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COMPETENCY BASED TRAINING AND ASSESSMENT IN BRAZILIAN COMMERCIAL PILOT LICENSING

New methodology updating theoretical and practical curriculum

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COMPETENCY BASED TRAINING AND ASSESSMENT IN BRAZILIAN COMMERCIAL PILOT LICENSING

New methodology updating theoretical and practical curriculum

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ABSTRACT

Aviation safety statistics have shown the concerning contribution of the general aviation segment, especially of the commercial licensed pilots in accidents and incidents in general. Likewise, air operators have shown attention to the commercial pilot´s issue due to their operational and safety demands. Based on a methodology for the development of specific instructional materials and a modern and efficient methodology for the development of competency-based activities, the study develops several steps, ranging from the definition of a specific performance problem, work and population analysis, the proposition of curricular and instructional elements to the evaluation aspects, to the achievement of its objectives. Finally, the study enables the creation of a proposal of supplementary instructions associated with technical requirements of aviation schools' activities, aimed to support the development of their materials and practices for their training courses, based on the competency-based training and assessment methodology – CBTA.

KEY WORDS

Competency Based Training and Assessment [CBTA], Airplane Commercial Pilot, Licensing Process, Improvement and Safety.

RESUMO

Entre diversos atributos positivos do modal aéreo, principalmente sua confiabilidade e segurança são resultado da padronização internacional promulgada e adotada pela Organização de Aviação Civil Internacional [OACI] e diversos outros organismos associados. Dentre as práticas adotadas, destaca-se a regulamentação, certificação, vigilância e medidas de gerenciamento da segurança operacional. Como um desses processos, o tema do estudo é aquele que relaciona o licenciamento do piloto. E seu foco reside nos aspectos teóricos e práticos dos cursos de licenciamento do piloto comercial de avião e sua habilitação para voos por instrumentos.

Em específico, o estudo relaciona a efetividade dos requisitos e instruções suplementares vigentes da ANAC, relacionadas com a execução dos cursos acima pelas escolas de formação de pilotos e sugere possíveis problemas no desenvolvimento e execução destes cursos quando não aderidos às metodologias de desenvolvimento de conteúdo, de execução de treinamento e avaliações baseadas em competências como suportado pela OACI.

O problema considerado pelo estudo é o desempenho de um determinado segmento de pilotos da aviação civil brasileira, o de pilotos comerciais, e sua notável contribuição às estatísticas de acidentes e incidentes – seja pelo volume de pilotos contribuintes e horas voadas por este segmento. Através de uma abordagem sistêmica sobre o problema, que relaciona outros fatores externos, o estudo assumiu acidentes, incidentes, ou mesmo os atos inseguros desta população como reflexo dos cursos atuais relacionados à sua formação. Desta forma, o estudo questiona a efetividade dos requisitos e instruções suplementares vigentes da ANAC acerca da execução dos cursos de formação em questão; e em que extensão o Brasil se adere à metodologia CBTA da OACI.

Alinhado à posição de autoridade de aviação civil da ANAC, o estudo objetiva atualizar as orientações e guias sobre a metodologia *Competency-based Training and Assessment* [CBTA] e *Instructional Systems Design* [ISD] para melhor formatar e desenvolver os cursos de formação de pilotos comerciais de avião e de habilitação de voo por instrumentos [IFR] no Brasil, executados pelas escolas de formação; e propor

atualizações nos currículos teóricos e práticos dos respectivos cursos utilizando essas metodologias inovadoras, o que também considera suas avaliações. Este objetivo considera a formatação de um pacote de informações e formulários do Programa TRAINAIR PLUS da OACI, configurando uma proposta de solução de treinamento e se materializa na proposta de atualizações das instruções suplementares brasileiras relacionadas à formatação e execução dos cursos para que sejam baseados em competências. Assim, o estudo busca reduzir a lacuna entre as competências dos pilotos comerciais de aviões formados com base na metodologia atual - utilizada pela maioria das escolas de voo no Brasil - e as necessidades dos operadores aéreos. Com isso, se espera um processo de transição mais seguro e tranquilo desses pilotos para o segmento operacional dos operadores aéreos regulares e melhoria nas estatísticas de acidentes.

Através de uma metodologia mista, este estudo exploratório pesquisou, coletou e interpretou informações de suporte relacionadas às metodologias ISD e CBTA apresentadas em diversas publicações de referência da OACI, IATA, EASA, FAA, e realizou diversas interações com representantes de organizações de formação e qualificação de pilotos da EASA. Assim, o estudo reuniu e analisou informações relevantes para propor informações relevantes de treinamento e avaliação baseados em competência às escolas de formação de pilotos brasileiras. Igualmente, foram realizados inquéritos com o pessoal destas escolas - coordenadores e instrutores do curso - protagonistas do processo de licenciamento no Brasil, com especialistas em formação e qualificação de pilotos de avião, com funcionários específicos da área de *safety*/*flight standards* de operadores aéreos regulares brasileiros; e suas respostas, críticas e sugestões também foram consideradas nas propostas e em outras análises do estudo.

As contribuições mais relevantes do estudo se revelaram no decorrer das sete etapas que marcaram sua metodologia. Através de um estudo preliminar, se destacou a posição do Brasil no panorama mundial de *safety* e fora definido o problema de desempenho do segmento de pilotos alvo do estudo através da visão sistêmica dada ao treinamento nas operações dos pilotos. Após, se realizou uma análise do trabalho do piloto comercial, inédita no Brasil, onde foram definidos elementos essenciais, com devidas distinções operacionais, para o desenvolvimento de todo o estudo e proposição de seus objetivos: solução de treinamento baseado na metodologia CBTA. Três

atividades marcaram a etapa da análise populacional do estudo: - foi realizado um comparativo entre os requisitos de proficiência e de treinamento prático da ANAC e descritivos de competência da OACI, que evidenciou supostas lacunas entre as competências alcançadas pelos pilotos brasileiros e aquelas preconizadas pela OACI para o bom exercício de suas funções, em especial ao que tange o gerenciamento de erros e ameaças; - e foi realizada uma pesquisa relacionada com os principais fatores contribuintes de acidentes do segmento ocorridos nos dez últimos anos, e suas relações com as competências previstas pela OACI para a boa atuação dos pilotos. Neste caso o estudo apresentou uma relação direta entre a falta de diversas competências, materializadas em comportamentos observáveis determinados pela OACI e IATA, que foram refletidas nos onze fatores contribuintes mais presentes nos acidentes ocorridos. Finalmente; a última atividade considerou diversos inquéritos com coordenadores e instrutores dos cursos associados das escolas de formação de pilotos, que coletou diversos dados demográficos, elementos característicos das escolas em que atuam, suas percepções sobre valores sobre o CBTA, atual programa e currículos usados na instrução, disposições da ANAC e contraste acerca do atingimento de competências específicas por parte dos alunos que instruem. A etapa do *design* do currículo proposto pelo estudo relacionou os elementos-chave da metodologia ISD em um sequenciamento mais lógico de módulos, objetivos intermediários, cargas-horárias, condições, desempenho esperado, elementos sobre avaliação – entre outros – para a proposta de treinamento. Com isso, se propôs uma reestruturação dos cursos com base nos dados da análise populacional, previsões dos organismos internacionais e na relação direta requerida entre as avaliações propostas e comportamentos observáveis esperados pelos alunos. O *design* dos módulos consolidou a confluência entre as perspectivas adotadas na análise do trabalho e *design* curricular; definiu um modelo de competências adaptado com ênfase no desempenho humano, gerenciamento de erros, ameaças e procedimentos operacionais; e definiu os componentes padrões de módulos em um conjunto de formulários com diversos elementos essenciais para desenvolvimento do curso, avaliações requeridas e atuação dos instrutores. Uma vez que a metodologia original utilizada pelo estudo foi adaptada conforme a posição da ANAC, os testes de produção e desenvolvimento da solução de treinamento deram lugar à proposição de orientações relevantes às escolas acerca da atuação dos instrutores, produção de

material instrucional e condução das avaliações teóricas e práticas frente a diferentes níveis de competência esperados. A última etapa o estudo definiu instruções sobre a condução das avaliações associadas à sua proposta de treinamento com ênfase na necessidade de um plano de avaliação contendo determinados elementos, uso de um modelo adotado internacionalmente para as avaliações práticas; e a necessidade de treinamento e avaliações específicas aos instrutores e avaliadores acerca dos méritos comuns de CBTA e outros específicos às suas funções. Finalmente, a etapa ratificou a avaliação positiva da oportunidade do estudo através do posicionamento dos diversos especialistas relacionados sobre o tema, oportunidade, objetivos e implicações do estudo em seus ambientes de trabalho.

O estudo concluiu que a melhoria do desempenho do Brasil no contexto de *safety* – desempenho dos pilotos – e nas estatísticas associadas internas se relaciona com contribuições do sistema de treinamento e do segmento de aviação geral. Em decorrência da análise de trabalho do piloto comercial e dos resultados das etapas seguintes do estudo, se constatou a inadequação e não adesão de requisitos e, principalmente, das instruções técnicas brasileiras relacionadas à metodologia CBTA, algumas provisões da OACI e aspectos de fatores humanos, habilidades não técnicas, gerenciamento de erros e ameaças de maneira adequada. Paralelamente, foi ratificada a correlação de fatores contribuintes de acidentes do segmento à OB e currículos de treinamento vigentes não tratados e, respectivamente, adequados à atualidade do contexto operacional. Neste sentido, a adoção da solução em treinamento CBTA é considerada promissora e válida. Já na esfera das atividades das escolas de formação de pilotos, conclui-se que ainda que haja abertura para aprendizado e confiança sobre a metodologia CBTA, há baixo nível de conhecimento e irrelevante atuação delas na garantia de atingimento das competências desejáveis e aspectos diversos da metodologia. Com isso, ficou clara a necessidade de melhorias nos cursos-alvo vigentes através de provisões CBTA imprescindíveis à estrutura, currículos, módulos e seus aspectos didáticos – que devem ser referenciados em um modelo de competências adaptadas. Por último, com o foco nos instrutores da proposta de treinamento do estudo, as conclusões foram claras sobre: a necessidade de provisões de suporte aos mesmos – sobre o *design*, produção e condução cursos - com ênfase em fatores

humanos, gerenciamento de erros e ameaças, e metodologia CBTA; sobre a necessidade de planos específicos para o exercício de suas funções de avaliação conforme nova metodologia; sobre o uso de ferramentas específicas tanto para a instrução como avaliações; e sobre a necessidade de processo específico de seleção, capacitação e avaliação dos mesmos tanto nas competências comuns CBTA como naquelas específicas às suas funções.

Finalmente, as investigações futuras devem sobrepor as limitações deste estudo, que se relacionaram principalmente com a falta de referências, evidências e resultados do uso da metodologia CBTA na formação de pilotos, com a definição de determinados elementos da análise do trabalho e com a agenda para as interações com o público-alvo do segmento e especialistas diversos considerados. Nesse sentido, as perspectivas futuras devem se focar no desenvolvimento, uso e validação das ferramentas e nos modelos de avaliação teórica e prática adotados pelo estudo; no incentivo à troca de mais e melhores dados relacionados à competências desejáveis advindas das análises sistemáticas de treinamento e operações dos operadores regulares de avião; na concepção de uma sistemática mais robusta para as interações com os representantes do segmento tratado pelo estudo, especialistas diversos e no uso da metodologia para propor melhorias aos outros cursos afetos à formação inicial de pilotos de aeronaves.

SUMMARY

INDEX OF TABLES

INDEX OF FIGURES

1. INTRODUCTION

Air transport is a reliable and safe modal in most places around the world. The modal, also agile, normally has its readability and safety higher than others. Different practices in its context distinguish it from others and maintain its high levels of safety. Even though its operations take place in a complex environment, can be highlighted its regulation, certification, surveillance, and safety management measures. All these highly developed processes and adopted practices are a result of international standardization promulgated by the International Civil Aviation Organization [ICAO] – an international body. “Especially, training of the aviation professionals plays a critical role in achieving safety objectives. So, competent personnel is essential to establish, manage and operate safe air transportation systems.” (ICAO, 2013).

In this sense, the theme of the study is the pilot licensing process. One of the various certification processes found in civil aviation. Its focus is on the theoretical and practical aspects of the course related to the issuance of the airplane commercial pilot license and instrument rating in Brazil.

The study relates, in the Brazilian civil aviation instruction centers [*herein considered as flight schools*[1]], the effectiveness of the existing requirements and its supplementary information related to the execution of the course above. Still, on the course in focus, it was considered a specific pilot segment´s due to its contribution to the general accidents and incidents statistics. By the development of the proposed improvement elements by the end of the study, which may affect the airplane pilot´s licensing and qualification, it was suggested possible issues related to the current training course´s development and delivery methodologies when not adhered to the ICAO supported Competency-Based Training and Assessment [CBTA] and instructional content development methodologies. To assist this task, it was considered some European Aviation Safety Agency [EASA] technical requirements, guidance’s efforts,

[1] The term flight schools encompass *“Civil Aviation Instruction Centers”* [ANAC terminology], Pilot Schools [FAA terminology], and Approved Training Organizations [EASA terminology], relating to aircraft pilots formation/licensing activities only.

approved training organization´s [ATO´s] benchmark in the subject and inquiries with flight school´s staff.

The study´s objective is to propose updates on the theoretical and practical syllabus and curriculums of Brazilian airplane´s commercial pilots' and IFR [2] rating courses based on an innovative methodology to better assist flight schools to set and deliver their courses, syllabus, courseware, and assessments. The objective is framed on the shape of ICAO´s TRAINAIR PLUS Programme´s pack of formularies and on the proposal of update of the Brazilian supplementary instructions related to the mentioned courses execution.

Overall, the study assumed the accidents, incidents, or even the specific population pilot´s unsafe acts and its impacts on safety as an output of related current courses. Finally, the study seeks to reduce the gap among the very new licensed airplane commercial pilots, considered as outputs of the current methodology - used by most of the flight schools in Brazil - and the air operator´s needs. The initiative allows a safer and smoother transition process of these pilots to the air operators segment.

[2]The acronym is a reference to the training which qualifies a pilot to fly under instrument flight rules (IFR), leading to an endorsement of a rating to his license.

1.1 Literature Review

International civil aviation is regulated by the ICAO, an exclusive United Nations [UN] body. This organization supports, develops, and promotes what is known as the international civil aviation system – the environment of the signatory countries, their documental basis, practices, and operations. All the countries that belong to this system have signed what is known as the Chicago Convention - established in 1944. Since then, many other countries have adhered to the convention and to the international system. According to ICAO (2019), the convention nowadays counts with 193 parties.

Through core principles declared as of international validity, the ICAO has created the Standards and Recommended Practices [SARP´s]. A manner to fulfill its mission: guarantee the development of civil aviation. These recommendatory nature documents state proposals of fundamental bases, which are standards and practices to be adopted by the countries. These documents assist the countries in the development and management of the civil aviation activities among countries and under their territory and jurisdiction. They also develop some topics throughout the countries in a uniform manner or with the smallest level of difference between them (ICAO, 2021). SARP´s are grouped into major themes, making up the ICAO Annexes. For example, Annex 1 is related to Personnel Licensing and Annex 6 is with Operation of Aircraft among seventeen others. Directly concerned with the study, Annex 1 sets the general requirements for the issuance of the commercial pilot license and IFR rating among various other relevant aspects of the pilot´s licensing process. Among these aspects, the study is based on the license/rating issuance requirements [knowledge] and [skills].

Furthermore, Documents [DOC´s] and Procedures to Air Navigation Services [PANS] are created. They are specific on certain themes and topics already set out in SARP´s. Normally, offers a complimentary basis with a greater level of detail and specificity, serving as a guide or instruction and procedure´s manual aimed to implement something addressed in SARP's.

Within the scope of the ICAO Annex 1 and the study´s focus, it´s commendable to emphasize the higher place of the DOC 9868, 3rd edition - Procedures for Air

Navigation Services [PANS] – Training (ICAO, 2020). The DOC is complementary to the SARP´s contained in Annex 1 and contains specified material and provisions for the implementation of the training for pilot licenses, ratings, and other provisions. It was primarily used by the study on the aspects below:

- Understanding of the ICAO competency framework.
- Considerations of the CBTA approach to pilot´s training and assessment.
- Development and implementation of competency-based activities.
- Considerations of the available Instructional Systems Development [ISD] methodology to design CBTA contents and materials.
- Considerations on the instructor´s and developer´s course competencies.
- Possible suggestions of the use of CBTA methodology applied to other licenses.

Simultaneously with the DOC 9868, the study used the DOC 9941 AN/478, 1st edition - Training Development Guide Competency-based Training Methodology (ICAO, 2011). This DOC presents the proposed methodology to develop instructional materials for competency-based courses according to ICAO's TRAINAIR PLUS programme. The DOC also provides an ISD methodology and a further systematic approach to carry out TRAINAIR PLUS procedures to develop what is known as Standardized Training Packages [STP´s] for competency-based courses according to the TRAINAIR PLUS Operations Manual [TPOM] (ICAO, 2013).

The study also used the ICAO DOC 9841 AN/456, 2nd edition - Manual on the Approval of Flight Crew Training Organizations. According to the ICAO (2012), the DOC focuses on "the provision of information and guidance to licensing authorities and training organizations on the implementation of Annex 1[3] and other Annex Standards related to the approval of training organizations". Despite the theme of the study, the DOC carries relevant information about the approved training organization [ATO] approval process, competency-based courses delivery, and authority approval issues.

[3] Annex 1 to the Convention on International Civil Aviation - Personnel Licensing.

To support the civil aviation industry´s effort to execute and implement the ICAO´s standards and recommended practices towards safer operations, the International Air Transport Association [IATA] develops orientations and guidance materials to air operators and the industry in general. These publications are very practical-oriented, figuring as an efficient way for the operators to perform, adhere and fulfill ICAO´s technical elements. In this sense, the study considered two publications: the Competency Assessment and Evaluation for Pilots, Instructors and Evaluators – Guidance Material (IATA, 2021) and the Guidance Material for Instructor and Evaluator Training (IATA, 2018). The first one relates the main organism´s and authorities´ documents in the effort to disseminate and execute CBTA programs with an emphasis on how to configure competency-based training and assessments and how to frame the instructor and evaluator performance assessment. The second was used to gather and stress instructor and evaluator [wherein considered as assessor] some key elements on their training and qualification program. Both functions are remarkable on the CBTA methodology and must be based on competencies.

Consequently, as an immediate result of the guidance and recommendations published by ICAO, the Brazilian National Civil Aviation Agency [4] [ANAC], like any other country, creates its technical regulations over its own legal basement. These regulations comprise the range of relevant certifying, operational, and surveillance duties of all civil aviation system.

In the scope of the study, the ANAC has published the *"RBAC 61 - Licenças, habilitações e certificados para pilotos, emenda 13."* [Licenses, ratings and certificates to pilots, amendment 13] (ANAC, 2019d). This regulation brings together standards, requirements, and procedures related to the pilot´s licenses, rates, certificates concession, and renewal according to ICAO Annex 1. The information on it was considered in a wider perspective by the study, since states the pilot´s license issuance requirements and prerogatives. According to the study, only those requirements [theoretical and practical] applicable for the issuance of the airplane commercial pilot

[4] The Brazilian Agency ANAC holds the place of the Civil Aviation Authority [CAA] according to ICAO´s terminology.

license, the IFR rating as well as the holder´s prerogatives and limitations were considered.

Besides it, the study mentioned the "RBAC 141 – *Certificação e requisitos operacionais: Centros de Instrução de Aviação Civil, emenda 01."* [Certification and operational requirements: Civil Aviation Instruction Centers, amendment 01] (ANAC, 2020f). This regulation issues the certification requirements and the rules of operation for flight schools. In Brazil, they are institutions specific related to the training and licensing process of pilots, flight attendants, and other aviation professionals according to RBAC 61, 63, and 65. The mention of this regulation was due to the fact that it states the approval need and other related provisions about the courses to be delivered by the flight school, always in compliance with RBAC 61 requirements in this case.

Right below the level of [technical regulations], ANAC has issued Supplementary Instructions [IS] for their requirements. This kind of publication intends to provide complementary information, explanations, and an acceptable method on how to meet requirements stated on RBAC or another technical regulatory document issued by ANAC.

In the scope of the study, attention was concentrated on the "IS 141-007 - *Programas de Instruções e Procedimentos e Manual de Instruções e Procedimentos, revisão A"* (ANAC, 2020e) [Instructional Programs and Instruction and Procedures Manual, revision A]. As its name suggests, the publication provides the most detailed provisions on the set of the manuals and documents to be issued by a flight school to deliver its courses. This set includes the flight school´s manuals for its own functioning, the course´s and trainee´s documentation, including syllabus, curriculum, courseware among other contents.

In addition, it was used the Brazilian operational safety annual report [RASO] and CENIPA data. This annual report issued by the ANAC[5] was used to set the performance problem and to substantiate the population analysis. The report is the

[5] It was used to collect data related to the specific civil aviation segment addressed as a participant of this study. The report did state remarkable data that were used with other collected from other ANAC databases related to personal licensing and flight school´s activities.

most comprehensive ANAC report which considers valuable data related to all civil aviation segments. It is produced in collaboration with the Brazilian Aeronautical Accidents and Incidents Investigation and Prevention Centre (CENIPA)[6] and embraces their information derived from accident and incident investigation and reporting efforts. The document joins the major operational data and analysis of each specific civil aviation segment and sets remarkable indicators, trends, and targets for civil aviation safety.

Specifically, about the information of the CENIPA, the study used the data displaced on the CENIPA´s Statistical Summary – Private Segment Aviation, years of 2010 to 2019 (CENIPA, 2020) and on its panel [*Painel SIPAER*[7]] at the population analysis step. In this step, the study used specific and filtered data related to the year 2018, 2019, 2020 accidents and serious incidents to determine possible pilot´s deficiencies contrasting the ICAO´s pilot´s competency provisions to the current curriculums to configure the training needs and the proposals of the training solution.

Likewise all current publications on the layers above, the study finally considered various specific technical content guidance materials, advisory circulars, supplementary instructions, papers, and other same leveled kinds of publications of different Civil Aviation Authorities [CAA] and organisms. These specific subject publications did not frame the study but played a remarkable role in the outline of the modules and in the design of the curriculum of the proposed training solution. The study analyzed their contents and considered some specific parts to serve as guidance to the flight schools develop their instructional materials. The publications also served to guarantee the legitimacy of the Learning Objectives [LO] of each proposed module. In the same way, one specific aviation safety content website[8] [electronic repository] was

[6] *Centro de Investigação e Prevenção de Acidentes Aeronáuticos* [CENIPA] is the Brazilian Aeronautical Accidents and Incidents Investigation and Prevention Center, a Brazilian Air Force body responsible for all aviation accident and incident investigation in the country.

[7] *Painel SIPAER* [SIPAER Panel] is a panel available on the internet[http://painelsipaer.cenipa.aer.mil.br/] that is provided by CENIPA. The panel is a data consulting tool based on a dynamic presentation of filtered data regarding all reported aeronautical occurrences from the last 3 years [2018, 2019 and 2020].

[8] The website skybrary.aero counts with remarkable partners [ICAO, Flight Safety Foundation – FSF, The UK Flight Safety Committee among others]. The initiative, started with the support of the EUROCONTROL, is to figure the website as an aviation safety knowledge repository to be used as a universal point of reference to the related subjects. The website, despite allows comments, modifications on the existing articles, and also propose new ones, counts with specific content management and control process of the stored safety data (SKYbrary, n.d.).

used to offer an additional source of content to the flight schools. Especial place was given to the Australian Civil Aviation Safety Authority´s [CASA] Civil Aviation Advisory Publication – CAAP 5.59A-1(0) - Competency Based Training and Assessment in the Aviation Environment. Similarly to the EASA´s Guidance Materials, Acceptable Means of Compliance, FAA´s Advisory Circulars, ANAC´s Supplementary Instructions, the publication has been written to provide practical guidance about competency-based training (CBT) and assessment as applicable in the aviation environment, and how to use these principles to meet Civil Aviation Safety Authority (CASA) requirements. This specific publication was chosen due to the know-how of the Australian´s government on competency-based education in general, including on the aviation context too. Competency based training and assessment was introduced by CASA in 1999 to comply with the national requirement for industries undertake training and assessment using a systematic approach (CASA, 2009). The initiative on the aviation context was one of the various outcomes of a comprehensive program of reform - the National Training Reform Agenda - to improvement the Australia's productivity and international competitiveness bringing formalized training to occupational areas where none was available (Guthrie, 2009). The CAAP 5.59A-1(0) was issued in the year of 2009, after ten years of benchmark on the subject in the aviation context.

In parallel to all the international organism´s literature review, the study also considered various scientific papers related to the competency-based education in general and to training in aviation. The papers also stated the associated benefits of the methodology in subsequent subjects related to the pilot´s performance enhancement – that commonly covers the application of human factors, threat, error management and other specific approaches and concepts used on pilot´s qualification. The initiative ratified the research´s efforts as aligned with what is considered as forefront of the study´s theme and both methodologies used. The results of the initiative appeared in shape of varied citations throughout the study.

1.2 Problem, Research question and Objectives

According to the ANAC report RASO (ANAC, 2020g) data and CENIPA statistics, the problem is constituted by the influence of the specific civil aviation segment, comprised by commercial pilots either IFR rated, or not, the related courses´ trainees, and associated flight school´s activities, on the overall civil aviation accidents and incidents statistics. The problem assumed this segment´s performance as an outcome of the Brazilian regulatory support to the flight schools´ activities, which encompasses the trainee pilot´s training activities on behalf of the pursued license and rating. Besides that, the problem is emphasized by the known air operator´s concerns and increasing demand for more capable and safer pilots for its operations.

From this context, the research question emerges as follows:

To what extent are the Brazilian requirements and supplementary instructions, related to theoretical knowledge and flight instruction of an airplane commercial pilot's license and IFR rating, aligned with the competency-based training and assessment methodology as enacted by ICAO?

Concerning the use of the adopted ISD and CBTA methodology, the objective of the study is:

- Propose updates on the technical supplementary instructions and guidance used by flight schools to administer their training courses. The proposal encompasses: - orientations and guidance on CBTA methodology and on the ISD elements, - theoretical, practical syllabus, and curriculums updates for Brazilian airplane´s commercial pilots' and IFR[9] rating courses. The objective aims better assist flight schools to set and deliver their courses, all the instructional material, and assessments activities.

[9]This expression is a reference to the training which qualifies a pilot to fly under instrument flight rules (IFR), leading to an endorsement to his license.

2. METHODOLOGY

2.1 Design of the study, population, and data collection of the participants

To achieve the research objectives, an exploratory study was designed with a mixed qualitative and quantitative methodology to obtain a more complete view and understanding of the study theme and object.

The qualitative methodology was operationalized by the gathering and interpretation of the CBTA related supportive information presented on ICAO, EASA, IATA, ANAC publications, references, and by interactions with some EASA flight schools´ staff on how to implement the instructions of the mentioned organisms. The additional expertise of the research´s co-supervisor, an employee in charge of a significative function on an EASA aircraft manufacturer associated ATO, on the benchmark of competency-based training for airliners pilots, also was considered as the support of the experienced special advisors on the theme of the study.

Extensive research on ICAO´s, other organizations´ and authority´s publications was performed to gather relevant information on how to propose training and assessment solutions, contents, and other information according to the CBTA methodology and ICAO's TRAINAIR PLUS programme method. The research was critical to whether consider or not, the applicability of its deliberations on the study scenario.

After that initial approach, the study adopted the DOC 9941, 1st edition - TRAINAIR PLUS [TDG] methodology (ICAO, 2011). The DOC is considered one of the main publications related to a methodology to produce CBTA instructional materials according to ICAO's TRAINAIR PLUS programme. The proposed methodology considers steps there were followed with some adaptations due to the study´s objectives and regulatory context. The assumed steps were explained throughout the internal parts of this chapter.

Special attention was given to the straight contact with the key players of the study scenario, as required on the DOC 9941 [TDG], that occurred through almost all

steps of the study. Inquiries with relevant flight school staff, SME group[10] were used to collect their answers on the requested questions, their critiques, and suggestions about the tasks and elements proposed by the researcher, and the outcomes of the study. The activity also related the feedback about the ISD systematic approach used to carry out the study.

The quantitative methodology was considered by the analysis of the outputs of the inquiries related to the elements above, separated by two main focuses: on the populational analysis and on the development and delivery of the associated course, which were oriented to Brazilian flight school´s staff – course coordinators and instructors - key players of the Brazilian civil aviation licensing process. The data collected by the inquiries received descriptive statistical treatment only. It was assumed only averages and percentage calculations on the steps of the study where surveys on the safety statistics, populational analysis, and inquiries with the participants were performed.

The Brazilian related inquiries counted with the following participants:

Table 1: Participants of the study´s inquiries. Source: ANAC- 2020

Participants	n	%
Total functioning flight schools on Brazil:	318	100
Active flight schools related with airplane´s commercial pilot licensing and IFR-rating courses:	124	38,99
Training coordinators listed by the flight schools:	123	100
[Study´s participants - Inquiry]:	15	12,2
Practical instructors listed by the flight schools:	156	100
[Study´s participants - Inquiry]:	52	33,3

Note: In Brazil, "Flight Schools" are also related to the licensing courses of flight attendants, flight engineers, flight dispatchers and mechanical technicians. The related training coordinators and practical instructors were only those associated to flight schools with airplane´s commercial pilot licensing and IFR-rating courses. Differing from the Brazilian scenario, EASA considers both ATO: those one´s related to airline pilot´s qualification on specific kind of airplane and on its operations; and those one´s related to the pilot licensing [initial formation] process.

[10] The inquiry was proposed to flight school´s staff and ANAC SME group, which only considered airplane pilots at least with Commercial Pilot License, IFR rated. Within the flight school´s group, these are also qualified as flight instructors. Some of them may be acting as training course coordinators.

Other related socio-demographic data and CBTA technical considerations were later and properly commented on the specific parts of the study. The first part of the data was related to the performance problem and grouped general aviation safety data based on the ANAC report RASO (ANAC, 2020g). The second part related the population analysis, the contents of the final reports and investigations of the accidents and serious incidents that occurred during a specific period of time and stated the outputs of the inquiries concerned with the Brazilian flight school´s instructors and training course coordinators of the study [Table 1].

As may be observed on the following steps of the study, there is expressive participation of the airplane commercial licensed pilots in the Brazilian civil aviation context. So, the use of the CBTA methodology on their licensing and rating processes enacts this study as unprecedented. Despite the variety of licenses and ratings that compose the general aviation segment, the addition of any one of these licenses and ratings to the population of the study would be considered an expressive extension to the study´s schedule. For this reason, it was elected only the single-engine airplane´s commercial pilot licensed and IFR-rated and the related flight school´s training courses as the study´s population.

The study also counted with some EASA ATO support. In this case, their participation occurred by calls and meetings with the respective CTKI of the two Lisbon-based and consulted ATO and by the specific support of the co-supervisor of the study. In this last case, the individual is an employee of a European airplane manufactory´s associated ATO, who acts as TRI, TRE, Deputy Head of ATO Operations and Certification, a function that embraces both flight operations and the worldwide ATO standardization regarding the development and delivery of training to airliner´s pilots based on competency-based activities. These interactions, remarkable to the study, allowed the researcher to realize constraints and important elements on the implementation of the CBTA methodology on airplane´s licensing theoretical and practical training according to the EASA environment.

Besides the activities above, concluding the results of the study, it was performed a specific inquiry with the responsible employees of the Training, Flight

Standards, Quality and AQP [11] of the three biggest commercial airlines on Brazil, with one experienced special advisor on pilot´s training and air operations and with a few flight school´s technical managers to their freewill comments and pieces of advice about the opportunity of the study and the implications of its results on their operational environment. The details of this last activity were stated in the last step of the study.

[11] AQP – Advanced Qualification Program.

2.2 Preliminary Study

Background

As an introduction to this step, the study fitted the Brazilian civil aviation safety performance in a worldwide context. Were presented some numbers related to accident rates per millions of takeoffs for commercial civil aviation activities[12] in the year 2020. Just the most expressive countries and regions worldwide were considered. Even not the most accurate scale, the numbers, based on ICAO and IATA data, drawing a big picture about the Brazilian performance (ANAC, 2020g).

After, inside the Brazilian general safety scenario, the study analyzed a historic accident series started in the year 1979 and then, used the most relevant and accurate information about the Brazilian scenario, the number of accidents per million hours flown[13].

The performance problem analysis

- **Identification**

In the shape of a preliminary study to substantiate the purpose of the study, it was considered and analyzed a performance problem of the specified civil aviation segment based on various elements and its accidents and incidents contribution to the Brazilian aviation safety statistics. The performance problem was depicted as a further detailing of the research problem. Its presentation was a remarkable point of the study, allowing the analysis of some causes of the problem and actions for its solution.

Later, it was appreciated further aspects regarding a training analysis that based the proposal of solution of the problem on this preliminary study. This study and

[12] The taxes are related to scheduled and non-scheduled commercial flights, including translates ferry-flights, considering airplanes with maximum take-off weight [MTOW] more than 5.700kg.
[13] Just considered flight hours declared to ANAC, registered by BIMTRA, a Brazilian air traffic/ movement´s databank.

its proposal focused on the Brazilian [ANAC] current provisions to the current flight school´s training course´s as a possible contributor to the scenario.

The considered performance problem was the contribution [accidents] of commercial pilots licensed on the airplane category, either IFR rated, or not, and the flight school´s trainee´s activities related to that license and rating´s course to the aeronautical accidents rates. However, at first, the study stated on what aviation segment the problem resided. All the segments were compared by their percentual participation on the sum of accidents and by their own rate of flown hours.

Since the focused segment is composed of operations of pilots holding different airplane´s kinds of licenses [e.g., Student, Private, Commercial, and Air Transport Pilot.], the study stressed the proportion of contribution among those licenses, configuring the most contributors to the accidents´ data. The comparison among the portions considered the sum of issued licenses from a period greater than fifty years and was refined by the number of pilots with the respective ratings valid on their licenses and by the sum of registered flight time logged on the ANAC´s data-bank – related to the year 2020.

Besides the aspect of the licenses involved, the study entered on the general aviation specific characteristics and accident data. It was stated the average of the accidents under the last five years, and it was cleared the participation on the accidents of the segment by the kind of airplanes involved. The same was made with the airplane air instruction activities. Finally, the study emphasized the importance of the problem in the sense of how spread the airplane commercial pilots are on the civil aviation, and to allow the reader to estimate the associate´s hazards from different perspectives.

- ***Systems approach analysis***

The study used a systematic approach, and its well-known elements, to appraise how the training scenario relates to the performance problem. The approach allowed the understanding of the training and non-training processes and association among its possible deficiencies and the performance problem. Still on the benefits of

the use of this approach, it was listed examples of processes related to the ANAC context that may interfere with the performance problem.

In conclusion to the use of the systematic approach, the performance problem and the research question were addressed to a training solution and to the expected benefits of the proposed solution. In parallel, a tool and some elements were considered on how to ratify and to register what impacts may be observed on the target population. Dekker (2002), already called to the need of changes on the structure of the civil pilot training and preparation according to the evolution of aviation technologies, which may lead to evolution of the educational policies regarding the improvement of commercial pilots, especially on the use of new tools suitable for newer and more complex flight environments from the moment they begin their pilot training and preparation.

2.3 Job Analysis

The job analysis is a breakdown of a certain job, that provided all relevant information to set and deliver the proposed training solution. The job was broken into functions, tasks, subtasks, and tasks elements. The breakdown was based on the existing commercial airplane, instrument, and single-engine rated pilots´ prerogatives, limitations, licensing, and training requirements. The analysis considered the pilot´s licensing requirements to be set as a performance standard. Based on that, the analysis stated the terms which a job is done to finally define, among other elements, the required Knowledge, Skills, and Attitudes [KSA] required for that job. The outcome of the analysis supported the setting of competencies and performance standards of the job and served to analyze possible improvement suggestions on the determination of the best practices of the job.

All the analysis was performed to support the determination of the acceptable level of competency on the achievement of the job.

The job

The job statement is a milestone to its analysis and was based on ANAC´s requirements. Even this definition seems to be a very simple part, it´s a paramount

statement to realize what currently exists regarding the job and the possible gap between what is proposed according to CBTA provisions.

From this statement on, the study assembled all other job-related and associated instructions requirements under the ANAC current provisions and drew a whole picture of the job performance on the frame and sequencing of the ICAO´s airplane pilot tasks list.

Proposed outcomes

Despite it appears operationally related, the job analysis leads to the training needs. As introduced above, the outcomes emerged by several inputs, like training requests; task lists; operational, technical, regulatory, and organizational specifications. Then, they passed through a screening process [purpose of the training, operational environment, associable tasks; and various other requirements] until it assists the training specification as output. The most expected outcome from the job analysis was the realization of how the job should be done rather than how it is done to base the proposed training solution (ICAO, 2011). All the elements of [figure 12] were stated and detailed on the results of the study.

- **Functions**

The study considered supposed differences among the kind of pilot´s interaction and the organizational environment of each function´s scenario when performing the job.

- **Tasks**

The study´s consideration of tasks correlated the ANAC´s RBAC 61 current single-engine commercial pilot licensing, IFR-rating proficiency[14] and the flight training requirements to the job references of the DOC 9941. The correlation differed the

[14] ANAC RBAC 61 IFR-rating proficiency requirements [61.223(a)(7)] are linked to the execution of procedures and maneuvers specified on the [61.223(a)(5)(iii)] with an appropriate degree of competency as to guarantee the same tasks listed on the paragraph [61.223(a)(7)(i) to (vi)] – same of the commercial pilot proficiency requirements [61.103(a)(1) to (6)].

requirements among what were considered expressed as maneuvers and tasks and what were considered as competency or performance standard instead of a task to be properly used through the study.

During the activity, it was adapted some terminologies of the ANAC references to reflect the training purposes of the study. At the same time, other ICAO references were used to frame the tasks of the pilot from the perspective of how it must be done. Moreover, the activity differentiated some tasks due to possible differences in the pilot´s operational environment and duties. At last, it was tracked assumed gaps among the ANAC and ICAO provisions to be later used on the course development step. The information of both activities was proposed by the researcher and after, they were disposed to the study´s participants and SME critique and feedback by an inquiry.

- **Subtasks and Task elements**

On the contrary of it may suggest, the last two levels of the job breakdown were very important. Subtasks and task elements bring together various vital elements necessary to the design of curriculums on the proposed training solution.

The activity filled out a required Form, that was based on the ICAO definitions and on the CBTA rationale that the observation and the assessment of tasks shall only be based on defined standards. So, the study related all the parts of the job break down to standard elements under the job perspective, defining what is called as a performance criterion. The contents of the Form received specific markings according to the different functions and other relevant aspects to make easier the understanding of the relationship among the job elements and the curriculum set elements.

2.4 Population Analysis

It was considered two main purposes of this kind of analysis. The first, to substantiate the determination of possible operational, social, and cultural aspects that could affect the learning styles, methodology, and other related elements of the design of the curriculum. The second, to guaranty the participants with all required competencies to carry out their tasks. Additionally, the populational analysis of the

study was based on the specificity of its scope and on the particular aspects of the target population regarding how they assess the flight schools and some common points among trainees. Based on that, the analysis focused on the competency element of the participant´s segment and direct possible variations on trainee´s characteristics to other steps.

Illustrating the significance of analysis like that, recent investigations on aircraft accidents pointed to the crew's unpreparedness in properly monitoring the aircraft`s automation systems as one of the contributing factors to accidents. It meant that increased volumes of information regarding the conditions of a given flight without proper analytical and solution training may led to more accidents (Henriqson et al., 2009). So, by a same spirit, the populational analysis gathered information from the pilots, considered the target of the study, and about the safety issues on their operational environment.

To that end, there were performed three activities.

- ✓ Comparison between ANAC´s current proficiency requirements and the ICAO DOC 9868 [Part II - Appendix 1 to Chapter 1] - ICAO COMPETENCY FRAMEWORK´s Competencies descriptions.
- ✓ Research on CENIPA´s accident and serious incidents database related to the participant´s aviation segment concerned.
- ✓ Demographic and a CBTA inquiry from flight school´s staff.

The first activity considered the common ANAC proficiency requirements as competencies and compared them with the ICAO competencies descriptions. This activity aimed to assume a potential gap analysis among already acquired competencies and the desired ones. The comparison configured what is relevant to the job performance, supposing the training needs.

In the second activity, the study collected some accident and incident analysis information. The activity sought for contributing factors of general accidents and incidents of the past two years [2019 and 2020] aiming to contribute to the potential

gap analysis on the missing competencies that should have been acquired by the pilots involved in the study, defined as the primary target population.

The third activity was configured by an inquiry with flight instructors and training course coordinators of flight schools. The inquiry was oriented to five major themes:

- ✓ Pilot´s demographical information.
- ✓ Flight school´s characteristics.
- ✓ Pilot´s general perceptions about the value of the CBTA.
- ✓ Pilot´s general perceptions about current training syllabus and curriculum.
- ✓ Perceptions about ANAC current provisions regarding the CBTA.

Consequently, the outputs of each activity were considered in the design of the curriculum and the modules of the proposed training solution and to ratify the gaps of the training needs as realize in the previous steps and activities of the study.

2.5 Design of the Curriculum

General aspects

The increasing complexity surrounding the cognitive systems may result in an incompatibility between the demand of these systems tasks and the operating capacity of system controllers. This deficiency may be reduced or even extinguished by simplifying the cognitive systems or improving the preparation and qualification of its operators, or even both (Rondon & Fontes, 2017).

Consenting to the citation above, relating the theme and objective of the study, this step aimed to guarantee such a framework of the proposed training solution that better drives the performance, attention, and motivation of the trainees to achieve the competent performance of their tasks. In this step, it was designed the proposal of updating structure of the syllabuses, curriculums, and the instructional components of the DOC 9941 [TDG] approach were positioned. The study defined an interrelated structure to the proposed training solution still considering the current ANAC course´s structure, setting, and delivery supplementary instructions.

By the introduction of the proposed framework and by the study´s required modifications on the modules, its elements, and references, there were highlighted some assumptions and core aspects related to its optimal use. The step shaped all the modules´ outlines, stressed the relationship among the respective intermediate objectives, observable behaviors [OB], and associated all the end-of-modules objectives to assessment activities. All the technical publications to be used as the source of content were also related to each module.

All relevant elements from the previous steps were considered hereinafter and must be considered with the proposed framework by the flight schools, configuring this step as a link to the instructional contents of the modules on the proposed training solution. After, it was compared the ANAC´s current provisions and the study´s proposed provisions to sensitize the reader about the updates.

Exams and observable behaviors

Exams were considered an assessment toll not only to check the trainee´s performance towards the expected competency. They assess the training material aspects, how the training has been conducted, the exam and evaluator´s performance, and other elements. Associated to that, the scope of this study is not to provide a bank [drafts] of questions and elements to flight schools use as an exam, which would be plastered and ineffective. The study is committed to providing to flight schools with the elements to let them able to understand the purpose and importance of the evaluation, prepare and perform valid and reliable exams upon their trainees.

Due to the vital role of the assessments on the CBTA methodology, the study focused and treated the theme on its seventh step – EVALUATION. In this part of the step, the study positioned the reader on the previous assessment activities that the trainee undergoes before, during and after the flight school´s course to make him able to ponder about the study´s proposed assessment methodology and references to the two syllabuses. After, a comprehensive approach to the assessment activities was given among the statement of other elements that contributes to the assessment context. The study only provided preliminary information about the assessments of each curriculum.

Module´s outline

Following the adopted ISD methodology, all the modules proposed by the training solution were listed and presented in Forms. The presentation, that constituted the training plan, considered its core elements, and was aligned with the proposed structures and rationale above of this step. As a result of the proposed training solution framework, there were emphasized specific elements of the theoretical and practical curriculums, including their assessment activities. The same job analysis related markings also were used, maintaining guidance to the users of the training solution on the delivery of the outcome of the step: the teaching points.

2.6 Design of the Modules

General aspects and module´s plan

This step encompassed the preparation and detailing of all provisions, both trainee and instructor oriented, to make available the most comprehensive instructional materials of each module for its correct delivery. They configure a detailed guide for the development of each module, referring to its sequencing, teaching points, learning objectives [LO], highlights, and other elements.

On this step, the modules were organized by a standard layout and components, some elements of the instructor´s provisions were highlighted and orientations on the performance of the progress and mastery tests were designed. After, the provisions were detailed until the relationship between the tasks of the job analysis, associated intermediate objectives, LO, and OB. Finally, it was sequenced the teaching points and detailed their related learning objectives. These relationships were materialized on a specific FORM that proposes a module plan. All the elements on that plan were chosen to make available all the associated provisions to a standardized and appropriated training solution delivery. It was produced a piece of complete information to assist the instructors on their duties through all the training solution.

Due to the study´s purposes, the elements, and contents, including handouts [to be taught and delivered to the trainees] for each module by itself were not produced.

The study aimed to establish only the LO to each module and its parts [enabling objectives]. The design of the LO was based on the same taxonomy[15] previously used in the study and in observance to the EASA understanding of LO.

Threat and Error management – TEM emphasis

This part of the step clarified some considerations about the TEM term, already mentioned on the Job analysis and on the Population analysis step. The clarification aimed to set its remarkable place on the proposed training solution to the proper use of this safety concept by instructors and assessors on both curriculums.

Human Performance and Limitations

Based on the above assumptions about the TEM concept and its remarkable place on the training solution, this part of the step highlighted how dependent this concept is on human performance and its limitations´ elements to be properly and broadly practiced. Similarly, it was stressed how human performance and its limitations built the competencies and the related OB despite the ANAC provision to the subject.

Observable Behaviors [OB] and adapted competency model

The term OB already have been shallowly quoted before in the study when related to the job analysis, design of curriculum step, among subtasks elements [KSA]; and when confronted with the ANAC requirements. However, the term by itself and its place on the CBTA methodology was stressed on this part of the step when its understanding became critical to the correct delivery of the teaching points and on the assessment activities. In this part of the step, it was cleared the relationship among OB and the competencies of an adapted competency framework.

15 The taxonomy for action verbs was paramount to the study. The standardization was also used in Appendix 6 to set all the KSA. The categorization of action verbs is based on certain levels of accomplishment and shall be considered by the flight school´s task to delimit the teaching points on each module.

2.7 Production and Developmental Testing

The original purpose of this step by the CBTA methodology is to produce and try out the full set of material that would be produced after the design of the curriculum and of the modules. After that, validation would be expected before the consolidation of the final version of the course. However, the study´s nature and objective did not consider the production of instructional elements and contents of the modules. This was directed to the flight schools´ production under the defined teaching points, LO, the assessment elements, and specific adaptations markings.

On this step, it was stated the main elements concerned with the best text editing, layout, and design options for all the instructional materials. The step aimed to provide only support to have the flight schools with the most appropriate choices on the matters.

Still attached to the validation significance of the materials to be delivered, the study chose to provide significant SME and instructor´s-oriented provisions on the comprehension, choice, and filling of the required information on the Forms and on the design and production of the instructional material. The nature and detail of the information to be provided in this step are paramount by the CBTA methodology. Besides it expands the SME and instructor´s understanding of all instructional aspects to effective training and assessment activities, it allows them to choose or combine the better options to an effective training. Another point covered was the trial-out of the instructor´s guides and the instructional material. The activity figures as an important activity related to the delivery of the better training solution as possible. Due to that, were related elements to be considered on the trial tests.

2.8 Evaluation

This last step of the adopted methodology of the study originally refers to the evaluation of the proposed training solution as a product[16] of the ICAO TRAINAIR

[16] The term “product” refers to the pack of materials produced as a result of the methodology, known as Standard Training Package [STP].

programme ISD. However, due to the study´s regulatory context and objectives, the study´s results would not be able to be tested by flight schools before ANAC´s approval and publication of its proposals. Moreover, by the existing provisions of the requirements and supplementary instructions of the quality assurance system to flight schools, this step was adapted, focusing on three other evaluative contexts, but keeping the evaluative emphasis of the original methodology.

The first adaptation assembled and framed all the information concerned with the assessment activities on the proposed training solution, establishing an assessment plan for the use of the flight schools. The second adaptation stressed the main elements concerned with the qualification and standardization of the instructors and assessors on the CBTA activities.

Finally, the study inquired and stated the feedback of some SME, flight school´s managerial technical staff, and special advisors either on the use of the CBTA methodology and on the use of ISD approach on airplane pilot´s training materials to their considerations about the opportunity of the study and implications of its results. The inquiry presented the results by the ordering of the steps performed on the study and required from the respondent´s their freewill statements, critiques, and suggestions only about it. The inquiry elected only specific results of the study to be brought to the respondents and defined clear questions on the aspects to be evaluated on scaled answers. The inquiry considered separated questions and free answers related to the respondents´ positioning and point-of-views about the study´s capacity to reflect and treat the real safety concerns of their operational scenario.

3. RESULTS

Discussion

The poor performance of the general aviation segment to the Brazilian aviation safety statistics, mainly of the airplane single-engine commercial pilots, is the focus of the discussion of the study. As stated by Rondon and Fontes (2017), due to new requirements on the technological world, the preparation of civil aviation pilots must assume a position in which it supports the demands of a world where the complex socio-technological systems are more present over time, being necessary to redefine features and purposes of the preparation, as well as the demanded competencies for a 'new' pilot. Owing to that, the research based itself on the premise of the relationship of this performance with the licensing process of the pilots whereas the ANAC offers no encouragement and appropriate supportive information to allow flight schools to set and deliver its training courses. Consequently, the newly airplane commercial pilots are not fulfilled with the proper competencies required by the challenges of the operational environment both of the private and of the commercial operations and by the modern and advanced aircraft.

On the contrary, the current ANAC provisions related to the CPL and to the IR courses, considered strictly maneuver´s and conditions-oriented only, makes the flight schools unconcerned or even unable to evince and check if the candidates of a commercial airplane pilot´ license acquired the competencies required to the proper airplane pilot´s job performance as enacted by the various reference organisms, such as already evidenced by the other key players of the most specific pilot´s qualification segment: which ones carry the type-rating qualification to the airline pilots.

After the application of a specific methodology to design instructional material and considering another one to develop a competency-based training solution, the several outcomes produced were considered aligned to the international premises, needs, and gaps encountered in the Brazilian general and commercial aviation segments where commercial pilots act. The outcomes, in the format of methodological guiding steps, performance [job] criterion elements, and instructional-oriented materials

supplies the ANAC with the most appropriated data to offer the flight schools elements to train and assess newly commercial airplane pilots as ICAO, IATA and other players of reference already recommend.

Although the research has had limitations, the perspectives using the outcome of the research by the ANAC, and subsequently, by the flight schools are promising either on the licensing and on the operational context. So, further studies are encouraged to suppress the research´s limitations and place Brazil at the forefront of the competency-based training and assessment activities.

A Preliminary Study

As an introduction to this step, in a worldwide context, Brazil registered 2,37 accidents per million take-offs in the year 2020. The 7th [from 9] better rate, behind North Asia (0,00); Middle East and North of Africa [1,01]; Europe [1,31]; Pacific Asia [1,67]; North America [1,81]; and Latin America and Caribbean [1,93].

Inside the Brazilian general safety scenario and in absolute terms [Figure 1], the selected period of the historic accident series stated a considerable decrease in the number of accidents. Even with a reduction of 88% of accidents between 1983 [worst year, with 421 accidents] and 1999 [best year, with 50 accidents], the year 2019 registered 112 accidents. A number accommodated on an average range of 135,8 accidents/year over the past 10 years [2011 and 2020]. Then, considering the number of accidents per million hours flown, the year 2020 stated an increased rate of 53 accidents per 2,10 million registered flown hours according to the Figure 2. Special attention should be given to the term “registered flown hours” that do not consider movements of aircraft operating on non-controlled airdromes, for example, most of the agricultural flights. The use of this kind of information is recently considered on the Brazilian safety statistics and was intended by the study for possible future studies.

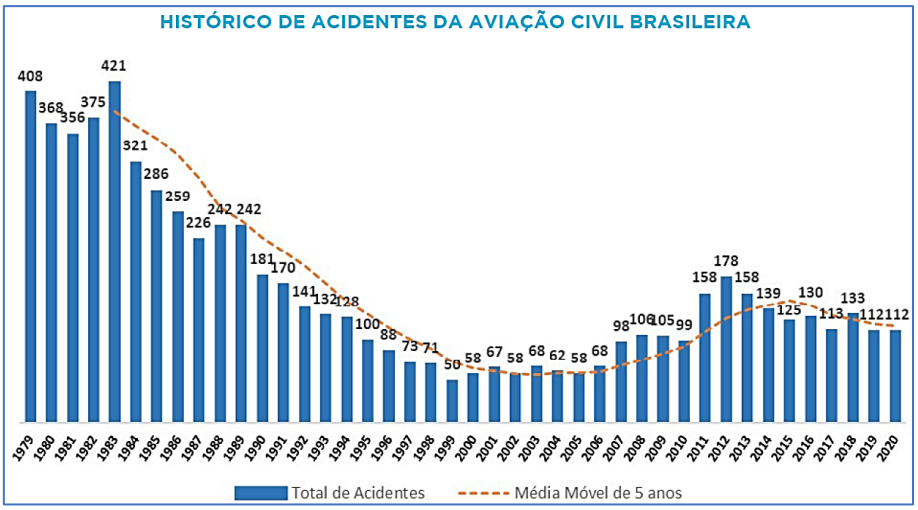


FIGURE 1: BRAZILIAN CIVIL AVIATION ACCIDENTS HISTORIC RATE. THE PICTURE REGISTERS THE HISTORICAL EVOLUTION OF THE BRAZILIAN SAFETY PERFORMANCE IN GENERAL, COMPILING DATA FROM THE YEAR 1979 TO 2020. THE GRAPHIC SETS A CONSIDERABLE DECREASE IN THE RATE. SOURCE: ANAC - RASO - 2020.

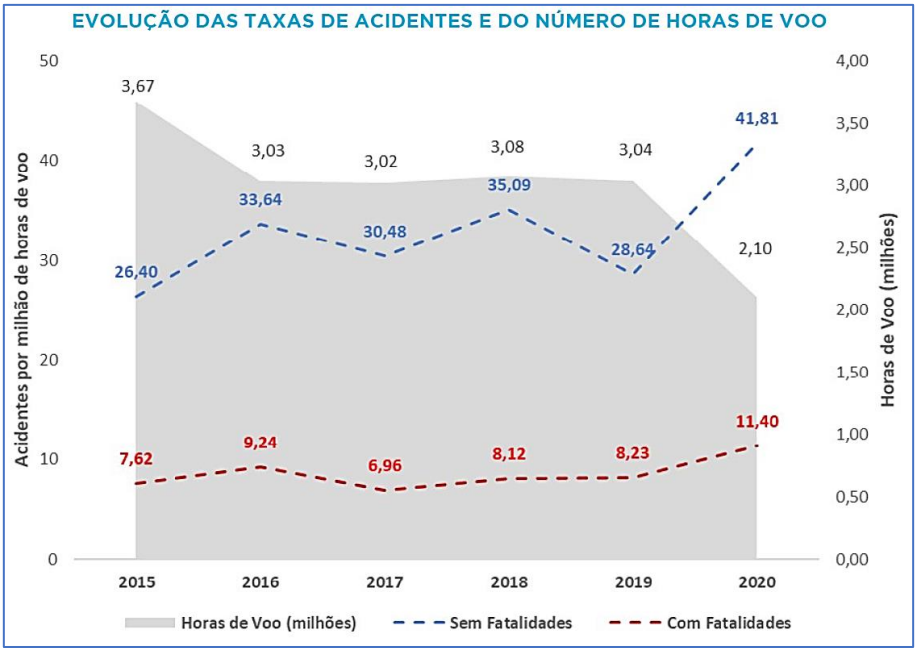


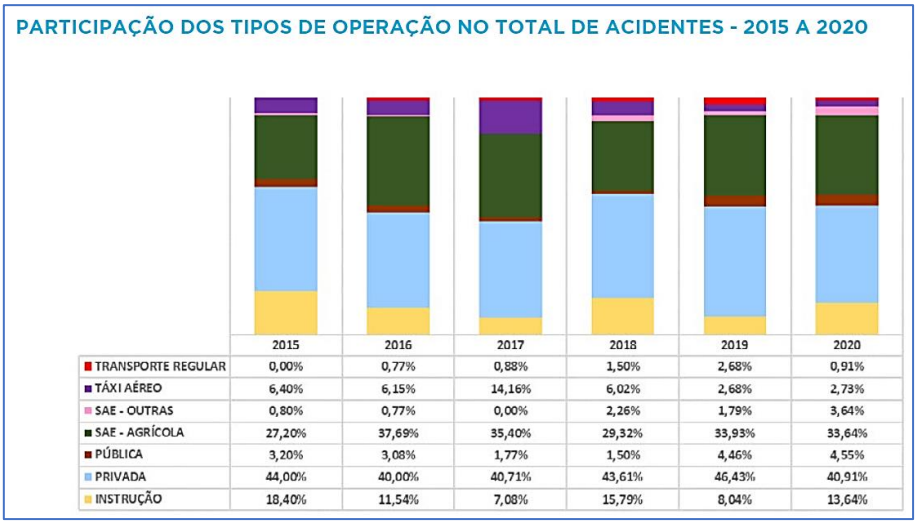
FIGURE 2: BRAZILIAN CIVIL AVIATION ACCIDENTS EVOLUTION RATE BY HOURS FLOWN. THE PICTURE REGISTERS THE HISTORICAL EVOLUTION OF THE BRAZILIAN RATE OF ACCIDENTS BY THE APPROXIMATED NUMBER OF REGISTERED HOURS FLOWN [MILLIONS]. THE BLUE LINE INDICATES THE ACCIDENTS WITH NO FATALITIES AND THE RED INDICATES THE ONES WITH FATALITIES AMONG THE TOTAL OF REGISTERED HOURS FLOWN FROM 2015 TO 2020. SOURCE: ANAC - RASO - 2020.

The performance problem analysis

- **Identification**

The symptoms of the identified problem performance are stated on the numbers associated in Figure 3 and Figure 4. More than 54% of the accidents in Brazil were caused by the general [private] aviation and by the instruction [flight school´s]

segments contributions[17]. Despite Figure 3 does not consider each segment´s volume to set its contribution to the big picture, Figure 4 does consider, pondering the number of flown hours for each one. It allowed a parameterized comparison among the segment´s operational differences. The two segments were the second and third most contributors, after only the agricultural segment.



	2015	2016	2017	2018	2019	2020
TRANSPORTE REGULAR	0,00%	0,77%	0,88%	1,50%	2,68%	0,91%
TÁXI AÉREO	6,40%	6,15%	14,16%	6,02%	2,68%	2,73%
SAE - OUTRAS	0,80%	0,77%	0,00%	2,26%	1,79%	3,64%
SAE - AGRÍCOLA	27,20%	37,69%	35,40%	29,32%	33,93%	33,64%
PÚBLICA	3,20%	3,08%	1,77%	1,50%	4,46%	4,55%
PRIVADA	44,00%	40,00%	40,71%	43,61%	46,43%	40,91%
INSTRUÇÃO	18,40%	11,54%	7,08%	15,79%	8,04%	13,64%

FIGURE 3: BRAZILIAN CIVIL AVIATION SEGMENTS GENERAL PARTICIPATION ON ACCIDENTS**.** THE PICTURE REGISTERS EACH SPECIFIC SEGMENT CONTRIBUTION [%] TO THE GENERAL SUM OF ACCIDENTS FROM THE YEAR 2015 TO 2020, WHEREAS "*TRANSPORTE REGULAR*" MEANS SCHEDULED/COMMERCIAL AIR TRANSP.; "*TAXI-AÉREO*" MEANS NON-SCHED/COMMERCIAL AIR TRANSP.; "*SAE – OUTRAS*" MEANS SPECIALIZED OPS. – OTHER; "*SAE – AGRÍCOLA*" MEANS SPECIALIZED OPS. – AGRICULTURAL; "*PÚBLICA*" MEANS GOVERNMENT/STATE OPS.; "*PRIVADA*" MEANS PRIVATE/EXECUTIVE AVIATION; "*INSTRUÇÃO*" MEANS INSTRUCTION/FLIGHT SCHOOLS/ATO. *SOURCE:* ANAC - RASO - 2020.

[17] The agricultural special operations segment´s contribution shall be considered apart since most of their operations are not registered by the Brazilian databank of air traffic/movements due to its kind and places of operations.

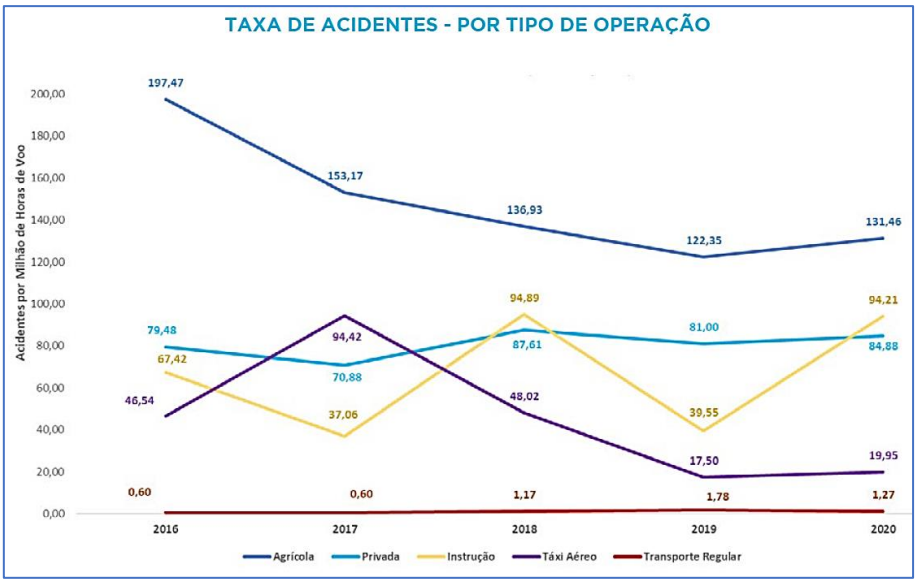


FIGURE 4: BRAZILIAN CIVIL AVIATION ACCIDENT RATES PER KIND OF OPERATION. THE PICTURE REGISTERS EACH MAJOR SEGMENT CONTRIBUTION NUMBER TO THE GENERAL SUM OF ACCIDENTS FROM THE YEAR 2016 TO 2020, PONDERING THE NUMBER OF TAKE-OFFS [VOLUME]. WHEREAS "*TRANSPORTE REGULAR*" MEANS SCHEDULED/COMMERCIAL AIR TRANSP.; "*TAXI-AÉREO*" MEANS NON-SCHED/COMMERCIAL AIR TRANSP.; "*INSTRUÇÃO*" MEANS INSTRUCTION/FLIGHT SCHOOLS; "*PRIVADA*" MEANS PRIVATE/EXECUTIVE AVIATION; "AGRÍCOLA" MEANS AGRICULTURAL. SOURCE: ANAC - RASO - 2020.

Another fact related to the study is shown in Figure 5. The most contributors to airplane accidents between the years 2015 and 2020 were "Commercial Pilots". This license was the higher one held by the involved pilots on more than 69% of the accidents. Adding the Air Transport Pilot License holder´s contribution, the figure assumes 85% of the accidents were performed not by inexperienced pilots. Contributing to the illustration, according to ANAC online data[18], from 1950 and 2019 were issued 114.245 airplane licenses, considering: 67.491 private pilots; 33.250 commercial pilots; and 13.504 air transport pilots. Based on the sum of issued licenses´ data, it could be said that 65% of the airplane's accidents may had been caused by 29,10% of this universe. Private pilots were 59,07% of the same universe, and Air Transport Pilots, 11,82%.

[18] According to ANAC online data [updated on January 02nd, 2021] (ANAC, 2021d).

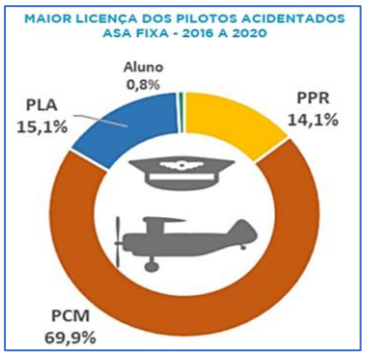


FIGURE 5: HIGHEST LICENSE OF BRAZILIAN AIRPLANE PILOTS INVOLVED IN ACCIDENTS. THE PICTURE STATES THE HIGHEST LICENSE HOLD BY AIRPLANE PILOTS INVOLVED IN ACCIDENTS FROM THE YEAR OF 2016 TO 2020. WHEREAS: "PPR" MEANS PRIVATE PILOT LIC.; "PCM" MEANS COMMERCIAL PILOT LIC.; "PLA" MEANS AIR TRANSPORT PILOT LIC.; AND "*ALUNO*" MEANS TRAINEE LIC. SOURCE: ANAC - RASO - 2020.

However, the sum of issued licenses was not the best indicator to substantiate Figure 5. To better do it, Table 2 and Figure 6 grouped two important data: first, regarding aircraft pilots with a valid rating [current pilots] only[19], second, the sum of registered flight time[20] logged by pilots on ANAC specific data-bank [CIV-Digital][21] related to all year of 2020].

Table 2: Aircraft pilots with valid rating only. Source: ANAC - 2020

By rating:				
	rating:			TOTAL
		VFR only	IFR	*n*
		n	*n*	-
	Single engine	10.787	6.083	16.870
	Multi engine	1.961	4.776	6.737
	TOTAL	12.748	10.859	-
By license:				
	license:		*n*	%
	Private pilot		6.436	27,84
	Commercial pilot		10.459	45,24
	Air transport pilot [ATPL] [*PLA*]		6.225	26,92
	TOTAL:		23.120	100

[19] According to ANAC online data [updated on February 01st, 2021 (ANAC, 2021c).
[20] According to ANAC online data [updated on April 22nd, 2021 (ANAC, 2021b).
[21] ANAC does have a specific online databank related to the pilot´s flight time logbook. The databank is part of a system that is officially and it´s the recommended use by pilots for their PEL [licenses and ratings] processes in general.

Note: [By rating] part of the table does consider only [class-ratings[22]], excluding [type-rated] pilots. The [By License] part of the table is independent of the first one. Both compose the current pilot´s scenario of the civil aviation on Brazil. Data collected on Feb. 1st, 2021.

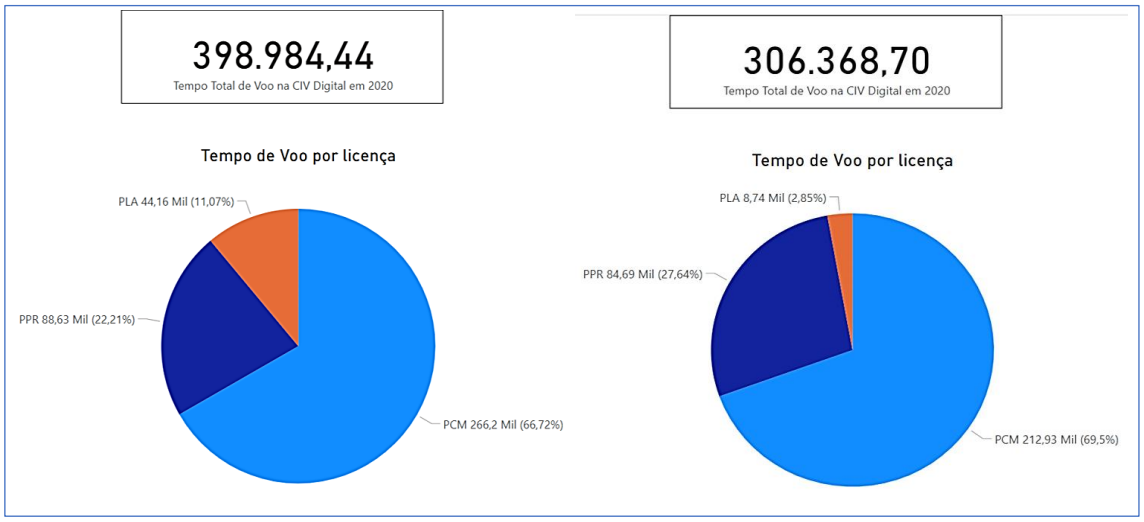


FIGURE 6: ANAC DIGITAL FLIGHT TIME DATA-BANK REGISTERS – YEAR OF 2020. THE LEFT GRAPHIC SHOWS ALL REGISTERED FLOWN HOURS BY PILOTS ON THE AIRPLANE CATEGORY, ENCOMPASSING SINGLE-ENGINE AND MULTI-ENGINE AIRCRAFTS. THE RIGHT GRAPHIC SPECIFIES ONLY SINGLE-ENGINE AIRCRAFTS ON THE SAME CATEGORY. DATA REGARDING THE YEAR OF 2020, COLLECTED ON APR. 22ND, 2021.

Regarding the current airplane pilot´s universe and considering their licenses, again, more than 72% of the pilots are not inexperienced [grouping commercial and air transport pilots]. Still based on Table 2:

- ✓ From the total of single-engine rated pilots, most of them [63,94%] were VFR rated only. 36,06% were IFR-rated.
- ✓ From the total of multi-engine rated pilots, most of them [70,89%] were IFR rated. Only 29,11% were VFR-rated only and.
- ✓ From the total of VFR-rated pilots only, most of them [84,62%] were single-engine rated. Only 15,38% were multi-engine rated.
- ✓ From the total of IFR-rated pilots, they´re almost divided equally. 56,02% of them were single engine rated and 43,98% were multi-engine rated.

[22] Type-rating is a specific habilitation to a pilot fly certain airplane based on its complexity and minimum crew requirements. Class rating [single or multi-engine] is a habilitation to a pilot fly a common group of airplanes based on common training requirements.

Regarding the total amount of registered flown hours registered by pilots in the year 2020, the Figure 6 stated that:

- ✓ Independent of piloting single or multi-engine airplanes, commercial pilots logged around 68% of registered flown hours on the ANAC digital logbook. It meant two-thirds of the general aviation segment movement of the year 2020.

The private and executive aviation segment is composed of recreational and private purposed operations not intended to air ticket sales. According to ANAC (2020c), it´s a very heterogeneous segment due to the variety of operations, involved pilots qualification, infrastructure and support, and the less restrictive certification and maintenance requirements – when compared with other segments. Also, is the biggest segment. Grouping all kinds of aircraft, this segment encompassed 6.788 airworthy aircraft[23] in the year 2020, 65% of the Brazilian fleet on the period. Throughout the last 5 years, this segment had stated an average rate of 50,6 accidents per year, considering 57% of them on single-engine aircraft [Figure 7 and Figure 8].

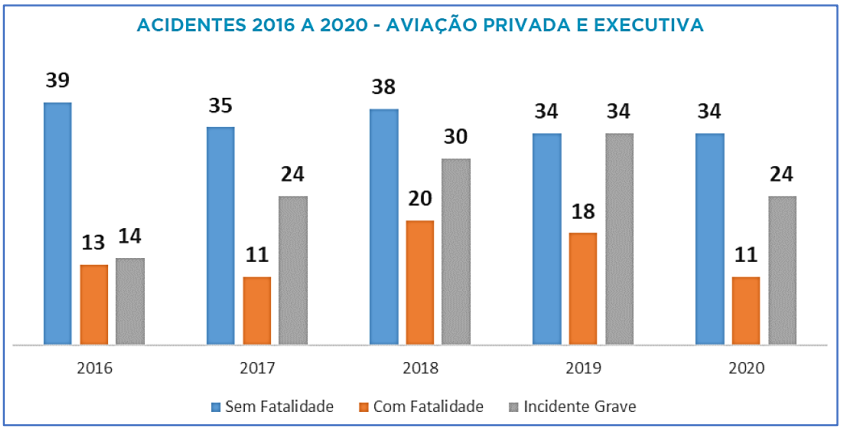


FIGURE 7: PRIVATE AND EXECUTIVE AVIATION ACCIDENTS FROM 2016 TO 2020. THE PICTURE STATES THE ACCIDENTS AND SERIOUS INCIDENTS ON PRIVATE AND EXECUTIVE AVIATION FROM THE YEAR 2016 TO 2020. WHEREAS "*SEM FATALIDADES* [RED]" MEANS NO FATALITIES; "*COM FATALIDADE* [ORANGE]" MEANS FATALITIES; AND "*INCIDENTE GRAVE*" MEANS SERIOUS INCIDENT. SOURCE: ANAC - RASO - 2020.

[23] There were considered only aircrafts registered on a *"TPP"* category, meaning Private Passengers Transport aircraft. Were also excluded experimental airplanes and other with canceled, suspended or expired airworthiness certificate.

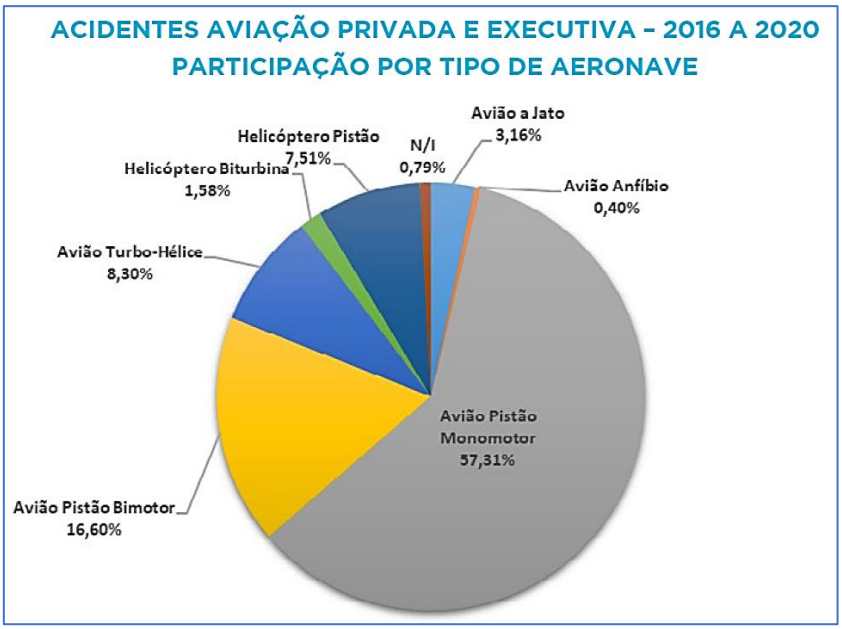


FIGURE 8: AND EXECUTIVE AVIATION ACCIDENTS PER KIND OF AIRCRAFT FROM 2016 TO 2020. THE PICTURE STATES THE PARTICIPATION OF EACH KIND OF AIRCRAFTS ON ACCIDENTS RELATED TO THE PRIVATE AND EXECUTIVE AVIATION FROM THE YEAR OF 2016 TO 2020. WHEREAS: 57,31% - PISTON SINGLE ENGINE AIRPLANE; 16,6% - PISTON TWIN ENGINE AIRPLANE; 78,3% - TURBOPROP AIRPLANE; 1,58% - BI-TURBINE HELICOPTER; 7,51% - PISTON HELICOPTER; 3,16% - JET AIRPLANE; 0,4% - AMPHIBIOUS AIRPLANE. SOURCE: ANAC - RASO - 2020.

Regarding the general flight school´s accident numbers, Figure 9 states a high accident rate considering the amount of flown hours of the segment. Most of them occurred with airplanes [Figure 10]. According to the ANAC databank of a specified sector [on March 03rd, 2021], from the total of 318 functioning flight schools, 202 had pilot´s practical courses, summing 854 courses for all aircraft categories among its classes and kind of operations. Of these courses, 128 are airplane commercial pilot courses [VFR]; and 108 airplane IFR-rating courses.

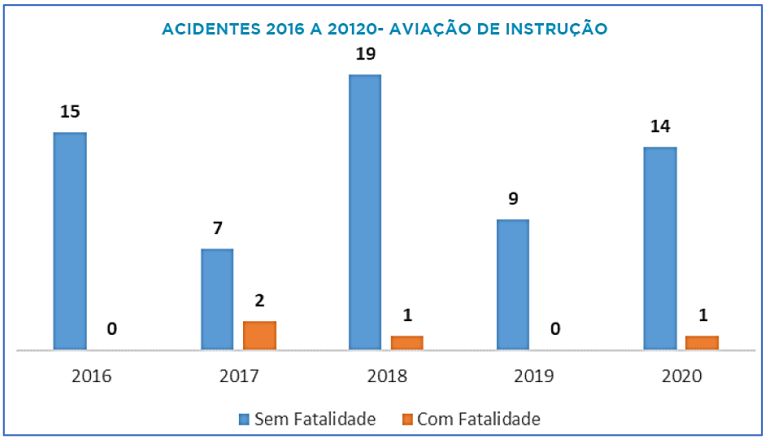


FIGURE 9: BRAZILIAN AIRPLANE FLIGHT INSTRUCTION ACCIDENT EVOLUTION RATE. THE PICTURE STATES THE ACCIDENT NUMBERS FOR AIRPLANE AIR INSTRUCTION ACTIVITIES FROM THE YEAR 2016 TO 2020. WHEREAS: "SEM FATALIDADES [RED]" MEANS NO FATALITIES; "COM FATALIDADE [ORANGE]" MEANS FATALITIES. *SOURCE:* ANAC - RASO - 2020.

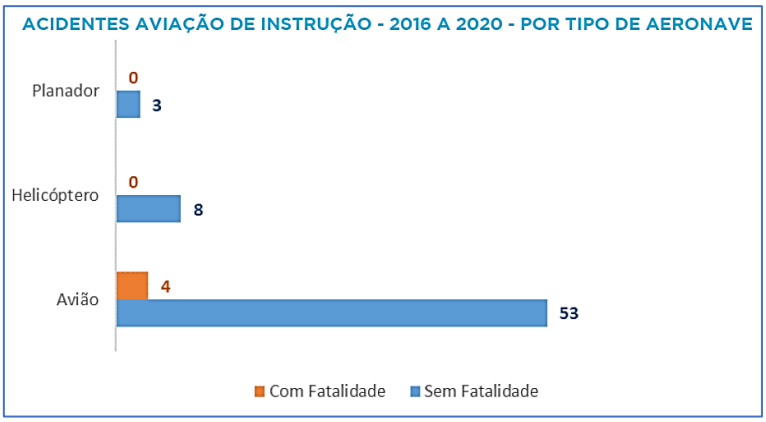


FIGURE 10: BRAZILIAN FLIGHT INSTRUCTION ACCIDENTS PER KIND OF AIRCRAFT. THE PICTURE STATES THE AIR INSTRUCTION ACCIDENTS NUMBERS DIVIDED BY KIND OF AIRCRAFT FROM THE YEAR 2016 TO 2020. WHEREAS: "*PLANADOR*" MEANS GLIDER; "*HELICÓPTERO*" MEANS HELICOPTER; "*AVIÃO*" MEANS AIRPLANE; "*SEM FATALIDADES* [RED]" MEANS NO FATALITIES; "*COM FATALIDADE* [ORANGE]" MEANS FATALITIES. SOURCE: ANAC - RASO - 2020.

- ***Importance of the performance problem***

The study´s performance problem was considered spread all over the Brazilian civil aviation scenario, concerning almost all its segments. Even though commercial pilots were 45,24% of the current pilots in the year 2020, they acted both on scheduled and non-scheduled air transport services as they were inserted on private [executive] aviation services since they´re paid to fly private airplanes on behalf of its owners. In the same way, flight schools are also dependent on commercial pilots to run their practical courses. In this case, they shall add a flight instructor´s certification related to their ratings to let them act.

The specific geographical data correlating each segment´s contribution on accidents statistics and the region of the country where it´s more or less dynamic was not relevant due to the theme, scope, and study´s output: a nationwide civil aviation reference in the shape of supplementary instructional guidance to be used by all flight schools.

In conclusion, the definition of the performance problem was remarkable to estimate how important is its elimination or the attenuation of the associated hazards since it affects the involved personnel, equipment, and the civil aviation community in two perspectives. From a monetary perspective, fewer accidents and incidents directly impact the safety statistics of each segment. It means, in general terms, like associated symptoms: improvement of the productivity, cost reduction, more and cheaper

availability of the related service among others. From an intangible and a "chain-reaction" perspective, fewer accidents and incidents are the fulfillment of a better and safer pilot´s operations, result of a better pilot´s indoctrination, related to better flight school´s activities, supported by better regulatory apparatus – main output of the study.

- ***Systems approach analysis***

The systematic approach used by the study realized the training system as one of some existing pillars to safety operations [Figure 11]. Training tasks were considered as a process allocated between inputs, outputs, and feedback of the training delivered. The approach allowed the study to differentiate and list the causes of the problem: within a training system [internal] or not [external]. In this case, inputs of other systems.

The training issues were one cause of the performance problem pointed in the study. In general, a performance problem may be associated with deficiencies in the training process and/or with structural or procedural deficiencies in the organization where it occurs. Normally they are mixed. In the training process can be listed, but not limited to: - Inadequate Instructional materials, tools and job aids; - Mismatch between training and job assignment; - Instructor´s and assessor´s deficiencies; - Genuine skills and knowledge deficiencies; and - Inadequate training planning and delivery. In the management [other] process, can be listed, but not limited to: - Lack of feedback and motivation; - Inadequate organizational structure; - Inadequate selection and recruitment procedures and - Badly designed job procedures and standards.

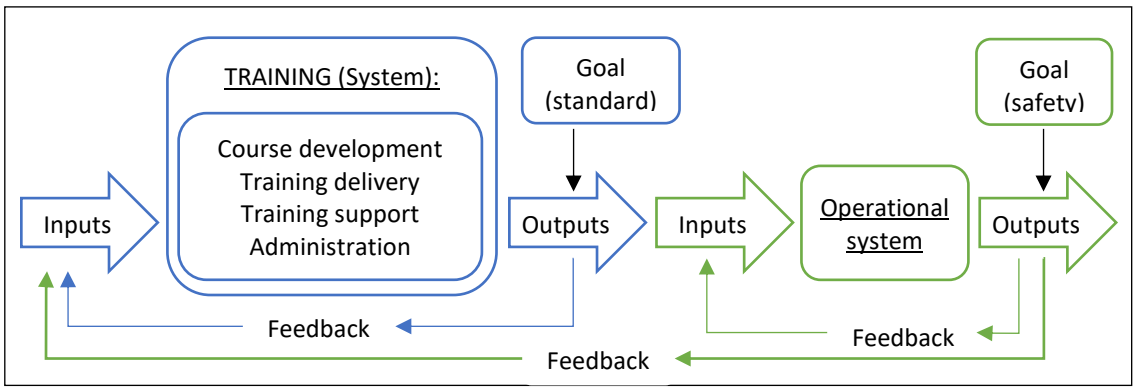


FIGURE 11: TRAINING SYSTEM AND ITS CONTRIBUTION. THE PICTURE RELATES TRAINING TASKS AS A PROCESS INTO A SYSTEMATIC VIEW AND AS SUPPORT TO THE OPERATIONAL ENVIRONMENT. THE PICTURE EMPHASIZES THE FEEDBACK ELEMENT THROUGH THE SYSTEMS. ADAPTED FROM ICAO (2013b).

Similar to the research´s systems approach analysis, for Fontes and Fay (2016), it was obvious that 40 years after publication of Annex 1, the training methodology no longer followed the best industry practices, as well as did not reflect the possibilities offered by advanced training devices, especially in the field of high-fidelity flight simulation. In addition, it was urgent to incorporate new concepts related to the threat and error management as a principle that would elevate the flight operations safety level.

Although the scope of the study highlighted the cause of the problem as training-process related, this statement must not overshadow the need for appropriate responses of the regulatory stakeholders on the other systems and causes which interferes with the training system, nominating the non-training solutions to the performance problems, as listed below. It is not expected that training alone can solve all deficiencies related to the problem.

- ✓ Outcome of the ANAC´s theoretical knowledge examination [requirement] of both airplane commercial pilot licensing and IFR rating applicants.
- ✓ ANAC´s certification and continued surveillance´s inspection effectiveness on meters and evaluate flight school´s capability to fulfill the applicable certification and operational requirements.

The use of the systematic approach set the objective of the study, highlighting the process of gathering relevant information and how set, deliver and assess competency-based contents. In that way, it considers that the study addressed the problem and the research question to a training solution. In this case, developing new competency-based training and assessment contents to update the training courses to the assigned population.

> Competency-based training and assessment are characterized by a performance orientation, emphasis on standards of performance and their measurement, and the development of training to the specified performance standards. The development of competency-based training and assessment shall be based on a systematic approach whereby

> competencies and their standards are defined, training is based on the competencies identified, and assessments are developed to determine whether these competencies have been achieved. (ICAO, 2020)

The addressing of the problem and the research question of the study consented with ICAO´s directives on the pilot´s licensing context. Still according to Fontes and Fay (2016), the Multi-crew Pilot License [MPL] was the first license introduced on the ICAO´s requirements [year 2006] for over forty years after its publication due to the paradigm change of the technical operation of aircrafts and the pilot´s qualification methodology, which no longer kept up the industry´s better practices and benefits offered by the advanced training devices. The paradigm change is related to the introduction of increasingly autonomous systems in aircrafts, which led to the pilot's move away from the manual control of the aircraft, a fact that reduced their global understanding of the systems in general, limiting his actions at critical moments. In this sense, the paradigm shift required, from the pilots, different skills from those previously required on the analogic paradigm - where pilots were used to have full and manual control of the aircraft. The new [technological] paradigm and the needs of the civil aviation market requires competencies to better and more precise assessments, risk management when operating within these new technologies. In order to respond to such complexity, the pilots' training must include elements that benefit the development of competencies that help them to perform the activities of an air operation with safety and efficiency. The competency-based training in the pilot preparation builds on the idea that it is not possible to train for emergencies and unexpected events. However, it is possible to prepare the pilot for these situations through scenario-based (problem-solving) instruction, where key competencies must be focused in the training of the 21st-century pilot. Learning is thus based on the mobilization of superior mindsets in the face of real or simulated challenges imposed by the environment, which would result in meaningful professional learning (Rondon & Fontes, 2017).

Concluding the preliminary study elements, the expected benefit resulted from the proposed training solution is any significant reduction of the population´s rate

[accidents], safety management System data [statistics], and positive feedback of the aviation training system´ key players after its implementation. The proposal of the comprehensive and detailed guidance and supportive materials to the flight schools based on CBTA approach will provide the pilots the necessary KSA to standardize their performance and ensure a safer enjoyment of their prerogatives.

The fact that the study has been performed during a previously authorized mastering program under its well-known objectives meant the fundamental approval of the cost-effectiveness of beginning to treat the proposed training solution against the "importance of the performance problem". No extra funding and human resource were available to the research. The main constraints faced in the study were related to the acquisition of specific past data on ANAC databank, the timeframe of the participant´s feedback on the inquiries, the workload, and agenda management of the tasks proposed to the SME´s group.

An evaluation plan sheet was set in Appendix 1. The sheet is a monitoring and measuring tool regarding the impacts of the study´s training solution on the population. It contains the factors and aspects to be future evaluated; indicators; methods, the responsible to carry out the evaluation and to relate to the post-training and managerial evidence.

Job Analysis

A significant step in the field of the performance and competency elements was the job detailing into functions, tasks, subtasks, and tasks elements [Figure 12]. Throughout this process, the job analysis determined some vital elements [terms] and interactions necessary to the design of curriculums and modules, avoiding irrelevant information to the courseware.

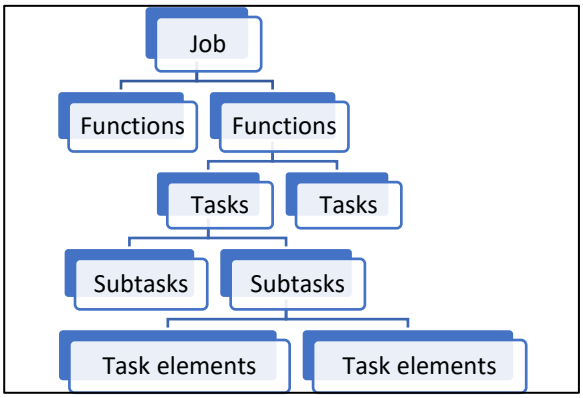


FIGURE 12: BREAKDOWN OF A JOB AND ITS RELATIONS. BREAKDOWN OF A JOB ANALYSIS ACCORDING TO EACH SPECIFIC DEFINITION. ADAPTED FROM ICAO (2011).

Based on a given job, this study considered:

- ✓ Function[s]: The major division or areas of a job. A function is made up of a series of tasks and the result of a function is the combined result of the tasks that constitute it. Some jobs can have only one or more functions instead.
- ✓ Task[s]: The smallest unit of work specified by a supervisor that always has a beginning [triggering event], measurable or observable output [end], and involves a specific performance. They may follow a certain sequence of execution within a function, or they may be independent of others. Tasks can also be a component of more than one function.
- ✓ Subtask[s]: Single specific action required to complete a task and is also measurable and observable. Subtasks form a process within a task and may, or may not, must be accomplished in sequential order. Subtasks relate the KSA required to competent performance.
- ✓ Task elements. The very small actions carried out in each subtask.

- ***The job***

The statement adopted by the study was related to the single-engine airplane commercial pilot license holder´s prerogatives and conditions to its exercise. It was based on the associated ANAC´s RBAC 61 requirements added to the prerogatives and limitations of the IFR rating. The relation assumed the strait relation between these requirements and what is expected as a work of a commercial pilot.

- ✓ Act as pilot in command [PIC] or second in command [SIC] on single-engine airplane both on public or non-public air transport services under visual [VFR] or instrument flight rules [IFR].

Owing to the many prerogative aspects related both to the holding of a commercial pilot license and an IFR rating on the RBAC 61, Appendix 2 stated all those relevant aspects to the statement above.

Table 3: Job breakdown´s references to related publications. Source: Author

Job break-down	Interactions			
	Current ANAC provisions		ICAO´s CBTA provisions	
	Reference	Considered input	Reference	Considered output
Job	RBAC 61: [61.105] [61.227]	Commercial pilot license and IFR rating´s owners' prerogatives, conditions to exercise and limitations	DOC 9941 [TDG]: Step-2	Job statement
Functions	[GAP]	[GAP]	DOC 9941 [TDG]: Step-2	Three [3] functions statement
Tasks	RBAC 61: [61.99(a)(1)] [61.103(a)(1)] [61.223(a)(5)(iii)] [61.223(a)(7)]	Commercial pilot licensing and IFR-rating´s proficiency and flight instruction requirements [GAP]	DOC 9941 [TDG]: Step-2 DOC 9868	Task statement Part II - Appendix 2 to Chapter 1 AEROPL. PILOT TASKS BY PHASES OF FLIGHT
Sub-tasks and Task elements	IS 141-007A [Table 7-9] [Table 7-24]	Contents units and Competency-elements of Commercial pilot licensing and IFR-rating courses. [GAP]	DOC 9868	Part II - Appendix 2 to Chapter 1 AEROPL. PILOT SUBTASKS BY PHASES OF FLIGHT

Note: The table states the references used to set the job analysis, creating a milestone to the job´s understanding and further use on the next steps of the study. Not all references among ANAC and ICAO´s provisions are directly associable, but they were used in a more feasible manner possible.

- ***Functions***

Based on the job statement, the study defined three functions. The distinction between the functions is normal, depending on the job. The three statements [Appendix 3] were based on the SHELL and REASON model´s perspectives (ICAO, 2012b). The first human factor´s model, focused on the individual, states that the [human] performance

is affected by different kinds of interactions among the support [software], machines and equipment [hardware], working environment [environment], and other individuals [humans] in a specific workplace. The second model, focused on the organizational environment, states that an accident just happens as a result of latent conditions [management decisions and organizational processes; workplace conditions; people´s errors and violations] with no appropriate defenses [technology; training; and regulations] until it happens.

- ***Tasks***

Among the airplane commercial pilot flight training requirements, most of them were considered expressed as maneuvers and tasks - required from an applicant to be competent and safe on its performance. Just one item, [61.99(a)(1)(i) *reconhecimento e gerenciamento de ameaças e erros*] [recognize and manage threats and errors] was considered by the study as competency or performance standard instead of a task. Regarding all other flight training requirements, the study considered the references of the DOC 9941 TDG to relate them as tasks. The same happened with IFR-rating flight training requirements. In this case, all those flight training requirements were procedures and tasks. However, since the commercial pilot licensing and the IFR-rating flight training requirements are distinct in the ANAC regulatory provisions, they were stated separately on the first sheet of Appendix 4.

Regarding the proficiency´s requirements, an important consideration is that both [commercial pilot licensing and IFR-rating] proficiency´s requirements are identical and were related to each practical instruction´s requirements. Most of them could be related to tasks, although the items 61.103(a)(1) [commercial pilot]; and 61.223(a)(7)(i) [IFR-rating] of the RBAC 61, both stating "*reconhecimento e gerenciamento de ameaças e erros*" [recognize and manage threats and errors] – that were considered as competency or as performance standard instead. In contrast to the flight training terms of the requirements [considering the capacity of an applicant to perform the listed elements - procedures and maneuvers] in reference to the flight instruction tasks, all the ANAC proficiency´s requirements and one flight training requirement [61.99(a)(1)(i) *reconhecimento e gerenciamento de ameaças e erros*] [recognize and manage threats

and errors (TEM)][24] were not considered as tasks. They were highlighted [grey marks on the first list of Appendix 4] to be further considered as a reference on the competency and performance standards statements of the associated tasks. Special emphasis was given on how the TEM concept is embedded among the CBTA methodology on the design of the curriculum step of the study.

Still about the first sheet of Appendix 4 , the study pointed the tasks that may lead to variations on its performance based on the air transport service, flight rules, and PIC or SIC duties. This discrimination stressed possible further differences in the performance of the associated subtasks on the proposed training solution.

Until this first sheet list [Appendix 4], the study used the terminology PIC [pilot in command] and SIC [second in command] in reference to the RBAC 61 – that emphasizes the final authority, responsibility for the safety of the flight, and logbook aspects of the RBAC 91 (ANAC, 2021h). From the second list of the Appendix, the study adopted the current terminology of PF[25] [pilot flying] and PM[26] [pilot monitoring] (ICAO, 2020). The terminology is more duty and task-related, more appropriate to the training purposes.

About the second sheet [Appendix 4], the study listed all the tasks related to the aeroplane tasks by phase of flight [Part II - Appendix 2 to Chapter 1] DOC 9868. The task list was chosen since it figures as the reference of the competency framework to airplanes pilots in general, expressing the elements in the perspective on how the job must be done instead of how currently is. The list still differentiated subtasks according to the duty [PF or PM]. The differentiation was not treated in this part of the study but was considered on the curriculum-related step. Additionally, the sheet considered a

[24] According to ICAO, the acronym TEM is used to name a conceptual framework [model] to assist pilots to understand the interrelationship between safety and human performance in their operational [dynamic and challenging] context when performing duties. The TEM model can be used either as safety analysis, licensing, training, and operational tool. The TEM model is naturally and fully embedded in the CBTA training curriculum. Due to this, this will be later considered in the study.

[25] Pilot flying (PF). The pilot whose primary task is to control and manage the flight path. The secondary tasks of the PF are to perform non–flight path-related actions (radio communications, aircraft systems, other operational activities, etc.) and to monitor other crewmembers.

[26] Pilot monitoring (PM). The pilot whose primary task is to monitor the flight path and its management by the PF. The secondary tasks of the PM are to perform non–flight path-related actions (radio communications, aircraft systems, other operational activities, etc.) and to monitor other crewmembers.

column to track the study´s assumed correlation between the ANAC [VFR and IFR current elements] and the ICAO [pursued] provisions, which led to figure the assumed gaps of some tasks considered important to the course development´s point of view. In an inversed perspective, just four ANAC flight training requirements were not correlated on the ICAO´s tasks provisions. The items were marked on the sheet´s notes to be further considered on the setting of the competencies statement:

- ✓ ANAC RBAC 61 [VFR] requirements 61.99(a)(1)(v); (vii); (x) were not correlated with any ICAO task:
  - ✓ flight at critically slow airspeeds; spin avoidance; recognition of, and recovery from, incipient and full stalls.
  - ✓ flight at critically high airspeeds; recognition of, and recovery from, spiral dives.
  - ✓ basic flight maneuvers and recovery from unusual attitudes by reference solely to basic flight instruments.
- ✓ ANAC RBAC 61 [IFR] requirement 61.223(a)(5)(iv) was not correlated with any ICAO task:
  - ✓ in-flight maneuvers and particular flight characteristics.

Finally, the confrontation of the ICAO´s tasks with the ANAC´s requirements related to the training needs and objectives, design of modules, the assessment criterion, and other elements on a given training plan. Further clarifications about these relationships follow in the next part of the study [Figure 13]. According to the distinction of the three functions, the study filled specific TASK LIST Forms for each one [Appendix 5]. The Forms graded four elements per subtask to be considered on the proposed training solution.

- ✓ Frequency: indicates the possible need of assistance, or not, of job aid in the performance of frequently performed task depending on how frequently the repeated task is performed and how costly could be a failure on its performance. Scale: [A]ll [F]lights, [D]aily, [W]eekly, and [M]onthly.

- ✓ Importance: indicates how serious would be the consequences if the task were poorly or incomplete performed. Scale: [N]ot [S]erious, [S]erious, and [V]ery [S]erious.
- ✓ Difficulty: indicates the probability of failure on the task performance. It associates how frequently performance errors are done. Scale: [N]ot [D]ifficulty, [D]ifficulty, and [V]ery [D]ifficulty.
- ✓ Priority: determines the priority among the combination of the three factors above. Scale: [L]ow [P]riority, [P]riority, and [H]igh [P]riority.

Still, on the TASK LIST Form, some tasks were considered not applicable due to the reasons below, receiving different marks as explained on each Form notes:

- ✓ Due to the crew composition: single pilot or dual pilot operation.
- ✓ Due to the kind of air transport service: private or air transport service.
- ✓ Due to the PF [PIC] or PM [SIC] primarily related duty: Some PF [PIC] tasks may include other sub-tasks to which the PM [SIC] also contributes to maintaining the monitoring duty of the task performed by the PF [PIC].

- ***Subtasks and Task elements***

The study was based on the DOC 9868 explanation of Knowledge, Skills, and Attitudes, listed on the Definitions. However, to allow a more fluid reading experience, it was summarized the main idea behind the three elements. Knowledge is a piece of specific information compared to the fuel that ignites the intellectual and physical skills of an individual, allowing a task accomplishment. Knowledge by itself does not solve any action. Skill is the motor, cognitive or metacognitive ability to act [perform] over a given situation [activity]. Attention is required to different levels of accomplishment of cognitive skills[27]. Attitude is a mental state or disposition that prone an individual action when confronted with something. Attitude depends on various personnel aspects, that

[27] The differentiation is referred to the list of verbs of the DOC 9941 [TDG] Annex 1. The list defines and levels verbs according to the complexity of accomplishment of various actions verbs to be used on the task description form, items [LoA] and [8.]. The five [0 to 4] levels vary from: a simple level of awareness on a subject from the executor; passing to basic knowledge on it; understanding to discuss the subject intelligently; thorough knowledge on the subject to apply it with accuracy; until the ability to analyze and elaborate relevant strategies to solve complex problems related.

could not be changed alone. Although, the study stresses that a training solution only is valid when enables changes in the individual´s attitude when carrying a task. Based on that, it´s clear that the observation and assessment of the tasks shall be based on determined standards, that shape the CBTA methodology.

The Figure 13 presents and stresses the rationale above, illustrating the relationship among all parts of the job breakdown under a job analysis and a curriculum set perspective. In the same way, the figure facilitates the understanding of all the elements of the Task Description Form - the last part of the job breakdown.

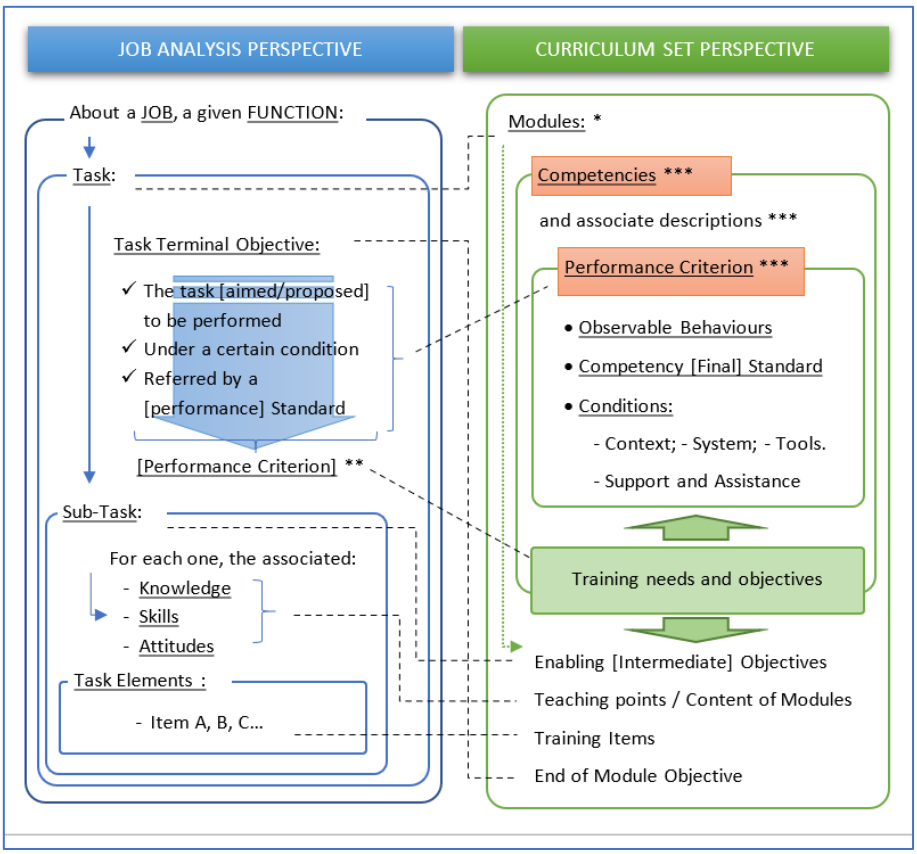


FIGURE 13: JOB ANALYSIS RELATIONSHIP WITH CURRICULUM SETTING. NOTES:
[*]-NORMALLY EACH TASK IS ASSOCIATED WITH A MODULE. BUT DEPENDING ON TASK COMPLEXITY, COULD BE SET MORE THAN ONE MODULE FOR A GIVEN TASK.
[**]-TASK TERMINAL OBJECTIVE [PERFORMANCE CRITERIA] IS USED AS PARAMETER TO ASSESS THE TASK PERFORMANCE AS ACCEPTABLE [COMPETENT] OR NOT ACCEPTABLE [INCOMPETENT].
[***]-TERMINOLOGY DERIVED FROM DOC 9868 RELATED TO AN ADAPTED COMPETENCY MODEL, WHEREAS COMPETENCIES AND ITS DESCRIPTIONS COULD BE ADAPTED DEPENDING ON THE CONTEXT AND BASED ON TRAINING SPECIFICATIONS.
ADAPTED FROM ICAO DOC 9941 [TDG] (2011); AND ICAO DOC 9868 (2020).

To conclude the job breakdown, the study filled a Task Description Form, required by ICAO's TRAINAIR PLUS programme and DOC 9841 [TDG] methodology. Throughout the Form [Appendix 6], some elements were marked with different colors,

referring to the variations related to the three different functions as realized on Appendix 3 and with brackets referring to other aspects. They were explained on each Form notes and summarized below:

- ✓ [VFR/IFR] – distinguishes the flight rule variations to be further considered on the related teaching points of the intermediate objectives [sub-tasks].
- ✓ [PF/PM] – distinguishes the duty variation on a sub-task. The distinction should not compromise the monitoring activity of the PM when the [PF] acronym is signed.
- ✓ Function 2. [yellow] – emphasizes variations by the public air transport service and air operator structure and manuals.
- ✓ Function 3. [blue] – emphasizes the variations by the pilot actions as [PM] – Pilot Monitoring related skills to the sub-task performance.
- ✓ [Green] repetition marks on various among various [Int. Obj.] among the [tasks] – indicates the correlation/similarity of the associated [Int. Obj.], but with possible customization on KSA requirements according to the specific scenario or phase of the flight.
- ✓ Strikethrough elements – considers a not applicable element to a specific function.
- ✓ Some acronyms were adapted due to airplane´s characteristics to be related to the training course in reference (MEL, FMS among others).
- ✓ HF/CRM, TEM, and other NOTECH quotes were specifically considered on the Form.
- ✓ Specific procedures not applicable due to the kind of aircraft [e.g. V1 procedures] or Brazilian specific air navigation procedures [e.g. PAR, MLS, SER, and others]; were removed or adapted to airplane operation environment [private or air transport service] or airplane arrangement [conventional].

The tasks and subtasks on the Form were listed in a coherent way[28] according to the DOC 9868 tasks list. For each specific task, the Form considered the following points:

- ✓ [1.] Where performed: Brief description of where [physical location] the task is performed.
- ✓ [2; 3.] Triggering and terminating event: An action [verb] of an event that marks the task´s beginning and completion.
- ✓ [4.] References/Standards: What documents and publications can support [substantiate] the evaluation of the task, whether correctly, or not, performance.
- ✓ [5; 6.] Subtasks numbering: The sequence of subtasks of each task and its description, that also composes how the task is to be carried in the whole.
- ✓ Int. obj [Intermediate Objective]: A sequential numbering for each subtask throughout all tasks. If the same subtask appears in two or more tasks, is stipulated the repetition of the first numbering used among all tasks.
- ✓ [7.] Performance difficulties: Any remarkable difficulty on each subtask performance.
- ✓ LoA [Level of accomplishment]: A reference to each level of verbs of the DOC 9941 [TDG] Annex 1 according to the complexity of the action used on KSA column.
- ✓ [8.] Summary of KSA: The required KSA to carry out each subtask using the list of action verbs [29] of the DOC 9941 [TDG] Annex 1.
- ✓ Task terminal objective: The required [performance] task to be accomplished, the [condition] which the task should be carried out, and the [standard] to be achieved to a competent performance assessment.

[28] The researcher preferred to keep a single task ordering for all functions with the applicable markings to some elements when appropriate. The action aimed at a simpler task description FORM filling and to not change the intermediate objectives ordering for all functions. However, it requires attention during the courseware design step depending on a function.

[29] The list, presented on the DOC 9941 [TDG] Annex 1, states the training objective taxonomy of the DOC 7192-AN/857 TRAINING MANUAL, PART E-2 AIR TRAFFIC SAFETY ELECTRONIC PERSONNEL, APPENDIX A (ICAO, 2004). The verbs were also used on the composition of the learning objectives [LO] on the design of modules step of the study. The list standardizes verbs for specific levels of accomplishment.

After the review of the Task Description Form elements, is easier to understand the elements and relationship among job analysis and curriculum setting [Figure 13]. Each task execution on a job analysis perspective is supposed to have a module arrangement and an end-of-module objective on the curriculum set perspective. Furthermore, for each task execution, is expected its terminal objective, referred to by three elements, figuring the performance criterion to be used as an assessment on both perspectives. They are the criterion that makes clear the distinction between acceptable or unacceptable performance, which relates to the training needs and objectives. The assessment activities are the comparison between what was performed and what is expected as competencies and its description by the curriculum set perspective. Competencies are ruled by expected OB under a competency [final] standard and an expected [condition]. From each [subtask], arises the specific [KSA], that grouped, allows a task to be performed from a job analysis perspective. And the bridge with the curriculum set perspective is done because they state enabling [intermediate] objectives, the content of modules [teaching points] as the [task elements] figures [training items] on the proposed training solution.

One purposeful positioning of the study about the KSA references is that they were constituted mainly by technical elements with just a few NOTECH quotes. The configuration aimed to sensitize the reader about the gap of NOTECH skills, which automatically remit him to the inseparable correlation among technical and NOTECH skills to compose the associated [desirable] observable behaviors [OB]. At this stage of the study, it was used the DOC 9868 [Part II - Appendix 1 to Chapter 1] - ICAO COMPETENCY FRAMEWORK as reference. After, the study created a [adapted] competency model (IATA, 2021). The adaptation raised from due the IATA´s reference seemed more complete by the addition of one new competency, not related by the ICAO´s one: “Application of Knowledge”.

Population Analysis

An important commentary must be addressed regarding the activities performed by the study on this step. A commercial pilot only starts his theoretical and practical training in a flight school after fulfilling previous aviation authority requirements, such

as eligibility, health requirements, and aeronautical knowledge. Together, these requirements consider a minimum age, education level, previous licenses, ratings and flight experience, health condition, and approval status on an exam [30] [theoretical knowledge examination] performed by the ANAC. So, due to the study´s scope, there was not possible to run further research about possible effects, resulted of differences [higher] on previous education, vocational training, working experience, livingness in general on the design of curriculum step. Therefore, variations on trainee´s attitude, preferred learning styles, ease on technology, use of job aids, and other related aspects were considered on the next step, raising to the flight schools the need to adapt and encompass their training and instructor´s support publications on these issues.

The populational analysis performed by the study focused on the identification of what competencies already had been acquired by the participants and obtained relevant information about the participant´s aviation segment by the activities below:

- ***ANAC current proficiency requirements and ICAO competency's descriptions***

The comparison [Appendix 7] related some ANAC provisions with the ICAO competency framework and its OB. On the ANAC part of the spreadsheet, it was listed the proficiency requirements and the associated commercial pilot flight training requirements using the IS 141-007A components to the course. On this part, the study added and marked [grey] the IFR rating training requirements to a most comprehensive comparison of the ANAC and ICAO provisions. The IS was chosen because it states, among various subjects, some spreadsheets called *"Unidades de conteúdo e diretrizes para PC"* [Units of contents and directives to Commercial Pilot]. These units state "what an applicant must be able to do under certain conditions and scenarios" and adds kind of stressed orientation on how to perform [execute] and fulfill each flight training requirement on a certain course. They were used with what is referred as *"Elementos de competência"* [Competencies elements]: a kind of list of maneuvers, exercises, and

[30] Previous comments about the influence of the quality of ANAC´s theoretical knowledge examination [requirement] on the commercial pilot training courses were made on the Systems approach analysis part of the study.

associated details to compose a curriculum. Even though not classified as competencies and not aligned with CBTA premises, these units of contents and competencies elements, somehow, were considered what starts an approach to competencies for the flight schools. These units were considered the closest oriented information to them set their curriculums by the range of associated supplementary instructions[31] of the ANAC. The study considered them as tasks, subtasks, and conditions only.

On the ICAO part of the spreadsheet, together with the competencies and their descriptions were added the related OB. The breakdown of the competencies served to substantiate the comparison proposed by the activity.

The outcome of this comparison was paramount to the study. It provided a realization of supposed gaps [training need column] among the elements to be treated on the design of curriculum, on the part of the modules of the study, and to provide to the pilot the proper competencies on the performance of his tasks. The comparison not considered any possible mismatch of some OB related to PF/PM [crew] duties, culture, technology, or aircraft systems among others. Attention must be addressed to the fact that ANAC IS 141-007A was considered not aligned with CBTA premises, so its elements were only associated, but competencies were not compared. The spreadsheet highlighted in [green] the associable elements among ANAC and ICAO provisions; and in [red] those not associable elements, requiring attention on the curriculum set step. The study marked a considerable quantity of not associable elements, most in the field of TEM in general. It included NOTECHS[32] Skills, which are also related to the human factors [HF] discipline, taught under crew resource management [CRM] training. In the same way, the considerations were raised due to a lack of most detailed information on the ANAC provision [elements].

[31] In parallel to the units of contents and directives and the competencies elements, the IS 141-007A provides other appropriate guidance on the setting of curriculums. The guidance is related to the syllabus structure, required flight experience [including as PIC], course endurance, use of scenarios, previous flight experience rebate, and other.

[32] Non-technical [NOTECHS] skills are those related to behavioral aspects, classified under four main categories [cooperation, leadership and managerial skills, situation awareness and decision-making] and associated elements and behavioral markers. NOTECH is an aviation human-factor term, widely used by the industry, to classify and assess these skills and their related behavioral markers for operational and training purposes.

Regarding the Threat and Error Management [TEM] and OB, there were no specific lines [elements] to compare the OB with the ANAC column. According to the DOC 9868 and to the CBTA methodology, the TEM knowledge, the threat, and the error recognition and management are embedded among the other competency descriptions. According to the study´s considerations, the subject received few details under the ANAC provisions.

Under the study´s perspective, the ANAC has no adequate or specific requirements related to TEM and Non-Technical skills to the flight school´s activities. In its array of technical requirements and supplementary instructions, there is only a single IS related to CRM, the IS 00-010A [*Treinamento de Gerenciamento de Recursos de Equipes* (Corporate Resource Management - CRM)]. This document is not applied to flight schools, only for other air operators. The only two TEM and CRM-related orientations to the CPL course on the IS 141-007A are related to the theoretical requirements [Table 7-6, in the human´s performance elements] and related to the above´s mentioned units of contents and directives of the practical requirements [Table 7-9, in unit 1 - recognition and management of threats and errors]. In the theoretical requirements for the course, the elements shall be taught for 15 class hours [Table 7-7] under the following topics: - Human performance; TEM principles; basic aeronautical psychology; human error; decision making; cabin coordination; relationship with automation; fatigue and fatigue management – with no further details. For the practical phase, there is also no further orientation to develop TEM principles [Table 7-9] among its competency elements. One more time, the study considered that there is not enough orientation and details about the use, integration, and assessment of the TEM and CRM elements [NOTECH] on the commercial pilot theoretical and practical syllabus, reinforcing it as the training need [Appendix 7].

- ***The accidents data analysis***

To substantiate the training needs, it was used the specific CENIPA data from its accident reports.

The activity used the CENIPA´s Statistical Summary – Private Segment Aviation, years of 2010 to 2019 (CENIPA, 2020) and sought to contribute to the potential gap analysis of the competencies in the general aviation scenario based on the ICAO´s provisions [competency framework]. The study analyzed the most present [identified] contributing factors stated on the accident´s final report to the period and segment. Although the segment encompasses both private and commercial pilots, VFR and IFR flights, and both single-engine and multi-engine aircraft in general, the data´s analysis agreed on the direct correlation among the contributing factors and the training needs of the previous activities. Figure 14 and Figure 15 show that the contributing factors are mostly TEM and NOTECH related, circulating among the marks of Appendix 7.

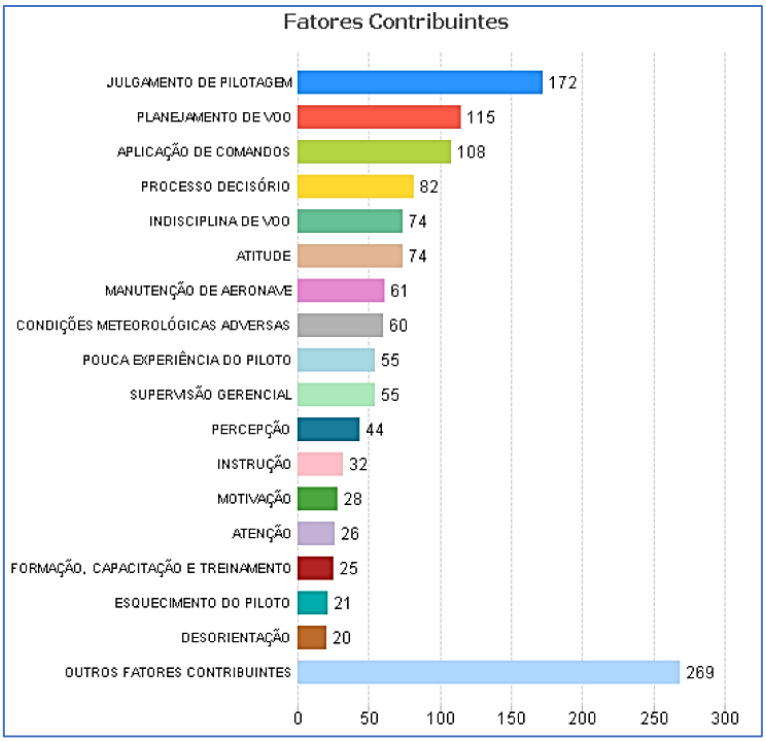


FIGURE 14: PRIVATE AVIATION SEGMENT ACCIDENT´S CONTRIBUTING FACTORS – YEAR 2010 TO 2019. THE PICTURE STATES THE MOST CONTRIBUTING FACTORS LISTED ON ACCIDENT´S FINAL REPORTS, WHERE THE NUMBERS REPRESENT HOW MANY TIMES EACH ONE WAS LISTED IN THE OCCURRENCES ON THE PERIOD OF THE YEARS 2010 TO 2019. ADAPTED FROM CENIPA (2020).

According to Figure 14 [accidents], pilot judgment, flight planning, and application of controls [manual handling] represented 29.9% of the total contributing factors identified in investigations. According to Figure 15 [serious incidents], aircraft maintenance, pilot judgment, and pilot lapses [neglect], flight planning and application of controls [manual handling] represented 39.5% of the total contributing factors identified in investigations. As an example, but not limited to the five contributing

factors below, the study associated a gap between them and to what the ICAO´s competencies descriptions and related [OB] refers [Appendix 7], configuring a training need on the segment.

- ✓ Application of procedures and compliance with regulations.
- ✓ Aeroplane Flight Path Management, manual Control.
- ✓ Situational awareness and management of information.
- ✓ Workload Management.
- ✓ Problem-solving and decision-making.

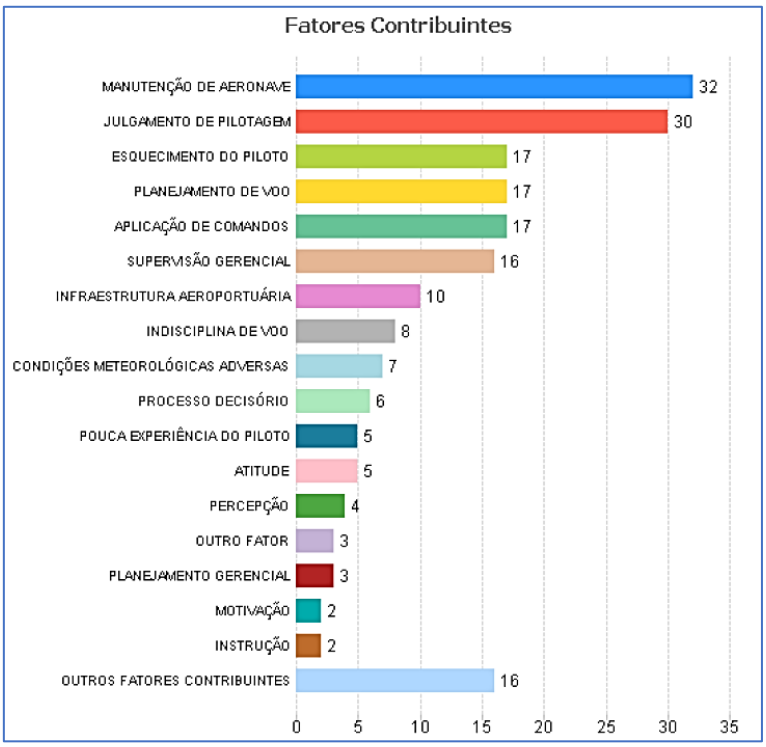


FIGURE 15: PRIVATE AVIATION SEGMENT SERIOUS INCIDENT´S CONTRIBUTING FACTORS – YEAR 2010 TO 2019. THE PICTURE STATES THE MOST CONTRIBUTING FACTORS LISTED ON SERIOUS INCIDENT´S REPORTS, WHERE THE NUMBERS REPRESENT HOW MANY TIMES EACH ONE WAS LISTED IN THE OCCURRENCES ON THE PERIOD OF THE YEARS 2010 TO 2019. ADAPTED FROM CENIPA (2020).

Since that were no more detailed filters both on CENIPA and ANAC reports, the study used the CENIPA´s *Painel* [Panel] SIPAER to seek a most filtered data. In the same line of the following activity, that one used the following filters to realize what elements appeared and their associated percentages:

- ✓ Occurrence classification: Accidents. - Segment: General aviation.
- ✓ Aircraft: airplane, single engine only. - Operation: Private only.

As stated in Appendix 8 and with no significant differences, among the forty-four [44] different classifications of contributing factors, the study listed the eleven [11] most present classifications on the accidents that occurred between the year 2010 and 2019. Besides each classification, it was associated with the percentage of citations of each one among all accidents of the period. All other thirty-threes [33] classifications listed on the Appendix were cited on less than 2% of the occurrences.

- ✓ Pilot judgment: 15.59%.
- ✓ Manual handling: 8.41 %.
- ✓ Aircraft maintenance: 7.01 %.
- ✓ In-flight indiscipline: 5.95 %.
- ✓ Managerial supervision: 4.20 %.
- ✓ Perception: 3.85 %.
- Flight planning: 9.28%.
- Decision-making process: 7.88 %.
- Attitude: 6.13 %.
- Poor pilot experience: 5.78 %.
- Adverse weather condit.: 4.03 %.

Again, the activity clarified the direct relation among the supposed lack of a good performance of all ICAO´s competencies and related behaviors on occurrences, realizing a training need on the segment.

- ***Participant´s inquiries output***

To satisfy the main purposes of the population analysis, the study performed an inquiry with the flight school´s staff [flight instructors and course coordinators]. The questions focused on the flight schools and its instructor´s demographic elements, on the CBTA knowledge issues, on the perceptions, and on the activity-related indicators of the study. The initiative cleared important elements of the study´s theme and environment.

Both pilot´s demographical information and flight school´s characteristics questions were set up with closed questions and arranged as an introductory part to the following ones. Just two opened questions were made to contrast what the respondents really knew about the CBTA and the reasons for. Among these two first parts, the questions brought the number of respondents, an important element be correlated to all other questions, the participant´s knowledge and confidence about the theme, the willingness to learn more about, some flight school´s general information, and more.

This part, considered as an introduction, collected several external elements which, correlated with the following questions, substantiated the survey´s assumptions.

On the pilot´s general perceptions about the value of the CBTA and current syllabus and curriculum, most of the questions used scales to register their feedback regarding the constraints and benefits of the CBTA implementation and usage. On the other hand, their feedback on the use of the current syllabus and curriculum, in contrast to the ICAO competencies, brought elements that corroborated to figure the gap on some competencies required by a commercial pilot, as supported by the study.

By the last part, it brought the pilot´s perceptions about ANAC´s current provisions regarding the CBTA, confirming the concern of the study.

All questions, their answers, and descriptive statistical elements were registered in Appendix 9. However, a summary of correlations among the answers and some highlights follows below.

Pilot´s demographical information and flight school´s characteristics:

- ✓ From the sum of 124 active flight schools enrolled with airplane´s commercial pilot licensing and IFR-rating courses, the questionnaire registered 52 answers from 25 different flight schools, implying 20,2% of participating flight schools.
- ✓ The two most significant age range, 26 to 31 years old and 40 or more years old summed 57,7% of the participants. The third most significant, with 25% of them, is related to ages from 18 to 25 years old.
- ✓ Almost 2/3 [71,2%] of the participants were only instructors. However, all participants were identically divided among VFR and IFR instruction groups.
- ✓ Almost 2/3 [74,5%] of the participants were considered experienced, with 500 or more accumulated flight hours on instruction. From this part, 43,1 % with more than 1000 accumulated flight hours.
- ✓ 50% of the participants already have worked in another civil aviation segment. From this half part, the two most cited sources of professional experience were the executive/private [46,2%] and the domestic/flag

[34,6%] segment, that summed 80,8% of the answers. The third most contributing segment was the non-scheduled aviation segment, with 19,2%. Even though 84,6% of the participants did not register a type-rating associated with their licenses and 59,6% of them had not heard about CBTA before the survey. But 100% of this part wants to know more about the subject.

- ✓ From the 40,4% of the participants that already had heard about CBTA, the most expressive source of knowledge about was the academic papers in journals [33,3%], followed by ANAC legislation [28,6%]. Colleagues, lectures, events, fairs, heads, and upper levels of where they work, tied on 23% within this 40,4%. In addition to the fact that only the smaller part of the participants knows about CBTA, 66,7% of them assumed that have only a little knowledge about the theme. With a high level of knowledge about, just 4,8%.
- ✓ The questionnaire revealed that the attention to the subject may reside both in the southwest region of Brazil [61,5%] and in the northeast region of Brazil, as portioned 86,1% of the answers on these regions.
- ✓ 61,5% of the answers came from flight schools with a fleet of between 1 to 4 airplanes. 5 to 6 and 7 to 8 airplanes tied 11,5% each, summing 84,5% of the answers.
- ✓ When asked about the CBTA status on their flight schools, the answers could be divided into three groups: 28,8% merged answers among “don´t know how to answer” and “believe that CBTA methodology is implemented”, meaning a lack of understanding of the CBTA and flight school´s status about. 28,8% related that the flight school has only expectations/intentions to implement. 38,5% assumed that the flight school has no intentions. Just 3,8% of the answers assumed that the respective flight school already have CBTA implemented. This last portion pointed the experience on CBTA of the owners of the schools [current airline captains] to the status.
- ✓ Still on the status of the CBTA among flight schools and reinforcing the previous condition, when asked about the training data that the flight

school currently stores and considers, the “acquired competencies” appeared in the sixth place from nine items, registered among 48,1% of the answers, and the “observable behaviors” appeared on 61,5% of the answers. The top three elements were maintained as “mission´s repetition/Failure” [86,5%]; quantity of flown hours to complete the course [80,8%], and trainee´s grade [71,2%]. All the three were not CBTA related. They are just “condition” related.

Pilot´s general perceptions about the value of the CBTA and current syllabus and curriculum:

- ✓ Despite the weak knowledge of CBTA by the participants, 75% of them believe that it clearly/substantially differs from the traditional training.
- ✓ When asked to judge what defines competency using 3 elements, in general, the participants correctly elected Knowledge [94,2%] and Skills [65,4%]. But, mistakenly, Experience was the third most chosen [51,9%] element. The last and correct one, Attitude, was the penultimate element with 26.9%, losing just for the Habit.
- ✓ When just 30,7% [16 answers] of the respondents briefly stated what came to their minds when asked to define what they knew about CBTA: just 18,7% of the answers were associated and used CBTA related terms and elements, as “use of standards”, “definition of technical and no-technical skills”, “reaching specific objectives” “aiming an expected standard”, “methodology to develop and assess required competencies to a specific function”. 56,2% of the answers had no associated elements and 25,1% were dubious or did not match substantial association.
- ✓ When asked about what kind of challenges/constraints on a hypothetical CBTA course implementation, the coordinators mistakenly assumed “Investment in new training control features/technologies” [on 63,2% of the answers] and “Development costs and time” [on 57,9% of the answers] as the two main constrains. “Interpretation of legislation and instructions” and “Approval of courses by ANAC” [ANAC issues] tied as third and fourth most quoted constrains, on 47,4% of the answers. Data analysis, acquisition

of new devices and instructor´s standardization appeared among 26,8% and 26,3% of the answers.

- ✓ Even with the lack of knowledge on CBTA assumed by the participants, 86,2% of them agreed that the flight school could improve its training capacity by having implemented the CBTA. 74,5% agreed that the flight school´s activities could be safer by having implemented the CBTA. 62,7% agreed that the trainee/instructor relationship at flight school could be improved. And 80,3% agreed that instruction could have better support and practical guidance for having implemented the CBTA. The survey revealed a considerable difference among "neutral" answers, that varied between 11,7% and 33,3% on the answers.
- ✓ When asked about the current training program, the participants revealed a considerable difference among the two most used scales, always and generally. 53,8% of the participants were always satisfied with the current training program in which they instruct, 28,8% were generally satisfied. 13,4% were just satisfied sometimes.
- ✓ Still about the current training program, if it was relevant to current operational challenges/needs, 46,1% believed it was always relevant, 30,7% believed it was generally relevant, and 17,3% judged only sometimes, decreasing the difference between the two most used grades.
- ✓ Still about the current training program, if they were satisfied with the current evaluation method used, 53,8% were always satisfied, 28,8% were generally satisfied, and 11,5% just sometimes.
- ✓ The last item about the current training program, regarding the standardization of instructors, 50% were always satisfied with it, 25% were generally satisfied, and 15,4% assigned just sometimes. This last graphic figured the lowest average than other training program questions and raised the scale never for the first time, with 3,8% of the answers.
- ✓ Finally, the participants confronted the current training program provisions with the ICAO competency provisions. For each competency, the participants assigned the following scale when asked if the trainee becomes, or not, competent on the following:

- Application of procedures, 88,5% agreed. 11,5% were neutral.
- Communication, 88,5% agreed. 11,5% were neutral.
- Flightpath management with automation stated the lowest/most central average, where 51,9% agreed, 28,9% were neutral, and disagreed raised with the higher [19,2%] dissent of the answers.
- Flight Path Management with manual handling, 82,7% agreed, 15,4% were neutral and those who disagreed was insignificant, with 1,9%.
- Knowledge [obtaining and using], 73% agreed, 23% were neutral and 4% disagreed.
- Problem-solving and decision-making also registered the same lower/central average, 61,5% agreed, 34,6% were neutral and 3,9% disagreed.
- Situational awareness, 76,9% agreed, 17,3% were neutral, and 5,8% disagreed.
- Workload management, another lower/central average, where 65,4% agreed, 23,1% were neutral, and 11,5% disagreed, the second higher disagreement grade.
- Leadership and teamwork, almost like the competency above, stated the second lower agreement answers, with 55,8% of agreements, 32,7% of neutrals answers, and 11,5% disagreements.

<u>Pilot´s perceptions about ANAC current provisions regarding the CBTA:</u>

- ✓ As a first impression, when asked if the ANAC currently make available adequate CBTA provisions and instructions, 84% of the respondents stated no, ANAC does not. When given a scale to the participants state what they judge if the ANAC does make available adequate provisions and instructions on CBTA, 30,8% said that do not how to answer, consenting with the previous part of the questionnaire. 15,4% strongly disagreed. Just 3,8% agreed that ANAC does make available adequate provisions.
- ✓ When asked if the ANAC is considered aligned with other authorities considered as reference, just 13,5% totally agreed. 42,3% agreed in parts,

9,6% did not agree. Around 14,4% disagreed in parts or did not how to answer.

Design of the Curriculum

In allusion to Figure 13, this step defined the following framework to be used on the level of the curriculum and the design of the modules. The scheme is figured on Figure 16.

- ✓ Consideration of two syllabuses: theoretical and practical.
- ✓ Consideration of curriculums based on a group of modules.
- ✓ Consideration of modules based on training needs, tasks, or subtasks[33].
    - For each module: sequence of enabling intermediate objectives [units] based on training needs or specific subtask, when applicable.
        - ✓ For each enabling intermediate objective [units], the consideration of:
            - Learning Objectives [LO];
            - Teaching Points[34], based on [KSA] and [OB];
            - Assessment activities[35] based on competency and [OB] relation.
    - For each module, the consideration of:
        - ✓ End-of-modules objectives based on the training needs or on performance criterion [task terminal objective] when applicable.
            - For each end-of-module objective, the consideration of assessments [mastery-test].

[33] The use of training needs occurred to set the modules of the theoretical curriculum. The use of tasks or subtasks occurred to set the modules of the practical curriculum.
[34] Teaching points were assumed as the anchor point to the enabling objectives of each module. Due to the study´s objective, all the elements and contents of each enabling objective of all modules shall be designed by the flight schools upon ANAC´s approval.
[35] Relating to the theoretical curriculum, the assessment events aim to the interim level of competency. Relating to the practical curriculum, they aim to the final level of competency as further detailed in the study.

The study kept its proposed training solution as close as possible to the current ANAC instructions and orientations for the CPL/IR course. Nevertheless, according to its outcomes, some improvements were required on the syllabuses and on the curriculums of the course to guarantee the safety enhancement. These improvements were figured as specific class load changes, adjustments, or additions of modules, and by the addition of different assessment activities. The improvements´ need arose as it was realized by the implementation of the MPL license – the first aircraft pilot´s competency-oriented license issued by ICAO. The idea behind the concept of the MPL license, as proposed by this research, is to focus the training on the real skills required in a cockpit of a modern aircraft, instead of a pre-fixed value of flight hours, as occurs in traditional trainings - which are based on fixed amount of training/flight hours. In the traditional results-based approach, once the time requirements have been met, it is assumed that the training objectives have been met too. Although suitable for pilot flying solo operations, they avoid the transfer of these skills to multi-crew operations, increasing the chances of an aeronautical accident/incident, when flying more complex aircraft, where complex management and [CRM] is required. In comparison, a competency-based training makes better use of simulators, adopts methods based on competency training, applies human factors, and threat and error management at all stages of training (Fontes & Fay, 2016).

Special attention was given to the outputs of the three population analysis activities, which defined the core of the proposed training objectives and were summarized below:

- ✓ On the first activity [Appendix 7], when the current ANAC commercial pilots´ flight training requirements were compared with the ICAO´s competency framework, only 14% [9] of the total of 66 OB were considered satisfied by current flight training requirements. Most of them were considered not satisfied with various competencies.
- ✓ On the second activity [Appendix 8], the most present [relevant] contributing factors according to the Brazilian accident and incident reports were also related to the not satisfied OB and their matters: NOTECH skills associating TEM concept and its practice.

- ✓ On the third activity [Appendix 9], it was highlighted similar findings as above, but with further information related to the CBTA methodology, concepts, and goals. By the fourth and fifth themes, the most diffused variations [lower/central averages], the study ratified the aspects to be focused on the training solution.

Regardless of the aspects improved, the training solution respected the current two main structures of the course, which drove the framework of the theoretical and practical syllabuses.

The first main structure was that one related to the IS 140-007, item 7.2. – integrated instrument rating, commercial pilot instruction program [table 7-6]. This first structure states the requirements on contents to the theoretical curriculum of the course; and related class load requirements [table 7-7]. The structure set by the proposed theoretical training solution updated some current contents and added new ones [modules] as observed on Figure 16. The proposed structure also embraced a specific CBTA assessment methodology, differing from the current one.

- ✓ Update on Human Performance and Limitations.
- ✓ Addition of Threat and Error Management.
- ✓ Update on Operational Procedures.
- ✓ Addition of Pilot Competency [KSA].

The second main structure was that one related to the IS 140-007, item 7.2. – integrated instrument rating, commercial pilot instruction program [tables 7-9 and 7-10]. This second structure states the units of contents of the practical curriculum of the course [table 7-09]; and its related to the competency-elements [table 7-10], which drives and frame the current course. In this case, the structure set by the proposed training solution updated one unit of contents [table 7-09], assuming this one as maneuvers phase/oriented; and fully changed the reference of the competency elements [table 7-10], using the DOC 9868 task list to be assumed as the scenery phase/oriented. Both are oriented to assessment purposes.

- ✓ Units of contents [table 7-09]: Addition - Unit (1) Human Performance and Limitations.
- ✓ Units of contents [table 7-09]: Update - Unit (1) Threat and error management - TEM.
- ✓ Competency-elements [table 7-10]: Change to DOC 9868 task list: Pilot Competency [KSA] and Operational Procedures.

Still on the proposed practical curriculum, the study highlights that are expected only practical assessment activities to be performed in parallel to the flight training practices of the phase. The study assumed that the trainee has earned enough knowledge, basic skills, and attitude on the proposed content that would lead him to use it and be assessed.

About the proposed modules to the practical curriculum, the study highlights that the change of table 7-10 to the [DOC 9868 - Part II - Appendix 2 to Chapter 1] ICAO aeroplane pilot tasks by phase of flight [Appendix 4] updated the current competency-elements towards the desired adapted competencies [Appendix 6]. The consequence of the change is to have the assessment events based on OB through the [KSA] as competency indicator. The proposed structure is observed on Figure 16.

CURRICULUM

THEORETICAL

#	Contents IS 141-007A [7-6]	Study´s proposed modules	Status
1	Aeron. Regulat. [air law]	Aeron. Regulation [Air Law]	Same
2	Acft. Technical [Gen.] knowledge	Human Performance and Limitations [1]	Updated
		+ specific assessments [5]	
3	Flt. Perf., Planning and Loading	Threat and Error Management - TEM [1] [5]	Added
		+ specific assessments [5]	
4	Human Performance	Acft. Technical [Gen.] knowledge	Same
5	Meteorology	Flt. Perf., Planning and Loading	Same
6	Navigation	Meteorology	Same
7	Operational Procedures	Navigation	Same
8	Principles of Flight	Principles of Flight	Same
9	Radio Communications	Radio Communications	Same
10		Operational Procedures [1] [2] [5]	Updated
		+ specific assessments [5]	
11		Pilot Competency [KSA] [1] [2] [5]	Added
		+ specific assessments [5]	

PRACTICAL

#	Units of contents IS 141-007A [7-09]	Study´s Proposed modules	Status
1	Recognition and management of threats and errors [3]	Human Performance and Limitations [1]	Added
		+ specific assessments [5] [6]	
		Threat and error management - TEM [3]	Updated
		+ specific assessments [5] [6]	
2 to 14	Same [3]	Same [3]	Same

#	Competency Elem. IS 141-007A [7-10]	Study´s Proposed contents	Status
1 to 26	See remarks [4]	Pilot Competency [KSA] and Operational Procedures [5] According: - Task List FORM [Appendix 6] - Task Description FORM [Appendix 7]	Changed
		+ specific assessments [5]	

Remarks:

[1] – Modules which adds formative and summative assessment throughout the syllabus progress. Contents reference: EASA Part-FCL – FCL.310 CPL (Council, 11 C.E.)].

[2] – Modules which relates to the Observable behaviors [OB].

[3] – All contents are related to the ANAC RBAC 61.99(a)(1) - Commercial pilot licensing - flight instruction – airplane category, quoted on Appendix 5.

[4] – The competency elements were grouped on the remarks to not disturb the picture and allow a comparison with the two proposed Appendices: -Familiariz. with the acft.; -Basic emerg. proced.; -Pre- and post-flight prepar. and proced.; Flight at low speeds; -Stalls; -Abnormal att. and steep turns recovery; -Early-stage spins recovery; -Developed spins recovery; -Max. perf. t/o and landings; -T/O and landing emerg.; -Forced landing – Idle; -Precaut. landing in an unprepared/unknown location; -Navigation; -Difficulties, problems and scenarios involving navig. with reduced visibility; -Night flight; -IFR (basic); -Use of radio navig.; -IFR operation, proced. and trajectories; -Use of automation and other features; -Non-precision app.; -Non-precision app. with vertical guide; -Precision app.; -Abnorm. att. recovery (instrum. flight); -Operations with partial panel; -Emerg. related to instrum. flight; - IFR (navigation).

[5] – The choose of the assessment activities may vary according to the syllabus, modules and other related elements.

[6] – The assessment activities of the [HPL] and [TEM] modules can be performed together, according to the flight school´s practical syllabus scheme and further orientations of the study.

FIGURE 16: PROPOSED TRAINING SOLUTION – CURRICULUM AND SYLLABUSES. THE PICTURE PROVIDES AN OVERVIEW OF THE PROPOSED TRAINING SOLUTION IN CONJUNCTION TO THE ANAC CURRENT COURSE STRUCTURE AND STATES ELEMENTS OTHER RESTRICTED UNTIL THE DESIGN OF THE MODULES. THE PICTURE IS BETTER ANALYZED WITH THE TABLE 4 ELEMENTS.

The Table 4 compares the current and the proposed minimum class load and flight time [assessment activities] for each syllabus.

Table 4: ANAC current minimum instruction and study´s proposed minimum´s – CPL and IR. Source: Author

Proposed CPL/IR Course				
			Current ANAC provisions [table 7-7]	Study´s proposed provisions
Syllabus:	Theoretical:	Content [module]:	Class load [days]:	
		Human Performance and Limitations [updated]	15	24 hours [3 days]
		Threat and Error Management [added]	N/A	16 hours [2 days]
		Operational Procedures [updated]	10	24 hours [3 days]
		Pilot [KSA] Competency [added]	N/A	24 hours [3 days]
	Practical [assessment]:	Modules [Units of content or competency elements]:	Activities [assessment]	
		Human Performance and Limitations [added]	N/A	According to the content unit
		Threats and errors management – TEM [updated]	N/A	According to the content unit
		Pilot Competency [KSA] and operational procedures [Changed]	N/A	4 activities of 1,5 hour/each

Note: The table compares the current ANAC CPL/IR provisions to the study´s proposed training solution. There are stated minimum class load on each module to the theoretical syllabus. The practical syllabus only considered assessment activities, that shall occur on simulated or practical [real] events. Adapted from ANAC IS 141-007A. There is no specific load of the practical assessment activities.

- ***Exams and observable behaviors***

Just bringing the theme, according to the technical requirements of the licensing process of the airplane commercial pilots in Brazil, besides the Agency´s theoretical knowledge exam, which a trainee shall be approved, the applicant shall be approved on the flight schools´ theoretical and flight phases [syllabus] of the proposed course. According to the current ANAC orientation to the theoretical syllabus, shall exist a final assessment for each discipline, and intermediate assessments are encouraged. Regarding the practical syllabus, the flight school shall establish a criterion [gate] to define whether the trainee is able, or not, to the next training phase/session until the check ride.

On the other hand, by the methodology adopted by the study, it was considered two kinds of exams: progress tests, and mastery tests. The first intends to check whether a trainee achieves the performance for the intermediate objectives [subtasks], which consequently leads to the end-of-module´s objectives. The second intends to check whether the trainee accomplishes the training objective of the module.

On the whole, the study´s adoption configured four assessment methods, suitable to the theoretical or practical curriculum. Each one is better applied depending on some aspects, for example syllabus, limitations on the simulated or practical [real] environment, focus whether on the interim or final level of competency standard, course´s milestone[36], focus on knowledge, skills, or attitudes.

Regardless of the assessment method and still based on CBTA perspective, the study proposes assessment activities to check the occurrence of the correct and desirable [OB], according to a desirable and adapted competency level and among the performance of tasks, related subtasks, and under an expected performance criterion. The [OB] shall be revealed through KSA demonstration. The development of the evaluative process is illustrated by Figure 13.

- ***Module's outline***

The module´s outline, stated as Forms, materialized the job straight association with the curricular and instructional perspectives. Most of the elements of each module Form [Appendix 10] are self-explanatory. However, the study highlighted some elements:

- ✓ Each module was separated by intermediate objectives and signed the minimum class load.
- ✓ Each module has its own title according to the Figure 16 framework. Each intermediate objective detailed its contents until the teaching points. Teaching points were considered as the self-contained unit of each

[36] On some literature, the terminology [milestone] refers to the chunks or gates within a logical sequencing or division of a complex course, which is already treated by the adopted ISD as enabling [intermediate] objectives, towards the end-of-module objective.

intermediate objectives, which served to originate the [LO], associated to other Forms - Appendix 12.

- ✓ The source of contents for each intermediate objective is considered the base for each teaching point. Different sources may be added, but not substitute the base.

Specifically, on the proposed modules of the theoretical curriculum, the study highlights that they weren´t part [proposed outcome] of the job analysis and its related competencies. Nevertheless, they are indispensable elements to allow a pilot competently perform his job under a performance criterion. Each teaching point of the two first proposed modules was placed before of the other unchanged technical modules of the course. The goal was to provide the trainee the minimum knowledge on human performance and TEM to a better application of it through other modules. Later, the two other modules were placed by the end of the curriculum to assemble the operational procedure mindset and the competency concept. On both occasions, the course expects just the interim level of competency of the trainee. To all modules, the teaching points must support the enabling [intermediate] objectives. However, each end-of-module objective received a different treatment to reflect its objective to allow the trainee to be aware of their elements, as well as to reflect their logical fitting through the content of the other modules.

Relating to the proposed modules of the practical curriculum, only half of them were strictly based on the outcomes of the job analysis and its outputs. It occurred because they were divided into two phases. On the first [maneuvers phase], the study kept the same argumentation used to the theoretical curriculum, contrasting only by the evaluative nature of the module to occur during its in-flight practices. Still on the maneuvers phase, despite the [HPL] and [TEM] assessment activities could be performed together, they were kept separately to stress each instructor´s-oriented specifications and better base the assessment element.

On the second phase [scenery based], the evaluative nature of the module utilized the logical sequence of the intermediate and end-of-modules objectives of the job analysis, which finally allows the trainee to embody the complete operational

procedural mindset and the final level of competency concept throughout all the proposed job [tasks and subtasks]. In both phases, the course targets the final level competency on the proposed modules.

Appendix 10 also used markings as on the previous Forms. Based on the distinction of the three functions before considered, the Forms highlighted the teaching points which a given organizational structure [non-public versus public air transport] could influence the performance of a given task, independent of the fact that the pilot acts as PIC or SIC and marked the points where the PF or PM duty could influence too. The items with no markings were considered common and base to all others, independent of the context and duty. The attention to the organizational structure resided on the influence of the air operator culture, its practices [SOP], and on its documentation system. The markings shall be references to the LO markings [Appendix 12] to have the flight schools setting the proper differences when developing contents and elements of each module. Specific to the modules P-HPL and P-TEM, the ANAC flight training requirements [RBAC 61 61.99(a)(1)(v); (vii); (x) and 61.223(a)(5)(iv)], not correlated on the ICAO´s pilot´s tasks provisions, were marked. The elements must be stressed on the module since the last practical module [KSAOP] do not have provisions to stress the elements to set the trainee´s competency statement.

Design of the Modules

The efforts to produce all the provisions to the modules were based on the EASA´s Flight Crew Licensing [FCL] Part considerations for its LO and using a taxonomy to set the actions on each objective [Appendix 14]:

> "The LOs define the subject knowledge and applied knowledge, skills and attitudes that a student pilot should have assimilated during the theoretical knowledge course. The LOs are intended to be used by an (ATO) when developing the … theoretical knowledge elements of the appropriate course. …LOs do not provide a ready-made ground training syllabus for individual ATOs and should not be seen by organisations as a substitute for thorough course design. …ATOs are required to produce a

training plan for each of their courses based on the instructional systems design (ISD) methodology" (Council, 11 C.E.)

Currently, given the advanced technologies present on the latest-generation aircraft, whose data and information production are shown to be more complex when compared to the past, it is necessary to rethink the preparation, the professional activities and the knowledge the pilot has regarding these complex technologies in this new worldwide scenario (Rondon & Fontes, 2017). The statement, referred to one subject only, emphasizes the need of updates on what is considered as the current training solution.

The first and general provision was related to the layout of the modules. The study defined the components of Table 5 to be standard for each module. The adoption of a single layout for all modules enables the trainee to be aware and capable to achieve of end-of-modules objective. Further considerations about the components were summarized on Appendix 11. The Appendix framed the theoretical and flight modules. However, since the practical phase encompassed only assessment activities, it must be supported by other Appendices later detailed in the study.

Table 5: Module´s components. Source: Author

CPL/IR Course module:		
	Part:	Components:
Theoretical Syllabus:	Beginning:	-Presentation of the end-of-module objective and the mastery test. - Indication of the relevance of the contents [approximately 5 to 15 min.]
	Central Body:	-Presentation of the contents -Clarification of main points of the contents -Provisions for practices and intermediate assessments [progress tests] -Provisions of feedback
	End:	-Assessment [mastery test] performance and feedback
Practical Syllabus:	Maneuver's phase:	-Briefing on the competency according to the specific unit of content and its critical elements -Assessment [mastery test] performance and feedback on the final level of competency for each specific unit of content and its critical elements
	Scenery phase:	-Briefing on the on the trainee´s final level of standardization of operational procedures [SOP] and the elements related to his competence -Assessment [mastery test] performance and feedback on the trainee´s final level of standardization of operational procedures [SOP] and the elements related to his competence.

Note: The table states the main components to be applicable to each module for both syllabus on the proposed training solution. Before performing the assessment of the practical syllabus, they shall be briefed and debriefed according to the assessment tools and guidelines. Adapted from DOC 9941 AN/478, 1st edition - Training Development Guide Competency-based Training Methodology (ICAO, 2011)

It´s important to appreciate different relations among intermediate objectives towards the assigned task of a module. In general, by the CBTA methodology, the relation is logical among all modules and within each module up to reaching a task terminal objective under given performance criteria. However, due to the study´s proposed training solution over a current CPL/IR course, this relation occurred differently. As realized on the previous step, the first two modules of the theoretical curriculum were considered base to others. So, their intermediate objectives were independent even though they were positioned to allow their contents to be used among other modules. From the third and fourth proposed modules [operational procedure and pilot competency] of the theoretical curriculum, each intermediate objective dependency from one to another to the assigned task became clear. The contents and objectives required to fulfill the final level of competency fitted towards the last practical module. This relation maintained itself clear through the practical syllabus.

Another important aspect related to the statement of the LO is its relationship with competency and OB. The teaching of competency is considered achieved when enables the register of its related OB, whether on the theoretical or practical curriculums. Some airplane pilots´ competencies were considered more likely to be taught in the practice curriculum. In this case, they received different verbs by the taxonomy of the [LO], as marked on the module T-KSA.03 [theoretical curriculum].

Appendix 12 presented detailed information about on the Forms and added preliminary instructor´s-oriented specifications [37] for the accomplishment of the modules of both curriculums. Each Form expanded the information of Appendix 10 to be aligned with Appendix 11. So, the following highlights must be considered along with the Appendix 12:

[37] Further information about the Forms [Appendix 12] was listed on the next step of the study to configure the complete detailed instructor´s-oriented specifications.

- ✓ Layout: Structural differences among the Forms used on each syllabus due to the nature of the respective modules, activities, and details.
- ✓ Level of competency: Different levels of competency. The interim level related to the theoretical; and the final related to the practical curriculum.
- ✓ Function and subtasks variations: Markings highlighting variations on PF at non-public air service; PF or PM at public air service variations, that also relates its sub-tasks – according to Appendix 3 and Appendix 6.
- ✓ [KSA]: Possible variations according to the following sub-tasks according to Appendix 6.
- ✓ VFR to IFR flight rules: Specific procedures according to Appendix 6.
- ✓ Practical competencies: Markings highlighting [LO] that received different action verbs – by taxonomy – from the other competencies.
- ✓ [OB] at the interim and the final level of competency: Specified [OB] by each intermediate objective and flight phase to the respective assessment on both curriculums.

- ***Threat and Error management – TEM emphasis***

TEM is a safety concept that links human performance to the operational environment. Like other concepts, this one has been gradually evolving over the years and generations. On the traditional [previous] approach of the TEM, its concept and elements were mostly taught during HF curriculums, CRM training interventions, and among classifications of technical and NOTECH skills. On that approach, for an illustrative purpose only, TEM elements were stated and explained: The threat, the error, the undesirable aircraft state [UAS]. Additionally, the actions to recognize or mitigate de threats, detect or correct the errors, recognize or recovery the UAS to avoid an accident were stated in complement. Moreover, these elements were exemplified in the operational environment among technical and non-technical skills. Although very useful, on that approach, the TEM knowledge appeared to be more a stand-alone [separated module] and tick-box element assisting the understanding of the human factor´s issues on the operation context.

On the proposed CBTA methodology, the TEM goal is fully guaranteed in a more practical and prone to an optimal way to the pilot operational perspective. In this case, the TEM is embedded throughout CBTA designed training contents.

> "From a competency-based training and assessment perspective, the competencies of the approved adapted competency model provide individual and team countermeasures to threats and errors and undesired aircraft states. CRM skills are embedded in the approved adapted competency model. Therefore, the CRM training supports the development of the competencies as countermeasures in the TEM concept (ICAO, 2020)."

The citation is materialized, in practical terms, by the result of the merge of the ICAO tasks and associated subtasks needs with the adapted competency´s framework and observable behaviors statements. It was realized in the study by the use of the second table of Appendix 4 , Appendix 6 and Appendix 13. From the curriculum design perspective, for each task and subtask performance, there are required certain KSA. Under an operational perspective, for the same tasks and subtasks, there are considered expected OB to figure the acceptable performance and evaluation under a defined criterion. So, when a pilot has passed through CBTA activities, its assumed that he acquired the competencies that serve as barriers to manage threats, errors, and UAS. As to illustrate the practical consideration of the concept, while on both phases of the practical syllabus, for example – as suggested by CASA (2009): instead of just assessing a 30° banked turn against the specified standard, it may be more realistic to observe the candidate performing the maneuver during a precautionary search (a contingency) where the turn is used to position the aircraft to observe and assess the landing surface (a role). The change on exemplified mindset may impact both training and assessment activities. There is a direct relationship among how many, appropriated and how timely OB are demonstrated and how efficient to a threat and error management is. The rationale is illustrated by Figure 17. By the CBTA methodology, what was called technical and NOTECH skills, now merged, becoming competencies and its tangible observable behaviors.

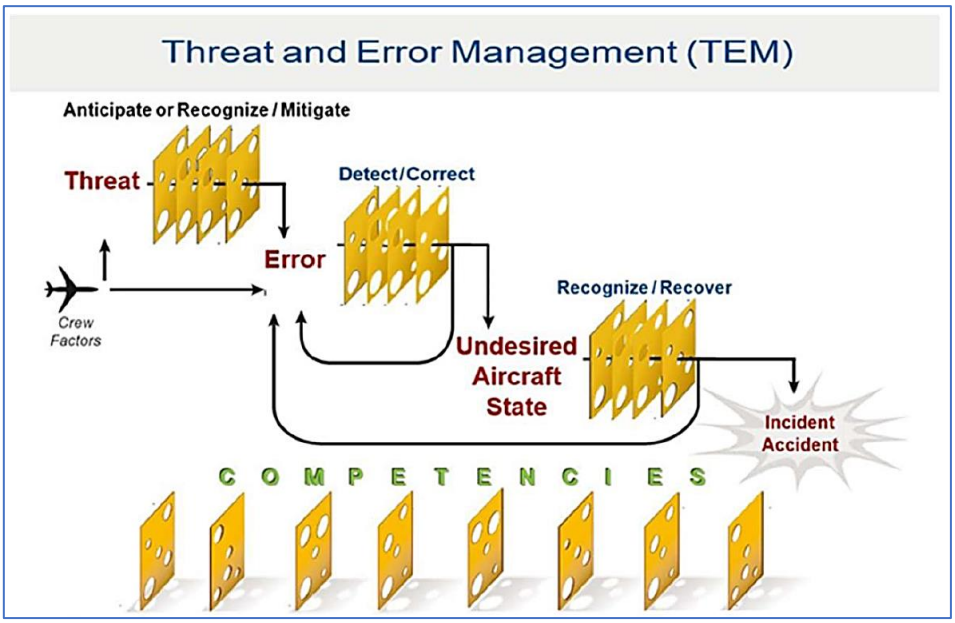


Figure 17: TEM by a CBTA perspective. The figure states the CBTA competencies acquirement as a barrier to manage threats and errors on an operational environment. Adapted from IATA (2021).

- ***Human Performance and Limitations***

Since the unique current ANAC supplementary instruction related to the matter and to the CRM training[38] does not encompass the flight school´s segment; and by the output of the participant´s inquiries, the study emphasized the subject on a specific and more structured module on both syllabus of the proposed training solution. The study deliberately positioned the subject prior to the TEM subject and to the many other already existing modules to let the trainee correctly absorb this concept and allow use among the others.

- ***Observable Behaviors [OB] and adapted competency model***

The term [adapted] competency model was incorporated from this point on, after having been briefly quoted on previous steps, when were discussed that differences in functions and on the operational environment may arise adaptations on the ICAO´s competency indicators.

[38] CRM training is considered a human-factors training intervention applied to pilots and other carriers qualifications, according to ICAO, 2020. The training is diffused by airlines operations and other segments of commercial aviation.

When referring to the OB and to the competency definitions, it´s easier realize his place in the CBTA methodology, whether on the training and on the assessment activities. Figure 18 schematizes that relation. OB are considered the tangible outcome used by an assessor to evince a trainee´s determined level of competency during the theoretical and practical phases of the course. In both cases, OB shall be observed among the utilization of the required KSA on the tasks and its subtasks in question. Furthermore, OB shall be the milestones on the achievement of either the end-of-module objectives and the task terminal objectives.

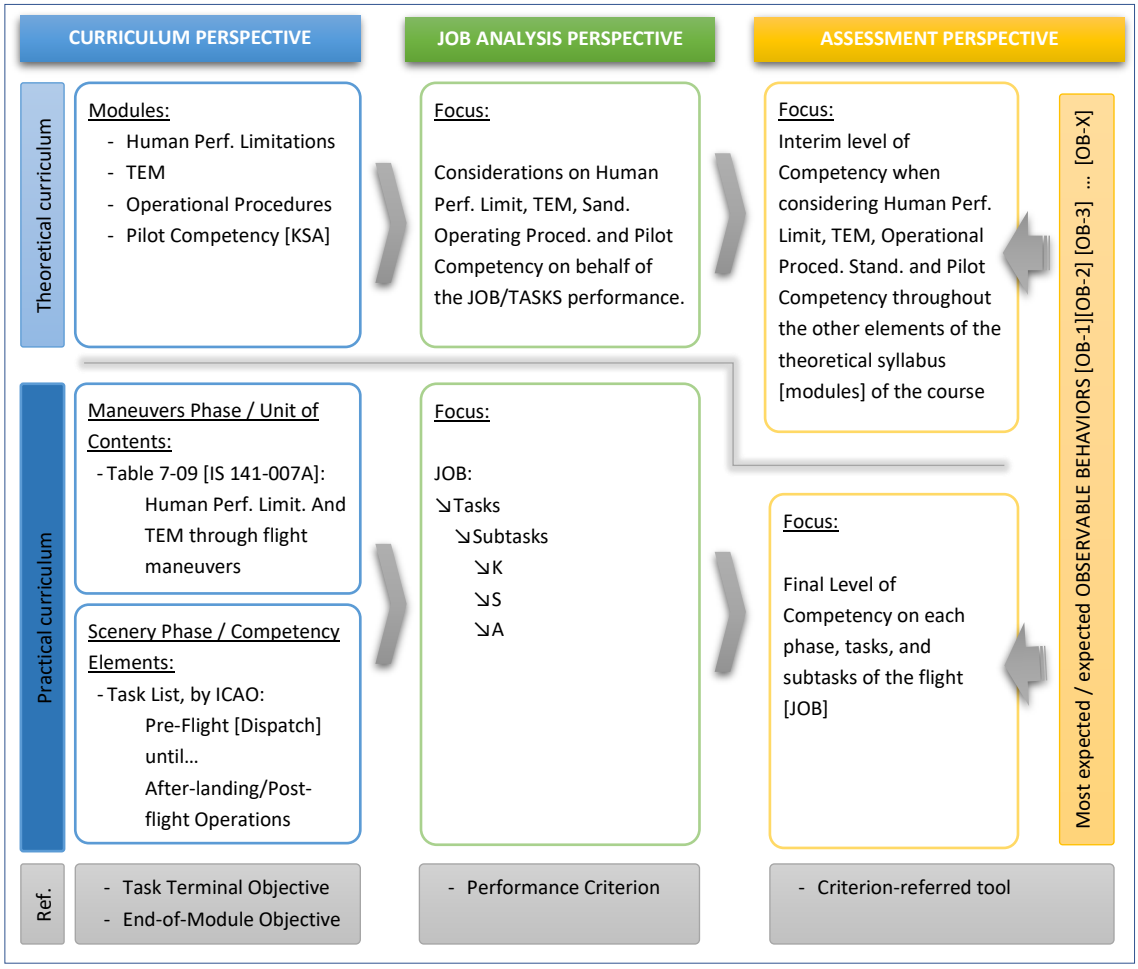


FIGURE 18: OBSERVABLE BEHAVIORS AMONG CBTA METHODOLOGY. THE PICTURE EMPHASIZES THE PLACE OF THE [OB] AMONG DIFFERENT PERSPECTIVES THROUGH THE CBTA METHODOLOGY. AT LAST, SCHEMATIZES THE DEPENDENCE OF THE INTERIM LEVEL OF COMPETENCIES ACHIEVE ON THEORETICAL CURRICULUM TO THE FINAL LEVEL OF COMPETENCY, CONSEQUENTLY ACHIEVED ON THE MANEUVERS AND ON THE SCENERY PHASE OF THE PRACTICAL CURRICULUM.

In conclusion on how OB must be placed, it´s important to always relate them to certain competencies - those better associated with a task completion under the specified performance criterion. However, since some tasks [or subtasks] could vary due

to different contexts and operational environment, it became logical that those competencies should be adapted to better relate the right OB, avoiding having unsuitable ones to assess the performance. That´s exactly what happened in the study. Appendix 13 listed what were the most required competencies and the suitable OB to be used on the last module of the practical syllabus of the course. The Appendix is a result of an inquiry performed with the flight school´s staff. The activity listed all phases [tasks and subtasks] of the flight [Appendix 4] of the ICAO DOC 9868 pilot task list and required the participant´s suggestions and critique on what competencies and related OB they considered as key ones. Finally, the outputs were confronted with the proposed researcher´s listed and ordered most relevant competencies and OB to reach the consensus of the final statement. Due to the quantity of OB pointed and possible constraints and differences on the practical assessment activities to be performed by the flight schools´ particularities on their assessment plan, the study highlights the need for distinction and marking of all OB according to the following:

- ✓ Those most expected [must-see] to be demonstrated by trainees, indispensable to the assessment. Those that assessors have the most chance to observe.
- ✓ Those just expected [quite-probably] to be demonstrated by trainees, supplementary to the assessment. Those that assessors may observe.

The initiative aimed to have the schools choosing and proposing updates approvals on the proposed scheme to encourage the improvement of the assessment context according to each flight school´s capabilities and expertise. Still about the activity, the study considered the IATA Pilot Competencies set (IATA, 2021) due to the consideration of a new and valuable competency, not previously assumed by the ICAO: Application of Knowledge, that also complements the ICAO´s competency: Application of procedures and compliance with regulations.

Other associated outcome of the initiative, and by the use of the Appendix 12, is the related to the construct more empirical data to what is called as the true competency-based education program in aviation (Mendonça at al., 2019). When writing about competency-based education model in general, the authors defend the

development of empirical data provided by competency-based flight programs - considered a product of complexes social-system that differently deals with hazards and risks of flight operations on different levels - to use proficiency levels descriptors [developing, emerging and proficient] on pilot´s qualification process in general. The descriptors represent a continuous spectrum of development of proficiency on professional flight skills - that initiates on the basic of the flight related studies and evolves throughout a lifelong learning process in which all professionals are engaged. By the three levels of development, the expectations of knowledge, skills as the breadth of the capabilities expands from ideas to well-done practices. By a result of this concept, competencies [OB] would be better mapped and the course´s [training solution] in general would ensure more reliability and validity. Still on the sense to determine whether trainees acquired determined level of competency during the course and exams, that's important to sensitize the reader about another difficulty of designing pilot training scenarios – by the determination of what specific combination of events and conditions must be included in the scenario in order to effectively evaluate certain set of competences (Dapica & Peinado, 2021). By the authors, in the field of pilot training there are currently no effective semantic tools that allow interoperability between all the different agents involved in it, such as aeronautical authorities, instructors, scenario designers, airlines and FSTD manufacturers. So, considering the use of the available data that may arise by the use of the Appendix 12, it will be easier to deal with the two aspects quoted on this paragraph – helping the training developers and experts on the path of the issues related by the authors – the use of a empirical data and the consideration of an ontology to improve the design process to classify the scenarios as useful for training specific and right competencies based on the structure and combination of validated elements.

Production and Developmental Tests

- ***Detailed instructor´s information***

Besides the preliminary considerations of the modules, the study considered that the following elements shall be considered to the design of modules and to set the instructional materials in reference to the elements of Appendix 12:

- **Dependency and modes of delivery of the proposed training content:**

All the training solution shall be considered as validated material dependent. It means that all teaching points are collectively validated to be delivered according to all instructor´s provisions. The instructor shall not be the main source of knowledge or who decides what and how to include on the training solution and during their performance.

The training solution is primarily designed to be delivered in groups or under individualized events. Most of the theoretical curriculum modules are prone to group training and the assessment events of the practical curriculum are prone to be individualized, even in the case of eventual crew [dual pilots] activities. Individualized interventions are prone to an individual´s limited social skills, lack on achieving certain objectives, or due high degrees of acquired skills among trainees. They may be only desirable on the patch of the interim level of competency, on specific activities of the theoretical curriculum, and must be properly based on specific support and references. In general, the initiative must not jeopardize the team elements, the syllabuses, and its instructional resources – when applicable.

- **Training Techniques and methods:**

The choice of the techniques and methods must be appropriated to each intermediate objective, modules, and [KSA] when applicable. The attention to the choice resides to encourage the trainee´s interest and motivation throughout all course, making it effective. The choice must balance the most time-effective with the most interesting options, the preferred learning styles of the trainees [population] and available support. They can be combined and must vary among the following options:

- ✓ **Oral presentation of the content by the instructor** – following an instructor´ guide, preferably assisted by appropriate and adapted media. Attention must be addressed to the quality and quantity of the media, which determines being effective support to the instructor and trainee´s attention.

- ✓ **Group discussions guided by the instructor** – considered a useful developing and testing tool of the trainee´s interpersonal skills. They immerse trainees on the subject and are prone to reveal OB and competencies on its interim level.
- ✓ **Demonstrations by the instructor** – depending on the nature of the subject, are more effective and supplement explanations or oral presentations. Demonstrations can be “Hands-on” or “hands-off. They are advisable when concepts and rules must be applied after they have been theoretically explained. “Hands-on” demonstrations, after the instructor´s presentation [briefing] normally encompasses knowledge, skills and attitudes, which retains the trainee´s attention.
- ✓ **Case studies** – based on real cases and with defined feedback. They must be carried under the instructor´s guidance and requires significant preparation for their performance. This technique is a useful tool when high and new levels of knowledge and skills are required to analyze complex situations, various parameters, problem analysis, and for providing solutions or feedback. Trainees normally appreciate challenging case studies.
- ✓ **Role play** – in simulated situations normally let the trainees to actively participation. However, they are time-consuming, since require good preparation to be well organized and performed. The activity also depends on guidance materials and on the instructor´s skills to control the situation to arise the trainee´s right attitudes. After the trainee´s acquisition of the required knowledge and skills, the activity is good to stress their attitudes.
- ✓ **Supervised practices** – are prone to practical activities since relate skills to a competent performance of a task. Typically, the activity relates a specific tool, standardized procedures, and a performance criterion. Due to that, the activity also requires the support of guidance materials to let the trainee achieve the required competency, similar to the role play.

- ✓ **Independent study** – is a valuable method either in preparation or complement of certain subjects. The activity is normally electronically [e-training] delivered and suppresses constraints on gathering trainees together or schedule issues. To be effective, the independent study must be tailored by validated guidance material and requires defined feedback.
- ✓ **Field observations** – complement classroom activities. Whenever is possible, the observation of experienced staff [or even other trainees] performing tasks is a useful technique. To be effective, the activity requires the definition of the points to be observed, evaluated and debriefed [feedback].

- o **Media – Audio visual Aids, Instructional resources:**

The appropriate support where the instructional content is communicated is an important element. There is a large variety of media available, including those computer-based solutions. However, the basic selection criteria must be the aptitude to convey the teaching points, motivate and stimulate the trainee´s attention. In parallel, the curriculum and module´s specifications, availability of support, and operator´s skills must be considered to the choice. Normally, these are decisions to be taken when the instructor´s materials and guides are to be prepared.

Despite the fast progress of the computer´s support and its attractiveness for training activities, the selection criteria must consider the effectiveness of the media support, its simplicity, and cost. High sophisticated media does not necessarily mean effectiveness. The SME must bear in mind what media better fits the module´s objectives. For example, the following questions must be made during the media production process to check its purpose: Drawing and explain a scheme, but with no permanent record of the information? Print a hand-out with further explanations to a later discussion and availability to other courses? The use colors and animations of a data-show? Could the scheme be put on the wall on permanent display?

Media options can be combined and must vary among the following options:

- ✓ **Printed texts** – e.g., course manuals, handouts, technical publications.
- ✓ **Displays** – e.g., whiteboards, flipcharts, wall-charts, cockpit representations.
- ✓ **Projections** – e.g., data-show, videos, PowerPoint/PDF presentations.
- ✓ **Models** – e.g., fixed classrooms, mobile, mockups, and set-ups.
- ✓ **Equipment** – e.g., real equipment, flight simulation training devices [FSTD].
- ✓ **Computers** – e.g., computer-based solutions: interactive software, applications, and simulation programs.

- o **Student´s materials – Job Aids and hand-outs**:

According to the job aids definition, it assists trainees´ memory and performance of a given task, since it allows him to have a permanent reference to consult instead of asking about and memorize something to learn. Hand-outs have almost the same function, however, are simpler or have just topical, guiding or additional information.

Job aids, if self-explanatory as should be made, are prone to increase the confidence of its users, reduce error rates, the time and need for training in general - just requiring training for its use. So as to, the use of both tools should be analyzed by the SME and instructors. The use of job aids should be related to the job analysis, specifically to the KSA column. The reference must be about the use of the job aid or how to perform its related task. In the same way, SME and instructors should correspond teaching points to explain and ensure how to carry out the job aid on a task performance. The strategy for the use of the job aids also requires the instructor´s preparation to his guidance on the tract of the job aid and hand-out. The instructor must be aware of the objective, content, teaching, working environment and situation in which the job aid is to be used. Finally, SME and instructors always must be questioning each other - if the job aid fulfills its instructional and operational purpose, - if a job aid is necessary, or not,

to assist trainees, and - if its proposed physical characteristics are adequate.

- **Instructor´ guide and materials**:

The instructor´s guide and related materials are paramount to the training solution´s effectiveness. The guide is what characterizes the course´s validated material dependency, guiding the instructor on the delivery of the various parts of the modules with no deviations from what trainees should learn and practice to lead the intermediate and end-of-modules objectives. The guide prevents superfluous, out-of-context items and keeps the focus on the training objectives. The guide and its materials should not underrate the instructor. On the contrary, if the instructor is used with a well-developed guide, less time is required on his preparation for the course; and more attention can be addressed to his instructional skills, particular talents, and personal experiences which motivate the trainees.

The guide should include references to all teaching points, stressing those that require special attention, LO, techniques and methods, instructional resources, support, and trainee´s materials. The guide must neither be so complex or boring to be characterized as a book to be read to the trainees nor be so simple to not guide the instructor on parts of the modules. The guide shall be configured as support on how the instructor better responds to the group of trainees' expectations. For example, but not limited to: How much time on this point? How many images or references and comments about that point? Explanations should have been writing or referred to on flipchart or wall-chart? Should have hand-outs be delivered? Would be required a prior lecture?

The study suggested the following instructor´s guide structure:

- ✓ **Instructor´s guide – cover page:**

  Contains the general information about the module. Such information as those introductory ones stated in Appendix 10 and Appendix 12 allows the SME and instructors to general references in case of doubts

about how to deliver the teaching points, the feasibility of KSA, and to prepare all the guide as a whole. The main information should be: - Name of the module, - It´s number and version, - Tasks and Subtasks [when applicable] associated, - End-of-module, and - Mastery tests conditions. Likewise, special attention should be addressed to the general notes. This specific blank field must be used to any special items concerning the delivery of the module, such as specific competency or quality of the instructor, the need of personal examples, bring of a specific document, attention to complex points, logistics, availability of certain equipment, etc.

- ✓ **Instructor´s guide – introduction and main body:**

  Contains the dynamics and instructions to deliver the teaching points and to reach the LO according to the structure of the modules [Appendix 11]. It´s advisable to the guide have clear codes and symbols indicating when [where] what kind of job aid, hand-out, or media support is required for a particular point, or even when personal experiences and anecdotes from the instructor are recommendable. Another useful point is to indicate notes regarding test [intermediate and mastery] items to discuss possible answers concerns from the trainees. It helps with the test validating process.

  In parallel to the above elements, the guide shall be written with the same taxonomy before [Appendix 14]. However, the verbs must be different from those used on KSA and LO. They must provide the instructors´ guidance and support to the KSA needs and LO accomplishment. E.g. – inform the trainees; - discuss with trainees; - explain why and how; - organize trainees into groups; - demonstrate how, etc.

  Just by the end, when gathered all elements above, the guide will be ready to the estimates of the time on the module.

- ✓ **Instructor´s guide – revision of contents and mastery test preparation:**

  Contains instructions and the time to review the relevant content and give provisions for the assessments [Appendix 11]. The revision must

summarize the main points of the exams. This part must clear what technique is better applied according to the module´s context. Further clarifications of some points, discussions, emphasis on main points, need of reviewing, self-study and others may be used. This part must clear any instruction related to the performance of the exams when applicable. E.g., endurance of the exam, use of handouts, and other devices. The opportunity must create a positive mindset on the trainees regarding the exams towards the performance criterion. Finally, this part shall consider time to provide the trainees´ feedback on the exam questions, using a proper Form or an answer´s sheet model, and to the filling of the opinion´s questionnaire. An anonymous questionnaire is considered a very serious feedback tool about the modules and must be proposed and filled for all the modules.

- ✓ **Instructor´s guide – course administrator´s guide:**

  Besides all the instructor´s related Forms and guides, the most directed and comprehensive information may be attractively presented and facilitated to the course administration use. This information is more managerial intended and may be significantly enhanced when compared to other´s trainee´s materials.

  - ✓ Timetable Form – Besides the Int. Objective reference on the Module Outline; the session and time references on the Module Plan, specific and standalone time control is advisable.
  - ✓ Facilities, Material and Equipment Form – Besides all these references on the Module Outline and Plan Forms, specific control of all instructional support is advisable.

- **Related competencies and [OB]**:

The OB still are considered the references on the theoretical curriculum module´s assessment activities despite its interim level, which substantially differs when assessed on the practical curriculum. All the competencies and related OB must be addressed to each intermediate objective of all the modules of both curriculums. The instructor must use them through the

performance and feedback of the various activities' techniques of the modules.

- **Assessment points, elements, and contents:**

The elements of the Appendix 12 shall only be used by the SME and instructors to set the assessment framework [guide] detailed on the step. The performance of the assessment activities shall use a tool, known as an evidence guide, which provides information about the evidence that determines whether a candidate met the requirements of the competency standard.

✓ **Assessment points and subtasks:**

- On the [P-HPL] and [P-TEM] modules, the unit of contents and competency units of the IS 141-007A figures as means on where the assessment points and intermediate objectives of the modules must be accomplished. However, in fact, the assessment activities still have to determine whether the competencies and the Related OB were evidenced during the practical activities.
- On the [P-KSAOP] module, the ICAO aeroplane pilot task list figured as means on where the assessment points and intermediate objectives of the module must be accomplished. However, in fact, throughout the subtasks, is where when and how the related competencies and OB shall be evidenced during the practical activities.

The study considered adaptations on the module´s plans of the practical curriculum due to its particularity of carrying assessment activities only. The following adaptations [Appendix 12] should be reflected on the instructor´s-oriented provisions. Other slight variations on some terms were considered self-explanatory in parallel to those explanations related to the theoretical curriculum [e.g., Session/Time related to the practical activities, Instructor´s tools in reference to his support on the practical activities, and Assessment techniques, methods, resources, and Trainee´s materials required for].

- ***Design and production of instructional material***

Efforts on the design and production of the printed instructional material were appreciated by the study on the training solution. The production of the written and printed training material must comply with some general principles and technical details to be considered effective and to contribute to the trainee´s motivation and performance along the course.

The study listed some, but not limited all, important aspects to be considered in the design of the instructional material. Since the elements were considered an accessory to the study´s body, they were listed in Appendix 15.

Finally, the study recommended trying out the instructor´s guides and all the instructional material before delivering the proposed training solution. All material must be proofread both for SME, instructors, and secretarial personnel on their specific expertise. The projected material must undergo testing on all available rooms and electronic devices. Each room or equipment may differently influence the material´s readability. Any job aid or hand-out to be provided to trainees must be presented and performed either by experienced and newbies to explore their perspectives on the feedbacks. These efforts aim to provide as much as possible high-quality materials [error-free materials] to expedite the validation[39] of the training solution. The validation activities may occur at the same time as the design of the modules – depending on the flight school´s capacity.

During trial tests, the study emphasized the following points to brief the body of proof:

- Trainees must be explained what is being assessed: the instructional material instead of their performance to encourage constructive criticism.
- Trainees must be encouraged to ask questions when facing difficulties.

[39] The validation of the proposed training solution according to the study´s methodology also encompasses the validation of the assessment activities related to the theoretical and practical curriculums.

- Respect to the instructor´s guides rules on providing guidance or hints. No more than the expected level of information must be provided in order to fulfill the teaching points and LO. If more explanations were required, the fact must be noted.
- Keep records of all problems and constraints faced whether on the guides, instructional materials, events, exams, or when teaching.
- Keep close attention and note the trainee´s reactions.

Evaluation

- ***Proposed training activities´ assessment***

Various opportune comments about the assessment activities have already been made through the study and they must be carefully considered. Hereinafter, the study stressed the components of the framework, its elements, associated processes, and considerations required for effective assessment activities on the proposed training solution.

- **Assessment Plan**

It´s required to define the core processes and elements to be used in the assessment activities. The plan shall be accepted by the ANAC and its main objective is to guarantee that only valid and reliable evidence is gathered during the training activities.

The assessment plan shall consider the following:

- ✓ **Principles of competency-based assessment:** There are five principles that shall be listed and evidenced through the assessment plan and activities:
  - ✓ Use of adapted-competency framework and clear performance criterion to assess competence.
  - ✓ Competence observation based on an integrated performance. To be considered competent, all the competencies must be demonstrated, including their seamless interactions.

- ✓ Multiple observations must be carried out to determine whether the trainee achieved the interim or final level of competency standard.
- ✓ Assessment must be valid. To be considered valid, all the competencies must be assessed with sufficient evidence on the trainee´s competency, whether on its interim or final level. The scope of the adapted competency for each assessment activity must be respected. No outer evidence must be required outside the scope of the given activity.
- ✓ Assessment must be reliable. Any assessor should reach the same conclusion when assessing. All assessors must be trained and monitored to maintain the readability of their activities.

- ✓ **Assessment Methods:** There are different methods to be used whether on the theoretical and practical syllabus. Some modules or their intermediate objectives may adopt more than one method and assessment activity.
  - ✓ Formative assessments: This method is related to the learning process since enables trainees to progressively build the interim or final level of competency under the performance criterion. It is expected more interaction between instructor and trainee to provide them feedback on how they are progressing towards competence instead of only receiving this feedback at the end of the training. Formative assessments may allow supportive oriented performance, serving as an opportunity to motivate trainees, identify their strengths, weakness and promote learning.
  - ✓ Normally, this method encompasses individual and group exercises related to technical and NOTHEC skills with the assessment and debriefing focuses on the competencies. This method may be complemented by supplemental assessments.
  - ✓ Summative assessments: This method is characterized by the need of collect evidence and grades the demonstration of the competencies under the performance criterion. For example, is that

one used for the issuance of licenses and ratings and is characterized by the lack of supportive interaction with the assessor as quoted in the previous method.

- ✓ Normally, this method utilizes individual evaluations that can be carried out both at defined points or at the end of the training. The outcome of the summative assessments shall be competent or not competent. Besides the outcome to the trainees, the grading system and any scale of a judgment of this method is also to improve feedback for instructors, assessors, and SME about the training. It´s advisable to count on different assessors than the instructors who routinely deal with the trainees. In the same way, the qualification of the assessors is an important issue. It shall guarantee their competency on how to collect the evidence in a systematic and reliable manner.
- ✓ Supplemental assessments: This method, but not limited to the bellow activities, may assist the practical assessment activities. The following practices must be consented to by the assessment plan.
  - *Oral assessment:* Provides the opportunity to target those specific areas of performance that could not be realistically observed in the practical environment. Usually, this practice supplements practical summative assessment when a representative cross-section of all competencies may not be possible to be observed or when it is not feasible to engage in discussions while trainees are carrying on practical assessment. Normally this may be a scenario-based practice – designed around situations to be further explored by the assessor.

    The practice requires the assessor explaining the scenario to ask trainees their actions, with, or not, further clarifying questions from the assessor – depending on the area.
  - *Examinations:* Used to evaluate theoretical knowledge and are lesser demanding. The practice normally uses written questioning

and could be completed with job aids, hand-outs, or other support.

- ✓ **Concept of milestones [intermediate Objectives]:** Due to the proposed training solution complexity, all the intermediate objectives of the modules were considered as milestones, chunks, or gates, within a logical sequencing sequence of the course towards the end-of-module objective of each module. Each intermediate objective must receive at least a formative assessment activity. If the trainee fails on the intermediate objective´s assessment, he is not authorized to move forward on the course, requiring remedial actions as established on the administrative procedures.

- ✓ **Interim and Final competency standards:** By the completion of the course, trainees must have achieved the final competency level under the performance criterion and based on the adapted competency model.

  Due to the complexity of the proposed training solution, the study considered relating the interim level of competencies to the modules of the theoretical curriculum; and the final level of competency to the modules of the practical curriculum.

  Regardless of the level of competency, trainees shall always achieve the end-of-module objective on both syllabuses.

- ✓ **Assessment activities:** All the assessment activities must be specified and associated with their respective details on how they are performed. The activities should be determined in reference to the provisions of the modules outline and plan. They must be specified, at least, according to the following:
  - ✓ Syllabus reference - theoretical or practical.
  - ✓ Intermediate objective [progress tests] or end-of-module [mastery tests].

- ✓ Interim of final level of competency related.
- ✓ Related competencies and OB.
- ✓ Conditions to be performed.
- ✓ Technique(s), method, tools, and associated performance procedures.
- ✓ Resources to be used – media support, aids, facilities and equipment.
- ✓ Trainee´s [assessment] related materials.

The study defined the minimum following activities according to each syllabus and examples and details below. According to Dapica and Peinado (2021), despite the syllabuses, specific requirements must be addressed for any scenario definition: - What competencies does the scenarios train? – Is a right scenario to train the competencies? – What scenarios can I use to train the competency? - Under what flight conditions (phase of flight, state of loading of the aircraft, etc.) should I add the event in order to train competency?

- ✓ <u>Theoretical syllabus assessments:</u> At least two types of assessments activities are required for each module. The intermediate objective and the end-of-the module related. Both assessments shall verify the occurrence of correct and desirable OB according to the established performance criterion level and expected competence level. The OB must be distinguished as indispensable [must-see] or supplementary [quite-probably] to the activities. They should also consider the customization to the different functions and characteristics of the air transport service [when applicable].
  - *Those for each [intermediate] enabling objective, known as [progress tests],* check whether the trainee has achieved the minimum level of performance required in that objective that will bring him/her to the level of interim competence expected for the end of the module. Despite being less demanding, still constitutes an important part of the acquisition of the final level of competency by the CBTA methodology. The activities must be

carried out by the assessors using formative methodology through exercises and group activities that refer to interactions among the group. The activities must be debriefed on the expected performances. The activities can rely on supplemental tests, oral questionnaires, and the use of various resources.

- *That one to the end of the module, known as the [mastery test]*, is based on the training objective of the entire module and the pilot's interim competence about it. This one has a summative character, which means, is more formal, does not consider interactions, or has the same type of debriefing as the previous one. This has a grading and a reproachful character and is required for each module.

✓ <u>Practical syllabus assessments:</u> At least one type of assessment activity is required for each module. In this case, just for the end of the module objective. For these modules, only practical assessments are expected to be developed on simulated [FSTD] or real [in flight] environment.

✓ The activities were divided into two phases, based on the structure of the proposed practical phase of the course. On the two phases, the OB focuses of the activities must also be distinguished as indispensable [must-see] or supplementary [quite-probably].

- *On the first one, characterized as [maneuvers phase],* the focus of the assessment resides on the application of the TEM concept in consideration of the human performance and its limitations issues throughout the practice of the skills required from the trainees while performing all the required maneuvers and tasks according to the units of contents of the IS 141-007A. There is no specific load on the assessment activities of this phase. They shall occur

according to the flight school´s provisions [40] on the practical syllabus scheme. This phase encompasses the [HPL] and [TEM] modules and their assessment activities can be performed together since the TEM concept is conceived on the human performance on operational contexts. All the competencies of each module must be evidenced on its final level.

- *On the second phase, characterized as the scenery phase,* the focus of the assessment resides on the competency of the pilot throughout all operational procedures. This phase encompasses the [KSAOP] module focusing on the observation of the OB through the KSA requirements of each task and subtask of the ICAO aeroplane pilot task list and specific demands of the job analysis.

  For this phase, the activities are considered the most comprehensive of all the course. There was specified at least 4 flights [events] with one and a half-hour [1,5] each to totalize the assessment activities. They shall take place whether on simulated [FSTD] or real [in flight] environment and could be separated in accordance with the provisions of the flight school to assure the proper collection of the evidence of the competencies. However, all tasks and subtasks expected for all flight phases shall be verified. All the competencies of this module must be evidenced on its final level. To do that, the assessors and the instructor´s guide must mastery the application of the proposed scenarios[41] on activities.

[40] The provisions may elect the better environment [simulated or real] better evince the competencies and OB observation. The variables must be related to the aircraft features, near airports availability or facilities among others.

[41] The application of scenarios may rely on the Line Oriented Flight Training [LOFT] practices with the proper adaptations due to the different operational scenarios [airline] and FSTD used. However, the initiative may involve the real timed and detailed [representative] conduction of a flight whereas abnormal situations may arise competencies to be collected.

Specifically to the practical syllabus assessment activities, the study suggested the use of the VENN Model (IATA, 2021) method. The model, to be used on the multiple observation activities, is adhered to the CBTA principles and to the general assessment´s points of the study. The model allows the assessor to record the effective and ineffective behaviors [OB], classify and allocate them to each competency, resulting on the overall assessment grade. The model and its instructions and are stressed on Appendix 16.

The study addressed special attention to the development and use of assessment tools. On both syllabuses, the assessment activities must be guided by tools set under the consideration of the points below. Complementary to the use of tools, a remarkable consideration are the registers about the progress of the trainees that they create, allowing the identification of the areas of weakness that require further developments. Despite the records normally paints a negative picture in general, they are required to document the achievement of the competencies. In order to, the records must be comprehensive, with enough information so that any instructor or assessor may step in and train the trainees with no difficult as they register not only trainee´s deficiencies, but commenting when competency is demonstrated (CASA, 2009). The information of the tools may be separated, or not, by the flight school´s discretion, but shall consider the following elements:

- ✓ **Evidence guide:** A guide that turns the performance criteria of an adapted competency model into practical examples of OB expected to be seen by the assessors. The benefit of the guide is to detail the competencies on its standard and to avoid different interpretations among assessors, ensuring the validity and reliability of the assessment.

- ✓ **Competency checklist:** A list to record the achievement of the competencies and OB during the formative and summative assessment.

- ✓ **Competency assessment Form:** A Form to summarize and group the results of all the assessment activities undertaken by each trainee to advise about whether he/she achieved the competency. The Form considers both the interim and final level of competency under a performance criterion and must be correlated at the assessment plan.
  The checklists and Forms must be specified at least to the level of the tasks of each flight phase. The flight school may specify and relate the OB to the level of the subtasks according to their discretion [provisions on assessment plan].

- o **Administrative procedures:** The plan should describe the administrative procedures related to the use of the plan, at least limited to:
  - ✓ Distinction among functions.
  - ✓ Which personnel is able to conduct the assessment, including their qualifications [42].
  - ✓ Roles and responsibilities of the personnel during the conduct of assessments.
  - ✓ Other assessment procedures and/or conditions to be undertaken.
  - ✓ Record-keeping and disposal [43].
  - ✓ Actions in case of trainee´s fail [remedial training] on the assessment activities.

- ***Instructor and assessor training***

Well-trained, competent instructors and assessors[44] constitute two of the most important and sensible pillars to the CBTA activities. They instruct, observe, collect, assess, and grade the competencies of the trainees. In parallel to that, they also input

[42] Any competent instructor who is qualified and authorized to perform assessment activities on both syllabuses – theoretical and practical.
[43] The study suggests the disposal of the trainee´s competency assessment Forms [records] to possible air operator contractors under agreement terms under the parts and flight school.
[44] Assessor is the designated instructor of a flight school that carries out the competency-based assessment activities based on specific duties definitions. The designation is under the flight school´s discretion and does not relate to the examiner´s accreditation process.

the system that carries and deliver the proposed training solution with the output of all activities to check its effectiveness. Instructors´ and assessors´ qualification and standardization are remarkable elements to guarantee the fulfillment of all activities under the highest degree of reliability.

The ANAC issues the instructor´s qualification requirements and oversees his licensing and qualification processes to issue the instructor´s ratings. Due to the study´s objective and target population, this part aims to state only what was considered as [extra qualification] to both instructors and assessors. Under the study´s perspective, it was required to make them able to respect the principles and to demonstrate the competencies required to carry out their duties.

Instructors and assessor´s extra training and qualification shall be completed in a shape of a formal process before the flight school starts the trainee´s proposed training solution. The study considered the following elements in the given ordering to frame the process, also schematized on Figure 19.

- Instructors and assessors must undergo a specific selection process to guarantee the most prone individual with the motivation and disposition claimed on the competency-based activities.

- Instructors and assessors must undergo their training and qualification activities. The activities must be specified under theoretical, practical syllabuses and under flight school´s discretion on duties specifications for instructors and assessors. Each flight school may elect its own specifications to differ, or not, theoretical and/or practical instruction, assessment duties by levels of competency or other aspects. Regardless of the criteria, the training and qualification process must state what competencies are required; and that the instructors and assessors have consistently demonstrated the acquisition of the competencies throughout documented assessment processes.

- The competencies must be addressed under two domains: – pilots' competencies in general; and – instructor-assessor competencies.
  - ✓ The first, encompasses the same [KSA] required from the trainee´s proposed training solution.
  - ✓ The second, encompasses specific [KSA] related to the instruction and assessing duties.

- The training and qualification process must consider initial and refresher activities in a period not greater than 3 years and comply with the assessment plan.

- The process, including the registers of the formal assessment of the instructors and assessors, must be documented and make them ready to fully understand the assessment plan, all its elements, activities, and tools.

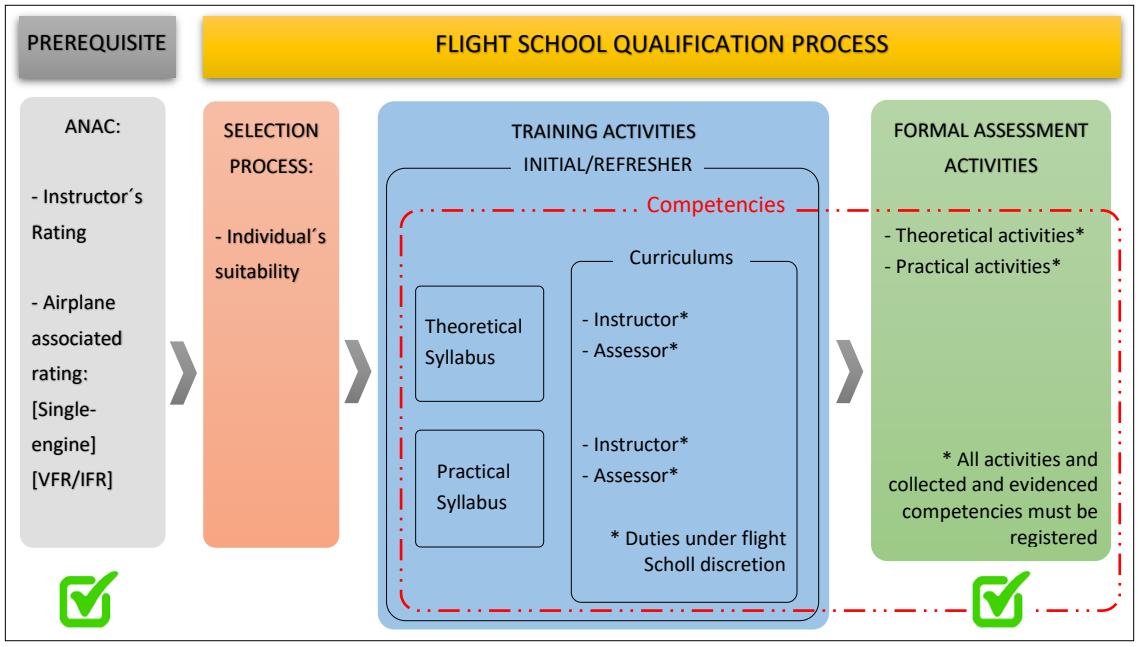


FIGURE 19: INSTRUCTOR AND ASSESSOR TRAINING AND QUALIFICATION. EACH DUTY ON FLIGHT SCHOOL´S DISCRETION SHALL HAVE AN ASSOCIATED CURRICULUM UNDER THE THEORETICAL AND PRACTICAL SYLLABUSES. COMPETENCIES MUST BE UNDER TWO DOMAINS AND RELATES TO THE ADAPTED COMPETENCY MODEL. ALL ACTIVITIES MUST BE DOCUMENTED.

Further curricular information about the extra training and qualification curriculums were detailed in Appendix 17.

- ***Study´s feedback and opportunity***

It was inquired some key players of the study´s scenario to collect their positioning and reactions about the theme of the study, the opportunity of its objectives, and the implication of the research´s results on their operational scenario or context. Among the key players, it was considered SME on airplane pilot´s training development based on competency-based practices, ISD methodologies, key staff [45] of the three biggest Brazilian regular air operators[46], CTKI and course´s coordinators, respectively of EASA and ANAC flight schools – all entities elected as beneficiary parts of the study. Commercial air operators are a very sensible element on pilot´s qualification scenario. The current and predicted growth of the aviation will create a well-known shortage on available pilots to commercial operations, that will be exacerbated by the element of the mandatory retirement age of the nowadays generation of pilots [captains]. The result of this scenario is commercial air operator´s captains younger and less flight experienced than before and playing in an even more substantially complex, changed operational and organization contexts. The characteristics of the operational context are related to the rapid advances in the technologies of aircrafts, single-pilot operations, new and less predictable hazardous (Mendonça at al., 2019). Still on the regulatory and guiding context of the study, the diversity of the key players was realized to collect the most heterogeneous and comprehensive feedback on the inquiry's questions and to enable the most different proposals of improvement and suggestions to future studies on the theme.

All the questions of the inquiry, their specific answers and the general feedback of the respondents were registered on Appendix 18. The study demonstrated itself opportune since the respondents agreed with it. As they elected that its results may positively imply on the safety of the segment´s operational context. To allow a more fluid reading of the evaluative proposal of the activity, the results of the inquiry were summarized below:

[45] According Appendix 18 - Respondent´s information question 2.
[46] The elected departments were those with bigger suitability with the study´s context, which may better take advantage of the study´s proposals. The three commercial airlines together represented 95,9% of the Brazilian market share in the year 2019 (ANAC, 2019e) and have 5211 pilots associated with them, according to the ANAC databank updated on SEP 01st, 2021 (ANAC, 2021a).

- ✓ 75% of the respondents were course coordinators of Brazilian flight schools and Brazilian air operators' representatives – the most impacted key players of the study.
- ✓ 75% of the respondents strongly agreed and 25% agreed that the theme of the study is relevant to any country; that the gaps assumed by the study are real and a concernment to air operators; and that the initiative to allow a safer and smoother transition of the commercial pilots to the air operators segment, based on CBTA CPL/IR courses, is relevant. 62,5% and 37,5% strongly agreed and respectively agreed that the limited population of the study is relevant too. Less respondents [37,5%] strongly agreed about the possible relationship among the problem of the study as an output of the current course´s output, where non-training solutions may have influenced the answers. However, the rest of the answers on the point [62,5%], were agreements too. 87,5% of the respondents strongly agreed about the relevancy of the study´s proposed objectives. No respondents were neutral or disagreed with any question.
- ✓ *Regarding STEP-1*, 50% of the respondents strongly agreed and agreed that the specified segment´s contribution to the Brazilian safety statistics, as the use of the ISD approach´ outputs to compose CBTA contents and activities are relevant on the safety statistics and to the respondent´s operational context, respectively. Specific about the single-engine rated CPL contributions to Brazilian safety statistics, 12,5% of the respondents were neutral about. Most of them [50%] agreed and less respondents [37,5] strongly agreed about. The dispersion of strongly agreements may raise the attention on CBTA solution to be applied on other pilot´s courses. No respondents disagreed with any question of the STEP-1.
- ✓ *Regarding STEP-2*, 37,5% of the respondents strongly agreed that the job breakdown is relevant to propose CBTA training solutions in addition to the 62,5% that agreed about it with no neutral or disagreements on it. About how sufficient the outcomes of the job break down were to substantiate good training solution, 12,5% of the respondents disagreed about. However, 62,5% plus 12,5% of the respondents agreed and strongly agreed

about the sufficiency of the job analysis outcomes to a good training solution. On the contrary way, when asked if there were unnecessary elements on the job break down that might be removed, still not jeopardizing the assessment of the safety of the job, the respondents tied on 50% among neutrals and negative answers or any kind of agreements, figuring the most central [undecided] answers about the steps. About variations regarding differences in organizational structure, PF/PM and VFR/IFR duties, 50% of the respondents strongly agreed, 25% just agreed and the resting 25% were neutral about. No disagreement was registered. The answers about the gaps assumed by the study [by the association of the ICAO airplane pilot task lists to the ANAC Licensing/Training requirements]; reached the higher rate of agreements of the step-1, with 75% of agreements plus 12,5% of strongly agreements and 12,5% of neutral answer. Finally, about the relevancy of the adopted variations on the three assumed functions and the results of the Task Description Form, both questions received same answers: 25% of strong agreements, 62,5% of agreements and 12,5% of neutral answers.

- ✓ *Regarding STEP-3*, 75% of the respondents strongly agreed and 25% agreed both on consider relevant and also practical the gaps marked on the first activity of the step [contrast among the ANAC RBAC 61 CPL VFR/IFR proficiency requirements and ICAO competencies]. About the relevancy of the gaps raised by the activity to safety and to proposed CBTA-based training solution, both answers registered respectively 62,5% and 37,5% of strongly agreements and agreements. Besides it, the last two questions about the step-3, related to the confluence of the HF and NOTECH issues on the gaps assumed on the same activity as well about the pilot´s possible gaps on the pursued competencies [OB] evidenced by the most present contributing factors found on the accidents data analysis, reached the same answers: 50% of the respondents strongly agreed about, 37,5% agreed and 12,5% were neutral about. In the end, the third activity of the step related that the inquiry with flight school´s staff was the most relevant activity to

50% of the respondents. The other two activities tied on 25% as the most important. No respondents disagreed with any question of the STEP-3.

- ✓ *Regarding STEP-4*, 62,5% of the respondents strongly agreed and 37,5% agreed on consider relevant the proposed training solution to the theoretical and practical curriculum of the CPL course – the two best answers about the step. Subsequently, about the relevancy of the division of the practical curriculum into phases, the same 62,5% of the respondents strongly agreed about, but 25% agreed and just 12,5% were neutral about. Regarding the use and relevancy of the ICAO´s airplane pilot task list as a spine of the scenery phase of the practical curriculum, 37,5% of the respondents strongly agreed with the proposal, 50% agreed and 12,5% were neutral about. The adequacy of the class loads and assessment activities to be added to the CPL/IR course was not refused. It was strongly agreed and agreed by 50% and 37,5% of the respondents. Just 12,5% of them were neutral about it. No respondent was even neutral about the relevancy of the teaching points and its intermediate objectives. 37,5% of them strongly agreed and 62,5% agreed about it. The last question figured the most centered average about the step: 37,5% of the respondents tied on strongly agreements and agreements about the adequacy of the source of contents. And 25% of them was neutral about it. No respondents disagreed with any question of the STEP-4.
- ✓ *Regarding STEP-5*, it was the step that reached more agreements than strong agreements but registered no neutral answers. 50% of the respondents equally agreed and strongly agreed [resting 50%] about the relevance of a standard layout [module´s components] as well about the relevance to stress how instructors must deal with HF, TEM, SOP and KSA modules on the proposed training solution. The significance of the suggested ordering of the proposed modules to the CPL/IR courses was agreed by 62,5% and strongly agreed by the respondents. The answers about the relevance and adequacy about how instructors must deal with OB throughout the modules and about the adoption of the IATA competency framework to the adapted competency framework considered

reached the same results: 62,5% strongly agreed and 37,5% agreed about both questions. The adequacy of the supportive information to the instructors on the Modules Plan Forms was agreed by 75% of the respondents and strongly agreed by the resting 25%. No respondents disagreed or were neutral with any question of the STEP-5.

- ✓ *Regarding STEP-6*, two questions reached more strong agreements [62,5%] than agreements [37,5%] with no neutral answers. They were about the relevancy of the instructor´s-oriented information to the quality of the competency-based training solution and about the relevancy of the information related to the design and production of the printed, projected and e-training instructional material to the quality of the training solution. About the sufficiency of the topics/elements related to the instructor´s-oriented information, the respondents strongly agreed [50%] more than agreed [37,5%] or were neutral [12,5%]. The relevancy of the information related to the design and production of instructional material to the quality of the proposed training solution was agreed by 75% of the respondents, summing strong agreements and agreements. Still on the point, 25% of the respondents were neutral about. About the topics/elements related on the information of the design and production of the printed material, 37,5% of the respondents strongly agreed that it was sufficient, 50% agreed and 12,5% were neutral about it. On the last question, about the adequacy of the provisions related to the trial tests before the development and delivery of the proposed training solution, the answers tied on 50% among strong agreements and agreements.
- ✓ *Regarding STEP-7*, two questions showed the same results: about de relevancy and opportunity of an assessment plan to frame and guide the related activities on the CBTA training solution and about the adequacy of the use of the VENN model on the practical assessment activities. On both, 50% of the respondents strongly agreed or simply 50% agreed about. 50% of the respondents also strongly agreed that the elements of the proposed assessment plan were sufficient and proper. Still about it, 37,5% also agreed and 12,5% of them were neutral about. About the activities and

methodology of the theoretical phase of the proposed training solution, 50% of the respondents strongly agreed that they were sufficient and proper and 25% tied on just agree or they were neutral about. About the practical phase, there were more strongly agreements, 62,5%. The same tax of agreements, 25%. And less neutral answers: 12,5%. The questions about the sufficiency and property of the suggested assessment tools [Evidence Guide, Competency Checklist and Competency assessment FORM] in order to conduct the activities, and about the elements stated on the instructor and Assessor´s [extra] training, qualification and evaluation plan they had the same answers: 62,5% of the respondents strongly agreed about and 37,5% of them agreed about the points. The last question, that received the best rate on its answers, about the relevancy of the instructor´s and assessor´s [extra] training, qualification and evaluation, stated 75% of strongly agreements and 25% of agreements on the point. No respondents disagreed with any question of the STEP-7.

All in all, considering all the closed questions [48], the inquiry realized a rate of 56,2% of strong agreements as the most voted answer, succeeded by 27,1% of agreements as the most voted. It means positive answers on 83,3% of the questions. Both answers above tied to 14,6% of the answers. Neutral answers appeared on 37,5% of the questions as tied with agreements on 14,6% of the questions. Disagreements appeared only on 2 answers, representing 4,2% of the total.

The answers to the open-ended questions were registered only on the Appendix 18 as to not duplicate information on the study. All answers were mischaracterized, but it was kept their related core statements that contributed to the study.

4. CONCLUSIONS

This part of the study concludes the research´s path about the use of competency-based training and assessment on the commercial pilot licensing process in Brazil. The relevance of the study was mainly substantiated by the poor performance of

the general aviation segment, its impact on the Brazilian civil aviation safety statistics, and related accidents and incidents´ reflexes to the civil aviation community and society in general. Still, on the relevance of the study, the airplane single-engine rated commercial pilots, whether instrument-rated or not, figured as the most contributors to that undesired performance. Furthermore, they figured as the most significant portion of licensed airplane pilots in Brazil.

By the elements above, the research focused on the possibility of training-related solutions to diminish the impacts of the segment and to enhance the commercial pilot´s performance, although non-training elements exist and also influence it, deserving to be treated together. So as to, the researcher based himself on the premise that the target pilots´ performance is an outcome of the current licensing training courses delivered by the flight schools in Brazil, which in turn were considered a result of the methodology and instructions provided by the ANAC.

In that sense, after a comprehensive and detailed study of several publications and documents of the most relevant and referred civil aviation organisms, associations, agencies, and civil aviation authorities, the study considered utilizing the competency-based methodology to produce instructional materials and contents to update the airplane commercial pilot licensing and instrument rating courses. By the adoption of the methodology and the regulatory framework of the study, it was produced proposals of updates to the ANAC supplementary instructions and orientations addressed to the flight schools on the setting and delivery of their courses - now to be Competency-Based Training and Assessment [CBTA] supported. By the adoption of the CBTA methodology, the study necessarily carried out and exposed the outcomes of the associated instructional systems development [ISD] methodology, used on behalf to gather, produce, and assembly valuable data to produce the proper training materials to the competency-based training solution. Although both methodologies have been disseminated by the worldwide organisms and already have been used by some key players of the airplane pilot training scenario, the adoption of the two methodologies in the Brazilian pilot´s training and qualification scenario was unprecedented. All in all, the study´s assumptions and outcomes were straight aligned to the premises, elements and

aspects enacted by the CASA´s CAAP 5.59A-1(0) - Competency Based Training and Assessment in the Aviation Environment; for example, but not limited to: training plan, [objective] assessments relating validity, currency, sufficiency, dimensions of competency, dimensions of competencies, need of tools, performance criteria, underpinning knowledge, skills, behaviors, flight standards, achievement and trainee´s progress records, instructions for assessors, approved manual, formative and summative assessments, planning matrix, among many others . As benefit of the study, is expected better qualification of the new airplane commercial pilots, allowing them to better execute their jobs and duties taking into consideration the evolution of the airplanes and the operational environment where they act. In addition, the study foresees a better transition process to the pilots who will act as a crew of the commercial air operators, which demands better-prepared pilots with the correct competencies according to the operator´s environment and needs.

According to the methods adopted, a preliminary study was required to substantiate the study by itself and revealed poor performance of Brazil in the worldwide aviation safety context and a specific and expressive contribution of the general aviation segment to the Brazilian safety statistics. In that internal scenario, airplane commercial pilots, specifying those single-engine rated, were the most contributors to the statistics regardless to the fact of acting on private services or not. In the same way, airplane commercial pilots also drove the flight instruction segment, where the airplanes were the most present kind of aircraft involved in accidents.

The system approach analysis used by the study stated the training system and its outputs as one of the most relevant and influencing pillars to the aviation operational context towards safety. So, the adoption of training solutions based on competency-based training and assessments to the commercial pilots´ process figured as one of the most promising proposals to safety enhancement.

The job analysis defined three different functions related to the airplane commercial pilot job. The definition of the functions was remarkable to highlight the differences in the pilot´s operational context, that were not previously assumed by any ANAC supplementary instruction related to the pilot´s formation. Furthermore, the

differences raised variations on the associated tasks, subtasks and among almost all the proposed training solution´ elements and materials later considered.

By definition of the tasks of the job analysis, the RBAC 61 CPL proficiency requirements were considered strictly maneuver-oriented statements in correlation to the respective flight training requirements only. The characteristic of the requirements was considered distant to the competency-based premises and focus since they remit more to conditions instead of competencies to be achieved. This was one of the driving conditions to the study´s objectives.

Still on the job analysis, the study considered that there are substantial gaps of the airplane tasks and subtasks to be considered on the ANAC CPL flight training requirements when referring to the ICAO´s airplane tasks provisions of the DOC 9868 PANS-Training. The gaps figured even more significant due to the lack of variations related to the PF and PM duties and their relevance on the pilot´s operational context. Finally, the job analysis broke down the subtasks and tasks elements level. By the statement of all the elements associated with each task terminal objective and elements of each sub-task, including the KSA, it was defined tasks performance criteria and the training needs and objectives to substantiate the setting of the curriculum and modules of the proposed training solution. By the task description Forms, there is a clear gap and need for HF/CRM, NOTECH skills, and TEM elements on the current approach to set the standards of the airplane pilot job.

The first activity of the populational analysis defined various OB and associated competencies not covered by the current provisions of the ANAC IS 141-007. They figured as training needs [gaps] that jeopardize the efficiency of the current courses delivered by the flight schools. Most of them are TEM-related, raised by the lack of HF elements and NOTECH skills support. The study considered the ANAC supplementary instruction very task and condition-oriented only, with no proper NOTECH and TEM basis and emphasis. Still on the sense of the HF/CRM and NOTECH skills issues, the study considered the ANAC with no other adequate supplementary information to develop the themes on the pilots licensing scenario, either to the fact that the flights schools and

its courses are not treated by the specific HF/CRM related IS or by the insufficient information on the IS 141-007A.

The second activity of the populational analysis showed a straight correlation among the most present contributing factors of the accidents on the general aviation segment and the training needs [gaps] realized on the previous activities of the study. The finding stated a pilot´s gap on the proper performance of the ICAO´s competencies.

Among several significant pieces of information, the last activity of the populational analysis figured a low level of knowledge on the competency by itself, on the competency-based activities and its implementation in Brazil. The statement was confirmed by several other direct or even mistakenly outputs of the inquiry. However, based on the respondent´s perception of the value of the CBTA, the inquiry revealed a general willingness to learn, understand and apply the CBTA activities. On the other hand, there is a reasonable satisfaction regarding the ANAC´s current CPL training program provisions. Nevertheless, the percentage of agreements regarding some key competencies on the current training program provisions dropped significatively when compared to the rest of the average. The study revealed that the ANAC was not considered an adequate provider of adequate CBTA provisions and instructions as the ANAC may not be considered aligned with other reference CAA.

The design of the modules step defined a framework and various key components and elements to support the effectiveness of the training solution on both curriculums and its modules. The study realized the need of improvements on the current CPL and IR course provisions. Despite the training solution had kept itself as close as possible to the current provisions, the required improvements, based on the previous activities, figured as specific class load changes, adjustments or additions of modules, and by the addition of different assessment activities. Another remarkable outcome of the step was the statement of the modules outlines. In a shape of a Form, it related all the associated intermediate objectives, teaching points, source of contents and end-of-modules objectives to be used on the required tests. Furthermore, the study stressed the linkage of the OB to assessment activities towards the obedience of the

CBTA methodology. The last two outcomes of the step did not previously exist on the ANAC current provisions.

The design of the modules step brought all the required provisions to set and deliver the modules of the proposed training solution in a proper way. The provisions started with a standard layout for each module of both syllabuses. After, still keeping the specific relations among the intermediate objectives of the modules and the assigned tasks, there was stated all the LO and associated specific OB to be used as a reference on the production and delivery of the modules. The study also defined other remarkable elements, called instructor´s-oriented, indispensable for the quality of the prosed training solution. By the end of the step, the study emphasized how TEM and HF elements must be embedded in the modules and their teaching points to achieve the proposed LO. Still, on that step, the study changed the ICAO competency framework to the IATA´s competency framework due to a new competency considered, then stated the adapted competency framework referring to the study´s considered job and functions.

By the sixth step, the study made available detailed instructors´ information and several pieces of information related to the adequate design, production, and delivery of the produced instructional material to all the modules of the proposed training solution. Although these kinds of information are supposed to be required to the setting, production, and delivery of any training solution, specially by the CBTA methodology, the study considered absent both information on the ANAC current course´s provisions. Finally, by the end of the step, the study enforced the need for the trial tests on all produced materials to the training solution before it starts to be used on the trainee´s courses.

The last step of the study defined two indispensable points associated with the exams: an assessment plan to be used by all flight schools on behalf of their assessment activities on the proposed training solution and the instructors and assessor training plan. The assessment activities were considered essential to the adequate implementation of the CBTA methodology. Due to that, all the elements of the assessment plan, with emphasis on the assessment tools, were placed to be considered

by the flight schools in order to guarantee the quality of the proposed training solution. In parallel, the study defined elements and set a process focused on the qualification of the instructor and assessor that addresses the minimum elements to allow them to perform their duties as requires the CBTA methodology. Finally, the last inquiry performed by the study showed results that ratified the objective of the study as well the opportunity of its results and its good implications on the civil aviation operational scenario.

This study intended to understand to what extent the Brazilian requirements and supplementary instructions, related to theoretical knowledge and flight instruction of an airplane commercial pilot's license and IFR rating, are aligned with the competency-based training and assessment methodology as enacted by ICAO. They are not aligned with the ICAO enacted competency-based training and assessment methodology.

The study´s proposals, in terms of updates on the technical supplementary instructions and guidance to be used by flight schools to administer their training courses, considering orientations and guidance on CBTA methodology and on the ISD elements to the setting and delivery of the theoretical, practical syllabus and curriculums updates of the airplane´s commercial pilots' and IFR[47] rating courses, is a reliable opportunity to better assist flight schools to set and deliver their courses and assessments activities. By the pieces of the evidence collected and produced by the study, the proposal of the study securely will assist the newly licensed pilots on the improvement of their performance towards lower accidents and incidents rates, meaning better results of Brazilian safety statists – whether on the specified general aviation segment or on the commercial aviation segments. By the initial level of implementation of the CBTA methodology on the Brazilian pilots´ qualification scenario, no efforts are considered mandatory to update the regulatory level of the technical requirements They are advisable only. All benefits by the adoption of the methodology

[47]This expression is a reference to the training which qualifies a pilot to fly under instrument flight rules (IFR), leading to an endorsement to his license.

are expected to be achieved simply by the update of the associated supplementary instructions focused on the study.

Limitations and suggestions to future studies

The research presents some limitations to be considered as suggestions for future studies in the pilot´s licensing and qualification scenario. Despite the CBTA methodology has been spread around the world on the scenario of the qualification of the airplane pilots, most of the commercial air operators´, its use on the ab-initio training [initial licensing process] of airplane pilots is considered new. The condition resulted in the lack or even the difficulty of access regulatory instructions and data about the expertise on the practice.

Due to the unprecedented character of the study, the commercial pilot job analysis was performed for its first time in Brazil for this purpose. The condition suggests the need of improvements on the statements, scope, and elements of the tasks and sub-tasks elements, including the standardization on the terms of the KSA. Still, for the same reason, further studies may focus on the development and implementation of the assessment tools, in order to validate the effectiveness of its use on the pilots´ licensing scenario [ab-initio training], and on the consideration of the competencies on the pilot´s proficiency requirements and the supplementary instructions related to their check-rides. In parallel, the Brazilian CAA may stress its foster positioning among the air operators as to stimulate the exchange of the competency-related data of their systematic training analysis to bring better indicators to have flight schools using it on the field of the competencies to be applied on the pilot´s initial qualification.

On the other hand, the study experienced limitations related to the adoption of the ISD methodology within the timeframe and conditions of a mastering program. Further studies using the ISD and CBTA methodology may establish a more robust system to contact all the participants, SME, and other specialist advisors as to guarantee more and most appropriate feedback of them throughout the various steps of the method. The contact with them must occur along with the study, and it was not easy to happen. Still, on limitations of the methodology and the timeframe of the study, it was

defined a unique training course to be graced by the proposed training solution. However, based on the Brazilian aviation safety statistics and operational impacts, the next studies may focus on the use of the ISD and CBTA methodologies to be applied to the multi-engine rating course with no prejudices of the use of the methodologies to be applied on other aircraft pilot´s courses with the proper adjustments. For an instance, the multi-engine rating course normally counts with more experienced trainees than the other possible courses to be treated by future studies, for example Private Pilot Licensing course. Afterward, the multi-engine rating course, even chosen by fewer pilots as a qualification course, has the potential to impact more the safety statistics due to the fact to make available more licensed pilots to the commercial aviation segment. However, on the other hand, the airplane private pilot licensing course may serve to introduce the CBTA methodology and collect its benefits on students with no previous vices or prejudices about a new approach on its qualification activities. The PPL course, as it deals with a training related to softer pilot´s prerogatives than the CPL course, may serve as a good laboratory to mature the use of the CBTA approach on Brazilian pilot´s qualification process.

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ANNEXES

Acronyms

AC – Advisory Circular

AFM – Aircraft Flight Manual

AFM – Aircraft Flight Manual

ANAC – Civil Aviation [National] Agency

AOM – Aircraft Operating Manual

ATO – Approved Training Organization

ATPL – Air Transport Pilot Licence

BIMTRA – Air Traffic´s Data bank *[Banco de Informações de Movimento de Tráfego Aéreo]*

CAA – Civil Aviation Authority

CASA – Civil Aviation Safety Authority

CAP – Chapter

CBTA – Competency-based Training and Assessment

CENIPA – Aeronautical Accidents Prevention and Investigation Center *[Centro de Investigação e Prevenção de Acidentes Aeronáuticos]*

CIV-Digital – Digital Pilot´s logbook *[Caderneta Individual de Voo]*

CPL/IR – Commercial Pilot Licence / Instrument Rating

CRM – Corporate Resources Management

CTKI – Chief Theoretical Knowledge Instructor

DOC – ICAO Document

EASA – European Union Aviation Safety Agency

EFB – Electronic Flight Bag

ETOPS – Extended Twin Operations

EVS – Enhanced Vision System

FAA – Federal Aviation Agency

FCOM – Flight Crew Operations Manual

FCTM – Flight Crew Training Manual

FSF – Flight Safety Foundation

FSTD – Flight Simulator Training Device

HF – Human Factors

HPL – Human Performance and Limitations

HUD – Head Up Display

IATA – International Air Transport Association

ICAO – International Civil Aviation Organization

IFR – Instrument Flight Rules

IS – Supplementary Instructions *[Instruções Suplementares]*

ISD – Instructional Systems Design

ISEC – Instituto Superior de Educação e Ciências

KSA - Knowledge, skill and attitudes

LoA – Level of Accomplishment

LO – Learning Objectives

MEL / MMEL - Minimum Equipment List / Master

MGO – Operations Manual [Air Operator´s]

MTOW – Maximum Take-off Weight

NOTECH Skills – Non-Technical Skills

PANS – Procedures for Air Navigation Services

PBN – Performance Based Navigation

PED – Portable Electronic Devices

PEL – Personal Licensing

POH – Pilot Operating Handbook

QRH – Quick Reference Handbook

RASO – Annual Safety Report *[Relatório Anual de Segurança Operacional]*

RBAC – Brazilian Civil Aviation Requirements *[Regulamento Brasileiro de Aviação Civil]*

RCSV – Confidential Safety Report *[Relatório Confidencial de Segurança de Voo]*

RELPREV – Prevention Report *[Relatório de Prevenção]*

RVSM - Reduced Vertical Separation Minima

SARP – Standard and Recommended Practices

SIPAER – Aeronautical Accidents Investigation and Prevention System *[Sistema de Investigação e Prevenção de Acidentes Aeronáuticos]*

SME – Subject-Matter Experts

SOP – Standard Operating Procedures

STP – Standard Training Package

TDG – Training Development Guide

TEM – Threat and Error Management

TOC / TOD – Top of Climb / Descent

TPOM – TRAINAIR PLUS Operations Manual

TRE – Type-rating Examiner

TRI – Type-rating Instructor

UAS – Undesired Aircraft State

UN – United Nations

VFR – Visual Flight Rules

APPENDICES

Appendix 1: Population analysis - evaluation plan

EVALUATION PLAN								
STP No. and title: [01] CPL/IR [PCM-A/IFR-A]		Methods						
Factors/Aspects to be evaluated	Indicators (What is to be monitored)	Observations / Interviews	Tests or Measurements	Questionnaires	Group discussions	Reports	Operational statistics	Who will carry out the evaluation
Overall Brazilian accident rates	Value [accident numbers]						X	Researcher [mm.dd.yy]
Brazilian accident rate by hours flown	Value [accidents per million hours flown]						X	Researcher [mm.dd.yy]
Private/Executive segment participation on accidents	Value [percentage]						X	Researcher [mm.dd.yy]
Instruction segment participation on accidents	Value [percentage]						X	Researcher [mm.dd.yy]
Private/Executive segment´s rate of accidents per kind of operation	Value [accidents per million of take-offs]						X	Researcher [mm.dd.yy]
Instruction segment segment´s rate of accidents per kind of operation	Value [accidents per million of take-offs]						X	Researcher [mm.dd.yy]
ANAC´s regulatory requirements and supplementary instructions – airplane commercial pilot courseware [theoretical and practical curriculum]	Feedback [Improvement and suitability of the contents]	X		X	X			Researcher [mm.dd.yy]
ANAC´s regulatory requirements and supplementary instructions – airplane IFR rating courseware [theoretical and practical curriculum]	Feedback [Improvement and suitability of the contents]	X		X	X			Researcher [mm.dd.yy]
CENIPA´s accident and serious incident´s reports database	Value [contributing factor´s occurrences related to the participant´s aviation segment concerned]					X	X	Researcher [mm.dd.yy]
Inquiry from flight schools and air operator´s staff	Feedback [Demographic and a CBTA related information]			X	X			Researcher [mm.dd.yy]

Remarks:

1-Factors/aspects to be evaluated: The list should correspond to symptoms of the performance problem identified during the Preliminary Study step. The evaluation is to verify to what extent the factors that led to the training have been overcome.

2-Indicators: The Indicators are the measuring instruments by which monitoring can be carried out [work units/day, number of faults/complaints/delays, etc.].

3-Methods: Indicate which of the methods will be used for monitoring each indicator.

4-Who will carry out the evaluation: Who [e.g., which manager, supervisor] will be responsible for the evaluation.

NOTE: ADAPTED FROM DOC 9941 AN/478, 1ST EDITION - TRAINING DEVELOPMENT GUIDE COMPETENCY-BASED TRAINING METHODOLOGY (ICAO, 2011)

Appendix 2: Current job statement

ANAC requirements related to the job statement [airplane single-engine commercial pilot job and IFR rating prerogatives, conditions and limitations]					
Requir. number	Section	Paragraph and item	Text	Specific job	Relevant aspect
61	.105		**Prerrogativas do titular da licença de piloto comercial e condições que devem ser observadas para exercê-las** ***[Prerogatives of the commercial pilot license holder and conditions that must be observed to its exercise]***	commercial pilot	n/a
61	.105	(a)	Observado o cumprimento dos preceitos estabelecidos neste Regulamento, as prerrogativas do titular de uma licença de piloto comercial são: *[Observing the fulfillment of the precepts established in this Regulation, the prerogatives of a commercial pilot license holder are:]*	commercial pilot	n/a
61	.105	(a)(1)	exercer todas as prerrogativas do titular de uma licença de piloto privado da categoria de aeronave correspondente; *[exercise all the prerogatives of a private pilot license holder for the corresponding aircraft category;]*	commercial pilot	n/a
61	.105	(a)(2)	atuar como piloto em comando de aeronave não empregada em voos de serviço de transporte aéreo público; *[act as a pilot in command of an aircraft not employed on public air transport service´s flights;]*	commercial pilot	act as pilot in command; non-public air transport services [private (executive) segment];
61	.105	(a)(3)	atuar como piloto em comando em voos de serviços de transporte aéreo público, em uma aeronave certificada para operação com tripulação mínima de 1 (um) piloto; *[act as a pilot in command on public air transport service´s flights, in an aircraft certified for operation with a minimum crew of 1 (one) pilot;]*	commercial pilot	act as pilot in command; public air transport services; single pilot aircrafts;
61	.105	(a)(4)	atuar como segundo em comando em voos de serviços de transporte aéreo público em uma aeronave certificada para operação com tripulação mínima de 2 (dois) pilotos; e *[act as second in command on public air transport service´s flights in an aircraft certified for operation with a minimum crew of 2 (two) pilots; and]*	commercial pilot	act as second pilot in command; public air transport services; dual pilot aircrafts;
61	.105	(a)(5)	para a categoria de dirigíveis, pilotar a aeronave em voos por instrumentos. *[for the airships category, piloting the aircraft on instrument flights.]*	commercial pilot	n/a
61	.105	(b)	Para que as prerrogativas do titular da licença possam ser exercidas à noite, o solicitante deve ter recebido instrução duplo comando em voo noturno na categoria apropriada, incluindo decolagens, aterrissagens e navegação. *[In order for the license holder's prerogatives to be exercised at night, the applicant shall have received instruction [as a SIC] in night period in the appropriate category, including takeoffs, landings and navigation.]*	commercial pilot	n/a
61	.105	(c)	O exercício das prerrogativas da licença de piloto comercial em voos internacionais é condicionado ao atendimento, pelo seu titular, aos requisitos estabelecidos na seção 61.10 deste Regulamento. [The exercise of the prerogatives of the commercial pilot license on international flights is conditioned to the fulfillment, by its holder, of the requirements established in section 61.10 of these Regulations.]	commercial pilot	n/a (*1)
61	.105	(d)	Nenhum titular de licença de piloto comercial pode atuar como piloto em operações internacionais de serviços de transporte aéreo público após ter completado 60 (sessenta) anos de idade ou, no caso de operações com mais de um piloto, 65 (sessenta e cinco) anos de idade.	commercial pilot	n/a

			[No commercial pilot license holder may act as a pilot in international operations of public air transport services after completing 60 (sixty) years of age or, in the case of operations with more than one pilot, 65 (sixty-five) years of age.]		
61	.227		**Prerrogativa e limitações do titular de uma habilitação de voo por instrumentos** ***[Prerogative and limitations of the IFR rating holder]***	IFR rating	n/a
62	.227	(a)	Observado o cumprimento dos preceitos estabelecidos neste Regulamento, a prerrogativa do titular de uma habilitação de voo por instrumentos é a de pilotar, sob regras de voo por instrumentos, aeronaves da categoria correspondente à licença em que tenha sido averbada a habilitação referida. *[In compliance with the precepts established in this Regulation, the prerogative of the holder of an IFR rating is to fly, under instrument flight rules, aircraft of the category corresponding to the license on which it has been registered.]*	IFR rating	operate under instrument flight rules
63	.227	(b)	Para que a prerrogativa da habilitação de voo por instrumentos possa ser exercida em aeronaves multimotoras, o solicitante deve ter demonstrado para um examinador credenciado ou INSPAC, em aeronave desta classe ou tipo, capacidade de operá-la exclusivamente por instrumentos, em condições simuladas de um motor inoperante. *[In order to the prerogative of the IFR rating can be exercised in aircraft multimotor engines, the applicant shall have demonstrated to an accredited examiner or INSPAC, in aircraft of this class or type, the ability to operate it exclusively by instruments, under conditions simulations of an inoperative engine.]*	n/a	n/a
64	.227	(c)	A prerrogativa do titular da habilitação de voo por instrumentos deixa de existir após decorrido o período de validade da habilitação pertinente estabelecido pela seção 61.19 deste Regulamento, considerando-se o prazo de tolerância estabelecido na seção 61.33 deste Regulamento, caso não tenha sido realizada a revalidação dessa habilitação de voo por instrumentos. *[The prerogative of the holder of the IFR rating instrument flight permit ceases to exist after the period of validity of the relevant qualification established by section 61.19 of these Regulations, considering the grace period established in section 61.33 of this Regulation, if you have not revalidated this IFR rating.]*	n/a	n/a

Notes:

-Dual pilot aircraft - an aircraft which the minimum crew consists of two pilots, one in the Pilot-in-Command (PIC) position and the other in the Second position in Command (SIC).
-Single pilot aircraft - an aircraft which the minimum crew consists of one pilot only.
(*1)-Despite the language [English] proficiency in radio-communications significance, it was not considered on this study due its comprehensive requirements vs. study´s scope.

-Job statement:

Atuar como piloto em comando (PIC) ou segundo em comando (SIC) em avião mono-motor empregado ou não empregado em voos de serviço de transporte aéreo público sob regras de voo visuais (VFR) ou por instrumentos (IFR).
[Act as pilot in command (PIC) or second in command (SIC) on single-engine airplanes both on public and non-public air transport services under visual (VFR) or instrument flight rules (IFR)].

Appendix 3: Current functions statement

job	function statement
Atuar como piloto em comando (PIC) ou segundo em comando (SIC) em avião mono-motor empregado ou não empregado em voos de serviço de transporte aéreo público sob regras de voo visuais (VFR) ou por instrumentos (IFR). *[Act as pilot in command (PIC) or second in command (SIC) on single-engine airplanes both on public or non-public air transport services under visual (VFR) or instrument flight rules (IFR)].*	[1.] Atuar como piloto em comando (PIC) em avião mono-motor não empregado em voos de serviço de transporte aéreo público sob regras de voo visuais (VFR) ou por instrumentos (IFR). *[Act as pilot in command (PIC) on single-engine airplane on non-public air transport services under visual (VFR) or instrument flight rules (IFR)].*
	[2.] Atuar como piloto em comando (PIC) em avião mono-motor, certificado para operação com tripulação mínima de 1 (um) piloto, empregado em voos de serviço de transporte aéreo público, sob regras de voo visuais (VFR) ou por instrumentos (IFR). *[Act as pilot in command (PIC) on single-engine airplane, certified for operation with a minimum crew of 1 (one) pilot, on public air transport services under visual (VFR) or instrument flight rules (IFR)].*
	[3.] Atuar como segundo em comando (SIC) em avião mono-motor, certificado para operação com tripulação mínima de 2 (dois) pilotos, empregado em voos de serviço de transporte aéreo público, sob regras de voo visuais (VFR) ou por instrumentos (IFR). *[Act as second in command (SIC) on single-engine airplane, certified for operation with a minimum crew of 2 (two) pilots, on public air transport services under visual (VFR) or instrument flight rules (IFR)].*

Notes: Functions variations proposed by study were due to the different kind of pilot´s interaction and the organizational environment of each function´s scenario when performing the job.

Appendix 4: Current tasks statement

PIC/SIC function differs?	ANAC requirement reference:	Prof. or Flt. Trn. Requir.?	VFR or IFR?	ANAC RBAC 61 tasks statement	Observations
YES	61.103(a)(1)	PROFIC.*	VFR	reconhecer e gerenciar ameaças e erros *[recognize and manage threats and errors]*	Monitoring capability depends on the duty to recognize and manage threat and errors [varying according air transport service] and take appropriate action.
YES	61.223(a)(7)(i)	PROFIC.*	IFR	reconhecer e gerenciar ameaças e erros *[recognize and manage threats and errors]*	Monitoring capability depends on the duty to recognize and manage threat and errors [varying according air transport service] and take appropriate action.
NO	61.103(a)(2)	PROFIC.*	VFR	operar a aeronave dentro de suas limitações de emprego *[operate the aircraft within its limitations]*	*[n/a]* *[both PIC and SIC should be able to perform the task in a same acceptable condition]*
NO	61.223(a)(7)(ii)	PROFIC.*	IFR	operar a aeronave dentro de suas limitações de emprego *[operate the aircraft within its limitations]*	*[n/a]* *[both PIC and SIC should be able to perform the task in a same acceptable condition]*
NO	61.103(a)(3)	PROFIC.*	VFR	executar todas as manobras com suavidade e precisão *[complete all manoeuvres with smoothness and accuracy]*	*[n/a]* *[both PIC and SIC should be able to perform the task in a same acceptable condition]*
NO	61.223(a)(7)(iii)	PROFIC.*	IFR	executar todas as manobras com suavidade e precisão *[complete all manoeuvres with smoothness and accuracy]*	*[n/a]* *[both PIC and SIC should be able to perform the task in a same acceptable condition]*
YES	61.103(a)(4)	PROFIC.*	VFR	revelar bom julgamento e aptidão de pilotagem *[exercise good judgement and airmanship]*	A better judgment and airmanship [when compared to a good] are reached only as pilot has more exposure to PIC´s duties.
YES	61.223(a)(7)(iv)	PROFIC.*	IFR	revelar bom julgamento e aptidão de pilotagem *[exercise good judgement and airmanship]*	A better judgment and airmanship [when compared to a good] are reached only as pilot has more exposure to PIC´s duties.
NO	61.103(a)(5)	PROFIC.*	VFR	aplicar os conhecimentos aeronáuticos *[apply aeronautical knowledge]*	*[n/a]* *[both PIC and SIC should be able to perform the task in a same acceptable condition]*
NO	61.223(a)(7)(v)	PROFIC.*	IFR	aplicar os conhecimentos aeronáuticos *[apply aeronautical knowledge]*	*[n/a]* *[both PIC and SIC should be able to perform the task in a same acceptable condition]*
NO	61.103(a)(6)	PROFIC.*	VFR	manter controle da aeronave durante todo o tempo do voo, de modo que não ocorram dúvidas quanto ao êxito de algum procedimento ou manobra *[maintain control of the aircraft at all times in a manner such that the successful outcome of a procedure or manoeuvre is assured]*	*[n/a]* *[both PIC and SIC should be able to perform the task in a same acceptable condition]*

NO	61.223(a)(7) (vi)	PROFIC.*	IFR	manter controle da aeronave durante todo o tempo do voo, de modo que não ocorram dúvidas quanto ao êxito de algum procedimento ou manobra *[maintain control of the aircraft at all times in a manner such that the successful outcome of a procedure or manoeuvre is assured]*	*[n/a]* *[both PIC and SIC should be able to perform the task in a same acceptable condition]*
YES	61.99(a)(1)(i)	FLT TRN.*	VFR	reconhecer e gerenciar ameaças e erros *[recognize and manage threats and errors]*	The task capability depends on the duty to recognize and manage threat and errors [varying according air transport service] and take appropriate action.
NO	61.99(a)(1)(ii)	FLT TRN.	VFR	procedimentos anteriores ao voo, inclusive determinação de peso e balanceamento, inspeções e serviços de manutenção no avião *[pre-flight operations, including mass and balance determination, aeroplane inspection and servicing]*	*[n/a]* *[both PIC and SIC should be able to perform the task in a same acceptable condition]*
NO	61.99(a)(1)(iii)	FLT TRN.	VFR	operações em aeródromos e em circuitos de tráfego; precauções e procedimentos relativos à prevenção de colisões *[aerodrome and traffic pattern operations, collision avoidance precautions and procedures]*	*[n/a]* *[both PIC and SIC should be able to perform the task in a same acceptable condition]*
NO	61.99(a)(1)(iv)	FLT TRN.	VFR	controle do avião utilizando referências visuais externas *[control of the aeroplane by external visual reference]*	*[n/a]* *[both PIC and SIC should be able to perform the task in a same acceptable condition]*
NO	61.99(a)(1)(v)	FLT TRN.	VFR	voo em velocidades críticas baixas, reconhecimento e recuperação de pré-estol, estol completo e parafuso *[flight at critically slow airspeeds; spin avoidance; recognition of, and recovery from, incipient and full stalls]*	*[n/a]* *[both PIC and SIC should be able to perform the task in a same acceptable condition]*
N/A	61.99(a)(1)(vi)	FLT TRN.	VFR	N/A [multi-engine]	*[n/a]*
NO	61.99(a)(1) (vii)	FLT TRN.	VFR	voo em velocidades críticas altas e saída de picadas em espiral *[flight at critically high airspeeds; recognition of, and recovery from, spiral dives]*	*[n/a]* *[both PIC and SIC should be able to perform the task in a same acceptable condition]*
NO	61.99(a)(1) (viii)	FLT TRN.	VFR	decolagens e aterrissagens normais e com vento de través *[normal and crosswind take-offs and landings]*	*[n/a]* *[both PIC and SIC should be able to perform the task in a same acceptable condition]*
NO	61.99(a)(1)(ix)	FLT TRN.	VFR	decolagens de máximo desempenho (pista curta e ultrapassagem de obstáculos), aterrissagens em pista curta *[maximum performance (short field and obstacle clearance) take-offs; short-field landings]*	*[n/a]* *[both PIC and SIC should be able to perform the task in a same acceptable condition]*

NO	61.99(a)(1)(x)	FLT TRN.	VFR	manobras básicas de voo e recuperação de atitude anormal por referência somente dos instrumentos básicos de voo *[basic flight manoeuvres and recovery from unusual attitudes by reference solely to basic flight instruments]*	*[n/a]* *[both PIC and SIC should be able to perform the task in a same acceptable condition]*
NO	61.99(a)(1)(xi)	FLT TRN.	VFR	voo de navegação por referências visuais, navegação estimada e, quando aplicável, com auxílio de rádio navegação *[cross-country flying using visual reference, dead reckoning and, when applicable, with radio navigation aids; and diversion procedures (*1)]*	*[n/a]* *[both PIC and SIC should be able to perform the task in a same acceptable condition]*
YES	61.99(a)(1)(xii)	FLT TRN.	VFR	operações de emergência, incluindo falhas simuladas de equipamentos do avião *[abnormal (*2) and emergency procedures and manoeuvres (*3) including simulated aeroplane equipment malfunctions]*	The performance of abnormal and emergency procedures may vary depending on the duty [PIC or SIC] and on further procedures [other than stated on POH/AFM] of a specific air operator
YES	61.99(a)(1)(xiii)	FLT TRN.	VFR	operações com origem, destino ou trânsito por aeródromos controlados, cumprindo os procedimentos dos serviços de controle de tráfego aéreo e os procedimentos e fraseologia de radiocomunicação *[operations to, from and transiting controlled aerodromes, compliance with air traffic services procedures]*	The performance of abnormal and emergency procedures may vary depending on the duty [PIC or SIC] and on further procedures [other than stated on POH/AFM] of a specific air operator
NO	61.99(a)(1)(xiv)	FLT TRN.	VFR	procedimentos e fraseologia para as comunicações *[communication procedures and phraseology]*	*[n/a]* *[both PIC and SIC should be able to perform the task in a same acceptable condition]*
NO	61.223(a)(5)(i)	FLT TRN.	IFR	procedimentos anteriores ao voo, inclusive utilização do manual de voo ou documento equivalente e dos documentos pertinentes aos serviços de controle de tráfego aéreo para a preparação de um plano de voo em condições de voo por instrumentos *[pre-flight procedures, including the use of the flight manual or equivalent documents, and appropriate air traffic services documents in the preparation of an IFR flight plan]*	*[n/a]* *[both PIC and SIC should be able to perform the task in a same acceptable condition]*
NO	61.223(a)(5)(ii)	FLT TRN.	IFR	inspeção de pré-voo, utilização de lista de verificações, táxi e verificações antes da decolagem *[pre-flight inspection, use of checklists, taxiing and pre-take-off checks]*	*[n/a]* *[both PIC and SIC should be able to perform the task in a same acceptable condition]*
YES	61.223(a)(5)(iii)	FLT TRN.	IFR	procedimentos e manobras para operações IFR em condições normais, anormais e de emergência que compreendam, no mínimo: *[procedures and manoeuvres for IFR operation under normal, abnormal and emergency conditions covering at least:]*	The performance of abnormal and emergency procedures may vary depending on the duty [PIC or SIC] and on further procedures [other than stated on POH/AFM] of a specific air operator

YES	61.223(a)(5) (iii)(A)	FLT TRN.	IFR	transição para voo por instrumentos na decolagem *[transition to instrument flight on take-off]*	The performance of abnormal and emergency procedures may vary depending on the duty [PIC or SIC] and on further procedures [other than stated on POH/AFM] of a specific air operator
YES	61.223(a)(5) (iii)(B)	FLT TRN.	IFR	saídas e aproximações por instrumentos padronizadas; *[standard instrument departures and arrivals]*	The performance of abnormal and emergency procedures may vary depending on the duty [PIC or SIC] and on further procedures [other than stated on POH/AFM] of a specific air operator
YES	61.223(a)(5) (iii)(C)	FLT TRN.	IFR	procedimentos de voo por instrumentos em voo de navegação; *[en-route IFR procedures]*	The performance of abnormal and emergency procedures may vary depending on the duty [PIC or SIC] and on further procedures [other than stated on POH/AFM] of a specific air operator
YES	61.223(a)(5) (iii)(D)	FLT TRN.	IFR	procedimentos de espera *[holding procedures]*	The performance of abnormal and emergency procedures may vary depending on the duty [PIC or SIC] and on further procedures [other than stated on POH/AFM] of a specific air operator
YES	61.223(a)(5) (iii)(E)	FLT TRN.	IFR	aproximações por instrumentos nos mínimos especificados [instrument approaches to specified minima]	The performance of abnormal and emergency procedures may vary depending on the duty [PIC or SIC] and on further procedures [other than stated on POH/AFM] of a specific air operator
YES	61.223(a)(5) (iii)(F)	FLT TRN.	IFR	procedimento de aproximação perdida por instrumentos *[missed praopach procedures]*	The performance of abnormal and emergency procedures may vary depending on the duty [PIC or SIC] and on further procedures [other than stated on POH/AFM] of a specific air operator
YES	61.223(a)(5) (iii)(G)	FLT TRN.	IFR	aterrissagem a partir de aproximações por instrumentos *[landings from instrument approaches]*	The performance of abnormal and emergency procedures may vary depending on the duty [PIC or SIC] and on further procedures [other than stated on POH/AFM] of a specific air operator
NO	61.223(a)(5) (iv)	FLT TRN.	IFR	manobras em voo e características peculiares de voo *[in-flight manoeuvres and particular flight characteristics]*	*[n/a]* *[both PIC and SIC should be able to perform the task in a same acceptable condition]*
N/A	61.223(a)(5) (v)	FLT TRN.	IFR	N/A [multi-engine]	*[n/a]*

Notes:

The column [PIC/SIC function differs?] highlight possible differences on the performance of the associated tasks considering someone acting as PIC or SIC and the air transport service, which may impact the proposed training solution.

(*) [gray marks] - All proficiency requirements and the flight training requirement [61.99(a)(1)(i)] were not considered as tasks. They were marked to be further considered as reference on the competency and performance standards statements.

(*1) - The term [diversion procedures] was not considered on the translation of the ANAC RBAC 61 item 61.99(a)(1)(xi) from ICAO ANNEX 1 item 2.4.3.2.1 (k)". Nevertheless, due the nature of the study, the items were kept to further considerations on the training instructional materials development.

(*2 and *3) - The terms [abnormal] and [maneuvers] were not considered on the translation of the ANAC RBAC 61 items 61.99(a)(1)(xii) and from ICAO ANNEX 1 item 2.4.3.2.1 (l)". Nevertheless, due the nature of the study, the item was kept to further considerations on the training instructional materials development.

ICAO ref.#	ICAO DOC 9868 task statement [Part II - Appendix 2 to Chapter 1] [Associated subtasks are not considered on this list]	ANAC RBAC 61 [VFR] / [IFR] [flight training requirements] correlation	ICAO ref.#	ICAO DOC 9868 task statement [Part II - Appendix 2 to Chapter 1] [Associated subtasks are not considered on this list]	ANAC RBAC 61 [VFR] / [IFR] [flight training requirements] correlation
2.	EXECUTAR AS OPERAÇÕES DE SOLO E PRÉ-VOO *[PERFORM AEROPLANE GROUND AND PRE-FLIGHT OPERATIONS]*	[N/A]	6.	EXECUTAR DESCIDA *[PERFORM DESCENT]*	[N/A]
2.1	Executar procedimentos de despacho *[Perform dispatch duties]*	**61.99(a)(1)(ii)** **61.223(a)(5)(i)**	6.1	Iniciar e gerenciar descida *[Initiate and manage descent]*	**61.99(a)(1)(xi); (xiii); (xiv)** **61.223(a)(5)(iii)(B); (C); (D)**
2.2	Fornecer instruções à tripulação de voo e à tripulação de cabine *[Provide flight crew and cabin crew briefings]*	**[GAP]** **[GAP]**	6.2	Monitorar e executar navegação de rota e descida *[Monitor and perform en-route and descent navigation]*	**61.99(a)(1)(xi); (xiii); (xiv)** **61.223(a)(5)(iii)(B); (C); (D)**
2.3	Executar verificações pré-voo e preparação da cabine *[Perform pre-flight checks and cockpit preparation]*	**61.99(a)(1)(ii)** **61.223(a)(5)(ii)**	6.3	Replanejar e atualizar instruções de aproximação *[Replanning and update of approach briefing]*	**[GAP]** **[GAP]**
2.4	Executar acionamento do motor *[Perform engine start]*	**61.99(a)(1)(xiii), (xiv)** **[N/A]**	6.4	Executar esperas *[Perform holding]*	**61.99(a)(1)(xiii)** **61.223(a)(5)(iii)(D)**
2.5	Executar taxi *[Perform taxi]*	**61.99(a)(1)(iii); (iv); (xiii); (xiv)** **61.223(a)(5)(ii)**	6.5	Executar operações e procedimentos de sistemas *[Perform systems operations and procedures]*	**[GAP]** **[GAP]**
2.6	Gerenciar situações anormais e de emergência *[Manage abnormal and emergency situations]*	**61.99(a)(1)(xii); (xiv)** **61.223(a)(5)(iii)**	6.6	Gerenciar situações anormais e de emergência *[Manage abnormal and emergency situations]*	**61.99(a)(1)(xii); (xiv)** **61.223(a)(5)(iii)**
2.7	Comunicar com tripulação de cabine, passageiros e operador aéreo *[Communicate with cabin crew, passengers and company]*	**[GAP]** **[GAP]**	6.7	Comunicar com tripulação de cabine, passageiros e operador aéreo *[Communicate with cabin crew, passengers and company]*	**[GAP]** **[GAP]**
3.	EXECUTAR DECOLAGEM *[PERFORM TAKE-OFF]*	[N/A]	7.	EXECUTAR APROXIMAÇÃO *[PERFORM APPROACH]*	[N/A]
3.1	Executar preparação antes da decolagem e saída padronizada *[Perform pre-take-off and pre-departure preparation]*	**61.99(a)(1)(iii); (iv)** **61.223(a)(5)(ii)**	7.1	Executar aproximação em geral *[Perform approach in general]*	**61.99(a)(1)(xiii); (xiv)** **61.223(a)(5)(iii)(B)**
3.2	Executar rolagem da decolagem *[Perform take-off roll]*	**61.99(a)(1) (iv); (viii); (ix)** **[N/A]**	7.2	Executar aproximação de precisão *[Perform precision approach]*	**[N/A]** **[GAP]**

3.3	Executar transição para regras de voo por instrumentos *[Perform transition to instrument flight rules]*	**61.99(a)(1) (iv); (viii)** **61.223(a)(5)(iii)(A)**	7.3	Executar aproximação de não-precisão *[Perform non-precision approach]*	**[N/A]** **61.223(a)(5)(iii)(E)**
3.4	Executar subida inicial para a altitude de retração do flape] *[Perform initial climb to flap retraction altitude]*	**61.99(a)(1) (iv); (viii)** **61.223(a)(5)(iii)(A)**	7.4	Executar aproximação com referências visuais do terreno *[Perform approach with visual reference to ground]*	**[N/A]** **[GAP]**
3.5	Executar decolagem abortada *[Perform rejected take-off]*	**61.99(a)(1)(xii); (xiv)** **[N/A]**	7.5	Monitorar progresso do voo *[Monitor flight progress]*	**61.99(a)(1)(xi); (xiii); (xiv)** **[GAP]**
3.6	Executar navegação *[Perform navigation]*	**61.99(a)(1)(xi); (xiii); (xiv)** **61.223(a)(5)(iii)(A); (B); (C)**	7.6	Executar operações e procedimentos de sistemas *[Perform systems operations and procedures]*	**[GAP]** **[GAP]**
3.7	Gerenciar situações anormais e de emergência *[Manage abnormal and emergency situations]*	**61.99(a)(1)(xii); (xiv)** **61.223(a)(5)(iii)**	7.7	Gerenciar situações anormais e de emergência *[Manage abnormal and emergency situations]*	**61.99(a)(1)(xii); (xiv)** **61.223(a)(5)(iii)**
4.	EXECUTAR SUBIDA *[PERFORM CLIMB]*	[N/A]	7.8	Executar arremetida/aproximação perdida *[Perform go-around/missed approach]*	**61.99(a)(1)(xi); (xiii); (xiv).** **61.223(a)(5)(iii)(F)**
4.1	Executar saída por instrumentos padronizadas/navegação em rota *[Perform standard instrument departure/en-route navigation]*	**61.99(a)(1)(xi); (xiii); (xiv)** **61.223(a)(5)(iii)(A); (B); (C)**	7.9	Comunicar com tripulação de cabine, passageiros e operador aéreo *[Communicate with cabin crew, passengers and company]*	**[GAP]** **[GAP]**
4.2	Concluir procedimentos de subida e listas de verificações [*1] *[Complete climb procedures and checklists]* [*1]	**61.99(a)(1)(xi); (xiii); (xiv)** **61.223(a)(5)(iii)(B)**	8.	EXECUTAR POUSO *[PERFORM LANDING]*	[N/A]
4.3	Ajustar velocidades de subida, razão e altitude de cruzeiro *[Modify climb speeds, rate of climb and cruise altitude]*	**61.99(a)(1)(xi); (xiii); (xiv)** **[GAP]**	8.1	Pousar o avião *[Land the aeroplane]*	**61.99(a)(1)(iv); (viii); (xiii); (xiv)** **61.223(a)(5)(iii)(G)**
4.4	Executar operações e procedimentos de sistemas *[Perform systems operations and procedures]*	**[GAP]** **[GAP]**	8.2	Executar operações e procedimentos de sistemas *[Perform systems operations and procedures]*	**[GAP]** **[N/A]**
4.5	Gerenciar situações anormais e de emergência *[Manage abnormal and emergency situations]*	**61.99(a)(1)(xii); (xiv)** **61.223(a)(5)(iii)**	8.3	Gerenciar situações anormais e de emergência *[Manage abnormal and emergency situations]*	**61.99(a)(1)(xii); (xiv).** **61.223(a)(5)(iii)**
4.6	Comunicar com tripulação de cabine, passageiros e operador aéreo *[Communicate with cabin crew, passengers and company]*	**[GAP]** **[GAP]**	9.	EXECUTAR AS OPERAÇÕES PÓS-POUSO E PÓS-VOO *[PERFORM AFTER-LANDING AND POST-FLIGHT OPERATIONS]*	[N/A]
5.	EXECUTAR VOO DE CRUZEIRO *[PERFORM CRUISE]*	[N/A]	9.1	Executar taxi e estacionamento *[Perform taxi-in and parking]*	**61.99(a)(1)(iii); (iv); (xiii); (xiv)** **[N/A]**

5.1	Monitorar precisão da navegação *[Monitor navigation accuracy]*	**[GAP]** **[GAP]**	9.2	Executar operações pós-voo do avião *[Perform aeroplane post-flight operations]*	**[GAP]** **[N/A]**
5.2	Monitorar progresso do voo *[Monitor flight progress]*	**61.99(a)(1)(xi); (xiii); (xiv)** **61.223(a)(5)(iii)(C);(D)**	9.3	Executar operações e procedimentos de sistemas *[Perform systems operations and procedures]*	**[GAP]** **[N/A]**
5.3	Executar planejamento da descida e aproximação *[Perform descent and approach planning]*	**[GAP]** **[GAP]**	9.4	Gerenciar situações anormais e de emergência *[Manage abnormal and emergency situations]*	**61.99(a)(1)(xii); (xiv)** **[N/A]**
5.4	Executar operações e procedimentos de sistemas [Perform systems operations and procedures]	**[GAP]** **61.223(a)(5)(iv)**	9.5	Comunicar com tripulação de cabine, passageiros e operador aéreo [Communicate with cabin crew, passengers and company]	**[GAP]** **[N/A]**
5.5	Gerenciar situações anormais e de emergência *[Manage abnormal and emergency situations]*	**61.99(a)(1)(xii); (xiv)** **61.223(a)(5)(iii)**	-	-	-
5.6	Comunicar com tripulação de cabine, passageiros e operador aéreo *[Communicate with cabin crew, passengers and company]*	**[GAP]** **[GAP]**	-	-	-

Notes:

ANAC RBAC 61 correlation column lists both commercial pilot licensing **[VFR]** and **[IFR]**-rating flight training´ requirements associated to the ICAO´s task provisions or states a [GAP] assumed by the study on the same provisions.

[*1] – Specifically gap on the use of checklists [uso de listas de verificação].

- ICAO´s provisions [aeroplane pilot task list] did not correlate the following ANAC RBAC 61 requirements [VFR] **61.99(a)(1)(v); (vii); (x)**:
  [flight at critically slow airspeeds; spin avoidance; recognition of, and recovery from, incipient and full stalls]
  [flight at critically high airspeeds; recognition of, and recovery from, spiral dives]
  [basic flight manoeuvres and recovery from unusual attitudes by reference solely to basic flight instruments]

- ICAO´s provisions [aeroplane pilot task list] did not correlate the following ANAC RBAC 61 requirements [VFR **61.223(a)(5)(iv)**:
  [in-flight manoeuvres and particular flight characteristics]

Appendix 5: Task list Forms

TASK LIST			
STP No: 01	**Location:** Lisbon, Portugal		**Date:** NOV21
	Completed by: Colonese, João - researcher		**Page:** 01 **of** 02

Job:
[Act as pilot in command (PIC) or second in command (SIC) on single-engine airplanes both on public and non-public air transport services under visual (VFR) or instrument flight rules (IFR)].

Function:
*[Act as pilot in command **(PIC)** on single-engine airplane on **non-public air transport services** under visual (VFR) or instrument flight rules (IFR)].*

Function No : [1.]

Task n° :	**Task**	**(F)**	**(I)**	**(D)**	**(P)**
1	*[PERFORM AEROPLANE GROUND AND PRE-FLIGHT OPERATIONS]*	-	-	-	-
1.1	*[Perform dispatch duties]*	AF	VS	D	HP
1.2	~~*[Provide flight crew and cabin crew briefings]*~~ *	[n/a]	[n/a]	[n/a]	[n/a]
1.3	*[Perform pre-flight checks and cockpit preparation]*	AF	VS	D	HP
1.4	*[Perform engine start]*	AF	S	ND	HP
1.5	*[Perform taxi]*	AF	VS	D	P
1.6	*[Manage abnormal and emergency situations]*	M	VS	D	HP
1.7	*[Communicate with ~~cabin crew~~*, passengers and ~~company~~*]*	AF	NS	ND	LP
2	*[PERFORM TAKE-OFF]*	-	-	-	-
2.1	*[Perform pre-take-off and pre-departure preparation]*	AF	VS	D	HP
2.2	*[Perform take-off roll]*	AF	VS	ND	P
2.3	*[Perform transition to instrument flight rules]*	W	S	D	P
2.4	*[Perform initial climb to flap retraction altitude]*	AF	S	ND	P
2.5	*[Perform rejected take-off]*	M	VS	D	HP
2.6	*[Perform navigation]*	AF	S	ND	P
2.7	*[Manage abnormal and emergency situations]*	M	VS	VD	HP
3	*[PERFORM CLIMB]*	-	-	-	-
3.1	*[Perform standard instrument departure/en-route navigation]*	W	VS	D	HP
3.2	*[Complete climb procedures and checklists]*	AF	S	ND	P
3.3	*[Modify climb speeds, rate of climb and cruise altitude]*	AF	S	ND	P
3.4	*[Perform systems operations and procedures]*	AF	S	ND	P
3.5	*[Manage abnormal and emergency situations]*	M	VS	VD	HP
3.6	*[Communicate with ~~cabin crew~~*, passengers and ~~company~~*]*	AF	NS	ND	LP
4	*[PERFORM CRUISE]*	-	-	-	-
4.1	*[Monitor navigation accuracy]*	AF	VS	ND	P
4.2	*[Monitor flight progress]*	AF	VS	ND	P
4.3	*[Perform descent and approach planning]*	AF	VS	D	HP
4.4	[Perform systems operations and procedures]	AF	S	ND	P
4.5	*[Manage abnormal and emergency situations]*	M	VS	VD	HP
4.6	*[Communicate with ~~cabin crew~~*, passengers and ~~company~~*]*	AF	NS	ND	LP
5	*[PERFORM DESCENT]*	-	-	-	-
5.1	*[Initiate and manage descent]*	AF	VS	D	P
5.2	*[Monitor and perform en-route and descent navigation]*	AF	VS	D	P
5.3	*[Replanning and update of approach briefing]*	W	VS	D	HP
5.4	*[Perform holding]*	W	S	ND	HP
5.5	*[Perform systems operations and procedures]*	AF	S	ND	P
5.6	*[Manage abnormal and emergency situations]*	M	VS	VD	HP
5.7	*[Communicate with ~~cabin crew~~*, passengers and ~~company~~*]*	AF	NS	ND	LP
6	*[PERFORM APPROACH]*	-	-	-	-
6.1	*[Perform approach in general]*	AF	VS	VD	HP
6.2	*[Perform precision approach]*	W	VS	VD	HP
6.3	*[Perform non-precision approach]*	W	VS	D	HP
6.4	*[Perform approach with visual reference to ground]*	W	VS	D	HP
6.5	*[Monitor flight progress]*	AF	S	ND	P
6.6	*[Perform systems operations and procedures]*	AF	S	ND	LP
6.7	*[Manage abnormal and emergency situations]*	M	VS	VD	HP
6.8	*[Perform go-around/missed approach]*	W	VS	VD	HP
6.9	*[Communicate with ~~cabin crew~~*, passengers and ~~company~~*]*	AF	NS	ND	LP
7	*[PERFORM LANDING]*	-	-	-	-
7.1	*[Land the aeroplane]*	AF	VS	D	HP
7.2	*[Perform systems operations and procedures]*	AF	S	ND	P
7.3	*[Manage abnormal and emergency situations]*	M	VS	VD	HP
8	*[PERFORM AFTER-LANDING AND POST-FLIGHT OPERATIONS]*	-	-	-	-
8.1	*[Perform taxi-in and parking]*	AF	S	ND	P

8.2	*[Perform aeroplane post-flight operations]*	AF	S	ND	P
8.3	*[Perform systems operations and procedures]*	AF	S	ND	P
8.4	*[Manage abnormal and emergency situations]*	M	VS	D	HP
8.5	*[Communicate with ~~cabin crew~~*, passengers and ~~company~~*]*	AF	NS	ND	LP

Whereas:

[F] means Frequency. Scale: [A]ll [F]lights, [D]aily, [W]eekly, and [M]onthly.
[I] means Importance. Scale: [N]ot [S]erious, [S]erious, and [V]ery [S]erious.
[D] means Difficulty. Scale: [N]ot [D]ifficulty, [D]ifficulty, and [V]ery [D]ifficulty.
[P] means Priority. Scale: [L]ow [P]riority, [P]riority, and [H]igh [P]riority.

Notes:

PIC and SIC terminology were considered as PF and PM terminology due training purposes.
[N/A] – Items considered not applicable due the kind of air transport service.
Strikeout and [*] elements considered not applicable due the kind of air transport service.

NOTE: ADAPTED FROM DOC 9941 AN/478, 1ST EDITION - TRAINING DEVELOPMENT GUIDE COMPETENCY-BASED TRAINING METHODOLOGY (ICAO, 2011)

TASK LIST

STP No: 01	**Location:** Lisbon, Portugal	**Date:** NOV21
	Completed by: Colonese, João - researcher	**Page:** 01 **of** 02

Job:
[Act as pilot in command (PIC) or second in command (SIC) on single-engine airplanes both on public and non-public air transport services under visual (VFR) or instrument flight rules (IFR)].

Function:	**Function No :**
[Act as pilot in command **(PIC)** on single-engine airplane, certified for operation with a **minimum crew of 1 (one) pilot**, on **public air transport services** under visual (VFR) or instrument flight rules (IFR)].	[2.]

Task n° :	**Task**	**(F)**	**(I)**	**(D)**	**(P)**
1	*[PERFORM AEROPLANE GROUND AND PRE-FLIGHT OPERATIONS]*	-	-	-	-
1.1	*[Perform dispatch duties]*	AF	VS	D	HP
1.2	*[Provide flight crew and cabin crew briefings]*	AF	VS	ND	P
1.3	*[Perform pre-flight checks and cockpit preparation]*	AF	VS	D	HP
1.4	*[Perform engine start]*	AF	S	ND	HP
1.5	*[Perform taxi]*	AF	VS	D	P
1.6	*[Manage abnormal and emergency situations]*	M	VS	D	HP
1.7	*[Communicate with cabin crew**, passengers and company]*	AF	S	ND	P
2	*[PERFORM TAKE-OFF]*	-	-	-	-
2.1	*[Perform pre-take-off and pre-departure preparation]*	AF	VS	D	HP
2.2	*[Perform take-off roll]*	AF	VS	ND	P
2.3	*[Perform transition to instrument flight rules]*	W	S	D	P
2.4	*[Perform initial climb to flap retraction altitude]*	AF	S	ND	P
2.5	*[Perform rejected take-off]*	M	VS	D	HP
2.6	*[Perform navigation]*	AF	S	ND	P
2.7	*[Manage abnormal and emergency situations]*	M	VS	VD	HP
3	*[PERFORM CLIMB]*	-	-	-	-
3.1	*[Perform standard instrument departure/en-route navigation]*	W	VS	D	HP
3.2	*[Complete climb procedures and checklists]*	AF	S	ND	P
3.3	*[Modify climb speeds, rate of climb and cruise altitude]*	AF	S	ND	P
3.4	*[Perform systems operations and procedures]*	AF	S	ND	P
3.5	*[Manage abnormal and emergency situations]*	M	VS	VD	HP
3.6	*[Communicate with cabin crew**, passengers and company]*	AF	S	ND	P
4	*[PERFORM CRUISE]*	-	-	-	-
4.1	*[Monitor navigation accuracy]*	AF	VS	ND	P
4.2	*[Monitor flight progress]*	AF	VS	ND	P
4.3	*[Perform descent and approach planning]*	AF	VS	D	P
4.4	*[Perform systems operations and procedures]*	AF	S	ND	P
4.5	*[Manage abnormal and emergency situations]*	M	VS	VD	HP
4.6	*[Communicate with cabin crew**, passengers and company]*	AF	S	ND	LP
5	*[PERFORM DESCENT]*	-	-	-	-
5.1	*[Initiate and manage descent]*	AF	VS	D	P
5.2	*[Monitor and perform en-route and descent navigation]*	AF	VS	D	P
5.3	*[Replanning and update of approach briefing]*	W	VS	D	HP
5.4	*[Perform holding]*	W	S	ND	HP
5.5	*[Perform systems operations and procedures]*	AF	S	ND	P

5.6	*[Manage abnormal and emergency situations]*	M	VS	VD	HP
5.7	*[Communicate with cabin crew**, passengers and company]*	AF	S	ND	P
6	***[PERFORM APPROACH]***	-	-	-	-
6.1	*[Perform approach in general]*	AF	VS	VD	HP
6.2	*[Perform precision approach]*	W	VS	VD	HP
6.3	*[Perform non-precision approach]*	W	VS	D	HP
6.4	*[Perform approach with visual reference to ground]*	D	VS	D	HP
6.5	*[Monitor flight progress]*	AF	S	ND	P
6.6	*[Perform systems operations and procedures]*	AF	S	ND	LP
6.7	*[Manage abnormal and emergency situations]*	M	VS	VD	HP
6.8	*[Perform go-around/missed approach]*	W	VS	VD	HP
6.9	*[Communicate with cabin crew**, passengers and company]*	AF	S	ND	P
7	***[PERFORM LANDING]***	-	-	-	-
7.1	*[Land the aeroplane]*	AF	VS	D	HP
7.2	*[Perform systems operations and procedures]*	AF	S	ND	P
7.3	*[Manage abnormal and emergency situations]*	M	VS	VD	HP
8	***[PERFORM AFTER-LANDING AND POST-FLIGHT OPERATIONS]***	-	-	-	-
8.1	*[Perform taxi-in and parking]*	AF	S	ND	P
8.2	*[Perform aeroplane post-flight operations]*	AF	S	ND	P
8.3	*[Perform systems operations and procedures]*	AF	S	ND	P
8.4	*[Manage abnormal and emergency situations]*	M	VS	D	HP
8.5	*[Communicate with cabin crew**, passengers and company]*	AF	S	ND	P

Whereas:

[F] means Frequency. Scale: [A]ll [F]lights, [D]aily, [W]eekly, and [M]onthly.
[I] means Importance. Scale: [N]ot [S]erious, [S]erious, and [V]ery [S]erious.
[D] means Difficulty. Scale: [N]ot [D]ifficulty, [D]ifficulty, and [V]ery [D]ifficulty.
[P] means Priority. Scale: [L]ow [P]riority, [P]riority, and [H]igh [P]riority.

Notes:

PIC and SIC terminology were considered as PF and PM terminology due training purposes.
Strikeout and [*] elements considered not applicable due the crew composition.
Marked [**] elements may be considered due the kind of air transport service.

Modified items from function [1.]: 1.7; 3.6; 4.6; 5.7; 6.9; 8.5.

NOTE: ADAPTED FROM DOC 9941 AN/478, 1ST EDITION - TRAINING DEVELOPMENT GUIDE COMPETENCY-BASED TRAINING METHODOLOGY (ICAO, 2011)

TASK LIST			
STP No: 01	**Location:** Lisbon, Portugal	**Date:** NOV21	
	Completed by: Colonese, João - researcher	**Page:** 01 **of** 02	

Job:
[Act as pilot in command (PIC) or second in command (SIC) on single-engine airplanes both on public and non-public air transport services under visual (VFR) or instrument flight rules (IFR)].

Function: [Act as second in command **(SIC)** on single-engine airplane, certified for operation with a **minimum crew of 2 (two) pilots**, on **public air transport services** under visual (VFR) or instrument flight rules (IFR)].				**Function No :** [3.]	
Task n° :	**Task**	**(F)**	**(I)**	**(D)**	**(P)**
1	***[PERFORM AEROPLANE GROUND AND PRE-FLIGHT OPERATIONS]***	-	-	-	-
1.1	*[Perform dispatch duties]*	AF	VS	D	HP
1.2	*[Provide flight crew and cabin crew briefings] ****	AF***	VS***	ND***	P***
1.3	*[Perform pre-flight checks and cockpit preparation]*	AF	VS	D	HP
1.4	*[Perform engine start]*	AF	NS	ND	HP
1.5	*[Perform taxi]*	AF	VS	D	P
1.6	*[Manage abnormal and emergency situations]*	M	S	D	HP
1.7	*[Communicate with cabin crew, passengers and company]*	AF	S	ND	P
2	***[PERFORM TAKE-OFF]***	-	-	-	-
2.1	*[Perform pre-take-off and pre-departure preparation]*	AF	VS	D	HP
2.2	*[Perform take-off roll]*	AF	VS	ND	P
2.3	*[Perform transition to instrument flight rules]*	W	S	ND	P
2.4	*[Perform initial climb to flap retraction altitude]*	AF	S	ND	P
2.5	*[Perform rejected take-off]*	M	VS	D	HP
2.6	*[Perform navigation]*	AF	S	ND	P
2.7	*[Manage abnormal and emergency situations]*	M	VS	VD	HP

3	***[PERFORM CLIMB]***	-	-	-	-
3.1	*[Perform standard instrument departure/en-route navigation]*	AF	VS	D	HP
3.2	*[Complete climb procedures and checklists]*	AF	S	ND	P
3.3	*[Modify climb speeds, rate of climb and cruise altitude]*	AF	NS	ND	P
3.4	*[Perform systems operations and procedures]*	AF	S	ND	P
3.5	*[Manage abnormal and emergency situations]*	M	VS	VD	HP
3.6	*[Communicate with cabin crew, passengers and company]*	AF	S	ND	P
4	***[PERFORM CRUISE]***	-	-	-	-
4.1	*[Monitor navigation accuracy]*	AF	VS	ND	P
4.2	*[Monitor flight progress]*	AF	S	D	P
4.3	*[Perform descent and approach planning]*	AF	VS	D	P
4.4	*[Perform systems operations and procedures]*	AF	S	ND	P
4.5	*[Manage abnormal and emergency situations]*	M	VS	VD	HP
4.6	*[Communicate with cabin crew, passengers and company]*	AF	S	ND	P
5	***[PERFORM DESCENT]***	-	-	-	-
5.1	*[Initiate and manage descent] ****	AF***	VS***	VD***	HP***
5.2	*[Monitor and perform en-route and descent navigation]*	AF	VS	D	LP
5.3	*[Replanning and update of approach briefing]*	W	VS	D	HP
5.4	*[Perform holding]*	W	S	ND	HP
5.5	*[Perform systems operations and procedures]*	AF	S	ND	P
5.6	*[Manage abnormal and emergency situations]*	M	VS	VD	HP
5.7	*[Communicate with cabin crew, passengers and company]*	AF	S	ND	P
6	***[PERFORM APPROACH]***	-	-	-	-
6.1	*[Perform approach in general]*	AF	S	ND	HP
6.2	*[Perform precision approach] ****	M***	VS***	VD***	HP***
6.3	*[Perform non-precision approach] ****	W***	VS***	VD***	HP***
6.4	*[Perform approach with visual reference to ground] ****	W***	VS***	VD***	HP***
6.5	*[Monitor flight progress]*	AF	NS	ND	P
6.6	*[Perform systems operations and procedures] ****	AF***	S***	ND***	P***
6.7	*[Manage abnormal and emergency situations]*	M	VS	VD	HP
6.8	*[Perform go-around/missed approach]*	W	S	ND	HP
6.9	*[Communicate with cabin crew, passengers and company]*	AF	S	ND	P
7	***[PERFORM LANDING]***	-	-	-	-
7.1	*[Land the aeroplane] ****	AF***	VS***	VD***	HP***
7.2	*[Perform systems operations and procedures] ****	AF***	S***	ND***	P***
7.3	*[Manage abnormal and emergency situations]*	M	VS	VD	HP
8	***[PERFORM AFTER-LANDING AND POST-FLIGHT OPERATIONS]***	-	-	-	-
8.1	*[Perform taxi-in and parking]*	AF	S	ND	P
8.2	*[Perform aeroplane post-flight operations]*	AF	NS	ND	P
8.3	*[Perform systems operations and procedures]*	AF	S	ND	P
8.4	*[Manage abnormal and emergency situations]*	M	VS	D	HP
8.5	*[Communicate with cabin crew, passengers and company]*	AF	S	ND	P

Whereas:

[F] means Frequency. Scale: [A]ll [F]lights, [D]aily, [W]eekly, and [M]onthly.
[I] means Importance. Scale: [N]ot [S]erious, [S]erious, and [V]ery [S]erious.
[D] means Difficulty. Scale: [N]ot [D]ifficulty, [D]ifficulty, and [V]ery [D]ifficulty.
[P] means Priority. Scale: [L]ow [P]riority, [P]riority, and [H]igh [P]riority.

Notes:

PIC and SIC terminology were considered as PF and PM terminology due training purposes.
Marked [***] tasks are primarily related to the PF [PIC] duty. Although, the task may include other PM [SIC] sub-tasks associated to the maintenance of the monitoring of the task performed by the PF [PIC].

Modified items from function [2.] : 1.2; 1.4; 1.6; 5.1; 6.1; 6.2; 6.3; 6.4; 6.5; 6.6; 6.8; 7.1; 7.2.

NOTE: ADAPTED FROM DOC 9941 AN/478, 1ST EDITION - TRAINING DEVELOPMENT GUIDE COMPETENCY-BASED TRAINING METHODOLOGY (ICAO, 2011)

Appendix 6: Task description Form

TASK DESCRIPTION		
STP No: 01	**Location:** Lisbon, Portugal	**Date:** NOV2021
	Completed by: Colonese, João - researcher	**Page:** 01 **of** 132

Job: *[Act as pilot in command (PIC) or second in command (SIC) on single-engine airplanes both on public and non-public air transport services under visual (VFR) or instrument flight rules (IFR)].*	
Function: *[Act as pilot in command **(PIC)** on single-engine airplane on **non-public air transport services** under visual (VFR) or instrument flight rules (IFR)].*	**Function No :** [1.]
*[Act as pilot in command **(PIC)** on single-engine airplane, certified for operation with a minimum crew of 1 (one) pilot, **on public air transport services** under visual (VFR) or instrument flight rules (IFR)].*	[2.]
*[**Act as second in command (SIC)** on single-engine airplane, certified for operation with a minimum crew of 2 (two) pilots, **on public air transport services** under visual (VFR) or instrument flight rules (IFR)].*	[3.]

Task : *[Perform dispatch duties]*	**Task No :** 1.1
1.Where performed: *[Aerodrome AIS room or at specific location with access to electronic publications and communication with electronic information systems]* **2.Triggering Event:** *[Request pilot action as PIC for a flight]* **3.Terminating Event:** *[Provide updated flight dispatch documentation]*	**4. References/Standards for the task (if any):** ANAC - RBAC 91; IS 91-001; IS 91-21-001; DECEA - ICA 100-11; MCA 100-11; ICA 100-12; ICA 100-37; MCA 96-3; MCA-96-4; ICA 100-5; ICA 100-17; ICA 105-12; IEPV 105-67; Airplane manual [POH; AFM]; Air Operator´s Manual and AOM;

5.No : Sub-Task	Int Obj	**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
1.1.1	1	Verificar condição técnica do avião, incluindo o uso adequado de MEL (*1) *[Verifies technical condition of the airplane, including adequate use of MEL (*1)]* *[VFR/IFR]* *[PF/PM]*	Acessar e interpretar informações técnicas no idioma inglês. *[Access and interpret technical information in the English language.]*	1	K- Listar manuais e documentos necessários e específicos do avião para análise da condição técnica.
				2	K- Demonstrar procedimentos adotados na determinação da condição técnica do avião, havendo, ou não, MEL (*1) aprovada.
				2	K- Caracterizar estrutura/suporte de manutenção e/ou controle técnico utilizada para manter condição técnica do avião.
				3	S- Apreciar informações relevantes da documentação técnica específica do avião.
				3	S- Determinar implicações da condição técnica do avião nos procedimentos de voo *[VFR/IFR]*.
				3	S- Interagir com estrutura/suporte de manutenção e/ou controle técnico [pessoal], no caso de dúvidas sobre condição técnica do avião.
				4	S- Garantir condição técnica adequada do avião para o voo *[VFR/IFR]*.
				4	A- Diligência na consulta às referências técnicas adequadas em caso de dúvidas sobre limitações existentes.
				4	A- Diligência sobre uso e interação com estrutura/suporte de manutenção e/ou controle técnico [pessoal] no caso de dúvidas.
				5	A- Resolução de dúvidas sobre condição técnica do avião antes do despacho.
				3	S- Notificar/Alertar PF discrepâncias sobre verificação e apreciação da condição técnica do avião, inclusive acerca do uso adequado de MEL (*1).
				3	S- Monitorar/Alertar PF na diligência na consulta às referências técnicas sobre condição técnica do avião e uso de estrutura/suporte de manutenção e/ou controle técnico utilizada para manter condição técnica do avião.

				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
1.1.2	2	Verificar boletins técnicos e avisos *[Checks technical bulletins and notices]* *[VFR/IFR]* *[PF/PM]*	Acessar e interpretar informações técnicas no idioma inglês. *[Access and interpret technical information in the English language.]* Acessar as fontes válidas dos boletins técnicos e avisos. *[Access valid sources of technical bulletins and notices.]*	2 2 2 3 3 5 4 5 5 4 3 3 3	K- Demonstrar aplicabilidade de diretrizes de aeronavegabilidade, boletins técnicos, avisos para determinação da condição técnica do avião. K- Caracterizar estrutura/suporte de manutenção e/ou controle técnico utilizada para informar boletins técnicos e avisos. K- Listar boletins técnicos e avisos aplicáveis ao avião. S- Verificar conteúdo dos boletins técnicos, avisos e outros documentos pertinentes aplicáveis ao avião. Interagir com estrutura/suporte de manutenção e/ou controle técnico [pessoal], no caso de dúvidas sobre boletins técnicos e avisos. S- Estimar influência dos boletins técnicos, avisos e outros documentos pertinentes aplicáveis na aeronavegabilidade e operação do avião e voo *[VFR/IFR]*. A- Relacionar limitações ou alterações de procedimentos para operar o avião conforme limites ou condições dos boletins técnicos, avisos e outros documentos pertinentes aplicáveis ao avião. A- Manter postura consultiva técnica e cuidadosa. A- Consideração prática da influência dos boletins, avisos e outros documentos pertinentes para a operação segura do avião. A- Diligência sobre uso e interação com estrutura/suporte de manutenção e/ou controle técnico [pessoal], no caso de dúvidas. S- Notificar/Alertar PF discrepâncias na verificação e estima de boletins técnicos, avisos e outros documentos associados. S- Monitorar/Alertar PF na diligência na consulta às referências técnicas utilizadas para a estima dos boletins técnicos, avisos e outros documentos pertinentes aplicáveis na aeronavegabilidade e operação do avião e voo, assim como no uso da estrutura/suporte de manutenção e/ou controle técnico utilizada para tal. S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
1.1.3	3	Determinar ambiente operacional e elementos meteorológicos pertinentes *[Determines operational environment and pertinent weather]* *[VFR/IFR]* *[PF/PM]*	Interpretar códigos meteorológicos associados ao voo, incluindo alternativas. *[Interpret weather codes associated with the flight, including alternatives.]*	1 1 3 5 5 5	K- Reconhecer fonte de pesquisa oficial de meteorologia aeronáutica. K- Listar limites meteorológicos relacionados às regras de voo *[VFR/IFR]* aplicáveis, considerando limites dos aeródromos [decolagem e pouso – destino e alternativa] e rota. K- Acessar e decodificar informações das mensagens meteorológicas aplicáveis às regras de voo *[VFR/IFR]*. S- Avaliar influência dos elementos meteorológicos no voo *[VFR/IFR]*. S- Avaliar regra de voo *[VFR/IFR]* mais adequada para sua realização, assim como da melhor opção de alternativa. A- Postura contingente e baseada em ameaças e riscos nas avaliações afetas a realização do voo *[VFR/IFR]*.

				5	A- Postura avaliativa acerca da validade e confiabilidade das informações meteorológicas para todos momentos do voo *[VFR/IFR]*.
				3	S- Notificar/Alertar PF elementos e discrepâncias na determinação do ambiente operacional e elementos meteorológicos pertinentes.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
1.1.4	4	Determinar impacto dos elementos meteorológicos no desempenho do avião *[Determines impact of weather on airplane performance]* *[VFR/IFR]* *[PF/PM]*	Avaliar influência de fenômenos no desempenho do avião. *[Evaluate the influence of phenomena on the airplane's performance.]*	2	K- Demonstrar fatores que afetam adversamente o desempenho do avião.
				1	K- Declarar condição técnica do avião bem como limitações estabelecidas no manual do avião (*7) e MEL (*1).
				5	S- Avaliar influência dos elementos meteorológicos para o voo *[VFR/IFR]* proposto, incluindo alternativa, considerando limitações e condições técnicas do avião.
				5	S- Avaliar influência dos elementos meteorológicos no desempenho do avião e decidir sobre a execução do voo.
				5	A- Postura contingente e baseada em ameaças e riscos nas avaliações afetas a realização do voo *[VFR/IFR]*.
				5	A- Diligência sobre o uso de informações meteorológicas válidas e confiáveis para todas etapas do voo *[VFR/IFR]*.
				3	S- Notificar/Alertar PF elementos e discrepâncias na determinação do impactos dos elementos meteorológicos no desempenho do avião.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
1.1.5	5	Preencher plano de voo e procedimentos de carga *[Applies flight planning and load procedures]* *[VFR/IFR]* *[PF/PM]*	Apontar códigos previstos para preenchimento correto de plano de voo *[Point out codes for the correct completion of the flight plan]*	1	K- Reconhecer fonte de consulta oficial e publicações aeronáuticas referentes ao preenchimento do plano de voo *[VFR/IFR]*.
				2	K- Demonstrar conhecimento sobre itens previstos do formulário de preenchimento de plano de voo *[VFR/IFR]*.
				2	K- Demonstrar conhecimento da parte específica de peso e balanceamento e carregamento do manual do avião (*7).
				2	K- Caracterizar possíveis impactos de variações limítrofes de balanceamento e carregamento no desempenho do avião.
				3	K- Demonstrar elementos necessários para realização do balanceamento e carregamento conforme limites do avião e condições do voo *[VFR/IFR]*.
				3	S- Escolher e aplicar os itens previstos no formulário de preenchimento do plano de voo *[VFR/IFR]* conforme seu planejamento.
				3	S- Calcular balanceamento do avião mediante consulta à gráficos e tabelas do manual do avião (*7).
				5	S- Determinar instruções corretas para a distribuição de cargas no avião mediante consulta à gráficos e tabelas do manual do avião (*7).
				5	A- Manter postura consultiva e cuidadosa que garantam adesão às limitações do manual para o carregamento do avião ou operador; assim como demonstrar postura contingente frente ao seu desempenho.
				5	A- Capacidade de destacar elementos do plano de voo que reflitam postura contingente acerca do desempenho e

					carregamento do avião, rota do voo, elementos meteorológicos e outras ameaças e riscos.
				3	S- Notificar/Alertar PF discrepâncias no preenchimento do plano de voo, procedimentos de balanceamento e carregamento do avião.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
1.1.6	6	Determinar necessidade de combustível *[Determines fuel requirement]* *[VFR/IFR]* *[PF/PM]*	Acessar, interpretar referências do manual do avião (*7) *[Access, interpret references in the airplane manual]*	1	K- Definir combustível mínimo requerido para realização do voo *[VFR/IFR]* previsto, em consulta ao manual do avião (*7) e determinação de combustível remanescente, conforme Manual do Operador Aéreo.
				1	K- Reconhecer possíveis penalidades de combustível estabelecidas pela MEL (*1), outro documento técnico aplicável ou grandes modificações no avião.
				2	S- Considerar aspectos que influenciam o consumo de combustível.
				3	S- Calcular combustível mínimo para o voo *[VFR/IFR]* com estabelecimento de margem de segurança apropriada, mediante combustível remanescente e manual do avião (*7).
				5	A- Postura contingente e de consideração abrangente acerca do desempenho e carregamento do avião, rota do voo *[VFR/IFR]*, elementos meteorológicos e outras ameaças e riscos.
				3	S- Notificar/Alertar PF discrepâncias na determinação da necessidade de combustível.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
1.1.7	7	Apresentar um plano de voo ao serviço ATM (se necessário) *[Files an ATS flight plan (if required)]* *[VFR/IFR]* *[PF/PM]*	Apontar códigos previstos para preenchimento correto de plano de voo *[Point out codes for the correct completion of the flight plan]* Manter comunicação adequada com o operador AIS *[Maintain adequate communication with the AIS operator]*	1	K- Reconhecer canais para recebimento de plano de voo.
				3	S- Acessar, comunicar-se [texto, voz, sistema online] adequadamente com o operador AIS e transmitir todas informações corretas de maneira clara e concisa.
				3	S- Manipular e inserir dados adequadamente no Sistema de apresentação de plano de voo *[VFR/IFR]* ON-LINE (SIGMA) ou outro meio utilizado.
				4	S- Expedir/Apresentar um plano de voo *[VFR/IFR]*.
				3	A- Aptidão e cuidado no manuseio de plataformas e aplicativos para apresentação de plano de voo em meio digital.
				3	S- Notificar/Alertar PF discrepâncias na apresentação e expedição de plano de voo ao serviço ATM (se necessário).
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Given the prevision of a properly rated pilot to be called to act as PIC, subject to a work agreement and timely period before the flight.]*

Performance: *[Prepare and provide updated dispatch documentation required for the flight.]*

Standard: *[Updated flight dispatch documentation interpreted and provided according to official requirements [ANAC and DECEA], aircraft manual, adopted SOP [AOM], and operator's manual.]*

Task : *[Provide flight crew and cabin crew briefings]*	**Task No :** 1.2
1.Where performed: *[Aerodrome AIS room, specific location or airplane/Apron]*	**4. References/Standards for the task (if any):** ANAC - RBAC 91; Air Operator´s Manual and AOM;
2.Triggering Event: *[Have updated flight dispatch documentation]*	

3.Terminating Event: *[Have instructed flight crew and cabin crew]*					
5.No :		**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
Sub-Task	**Int Obj**				
1.2.1	8	Informar a tripulação de voo todos assuntos relevantes *[Briefs flight crew in all relevant matters]* *[PF]*	Sumariar elementos críticos de todo o voo *[Summarize critical elements of the entire flight]*	4	K- Relacionar comunicação efetiva e o bom relacionamento interpessoal (*3).
				2	K- Relacionar elementos de informação à tripulação de voo conforme manual do avião (*7).
				3	S- Coletar e aplicar dados atualizados para conduzir briefings.
				3	S- Conduzir briefings abordando elementos críticos do voo *[VFR/IFR]* conforme operações normais manual do avião (*7).
				3	S- Conduzir briefings de condições anormais e de emergência com tripulação de voo conforme manual do avião (*7).
				4	A- Estruturação lógica na preparação e execução de briefings.
				5	A- Consideração a elementos não técnicos [NOTECHS] (*3) na condução de briefings.
				3	S- Monitorar/Verificar, quando aplicável, ações e procedimentos [aderência ao manual do operador] de outros membros da tripulação.
				3	S- Reconhecer e aconselhar, quando aplicável e oportuno, sobre quaisquer erros cometidos [não aderência ao manual do operador] por outros membros da tripulação.
1.2.2	9	Informar a tripulação de cabine todos assuntos relevantes *[Briefs cabin crew in all relevant matters]* *[PF]*	Sumariar elementos críticos de todo o voo *[Summarize critical elements of the entire flight]*	4	K- Relacionar comunicação efetiva e o bom relacionamento interpessoal (*3).
				2	K- Relacionar elementos de informação à tripulação de cabine conforme manual do operador aéreo (*7).
				3	S- Coletar e aplicar dados atualizados para conduzir briefings.
				3	S- Conduzir briefings abordando elementos críticos aos passageiros conforme operações normais manual do operador aéreo (*7).
				3	S- Conduzir briefings de condições anormais e de emergência com tripulação de cabine e conforme manual do operador aéreo (*7).
				4	A- Estruturação lógica na preparação e execução de briefings.
				5	A- Consideração a elementos não técnicos [NOTECHS] (*3) na condução de briefings.
				3	S- Monitorar/Verificar, quando aplicável, ações e procedimentos [aderência ao manual do operador] de outros membros da tripulação.
				3	S- Reconhecer e aconselhar, quando aplicável e oportuno, sobre quaisquer erros cometidos [não aderência ao manual do operador] por outros membros da tripulação.

Task Terminal Objective
Condition: *[In possession and aware of the technical elements about the flight, passenger information and related services.]* **Performance:** *[Inform crew about relevant matters related to flight safety and performance of their tasks.]* **Standard:** *[Have crew informed about relevant information for the performance of their tasks according to the adopted SOP [AOM], and operator's manual.]*

Task : *[Perform pre-flight checks and cockpit preparation]*	**Task No :** 1.3
1.Where performed: *[Airplane/Apron]*	**4. References/Standards for the task (if any):**
2.Triggering Event: *[Have instructed flight crew and cabin crew]*	ANAC - RBAC 91; IS 91-001; IS 91-21-001;

3.Terminating Event: *[Provide configured airplane and pilot ready for engine start procedures]*				DECEA - ICA 100-12; ICA 100-37; MCA 96-3; MCA-96-4; ICA 100-5; ICA 105-12; Airplane manual [POH; AFM]; Air Operator´s Manual and AOM;	
5.No :		**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
Sub-Task	**Int Obj**				
1.3.1	10	Garantir a aeronavegabilidade do avião *[Ensures the airworthiness of the airplane]* *[VFR/IFR]* *[PF]*	Conhecer requisitos regulamentares de equipamentos e documentos requeridos para o voo *[VFR/IFR]* *Knowledge of the regulatory requirements for equipment and documents required for flight [VFR/IFR]*	1 2 1 3 3 3 5 4 3 3	K- Declarar documentos requeridos a bordo do avião e elementos da inspeção pré-voo. K- Explicar relevância do mapa de componentes e outros documentos de controle técnico do avião. S- Reconhecer equipamentos mínimos necessários para o voo *[VFR/IFR]*. S- Checar aplicação de requisitos regulamentares acerca da documentação e equipamentos instalados no avião. S- Executar inspeção pré-voo conforme manual do avião (*7). S- Determinar validade dos componentes instalados no avião e possíveis tipos de manutenções possíveis de serem realizadas. S- Validar aeronavegabilidade do avião [sistemas e equipamentos] conforme tipo de voo *[VFR/IFR]* e mapa de componentes e outros documentos de controle técnico do avião. A- Manter postura consultiva técnica e contingente nos casos de dúvidas na validação da aeronavegabilidade do avião e elementos da inspeção pré-voo. S- Notificar/Alertar PF discrepâncias na garantia da aeronavegabilidade do avião e execução de inspeção pré-voo. S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
1.3.2	11	Executar a preparação do cockpit e briefings *[Performs the cockpit preparation and briefings]* *[VFR/IFR]* *[PF/PM]*	Aderir a listas de verificação e sumariar todos elementos críticos de briefings *[Adhere to checklists and summarize all critical elements of briefings]*	1 1 2 3 3 3 3 3 4 3	K- Demonstrar procedimentos normais para preparação do cockpit, incluindo acesso a serviços de informações sobre aeródromo e terminal. K- Citar elementos importantes para realizar briefing adequado ao voo *[VFR/IFR]*. K- Descrever procedimentos para o caso de evacuação do avião. K- Destacar documentos de apoio e cartas de navegação requeridas para o voo *[VFR/IFR].* S- Aplicar técnica de *scan-flow* e leitura de checklists correta para a preparação do cockpit. S- Preparar documentos de apoio e cartas de navegação requeridas para o voo *[VFR/IFR].* S- Executar preparação do cockpit para voo *[VFR/IFR]* e conforme checklist/manual do avião (*7). A- Manter adesão ao checklist e padrão operacional adotado, conforme manual do avião (*7) na preparação do cockpit. A- Estruturação lógica na preparação e execução de briefings conforme voo *[VFR/IFR]*. S- Notificar/Alertar PF discrepâncias na execução da preparação do cockpit, briefings, uso de documentos de apoio e cartas requeridas.

				3	S- Monitorar/Alertar PF sobre configuração [e desvios] apropriada do avião conforme manual do avião (*7).
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
1.3.3	12	Executar inicialização do FMS (*2), inserção e confirmação de dados *[Performs FMS (*2) initialization, data insertion and confirmation]* *[VFR/IFR]* *[PF/PM]*	Garantir atenção na consulta e inserção de dados *[Ensure attention while data consulting and insertion]*	2	K- Caracterizar o sistema, suas funcionabilidades e operação.
				2	K- Demonstrar procedimentos operacionais afetos ao uso do FMS (*2), incluindo aqueles associados com sua falha.
				4	S- Garantir pertinência e validade dos dados do voo *[VFR/IFR]* para posterior manipulação do sistema.
				3	S- Inserir dados do voo *[VFR/IFR]*, manipulando o sistema de maneira correta, lógica ou pré-definida.
				5	S- Garantir preparação do avião para o voo *[VFR/IFR]*, inclusive mediante uso de outros recursos, no caso de falha do FMS (*2).
				4	A- Postura consultiva aos dados de despacho obtidos nas etapas anteriores; e contingente quando em dúvidas sobre a pertinência e validade dos dados.
				4	A- Alocar cálculos mentais de conferência e concordância entre valores inseridos e resultados esperados apresentados no gerenciamento de voo.
				3	S- Notificar/Alertar PF discrepâncias na inicialização do FMS (*2), inserção, confirmação de dados e nos cálculos mentais de conferência.
				3	S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] nos controles e instrumentos, conforme manual do avião (*7).
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
1.3.4	13	Otimizar e verificar os dados e cálculos de desempenho de decolagem *[Optimizes and checks take-off performance and take-off data calculation]* *[PF/PM]*	Acessar e interpretar referências do manual do avião (*7) *[Access and interpret references from the airplane manual]*	2	K- Demonstrar importância dos cálculos e verificações de desempenho de decolagem e sua verificação.
				2	K- Caracterizar distâncias declaradas da pista em uso.
				2	K- Caracterizar cada velocidade utilizada nos cálculos de desempenho de decolagem.
				3	S- Acessar e decodificar distâncias declaradas da pista em uso para a decolagem, assim como seus valores.
				3	S- Identificar e verificar dados utilizados e/ou inseridos no FMS (*2).
				4	S- Analisar desempenho de decolagem considerando as condições atmosféricas, pista em uso e carregamento do avião.
				3	S- Verificar validade dos dados de performance.
				3	A- Manter adesão ao padrão operacional adotado no manual do avião (*7) na otimização e verificação dos dados.
				3	S- Notificar/Alertar PF discrepâncias na otimização e verificação de dados, cálculos de desempenho de decolagem e nos cálculos mentais de conferência.
				3	S- Monitorar/Alertar PF sobre configuração [e desvios] apropriada do avião, seus sistemas e instumentos conforme desempenho requerido e manual do avião (*7).
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
1.3.5	14	Conduzir briefings relevantes	Sumariar elementos	4	K- Relacionar comunicação efetiva e o bom relacionamento interpessoal (*3).

		[Conducts relevant briefings] *[VFR/IFR]* *[PF]*	críticos de todo o voo [Summarize critical elements of the entire flight]	3 3 3 3 5 3 3	S- Coletar e aplicar dados atualizados para conduzir briefings. S- Conduzir briefings abordando todos elementos críticos do voo *[VFR/IFR]*. S- Executar briefings de operações normais, anormais e de emergência com passageiros. S- Comunicar-se de maneira efetiva e assertiva (*3). A- Consideração a elementos não técnicos [NOTECHS] (*3) na condução de briefings. S- Monitorar/Verificar, quando aplicável, ações e procedimentos [aderência ao manual do operador] de outros membros da tripulação. S- Reconhecer e aconselhar, quando aplicável e oportuno, sobre quaisquer erros cometidos [não aderência ao manual do operador] por outros membros da tripulação.

Task Terminal Objective

Condition: *[In possession of all updated flight dispatch documentation required for the flight.]*

Performance: *[Check technical records, configure the airplane, systems and conduct relevant briefings.]*

Standard: *[Airworthiness of the aircraft validated, procedures for configuring the aircraft systems executed according airplane manual, SOP [AOM] and operator´s manual; and being aware of elements of each phase of the flight upon completion of relevant briefings.]*

Task : *[Perform engine start]* — **Task No :** 1.4

1.Where performed:
[Airplane/Apron]

2.Triggering Event:
[Communicate and obtain ATC authorization to perform engine start procedures]

3.Terminating Event:
[Provide a plane and pilot ready to perform taxi]

4. References/Standards for the task (if any):

ANAC - RBAC 91; IS 91-001; IS 91-21-001;
DECEA - ICA 100-12; ICA 100-37; MCA-100-16;
Manual do avião [POH; AFM];
Air Operator´s Manual and AOM;

5.No : Sub-Task	Int Obj	6.Sub-Tasks	7.Performance Difficulties	LoA	8. Summary of K/S/A Requirements
1.4.1	15	Solicitar, receber, cotejar e verificar autorização do CTA *[Asks for, receives, acknowledges and checks ATC clearance]* *[PF/PM]* (*8)	Identificar e associar elementos da autorização com demandas do voo. *[Identify and associate elements of the ATC authorization with flight demands]*	2 2 3 3 3 4 4 3 3	K- Demonstrar conhecimento sobre serviços de tráfego aéreo, sobre autorização de tráfego e informações sobre terminal e meteorologia. K- Demonstrar procedimentos padrões de fraseologia aeronáutica. S- Verificar elementos da autorização de tráfego CTA conforme plano de voo, documentos de apoio e cartas de navegação requeridas para o voo *[VFR/IFR].* S- Utilizar os procedimentos padrões de fraseologia aeronáutica. S- Comunicar-se de maneira clara, precisa, e concisa, considerando, no mínimo os elementos (*3): solicitação, recebimento, verificação e cotejamento de autorização CTA. A- Diligência na solicitação de confirmações em caso de dúvidas. A- Disponibilidade para receber, registrar e entender mensagens. S- Notificar/Alertar PF discrepâncias na solicitação, recebimento, cotejamento e verificação das autorizações CTA. S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
1.4.2	16	Executar o procedimento de partida do motor	Aplicar rápida e corretamente	1	K- Citar limitações do grupo motopropulsor relacionadas ao acionamento.

		[Performs engine start procedure] *[PF/PM]*	procedimentos anormais ou de emergência. *[Apply procedures quickly and correctly in the abnormal or emergency events]*	2 2 3 3 3 3 3	K- Diferenciar tipos de partidas [normais e anormais] e ações tomadas em resposta a cada uma. K- Demonstrar procedimentos normais para partida do motor. S- Executar procedimento de partida do motor cumprindo os itens previstos pelos procedimentos normais. A- Manter-se alerta à possibilidade de eventos anormais e de emergência durante procedimento. S- Notificar/Alertar PF discrepâncias no procedimento de partida do motor conforme manual do avião (*7). S- Notificar/Alertar PF sobre ameaças externas. S- Monitorar/Alertar PF sobre discrepâncias de parâmetros de motor, sistemas associados, condições anormais e de emergência acerca da partida,estabilização do motor e ajustes posteriores. S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
1.4.3	17	Usar procedimentos de comunicação padrão com a equipe de solo e CTA *[Uses standard communication procedures with ground crew and ATC]* *[PF/PM]*	Aderir a comunicação padrão e garantir feedback *[Adhere to standard communication and guarantee feedback]*	1 2 2 3 3 3 5 3 3 3	K- Reconhecer simbologias [gestos/sinais] utilizadas na comunicação entre piloto, CTA e equipe de solo. K- Citar elementos técnicos e aspectos relevantes acerca do avião e voo para serem comunicados com pessoal de solo. K- Demonstrar conhecimentos sobre diferentes frequências para comunicação CTA em aeródromos controlados ou não. S- Comunicar-se com equipe de solo e CTA de maneira clara, precisa e concisa, utilizando fraseologia e simbologia [gestos/sinais] padrão. S- Ater-se a elementos técnicos e aspectos relevantes acerca do avião e voo na comunicação com pessoal de solo e CTA. S- Checar (garantir feedback) (*3) entendimento das mensagens trocadas. A- Consideração a elementos não técnicos [NOTECHS] (*3) na comunicação com pessoal de solo. S- Notificar/Alertar PF discrepâncias na comunicação padrão com a equipe de solo e CTA. S- Notificar/Alertar PF sobre uso de frequências corretas e elementos técnicos e da comunicação relevantes. S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *In possession of the engine start clearance and through standard ATC and ground personnel communication, and aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Perform engine start procedure as per ATC clearance and proper communication.]*

Standard: *[Performed and completed engine starting procedures according aircraft manual, adopted SOP [AOM], and operator's manual; upon receipt, confirmation of ATC clearance, and proper communication with ground personnel.]*

Task : *[Perform taxi]*	**Task No :** 1.5
1.Where performed: *[Airplane/Apron and taxiways]*	**4. References/Standards for the task (if any):** ANAC - RBAC 91; IS 91-001; IS 91-21-001; DECEA - ICA 100-12; ICA 100-37; MCA-100-16; MCA 96-3; MCA-96-4; Manual do avião [POH; AFM]; Air Operator´s Manual and AOM;
2.Triggering Event: *[Move airplane by its own means]*	
3.Terminating Event: *[Provide airplane and pilot ready for communication with passengers and preparations before take-off]*	

5.No : Sub-Task	Int Obj	6.Sub-Tasks	7.Performance Difficulties	LoA	8. Summary of K/S/A Requirements
1.5.1	18	Receber, verificar e aderir à autorização de táxi *[Receives, checks and adheres to taxi clearance]* *[PF/PM]* (*8)	Reconhecer e relacionar elementos da autorização com a etapa do voo. *[Recognize and relate elements of the authorization to the flight stage]*	1	K- Reconhecer simbologias utilizadas nas cartas de aeródromo e estacionamento.
				2	K- Demonstrar conhecimento sobre serviços de tráfego aéreo, sobre autorização de taxi e procedimentos padrões de fraseologia aeronáutica.
				3	S- Acessar e decodificar cartas de aeródromo e estacionamento relativas ao aeródromo.
				3	S- Escolher diferentes frequências de comunicação CTA.
				3	S- Comunicar-se de maneira clara, precisa, e concisa, considerando, no mínimo os elementos (*3): solicitação, recebimento, verificação e cotejamento de autorização CTA.
				3	S- Coletar e registrar informações da autorização de taxi.
				3	S- Verificar e cotejar autorização de taxi.
				4	A- Diligência na solicitação de confirmações em caso de dúvidas.
				5	A- Demonstrar consciência situacional e antecipação acerca da posição atual do avião frente a autorização CTA, trajeto e execução de outras tarefas.
				3	S- Notificar/Alertar PF discrepâncias no recebimento, verificação e adesão à autorização de taxi.
				3	S- Monitorar/Alertar PF sobre discrepâncias na utilização de cartas, uso de frequências de comunicação, coleta, registros de informações da autorização CTA e adesão à mesma.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
1.5.2	19	Taxiar avião, incluindo o uso de iluminação externa *[Taxis the airplane including use of exterior lighting]* *[PF]*	Manutenção de consciência situacional adequada. *[Adequate situational awareness maintenance]*	2	K- Descrever funcionamento do sistema utilizado para manter o controle do avião durante as operações de taxi.
				1	K- Citar velocidade máxima de taxi.
				1	K- Citar elementos da iluminação externa para movimentação do avião no aeródromo.
				2	K- Caracterizar os efeitos do jetblast do avião.
				3	S- Realizar taxi de maneira segura, conforme autorização CTA, utilizando comandos com suavidade e iluminação externa adequada.
				3	S- Manter vigilância (*3) da subtarefa em função de obstáculos na área de movimento do aeródromo, efeitos do jetblast frente a autorização CTA e execução de outras tarefas.
				4	A- Alocar maior atenção a elementos de risco externos.
				5	A- Diligência na comunicação e coordenação requerida em caso de desorientação.
				3	S- Notificar/Alertar PF sobre ameaças externas.
				3	S- Monitorar/Alertar PF sobre discrepâncias na realização do taxi, velocidade, uso de comandos e iluminação.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

1.5.3	20	Cumprir a autorização de táxi *[Complies to taxi clearance]* *[PF/PM]*	Manter consciência situacional adequada (*3) em meio a execução de outros procedimentos. *[Adequate situational awareness (*3) maintenance while performance of other procedures]*	1 1 3 3 3 3 4 3 3 3	K- Reconhecer fonte de consulta oficial e publicações aeronáuticas referentes características, informações e limitações sobre uso de área de movimento do aeródromo. K- Reconhecer simbologias utilizadas nas cartas de aeródromo e estacionamento. S- Acessar e decodificar cartas de aeródromo e estacionamento associadas com a posição do avião no aeródromo. S- Comunicar-se de maneira clara, precisa, e concisa [sobre cumprimento da autorização de taxi]. S- Gerenciar trajetória do avião, conforme autorização CTA, utilizando comandos de maneira segura, com suavidade e iluminação externa adequada. S- Verificar constantemente cumprimento da autorização de taxi recebida. A- Alocar maior atenção a elementos de risco externos. S- Notificar/Alertar PF sobre ameaças externas. S- Monitorar/Alertar PF sobre discrepâncias na utilização de cartas, orientação e trajetória do avião e adesão à autorização CTA. S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
1.5.4	21	Manter vigilância acerca de tráfego e obstáculos conflitantes *[Maintains lookout for conflicting traffic and obstacles]* *[PF/PM]*	Identificar perigos e avaliar riscos em meio a execução de outros procedimentos. *[Identify hazards and assess risks while performing other procedures]*	1 1 3 3 3 3 5 5 3 3	K- Reconhecer simbologias utilizadas nas cartas de aeródromos. K- Reconhecer simbologias utilizadas nas sinalizações verticais e horizontais nos aeródromos. S- Acessar e decodificar cartas de aeródromo e estacionamento associadas com a posição do avião o aeródromo. S- Decodificar simbologias utilizadas nas sinalizações verticais e horizontais nos aeródromos. S- Manter vigilância na frequência de comunicação CTA. S- Manter vigilância (*3) da subtarefa em função de obstáculos na área de movimento do aeródromo, efeitos do jetblast frente a autorização CTA e execução de outras tarefas. A- Postura avaliativa e contingente sobre a segurança do avião durante todo o taxi e complexidade do aeródromo. A- Assertividade na ocorrência de situações de risco a segurança do avião. S- Notificar/Alertar PF sobre ameaças externas, verbalização de tráfego, obstáculos e desvios. S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
1.5.5	22	Operar motores, freios e direção *[Operates thrust, brakes and steering]* *[PF]*	Operar em meio a execução de outros procedimentos. *[Operation of systems while performing*	2 3	K- Descrever funcionamento e limitações dos sistemas utilizados para manter o controle do avião: propulsor, de freios e direção. S- Gerenciar trajetória do avião, conforme autorização CTA, utilizando comandos de maneira segura, com suavidade e iluminação externa adequada.

			other procedures]	5	A- Postura contingente e cuidadosa acerca do manuseio dos comandos dos sistemas, seus limites, conflitos de tráfego e obstáculos.
				3	S- Monitorar/Alertar PF sobre discrepâncias na operação de motores, freios e direção.
				3	S- Monitorar/Alertar PF sobre discrepâncias de parâmetros de motor, freios e direção e seus limites durante taxi.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
1.5.6	14	Conduzir briefings relevantes *[Conducts relevant briefings*] *[VFR/IFR]* *[PF]*	Sumariar elementos críticos das etapas seguintes em meio a execução de outros procedimentos. *[Summarize critical elements of the following phases while performing other procedures]*	4	K- Relacionar comunicação efetiva e o bom relacionamento interpessoal (*3).
				3	S- Coletar e aplicar dados atualizados para conduzir briefings.
				3	S- Conduzir briefings abordando todos elementos críticos do voo *[VFR/IFR]*.
				3	S- Executar briefings de operações normais, anormais e de emergência com passageiros.
				3	S- Comunicar-se de maneira efetiva e assertiva (*3).
				5	A- Consideração a elementos não técnicos [NOTECHS] (*3) na condução de briefings.
				3	S- Monitorar/Verificar, quando aplicável, ações e procedimentos [aderência ao manual do operador] de outros membros da tripulação.
				3	S- Reconhecer e aconselhar, quando aplicável e oportuno, sobre quaisquer erros cometidos [não aderência ao manual do operador] por outros membros da tripulação.
1.5.7	17	Usar procedimentos de comunicação padrão com a equipe de solo e CTA *[Uses standard communication procedures with ground crew and ATC]* *[PF/PM]* (*8)	Aderir a comunicação padrão e garantir feedback *[Adhere to standard communication and guarantee feedback]*	1	K- Reconhecer simbologias [gestos/sinais] utilizadas na comunicação entre piloto, CTA e equipe de solo.
				2	K- Citar elementos técnicos e aspectos relevantes acerca do avião e voo para serem comunicados com pessoal de solo.
				2	K- Demonstrar conhecimentos sobre diferentes frequências para comunicação CTA em aeródromos controlados ou não.
				3	S- Comunicar-se com equipe de solo e CTA de maneira clara, precisa e concisa, utilizando fraseologia e simbologia [gestos/sinais] padrão.
				3	S- Ater-se a elementos técnicos e aspectos relevantes acerca do avião e voo na comunicação com pessoal de solo e CTA.
				3	S- Checar (garantir feedback) (*3) entendimento das mensagens trocadas.
				5	A- Consideração a elementos não técnicos [NOTECHS] (*3) na comunicação com pessoal de solo.
				3	S- Notificar/Alertar PF discrepâncias na comunicação padrão com a equipe de solo e CTA.
				3	S- Notificar/Alertar PF sobre uso de frequências corretas e elementos técnicos e da comunicação relevantes.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
1.5.8	23	Concluir procedimentos operacionais padrão [SOP] e listas de verificação	Aderir a padrões operacionais adotados e a listas de verificação	2	K- Demonstrar procedimentos normais para executar taxi e familiarização com a lista de verificação associada.
				2	K- Citar limitações dos sistemas utilizados para executar taxi.

		[Completes standard operating procedures (SOP) and checklists] *[PF/PM]*	*[Adhere to adopted operational standards and to checklists]*	3 4 4 3 3 3	S- Executar checklist conforme padrão operacional adotado no manual do avião (*7). S- Gerenciar carga de trabalho (*3) e determinar prioridades adequadamente frente a realização de outras tarefas, se requerido. A – Manter adesão integral ao padrão operacional adotado e lista de verificação conforme manual do avião (*7). S- Monitorar/Verificar PF, quando aplicável, sobre discrepâncias em ações e procedimentos [aderência ao manual do avião (*7)]. S- Reconhecer e aconselhar PF, quando aplicável e oportuno, sobre quaisquer erros cometidos [não aderência ao manual do avião (*7)]. S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
1.5.9	24	Atualizar e confirmar dados do FMS (*2) *[Update and confirm FMS (*2) data]* *[VFR/IFR]* *[PF/PM]*	Garantir atenção na obtenção e inserção de novos dados *[Ensure attention in obtaining and inserting new data]*	1 2 2 4 5 3 5 4 3 3 3 3	K- Listar fontes válidas de consulta a dados utilizados no FMS (*2). K- Demonstrar influência da utilização de informações desatualizadas no desempenho e navegação do avião. K- Demonstrar procedimentos operacionais afetos a atualização e confirmação de dados do FMS (*2), incluindo aqueles associados com sua falha. S- Garantir pertinência e validade dos dados do voo *[VFR/IFR]* para posterior manipulação do sistema. S- Apreciar impactos de variações limítrofes de balanceamento, carregamento e elementos meteorológicos no desempenho do avião. S- Inserir dados corretos, manipulando o sistema de maneira correta, lógica ou pré-definida. S- Garantir preparação do avião para o voo *[VFR/IFR]*, inclusive mediante uso de outros recursos, no caso de falha do FMS (*2). A- Alocar cálculos mentais de conferência e concordância entre valores inseridos e resultados esperados apresentados no gerenciamento de voo. S- Notificar/Alertar PF discrepâncias na atualização e confirmação de dados do FMS (*2) e nos cálculos mentais de conferência. S- Monitorar/Alertar PF sobre pertinência e validade dos dados a serem inseridos e sobre a correta manipulação e inserção [verificação] dos mesmos. S- Monitorar/Alertar PF na conferência e concordância entre valores inseridos e resultados no gerenciamento de voo. S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] nos controles e instrumentos, conforme manual do avião (*7). S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
1.5.10	25	Gerenciar mudanças de desempenho e rota de saída *[Manages changes in performance and departure route]*	Avaliar e validar impactos operacionais. *[Assess and validate*	4 5	K- Relacionar possíveis ajustes em sistemas, funcionalidades [comandos] do avião e mudanças de desempenho computadas no gerenciamento do voo. S- Avaliar impactos das mudanças na segurança do voo, condição técnica do avião e validar nova condição.

		[PF/PM]	*operational impacts]*	3 3 4 5 3 3 3	S- Executar alterações adequadas nos diversos sistemas e funcionalidades [comandos] do avião. S- Garantir informação relevante a passageiros quando pertinente. A- Alocar cálculos mentais de conferência e concordância entre elementos alterados e reflexos esperados no desempenho do voo. A- Diligência na comunicação e coordenação CTA no caso de inviabilidade técnica na execução de mudança requerida. S- Notificar/Alertar PF discrepâncias no gerenciamento de mudanças de desempenho e rota de saída. S- Monitorar/Alertar PF sobre configuração [e desvios] apropriada do avião, seus controles e instrumentos conforme manual do avião (*7). S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
1.5.11	26	Concluir procedimentos de degelo / anti-gelo [quando aplicável] *[Completes de-icing/anti-icing procedures] [when applicable]* *[PF/PM]*	Avaliar e validar impactos operacionais da condição meteorológica. *[Assess and validate operational impacts of the meteorological condition]*	1 2 3 3 5 3 3 3	K- Reconhecer condições associadas com a formação de gelo. K- Diferenciar condições meteorológicas que requeiram procedimento anti-gelo ou de degelo. S- Confirmar acesso a informação específica válida sobre a condição meteorológica. S- Executar procedimento correto frente a condição existente para o voo conforme manual do avião (*7). A- Estender estimativa da presença de gelo nas superfícies do avião frente às alterações de altitude de voo e temperatura externa do ar. S- Notificar/Alertar PF discrepâncias na conclusão de procedimentos de degelo / anti-gelo [quando aplicável]. S- Notificar/Alertar PF sobre ameaças meteorológicas e atmosféricas, discrepâncias nas informações válidas e estimativas da presença de gelo. S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[In possession of ATC taxi authorization, airport guidance charts and through standard communication procedures with ATC, ground crew, aircraft manual, operational standard adopted [AOM] and operator's manual.]*

Performance: *[Execute airplane taxiing procedure]*

Standard: *[Have safely operated the airplane during the taxi, according ATC taxi authorization, standard communication, and have prepared airplane for the flight according to the aircraft manual, operational standard adopted [AOM] and operator's manual.]*

Task: *[Manage abnormal and emergency situations]*					**Task No :** 1.6
1.Where performed: *[Airplane/Apron and taxiways]* **2.Triggering Event:** *[Identify abnormal or emergency condition of the plane]* **3.Terminating Event:** *[Determine the end of the abnormal or emergency condition of the airplane]*					**4. References/Standards for the task (if any):** ANAC - RBAC 91; DECEA - ICA 100-12; ICA 100-37; MCA-100-16; Manual do avião [POH; AFM]; Air Operator´s Manual and AOM;
5.No :		**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
Sub-Task	**Int Obj**				
1.6.1	27	Identificar condição anormal e de emergência *[Identifies the abnormal and emergency condition]*	Manter consciência situacional adequada (*3) para caracterizar	2 3	K- Demonstrar parâmetros normas e anormais dos sistemas relevantes do avião à fase da operação e condição identificada. S- Identificar alteração de parâmetros e/ou condições normais.

		[PF/PM]	condição anormal/emergência. *[Maintain adequate situational* (*3) *awareness to characterize abnormal condition/ emergency.]*	3 3 3 5 3 3 3	S- Atuar conforme previsto no manual do avião (*7), quando requerido. S- Manter vigilância (*3) da subtarefa e de outros elementos do ambiente para manutenção do voo de forma segura. A- Manter-se alerta à possibilidade de eventos anormais e de emergência durante todo o período de operações normais. A- Estima à manutenção do estado de alerta elevado. S- Notificar/Alertar PF sobre ameaças externas. S- Monitorar/Alertar PF sobre condições anormais e de emergência no avião, seus sistemas, funcionabilidades, controles e parâmetros. S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
1.6.2	28	Interpretar a condição anormal e de emergência *[Interprets the abnormal and emergency condition]* *[PF/PM]*	Avaliar impactos operacionais da condição *[Assess the operational impacts of the condition]*	2 2 2 5 3 3 5 3 3 3	K- Demonstrar o funcionamento dos sistemas relevantes do avião à fase da operação e condição identificada. K- Descrever influências da condição identificada na operação do avião. K- Demonstrar o checklist ou parte correta do manual do avião (*7) para a lidar com a condição. S- Avaliar impactos da condição na operação do avião. S- Manter adesão ao checklist, padrão operacional adotado ou manual do avião (*7). S- Manter vigilância (*3) da subtarefa e de outros elementos do ambiente para manutenção do voo de forma segura. A- Diligência na consulta às referências técnicas adequadas em caso de dúvidas na interpretação da condição anormal. S- Notificar/Alertar PF discrepâncias na interpretação da condição anormal e de emergência. S- Monitorar/Alertar PF influência e impactos da condição, consultas tecnicas requeridas e vigilância do ambiente interno e externo. S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
1.6.3	29	Executar procedimentos para a condição anormal e de emergência *[Performs the procedure for the abnormal and emergency condition]* *[PF/PM]*	Aderir a padrões operacionais adotados e a listas de verificação *[Adhere to adopted operational standards and checklists]*	2 2 3 3 4 3 3 3	K- Demonstrar o funcionamento dos sistemas do avião relevantes à fase da operação e condição identificada. K- Demonstrar conhecimento dos procedimentos anormais e de emergência relacionados com condição identificada. K- Descrever influências da condição identificada na operação e em outros sistemas do avião. S- Escolher o checklist ou parte correta do manual do avião (*7) para a lidar com a condição. S- Atuar conforme avaliação anterior, dos impactos da condição na operação do avião. S- Gerenciar condição conforme execução correta do checklist, padrão operacional adotado ou manual do avião (*7). S- Manter adesão ao checklist, padrão operacional adotado ou manual do avião (*7). S-Comunicar/declarar condição perante CTA, quando aplicável.

				5	S- Manter vigilância (*3) da subtarefa e de outros elementos do ambiente para manutenção do voo de forma segura.
				4	A- Não hesitar e agir prontamente quando atingida condição de emergência e priorizar tarefas [voar, navegar e comunicar], quando aplicável.
				3	S- Notificar/Alertar PF discrepâncias na execução do procedimento da condição anormal e de emergência.
				3	S- Monitorar/Alertar PF nas consultas tecnicas requeridas, coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Given the prior normal operating condition of the aircraft and provisions about abnormal and emergency conditions according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Extinguish the abnormal or emergency condition of the aircraft and define flight continuity.]*

Standard: *[Have performed and completed operational procedures according aircraft manual, adopted SOP [AOM], and operator's manual; extinguished the abnormal or emergency condition of the aircraft; and properly assessed the safety of the flight.]*

Task: *[Communicate with cabin crew, passengers and company]*					**Task No :** 1.7
1.Where performed: *[Airplane/Apron and taxiways]* **2.Triggering Event:** *[Consider the need for communication with cabin crew, passengers and air operator]* **3.Terminating Event:** *[Receive feedback on communication, if appropriate or required]*					**4. References/Standards for the task (if any):** ANAC - RBAC 91; Air Operator´s Manual and AOM;
5.No : **Sub-Task**	**Int Obj**	**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
1.7.1	30	Comunicar informação relevante à tripulação de cabine *[Communicates relevant information to cabin crew]* *[PF]*	Aderir a comunicação efetiva *[Adhere to effective communication]*	1	K- Citar elementos técnicos e aspectos relevantes acerca do avião, fase do voo e segurança em geral utilizados na comunicação com a tripulação de cabine, se aplicável.
				3	S- Comunicar-se com a tripulação de cabine, se aplicável, de maneira clara, precisa e concisa.
				3	S- Utilizar somente elementos técnicos e aspectos relevantes acerca do avião, fase do voo e segurança em geral na comunicação com a tripulação de cabine, se aplicável.
				3	S- Checar (garantir feedback) (*3) entendimento das mensagens trocadas com a tripulação de cabine, se aplicável.
				5	A- Consideração a elementos não técnicos [NOTECHS] (*3) na comunicação com a tripulação de cabine, se aplicável.
				3	S- Monitorar/Verificar, quando aplicável, ações e procedimentos [aderência ao manual do operador] de outros membros da tripulação.
				3	S- Reconhecer e aconselhar, quando aplicável e oportuno, sobre quaisquer erros cometidos [não aderência ao manual do operador] por outros membros da tripulação.
1.7.2	31	Comunicar informação relevante ao operador aéreo *[Communicates relevant information to company]* *[PF/PM]*	Aderir a comunicação efetiva *[Adhere to effective communication]*	1	K- Citar elementos técnicos e aspectos relevantes acerca do avião, andamento do voo, segurança em geral a outros pertinentes utilizados na comunicação com o operador aéreo.
				3	S- Comunicar-se com operador aéreo de maneira clara, precisa e concisa.
				3	S- Utilizar somente elementos técnicos e aspectos relevantes acerca do avião, andamento do voo, segurança em geral a outros pertinentes na comunicação com o operador aéreo.

				3	S- Checar (garantir feedback) (*3) entendimento das mensagens trocadas com o operador aéreo, quando oportuno.
				5	A- Consideração a elementos não técnicos [NOTECHS] (*3) na comunicação com a tripulação de cabine, se aplicável.
				3	S- Notificar/Alertar PF discrepâncias na comunicação de informação relevante ao operador aéreo.
				3	S- Monitorar/Alertar PF na obtenção e listagem de elementos relevantes para comunicação ao operador aéreo.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
1.7.3	32	Fazer anúncios a passageiros quando apropriado *[Makes passenger announcements when appropriate]* *[PF/PM]*	Sumarizar e declarar somente informações relevantes *[Summarize and declare only relevant information]*	1	K- Citar elementos técnicos e aspectos relevantes acerca dos avisos, instruções verbais e proibições relacionados com os anúncios a passageiros, quando apropriado.
				3	S- Comunicar-se com passageiros de maneira clara, precisa e concisa, conforme provisões do Manual do Operador Aéreo e AOM.
				3	S- Ater-se a elementos técnicos e aspectos relevantes acerca do avião, fase do voo e segurança em geral na comunicação com a tripulação de cabine, se aplicável.
				3	S- Checar (garantir feedback) (*3) entendimento das mensagens trocadas com passageiros, se requerido.
				5	A- Consideração a elementos não técnicos [NOTECHS] (*3) na comunicação com a tripulação de cabine, se aplicável.
				3	S- Notificar/Alertar PF discrepâncias nos anúncios à passageiros quando apropriado.
				3	S- Monitorar/Alertar PF na obtenção e listagem de elementos relevantes para comunicação, comunicação e feedback dos passageiros.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Through normal, abnormal or emergency operation of the airplane, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Communicate cabin crew, passengers and air operator.]*

Standard: *[Have cabin crew, passengers and air operator communicated about relevant aspects of the flight and safety issue elements to their appropriate actions, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Task: *[Perform pre-take-off and pre-departure preparation]* — **Task No :** 2.1

1.Where performed:
[Airplane/taxiways and runway]

2.Triggering Event:
[Prepare airplane to takeoff]

3.Terminating Event:
[Make airplane available to take-off run]

4. References/Standards for the task (if any):

ANAC - RBAC 91; IS 91-001; IS 91-21-001;
DECEA - ICA 100-12; ICA 100-37; MCA 100-16; MCA 96-3; MCA-96-4; ICA 100-5; ICA 105-12;
Manual do avião [POH; AFM];
Air Operator´s Manual and AOM;

5.No : Sub-Task	Int Obj	**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
2.1.1	33	Verificar e confirmar a autorização de alinhar à pista em uso *[Checks and acknowledges line-up clearance]* *[PF/PM]*	Aderir a comunicação efetiva *[Adhere to effective communication]*	2	K- Demonstrar conhecimento sobre serviços de tráfego aéreo, elementos da comunicação aeronáutica que requerem cotejamento, confirmações e preparação antes da decolagem e saída padronizada.
				3	K- Demonstrar procedimentos padrões de fraseologia aeronáutica.
				3	S- Escolher diferentes frequências de comunicação CTA, se aplicável.

				3	S- Utilizar os procedimentos padrões de fraseologia aeronáutica.
				3	S- Verificar elementos da autorização de alinhar à pista em uso conforme documentos de apoio e cartas de navegação requeridas para o voo *[VFR/IFR].*
				3	S- Comunicar-se de maneira clara, precisa, e concisa [sobre alinhamento à pista em uso].
				4	A- Diligência na solicitação de confirmações em caso de dúvidas.
				4	A- Disponibilidade para receber, registrar e entender mensagens.
				3	S- Notificar/Alertar PF discrepâncias na confirmação e autorização de alinhamento à pista em uso.
				3	S- Monitorar/Alertar PF nas comunicações CTA e uso de documentos de apoio à confirmação.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
2.1.2	34	Verificar a seleção correta da pista em uso *[Checks correct runway selection]* *[PF/PM]*	Manter consciência situacional adequada (*3) em meio a execução de outros procedimentos *[Maintain adequate situational awareness (*3) while performing other procedures]*	1	K- Reconhecer simbologias utilizadas nas cartas de aeródromo.
				1	K- Reconhecer outras fontes de consulta [internas e externas] para seleção correta de pista em uso.
				3	S- Decodificar cartas utilizadas durante taxi do avião.
				3	S- Utilizar fontes apropriadas de verificação da pista em uso em aeródromo controlado, ou não.
				3	S-Validar seleção da pista em uso citada na autorização CTA ou mediante outros meios de verificação.
				5	S- Manter vigilância (*3) acerca da posição atual do avião frente a autorização CTA e execução de outras tarefas.
				5	A- Estimar uso de elementos externos para confirmação da orientação da pista em uso.
				3	S- Notificar/Alertar PF discrepâncias na verificação e seleção correta de pista em uso.
				3	S- Monitorar/Alertar PF no reconhecimento e uso de cartas, outras fontes apropriadas de verificação e vigilância do ambiente externo.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
2.1.3	35	Confirmar a validade dos dados de desempenho *[Confirms validity of performance data]* *[PF/PM]*	Avaliar validade dos dados e validar impactos operacionais *[Assess data validity and validate operational impacts]*	3	K- Apreciar influência da utilização de informações desatualizadas no desempenho do avião ou penalidades de desempenho no caso de decolagem com vento desfavorável.
				3	S- Identificar e verificar dados utilizados e/ou inseridos no FMS (*2), inclusive mediante uso de outros recursos, no caso de falha do FMS (*2).
				4	S- Garantir pertinência e validade dos dados de desempenho *[VFR/IFR]* de decolagem e outras etapas, inclusive para posterior manipulação do sistema, ou outros recursos, no caso de falha do FMS (*2).
				4	A- Postura consultiva e confirmativa aos dados de desempenho frente ao ingresso na pista; e contingente quando em dúvidas sobre a pertinência e validade dos dados.

				4	A- Alocar cálculos mentais de conferência e concordância entre valores inseridos e resultados esperados apresentados no gerenciamento de voo.
				3	S- Notificar/Alertar PF discrepâncias na confirmação da validade de dados, cálculos de desempenho de decolagem e nos cálculos mentais de conferência.
				3	S- Monitorar/Alertar PF sobre pertinência e validade dos dados ajustados e sobre a correta manipulação e inserção [verificação] dos mesmos.
				3	S- Monitorar/Alertar PF na conferência e concordância entre valores inseridos e resultados no gerenciamento de voo.
				3	S- Monitorar/Alertar PF sobre configuração [e desvios] apropriada do avião, seus sistemas e instumentos conforme desempenho requerido e manual do avião (*7).
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
2.1.4	36	Verificar se o setor de aproximação e pista em uso estão livres *[Checks approach sector and runway are clear]* *[PF/PM]*	Garantir atenção para identificar perigos em meio a execução de outros procedimentos *[Ensure attention to identify hazards while performing other procedures]*	1	K- Reconhecer elementos de circuito de tráfego, posições críticas de aeronaves nos aeródromos e possibilidade de uso de comunicação para conferência de tráfego, quando aplicável.
				2	K- Caracterizar recursos e funcionalidades do avião que auxiliem a verificação.
				3	S- Verificar presença de aeronaves nas redondezas do aeródromo, no circuito de tráfego e/ou pista em uso.
				3	S- Utilizar recursos e funcionalidades do avião na verificação.
				3	S- Manter vigilância (*3) acerca de operações [tráfego] em torno do aeródromo.
				3	S- Utilizar de comunicação na frequência adequada para certificação sobre ausência de tráfego no setor de aproximação, quando aplicável.
				3	S- Confirmar setor de aproximação e pista em uso estão livres.
				4	A- Integrar todos os recursos disponíveis para a verificação.
				3	S- Notificar/Alertar PF discrepâncias na condição do setor de aproximação e pista em uso.
				3	S- Monitorar/Alertar PF sobre vigilância do ambiente externo, uso de recursos e funcionalidades do avião para tal e comunicação CTA.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
2.1.5	37	Confirmar conclusão de todas as listas de verificação e preparações de decolagem *[Confirms all checklists and take-off preparations completed]* *[PF/PM]*	Aderir a padrões operacionais adotados e a listas de verificação *[Adhere to adopted SOP and checklists]*	2	K- Demonstrar filosofia operacional adotada na leitura de listas de verificação e preparações de decolagem.
				2	K- Descrever procedimento normal a ser adotado para preparação de decolagem.
				3	S- Determinar conclusão de procedimentos e verificações previstas através da lista de verificação correspondente.
				5	A- Postura contingente e confirmativa em última instância frente ao ingresso na pista e rolagem.
				3	S- Notificar/Alertar PF discrepâncias na conclusão de todas as listas de verificação e preparações de decolagem.
				3	S- Monitorar/Alertar PF sobre configuração esperada na automação [modos de gerenciamentos], nos controles e instrumentos, conforme manual do avião (*7).

				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
2.1.6	38	Alinhar o avião no eixo central sem perder a distância *[Lines up the airplane on center line without losing distance]* *[PF]*	Operar em meio a execução de outros procedimentos *[Operate while performing other procedures]*	2 1 3 3 3 5 3 3 3	K- Demonstrar importância da manutenção do eixo da pista durante a decolagem. K- Citar limitações do sistema de direção do avião e procedimentos para alinhar o avião para corrida de decolagem. K- Caracterizar sistemas, recursos e funcionalidades do avião que devem ser ajustados à ação. S- Alinhar na pista em uso conforme autorização CTA, utilizando comandos conforme seus limites, de maneira segura, com suavidade e iluminação externa adequada. S- Verificar presença de aeronaves nas redondezas do aeródromo, no circuito de tráfego e/ou pista em uso. A- Postura contingente e confirmativa em última instância frente ao início da rolagem. S- Notificar/Alertar PF discrepâncias no alinhamento do avião ao eixo central da pista. S- Monitorar/Alertar PF sobre uso de comandos e iluminação para alinhamento à pista, vigilância do ambiente externo e confirmação de sistemas, recursos e funcionalidades do avião para decolagem. S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
2.1.7	39	Verificar meteorologia no setor de saída *[Checks weather on departure sector]* *[PF/PM]*	Identificar perigos e avaliar riscos em meio a execução de outros procedimentos *[Identify hazards and assess risks while performing other procedures]*	2 5 5 5 3 3 3	K- Caracterizar fenômenos meteorológicos relevantes ao desempenho do avião, com ênfase em microburst, tesoura de vento e tempestades. S- Estimar influência dos elementos meteorológicos no desempenho do avião. S- Interpretar e estimar condições e opções disponíveis para ajustes no procedimento de saída *[VFR/IFR]*. A- Postura contingente e baseada em ameaças e riscos nas avaliações afetas a decolagem e procedimento de saída *[VFR/IFR]*. S- Notificar/Alertar PF discrepâncias na verificação de meteorologia no setor de saída. S- Monitorar/Alertar PF sobre ameaças meteorológicas no setor, uso e de informações válidas e estimativas de impacto à navegação. S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
2.1.8	40	Verificar condição da pista em uso e o vento *[Checks runway status and wind]* *[PF/PM]*	Identificar perigos e avaliar riscos em meio a execução de outros procedimentos *[Identify hazards and assess risks while performing other procedures]*	1 3 5 5 5	K- Definir limites de vento do avião. S- Verificar dados de vento oriundos de mensagem METAR, aviso de aeródromo e informação provida por mensagem CTA, quando aplicável. S- Avaliar se a manutenção da segurança de voo está preservada na decisão de prosseguir ou abortar a decolagem. A- Postura contingente e confirmativa em última instância frente ao início da rolagem. A- Postura contingente e baseada em ameaças e riscos nas avaliações afetas a decolagem e procedimento de saída *[VFR/IFR]*.

				3	S- Notificar/Alertar PF discrepâncias na verificação da pista em uso e vento.
				3	S- Monitorar/Alertar PF sobre uso e de informações válidas sobre condição da pista e vento e impactos ao procedimento de decolagem.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Through normal operation of the airplane according aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Conclude preparation of the airplane to start takeoff run.]*

Standard: *[Have completed checks according to the aircraft manual, adopted SOP [AOM], and operator's manual and have guaranteed the safety to execute the takeoff run and subsequent steps.]*

Task: *[Perform take-off run]* | **Task No :** 2.2

1.Where performed: *[Airplane/runway in use]*

2.Triggering Event:
[Align airplane with runway in use center line]

3.Terminating Event:
[Start initial climb segment]

4. References/Standards for the task (if any):

ANAC - RBAC 91;
Manual do avião [POH; AFM];
Air Operator´s Manual and AOM;

5.No : Sub-Task	Int Obj	6.Sub-Tasks	7.Performance Difficulties	LoA	8. Summary of K/S/A Requirements
2.2.1	41	Aplicar potência de decolagem *[Applies take-off thrust]* *[PF]*	Respeitar e aderir a limites e padrões operacionais *[Respect and adhere to operational limits and standards]*	1	K- Citar limitações do grupo moto propulsor para decolagem.
				2	K- Caracterizar sistemas, recursos e funcionalidades do avião que devem ser ajustados à ação.
				3	S- Usar comandos na aplicação dos parâmetros do grupo moto propulsor específicos à decolagem.
				3	A- Proporcionalidade e conforto na aplicação de comandos.
				3	S- Notificar/Alertar PF discrepâncias na aplicação de potência de decolagem.
				3	S- Monitorar/Alertar PF sobre aplicação e resposta de potência e seus controles.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
2.2.2	42	Verificar parâmetros de motor *[Checks engine parameters]* *[PF/PM]*	Discriminar parâmetros anormais *[Discriminate abnormal parameters]*	1	K- Citar parâmetros [mínimos e máximos] do grupo moto propulsor específicos à decolagem.
				2	K- Demonstrar procedimentos operacionais normais acerca da verificação de parâmetros de motor.
				3	S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com a ação.
				3	S- Checar se os parâmetros foram atingidos e mantê-los.
				3	S- Atuar conforme previsto no manual do avião (*7).
				3	A- Não reter [calibrar] atenção a ajustes finos dos parâmetros do grupo moto propulsor frente à pequenas variações e ao desenvolvimento de outros elementos da corrida de decolagem.
				4	A- Não hesitar e agir prontamente, conforme manual do avião (*7), se não atingidos parâmetros mínimos ou excedidas limitações que ponham em risco o desempenho do avião para decolagem.
				3	S- Notificar/Alertar PF discrepâncias nos parâmetros do grupo moto-propulsor para decolagem.

				3	S- Monitorar/Alertar PF sobre controles e parâmetros relativos ao grupo moto-propulsor, sistemas, recursos e funcionalidades associadas.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
2.2.3	43	Verificar indicadores de velocidade *[Checks airspeed indicators]* *[PF/PM]*	Discriminar parâmetros anormais *[Discriminate abnormal parameters]*	2	K- Demonstrar o princípio de funcionamento do(s) velocímetro(s) e sistema(s) associados, quando aplicável.
				1	K- Definir velocidades específicas de decolagem, a depender do avião.
				2	K- Demonstrar procedimentos operacionais normais acerca da verificação de parâmetros de motor.
				3	S- Checar possível discrepância entre valores nos velocímetros, quando aplicável.
				3	S- Checar atingimento dos parâmetros mínimos da(s) velocidade(s) conforme previsto.
				3	S- Atuar conforme previsto no manual do avião (*7).
				4	A- Alocar modelos mentais relacionando velocidades à determinados padrões de comportamento [estabilidade] do avião.
				4	A- Não hesitar e agir prontamente, conforme manual do avião (*7), se não atingidos parâmetros de velocidade que ponham em risco o desempenho do avião para decolagem.
				3	S- Notificar/Alertar PF discrepâncias nos indicadores de velocidade.
				3	S- Monitorar/Alertar PF sobre disfunção entre os indicadores, não atingimento de parâmetros mínimos conforme condição técnica e desempenho previsto.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
2.2.4	44	Manter o eixo central da pista em uso *[Stays on runway centre line]* *[PF]*	Corrigir efeitos meteorológicos e torque assimétrico *[Correct weather effects and asymmetric torque]*	2	K- Caracterizar efeitos de torque, esteira de turbulência, ventos de superfície e outros fenômenos associados com a manutenção do eixo central da pista.
				2	K- Descrever a influência da velocidade do ar na atuação do leme direcional.
				3	S- Aplicar comandos, conjugando aileron e pedal na proporção correta na correção de tendências da perda de eixo do avião.
				3	S- Manter o avião no eixo central da pista.
				5	A- Demonstrar equilíbrio e predição na conjunção de comandos ao comportamento [estabilidade] do avião durante corrida de decolagem.
				3	S- Notificar/Alertar PF discrepâncias na manutenção ao eixo da pista em uso.
				3	S- Monitorar/Alertar PF sobre disfunção dos comandos do avião utilizados para manter o eixo central da pista em uso.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
Task Terminal Objective					
Condition: *[Through normal operation of the airplane according aircraft manual, adopted SOP [AOM], and operator's manual.]* **Performance:** *[Run the airplane on runway in use.]* **Standard:** *[Have concluded the takeoff run safely according to the technical condition of the aircraft and to the aircraft manual, operational standard adopted [AOM] and operator's manual.]*					

Task: *[Perform transition to instrument flight rules]*					**Task No :** 2.3
1.Where performed: *[Airplane/Control Zone]* **2.Triggering Event:** *[Stablish airplane takeoff]* **3.Terminating Event:** *[Make the airplane available for the initial climb segment and the flap retraction altitude]*					**4. References/Standards for the task (if any):** ANAC - RBAC 91; Manual do avião [POH; AFM]; Air Operator´s Manual and AOM;
5.No :		**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
Sub-Task	**Int Obj**				
N/A(*4)	-	~~Aplicar procedimentos de V1~~ ~~*[Applies V1 procedures]*~~	N/A (*4)		N/A(*4)
2.3.1	45	Rodar na VR até atitude inicial *[Rotates at VR to initial pitch atitude]* *[PF]*	Respeitar e aderir a limites e padrões operacionais *[Respect and adhere to operational limits and standards]*	2 1 3 3 4 3 3 3	K- Caracterizar importância de executar rotação na velocidade e atitude correta. K- Definir velocidade relacionadas à rotação. S- Iniciar rotação na V_R. S- Aplicar comandos no manche e compensador em função da velocidade angular de rotação e condições atmosféricas presentes. A- Não hesitar e agir prontamente quando atingida a VR. S- Notificar/Alertar PF discrepâncias na rotação conforme VR e atitude inicial. S- Monitorar/Alertar PF sobre disfunção entre os indicadores, não atingimento de parâmetros mínimos conforme condição técnica e desempenho previsto. S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
2.3.2	46	Estabelecer atitude inicial com asas niveladas *[Establishes initial wings level attitude]* *[PF]*	Corrigir efeitos meteorológicos e de torque *[Correct meteorological and torque effects]*	2 3 3 3 3 5 3 3 3	K- Caracterizar influência do vento, torque e do fator P na trajetória de decolagem. S- Apreciar influências do vento na trajetória de subida do avião. S-Determinar maneira correta de realizar correções devidas. S- Aplicar comandos no manche, compensador e pedais para devida correção e manutenção da atitude. S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com a ação. A- Conforto na aplicação de comandos (considerando controle manual ou automático do avião, quando aplicável). S- Notificar/Alertar PF discrepâncias no estabelecimento da atitude inicial com asas niveladas. S- Monitorar/Alertar PF sobre apreciação do vento, suas influências, da atuação e disfunção dos controles, recursos do avião associados com a ação e manutenção de parâmetros mínimos conforme condição técnica e desempenho previsto. S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
2.3.3	47	Recolher trem de pouso *[Retract landing gear]* *[PF/PM]* (*8)	Operar em meio a execução de outros procedimentos	2 1	K- Caracterizar influência do trem de pouso do desempenho do avião, se aplicável. K- Definir velocidades relacionadas a retração e operação com trem de pouso baixado, se aplicável.

			[Operate while performing other procedures]	3	S- Manter vigilância (*3) em relação aos limitantes de operação do trem de pouso, se aplicável.
				3	S- Recolher o trem de pouso conforme limites, se aplicável.
				4	A- Alocar conferência da condição do trem de pouso também através da alteração esperada no desempenho do avião.
				2	S- Notificar/Alertar PF discrepâncias no recolhimento do trem de pouso.
				2	S- Monitorar/Alertar PF sobre atingimento de limitantes para atuação do trem de pouso e desempenho previsto para o avião.
				2	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
2.3.4	48	Manter velocidades de subida *[Maintain climb-out speed]* *[PF]*	Respeitar e aderir a limites e padrões operacionais em meio a efeitos meteorológicos e de torque *[Respect and adhere to operating limits and standards amidst meteorological and torque effects]*	2	K- Caracterizar importância da manutenção da velocidade assumida no desempenho do avião.
				1	K- Definir velocidades de subida relacionadas com operações normais e de emergência.
				3	S- Apreciar influências do vento na velocidade.
				3	S-Determinar maneira correta de manter a velocidade.
				3	S- Aplicar comandos no manche, compensador e pedais para devida correção e manutenção da velocidade.
				3	S- Manter velocidade de subida correta.
				3	S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com a ação.
				5	A- Conforto na aplicação de comandos (considerando controle manual ou automático do avião, quando aplicável).
				3	S- Notificar/Alertar PF discrepâncias na manutenção das velocidades de subida.
				3	S- Monitorar/Alertar PF sobre atuação e disfunção dos indicadores de velocidade, sistemas, recursos e funcionalidades do avião e atitude empregada conforme condição técnica e desempenho previsto.
				3	S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] nos controles e instrumentos, conforme manual do avião (*7).
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Through normal operation of the airplane according aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Configure airplane to fly under instrument flight rules.]*

Standard: *[Have configured the airplane to safely perform the transition to instrument flight rules according to the airplane's technical condition, departure procedures, aircraft manual, operational standard adopted [AOM] and operator's manual.]*

Task : *[Perform initial climb to flap retraction altitude]* — **Task No :** 2.4

1.Where performed: *[Airplane/Control Zone]*	**4. References/Standards for the task (if any):** ANAC - RBAC 91; Manual do avião [POH; AFM]; Air Operator´s Manual and AOM;
2.Triggering Event: *[Define stabilization in the initial climb segment]*	
3.Terminating Event: *[Make airplane available to start navigation]*	

5.No :		**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
Sub-Task	**Int Obj**				

2.4.1	49	Definir potência de subida *[Sets climb power]* *[PF]*	Respeitar e aderir a limites e padrões operacionais *[Respect and adhere to operational limits and standards]*	1	K- Citar parâmetros do grupo moto propulsor específicos à decolagem e regimes de potência conforme manual do avião (*7).
				2	K- Demonstrar importância do emprego correto da potência, relacionando mistura e passo de hélice, quando aplicado.
				3	S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com a ação.
				3	S- Usar comandos na aplicação da potência estabelecida de subida conforme limites e regime previsto no planejamento do voo (considerando controle manual ou automático do avião, quando aplicável).
				3	S- Definir atingimento dos parâmetros de potência de subida e mantê-los conforme aplicável à subida.
				3	S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com a ação.
				3	A- Não reter [calibrar] atenção a ajustes finos dos parâmetros do grupo moto propulsor frente à pequenas variações e ao desenvolvimento de outros elementos da corrida de decolagem.
				3	S- Notificar/Alertar PF discrepâncias na definição da potência de subida.
				3	S- Monitorar/Alertar PF sobre atuação e disfunção dos controles e indicadores do grupo moto-propulsor conforme condição técnica e desempenho previsto.
				3	S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] nos controles e instrumentos, conforme manual do avião (*7).
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
2.4.2	50	Ajustar atitude para aceleração *[Adjusts attitude for acceleration]* *[PF]*	Corrigir efeitos meteorológicos e de torque *[Correct meteorological and torque effects]*	2	K- Caracterizar influência da determinação da altitude de aceleração no desempenho de subida.
				2	S- Caracterizar atitude e parâmetros dos grupo moto propulsor ideais para aceleração.
				3	S- Apreciar influências atmosféricas e de características do avião na atitude para aceleração.
				3	S- Usar comandos no ajuste da atitude conforme manual do avião (*7).
				3	S- Definir atitude correta para aceleração e mantê-la conforme aplicável à subida.
				3	S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com a ação.
				5	A- Conforto na aplicação de comandos (considerando controle manual ou automático do avião, quando aplicável).
				3	S- Notificar/Alertar PF discrepâncias no ajuste de atitude para aceleração.
				3	S- Monitorar/Alertar PF sobre apreciação de influências atmosféricas, meteorológicas na ação.
				3	S- Monitorar/Alertar PF sobre atuação e disfunção dos controles e recursos do avião associados com velocidade, atitude e manutenção de parâmetros mínimos conforme condição técnica e desempenho previsto.

				3	S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] nos controles e instrumentos, conforme manual do avião (*7).
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
2.4.3	51	Selecionar flaps de acordo com seus limites de velocidade *[Selects flaps according to flap speed schedule]* *[PF/PM]*	Respeitar e aderir a limites e padrões operacionais *[Respect and adhere to operational limits and standards]*	2	K- Caracterizar influência do uso de flaps no desempenho para aceleração e subida do avião.
				1	K- Citar limites de velocidades para uso/retração de flaps específicos à decolagem e subida.
				1	K- Definir limites e velocidades ideais de retração de flap específicas a aceleração e subida conforme manual do avião (*7).
				3	S- Selecionar e operar flaps de acordo com seus limites de velocidade.
				3	S- Usar comandos na aplicação de potência, ajuste de atitude e manutenção de velocidade no recolhimento dos flaps.
				5	A- Conforto na aplicação de comandos (considerando controle manual ou automático do avião, quando aplicável).
				3	S- Notificar/Alertar PF discrepâncias na seleção de flaps de acordo com seus limites de velocidade.
				3	S- Monitorar/Alertar PF sobre atuação dos flaps associados com velocidade, atitude e manutenção de parâmetros mínimos conforme condição técnica e desempenho previsto.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
2.4.4	52	Observar restrições de velocidade *[Observes speed restrictions]* *[PF]*	Garantir atenção para identificar perigos em meio a execução de outros procedimentos *[Ensure attention to identify hazards while performing other procedures]*	1	K- Reconhecer simbologias das cartas de procedimentos e navegação.
				3	S- Identificar limites de velocidade mediante navegação lateral e vertical.
				3	S- Usar comandos no ajuste e manutenção de velocidade.
				3	S- Aderir às velocidades do procedimento (ou instruções) de saída e subida.
				5	A- Conforto na aplicação de comandos (considerando controle manual ou automático do avião, quando aplicável).
				3	S- Notificar/Alertar PF discrepâncias acerca de restrições de velocidade.
				3	S- Monitorar/Alertar PF sobre controles e configurações do avião afetos a manutenção da velocidade, incluindo efeitos da automação [controles e modos de gerenciamentos] nos controles e instrumentos, conforme manual do avião (*7).
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
2.4.5	53	Concluir listas de verificação relevantes *[Completes relevant checklists]* *[PF/PM]*	Manter atenção e garantir confirmações, quando requeridas, a todos itens *[Maintain attention and ensure confirmations, when required, for all items]*	2	K- Demonstrar filosofia operacional adotada na leitura de listas de verificação de operações normais à fase da operação.
				3	S- Executar a lista de verificação.
				3	S- Determinar conclusão de procedimentos e verificações previstas na lista de verificação correspondente.
				5	A- Postura contingente e confirmativa a todos itens das listas de verificação.
				3	S- Notificar/Alertar PF discrepâncias na conclusão de listas de verificação relevantes.

				3	S- Monitorar/Alertar PF sobre confirmação da condição esperada de itens das listas de verificação conforme manual do avião (*7).
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Through normal operation of the airplane according aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Stabilize airplane to complete initial climb segment.]*

Standard: *[Complete initial climb and reach flap retraction altitude according to the aircraft manual, operational standard adopted [AOM] and operator's manual.]*

Task: *[Perform rejected take-off]* **Task No :** 2.5

1.Where performed:
[Airplane/Runway in use]

2.Triggering Event:
[Verify risk for airplane takeoff]

3.Terminating Event:
[Determine the end of the risk condition to the airplane and people]

4. References/Standards for the task (if any):

ANAC - RBAC 91;
DECEA - ICA 100-12; ICA 100-37; MCA 100-16;
Manual do avião [POH; AFM];
Air Operator´s Manual and AOM;

5.No : Sub-Task	Int Obj	6.Sub-Tasks	7.Performance Difficulties	LoA	8. Summary of K/S/A Requirements
2.5.1	54	Reconhecer necessidade para abortar a decolagem *[Recognizes the requirement to abort the take-off]* *[PF]*	Identificar o perigo e avaliar riscos correta e tempestivamente *[Identify the hazard and assess risks correctly and in a timely manner]*	2	K- Caracterizar todos critérios técnicos e condições externas para rejeitar decolagem.
				3	S- Manter vigilância sobre parâmetros e condições associadas aos critérios técnicos e outras condições externa para rejeitar decolagem.
				3	S- Identificar atingimento dos parâmetros e condições associadas aos critérios técnicos e outras condições externas para rejeitar decolagem.
				3	S- Manter vigilância (*3) acerca de toda operação.
				5	A- Estima à manutenção do estado de alerta elevado.
				3	S- Notificar/Alertar PF sobre ameaças externas.
				3	S- Monitorar/Alertar PF sobre condições anormais e de emergência no avião, seus sistemas, funcionabilidades, controles e parâmetros.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
2.5.2	55	Aplicar procedimentos para rejeitar a decolagem *[Applies the rejected take-off procedure]* *[PF]*	Aderir a padrões operacionais adotados tempestivamente	2	K- Caracterizar procedimentos e padrões operacionais de rejeição de decolagem conforme manual do avião (*7).
				2	K- Diferenciar situações anormais para prosseguir decolagem das quais devem resultar na rejeição de decolagem.
				3	S- Identificar parâmetro ou condição apresentado como passível de rejeição de decolagem.
				3	S- Executar rejeição de decolagem conforme manual do avião (*7).
				5	A- Não hesitar e agir prontamente quando atingidos parâmetros e condições de rejeição de decolagem.
				3	S- Monitorar/Alertar PF sobre configuração de parâmetros e/ou condições passíveis de rejeição de decolagem.
				3	S- Notificar/Alertar PF discrepâncias na execução do procedimento de rejeição de decolagem.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.

2.5.3	56	Avaliar necessidade de evacuar o avião *[Assesses the need to evacuate the airplane]* *[PF/PM]*	Avaliar riscos corretamente e agir tempestivamente.	2 3 5 3 3 5 3 3 3	K- Caracterizar todas condições que requeiram evacuar o avião e possíveis elementos de risco do ambiente externo à passageiros. S- Identificar condições que requeiram evacuar o avião e possíveis elementos de risco do ambiente externo à passageiros. S- Avaliar riscos e benefícios de se iniciar uma evacuação no cenário e ambiente apresentado. S-Comunicar/declarar condição perante CTA, quando aplicável. S- Evacuar avião conforme manual do avião (*7). A- Não hesitar e agir prontamente quando atingida condição de evacuar o avião. S- Notificar/Alertar PF sobre ameaças externas. S- Monitorar/Alertar PF sobre avaliação de riscos, benefícios da evacuação e na comunicação CTA. S- Notificar/Alertar PF discrepâncias na execução do procedimento de rejeição de decolagem. S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Given the prior normal operating condition of the aircraft and provisions about abnormal and emergency conditions according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Reject take-off and ensure occupant´s safety.]*

Standard: *[Have correctly recognized the feasibility and need to reject take-off, completed procedures according to the aircraft manual, adopted SOP [AOM], and operator's manual, and ensured the safety of the airplane's occupants.]*

Task: *[Perform navigation]*					**Task No :** 2.6
1.Where performed: *[Airplane/Control Zone]* **2.Triggering Event:** *[Maneuver airplane to comply with departure procedure]* **3.Terminating Event:** *[Perform standard instrument departure procedures]*					**4. References/Standards for the task (if any):** ANAC - RBAC 91; IS 91-001; IS 91-21-001; DECEA - ICA 100-12; ICA 100-37; MCA 100-16; MCA 96-3; MCA-96-4; Manual do avião [POH; AFM]; Air Operator´s Manual and AOM;
5.No :		**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
Sub-Task	**Int Obj**				
2.6.1	57	Cumprir autorização de saída *[Complies with departure clearance]* *[PF]*	Manter alerta efetivo em relação aos demais instrumentos do avião *[Maintain effective awareness in relation to the other instruments of the airplane]*	1 3 2 2 3 3 3 3	K- Reconhecer simbologias das cartas de procedimentos e navegação. S- Identificar limites horizontais e verticais da autorização de saída. K- Demonstrar filosofia de operação normal adotada na fase pós-decolagem. K- Descrever procedimento normal a ser adotado para fase pós-decolagem. S- Usar comandos no ajuste e manutenção de velocidade. S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com a ação. S- Comunicar-se de maneira clara, precisa, e concisa [sobre cumprimento da autorização de saída]. S- Aderir aos limites das cartas e instruções de saída.

				5	A- Conforto na aplicação de comandos (considerando controle manual ou automático do avião, quando aplicável).
				3	S- Notificar/Alertar PF discrepâncias no cumprimento da autorização de saída.
				3	S- Notificar/alertar PF sobre cumprimento da trajetória da autorização recebida, aproximação, atingimento de fixos e alturas determinadas no procedimento de saída.
				3	S- Notificar/alertar PF sobre altitudes de segurança e proximidade às mesmas.
				3	S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] nos controles e instrumentos, conforme manual do avião (*7).
				3	S- Notificar/Alertar PF sobre ambiente e ameaças externas e elementos da coordenação CTA.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
2.6.2	58	Cumprir procedimentos de saída, exemplo: velocidades *[Complies with published departure procedures, e.g. speeds]* *[PF]*	Manter consciência situacional adequada (*3) acerca da posição do avião *[Maintain adequate situational awareness (*3) regarding airplane position]*	1	K- Reconhecer simbologias das cartas de procedimentos e navegação.
				2	K- Explicar elementos da parte específica de desempenho do manual do avião (*7).
				3	S- Comunicar-se de maneira clara, precisa, e concisa [sobre cumprimento do procedimento de saída].
				3	S- Identificar limites horizontais e verticais das novas instruções da autorização de saída.
				5	S- Avaliar desempenho do avião acerca da execução das novas instruções.
				3	S- Executar alterações adequadas nos diversos sistemas e funcionalidades [comandos] do avião.
				3	S- Usar comandos no ajuste e manutenção das novas instruções.
				3	S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com a ação.
				3	S- Aderir aos limites das cartas e instruções de saída.
				5	A- Conforto na aplicação de comandos (considerando controle manual ou automático do avião, quando aplicável).
				3	S- Notificar/Alertar PF discrepâncias no cumprimento de procedimentos [instruções] específicos à saída.
				3	S- Notificar/alertar PF sobre avaliação e atingimento de desempenho do avião acerca de determinado procedimento [instrução].
				3	S- Notificar/Alertar PF sobre quaisquer desvios do procedimento [instrução] adotado.
				3	S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] nos controles e instrumentos, conforme manual do avião (*7).
				3	S- Notificar/Alertar PF sobre ambiente e ameaças externas.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
2.6.3	59	Monitorar precisão da navegação	Manter consciência	2	K- Caracterizar o funcionamento dos meios utilizados para navegação.

		[Monitors navigation accuracy] *[PF/PM]*	situacional adequada (*3) acerca da posição do avião *[Maintain adequate situational awareness (*3) regarding airplane position]*	2 3 5 3 3 3 3 5 3 3 3 3 3	K- Demonstrar procedimentos operacionais afetos a navegação VFR, IFR e PBN, quando aplicável, incluindo aqueles normais e de perda de capacidade de navegação. S- Manter vigilância (*3) em relação aos limitantes de precisão da navegação. S- Avaliar capacidade da navegação. S- Usar comandos, executar procedimentos adequados nos diversos sistemas e funcionalidades do avião, conforme avaliação anterior [no caso de perda da capacidade de navegação]. S- Comunicar-se de maneira clara, precisa, e concisa [no caso de perda da capacidade de navegação]. S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com a precisão da navegação. S- Aderir aos limites de precisão da capacidade de navegação. A- Estima à riscos associados à complacência na monitoração da precisão da navegação. S- Notificar/Alertar PF sobre discrepâncias na precisão da navegação. S- Notificar/alertar PF sobre avaliação e adesão à precisão [desempenho] de navegação específica ao tipo utilzada. S- Notificar/Alertar PF sobre execução de procedimentos e comunicação CTA [no caso de perda da capacidade de navegação]. S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] na precisão da navegação conforme manual do avião (*7). S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
2.6.4	60	Comunicar-se e coordenar-se com o CTA *[Communicates and coordinates with ATC]* *[PF/PM] (*8)*	Garantir entendimento de todas as mensagens por ambas as partes *[Ensure understanding of all messages by both parties]*	2 2 3 3 3 3 4 3	K- Demonstrar conhecimento sobre serviços de tráfego aéreo, sobre autorização de tráfego e informações sobre terminal e meteorologia. K- Demonstrar procedimentos padrões de fraseologia aeronáutica. S- Manter vigilância na frequência de comunicação CTA. S- Manter vigilância (*3) em relação a posição do avião. S- Comunicar-se de maneira clara, precisa, e concisa, considerando, no mínimo os elementos (*3): emissão [solicitação], recebimento, verificação e cotejamento das novas mensagens [instruções], quando aplicável. A- Respeito e atenção a desobstrução e congestionamento da frequência de comunicação CTA. A- Não se comunicar com o CTA de forma complacente (*3) ou automatizada. A- Disponibilidade para receber, registrar e entender mensagens. S- Notificar/Alertar PF discrepâncias na comunicação padrão com a equipe de solo e CTA.

				3	S- Notificar/Alertar PF sobre uso de frequências corretas e elementos técnicos e da comunicação relevantes.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Given the prior normal operating condition of the aircraft and provisions about abnormal and emergency conditions according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Navigate according departure procedures and instructions]*

Standard: *[Have navigated the airplane according to standard ATC communication and authorization, while performing operational procedures according to the aircraft manual, adopted SOP [AOM], and operator's manual; and adequate monitoring of navigation, complying with departure procedures.]*

Task: *[Manage abnormal and emergency situations]* — **Task No :** 2.7

1.Where performed:
[Airplane/Control Zone]

2.Triggering Event:
[Identify abnormal or emergency condition of the plane]

3.Terminating Event:
[Determine the end of the abnormal or emergency condition of the airplane]

4. References/Standards for the task (if any):

ANAC - RBAC 91;
DECEA - ICA 100-12; ICA 100-37; MCA-100-16;
Manual do avião [POH; AFM];
Air Operator´s Manual and AOM;

5.No : Sub-Task	Int Obj	6.Sub-Tasks	7.Performance Difficulties	LoA	8. Summary of K/S/A Requirements
2.7.1	27	Identificar condição anormal e de emergência *[Identifies the abnormal and emergency condition]* *[PF/PM]*	Manter consciência situacional adequada (*3) para caracterizar condição anormal/emergência. *[Maintain adequate situational awareness (*3) to characterize abnormal condition / emergency.]*	2	K- Demonstrar parâmetros normas e anormais dos sistemas relevantes do avião à fase da operação e condição identificada.
				3	S- Identificar alteração de parâmetros e/ou condições normais.
				3	S- Atuar conforme previsto no manual do avião (*7), quando requerido.
				3	S- Manter vigilância (*3) da subtarefa e de outros elementos do ambiente para manutenção do voo de forma segura.
				3	A- Manter-se alerta à possibilidade de eventos anormais e de emergência durante todo o período de operações normais.
				5	A- Estima à manutenção do estado de alerta elevado.
				3	S- Notificar/Alertar PF sobre ameaças externas.
				3	S- Monitorar/Alertar PF sobre condições anormais e de emergência no avião, seus sistemas, funcionabilidades, controles e parâmetros.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
2.7.2	28	Interpretar a condição anormal e de emergência *[Interprets the abnormal and emergency condition]* *[PF/PM]*	Avaliar impactos operacionais da condição *[Assess the operational impacts of the condition]*	2	K- Demonstrar o funcionamento dos sistemas relevantes do avião à fase da operação e condição identificada.
				2	K- Descrever influências da condição identificada na operação do avião.
				2	K- Demonstrar o checklist ou parte correta do manual do avião (*7) para a lidar com a condição.
				5	S- Avaliar impactos da condição na operação do avião.
				3	S- Manter adesão ao checklist, padrão operacional adotado ou manual do avião (*7).
				3	S- Manter vigilância (*3) da subtarefa e de outros elementos do ambiente para manutenção do voo de forma segura.
				5	A- Diligência na consulta às referências técnicas adequadas em caso de dúvidas na interpretação da condição anormal.

				3	S- Notificar/Alertar PF discrepâncias na interpretação da condição anormal e de emergência.
				3	S- Monitorar/Alertar PF influência e impactos da condição, consultas tecnicas requeridas e vigilância do ambiente interno e externo.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
2.7.3	29	Executar procedimentos para a condição anormal e de emergência *[Performs the procedure for the abnormal and emergency condition]* *[PF/PM]*	Aderir a padrões operacionais adotados e a listas de verificação *[Adhere to adopted operational standards and checklists]*	2	K- Demonstrar o funcionamento dos sistemas do avião relevantes à fase da operação e condição identificada.
				2	K- Demonstrar conhecimento dos procedimentos anormais e de emergência relacionados com condição identificada.
				3	K- Descrever influências da condição identificada na operação e em outros sistemas do avião.
				3	S- Escolher o checklist ou parte correta do manual do avião (*7) para a lidar com a condição.
				4	S- Atuar conforme avaliação anterior, dos impactos da condição na operação do avião.
				3	S- Gerenciar condição conforme execução correta do checklist, padrão operacional adotado ou manual do avião (*7).
				3	S- Manter adesão ao checklist, padrão operacional adotado ou manual do avião (*7).
				3	S-Comunicar/declarar condição perante CTA, quando aplicável.
				5	S- Manter vigilância (*3) da subtarefa e de outros elementos do ambiente para manutenção do voo de forma segura.
				4	A- Não hesitar e agir prontamente quando atingida condição de emergência e priorizar tarefas [voar, navegar e comunicar], quando aplicável.
				3	S- Notificar/Alertar PF discrepâncias na execução do procedimento da condição anormal e de emergência.
				3	S- Monitorar/Alertar PF nas consultas tecnicas requeridas, coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Given the prior normal operating condition of the aircraft and provisions about abnormal and emergency conditions according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Extinguish the abnormal or emergency condition of the aircraft and define flight continuity.]*

Standard: *[Have performed and completed operational procedures according aircraft manual, adopted SOP [AOM], and operator's manual; extinguished the abnormal or emergency condition of the aircraft; and properly assessed the safety of the flight.]*

Task: *[Perform standard instrument departure/en-route navigation]*	**Task No :** 3.1
1.Where performed: *[Airplane/Terminal Area]*	**4. References/Standards for the task (if any):**
2.Triggering Event: *[Maneuver airplane to comply with departure procedure]*	ANAC - RBAC 91; IS 91-001; IS 91-21-001; DECEA - ICA 100-12; ICA 100-37; MCA 100-16; MCA 96-3; MCA-96-4; ICA 100-5; ICA 105-12; Manual do avião [POH; AFM]; Air Operator´s Manual and AOM;
3.Terminating Event: *[Make airplane available to complete climb procedures and checklists]*	

5.No :		**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
Sub-Task	**Int Obj**				
3.1.1	61	Cumprir procedimentos da autorização de saída, incluindo procedimentos RNAV e RNP	Manter consciência situacional adequada (*3)	2	K- Explicar elementos da com a parte específica de desempenho do manual do avião (*7).

		[Complies with departure clearance and procedures, including RNAV and RNP Procedures] *[PF]*	em relação a posição vertical e lateral do avião *[Maintain adequate situational awareness* (*3) *regarding airplane position]*	1 2 3 5 3 3 3 3 3 3 3 3 3	K- Reconhecer simbologias das cartas de procedimentos e navegação. K- Demonstrar procedimentos operacionais afetos a navegação VFR, IFR e PBN, quando aplicável, incluindo aqueles normais e de perda de capacidade de navegação. S- Manter vigilância (*3) em relação aos limitantes do procedimento. S- Avaliar capacidade da navegação do avião frente ao procedimento. S- Comunicar-se de maneira clara, precisa, e concisa [sobre cumprimento do procedimento e ajustes da autorização]. S- Identificar limites horizontais e verticais acerca do procedimento. S- Usar comandos e executar alterações adequadas nos diversos sistemas e funcionalidades [comandos] do avião na execução do procedimento. S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com a execução do procedimento. S- Aderir aos limites e instruções do procedimento. A- Conforto na aplicação de comandos (considerando controle manual ou automático do avião, quando aplicável). S- Notificar/Alertar PF discrepâncias no cumprimento dos procedimentos de saída, incluindo aqueles específicos RNAV e RNP. S- Notificar/alertar PF sobre cumprimento da trajetória autorizada, aproximação, atingimento de fixos e alturas determinadas no procedimento. S- Notificar/alertar PF sobre avaliação e atingimento de desempenho do avião acerca de determinado procedimento [instrução]. S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] nos controles e instrumentos, conforme manual do avião (*7). S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
3.1.2	62	Demonstrar consciência situacional do terreno *[Demonstrates terrain awareness]* *[VFR/IFR]* *[PF/PM]*	Orientar-se com auxílio dos instrumentos de voo *[Orientation with the aid of flight instruments]*	1 1 2 2 3 5 3 3	K- Citar fatores contribuintes relacionados com a ocorrência de CFIT. K- Reconhecer simbologias das cartas de procedimentos e navegação *[VFR/IFR]*. K- Demonstrar funcionalidade dos instrumentos de navegação de bordo. K- Demonstrar funcionalidade do sistema de alerta de proximidade com o solo, quando aplicável. S- Orientar-se com auxílio dos instrumentos e cartas de navegação e procedimentos disponíveis. S- Avaliar e Determinar posição e trajetória do avião. S- Usar comandos e executar alterações adequadas nos diversos sistemas e funcionalidades [comandos] do avião na execução do procedimento. S- Manter navegação de forma segura.

				3	A- Estender consciência situacional sobre terreno acerca de possíveis operações de emergência.
				3	S- Notificar/Alertar PF sobre discrepâncias na consiciência situacional do terreno.
				3	S- Monitorar/Alertar PF sobre atuação e disfunção dos meios, instrumentos, recursos e funcionalidades do avião acerca de informações de terreno e navegação.
				3	S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] nos instrumentos e recursos afetos à informações de terreno e navegação conforme manual do avião (*7).
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
3.1.3	63	Monitorar precisão da navegação *[Monitors navigation accuracy]* *[PF/PM]*	Manter consciência situacional adequada (*3) acerca da posição do avião *[Maintain adequate situational awareness (*3) regarding airplane position]*	2	K- Caracterizar o funcionamento dos meios utilizados para navegação.
				2	K- Demonstrar procedimentos operacionais normais de navegação VFR, IFR, RNAV e RNP (PBN), quando aplicável, incluindo aqueles afetos a perda de capacidade de navegação.
				3	S- Manter vigilância (*3) em relação aos limitantes de precisão da navegação.
				5	S- Avaliar capacidade da navegação.
				3	S- Usar comandos, executar procedimentos adequados nos diversos sistemas e funcionalidades do avião, conforme avaliação anterior [no caso de perda da capacidade de navegação].
				3	S- Comunicar-se de maneira clara, precisa, e concisa [no caso de perda da capacidade de navegação].
				3	S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com a precisão da navegação.
				3	S- Aderir aos limites de precisão da capacidade de navegação.
				5	A- Estima à riscos associados à complacência na monitoração da precisão da navegação.
				3	S- Notificar/alertar PF discrepâncias na monitorização da precisão da navegação.
				3	S- Notificar/alertar PF discrepâncias na monitorização de sistemas, recursos e funcionalidades do avião associados com a precisão da navegação.
				3	S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] na precisão da navegação conforme manual do avião (*7).
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
3.1.4	64	Ajustar o voo às condições meteorológicas e de tráfego *[Adjusts flight to weather and traffic conditions]* *[VFR/IFR]* *[PF]*	Manter consciência situacional adequada (*3) em meio a execução de outros procedimentos *[Maintain adequate situational*	1	K- Reconhecer fontes de acesso às informações de meteorologia aeronáutica, incluindo aquelas em rota – sob comunicação CTA.
				1	K- Listar limites meteorológicos relacionados às regras de voo *[VFR/IFR]*.
				2	K- Caracterizar fenômenos meteorológicos relevantes a navegação do avião.
				2	K- Caracterizar procedimentos e regra do ar de prevenção de colisões entre aeronaves.

			awareness (*3) *while performing other procedures]*	2	K- Caracterizar o funcionamento do sistema de alerta de tráfego e prevenção de colisões, quando aplicável.
				3	K- Demonstrar procedimentos operacionais normais afetos a cada um dos sistemas, quando instalados no avião, incluindo aqueles afetos a perda de suas funcionalidades.
				3	S- Acessar e decodificar informações das mensagens meteorológicas.
				3	S- Observar elementos meteorológicos e/ou tráfego visualmente ou através dos sistemas e funcionalidades associadas, quando disponíveis.
				5	S- Estimar influência dos elementos meteorológicos no desempenho do avião e navegação *[VFR/IFR]*.
				3	S- Usar comandos e executar procedimentos adequados nos diversos sistemas e funcionalidades do avião e realizar desvios na rota afim de evitar tráfegos e formações meteorológicas.
				3	S- Comunicar-se de maneira clara, precisa, e concisa [no caso de desvios significativos].
				3	S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com a precisão da navegação, elementos meteorológicos e tráfego, se aplicável.
				5	A- Demonstrar postura contingente e baseada em ameaças e riscos nas avaliações afetas a realização do voo *[VFR/IFR]*.
				5	A- Diligência sobre o uso de informações meteorológicas válidas e confiáveis para todas etapas do voo *[VFR/IFR]*.
				3	S- Notificar/Alertar PF discrepâncias no ajuste do voo às condições meteorológicas e de tráfego.
				3	S- Monitorar/Alertar PF sobre ameaças de tráfego e meteorológicas no setor, uso de informações meteorológicas válidas e estimativas de impacto à navegação.
				3	S- Notificar/alertar PF discrepâncias na monitorização dos sistemas de alerta de tráfego e prevenção de colisões, e de elementos meteorológicos.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
3.1.5	60	Comunicar-se e coordenar-se com o CTA *[Communicates and coordinates with ATC]* *[PF/PM]* (*8)	Garantir entendimento de todas as mensagens por ambas as partes *[Ensure understanding of all messages by both parties]*	2	K- Demonstrar conhecimento sobre serviços de tráfego aéreo, sobre autorização de tráfego e informações sobre terminal e meteorologia.
				2	K- Demonstrar procedimentos padrões de fraseologia aeronáutica.
				3	S- Manter vigilância na frequência de comunicação CTA.
				3	S- Manter vigilância (*3) em relação a posição do avião.
				3	S- Comunicar-se de maneira clara, precisa, e concisa, considerando, no mínimo os elementos (*3): emissão [solicitação], recebimento, verificação e cotejamento das novas mensagens [instruções], quando aplicável.
				3	A- Respeito e atenção a desobstrução e congestionamento da frequência de comunicação CTA.
				3	A- Não se comunicar com o CTA de forma complacente (*3) ou automatizada.

				4	A- Disponibilidade para receber, registrar e entender mensagens.
				3	S- Notificar/Alertar PF discrepâncias na comunicação padrão com a equipe de solo e CTA.
				3	S- Notificar/Alertar PF sobre uso de frequências corretas e elementos técnicos e da comunicação relevantes.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
3.1.6	65	Observar altitudes mínimas *[Observes minimum altitudes]* *[PF/PM]*	Manter consciência situacional adequada (*3) da posição vertical do avião em meio a outros procedimentos *[Maintain adequate situational awareness (*3) regarding airplane altitude while performing other procedures]*	1	K- Citar nomenclaturas oficiais de altitudes mínimas e relevantes à fase do voo *[VFR/IFR]*.
				3	S- Acessar e decodificar informações das cartas de navegação *[VFR/IFR]* aeronáutica utilizadas.
				3	S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com manutenção da altitude.
				3	S- Orientar-se quanto a posição do avião com auxílio dos instrumentos disponíveis.
				3	S- Manter vigilância (*3) em relação aos diversos limites da navegação.
				3	S- Aderir aos limites da navegação.
				5	A- Antecipar-se sempre quanto à futura posição do avião e limites associados.
				3	S- Notificar/Alertar PF discrepâncias na observação de altitudes mínimas.
				3	S- Notificar/Alertar PF sobre atuação de sistemas, recursos e funcionalidades do avião associados com manutenção da altitude, e orientação quanto a posição atual e futura da trajetória do avião.
				3	S- Notificar/alertar PF sobre altitudes de segurança e proximidade às mesmas.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
3.1.7	66	Selecionar nível apropriado de automação *[Selects appropriate level of automation]* *[PF]*	Identificar o nível apropriado de automação *[Identify the proper level of automation]*	2	K- Descrever funcionamento e características dos diversos modos de automação, quando disponíveis.
				3	S- Identificar nível apropriado de automação conforme fase do voo e carga de trabalho (*3).
				3	S- Selecionar nível apropriado de automação.
				3	S- Usar comandos e executar alterações adequadas nos diversos sistemas e funcionalidades [comandos] do avião na execução do procedimento.
				3	A- Não ser complacente (*3) pelo uso da automação.
				3	S- Notificar/Alertar PF discrepâncias na seleção de nível apropriado de automação à fase do voo.
				3	S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] na condução do voo conforme manual do avião (*7).
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
3.1.8	67	Cumprir procedimentos de ajuste de altímetro		2	K- Caracterizar procedimentos oficiais de ajuste de altímetros durante o voo.

		[Complies with altimeter setting procedures] *[PF/PM]*		3 3 3 5 3 3 3	S- Manter vigilância (*3) em relação aos limitantes de precisão da navegação. S- Executar ajustes de altímetro. S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com manutenção da altitude e ajuste altimétrico. A- Antecipar-se sempre quanto oportunidade correta para executar a subtarefa. S- Notificar/Alertar PF discrepâncias no cumprimento de procedimentos de ajuste de altímetro. S- Monitorar/Alertar PF sobre sistemas, recursos e funcionalidades do avião associados com manutenção da altitude e ajuste altimétrico. S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Through normal, abnormal or emergency operation of the airplane, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Navigate according to procedure, departure instructions and monitor navigation.]*

Standard: *[Have completed the standardized departure procedure/navigation, according to the aircraft manual, adopted SOP [AOM], and operator's manual; amid an adequate level of situational awareness regarding adjustments and monitoring required to comply with procedure/navigation.]*

Task: *[Complete climb procedures and checklists]* | **Task No :** 3.2

1.Where performed:
[Airplane/Terminal Area]

2.Triggering Event:
[Perform checks according to checklists]

3.Terminating Event:
[Make airplane available for climb and cruise adjustments]

4. References/Standards for the task (if any):

ANAC - RBAC 91; IS 91-001;
Manual do avião [POH; AFM];
Air Operator´s Manual and AOM;

5.No :		**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
Sub-Task	**Int Obj**				
3.2.1	68	Executar itens pós-decolagem *[Performs the after-take-off items]* *[PF/PM]*		2 2 3 3 5 3 3 3	K- Demonstrar filosofia de operação normal adotada na fase pós-decolagem. K- Descrever procedimento normal a ser adotado para fase pós-decolagem. S- Executar todos itens pós-decolagem da lista de verificação. S- Determinar conclusão da execução de itens pós-decolagem da lista de verificação. A- Postura contingente e confirmativa quanto a correta execução dos itens pós-decolagem. S- Notificar/Alertar PF discrepâncias na execução dos itens pós-decolagem. S- Monitorar/Verificar PF, quando aplicável, sobre discrepâncias em ações e procedimentos [aderência ao manual do avião (*7)]. S- Reconhecer e aconselhar PF, quando aplicável e oportuno, sobre quaisquer erros cometidos [não aderência ao manual do avião (*7)]. S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
3.2.2	69	Confirmações e verificações de acordo com listas de verificação	Gerenciar carga de trabalho	1	K- Citar a importância da realização da lista de verificação.

		[Confirms and checks according to checklists] *[PF/PM]*	*[Manage workload]*	2 2 3 3 5 5 3 3 3	K- Demonstrar filosofia operacional adotada na fase do voo e na leitura da lista de verificação. K- Descrever procedimento normal a ser adotado para fase de voo. S- Executar confirmações e verificações das listas de verificação. S- Determinar conclusão das confirmações e verificações nas listas de verificação correspondentes. A- Postura contingente e confirmativa a todos itens das listas de verificação. A- Realizar as confirmações e verificações somente após ter priorizado tarefas [voar, navegar e comunicar], quando aplicável. S- Notificar/Alertar PF discrepâncias nas confirmações e verificações de acordo com listas de verificação. S- Monitorar/Alertar PF sobre confirmação da condição esperada de itens das listas de verificação conforme manual do avião (*7). S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Through normal, abnormal or emergency operation of the airplane, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Perform after take-off items and climb checks.]*

Standard: *[Have completed checks required for the flight, according to the aircraft manual, adopted SOP [AOM], and operator's manual, ensuring safe execution of the climb and subsequent steps.]*

Task: *[Modify climb speeds, rate of climb and cruise altitude]*					**Task No :** 3.3
1.Where performed: *[Airplane/ Terminal and Control Area]* **2.Triggering Event:** *[Identify need for adjustments to airplane systems]* **3.Terminating Event:** *[Make pilot available for system operations and procedures]*					**4. References/Standards for the task (if any):** ANAC - RBAC 91; DECEA - ICA 100-12; ICA 100-37; MCA 100-16; Manual do avião [POH; AFM]; Air Operator´s Manual and AOM;
5.No :		**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
Sub-Task	**Int Obj**				
3.3.1	70	Reconhecer necessidade de alterar velocidade/razão de subida/altitude de cruzeiro *[Recognizes the need to change speed/rate of climb/cruise altitude]* *[PF]*	Julgar necessidade de alterações mediante demanda do CTA, ambiente e proficiência do piloto *[Judge need for changes upon CTA demand, environment and pilot proficiency]*	2 1 2 1 3 3 3	K- Explicar elementos da parte específica de desempenho do manual do avião (*7). Citar limites e valores de velocidades, razões e ângulos de subida e de melhor planeio, considerando condição técnica do avião e fase do voo. K- Caracterizar fatores atmosféricos que influenciam no desempenho de subida e cruzeiro do avião. K- Reconhecer simbologias das cartas de procedimentos e navegação. S- Identificar tipo de relevo relacionado à trajetória do voo e de possíveis desvios. S- Determinar posição e trajetória do avião com auxílio dos instrumentos disponíveis. S- Calcular alteração requerida [velocidade, razão de subida, altitude] para manter a segurança do voo, considerando-se a análise dos fatores atmosféricos, relevos e condição técnica do avião para livrar obstáculos e manter a segurança do voo, inclusive em eventual falha e motor.

				5	S- Validar necessidade de alterar velocidade/razão de subida/altitude de cruzeiro.
				5	A- Diligência na consulta às referências técnicas sobre limitações do manual do avião (*7);
				5	A- Postura contingente frente ao seu desempenho.
				3	S- Notificar/Alertar PF discrepâncias no reconhecimento da necessidade de alterar velocidade/razão de subida/altitude de cruzeiro.
				3	S- Notificar/Alertar PF sobre caracterização da influência de fatores atmosféricos no desempenho de subida e cruzeiro do avião.
				3	S- Notificar/alertar PF sobre avaliação de desempenho de subida e cruzeiro do avião conforme manual do avião (*7).
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
3.3.2	71	Selecionar e manter apropriada velocidade/razão de subida *[Selects and maintains the appropriate climb speed/rate of climb]* *[PF]*	Julgar valores ideais mediante demanda do CTA, ambiente e proficiência do piloto *[Judge ideal values upon CTA demand, environment and pilot proficiency]*	2	K- Diferenciar valores de velocidades, razões e ângulos de subida do avião, considerando sua condição técnica.
				4	K- Relacionar possíveis ajustes em funcionalidades [comandos] do avião e mudanças computadas no gerenciamento do voo.
				3	S- Determinar velocidade/razão de subida adequada.
				3	S- Usar comandos e executar alterações adequadas nos diversos sistemas e funcionalidades [comandos] do avião na execução do procedimento.
				3	S- Aplicar a velocidade/razão de subida adequada.
				3	S- Comunicar-se de maneira clara, precisa, e concisa [no caso de ajustes requeridos].
				3	S- Manter navegação de forma segura e eficiente.
				3	A- Manter avaliação sobre manutenção dos valores alterados e desempenho esperado.
				3	S- Notificar/Alertar PF discrepâncias na seleção e manutenção de velocidade/razão de subida apropriada.
				3	S- Monitorar/Alertar PF na diligência na consulta às referências técnicas sobre limitações do manual do avião (*7), validação da necessidade de alterações e atingimento do esperado/requerido.
				3	S- Monitorar/Alertar PF sobre controles e configurações do avião afetos a seleção e manutenção da velocidade/razão de subida, incluindo efeitos da automação [controles e modos de gerenciamentos] nos controles e instrumentos, conforme manual do avião (*7).
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
3.3.3	72	Selecionar nível ótimo de cruzeiro *[Selects optimum cruise flight level]* *[PF/PM]*	Conhecimento de requisitos técnicos e análise de gráficos de performance *[Knowledge of technical requirements and analysis of*	2	K- Demonstrar aspectos e limitações operacionais do avião acerca do nível ótimo de cruzeiro, assim como limitações regulamentares [Uso de Oxigênio], espaço aéreo e regras de voo *[VFR/IFR]*.
				4	K- Relacionar possíveis ajustes em funcionalidades [comandos] do avião e mudanças computadas no gerenciamento do voo.
				5	S- Avaliar desempenho do avião para o nível de voo escolhido.

			performance graphics]	3	S- Selecionar nível ótimo de cruzeiro conforme condições técnicas do avião, espaço aéreo e regras de voo *[VFR/IFR]*.
				3	S- Usar comandos e executar alterações adequadas nos diversos sistemas e funcionalidades [comandos] do avião na execução do procedimento.
				3	A- Manter avaliação sobre manutenção dos valores alterados e desempenho esperado.
				4	A- Não hesitar na coordenação CTA para solicitar nível ótimo de cruzeiro, se aplicável.
				3	S- Notificar/Alertar PF discrepâncias na seleção de nível ótimo de cruzeiro.
				3	S- Monitorar/Alertar PF na diligência na consulta às referências técnicas sobre limitações do manual do avião (*7), validação da necessidade de ajuste ao nível ótimo de cruzeiro.
				3	S- Monitorar/Alertar PF sobre controles e configurações do avião afetos a seleção e manutenção do nível ótimo de cruzeiro, incluindo efeitos da automação [controles e modos de gerenciamentos] nos controles e instrumentos, conforme manual do avião (*7).
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Through normal, abnormal or emergency operation of the airplane, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Perform adjustments required for proper airplane navigation and performance.]*

Standard: *[Have made adequate adjustments to the airplane, according to the aircraft manual, adopted SOP [AOM], and operator's manual, having optimized its navigation and performance.]*

Task : *[Perform systems operations and procedures]*				**Task No :** 3.4	
1.Where performed: *[Airplane/Terminal and Control Area]* **2.Triggering Event:** *[Identify need to operate airplane systems]* **3.Terminating Event:** *[Make airplane available to complete navigation]*				**4. References/Standards for the task (if any):** ANAC - RBAC 91; Manual do avião [POH; AFM]; Air Operator´s Manual and AOM;	
5.No :		**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
Sub-Task	**Int Obj**				
3.4.1	73	Monitorar operação de todos sistemas *[Monitors operation of all systems]* *[PF/PM]*	Manter consciência situacional adequada (*3) mediante realização de outras manobras *[Maintain adequate situational awareness (*3) while performing other maneuvres]*	2	K- Caracterizar o funcionamento de todos sistemas disponíveis.
				2	K- Caracterizar o funcionamento e características dos diversos modos de automação, se disponíveis.
				3	S- Identificar parâmetros normais estabelecidos pelo manual do avião (*7), quando requerido, para todos sistemas.
				3	S- Checar atuação dos sistemas, seus recursos e funcionalidades.
				5	A- Estima à riscos associados à complacência na monitoração da operação dos sistemas.
				3	S- Notificar/Alertar PF discrepâncias na operação de todos os sistemas.
				3	S- Monitorar/Alertar PF sobre parâmetros e condições nos sistemas do avião e suas funcionabilidades.
				3	S- Monitorar/Alertar PF sobre os efeitos de complacência (*3) na monitoração de sistemas.

				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
3.4.2	74	Operar sistemas conforme requerido *[Operates systems as required]* *[PF/PM]*	Avaliar ação executada e seu resultado conforme esperado *[Evaluate action taken and its outcome as expected]*	2 2 3 3 3 5 5 3 3 3 3 3	K- Caracterizar o funcionamento de todos sistemas disponíveis e relevantes à fase do voo. K- Caracterizar relação entre os sistemas disponíveis e suas funcionalidades [comandos] no gerenciamento do voo. S- Identificar nível apropriado de automação conforme fase do voo e carga de trabalho (*3), se aplicável. S- Selecionar nível apropriado de automação, se aplicável. S- Usar comandos, executar procedimentos e alterações adequadas nos diversos sistemas e funcionalidades [comandos] do avião. S- Avaliar resultado dos comandos executados conforme o esperado. A- Não ser complacente (*3) pelo uso da automação. S- Notificar/Alertar PF discrepâncias na operação dos sistemas cnforme requerido. S- Monitorar/Alertar PF na diligência na consulta às referências técnicas sobre os sistemas conforme manual do avião (*7). S- Monitorar/Alertar PF na alterações requeridas aos comandos dos sistemas e avaliação dos resultados esperados conforme manual do avião (*7). S- Monitorar/Alertar PF sobre os efeitos de complacência pelo uso da automação na operação de sistemas. S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Through normal, abnormal or emergency operation of the airplane, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Monitor and operate airplane systems as required.]*

Standard: *[Have monitored and operated airplane systems when required, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Task: *[Manage abnormal and emergency situations]* | **Task No :** 3.5

1.Where performed:
[Airplane/Terminal and Control Area]

2.Triggering Event:
[Identify abnormal or emergency condition of the plane]

3.Terminating Event:
[Determine the end of the abnormal or emergency condition of the airplane]

4. References/Standards for the task (if any):

ANAC - RBAC 91;
DECEA - ICA 100-12; ICA 100-37; MCA-100-16;
Manual do avião [POH; AFM];
Air Operator´s Manual and AOM;

5.No : Sub-Task	**Int Obj**	**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
3.5.1	27	Identificar condição anormal e de emergência *[Identifies the abnormal and emergency condition]* *[PF/PM]*	Manter consciência situacional adequada (*3) para caracterizar condição anormal/emergência. *[Maintain adequate situational awareness (*3) to*	2 3 3 3 3	K- Demonstrar parâmetros normas e anormais dos sistemas relevantes do avião à fase da operação e condição identificada. S- Identificar alteração de parâmetros e/ou condições normais. S- Atuar conforme previsto no manual do avião (*7), quando requerido. S- Manter vigilância (*3) da subtarefa e de outros elementos do ambiente para manutenção do voo de forma segura. A- Manter-se alerta à possibilidade de eventos anormais e de emergência durante todo o período de operações normais.

			characterize abnormal condition / emergency.]		A- Estima à manutenção do estado de alerta elevado.
				3	S- Notificar/Alertar PF sobre ameaças externas.
				3	S- Monitorar/Alertar PF sobre condições anormais e de emergência no avião, seus sistemas, funcionabilidades, controles e parâmetros.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
3.5.2	28	Interpretar a condição anormal e de emergência *[Interprets the abnormal and emergency condition]* *[PF/PM]*	Avaliar impactos operacionais da condição *[Assess the operational impacts of the condition]*	2	K- Demonstrar o funcionamento dos sistemas relevantes do avião à fase da operação e condição identificada.
				2	K- Descrever influências da condição identificada na operação do avião.
				2	K- Demonstrar o checklist ou parte correta do manual do avião (*7) para a lidar com a condição.
				5	S- Avaliar impactos da condição na operação do avião.
				3	S- Manter adesão ao checklist, padrão operacional adotado ou manual do avião (*7).
				3	S- Manter vigilância (*3) da subtarefa e de outros elementos do ambiente para manutenção do voo de forma segura.
				5	A- Diligência na consulta às referências técnicas adequadas em caso de dúvidas na interpretação da condição anormal.
				3	S- Notificar/Alertar PF discrepâncias na interpretação da condição anormal e de emergência.
				3	S- Monitorar/Alertar PF influência e impactos da condição, consultas tecnicas requeridas e vigilância do ambiente interno e externo.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
3.5.3	29	Executar procedimentos para a condição anormal e de emergência *[Performs the procedure for the abnormal and emergency condition]* *[PF/PM]*	Aderir a padrões operacionais adotados e a listas de verificação *[Adhere to adopted operational standards and checklists]*	2	K- Demonstrar o funcionamento dos sistemas do avião relevantes à fase da operação e condição identificada.
				2	K- Demonstrar conhecimento dos procedimentos anormais e de emergência relacionados com condição identificada.
				3	K- Descrever influências da condição identificada na operação e em outros sistemas do avião.
				3	S- Escolher o checklist ou parte correta do manual do avião (*7) para a lidar com a condição.
				4	S- Atuar conforme avaliação anterior, dos impactos da condição na operação do avião.
				3	S- Gerenciar condição conforme execução correta do checklist, padrão operacional adotado ou manual do avião (*7).
				3	S- Manter adesão ao checklist, padrão operacional adotado ou manual do avião (*7).
				3	S-Comunicar/declarar condição perante CTA, quando aplicável.
				5	S- Manter vigilância (*3) da subtarefa e de outros elementos do ambiente para manutenção do voo de forma segura.
				4	A- Não hesitar e agir prontamente quando atingida condição de emergência e priorizar tarefas [voar, navegar e comunicar], quando aplicável.
				3	S- Notificar/Alertar PF discrepâncias na execução do procedimento da condição anormal e de emergência.

				3	S- Monitorar/Alertar PF nas consultas tecnicas requeridas, coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Given the prior normal operating condition of the aircraft and provisions about abnormal and emergency conditions according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Extinguish the abnormal or emergency condition of the aircraft and define flight continuity.]*

Standard: *[Have performed and completed operational procedures according aircraft manual, adopted SOP [AOM], and operator's manual; extinguished the abnormal or emergency condition of the aircraft; and properly assessed the safety of the flight.]*

Task: *[Communicate with cabin crew, passengers and company]* | **Task No :** 3.6

1.Where performed:
[Airplane/Terminal and Control Area]

2.Triggering Event:
[Consider the need for communication with cabin crew, passengers and air operator]

3.Terminating Event:
[Receive feedback on communication, if appropriate or required]

4. References/Standards for the task (if any):

ANAC - RBAC 91;
Air Operator´s Manual and AOM;

5.No : Sub-Task	Int Obj	**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
3.6.1	30	Comunicar informação relevante à tripulação de cabine *[Communicates relevant information to cabin crew]* *[PF]*	Aderir a comunicação efetiva *[Adhere to effective communication]*	1	K- Citar elementos técnicos e aspectos relevantes acerca do avião, fase do voo e segurança em geral utilizados na comunicação com a tripulação de cabine, se aplicável.
				3	S- Comunicar-se com a tripulação de cabine, se aplicável, de maneira clara, precisa e concisa.
				3	S- Utilizar somente elementos técnicos e aspectos relevantes acerca do avião, fase do voo e segurança em geral na comunicação com a tripulação de cabine, se aplicável.
				3	S- Checar (garantir feedback) (*3) entendimento das mensagens trocadas com a tripulação de cabine, se aplicável.
				5	A- Consideração a elementos não técnicos [NOTECHS] (*3) na comunicação com a tripulação de cabine, se aplicável.
				3	S- Monitorar/Verificar, quando aplicável, ações e procedimentos [aderência ao manual do operador] de outros membros da tripulação.
				3	S- Reconhecer e aconselhar, quando aplicável e oportuno, sobre quaisquer erros cometidos [não aderência ao manual do operador] por outros membros da tripulação.
3.6.2	31	Comunicar informação relevante ao operador aéreo *[Communicates relevant information to company]* *[PF/PM]*	Aderir a comunicação efetiva *[Adhere to effective communication]*	1	K- Citar elementos técnicos e aspectos relevantes acerca do avião, andamento do voo, segurança em geral a outros pertinentes utilizados na comunicação com o operador aéreo.
				3	S- Comunicar-se com operador aéreo de maneira clara, precisa e concisa.
				3	S- Utilizar somente elementos técnicos e aspectos relevantes acerca do avião, andamento do voo, segurança em geral a outros pertinentes na comunicação com o operador aéreo.
				3	S- Checar (garantir feedback) (*3) entendimento das mensagens trocadas com o operador aéreo, quando oportuno.
				5	A- Consideração a elementos não técnicos [NOTECHS] (*3) na comunicação com a tripulação de cabine, se aplicável.
				3	S- Notificar/Alertar PF discrepâncias na comunicação de informação relevante ao operador aéreo.

				3	S- Monitorar/Alertar PF na obtenção e listagem de elementos relevantes para comunicação ao operador aéreo.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
3.6.3	32	Fazer anúncios a passageiros quando apropriado *[Makes passenger announcements when appropriate]* *[PF]*	Sumarizar e declarar somente informações relevantes *[Summarize and declare only relevant information]*	1	K- Citar elementos técnicos e aspectos relevantes acerca dos avisos, instruções verbais e proibições relacionados com os anúncios a passageiros, quando apropriado.
				3	S- Comunicar-se com passageiros de maneira clara, precisa e concisa, conforme provisões do Manual do Operador Aéreo e AOM.
				3	S- Ater-se a elementos técnicos e aspectos relevantes acerca do avião, fase do voo e segurança em geral na comunicação com a tripulação de cabine, se aplicável.
				3	S- Checar (garantir feedback) (*3) entendimento das mensagens trocadas com passageiros, se requerido.
				5	A- Consideração a elementos não técnicos [NOTECHS] (*3) na comunicação com a tripulação de cabine, se aplicável.
				3	S- Notificar/Alertar PF discrepâncias nos anúncios à passageiros quando apropriado.
				3	S- Monitorar/Alertar PF na obtenção e listagem de elementos relevantes para comunicação, comunicação e feedback dos passageiros.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Through normal, abnormal or emergency operation of the airplane, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Communicate cabin crew, passengers and air operator.]*

Standard: *[Have cabin crew, passengers and air operator communicated about relevant aspects of the flight and safety issue elements to their appropriate actions, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Task : *[Monitor navigation accuracy]* — **Task No :** 4.1

1.Where performed:
[Airplane/Control Area]

2.Triggering Event:
[Check navigation accuracy]

3.Terminating Event:
[Monitor flight progress]

4. References/Standards for the task (if any):

ANAC - RBAC 91; IS 91-001; IS 91-21-001;
DECEA - ICA 100-12; ICA 100-37; MCA 100-16; MCA 96-3; MCA-96-4; ICA 100-5; ICA 105-12;
Manual do avião [POH; AFM];
Air Operator´s Manual and AOM;

5.No : Sub-Task	Int Obj	6.Sub-Tasks	7.Performance Difficulties	LoA	8. Summary of K/S/A Requirements
4.1.1	75	Demonstrar adequado conhecimento da área *[Demonstrates adequate area knowledge]* *[PF/PM]*	Caracterizar elementos relevantes nas cartas utilizadas *[Characterize relevant elements in the navigation charts utilized]*	1	K- Citar fatores contribuintes relacionados com a ocorrência de CFIT.
				1	K- Reconhecer simbologias das cartas de procedimentos e navegação.
				2	K- Caracterizar funcionabilidades de recursos e sistemas relevantes ao conhecimento da área [navegação], se disponíveis.
				2	S- Caracterizar simbologias utilizadas nas cartas de procedimentos e navegação.
				3	S- Determinar posição e trajetória do avião com auxílio dos instrumentos disponíveis.
				3	S- Identificar tipo de relevo relacionado à trajetória do voo e de possíveis desvios.

				3	S- Identificar altitudes mínimas da área sobrevoada, incluindo daquela prevista em procedimento de emergência, caso necessário.
				3	S- Manter vigilância (*3) do relevo e altitudes mínimas dá área sobrevoada, incluindo daquela prevista em procedimento de emergência, caso necessário.
				3	A- Não ser complacente (*3) com possível conhecimento da área navegada.
				3	S- Notificar/Alertar PF sobre discrepâncias no conhecimento adequado da área.
				3	S- Monitorar/Alertar PF sobre atuação e disfunção dos meios, instrumentos, recursos e funcionalidades do avião acerca de informações de terreno e navegação.
				3	S- Notificar/alertar PF sobre altitudes de segurança e proximidade às mesmas.
				3	S- Monitorar/Alertar PF sobre riscos acerca da orientação quanto a posição atual e futura da trajetória do avião e ocorrência de CFIT em operações normais e prevista em procedimento de emergência.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
4.1.2	76	Demonstrar adequado conhecimento da rota, incluindo rotas e procedimentos RNAV e RNP *[Demonstrates adequate route knowledge, including RNAV and RNP routes and procedures]* *[PF/PM]*	Dominar funcionalidades do equipamento de navegação e caracterizar elementos relevantes nas cartas utilizadas *[Master navigation equipment features and characterize relevant elements in the charts utilized]*	1	K- Reconhecer simbologias das cartas de procedimentos e navegação específicas RNAV e RNP (PBN).
				1	K- Reconhecer precisões laterais mínimas requeridas para determinados espaços aéreos.
				2	K- Demonstrar procedimentos operacionais normais de navegação RNAV e RNP (PBN), incluindo aqueles afetos a perda de capacidade de navegação.
				3	S- Identificar informações das cartas de navegação RNAV e RNP (PBN) utilizadas.
				3	S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com navegação RNAV e desempenho da navegação RNP (PBN) para determinado espaço aéreo e rota.
				3	S- Orientar-se quanto a posição do avião com auxílio dos instrumentos disponíveis.
				3	S- Manter vigilância (*3) dos diversos limites da navegação.
				5	S- Avaliar capacidade da navegação.
				5	A- Estima à riscos associados à complacência na monitoração do desempenho da navegação.
				3	S- Notificar/Alertar PF discrepâncias no adequado conhecimento da rota, incluindo rotas e procedimentos RNAV e RNP.
				3	S- Notificar/alertar PF sobre reconhecimento de simbologias, informações e precisões específicas à rota e espaço aéreo utilizado, assim como do cumprimento da trajetória autorizada, aproximação, atingimento de fixos e níveis determinados.
				3	S- Notificar/alertar PF sobre atuação de sistemas, recursos e funcionalidades do avião associados com navegação RNAV e desempenho da navegação RNP (PBN) para determinado espaço aéreo e rota.

				3	S- Notificar/alertar PF sobre avaliação e atingimento de desempenho RNP do avião.
				3	S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] nos controles e instrumentos, conforme manual do avião (*7).
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
4.1.3	77	Navegar conforme plano de voo e autorização *[Navigates according to flight plan and clearance]* *[PF]*	Atuar devidamente frente ação de elementos meteorológicos *[Act properly facing meteorological elements]*	2	K- Demonstrar conhecimento sobre serviços de tráfego aéreo e autorização acerca de navegação em distintos espaços aéreos.
				2	K- Caracterizar fatores atmosféricos que influenciam na navegação.
				3	S- Identificar influência dos fatores atmosféricos.
				3	S- Identificar limites horizontais e verticais da navegação e autorizações.
				3	S- Usar comandos, executar procedimentos adequados nos diversos sistemas e funcionalidades do avião para manutenção da navegação, autorizações e correção de elementos atmosféricos.
				3	S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com a precisão da navegação.
				3	S- Manter vigilância (*3) em relação a posição do avião, sua trajetória e autorizações.
				3	S- Aderir aos limites da navegação e autorizações.
				3	S- Comunicar-se de maneira clara, precisa, e concisa [no decorrer da navegação e em caso de ajustes].
				3	A- Não ser complacente (*3) por conta de eventual familiarização com a rota ou área navegada.
				3	S- Notificar/Alertar PF discrepâncias na navegação conforme plano de voo e autorização.
				3	S- Notificar/alertar PF sobre cumprimento da trajetória autorizada, aproximação, atingimento de fixos e alturas determinadas no procedimento.
				3	S- Notificar/alertar PF sobre avaliação e atingimento de desempenho do avião acerca do plano de voo e autorização [instrução].
				3	S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] nos controles e instrumentos afetos à navegação conforme manual do avião (*7).
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
4.1.4	64	Ajustar o voo às condições meteorológicas e de tráfego *[Adjusts flight to weather and traffic conditions]* *[VFR/IFR]* *[PF/PM]*	Manter consciência situacional adequada (*3) em meio a execução de outros procedimentos *[Maintain adequate situational awareness (*3) while performing*	1	K- Reconhecer fontes de acesso às informações de meteorologia aeronáutica, incluindo aquelas em rota – sob comunicação CTA.
				1	K- Listar limites meteorológicos relacionados às regras de voo *[VFR/IFR]*.
				2	K- Caracterizar fenômenos meteorológicos relevantes a navegação do avião.
				2	K- Caracterizar procedimentos e regra do ar de prevenção de colisões entre aeronaves.
				2	K- Caracterizar o funcionamento do sistema de alerta de tráfego e prevenção de colisões, quando aplicável.

			other procedures]	3	K- Demonstrar procedimentos operacionais normais afetos a cada um dos sistemas, quando instalados no avião, incluindo aqueles afetos a perda de suas funcionalidades.
				3	S- Acessar e decodificar informações das mensagens meteorológicas.
				3	S- Observar elementos meteorológicos e/ou tráfego visualmente ou através dos sistemas e funcionalidades associadas, quando disponíveis.
				5	S- Estimar influência dos elementos meteorológicos no desempenho do avião e navegação *[VFR/IFR]*.
				3	S- Usar comandos e executar procedimentos adequados nos diversos sistemas e funcionalidades do avião e realizar desvios na rota afim de evitar tráfegos e formações meteorológicas.
				3	S- Comunicar-se de maneira clara, precisa, e concisa [no caso de desvios significativos].
				3	S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com a precisão da navegação, elementos meteorológicos e tráfego, se aplicável.
				5	A- Demonstrar postura contingente e baseada em ameaças e riscos nas avaliações afetas a realização do voo *[VFR/IFR]*.
				5	A- Diligência sobre o uso de informações meteorológicas válidas e confiáveis para todas etapas do voo *[VFR/IFR]*.
				3	S- Notificar/Alertar PF discrepâncias no ajuste do voo às condições meteorológicas e de tráfego.
				3	S- Monitorar/Alertar PF sobre ameaças de tráfego e meteorológicas no setor, uso de informações meteorológicas válidas e estimativas de impacto à navegação.
				3	S- Notificar/alertar PF discrepâncias na monitorização dos sistemas de alerta de tráfego e prevenção de colisões, e de elementos meteorológicos.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
4.1.5	60	Comunicar-se e coordenar-se com o CTA *[Communicates and coordinates with ATC]* *[PF/PM]* (*8)	Garantir entendimento de todas as mensagens por ambas as partes *[Ensure understanding of all messages by both parties]*	2	K- Demonstrar conhecimento sobre serviços de tráfego aéreo, sobre autorização de tráfego e informações sobre terminal e meteorologia.
				2	K- Demonstrar procedimentos padrões de fraseologia aeronáutica.
				3	S- Manter vigilância na frequência de comunicação CTA.
				3	S- Manter vigilância (*3) em relação a posição do avião.
				3	S- Comunicar-se de maneira clara, precisa, e concisa, considerando, no mínimo os elementos (*3): emissão [solicitação], recebimento, verificação e cotejamento das novas mensagens [instruções], quando aplicável.
				3	A- Respeito e atenção a desobstrução e congestionamento da frequência de comunicação CTA.
				3	A- Não se comunicar com o CTA de forma complacente (*3) ou automatizada.
				4	A- Disponibilidade para receber, registrar e entender mensagens.

				3	S- Notificar/Alertar PF discrepâncias na comunicação padrão com a equipe de solo e CTA.
				3	S- Notificar/Alertar PF sobre uso de frequências corretas e elementos técnicos e da comunicação relevantes.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
4.1.6	65	Observar altitudes mínimas *[Observes minimum altitudes]* *[VFR/IFR]* *[PF/PM]*	Manter consciência situacional adequada (*3) da posição vertical do avião em meio a outros procedimentos *[Maintain adequate situational awareness (*3) regarding airplane altitude while performing other procedures]*	1 3 3 3 3 5 3 3 3 3	K- Citar nomenclaturas oficiais de altitudes mínimas e relevantes à fase do voo *[VFR/IFR]*. S- Acessar e decodificar informações das cartas de navegação *[VFR/IFR]* aeronáutica utilizadas. S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com manutenção da altitude. S- Orientar-se quanto a posição do avião com auxílio dos instrumentos disponíveis. S- Manter vigilância (*3) em relação aos diversos limites da navegação. S- Aderir aos limites da navegação. A- Antecipar-se sempre quanto à futura posição do avião e limites associados. S- Notificar/Alertar PF discrepâncias na observação de altitudes mínimas. S- Notificar/Alertar PF sobre atuação de sistemas, recursos e funcionalidades do avião associados com manutenção da altitude, e orientação quanto a posição atual e futura da trajetória do avião. S- Notificar/alertar PF sobre altitudes de segurança e proximidade às mesmas. S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
4.1.7	78	Usar todas formas de automação *[Uses all means of automation]* *[PF]*	Manter consciência situacional (*3) adequada *[Maintain adequate situational awareness (*3)]*	2 3 3 3 3 3 5 3 3	K- Descrever funcionamento e características dos diversos modos de automação, quando disponíveis. S- Identificar nível apropriado de automação conforme fase do voo e carga de trabalho (*3), entre outros aspectos específicos ao voo. S- Selecionar nível apropriado de automação. S- Usar comandos e executar alterações adequadas nos diversos sistemas e funcionalidades [comandos] do avião na execução do procedimento. S- Checar atuação dos sistemas, seus recursos e funcionalidades. A- Não ser complacente (*3) pelo uso da automação. A- Relacionar a carga de trabalho (*3) cognitiva e física pelo uso da automação. S- Notificar/Alertar PF discrepâncias no uso de automação apropriado à fase do voo. S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] na condução do voo conforme manual do avião (*7).

				3	S- Monitorar/Alertar PF sobre efeitos da automação na sua capacidade de manutenção de vigilância (*3) do ambiente interno e externo.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Through normal, abnormal or emergency operation of the airplane, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Navigate and monitors the navigation accuracy]*

Standard: *[Have navigated and monitored its accuracy, according to the aircraft manual, adopted SOP [AOM], and operator's manual, amid an adequate level of situational awareness.]*

Task : *[Monitor flight progress]* — **Task No :** 4.2

1.Where performed:
[Airplane/Control Area]

2.Triggering Event:
[Check flight progress]

3.Terminating Event:
[Make pilot available to plan descent and approach]

4. References/Standards for the task (if any):

ANAC - RBAC 91; IS 91-001; IS 91-21-001;
DECEA - ICA 100-12; ICA 100-37; MCA 100-16; MCA 96-3; MCA-96-4; ICA 100-5; ICA 105-12;
Manual do avião [POH; AFM];
Air Operator´s Manual and AOM;

5.No : Sub-Task	Int Obj	6.Sub-Tasks	7.Performance Difficulties	LoA	8. Summary of K/S/A Requirements
4.2.1	79	Selecionar velocidade ótima *[Selects optimum speed]* *[PF]*	Conhecimento de requisitos técnicos e análise de gráficos de performance *[Knowledge of technical requirements and analysis of performance graphics]*	2	K- Demonstrar aspectos e limitações operacionais do avião acerca da velocidade ótima, condições atmosféricas e meteorológicas.
				4	K- Relacionar possíveis ajustes em funcionalidades [comandos] do avião e mudanças computadas no gerenciamento do voo.
				3	S- Selecionar velocidade ótima de acordo com as condições técnicas do avião, espaço aéreo e regras de voo *[VFR/IFR]*.
				5	S- Avaliar desempenho do avião para a velocidade ótima escolhida.
				3	S- Usar comandos e executar alterações adequadas nos diversos sistemas e funcionalidades [comandos] do avião na execução do procedimento.
				3	A- Manter avaliação sobre manutenção dos valores alterados e desempenho esperado.
				4	A- Não hesitar na coordenação CTA para solicitar velocidade ótima de cruzeiro, se aplicável.
				3	S- Notificar/Alertar PF discrepâncias na seleção de velocidade ótima.
				3	S- Monitorar/Alertar PF na diligência na consulta às referências técnicas sobre velocidades [regimes] do manual do avião (*7), e validação aquela confirme requerido.
				3	S- Monitorar/Alertar PF sobre controles e configurações do avião afetos a velocidade ótima, incluindo efeitos da automação [controles e modos de gerenciamentos] nos controles e instrumentos, conforme manual do avião (*7).
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
4.2.2	72	Selecionar nível ótimo de cruzeiro *[Selects optimum cruise flight level]* *[VFR/IFR]*	Conhecimento de requisitos técnicos e análise de gráficos de performance	2	K- Demonstrar aspectos e limitações operacionais do avião acerca do nível ótimo de cruzeiro, assim como limitações regulamentares [Uso de Oxigênio], espaço aéreo e regras de voo *[VFR/IFR]*.
				4	K- Relacionar possíveis ajustes em funcionalidades [comandos] do avião e mudanças computadas no gerenciamento do voo.

		[PF]	*[Knowledge of technical requirements and analysis of performance graphics]*	5 3 3 3 4 3 3 3 3	S- Avaliar desempenho do avião para o nível de voo escolhido. S- Selecionar nível ótimo de cruzeiro conforme condições técnicas do avião, espaço aéreo e regras de voo *[VFR/IFR]*. S- Usar comandos e executar alterações adequadas nos diversos sistemas e funcionalidades [comandos] do avião na execução do procedimento. A- Manter avaliação sobre manutenção dos valores alterados e desempenho esperado. A- Não hesitar na coordenação CTA para solicitar nível ótimo de cruzeiro, se aplicável. S- Notificar/Alertar PF discrepâncias na seleção de nível ótimo de cruzeiro. S- Monitorar/Alertar PF na diligência na consulta às referências técnicas sobre limitações do manual do avião (*7), validação da necessidade de ajuste ao nível ótimo de cruzeiro. S- Monitorar/Alertar PF sobre controles e configurações do avião afetos a seleção e manutenção do nível ótimo de cruzeiro, incluindo efeitos da automação [controles e modos de gerenciamentos] nos controles e instrumentos, conforme manual do avião (*7). S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
4.2.3	80	Monitorar e controlar condição do combustível *[Monitors and controls fuel status]* *[PF/PM]*	Detectar e relacionar variações entre consumo previsto e real para o gerenciamento do voo *[Detect and relate variations among predicted and effective fuel consumption to the flight management]*	1 2 2 4 3 5 3 3 3 5 3 3	K- Citar limitações acerca do sistema de combustível do avião, bem como condições para uso do combustível. K- Demonstrar aspectos e limitações operacionais do avião acerca do consumo do combustível. K- Demonstrar procedimentos normais para monitorar e controlar condição do combustível. K- Relacionar possíveis ajustes em funcionalidades [comandos] do avião, parâmetros do grupo moto propulsor e mudanças computadas no gerenciamento do voo. S- Determinar consumo de combustível. S- Avaliar desempenho do avião para consumo de combustível escolhido [planejado e real] em consulta à gráficos e parte específica no manual do avião (*7). S- Usar comandos e executar alterações adequadas nos diversos sistemas e funcionalidades [comandos] do avião afetos ao consumo de combustível. S- Atuar conforme previsto no manual do avião (*7), quando requerido. S- Manter vigilância (*3) em relação ao consumo, outros parâmetros do grupo moto propulsor e desempenho do avião. A- Manter avaliação sobre manutenção dos valores alterados e desempenho esperado. S- Notificar/Alertar PF discrepâncias na monitoração e controle da condição do combustível e do sistema associado. S- Monitorar/Alertar PF sobre consumo em relação aos parâmetros do grupo moto-propulsor, de desempenho [planejado e real] do avião, e sobre o sistema de alimentação de combustível.

				3	S- Monitorar/Alertar PF sobre periodicidade do monitoramento durante o voo.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
4.2.4	81	Reconhecer necessidade de possível desvio (alternativa) *[Recognizes the need for a possible diversion]* *[VFR/IFR]* *[PF/PM]*	Avaliar dados relevantes e estimar adequadamente a necessidade de desvio *[Evaluate relevant data and properly estimate the need for deviation]*	1	K- Reconhecer fontes disponíveis para determinar informações, condições meteorológicas e de tráfego aéreo do aeródromo de destino e opções de alternativa.
				2	K- Caracterizar condições e critérios técnicos para realizar possível desvio (alternativa) conforme regras de voo *[VFR/IFR]*.
				3	S- Manter vigilância sobre condições e critérios associadas com a realização de possíveis desvios (alternativa) conforme regras de voo *[VFR/IFR]*.
				4	S- Analisar condições e critérios associadas para realizar possíveis desvios (alternativas) conforme regras de voo *[VFR/IFR]*.
				5	S- Avaliar combustível remanescente [autonomia] conforme requisitos ou manual do operador e a necessidade de realizar um desvio.
				5	A- Postura contingente e baseada em ameaças e riscos na análise correta de condições e critérios de realização de possível desvio (alternativa).
				3	S- Notificar/Alertar PF discrepâncias no reconhecimento da necessidade de possível desvio (alternativa).
				3	S- Monitorar/Alertar PF sobre determinação de condições meteorológicas e de tráfego aéreo do aeródromo de destino e opções de alternativa, assim como sobre o uso de fontes disponíveis de tais informações.
				3	S- Monitorar/Alertar PF sobre avaliação de combustível remanescente [autonomia].
				3	S- Monitorar/Alertar PF sobre vigilância e avaliação das condições e critérios associados com realização de possível desvio.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
4.2.5	82	Criar plano de desvio (alternativa) se requerido *[Creates a diversion contingency plan if required]* *[VFR/IFR]* *[PF/PM]*	Validar opção de desvio (alternativa) *[Validate diversion option]*	3	K- Demonstrar elementos e aspectos para criação de plano de desvio conforme provisões do Manual do Operador Aéreo e AOM, se aplicável.
				3	S- Utilizar fontes disponíveis para validar condições meteorológicas e de tráfego aéreo do aeródromo de destino e alternativa.
				3	S-Checar condições e critérios na realização do desvio (alternativa).
				3	S-Confirmar combustível remanescente [autonomia] adequado e a previsão da quantidade para realizar o desvio.
				3	S- Usar comandos e executar procedimentos adequados nos diversos sistemas e funcionalidades do avião e realizar desvio para aeródromo de alternativa.
				3	S- Criar plano de desvio (alternativa), se requerido, conforme provisões do Manual do Operador Aéreo e AOM, se aplicável.
				5	S- Executar plano de desvio (alternativa), se requerido.
				5	A- Postura consultiva técnica, contingente na criação do plano de desvio (alternativa), considerando suporte requerido ao avião.

				3	S- Notificar/Alertar PF discrepâncias na criação de desvio (alternativa) se requerido.
				3	S- Monitorar/Alertar PF sobre checagem e validação das condições e critérios na realização do desvio (alternativa).
				3	S- Monitorar/Alertar PF sobre confirmação do combustível remanescente [autonomia] e a previsão da quantidade para realizar o desvio.
				3	S- Monitorar/Alertar PF sobre criação e execução do plano de desvio (alternativa) conforme provisões manual do avião (*7) e manual do operador aéreo.
				3	S- Monitorar/Alertar PF na diligência na consulta às referências técnicas sobre condições, critérios para desvio e desempenho do avião.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Through normal, abnormal or emergency operation of the airplane, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Monitor flight progress and organize diversion plan when required.]*

Standard: *[Have monitored the progress of the flight, made required adjustments according to the aircraft manual, adopted SOP [AOM], and operator's manual, when necessary; have recognized and organized a diversion plan if required.]*

Task: *[Perform descent and approach planning]* — **Task No :** 4.3

1.Where performed:
[Airplane/Control Area]

2.Triggering Event:
[Prepare plane for descent and approach]

3.Terminating Event:
[Make pilot available for system operations and procedures]

4. References/Standards for the task (if any):

ANAC - RBAC 91; IS 91-001; IS 91-21-001;
DECEA - ICA 100-12; ICA 100-37; MCA 100-16; MCA 96-3; MCA-96-4; ICA 100-5; ICA 100-16; ICA 105-12;
Manual do avião [POH; AFM];
Air Operator´s Manual and AOM;

5.No : Sub-Task	Int Obj	6.Sub-Tasks	7.Performance Difficulties	LoA	8. Summary of K/S/A Requirements
4.3.1	83	Verificar meteorologia do destino e alternativa *[Checks weather of destination and alternate airport]* *[VFR/IFR]* *[PF/PM]*	Manter comunicação efetiva com os órgãos ATS para obter as informações *[Maintain effective ATC communication to obtain information]*	1	K- Reconhecer fontes disponíveis para acesso às condições meteorológicas do aeródromo de destino e alternativa.
				1	K- Listar limites meteorológicos relacionados às regras de voo *[VFR/IFR]* e procedimentos disponíveis do aeródromo de destino e alternativa.
				2	K- Caracterizar fenômenos meteorológicos relevantes ao desempenho do avião, com ênfase em microburst, tesoura de vento e tempestades.
				3	S- Obter informações meteorológicas através de comunicação CTA e serviços de informações pertinentes.
				3	S- Acessar e decodificar informações das mensagens meteorológicas do aeródromo de destino e alternativa.
				5	S- Estimar influência dos elementos meteorológicos no desempenho do avião e limites dos procedimentos de aproximação e pouso *[VFR/IFR]*.
				5	A- Postura contingente e baseada em ameaças e riscos nas avaliações afetas a realização do voo *[VFR/IFR]*.
				3	S- Notificar/Alertar PF discrepâncias na verificação de meteorologia do destino e alternativa.
				3	S- Monitorar/Alertar PF sobre determinação de condições meteorológicas do aeródromo de destino e alternativa, assim como sobre o uso de fontes de tais informações.

				3	S- Notificar/alertar PF discrepâncias no acesso e decodificação de informações meteorológicas através de comunicação CTA e serviços de informações pertinentes.
				3	S- Nonitorar/Alertas PF sobre caracterização de fenômenos relevantes ao desempenho do avião.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
4.3.2	84	Verificar pista em uso e procedimento de aproximação *[Checks runway in use and approach procedure]* *[VFR/IFR]* *[PF/PM]*	Analisar possibilidades de procedimentos de aproximação e pouso. *[Assess the possibility of approach and landing procedures]*	1	K- Reconhecer simbologias das cartas de procedimentos de chegada, aproximação e pouso.
				2	K- Caracterizar procedimentos normais previstos para chegada, aproximação e seleção da pista de pouso em uso.
				3	S- Manter comunicação CTA efetiva (*3) para obter informações sobre os procedimentos de chegada, aproximação e condições para pouso.
				3	S- Acessar e decodificar informações sobre os procedimentos de chegada, aproximação, pouso e suas condições.
				3	S- Determinar posição e trajetória do avião com auxílio dos instrumentos disponíveis.
				4	S- Analisar a pista que oferecerá maior facilidade para o pouso.
				5	A- Postura contingente e confirmativa acerca da posse e validade das cartas de aproximação e pouso.
				3	S- Notificar/Alertar PF discrepâncias na verificação de pista em uso e procedimento de aproximação.
				3	S- Monitorar/Alertar PF no reconhecimento e uso de cartas e simbologias/especificidades operacionais de determinados procedimentos.
				3	S- Notificar/alertar PF discrepâncias no acesso e decodificação de informações sobre pista e procedimentos em uso através de comunicação CTA e serviços de informações pertinentes.
				3	S- Notificar/alertar PF discrepâncias na determinação da posição, trajetória do avião, procedimento e pista mais favoráveis.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
4.3.3	85	Ajustar FMS (*2) adequadamente *[Sets the FMS (2) accordinly]* *[PF/PM] (*8)*	Gerenciar carga de trabalho *[Manage workload]*	2	K- Listar fontes válidas de consulta a dados relacionados às funcionabilidades do FMS (*2).
				2	K- Demonstrar procedimentos operacionais afetos ao uso do FMS (*2), incluindo aqueles associados com sua falha.
				4	S- Garantir pertinência e validade dos dados do voo para ajuste adequado do FMS (*2).
				3	S- Inserir dados corretos, manipulando o sistema de maneira correta, lógica ou pré-definida.
				3	S- Programar o FMS (*2) para os procedimentos de chegada e pouso em uso, ou outros recursos, no caso de falha do FMS (*2).
				3	S- Manter vigilância (*3) de outros parâmetros durante manipulação da interface do FMS (*2).
				5	S- Garantir preparação do avião para descida e aproximação *[VFR/IFR]*, inclusive mediante uso de outros recursos, no caso de falha do FMS (*2).

				4	A- Alocar cálculos mentais de conferência e concordância entre valores inseridos e resultados esperados apresentados no gerenciamento de voo.
				3	S- Notificar/Alertar PF discrepâncias no ajuste adequado do FMS (*2).
				3	S- Monitorar/Alertar PF sobre pertinência e validade dos dados ajustados e sobre a correta manipulação e inserção [verificação] dos mesmos ao sistema.
				3	S- Monitorar/Alertar PF na conferência e concordância entre valores inseridos e resultados no gerenciamento de voo.
				3	S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] nos controles e instrumentos, conforme manual do avião (*7).
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
4.3.4	86	Verificar peso de pouso e distância requerida *[Checks landing weight and landing distance required]* *[PF/PM]* (*8)	Acessar e interpretar referências do manual do avião *[Access and interpret references from the airplane manual]*	2	K- Demonstrar importância dos limitantes e cálculos relacionados com o pouso.
				1	K-Citar efeitos associados com extrapolação de limitações para pouso.
				2	K- Explicar elementos da parte específica a cálculos relacionados com pouso do manual do avião (*7).
				4	S- Analisar gráficos relacionados com o pouso.
				3	S- Determinar velocidade e limites de peso e distâncias requeridas para o pouso.
				5	A- Postura consultiva técnica na determinação dos valores para pouso.
				3	S- Notificar/Alertar PF discrepâncias na verificação do peso de pouso e distância requerida.
				3	S- Monitorar/Alertar PF na análise dos gráficos e sobre pertinência da velocidade e limites de peso e distâncias determinados para o pouso.
				3	S- Monitorar/Alertar PF na diligência na consulta às referências técnicas sobre os dados requeridos para pouso conforme manual do avião (*7).
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
4.3.5	87	Verificar MEA, MOCA e MAS *[Checks MEA, MOCA and MAS]* *[VFR/IFR]* *[PF/PM]*	Manter consciência situacional adequada (*3) da posição vertical do avião em meio a outros procedimentos *[Maintain adequate situational awareness* (*3) *regarding airplane altitude while performing other procedures]*	2	K- Caracterizar altitudes mínimas relevantes à navegação em rota e regras de voo *[VFR/IFR]*.
				3	S- Identificar informações sobre altitudes mínimas nas cartas de navegação *[VFR/IFR]* aeronáutica utilizadas.
				3	S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com manutenção das altitudes mínimas.
				3	S- Orientar-se quanto a posição do avião com auxílio dos instrumentos disponíveis.
				3	S- Manter vigilância (*3) em relação aos limites de atitudes mínimas.
				4	S- Relacionar o conhecimento e respeito aos limites das altitudes mínimas durante operações normais e de emergência.
				3	S- Aderir aos limites da altitude.

				5	A- Antecipar-se sempre aos limites associados às futuras posições do avião.
				3	S- Notificar/Alertar PF discrepâncias na verificação de MEA, MOCA e MAS.
				3	S- Notificar/Alertar PF sobre atuação de sistemas, recursos e funcionalidades do avião associados com manutenção da altitude, e orientação quanto a posição atual e futura da trajetória do avião.
				3	S- Notificar/alertar PF sobre identificação das altitudes mínimas nas cartas utilizadas, posição e trajetória no avião durante operações normais e de emergência.
				3	S- Notificar/Alertar PF sobre proximidade aos limites de altitude.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
4.3.6	88	Identificar ponto ideal de descida *[Identifies top of descent point]* *[PF]*	Reconhecer a influência dos fatores atmosféricos na determinação do ponto ideal de descida *[Recognize the influence of atmospheric factors in determining the ideal point of descent]*	2	K- Caracterizar ponto ideal de descida.
				2	K- Caracterizar influência dos fatores atmosféricos na determinação do ponto ideal de descida.
				2	K- Explicar elementos da parte específica a cálculos relacionados com o ponto ideal de descida do manual do avião (*7).
				4	S- Analisar gráficos relacionados com o ponto ideal de descida, relacionando as influências atmosféricas.
				3	S- Determinar ponto ideal de descida.
				4	A- Postura consultiva técnica na determinação dos valores para pouso.
				3	S- Notificar/Alertar PF discrepâncias na identificação do ponto ideal de descida.
				3	S- Monitorar/Alertar PF sobre apreciação de influências atmosféricas, meteorológicas na identificação do ponto ideal de descida.
				3	S- Monitorar/Alertar PF na análise dos gráficos e condições técnicas na determinação do ponto idela de descida.
				3	S- Monitorar/Alertar PF sobre efeitos da inserção dos dados associados ao ponto ideal de descida no FMS (*2) e resultados no gerenciamento do voo.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
4.3.7	14	Conduzir briefings relevantes *[Conducts relevant briefings]* *[VFR/IFR]* *[PF]*	Sumariar elementos críticos de todo o voo *[Summarize critical elements of the entire flight]*	4	K- Relacionar comunicação efetiva e o bom relacionamento interpessoal (*3).
				3	S- Coletar e aplicar dados atualizados para conduzir briefings.
				3	S- Conduzir briefings abordando todos elementos críticos do voo *[VFR/IFR]*.
				3	S- Executar briefings de operações normais, anormais e de emergência com passageiros.
				3	S- Comunicar-se de maneira efetiva e assertiva (*3).
				3	S- Monitorar/Verificar, quando aplicável, ações e procedimentos [aderência ao manual do operador] de outros membros da tripulação.

				3	S- Reconhecer e aconselhar, quando aplicável e oportuno, sobre quaisquer erros cometidos [não aderência ao manual do operador] por outros membros da tripulação.
				5	A- Consideração a elementos não técnicos [NOTECHS] (*3) na condução de briefings.

Task Terminal Objective

Condition: *[Through normal, abnormal or emergency operation of the airplane, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Check required data, plan descent and approach to runway in use.]*

Standard: *[Have completed required checks and confirmations according to aircraft manual, adopted SOP [AOM], and operator's manual, and have been available to operate systems and communicate crew.]*

Task: *[Perform systems operations and procedures]* — **Task No :** 4.4

1.Where performed:
[Airplane/Control Area]

2.Triggering Event:
[Identify need to operate airplane systems]

3.Terminating Event:
[Make airplane available to complete navigation]

4. References/Standards for the task (if any):

ANAC - RBAC 91;
Manual do avião [POH; AFM];
Air Operator´s Manual and AOM;

5.No : Sub-Task	Int Obj	6.Sub-Tasks	7.Performance Difficulties	LoA	8. Summary of K/S/A Requirements
4.4.1	73	Monitorar operação de todos sistemas *[Monitors operation of all systems]* *[PF/PM]*	Manter consciência situacional adequada (*3) mediante realização de outras manobras *[Maintain adequate situational awareness (*3) while performing other maneuvres]*	2	K- Caracterizar o funcionamento de todos sistemas disponíveis.
				2	K- Caracterizar o funcionamento e características dos diversos modos de automação, se disponíveis.
				3	S- Identificar parâmetros normais estabelecidos pelo manual do avião (*7), quando requerido, para todos sistemas.
				3	S- Checar atuação dos sistemas, seus recursos e funcionalidades.
				5	A- Estima à riscos associados à complacência na monitoração da operação dos sistemas.
				3	S- Notificar/Alertar PF discrepâncias na operação de todos os sistemas.
				3	S- Monitorar/Alertar PF sobre parâmetros e condições nos sistemas do avião e suas funcionabilidades.
				3	S- Monitorar/Alertar PF sobre os efeitos de complacência (*3) na monitoração de sistemas.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
4.4.2	74	Operar sistemas conforme requerido *[Operates systems as required]* *[PF/PM] (*8)*	Avaliar ação executada e seu resultado conforme esperado *[Evaluate action taken and its outcome as expected]*	2	K- Caracterizar o funcionamento de todos sistemas disponíveis e relevantes à fase do voo.
				2	K- Caracterizar relação entre os sistemas disponíveis e suas funcionalidades [comandos] no gerenciamento do voo.
				3	S- Identificar nível apropriado de automação conforme fase do voo e carga de trabalho (*3), se aplicável.
				3	S- Selecionar nível apropriado de automação, se aplicável.
				3	S- Usar comandos, executar procedimentos e alterações adequadas nos diversos sistemas e funcionalidades [comandos] do avião.
				5	S- Avaliar resultado dos comandos executados conforme o esperado.
				5	A- Não ser complacente (*3) pelo uso da automação.

				3	S- Notificar/Alertar PF discrepâncias na operação dos sistemas cnforme requerido.
				3	S- Monitorar/Alertar PF na diligência na consulta às referências técnicas sobre os sistemas conforme manual do avião (*7).
				3	S- Monitorar/Alertar PF na alterações requeridas aos comandos dos sistemas e avaliação dos resultados esperados conforme manual do avião (*7).
				3	S- Monitorar/Alertar PF sobre os efeitos de complacência pelo uso da automação na operação de sistemas.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Through normal, abnormal or emergency operation of the airplane, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Monitor and operate airplane systems as required.]*

Standard: *[Have monitored and operated airplane systems, according to the aircraft manual, adopted SOP [AOM], and operator's manual, when required.]*

Task: *[Manage abnormal and emergency situations]*				**Task No :** 4.5	
1.Where performed: *[Airplane/Control Area]* **2.Triggering Event:** *[Identify abnormal or emergency condition of the plane]* **3.Terminating Event:** *[Determine the end of the abnormal or emergency condition of the airplane]*				**4. References/Standards for the task (if any):** ANAC - RBAC 91; DECEA - ICA 100-12; ICA 100-37; MCA-100-16; Manual do avião [POH; AFM]; Air Operator´s Manual and AOM;	
5.No :		**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
Sub-Task	**Int Obj**				
4.5.1	27	Identificar condição anormal e de emergência *[Identifies the abnormal and emergency condition]* *[PF/PM]*	Manter consciência situacional adequada (*3) para caracterizar condição anormal/emergência. *[Maintain adequate situational awareness (*3) to characterize abnormal condition / emergency.]*	2 3 3 3 3 5 3 3 3	K- Demonstrar parâmetros normas e anormais dos sistemas relevantes do avião à fase da operação e condição identificada. S- Identificar alteração de parâmetros e/ou condições normais. S- Atuar conforme previsto no manual do avião (*7), quando requerido. S- Manter vigilância (*3) da subtarefa e de outros elementos do ambiente para manutenção do voo de forma segura. A- Manter-se alerta à possibilidade de eventos anormais e de emergência durante todo o período de operações normais. A- Estima à manutenção do estado de alerta elevado. S- Notificar/Alertar PF sobre ameaças externas. S- Monitorar/Alertar PF sobre condições anormais e de emergência no avião, seus sistemas, funcionabilidades, controles e parâmetros. S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
4.5.2	28	Interpretar a condição anormal e de emergência *[Interprets the abnormal and emergency condition]* *[PF/PM]*	Avaliar impactos operacionais da condição *[Assess the operational impacts of the condition]*	2 2 2 5	K- Demonstrar o funcionamento dos sistemas relevantes do avião à fase da operação e condição identificada. K- Descrever influências da condição identificada na operação do avião. K- Demonstrar o checklist ou parte correta do manual do avião (*7) para a lidar com a condição. S- Avaliar impactos da condição na operação do avião.

				3	S- Manter adesão ao checklist, padrão operacional adotado ou manual do avião (*7).
				3	S- Manter vigilância (*3) da subtarefa e de outros elementos do ambiente para manutenção do voo de forma segura.
				5	A- Diligência na consulta às referências técnicas adequadas em caso de dúvidas na interpretação da condição anormal.
				3	S- Notificar/Alertar PF discrepâncias na interpretação da condição anormal e de emergência.
				3	S- Monitorar/Alertar PF influência e impactos da condição, consultas tecnicas requeridas e vigilância do ambiente interno e externo.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
4.5.3	29	Executar procedimentos para a condição anormal e de emergência *[Performs the procedure for the abnormal and emergency condition]* *[PF/PM]*	Aderir a padrões operacionais adotados e a listas de verificação *[Adhere to adopted operational standards and checklists]*	2	K- Demonstrar o funcionamento dos sistemas do avião relevantes à fase da operação e condição identificada.
				2	K- Demonstrar conhecimento dos procedimentos anormais e de emergência relacionados com condição identificada.
				3	K- Descrever influências da condição identificada na operação e em outros sistemas do avião.
				3	S- Escolher o checklist ou parte correta do manual do avião (*7) para a lidar com a condição.
				4	S- Atuar conforme avaliação anterior, dos impactos da condição na operação do avião.
				3	S- Gerenciar condição conforme execução correta do checklist, padrão operacional adotado ou manual do avião (*7).
				3	S- Manter adesão ao checklist, padrão operacional adotado ou manual do avião (*7).
				3	S-Comunicar/declarar condição perante CTA, quando aplicável.
				5	S- Manter vigilância (*3) da subtarefa e de outros elementos do ambiente para manutenção do voo de forma segura.
				4	A- Não hesitar e agir prontamente quando atingida condição de emergência e priorizar tarefas [voar, navegar e comunicar], quando aplicável.
				3	S- Notificar/Alertar PF discrepâncias na execução do procedimento da condição anormal e de emergência.
				3	S- Monitorar/Alertar PF nas consultas tecnicas requeridas, coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Given the prior normal operating condition of the aircraft and provisions about abnormal and emergency conditions according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Extinguish the abnormal or emergency condition of the aircraft and define flight continuity.]*

Standard: *[Have performed and completed operational procedures according aircraft manual, adopted SOP [AOM], and operator's manual; have extinguished the abnormal or emergency condition of the aircraft; and properly assessed the safety of the flight.]*

Task: *[Communicate with cabin crew, passengers and company]*	**Task No :** 4.6
1.Where performed: *[Airplane/Control Area]*	**4. References/Standards for the task (if any):** ANAC - RBAC 91; Air Operator´s Manual and AOM;
2.Triggering Event: *[Consider the need for communication with cabin crew, passengers and air operator]*	

3.Terminating Event: *[Receive feedback on communication, if appropriate or required]*					
5.No :		**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
Sub-Task	**Int Obj**				
4.6.1	30	Comunicar informação relevante à tripulação de cabine *[Communicates relevant information to cabin crew]* *[PF]*	Aderir a comunicação efetiva *[Adhere to effective communication]*	1 3 3 3 5 3 3	K- Citar elementos técnicos e aspectos relevantes acerca do avião, fase do voo e segurança em geral utilizados na comunicação com a tripulação de cabine, se aplicável. S- Comunicar-se com a tripulação de cabine, se aplicável, de maneira clara, precisa e concisa. S- Utilizar somente elementos técnicos e aspectos relevantes acerca do avião, fase do voo e segurança em geral na comunicação com a tripulação de cabine, se aplicável. S- Checar (garantir feedback) (*3) entendimento das mensagens trocadas com a tripulação de cabine, se aplicável. A- Consideração a elementos não técnicos [NOTECHS] (*3) na comunicação com a tripulação de cabine, se aplicável. S- Monitorar/Verificar, quando aplicável, ações e procedimentos [aderência ao manual do operador] de outros membros da tripulação. S- Reconhecer e aconselhar, quando aplicável e oportuno, sobre quaisquer erros cometidos [não aderência ao manual do operador] por outros membros da tripulação.
4.6.2	31	Comunicar informação relevante ao operador aéreo *[Communicates relevant information to company]* *[PF/PM]*	Aderir a comunicação efetiva *[Adhere to effective communication]*	1 3 3 3 5 3 3 3	K- Citar elementos técnicos e aspectos relevantes acerca do avião, andamento do voo, segurança em geral a outros pertinentes utilizados na comunicação com o operador aéreo. S- Comunicar-se com operador aéreo de maneira clara, precisa e concisa. S- Utilizar somente elementos técnicos e aspectos relevantes acerca do avião, andamento do voo, segurança em geral a outros pertinentes na comunicação com o operador aéreo. S- Checar (garantir feedback) (*3) entendimento das mensagens trocadas com o operador aéreo, quando oportuno. A- Consideração a elementos não técnicos [NOTECHS] (*3) na comunicação com a tripulação de cabine, se aplicável. S- Notificar/Alertar PF discrepâncias na comunicação de informação relevante ao operador aéreo. S- Monitorar/Alertar PF na obtenção e listagem de elementos relevantes para comunicação ao operador aéreo. S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
4.6.3	32	Fazer anúncios a passageiros quando apropriado *[Makes passenger announcements when appropriate]* *[PF]*	Sumarizar e declarar somente informações relevantes *[Summarize and declare only relevant information]*	1 3 3 3 5	K- Citar elementos técnicos e aspectos relevantes acerca dos avisos, instruções verbais e proibições relacionados com os anúncios a passageiros, quando apropriado. S- Comunicar-se com passageiros de maneira clara, precisa e concisa, conforme provisões do Manual do Operador Aéreo e AOM. S- Ater-se a elementos técnicos e aspectos relevantes acerca do avião, fase do voo e segurança em geral na comunicação com a tripulação de cabine, se aplicável. S- Checar (garantir feedback) (*3) entendimento das mensagens trocadas com passageiros, se requerido. A- Consideração a elementos não técnicos [NOTECHS] (*3) na comunicação com a tripulação de cabine, se aplicável.

				3	S- Notificar/Alertar PF discrepâncias nos anúncios à passageiros quando apropriado.
				3	S- Monitorar/Alertar PF na obtenção e listagem de elementos relevantes para comunicação, comunicação e feedback dos passageiros.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Through normal, abnormal or emergency operation of the airplane, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Communicate cabin crew, passengers and air operator.]*

Standard: *[Have cabin crew, passengers and air operator communicated about relevant aspects of the flight and safety issue elements to their appropriate actions, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Task: *[Initiate and manage descent]* — **Task No :** 5.1

1.Where performed:
[Airplane/Terminal and Control Area]

2.Triggering Event:
[Maneuver airplane to initiate descent procedures]

3.Terminating Event:
[Make pilot available to monitor and execute descent]

4. References/Standards for the task (if any):

ANAC - RBAC 91; IS 91-001; IS 91-21-001;
DECEA - ICA 100-12; ICA 100-37; MCA 100-16; MCA 96-3; MCA-96-4; ICA 100-5; ICA 105-12;
Manual do avião [POH; AFM];
Air Operator´s Manual and AOM;

5.No : Sub-Task	Int Obj	6.Sub-Tasks	7.Performance Difficulties	LoA	8. Summary of K/S/A Requirements
5.1.1	89	Iniciar descida conforme autorização CTA ou ponto ideal de descida *[Starts descent according to ATC clearance or optimum descent point]* *[PF]*	Manter consciência situacional adequada (*3) em meio a execução de outros procedimentos *[Maintain adequate situational awareness (*3) while performing other procedures]*	1	K- Citar procedimentos relevantes de comunicação e coordenação aeronáutica.
				2	K- Demonstrar filosofia de operação normal adotada no início da descida conforme autorização CTA ou ponto ideal de descida.
				2	K- Descrever procedimento normal a ser adotado no início da descida conforme autorização CTA ou ponto ideal de descida.
				2	S- Manter vigilância (*3) em relação a posição do avião.
				3	S- Usar comandos, executar procedimentos adequados nos diversos sistemas e funcionalidades do avião para manutenção da descida, autorizações e correção de elementos atmosféricos.
				3	S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com execução da descida.
				3	S- Manter vigilância na frequência de comunicação CTA.
				3	S- Comunicar-se de maneira clara, precisa, e concisa [sobre início de descida ou ponto ideia de descida].
				5	A- Respeito e atenção a desobstrução e congestionamento da frequência de comunicação CTA.
				5	A- Não se comunicar com o CTA de forma complacente (*3) ou automatizada.
				3	S- Notificar/Alertar PF discrepâncias no cumprimento da descida conforme autorização CTA ou ponto ideal de descida.
				3	S- Notificar/alertar PF sobre cumprimento da trajetória da autorização recebida, aproximação, atingimento de fixos e alturas determinadas no procedimento de descida.
				3	S- Notificar/alertar PF sobre altitudes de segurança e proximidade às mesmas.

				3	S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] nos controles e instrumentos, conforme manual do avião (*7).
				3	S- Notificar/Alertar PF sobre ambiente e ameaças externas e elementos da coordenação CTA.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
5.1.2	90	Selecionar velocidade e razão de descida ótimas *[Selects optimum speed and descent rate]* *[PF]*	Manter consciência situacional adequada (*3) em meio a execução de outros procedimentos *[Maintain adequate situational awareness (*3) while performing other procedures]*	2	K- Explicar elementos da parte específica a cálculos relacionados com o ponto ideal, razão e velocidade de descida do manual do avião (*7).
				2	K- Caracterizar limitações operacionais, velocidade e razão de descida ótimas do avião.
				2	K- Caracterizar influência dos fatores atmosféricos na determinação velocidade e razão de descida ótimas.
				4	S- Analisar gráficos ou recursos do sistema de gerenciamento de navegação, quando disponível, relacionados com velocidade e razão de descida ótimas, relacionando as influências atmosféricas.
				3	S- Selecionar e manter velocidade e razão de descida ótimas de acordo com as condições técnicas do avião.
				5	S-Avaliar velocidade a ser utilizada para descer no ponto determinado.
				5	A- Postura consultiva técnica na determinação dos valores para pouso.
				3	S- Notificar/Alertar PF discrepâncias na seleção de velocidade e razão de descida ótimas.
				3	S- Monitorar/Alertar PF na diligência na consulta às referências técnicas sobre velocidades e razão de descida ótimas [regimes] do manual do avião (*7), e validação aquela confirme requerido.
				3	S- Monitorar/Alertar PF sobre controles e configurações do avião afetos a seleção e manutenção da velocidade/razão de descida, incluindo efeitos da automação [controles e modos de gerenciamentos] nos controles e instrumentos, conforme manual do avião (*7).
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
5.1.3	91	Ajustar velocidade às condições ambientais existentes *[Adjusts speed to existing environmental conditions]* *[PF]*	Manter consciência situacional adequada (*3) em meio a execução de outros procedimentos *[Maintain adequate situational awareness (*3) while performing other procedures]*	1	K- Citar procedimentos relevantes de comunicação e coordenação aeronáutica.
				2	K- Caracterizar influência dos fatores atmosféricos na velocidade de descida do avião.
				4	K- Relacionar possíveis ajustes em funcionalidades [comandos] do avião e mudanças computadas no gerenciamento do voo.
				3	S- Determinar posição e trajetória do avião com auxílio dos instrumentos disponíveis.
				5	S- Avaliar desempenho do avião frente às condições ambientais existentes e desempenho esperado.
				3	S- Calcular alteração requerida para manter a segurança do voo, considerando-se a análise dos fatores atmosféricos, relevos e condição técnica do avião para livrar obstáculos e manter a segurança do voo, inclusive em eventual falha e motor.
				3	S- Selecionar e manter velocidade de acordo com as condições ambientais existentes.

				3	S- Manter vigilância (*3) da velocidade e condições ambientais existentes.
				5	A- Manter avaliação sobre manutenção dos valores alterados.
				3	S- Notificar/Alertar PF discrepâncias no ajuste da velocidade às condições ambientais existentes.
				3	S- Monitorar/Alertar PF sobre uso de informações de tráfego, de elementos atmosféricos e ambientais no setor e determinação de suas influências no desempenho do avião e impacto à navegação.
				3	S- S- Notificar/alertar PF sobre determinação da posição, trajetória do avião, avaliação e atingimento de seu desempenho acerca da velocidade requerida.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
5.1.4	92	Reconhecer necessidade de ajustar trajetória de descida *[Recognizes the need to adjust the descent path]* *[PF]*	Julgar necessidade de alterações mediante demanda do CTA, ambiente e proficiência do piloto *[Judge need for changes upon CTA demand, environment and pilot proficiency]*	2	K- Explicar elementos da parte específica de desempenho do manual do avião (*7).
				1	K- Citar limites e valores de velocidades, razões e ângulos de descida e de melhor planeio, considerando condição técnica do avião.
				1	K- Reconhecer simbologias das cartas de procedimentos e navegação.
				3	S- Identificar tipo de relevo relacionado à trajetória do voo e de possíveis desvios.
				3	S- Determinar posição e trajetória do avião com auxílio dos instrumentos disponíveis.
				3	S- Identificar desempenho inadequado frente a trajetória ideal de descida.
				5	S- Validar necessidade de alterar trajetória de descida.
				5	A- Postura contingente frente ao seu desempenho.
				3	S- Notificar/Alertar PF discrepâncias no ajuste da trajetória de descida.
				3	S- Notificar/alertar PF sobre ameaças ao atingimento de fixos em alturas determinadas no procedimento de descida, e altitudes de segurança.
				3	S- Monitorar/Alertar PF sobre a orientação quanto a posição atual e futura da trajetória do avião e ocorrência de CFIT em operações normais e prevista em procedimento de emergência.
				3	S- Notificar/alertar PF sobre estimativas acerca da nova trajetória de descida ideal.
				3	S- Notificar/Alertar PF sobre ambiente e ameaças externas e elementos da coordenação CTA.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
5.1.5	93	Ajustar trajetória do voo conforme requerido *[Adjusts the flight path as required]* *[PF]*	Manter consciência situacional adequada (*3) em meio a execução de outros procedimentos	1	K- Citar procedimentos relevantes de comunicação e coordenação aeronáutica.
				2	K- Caracterizar fatores atmosféricos que influenciam na trajetória de descida do avião.
				4	K- Relacionar possíveis ajustes em funcionalidades [comandos] do avião e mudanças computadas no gerenciamento do voo.

			[Maintain adequate situational awareness (*3) *while performing other procedures]*	3	S- Calcular a alteração requerida [velocidade, razão de subida, altitude] para manter a segurança do voo, considerando-se a análise dos fatores atmosféricos, relevos e condição técnica do avião para livrar obstáculos e manter a segurança do voo, inclusive em eventual falha e motor.
				3	S- Usar comandos, executar procedimentos adequados nos diversos sistemas e funcionalidades do avião para manter ou ajustar a trajetória de descida de acordo com autorizações e correção de fatores atmosféricos.
				5	S- Avaliar desempenho do avião frente às condições ambientais existentes e resultado esperado.
				3	S-Comunicar/declarar condição perante CTA, quando aplicável.
				3	S- Manter vigilância (*3) da trajetória de descida e condições ambientais existentes.
				5	A- Manter avaliação sobre manutenção dos valores alterados e desempenho esperado.
				5	A- Diligência na consulta às referências técnicas adequadas sobre limitações do manual do avião (*7).
				3	S- Notificar/Alertar PF discrepâncias no ajuste da trajetória do voo conforme requerido.
				3	S- Notificar/alertar PF sobre ameaças ao atingimento de fixos em alturas determinadas no procedimento de descida, e altitudes de segurança.
				3	S- Monitorar/Alertar PF sobre a orientação quanto a posição atual e futura da trajetória do avião e ocorrência de CFIT em operações normais e prevista em procedimento de emergência.
				3	S- Notificar/alertar PF sobre cálculos e validação da trajetória de descida conforme requerido.
				3	S- Notificar/Alertar PF sobre atuação de sistemas, recursos e funcionalidades do avião associados com manutenção da trajetória do voo conforme requerido.
				3	S- Notificar/Alertar PF sobre ambiente e ameaças externas e elementos da coordenação CTA.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
5.1.6	94	Usar todas formas de informação de descida do FMS (*2) *[Utilizes all means of FMS* (*2) *descent information]* *[PF]*	Gerenciar carga de trabalho *[Manage workload]*	2	K- Caracterizar o sistema, suas funcionabilidades e operação.
				1	K- Listar fontes válidas de consulta a dados utilizados no FMS (*2), ou outros recursos, no caso de falha do FMS (*2).
				2	K- Caracterizar influência da utilização de informações desatualizadas no desempenho e navegação do avião.
				3	S- Identificar e verificar dados utilizados e/ou inseridos no FMS (*2), ou outros recursos, no caso de falha do FMS (*2).
				4	S- Garantir pertinência e validade dos dados do voo *[VFR/IFR]* para posterior manipulação do sistema.
				3	S- Inserir dados corretos, manipulando o sistema de maneira correta, lógica ou pré-definida, quando necessário.
				5	S- Utilizar todas formas de informação de descida do FMS (*2), ou outros recursos, no caso de falha do FMS (*2).

				4	A- Alocar cálculos mentais de conferência e concordância entre valores inseridos e resultados esperados apresentados no gerenciamento de voo.
				5	A- Postura consultiva aos dados de despacho obtidos nas etapas anteriores; e contingente quando em dúvidas sobre a pertinência e validade dos dados.
				3	S- Notificar/Alertar PF discrepâncias no uso de todas formas de informação de descida do FMS (*2).
				3	S- Monitorar/Alertar PF sobre pertinência e validade dos dados a serem inseridos e sobre a correta manipulação e inserção [verificação] dos mesmos no FMS (*2).
				3	S- Monitorar/Alertar PF sobre configuração [e desvios] apropriada do avião, seus sistemas e instumentos conforme informações disponíveis de descida do FMS (*2).
				3	S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] nos controles e instrumentos, conforme manual do avião (*7).
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Through normal, abnormal or emergency operation of the airplane, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Initiate and monitor descent and make adjusts if necessary.]*

Standard: *[Have initiated and managed the descent procedure; have made adjusts to the procedure, if necessary, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Task: *[Monitor and perform en-route and descent navigation]*	**Task No :** 5.2
1.Where performed: *[Airplane/Terminal and Control Area]*	**4. References/Standards for the task (if any):**
2.Triggering Event: *[Check navigation accuracy]*	ANAC - RBAC 91; IS 91-001; IS 91-21-001; DECEA - ICA 100-12; ICA 100-37; MCA 100-16; MCA 96-3; MCA-96-4; ICA 100-5; ICA 105-12; Manual do avião [POH; AFM]; Air Operator´s Manual and AOM;
3.Terminating Event: *[Make pilot available to update approach instructions]*	

5.No :		**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
Sub-Task	**Int Obj**				
5.2.1	95	Cumprir procedimentos da autorização de chegada, incluindo procedimentos RNAV e RNP *[Complies with arrival clearance and procedures, including RNAV and RNP procedures]* *[VFR/IFR]* *[PF]*	Manter consciência situacional adequada (*3) em relação a posição vertical e lateral do avião *[Maintain adequate situational awareness (*3) regarding airplane position]*	2	K- Explicar elementos da parte específica de desempenho do manual do avião (*7).
				1	K- Reconhecer simbologias específicas nas cartas de procedimentos e navegação.
				2	K- Demonstrar procedimentos operacionais afetos a navegação VFR, IFR e PBN, quando aplicável, incluindo aqueles normais e de perda de capacidade de navegação.
				3	S- Identificar limites horizontais e verticais do procedimento.
				5	S- Avaliar capacidade da navegação do avião frente ao procedimento.
				3	S- Comunicar-se de maneira clara, precisa, e concisa [sobre procedimentos da autorização de chegada].
				3	S- Manter vigilância (*3) em relação aos limitantes do procedimento.
				3	S- Usar comandos e executar alterações adequadas nos diversos sistemas e funcionalidades [comandos] do avião na execução do procedimento.

				3	S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com a execução do procedimento.
				3	S- Aderir aos limites e instruções do procedimento.
				3	A- Conforto na aplicação de comandos (considerando controle manual ou automático do avião, quando aplicável).
				3	S- Notificar/Alertar PF discrepâncias no cumprimento dos procedimentos de chegada, incluindo aqueles específicos RNAV e RNP.
				3	S- Notificar/alertar PF sobre cumprimento da trajetória autorizada, aproximação, atingimento de fixos e alturas determinadas no procedimento.
				3	S- Notificar/alertar PF sobre avaliação e atingimento de desempenho do avião acerca de determinado procedimento [instrução].
				3	S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] nos controles e instrumentos, conforme manual do avião (*7).
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
5.2.2	62	Demonstrar consciência situacional do terreno *[Demonstrates terrain awareness]* *[PF/PM]*	Orientar-se com auxílio dos instrumentos de voo *[Orientation with the aid of flight instruments]*	1	K- Citar fatores contribuintes relacionados com a ocorrência de CFIT.
				1	K- Reconhecer simbologias das cartas de procedimentos e navegação *[VFR/IFR]*.
				2	K- Demonstrar funcionalidade dos instrumentos de navegação de bordo.
				2	K- Demonstrar funcionalidade do sistema de alerta de proximidade com o solo, quando aplicável.
				3	S- Orientar-se com auxílio dos instrumentos e cartas de navegação e procedimentos disponíveis.
				5	S- Avaliar e Determinar posição e trajetória do avião.
				3	S- Usar comandos e executar alterações adequadas nos diversos sistemas e funcionalidades [comandos] do avião na execução do procedimento.
				3	S- Manter navegação de forma segura.
				3	A- Estender consciência situacional sobre terreno acerca de possíveis operações de emergência.
				3	S- Notificar/Alertar PF sobre discrepâncias na consiciência situacional do terreno.
				3	S- Monitorar/Alertar PF sobre atuação e disfunção dos meios, instrumentos, recursos e funcionalidades do avião acerca de informações de terreno e navegação.
				3	S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] nos instrumentos e recursos afetos à informações de terreno e navegação conforme manual do avião (*7).
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
5.2.3	59	Monitorar precisão da navegação *[Monitors navigation accuracy]*	Manter consciência situacional adequada (*3) acerca da	2	K- Caracterizar o funcionamento dos meios utilizados para navegação.

		[PF/PM]	posição do avião *[Maintain adequate situational awareness* (*3) *regarding airplane position]*	2 3 5 3 3 3 3 5 3 3 3 3	K- Demonstrar procedimentos operacionais afetos a navegação VFR, IFR e PBN, quando aplicável, incluindo aqueles normais e de perda de capacidade de navegação. S- Manter vigilância (*3) em relação aos limitantes de precisão da navegação. S- Avaliar capacidade da navegação. S- Usar comandos, executar procedimentos adequados nos diversos sistemas e funcionalidades do avião, conforme avaliação anterior [no caso de perda da capacidade de navegação]. S- Comunicar-se de maneira clara, precisa, e concisa [no caso de perda da capacidade de navegação]. S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com a precisão da navegação. S- Aderir aos limites de precisão da capacidade de navegação. A- Estima à riscos associados à complacência na monitoração da precisão da navegação. S- Notificar/Alertar PF sobre discrepâncias na precisão da navegação. S- Notificar/alertar PF sobre avaliação e adesão à precisão [desempenho] de navegação específica ao tipo utilzada. S- Notificar/Alertar PF sobre execução de procedimentos e comunicação CTA [no caso de perda da capacidade de navegação]. S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] na precisão da navegação conforme manual do avião (*7). S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
5.2.4	64	Ajustar o voo às condições meteorológicas e de tráfego *[Adjusts flight to weather and traffic conditions]* *[VFR/IFR]* *[PF]*	Manter consciência situacional adequada (*3) em meio a execução de outros procedimentos *[Maintain adequate situational awareness* (*3) *while performing other procedures]*	1 1 2 2 2 3 3 3 5	K- Reconhecer fontes de acesso às informações de meteorologia aeronáutica, incluindo aquelas em rota – sob comunicação CTA. K- Listar limites meteorológicos relacionados às regras de voo *[VFR/IFR]*. K- Caracterizar fenômenos meteorológicos relevantes a navegação do avião. K- Caracterizar procedimentos e regra do ar de prevenção de colisões entre aeronaves. K- Caracterizar o funcionamento do sistema de alerta de tráfego e prevenção de colisões, quando aplicável. K- Demonstrar procedimentos operacionais normais afetos a cada um dos sistemas, quando instalados no avião, incluindo aqueles afetos a perda de suas funcionalidades. S- Acessar e decodificar informações das mensagens meteorológicas. S- Observar elementos meteorológicos e/ou tráfego visualmente ou através dos sistemas e funcionalidades associadas, quando disponíveis. S- Estimar influência dos elementos meteorológicos no desempenho do avião e navegação *[VFR/IFR]*.

				3	S- Usar comandos e executar procedimentos adequados nos diversos sistemas e funcionalidades do avião e realizar desvios na rota afim de evitar tráfegos e formações meteorológicas.
				3	S- Comunicar-se de maneira clara, precisa, e concisa [no caso de desvios significativos].
				3	S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com a precisão da navegação, elementos meteorológicos e tráfego, se aplicável.
				5	A- Demonstrar postura contingente e baseada em ameaças e riscos nas avaliações afetas a realização do voo *[VFR/IFR]*.
				5	A- Diligência sobre o uso de informações meteorológicas válidas e confiáveis para todas etapas do voo *[VFR/IFR]*.
				3	S- Notificar/Alertar PF discrepâncias no ajuste do voo às condições meteorológicas e de tráfego.
				3	S- Monitorar/Alertar PF sobre ameaças de tráfego e meteorológicas no setor, uso de informações meteorológicas válidas e estimativas de impacto à navegação.
				3	S- Notificar/alertar PF discrepâncias na monitorização dos sistemas de alerta de tráfego e prevenção de colisões, e de elementos meteorológicos.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
5.2.5	60	Comunicar-se e coordenar-se com o CTA *[Communicates and coordinates with ATC]* *[PF/PM]* (*8)	Garantir entendimento de todas as mensagens por ambas as partes *[Ensure understanding of all messages by both parties]*	2	K- Demonstrar conhecimento sobre serviços de tráfego aéreo, sobre autorização de tráfego e informações sobre terminal e meteorologia.
				2	K- Demonstrar procedimentos padrões de fraseologia aeronáutica.
				3	S- Manter vigilância na frequência de comunicação CTA.
				3	S- Manter vigilância (*3) em relação a posição do avião.
				3	S- Comunicar-se de maneira clara, precisa, e concisa, considerando, no mínimo os elementos (*3): emissão [solicitação], recebimento, verificação e cotejamento das novas mensagens [instruções], quando aplicável.
				3	A- Respeito e atenção a desobstrução e congestionamento da frequência de comunicação CTA.
				3	A- Não se comunicar com o CTA de forma complacente (*3) ou automatizada.
				4	A- Disponibilidade para receber, registrar e entender mensagens.
				3	S- Notificar/Alertar PF discrepâncias na comunicação padrão com a equipe de solo e CTA.
				3	S- Notificar/Alertar PF sobre uso de frequências corretas e elementos técnicos e da comunicação relevantes.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
5.2.6	65	Observar altitudes mínimas *[Observes minimum altitudes]* *[PF/PM]*	Manter consciência situacional adequada (*3) da posição vertical do avião em meio a outros procedimentos	1	K- Citar nomenclaturas oficiais de altitudes mínimas e relevantes à fase do voo *[VFR/IFR]*.
				3	S- Acessar e decodificar informações das cartas de navegação *[VFR/IFR]* aeronáutica utilizadas.
				3	S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com manutenção da altitude.

			[Maintain adequate situational awareness (*3) *regarding airplane altitude while performing other procedures]*	3	S- Orientar-se quanto a posição do avião com auxílio dos instrumentos disponíveis.
				3	S- Manter vigilância (*3) em relação aos diversos limites da navegação.
				3	S- Aderir aos limites da navegação.
				5	A- Antecipar-se sempre quanto à futura posição do avião e limites associados.
				3	S- Notificar/Alertar PF discrepâncias na observação de altitudes mínimas.
				3	S- Notificar/Alertar PF sobre atuação de sistemas, recursos e funcionalidades do avião associados com manutenção da altitude, e orientação quanto a posição atual e futura da trajetória do avião.
				3	S- Notificar/alertar PF sobre altitudes de segurança e proximidade às mesmas.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
5.2.7	66	Selecionar nível apropriado de automação *[Selects appropriate level of automation]* *[PF]*	Identificar o nível apropriado de automação *[Identify the proper level of automation]*	2	K- Descrever funcionamento e características dos diversos modos de automação, quando disponíveis.
				3	S- Identificar nível apropriado de automação conforme fase do voo e carga de trabalho (*3).
				3	S- Selecionar nível apropriado de automação.
				3	S- Usar comandos e executar alterações adequadas nos diversos sistemas e funcionalidades [comandos] do avião na execução do procedimento.
				3	A- Não ser complacente (*3) pelo uso da automação.
				3	S- Notificar/Alertar PF discrepâncias na seleção de nível apropriado de automação à fase do voo.
				3	S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] na condução do voo conforme manual do avião (*7).
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
5.2.8	67	Cumprir procedimentos de ajuste de altímetro *[Complies with altimeter setting procedures]* *[PF/PM]*	Manter consciência situacional adequada (*3) da posição vertical do avião em meio a outros procedimentos *[Maintain adequate situational awareness* (*3) *regarding airplane altitude while performing other procedures]*	2	K- Caracterizar procedimentos oficiais de ajuste de altímetros durante o voo.
				3	S- Manter vigilância (*3) em relação aos limitantes de precisão da navegação.
				3	S- Executar ajustes de altímetro.
				3	S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com manutenção da altitude e ajuste altimétrico.
				5	A- Antecipar-se sempre quanto oportunidade correta para executar a subtarefa.
				3	S- Notificar/Alertar PF discrepâncias no cumprimento de procedimentos de ajuste de altímetro.
				3	S- Monitorar/Alertar PF sobre sistemas, recursos e funcionalidades do avião associados com manutenção da altitude e ajuste altimétrico.

				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Through normal, abnormal or emergency operation of the airplane, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: [*Execute and monitore the descend navigation]*

Standard: *[Have performed and monitored the descent navigation, having made adjusts when necessary, and complying with the procedure through CTA coordination, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Task: *[Replanning and update of approach briefing]* — **Task No :** 5.3

1.Where performed:
[Airplane/Terminal Area]

2.Triggering Event:
[Identify need to reconfigure the approach]

3.Terminating Event:
[Make pilot available to perform holdings]

4. References/Standards for the task (if any):

ANAC - RBAC 91; IS 91-001; IS 91-21-001;
DECEA - ICA 100-12; ICA 100-37; MCA 100-16; MCA 96-3; MCA-96-4; ICA 100-5; ICA 105-12;
Manual do avião [POH; AFM];
Air Operator´s Manual and AOM;

5.No : Sub-Task	Int Obj	**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
5.3.1	96	Verificar novamente meteorologia e pista em uso no destino *[Rechecks destination weather and runway in use]* *[VFR/IFR]* *[PF/PM] (*8)*	Gerenciar carga de trabalho *[Manage workload]*	1	K- Reconhecer fontes disponíveis para acesso às condições meteorológicas e pista em uso no destino.
				1	K- Reconhecer simbologias das cartas de procedimentos *[VFR/IFR]* de aproximação e pouso.
				3	S- Utilizar fontes apropriadas de verificação de meteorologia e pista em uso no destino.
				3	S- Utilizar meios de informação meteorológica e de pista em uso no destino através dos serviços de tráfego aéreo, incluindo acesso a serviço de informações sobre aeródromo e terminal.
				3	S- Acessar e decodificar informações sobre meteorologia e pista em uso no destino.
				3	S- Checar limites meteorológicos *[VFR/IFR]* dos procedimentos de aproximação e pouso na pista em uso no destino.
				3	S- Determinar posição e trajetória do avião com auxílio dos instrumentos disponíveis.
				5	S- Estimar influência dos elementos meteorológicos no desempenho do avião e navegação *[VFR/IFR]*.
				5	S-Validar seleção da pista em uso.
				3	S- Manter vigilância (*3) acerca da posição atual do avião frente a pista em uso e execução de outras tarefas.
				5	A- Diligência sobre o uso de informações meteorológicas válidas e confiáveis para todas etapas do voo *[VFR/IFR]*.
				3	S- Notificar/Alertar PF discrepâncias na verificação de meteorologia e pista em uso do destino.
				3	S- Monitorar/Alertar PF sobre determinação de condições meteorológicas do aeródromo de destino, assim como sobre o uso de fontes de tais informações.
				3	S- Notificar/alertar PF discrepâncias no acesso e decodificação de informações meteorológicas através de comunicação CTA e serviços de informações pertinentes.
				3	S- Nonitorar/Alertas PF sobre caracterização de fenômenos relevantes ao desempenho do avião.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.

5.3.2	97	Conduzir briefings e confirmações sobre aproximação por instrumento e pouso conforme requerido *[Briefs and confirms about instrument approach and landing as required]* *[PF]*	Sintetizar itens relevantes para realização de briefing rápido e efetivo *[Synthesize relevant items for a quick and effective briefing]*	1 1 4 4 3 3 3 5 5 3 3 3 3 3	K- Demonstrar procedimentos normais para confirmações, aproximação e pouso por instrumento. K- Citar itens relevantes para realizar um briefing e confirmações sobre a aproximação e pouso por instrumento. K- Relacionar comunicação efetiva e o bom relacionamento interpessoal (*3). S- Coletar, confirmar e sintetizar dados relevantes e atualizados para conduzir briefings. S- Conduzir briefing e confirmações sobre pontos relevantes da aproximação e pouso por instrumento. S- Executar briefings de emergência com passageiros. S- Comunicar-se de maneira efetiva e assertiva (*3) com passageiros. A- Consideração a elementos não técnicos [NOTECHS] (*3) na condução de briefings. A- Capacidade de estruturação lógica na preparação e execução de briefings sobre a aproximação e pouso por instrumento. S- Notificar/Alertar PF discrepâncias na condução de briefings e confirmações sobre aproximação por instrumento e pouso conforme requerido. S- Monitorar/Alertar PF no reconhecimento e uso de cartas e simbologias/especificidades operacionais do procedimento de aproximação e pouso em uso. S- Notificar/alertar PF discrepâncias no acesso e decodificação de informações do procedimento de aproximação e pouso obtidos através de comunicação CTA e serviços de informações pertinentes. S- Reconhecer e aconselhar, quando aplicável e oportuno, sobre quaisquer erros cometidos [não aderência ao manual do operador] por outros membros da tripulação. S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
5.3.3	98	Reprogramar FMS (*2) conforme requerido *[Reprogrammes the FMS (*2) as required]* *[PF/PM] (*8)*	Garantir atenção sobre necessidade de inserção de novos dados *[Ensure attention about the need of inserting new data]*	1 3 2 3 4 3 5 5	K- Listar fontes válidas de consulta a dados utilizados no FMS (*2). K- Demonstrar influência da utilização de informações desatualizadas no desempenho e navegação do avião. K- Demonstrar procedimentos operacionais afetos ao uso do FMS (*2), incluindo aqueles associados com sua falha. S- Identificar e verificar dados utilizados e/ou inseridos no FMS (*2). S- Garantir pertinência e validade dos dados corretos para posterior manipulação do sistema. S- Reprogramar dados pertinentes, manipulando o sistema de maneira correta, lógica ou pré-definida, se requerido. S- Garantir preparação do avião para aproximação e pouso *[VFR/IFR]*, inclusive mediante uso de outros recursos, no caso de falha do FMS (*2). S- Manter vigilância (*3) de outros parâmetros durante manipulação da interface do FMS (*2).

				4	A- Alocar cálculos mentais de conferência e concordância entre valores inseridos e resultados esperados apresentados no gerenciamento de voo.
				3	S- Notificar/Alertar PF discrepâncias na reprogramação do FMS (*2) conforme requerido.
				3	S- Monitorar/Alertar PF sobre pertinência e validade dos dados a serem inseridos e sobre a correta manipulação e inserção [verificação] dos mesmos.
				3	S- Monitorar/Alertar PF acerca da orientação requerida e análise dos impactos operacionais à gestão do voo conforme reprogramação do FMS (*2).
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
5.3.4	99	Verificar novamente condição do combustível *[Rechecks fuel status]* *[PF/PM]*	Detectar e relacionar variações entre consumo previsto e real para o gerenciamento do voo *[Detect and relate variations among predicted and effective fuel consumption to the flight management]*	2	K- Demonstrar aspectos e limitações operacionais do avião acerca do consumo do combustível.
				2	K- Caracterizar procedimentos oficiais previstos para informar combustível mínimo e emergência por combustível.
				3	S- Identificar fontes de consulta e determinar consumo de combustível e combustível remanescente.
				5	S- Avaliar requisitos de combustível necessários para realizar eventual arremetida ou prosseguir para a alternativa.
				5	S- Manter vigilância (*3) em relação ao consumo, outros parâmetros do grupo moto propulsor e desempenho do avião.
				3	A- Manter avaliação sobre manutenção dos valores alterados e desempenho esperado.
				3	S- Notificar/Alertar PF discrepâncias na verificação da condição do combustível.
				3	S- Monitorar/Alertar PF sobre consumo em relação aos parâmetros do grupo moto-propulsor, de desempenho [planejado e real] do avião.
				3	S- Monitorar/Alertar PF sobre determinação do combustível remanescente [autonomia] acerca do planejamento do voo.
				3	S- Monitorar/Alertar PF sobre avaliação das condições e critérios associados com realização de possível desvio.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Through normal, abnormal or emergency operation of the airplane, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Check, confirm approach instructions; and update and reprogram data as required.]*

Standard: *[Have completed checks and confirmations on the approach at the destination airport; and have updated data, when required and according aircraft manual, adopted SOP [AOM], and operator's manual, to be available to operate systems, communicate crew and perform approaches.]*

Task: *[Perform holdings]*	**Task No :** 5.4

1.Where performed: *[Airplane/Terminal Area]*	**4. References/Standards for the task (if any):** ANAC - RBAC 91; IS 91-001; IS 91-21-001; DECEA - ICA 100-12; ICA 100-37; MCA 100-16; MCA 96-3; MCA-96-4; ICA 100-5; ICA 105-12; Manual do avião [POH; AFM]; Air Operator´s Manual and AOM;
2.Triggering Event: *[Holding procedure request]*	
3.Terminating Event: *[Make pilot available to perform holdings for system operations and procedures]*	

5.No :		**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
Sub-Task	**Int Obj**				

5.4.1	100	Identificar requisitos da espera (órbita) *[Identifies holding requirement]* *[PF/PM]*	Manter consciência situacional adequada (*3) em meio a execução de outros procedimentos *[Maintain adequate situational awareness (*3) while performing other procedures]*	2 3 3 5 3 3 3	K- Descrever procedimentos normais e limitantes para realização de órbitas conforme requisitos oficiais. S- Manter vigilância (*3) em relação a posição do avião. S- Identificar tipo de órbita a ser realizada, fixos de referência, cursos, limites de velocidade, de razão de descida/subida e tempos/distâncias de afastamento conforme altitude do voo. A- Capacidade de manter vigilância (*3) acerca da posição atual do avião frente a pista em uso e execução de outras tarefas. S- Notificar/Alertar PF discrepâncias na identificação de requisitos da espera (órbita). S- Monitorar/Alertar PF sobre identificação de todos elementos relativos à espera (órbita) conforme altitude do voo. S- Monitorar/Alertar PF na vigilância (*3) acerca da posição atual do avião frente a pista em uso e execução de outras tarefas.. S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
5.4.2	101	Programar FMS (*2) para padrão da espera (órbita) *[Programmes FMS (*2) for holding pattern]* *[PF/PM] (*8)*	Computar procedimento no gerenciamento do voo *[Compute the procedure on the flight management]*	2 3 5 4 3 3 3 3 3	K- Caracterizar o sistema, suas funcionabilidades e operação. S- Inserir dados corretos, manipulando o sistema de maneira correta, lógica ou pré-definida. S- Manter vigilância (*3) de outros parâmetros durante manipulação da interface do FMS (*2). A- Alocar cálculos mentais de conferência e concordância entre valores inseridos e resultados esperados apresentados no gerenciamento de voo. S- Notificar/Alertar PF discrepâncias na programação do FMS (*2) para padrão da espera (órbita). S- Monitorar/Alertar PF sobre pertinência dos dados ajustados e sobre a correta manipulação e inserção [verificação] dos mesmos ao sistema. S- Monitorar/Alertar PF na conferência e concordância entre valores inseridos e resultados no gerenciamento de voo. S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] nos controles e instrumentos, conforme manual do avião (*7). S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
5.4.3	102	Entrar e monitorar o padrão da espera (órbita) *[Enters and monitors holding pattern]* *[PF]*	Manter consciência situacional adequada (*3) em meio a execução de outros procedimentos *[Maintain adequate situational awareness (*3) while performing other procedures]*	4 4 3 3 3 3 3	K- Relacionar possíveis ajustes em funcionalidades [comandos] do avião e mudanças computadas no gerenciamento do voo. K- Relacionar elementos identificados do procedimento de espera (órbita). S- Usar comandos e executar alterações adequadas nos diversos sistemas e funcionalidades [comandos] do avião na execução da espera (órbita). S- Checar atuação dos sistemas, seus recursos e funcionalidades. S- Executar e monitorar órbita. S- Manter vigilância (*3) acerca da posição atual do avião frente a pista em uso e execução de outras tarefas. A- Manter avaliação sobre manutenção dos valores alterados e desempenho esperado.

				3	S- Notificar/Alertar PF discrepâncias na entrada e monitoramento do padrão da espera (órbita).
				3	S- Monitorar/Alertar PF sobre uso de comandos, execução de alterações adequadas nos diversos sistemas e funcionalidades [comandos] do avião, assim como suas atuações, na execução da espera (órbita).
				3	S- Monitorar/Alertar PF na avaliação dos resultados de desempenho esperados conforme manual do avião (*7).
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
5.4.4	103	Avaliar requisitos de combustível e determinar tempo máximo da espera (órbita) *[Assesses fuel requirements and determines max. holding time]* *[PF/PM]*	Calcular tempo máximo de espera conforme variações entre consumo de combustível *[Calculate maximum holding time according fuel consumption variations]*	2	K- Demonstrar aspectos e limitações operacionais do avião acerca do consumo do combustível e autonomia.
				3	S- Identificar fontes de consulta e determinação do consumo de combustível em espera, combustível remanescente e autonomia.
				5	S- Avaliar requisitos de combustível necessário para determinar autonomia [tempo máximo de espera ou prosseguimento para alternativa].
				3	S- Determinar combustível necessário acerca do tempo máximo de espera; ou acerca do prosseguimento para alternativa, conforme requisitos oficiais e conforme provisões do Manual do Operador Aéreo e AOM.
				3	S- Manter vigilância (*3) em relação ao consumo, outros parâmetros do grupo moto propulsor e desempenho do avião.
				3	A- Manter avaliação sobre manutenção dos valores alterados e desempenho esperado.
				3	S- Notificar/Alertar PF discrepâncias na avaliação de requisitos de combustível e determinação do tempo máximo da espera (órbita).
				3	S- Monitorar/Alertar PF na diligência na consulta às referências técnicas sobre consumo de combustível em espera, combustível remanescente e autonomia.
				3	S- Monitorar/Alertar PF sobre avaliação de combustível remanescente, necessário para determinar autonomia [tempo máximo de espera ou prosseguimento para alternativa] conforme provisões do Manual do Operador Aéreo e AOM.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
5.4.5	104	Rever necessidade de desvio (alternativa) *[Reviews the need for a diversion]* *[PF/PM]*	Avaliar dados relevantes e estimar adequadamente a necessidade de desvio *[Evaluate relevant data and properly estimate the need for deviation]*	1	K- Reconhecer fontes disponíveis para determinar condições meteorológicas, de combustível remanescente, de autonomia, de tráfego aéreo do aeródromo de destino e alternativa.
				2	K- Caracterizar condições e critérios técnicos para realizar possível desvio (alternativa).
				3	S- Manter vigilância sobre condições e critérios associadas com a realização de possível desvio (alternativa).
				4	S- Analisar condições e critérios associados à possível desvio (alternativa).
				5	S- Avaliar condições meteorológicas e de tráfego aéreo nos aeródromos de destino e alternativa, relacionando informações sobre combustível remanescente.
				5	S- Rever necessidade de desvio (alternativa).

				5	A- Postura contingente e baseada em ameaças e riscos na análise correta de condições e critérios de realização de possível desvio (alternativa).
				3	S- Notificar/Alertar PF discrepâncias na revisão da necessidade de desvio (alternativa).
				3	S- Monitorar/Alertar PF na validação do uso das fontes e condições meteorológicas e de tráfego aéreo do aeródromo de destino e alternativa, do combustível remanescente e autonomia.
				3	S- Monitorar/Alertar PF sobre a análise das condições e critérios associados ao possível desvio (alternativa).
				3	S- Monitorar/Alertar PF na contingencia baseada em ameaças e riscos na análise correta de condições e critérios do possível desvio (alternativa).
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
5.4.6	105	Iniciar desvio (alternativa) *[Initiates diversion]* *[PF]*	Manter consciência situacional adequada (*3) em meio a execução de outros procedimentos *[Maintain adequate situational awareness (*3) while performing other procedures]*	3	K- Determinar inviabilidade de manter-se em espera (órbita).
				4	K- Relacionar possíveis ajustes em funcionalidades [comandos] do avião, parâmetros do grupo moto propulsor e mudanças computadas no gerenciamento do voo para início do desvio.
				3	S- Utilizar dados e elementos associados à decisão de executar desvio.
				3	S- Usar comandos e executar procedimentos adequados nos diversos sistemas e funcionalidades do avião e realizar desvio para aeródromo de alternativa.
				3	S- Identificar limites horizontais e verticais da navegação e autorizações de desvio (alternativa).
				3	S- Executar plano de desvio (alternativa).
				3	S- Aderir aos limites da navegação e autorizações de desvio (alternativa).
				3	S- Comunicar-se de maneira clara, precisa, e concisa [sobre execução do desvio (alternativa)].
				3	S- Manter vigilância (*3) em relação ao consumo, outros parâmetros do grupo moto propulsor e desempenho do avião.
				5	A- Postura consultiva técnica na criação do plano de desvio (alternativa).
				3	S- Notificar/Alertar PF discrepâncias no início do desvio (alternativa).
				3	S- Monitorar/Alertar PF nos ajustes em funcionalidades [comandos] do avião, parâmetros do grupo moto propulsor e mudanças computadas no gerenciamento do voo para início do desvio.
				3	S- Monitorar/Alertar PF na execução de procedimentos adequados nos diversos sistemas e funcionalidades do avião no desvio.
				3	S- Monitorar/Alertar PF na adesão aos limites da navegação e autorizações do desvio, assim como na coordenação CTA.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
Task Terminal Objective					
Condition: *[Through normal, abnormal or emergency operation of the airplane, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*					

Performance: *[Perform holdings according to requirements and adjustments required in the airplane, assess and properly perform deviation (alternative), when required.]*

Standard: *[Have performed holding according to the requirements and aircraft manual, adopted SOP [AOM], and operator's manual, adequate level of situational awareness and monitoring of navigation; and have properly assessed and performed diversion (alternative) flight, if required.]*

Task: *[Perform systems operations and procedures]* | **Task No :** 5.5

1.Where performed:
[Airplane/Terminal Area]

2.Triggering Event:
[Identify need to operate airplane systems]

3.Terminating Event:
Make a plane available to perform an approach]

4. References/Standards for the task (if any):

ANAC - RBAC 91;
Manual do avião [POH; AFM];
Air Operator´s Manual and AOM;

5.No : Sub-Task	Int Obj	6.Sub-Tasks	7.Performance Difficulties	LoA	8. Summary of K/S/A Requirements
5.5.1	73	Monitorar operação de todos sistemas *[Monitors operation of all systems]* *[PF/PM]*	Manter consciência situacional adequada (*3) mediante realização de outras manobras *[Maintain adequate situational awareness (*3) while performing other maneuvres]*	2	K- Caracterizar o funcionamento de todos sistemas disponíveis.
				2	K- Caracterizar o funcionamento e características dos diversos modos de automação, se disponíveis.
				3	S- Identificar parâmetros normais estabelecidos pelo manual do avião (*7), quando requerido, para todos sistemas.
				3	S- Checar atuação dos sistemas, seus recursos e funcionalidades.
				5	A- Estima à riscos associados à complacência na monitoração da operação dos sistemas.
				3	S- Notificar/Alertar PF discrepâncias na operação de todos os sistemas.
				3	S- Monitorar/Alertar PF sobre parâmetros e condições nos sistemas do avião e suas funcionabilidades.
				3	S- Monitorar/Alertar PF sobre os efeitos de complacência (*3) na monitoração de sistemas.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
5.5.2	74	Operar sistemas conforme requerido *[Operates systems as required]* *[PF/PM]*	Avaliar ação executada e seu resultado conforme esperado *[Evaluate action taken and its outcome as expected]*	2	K- Caracterizar o funcionamento de todos sistemas disponíveis e relevantes à fase do voo.
				2	K- Caracterizar relação entre os sistemas disponíveis e suas funcionalidades [comandos] no gerenciamento do voo.
				3	S- Identificar nível apropriado de automação conforme fase do voo e carga de trabalho (*3), se aplicável.
				3	S- Selecionar nível apropriado de automação, se aplicável.
				3	S- Usar comandos, executar procedimentos e alterações adequadas nos diversos sistemas e funcionalidades [comandos] do avião.
				5	S- Avaliar resultado dos comandos executados conforme o esperado.
				5	A- Não ser complacente (*3) pelo uso da automação.
				3	S- Notificar/Alertar PF discrepâncias na operação dos sistemas cnforme requerido.
				3	S- Monitorar/Alertar PF na diligência na consulta às referências técnicas sobre os sistemas conforme manual do avião (*7).

				3	S- Monitorar/Alertar PF na alterações requeridas aos comandos dos sistemas e avaliação dos resultados esperados conforme manual do avião (*7).
				3	S- Monitorar/Alertar PF sobre os efeitos de complacência pelo uso da automação na operação de sistemas.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Through normal, abnormal or emergency operation of the airplane, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Monitor and operate airplane systems as required.]*

Standard: *[Have monitored and operated airplane systems, according to the aircraft manual, adopted SOP [AOM], and operator's manual, when required.]*

Task: *[Manage abnormal and emergency situations]*					**Task No :** 5.6
1.Where performed: *[Airplane/Terminal Area]* **2.Triggering Event:** *[Identify abnormal or emergency condition of the plane]* **3.Terminating Event:** *[Determine the end of the abnormal or emergency condition of the airplane]*				**4. References/Standards for the task (if any):** ANAC - RBAC 91; DECEA - ICA 100-12; ICA 100-37; MCA-100-16; Manual do avião [POH; AFM]; Air Operator´s Manual and AOM;	
5.No :		**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
Sub-Task	**Int Obj**				
5.6.1	27	Identificar condição anormal e de emergência *[Identifies the abnormal and emergency condition]* *[PF/PM]*	Manter consciência situacional adequada (*3) para caracterizar condição anormal/emergência. *[Maintain adequate situational awareness (*3) to characterize abnormal condition / emergency.]*	2 3 3 3 3 5 3 3 3	K- Demonstrar parâmetros normas e anormais dos sistemas relevantes do avião à fase da operação e condição identificada. S- Identificar alteração de parâmetros e/ou condições normais. S- Atuar conforme previsto no manual do avião (*7), quando requerido. S- Manter vigilância (*3) da subtarefa e de outros elementos do ambiente para manutenção do voo de forma segura. A- Manter-se alerta à possibilidade de eventos anormais e de emergência durante todo o período de operações normais. A- Estima à manutenção do estado de alerta elevado. S- Notificar/Alertar PF sobre ameaças externas. S- Monitorar/Alertar PF sobre condições anormais e de emergência no avião, seus sistemas, funcionabilidades, controles e parâmetros. S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
5.6.2	28	Interpretar a condição anormal e de emergência *[Interprets the abnormal and emergency condition]* *[PF/PM]*	Avaliar impactos operacionais da condição *[Assess the operational impacts of the condition]*	2 2 2 5 3 3	K- Demonstrar o funcionamento dos sistemas relevantes do avião à fase da operação e condição identificada. K- Descrever influências da condição identificada na operação do avião. K- Demonstrar o checklist ou parte correta do manual do avião (*7) para a lidar com a condição. S- Avaliar impactos da condição na operação do avião. S- Manter adesão ao checklist, padrão operacional adotado ou manual do avião (*7). S- Manter vigilância (*3) da subtarefa e de outros elementos do ambiente para manutenção do voo de forma segura.

				5	A- Diligência na consulta às referências técnicas adequadas em caso de dúvidas na interpretação da condição anormal.
				3	S- Notificar/Alertar PF discrepâncias na interpretação da condição anormal e de emergência.
				3	S- Monitorar/Alertar PF influência e impactos da condição, consultas tecnicas requeridas e vigilância do ambiente interno e externo.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
5.6.3	29	Executar procedimentos para a condição anormal e de emergência *[Performs the procedure for the abnormal and emergency condition]* *[PF/PM]*	Aderir a padrões operacionais adotados e a listas de verificação *[Adhere to adopted operational standards and checklists]*	2	K- Demonstrar o funcionamento dos sistemas do avião relevantes à fase da operação e condição identificada.
				2	K- Demonstrar conhecimento dos procedimentos anormais e de emergência relacionados com condição identificada.
				3	K- Descrever influências da condição identificada na operação e em outros sistemas do avião.
				3	S- Escolher o checklist ou parte correta do manual do avião (*7) para a lidar com a condição.
				4	S- Atuar conforme avaliação anterior, dos impactos da condição na operação do avião.
				3	S- Gerenciar condição conforme execução correta do checklist, padrão operacional adotado ou manual do avião (*7).
				3	S- Manter adesão ao checklist, padrão operacional adotado ou manual do avião (*7).
				3	S-Comunicar/declarar condição perante CTA, quando aplicável.
				5	S- Manter vigilância (*3) da subtarefa e de outros elementos do ambiente para manutenção do voo de forma segura.
				4	A- Não hesitar e agir prontamente quando atingida condição de emergência e priorizar tarefas [voar, navegar e comunicar], quando aplicável.
				3	S- Notificar/Alertar PF discrepâncias na execução do procedimento da condição anormal e de emergência.
				3	S- Monitorar/Alertar PF nas consultas tecnicas requeridas, coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Given the prior normal operating condition of the aircraft and provisions about abnormal and emergency conditions according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Extinguish the abnormal or emergency condition of the aircraft and define flight continuity.]*

Standard: *[Have performed and completed operational procedures according aircraft manual, adopted SOP [AOM], and operator's manual; extinguished the abnormal or emergency condition of the aircraft; and properly assessed the safety of the flight.]*

Task: *[Communicate with cabin crew, passengers and company]*	**Task No :** 5.7
1.Where performed: *[Airplane/Terminal Area]*	**4. References/Standards for the task (if any):** ANAC - RBAC 91; Air Operator´s Manual and AOM;
2.Triggering Event: *[Consider the need for communication with cabin crew, passengers and air operator]*	
3.Terminating Event: *[Receive feedback on communication, if appropriate or required]*	

5.No :		**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
Sub-Task	**Int Obj**				

5.7.1	30	Comunicar informação relevante à tripulação de cabine *[Communicates relevant information to cabin crew]* *[PF]*	Aderir a comunicação efetiva *[Adhere to effective communication]*	1 3 3 3 5 3 3	K- Citar elementos técnicos e aspectos relevantes acerca do avião, fase do voo e segurança em geral utilizados na comunicação com a tripulação de cabine, se aplicável. S- Comunicar-se com a tripulação de cabine, se aplicável, de maneira clara, precisa e concisa. S- Utilizar somente elementos técnicos e aspectos relevantes acerca do avião, fase do voo e segurança em geral na comunicação com a tripulação de cabine, se aplicável. S- Checar (garantir feedback) (*3) entendimento das mensagens trocadas com a tripulação de cabine, se aplicável. A- Consideração a elementos não técnicos [NOTECHS] (*3) na comunicação com a tripulação de cabine, se aplicável. S- Monitorar/Verificar, quando aplicável, ações e procedimentos [aderência ao manual do operador] de outros membros da tripulação. S- Reconhecer e aconselhar, quando aplicável e oportuno, sobre quaisquer erros cometidos [não aderência ao manual do operador] por outros membros da tripulação.
5.7.2	31	Comunicar informação relevante ao operador aéreo *[Communicates relevant information to company]* *[PF/PM]*	Aderir a comunicação efetiva *[Adhere to effective communication]*	1 3 3 3 5 3 3 3	K- Citar elementos técnicos e aspectos relevantes acerca do avião, andamento do voo, segurança em geral a outros pertinentes utilizados na comunicação com o operador aéreo. S- Comunicar-se com operador aéreo de maneira clara, precisa e concisa. S- Utilizar somente elementos técnicos e aspectos relevantes acerca do avião, andamento do voo, segurança em geral a outros pertinentes na comunicação com o operador aéreo. S- Checar (garantir feedback) (*3) entendimento das mensagens trocadas com o operador aéreo, quando oportuno. A- Consideração a elementos não técnicos [NOTECHS] (*3) na comunicação com a tripulação de cabine, se aplicável. S- Notificar/Alertar PF discrepâncias na comunicação de informação relevante ao operador aéreo. S- Monitorar/Alertar PF na obtenção e listagem de elementos relevantes para comunicação ao operador aéreo. S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
5.7.3	32	Fazer anúncios a passageiros quando apropriado *[Makes passenger announcements when appropriate]* *[PF]*	Sumarizar e declarar somente informações relevantes *[Summarize and declare only relevant information]*	1 3 3 3 5 3	K- Citar elementos técnicos e aspectos relevantes acerca dos avisos, instruções verbais e proibições relacionados com os anúncios a passageiros, quando apropriado. S- Comunicar-se com passageiros de maneira clara, precisa e concisa, conforme provisões do Manual do Operador Aéreo e AOM. S- Ater-se a elementos técnicos e aspectos relevantes acerca do avião, fase do voo e segurança em geral na comunicação com a tripulação de cabine, se aplicável. S- Checar (garantir feedback) (*3) entendimento das mensagens trocadas com passageiros, se requerido. A- Consideração a elementos não técnicos [NOTECHS] (*3) na comunicação com a tripulação de cabine, se aplicável. S- Notificar/Alertar PF discrepâncias nos anúncios à passageiros quando apropriado.

				3	S- Monitorar/Alertar PF na obtenção e listagem de elementos relevantes para comunicação, comunicação e feedback dos passageiros.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Through normal, abnormal or emergency operation of the airplane, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Communicate cabin crew, passengers and air operator.]*

Standard: *[Have cabin crew, passengers and air operator communicated about relevant aspects of the flight and safety issue elements to their appropriate actions, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Task: *[Perform approach in general]* — **Task No :** 6.1

1.Where performed:
[Airplane/Control Zone]

2.Triggering Event:
[Maneuver airplane to comply with approach procedure]

3.Terminating Event:
[Make pilot available to monitor flight progress]

4. References/Standards for the task (if any):

ANAC - RBAC 91; IS 91-001; IS 91-21-001;
DECEA - ICA 100-12; ICA 100-37; MCA 100-16; MCA 96-3; MCA-96-4; ICA 100-5; ICA 105-12;
Manual do avião [POH; AFM];
Air Operator´s Manual and AOM;

5.No : Sub-Task	Int Obj	6.Sub-Tasks	7.Performance Difficulties	LoA	8. Summary of K/S/A Requirements
6.1.1	106	Executar aproximação conforme procedimentos e situação *[Executes approach according to procedures and situation]* *[VFR/IFR]* *[PF]*	Manter consciência situacional adequada (*3) em meio a execução de outros procedimentos. *[Maintain Adequate situational awareness (*3) while performance of other procedures]*	1	K- Reconhecer simbologias das cartas de aproximação e pouso *[VFR/IFR]*.
				4	K- Relacionar possíveis ajustes em funcionalidades [comandos] do avião e mudanças computadas no gerenciamento do voo para aproximação e pouso.
				2	K- Descrever procedimento normal a ser adotado para fase de voo.
				3	S- Acessar e decodificar informações sobre o procedimento de aproximação e pouso *[VFR/IFR]*.
				3	S- Identificar limites horizontais e verticais do procedimento de aproximação e pouso *[VFR/IFR]*.
				3	S- Determinar posição e trajetória do avião com auxílio dos instrumentos disponíveis.
				3	S- Usar comandos, executar procedimentos adequados nos diversos sistemas e funcionalidades do avião para manter a trajetória de descida de acordo com autorizações e correção de fatores atmosféricos.
				3	S- Escolher diferentes frequências de comunicação CTA.
				3	S- Comunicar-se de maneira clara, precisa, e concisa [sobre andamento da aproximação].
				3	S- Executar e aderir aos limites e procedimentos de aproximação e pouso *[VFR/IFR]*.
				3	A- Conforto na aplicação de comandos (considerando controle manual ou automático do avião, quando aplicável).
				4	A- Prever adequações ao procedimento ou solicitação de espera, conforme gerenciamento de carga de trabalho (*3).
				3	S- Notificar/Alertar PF discrepâncias na execução da aproximação conforme procedimentos e situação.
				3	S- Monitorar/Alertar PF no relacionamento de possíveis ajustes em funcionalidades [comandos] do avião, e descrição do procedimento normal a ser adotado para aproximação e pouso.

				3	S- Monitorar/Alertar PF na determinação da posição e trajetória do avião, e adesão aos limites horizontais e verticais do procedimento de aproximação e pouso *[VFR/IFR]*.
				3	S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] na condução do voo conforme manual do avião (*7) e manual do operador aéreo.
				3	S- Monitorar/Alertar PF na coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
6.1.2	66	Selecionar nível apropriado de automação *[Selects appropriate level of automation]* *[PF]*	Identificar o nível apropriado de automação *[Identify the proper level of automation]*	2	K- Descrever funcionamento e características dos diversos modos de automação, quando disponíveis.
				3	S- Identificar nível apropriado de automação conforme fase do voo e carga de trabalho (*3).
				3	S- Selecionar nível apropriado de automação.
				3	S- Usar comandos e executar alterações adequadas nos diversos sistemas e funcionalidades [comandos] do avião na execução do procedimento.
				3	A- Não ser complacente (*3) pelo uso da automação.
				3	S- Notificar/Alertar PF discrepâncias na seleção de nível apropriado de automação à fase do voo.
				3	S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] na condução do voo conforme manual do avião (*7).
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
6.1.3	107	Selecionar trajetória ótima de aproximação *[Selects optimum approach path]* *[PF]*	Controlar energia durante a aproximação *[Control energy when approaching]*	2	K- Caracterizar procedimento e/ou padrão operacional de gerenciamento de energia e economia de combustível durante aproximação conforme manual do avião (*7).
				3	S- Determinar posição e trajetória do avião com auxílio dos instrumentos disponíveis.
				5	S- Avaliar tipo de aproximação e posição do avião para determinar trajetória ótima a ser seguida.
				3	S- Usar comandos e executar alterações adequadas nos diversos sistemas e funcionalidades [comandos] do avião na execução do procedimento.
				3	S-Executar aproximação conforme trajetória ótima, de maneira econômica e que permita pouso com energia adequada.
				3	A- Manter critério de economia de combustível para definir trajetória ótima e segura de aproximação até o pouso.
				3	S- Notificar/Alertar PF discrepâncias na seleção de trajetória ótima de aproximação.
				3	S- Notificar/alertar PF sobre ameaças ao atingimento de fixos em alturas determinadas no procedimento de descida, e altitudes de segurança.
				3	S- Monitorar/Alertar PF sobre a orientação quanto a posição atual e futura da trajetória do avião e ocorrência de CFIT em operações normais e prevista em procedimento de emergência.

				3	S- Notificar/alertar PF sobre cálculos e validação da trajetória ótima de aproximação visando gerenciamento de energia e economia de combustível.
				3	S- Notificar/Alertar PF sobre ambiente e ameaças externas e elementos da coordenação CTA.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
6.1.4	108	Operar controles com suavidade e coordenação *[Operates controls smoothly and with coordination]* *[PF]*	Antecipar correções necessárias frente às características do avião *[Anticipate necessary corrections considering the characteristics of the airplane]*	2	K- Reconhecer características do avião, importância de operar os controles com suavidade e coordenação durante aproximação e pouso.
				2	K- Descrever procedimentos para controle e coordenação do avião durante aproximação e pouso conforme manual do avião (*7).
				2	K- Diferenciar aspectos de antecipação e suavidade de correções durante aproximações e pouso *[VFR/IFR]*.
				3	S- Usar comandos e executar alterações adequadas nos diversos sistemas e funcionalidades [comandos] do avião na execução da aproximação e pouso.
				3	S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com a execução da aproximação e pouso.
				3	S- Aderir aos limites e instruções da aproximação e procedimento de pouso.
				3	S- Operar controles com suavidade, coordenação e conforto (considerando controle manual ou automático do avião, quando aplicável).
				3	A- Selecionar adesão à critério de aproximação estabilizada frente pressões externas.
				3	S- Notificar/Alertar PF discrepâncias na operação de controles com suavidade.
				3	S- Notificar/alertar PF sobre limites na atuação dos controles conforme envelope do avião, antecipação acerca da posição atual do avião frente a autorização CTA, trajeto e execução de outras tarefas.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
6.1.5	109	Executar redução de velocidade e extensão de flaps *[Performs speed reduction and flap extension]* *[PF/PM]*	Respeitar e aderir a limites e padrões operacionais *[Respect and adhere to operational limits and standards]*	2	K- Caracterizar influência do uso de flaps na trajetória ótima de aproximação e pouso com energia adequada.
				1	K- Caracterizar influência do peso nas velocidades de aproximação e pouso.
				1	K- Citar limites de velocidades para uso/extensão de flaps específicos à configuração do avião para aproximação e pouso.
				3	K- Definir limites e velocidades ideais de extensão de flap específicas a desaceleração conforme manual do avião (*7).
				3	S- Selecionar e operar flaps de acordo com seus limites de velocidade.
				3	S- Usar comandos na aplicação de potência, ajuste de atitude e manutenção de velocidade na extensão dos flaps.
				5	S- Gerenciar carga de tralho, mantendo uma vigilância efetiva acerca dos limitantes de velocidade.
				3	A- Conforto na aplicação de comandos (considerando controle manual ou automático do avião, quando aplicável).

				3	S- Notificar/Alertar PF discrepâncias na redução de velocidade e extensão de flaps.
				3	S- Monitorar/Alertar PF sobre atuação dos flaps associados com limites de velocidade e configuração do avião para aproximação e pouso.
				3	S- Monitorar/Alertar PF sobre atuação dos flaps associados com realização de trajetória ótima de aproximação visando gerenciamento de energia e economia de combustível.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
6.1.6	110	Executar listas de verificação relevantes *[Performs relevant checklists]* *[PF/PM]*	Manter atenção e garantir confirmações, quando requeridas, a todos itens *[Maintain attention and ensure confirmations, when required, for all items]*	2	K- Demonstrar filosofia operacional adotada na leitura de listas de verificação de operações normais para aproximação e pouso.
				3	S- Identificar nível apropriado de automação conforme aproximação, pouso e carga de trabalho (*3), se aplicável.
				3	S- Selecionar nível apropriado de automação, se aplicável.
				3	S- Executar as listas de verificações de aproximação e pouso.
				3	S- Determinar conclusão de procedimentos e verificações previstas nas listas de verificações correspondentes.
				5	A- Postura contingente e confirmativa a todos itens das listas de verificação.
				3	S- Notificar/Alertar PF discrepâncias na execução de listas de verificação relevantes.
				3	S- Monitorar/Alertar PF sobre seleção de nível apropriado de automação conforme aproximação, pouso e carga de trabalho (*3).
				3	S- Monitorar/Alertar PF sobre determinação da conclusão de procedimentos, das verificações previstas e confirmação da condição esperada de itens das listas de verificação conforme manual do avião (*7).
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
6.1.7	111	Iniciar segmento final *[Initiates final descente]* *[PF]*	Relacionar a influência dos fatores atmosféricos na velocidade e enquadramento do segmento final *[Relate the influence of atmospheric factors on the speed and on the final segment framing]*	1	K- Citar limites e valores de velocidades relacionados ao segmento final, considerando condição técnica do avião.
				2	K- Caracterizar influência da velocidade, vento e inclinação do avião na execução de curvas e ajustes para o enquadramento do segmento final.
				3	S- Apreciar influências do vento e inclinação do avião para enquadrar o segmento final.
				3	S-Determinar maneira correta de realizar correções devidas.
				3	S- Aplicar comandos no manche, compensador e pedais para devida correção e manutenção do segmento final.
				3	S- Realizar correções necessárias para manter o segmento final e garantir estabilização.
				3	S- Checar atuação de sistemas, recursos e funcionalidades do avião associados a configuração para pouso.
				5	A- Antecipar critérios de aproximação estabilizada na execução de comandos para controle do avião.
				3	S- Notificar/Alertar PF discrepâncias no início do segmento final.

				3	S- Monitorar/Alertar PF sobre apreciação de influências do vento e inclinação do avião para enquadramento do segmento final.
				3	S- Monitorar/Alertar PF na checagem da atuação de sistemas, recursos e funcionalidades do avião associados a configuração para pouso.
				3	S- Monitorar/Alertar PF na antecipação aos critérios de aproximação estabilizada.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
6.1.8	112	Alcançar critério de aproximação estabilizada *[Achieves stabilized approach criteria]* *[VFR/IFR]* *[PF]*	Gerenciar velocidade e a trajetória vertical do avião. *[Manage speed and airplane profile]*	2	K- Caracterizar importância da aproximação estabilizada.
				1	K- Citar critérios de aproximação estabilizada *[VFR/IFR].*
				1	K- Citar regimes de potência, velocidade, configuração específicos ao segmento final da aproximação conforme manual do avião (*7).
				3	K- Relacionar possíveis ajustes em funcionalidades [comandos] do avião e mudanças computadas no gerenciamento do voo.
				3	S- Apreciar influências do vento e inclinação do avião para enquadrar o segmento final.
				3	S-Determinar maneira correta de realizar correções devidas.
				3	S- Aplicar comandos e executar alterações adequadas para devida correção e manutenção do critério de aproximação estabilizada.
				3	S- Utilizar flaps, trem de pouso e spoilers, se aplicável, mantendo a gestão da velocidade e razão de descida.
				3	S- Aderir ao critério de aproximação estabilizada.
				5	S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com a execução do procedimento.
				5	A- Imaginar possibilidade e procedimentos de arremetida, se aplicável.
				3	S- Notificar/Alertar PF discrepâncias no atingimento dos critérios de aproximação estabilizada.
				3	S- Monitorar/Alertar PF sobre apreciação de influências do vento e inclinação do avião para atingimento dos critérios de aproximação estabilizada.
				3	S- Monitorar/Alertar PF na checagem da atuação de sistemas, recursos e funcionalidades do avião associados a configuração para pouso.
				3	S- Monitorar/Alertar PF na utilização de flaps, trem de pouso e spoilers, se aplicável, e na gestão da velocidade e razão de descida.
				3	S- Monitorar/Alertar PF na adesão aos critérios de aproximação estabilizada e antecipação de procedimento de arremetida.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
6.1.9	113	Garantir aderência aos mínimos meteorológicos *[Ensures adherence to mínima]*	Correlacionar mínimos meteorológicos com ajustes de equipamentos do avião	2	K- Caracterizar importância da aderência aos mínimos meteorológicos para prosseguir para pouso.
				1	K- Reconhecer fonte de pesquisa oficial às publicações aeronáuticas referentes ao procedimentos de aproximação, pouso e orientação no aeródromo.

		[PF/PM]	*[Correlate meteorological minimums with airplane equipment adjustments]*	1	K- Reconhecer fontes disponíveis para acesso às condições meteorológicas no destino e pista em uso.
				1	K- Citar procedimentos relevantes de comunicação e coordenação aeronáutica para informação de condições meteorológicas no destino e sobre a pista em uso.
				1	K- Citar elementos da comunicação aeronáutica que requerem cotejamento obrigatório acerca da autorização de pouso.
				2	K- Descrever procedimento normal a ser adotado para aderência aos mínimos meteorológicos.
				3	S- Manter vigilância na frequência de comunicação CTA.
				3	S- Verificar ajuste altimétrico.
				3	S- Identificar e decodificar mínimos meteorológicos de acordo com a carta de aproximação e pouso.
				3	S- Manter vigilância (*3) em relação a posição do avião frente a fixos e altitudes conforme ajuste altimétrico adequado.
				5	S- Aderir aos mínimos meteorológicos para prosseguir para pouso.
				3	S- Manter vigilância (*3) da subtarefa e de outros elementos do ambiente para manutenção do voo de forma segura.
				5	A- Manter-se alerta à possibilidade de eventos anormais e de emergência durante todo o período de aproximação e pouso.
				3	S- Notificar/Alertar PF discrepâncias na aderência aos mínimos meteorológicos.
				3	S- Monitorar/Alertar PF sobre ajuste altimétrico, identificação e decodificar mínimos meteorológicos de acordo com a carta de aproximação e pouso.
				3	S- Monitorar/Alertar PF na orientação quanto a posição do avião frente a fixos e altitudes conforme ajuste altimétrico adequado, e na vigilância na comunicação CTA .
				3	S- Monitorar/Alertar PF na adesão aos mínimos meteorológicos para prosseguir para pouso e antecipação de procedimento de arremetida.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
6.1.10	114	Iniciar arremetida conforme requerido *[Initiates go-around if required]* *[PF]*	Gerenciar carga de trabalho *[Workload management]*	2	K- Caracterizar importância da arremetida frente ao não atendimento dos requisitos de aproximação estabilizada ou não aderência aos mínimos meteorológicos.
				2	K- Descrever procedimentos normais a serem adotados para iniciar arremetida.
				4	K- Relacionar possíveis ajustes em funcionalidades [comandos] do avião e mudanças computadas no gerenciamento do voo para arremetida.
				3	S- Usar comandos, executar procedimentos adequados nos diversos sistemas e funcionalidades do avião para manter a trajetória de arremetida.
				3	S- Executar procedimento correto conforme manual do avião (*7).
				3	S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com a ação.

				3	S- Comunicar-se de maneira clara, precisa, e concisa [sobre andamento da arremetida].
				3	S- Aderir aos limites do procedimento de arremetida.
				5	S- Avaliar e determinar nova aproximação ou desvio (alternativa).
				4	S- Gerenciar carga de trabalho (*3) e determinar prioridades adequadamente frente a realização de outras tarefas, se requerido.
				4	A- Não hesitar e agir prontamente quando extrapolados critérios de aproximação estabilizada ou mínimos meteorológicos.
				3	S- Notificar/Alertar PF discrepâncias na arremetida conforme requerido.
				3	S- Monitorar/Alertar PF a execução do procedimento correto conforme manual do avião (*7) e na checagem e atuação de sistemas, recursos e funcionalidades do avião associados a arremetida.
				3	S- Monitorar/Alertar PF na adesão aos limites do procedimento de arremetida e na determinação de nova aproximação ou desvio (alternativa).
				3	S- Monitorar/Alertar PF na gestão da carga de trabalho (*3) e coordenação CTA.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
6.1.11	115	Dominar transição para segmento visual *[Masters transition to visual segment]* *[PF]*	Evitar ilusões óticas *[Avoid optical illusions]*	2	K- Caracterizar ilusões de óticas e sua influência, junto de outros fenômenos, no desempenho do piloto na transição para segmento visual.
				2	K- Caracterizar o momento de estabelecer contato visual.
				3	S- Verificar instrumentos e parâmetros de voo mesmo em condições visuais.
				3	S- Manter vigilância (*3) da subtarefa e de outros elementos do ambiente para manutenção do voo de forma segura.
				3	S-Transitar do voo por instrumento para voo visual conforme momento estabelecido.
				3	S- Manter execução do procedimento de aproximação por instrumentos em curso.
				3	S- Comunicar-se de maneira clara, precisa, e concisa [sobre transição para voo visual].
				3	A- Não reter [calibrar] atenção somente a elementos externos durante o segmento visual.
				3	S- Notificar/Alertar PF discrepâncias no domínio da transição para segmento visual.
				3	S- Monitorar/Alertar PF na verificação de instrumentos e parâmetros de voo e na vigilância de outros elementos do ambiente para manutenção do voo de forma segura.
				3	S- Monitorar/Alertar PF na comunicação CTA.
				3	S- Monitorar/Alertar PF na gestão da carga de trabalho (*3) e coordenação CTA.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective					
Condition: *[Given the prior normal operating condition of the aircraft and provisions about abnormal and emergency conditions according to the aircraft manual, adopted SOP [AOM], and operator's manual.]* **Performance***: [Navigate according to approach procedure and instructions]* **Standard:** *[Have navigated the airplane in the approach procedure upon authorization and standard ATC communication, according to the aircraft manual, adopted SOP [AOM], and operator's manual, adequate level of situational awareness and monitoring of the approach and in adherence to meteorological minima.]*					
Task : *[Perform precision approach]*					**Task No :** 6.2
1.Where performed: *[Airplane/Control Zone]* **2.Triggering Event:** *[Maneuver airplane to comply with precision approach procedure]* **3.Terminating Event:** *[Make pilot available to monitor flight progress]*					**4. References/Standards for the task (if any):** ANAC - RBAC 91; IS 91-21-001; DECEA - ICA 100-12; ICA 100-37; MCA 100-16; MCA 96-3; MCA-96-4; ICA 100-5; ICA 100-16; ICA 105-12; Manual do avião [POH; AFM]; Air Operator´s Manual and AOM;
5.No :		**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
Sub-Task	**Int Obj**				
6.2.1	116	Executar aproximação ILS *[Performs ILS approach]* *[PF]*	Aderir a trajetória lateral e vertical e manter consciência situacional adequada (*3) *[Adhere to the lateral and vertical path and maintain adequate situational awareness (*3)]*	1 1 2 2 4 3 3 3 3 3 3 3 3 5	K- Reconhecer requisitos oficiais operacionais e de componentes para executar procedimento de aproximação ILS. K- Reconhecer simbologias das cartas de aproximação e pouso ILS específicas. K- Demonstrar procedimentos operacionais da aproximação e pouso ILS e vigilância da integridade dos instrumentos utilizados. K- Descrever funcionamento e características dos diversos modos de automação, quando disponíveis. K- Relacionar possíveis ajustes em funcionalidades [comandos] do avião e mudanças computadas no gerenciamento do voo. S- Acessar e decodificar informações sobre o procedimento de aproximação e pouso ILS. S- Identificar limites horizontais e verticais do procedimento de aproximação e pouso ILS. S- Determinar posição e trajetória do avião com auxílio dos instrumentos disponíveis. S- Identificar nível apropriado de automação conforme carga de trabalho (*3). S- Selecionar nível apropriado de automação. S- Usar comandos, executar procedimentos adequados nos diversos sistemas e funcionalidades do avião para manter a trajetória de descida de acordo com autorizações e correção de fatores atmosféricos. S- Comunicar-se de maneira clara, precisa, e concisa [sobre andamento da aproximação e atingimento de fixos, altitudes e perda da integridade dos instrumentos utilizados, se aplicável]. S- Aderir aos limites o procedimento de aproximação e pouso ILS. S- Atuar conforme previsto no manual do avião (*7). A- Demonstrar equilíbrio e predição na conjunção de comandos às etapas e manobras do procedimento (considerando controle manual ou automático do avião, quando aplicável).

				3	S- Notificar/Alertar PF discrepâncias na execução da aproximação ILS.
				3	S- Monitorar/Alertar PF na adesão aos requisitos oficiais operacionais e de componentes para execução do procedimento de aproximação ILS, e na decodificação de informações, limites horizontais e verticais sobre o procedimento.
				3	S- Monitorar/Alertar PF na execução de procedimentos adequados nos diversos sistemas e funcionalidades do avião para manter a trajetória de descida de acordo com autorizações.
				3	S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] na condução do voo conforme manual do avião (*7) e manual do operador aéreo.
				3	S- Monitorar/Alertar PF na determinação da posição e trajetória do avião, e adesão aos limites horizontais e verticais do procedimento de aproximação e pouso.
				3	S- Monitorar/Alertar PF na coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
6.2.2	117	Executar ILS CAT II/III *[Performs low visibility ILS CAT II/III approach]* *[PF]*	Aderir a trajetória lateral e vertical e manter consciência situacional adequada (*3) *[Adhere to the lateral and vertical path and maintain adequate situational awareness (*3)]*	1	K- Reconhecer requisitos oficiais operacionais, de aprovação e de componentes para executar procedimento de aproximação ILS CAT II/III.
				1	K- Reconhecer simbologias das cartas de aproximação e pouso ILS CAT II/III.
				1	K- Reconhecer requisitos do operador aéreo, acerca dos pilotos e avião, para executar ILS CAT II/III, se aplicável.
				2	K- Demonstrar procedimentos operacionais da aproximação e pouso ILS CAT II/III e vigilância da integridade dos instrumentos utilizados.
				2	K- Descrever funcionamento e características dos diversos modos de automação, quando disponíveis.
				4	K- Relacionar possíveis ajustes em funcionalidades [comandos] do avião e mudanças computadas no gerenciamento do voo.
				3	S- Verificar atingimento de requisitos do operador aéreo, acerca dos pilotos e avião, para executar ILS CAT II/III, se aplicável.
				3	S- Acessar e decodificar informações sobre o procedimento de aproximação e pouso ILS CAT II/III.
				3	S- Identificar limites horizontais e verticais do procedimento de aproximação e pouso ILS CAT II/III.
				3	S- Determinar posição e trajetória do avião com auxílio dos instrumentos disponíveis.
				3	S- Identificar nível apropriado de automação conforme carga de trabalho (*3).
				3	S- Selecionar nível apropriado de automação e gerenciar funcionamento/atuação em comandos.
				3	S- Usar comandos, executar procedimentos adequados nos diversos sistemas e funcionalidades do avião para manter a trajetória de descida de acordo com autorizações e correção de fatores atmosféricos.

				3	S- Comunicar-se de maneira clara, precisa, e concisa [sobre andamento da aproximação e atingimento de fixos e altitudes e perda da integridade dos instrumentos utilizados, se aplicável].
				3	S- Aderir aos limites o procedimento de aproximação e pouso ILS CAT II/III.
				3	S- Atuar conforme previsto no manual do avião (*7).
				5	A- Demonstrar equilíbrio e predição na conjunção de comandos às etapas e manobras do procedimento (considerando controle manual ou automático do avião, quando aplicável).
				3	S- Notificar/Alertar PF discrepâncias na execução da aproximação ILS CAT II/III.
				3	S- Monitorar/Alertar PF na adesão aos requisitos oficiais operacionais, de componentes e do operador aéreo, acerca dos pilotos e avião para execução do procedimento de aproximação ILS CAT II/III, e na decodificação de informações, limites horizontais e verticais sobre o procedimento.
				3	S- Monitorar/Alertar PF na execução de procedimentos adequados nos diversos sistemas e funcionalidades do avião para manter a trajetória de descida de acordo com autorizações.
				3	S- Monitorar/Alertar PF sobre efeitos e nível apropriado da automação [controles e modos de gerenciamentos] no gerenciamento, funcionamento/atuação em comandos na condução do voo conforme manual do avião (*7) e manual do operador aéreo.
				3	S- Monitorar/Alertar PF na determinação da posição e trajetória do avião, e adesão aos limites horizontais e verticais do procedimento de aproximação e pouso.
				3	S- Monitorar/Alertar PF na coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
N/A(*5)	-	~~Executar aproximação PAR~~ ~~*[Performs PAR approach]*~~	N/A (*5)		N/A(*5)
N/A(*5)	-	~~Executar aproximação GPS/GNSS~~ ~~*[Performs GPS/GNSS approach]*~~	N/A (*5)		N/A(*5)
N/A(*5)	-	~~Executar aproximação MLS~~ ~~*[Performs MLS approach]*~~	N/A (*5)		N/A(*5)

Task Terminal Objective

Condition: *[Given the prior normal operating condition of the aircraft and provisions about abnormal and emergency conditions according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Execute precision approach procedure according operational specifications]*

Standard: *[Have executed the precision approach procedure upon authorization and standard ATC communication, according to the aircraft manual, adopted SOP [AOM], and operator's manual, adequate level of situational awareness and monitoring of the approach and in adherence to meteorological minima.]*

Task: *[Perform non-precision approach]*	**Task No :** 6.3
1.Where performed: *[Airplane/Control Zone]*	**4. References/Standards for the task (if any):** ANAC - RBAC 91; IS 91-001; IS 91-21-001; DECEA - ICA 100-12; ICA 100-37; MCA 100-16; MCA 96-3; MCA-96-4; ICA 100-5; ICA 105-12; Manual do avião [POH; AFM]; Air Operator´s Manual and AOM;
2.Triggering Event: *[Maneuver airplane to comply with non-precision approach procedure]*	
3.Terminating Event: *[Make pilot available to monitor flight progress]*	

5.No :		6.Sub-Tasks	7.Performance Difficulties	LoA	8. Summary of K/S/A Requirements
Sub-Task	Int Obj				
6.3.1	118	Executar aproximação VOR *[Performs VOR approach]* *[PF]*	Aderir a trajetória lateral e vertical e manter consciência situacional adequada (*3) *[Adhere to the lateral and vertical path and maintain adequate situational awareness (*3)]*	1	K- Reconhecer simbologias das cartas de aproximação e pouso VOR específicas.
				2	K- Caracterizar VDP e importância de manutenção de trajetória padrão de aproximação.
				2	K- Demonstrar procedimentos operacionais da aproximação VOR e vigilância da integridade dos instrumentos utilizados.
				2	K- Descrever funcionamento e características dos diversos modos de automação, quando disponíveis.
				4	K- Relacionar possíveis ajustes em funcionalidades [comandos] do avião e mudanças computadas no gerenciamento do voo.
				3	S- Acessar e decodificar informações sobre o procedimento de aproximação e pouso VOR.
				3	S- Identificar limites horizontais e verticais do procedimento de aproximação e pouso VOR.
				3	S- Manter vigilância (*3) em relação aos limitantes do procedimento e integridade dos instrumentos utilizados.
				3	S- Determinar posição e trajetória do avião com auxílio dos instrumentos disponíveis.
				3	S- Identificar nível apropriado de automação conforme carga de trabalho (*3).
				3	S- Selecionar nível apropriado de automação.
				3	S- Usar comandos, executar procedimentos adequados nos diversos sistemas e funcionalidades do avião para manter a trajetória de descida de acordo com autorizações e correção de fatores atmosféricos.
				3	S- Comunicar-se de maneira clara, precisa, e concisa [sobre andamento da aproximação, atingimento de fixos, altitude e perda da integridade dos instrumentos utilizados, se aplicável].
				3	S- Aderir aos limites do procedimento de aproximação e pouso VOR.
				5	S- Atuar conforme previsto no manual do avião (*7).
				5	A- Demonstrar equilíbrio e predição na conjunção de comandos às etapas e manobras do procedimento (considerando controle manual ou automático do avião, quando aplicável).
				3	S- Notificar/Alertar PF discrepâncias na execução da aproximação VOR.
				3	S- Monitorar/Alertar PF na adesão aos procedimentos operacionais da aproximação VOR, vigilância da integridade dos instrumentos utilizados, e na decodificação de informações, limites horizontais e verticais sobre o procedimento.
				3	S- Monitorar/Alertar PF na execução de procedimentos adequados nos diversos sistemas e funcionalidades do avião para manter a trajetória de descida de acordo com autorizações.
				3	S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] na condução do voo conforme manual do avião (*7) e manual do operador aéreo.

				3	S- Monitorar/Alertar PF na determinação da posição e trajetória do avião, VDP e adesão aos limites horizontais e verticais do procedimento de aproximação e pouso.
				3	S- Monitorar/Alertar PF na coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
6.3.2	119	Executar aproximação NDB *[Performs NDB approach]* *[PF]*	Aderir a trajetória lateral e vertical e manter consciência situacional adequada (*3) *[Adhere to the lateral and vertical path and maintain adequate situational awareness (*3)]*	1	K- Caracterizar o VDP e importância de manutenção de trajetória padrão de aproximação.
				1	K- Reconhecer simbologias das cartas de aproximação e pouso NDB específicas.
				2	K- Demonstrar procedimentos operacionais da aproximação NDB e vigilância da integridade dos instrumentos utilizados.
				2	K- Descrever funcionamento e características dos diversos modos de automação, quando disponíveis.
				4	K- Relacionar possíveis ajustes em funcionalidades [comandos] do avião e mudanças computadas no gerenciamento do voo.
				3	S- Acessar e decodificar informações sobre o procedimento de aproximação e pouso NDB.
				3	S- Identificar limites horizontais e verticais do procedimento de aproximação e pouso NDB.
				3	S- Manter vigilância (*3) em relação aos limitantes do procedimento e integridade dos instrumentos utilizados.
				3	S- Determinar posição e trajetória do avião com auxílio dos instrumentos disponíveis.
				3	S- Identificar nível apropriado de automação conforme carga de trabalho (*3).
				3	S- Selecionar nível apropriado de automação.
				3	S- Usar comandos, executar procedimentos adequados nos diversos sistemas e funcionalidades do avião para manter a trajetória de descida de acordo com autorizações e correção de fatores atmosféricos.
				3	S- Comunicar-se de maneira clara, precisa, e concisa [sobre andamento da aproximação, atingimento de fixos e perda da integridade dos instrumentos utilizados, se aplicável].
				3	S- Aderir aos limites do procedimento de aproximação e pouso NDB.
				3	S- Atuar conforme previsto no manual do avião (*7).
				5	A- Demonstrar equilíbrio e predição na conjunção de comandos às etapas e manobras do procedimento (considerando controle manual ou automático do avião, quando aplicável).
				3	S- Notificar/Alertar PF discrepâncias na execução da aproximação NDB.
				3	S- Monitorar/Alertar PF na adesão aos procedimentos operacionais da aproximação NDB, vigilância da integridade dos instrumentos utilizados, e na decodificação de informações, limites horizontais e verticais sobre o procedimento.

				3	S- Monitorar/Alertar PF na execução de procedimentos adequados nos diversos sistemas e funcionalidades do avião para manter a trajetória de descida de acordo com autorizações.
				3	S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] na condução do voo conforme manual do avião (*7) e manual do operador aéreo.
				3	S- Monitorar/Alertar PF na determinação da posição e trajetória do avião, VDP e adesão aos limites horizontais e verticais do procedimento de aproximação e pouso.
				3	S- Monitorar/Alertar PF na coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
N/A(*5)	-	~~Executar aproximação SER *[Performs SRE approach]*~~	N/A (*5)		N/A(*5)
6.3.3	120	Executar aproximação GPS/GNSS *[Performs GPS/GNSS approach]* *[PF]*	Aderir a trajetória lateral e vertical e manter consciência situacional adequada (*3) *[Adhere to the lateral and vertical path and maintain adequate situational awareness (*3)]*	1	K- Reconhecer requisitos oficiais operacionais e de componentes para executar procedimento de aproximação GPS/GNSS.
				1	K- Reconhecer simbologias das cartas de aproximação e pouso GPS/GNSS específicas.
				2	K- Demonstrar procedimentos operacionais da aproximação GPS/GNSS, incluindo aqueles normais e de perda de capacidade de navegação.
				3	K- Descrever funcionamento e características dos diversos modos de automação, quando disponíveis.
				4	K- Relacionar possíveis ajustes em funcionalidades [comandos] do avião e mudanças computadas no gerenciamento do voo.
				3	S- Acessar e decodificar informações sobre o procedimento de aproximação e pouso GPS/GNSS.
				3	S- Identificar limites horizontais e verticais do procedimento de aproximação e pouso GPS/GNSS.
				3	S- Manter vigilância (*3) em relação aos limitantes do procedimento.
				3	S- Determinar posição e trajetória do avião com auxílio dos instrumentos disponíveis.
				5	S- Avaliar capacidade da navegação do avião frente ao procedimento.
				3	S- Identificar nível apropriado de automação conforme carga de trabalho (*3).
				3	S- Selecionar nível apropriado de automação.
				3	S- Usar comandos, executar procedimentos adequados nos diversos sistemas e funcionalidades do avião para manter a trajetória de descida de acordo com autorizações e correção de fatores atmosféricos.
				3	S- Comunicar-se de maneira clara, precisa, e concisa [sobre andamento da aproximação, atingimento de fixos, altitudes e perda da integridade dos instrumentos utilizados, se aplicável].
				3	S- Aderir aos limites do procedimento de aproximação e pouso GPS/GNSS.
				3	S- Atuar conforme previsto no manual do avião (*7).

				5	A- Demonstrar equilíbrio e predição na conjunção de comandos às etapas e manobras do procedimento (considerando controle manual ou automático do avião, quando aplicável).
				3	S- Notificar/Alertar PF discrepâncias na execução da aproximação GPS/GNSS.
				3	S- Monitorar/Alertar PF na adesão aos procedimentos operacionais da aproximação GPS/GNSS, vigilância da integridade dos instrumentos utilizados, e na decodificação de informações, limites horizontais e verticais sobre o procedimento.
				3	S- Monitorar/Alertar PF na execução de procedimentos adequados nos diversos sistemas e funcionalidades do avião para manter a trajetória de descida de acordo com autorizações.
				3	S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] na condução do voo conforme manual do avião (*7) e manual do operador aéreo.
				3	S- Monitorar/Alertar PF na determinação da posição e trajetória do avião, capacidade da navegação GPS/GNSS, adesão aos limites horizontais e verticais do procedimento de aproximação e pouso.
				3	S- Monitorar/Alertar PF na coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
6.3.4	121	Executar aproximação LOC *[Performs LOC approach]* *[PF]*	Aderir a trajetória lateral e vertical e manter consciência situacional adequada (*3) *[Adhere to the lateral and vertical path and maintain adequate situational awareness (*3)]*	1	K- Caracterizar o VDP e importância de manutenção de trajetória padrão de aproximação.
				1	K- Reconhecer simbologias das cartas de aproximação e pouso LOC específicas.
				2	K- Demonstrar procedimentos operacionais da aproximação LOC e vigilância da integridade dos instrumentos utilizados.
				2	K- Descrever funcionamento e características dos diversos modos de automação, quando disponíveis.
				4	K- Relacionar possíveis ajustes em funcionalidades [comandos] do avião e mudanças computadas no gerenciamento do voo.
				3	S- Acessar e decodificar informações sobre o procedimento de aproximação e pouso LOC.
				3	S- Identificar limites horizontais e verticais do procedimento de aproximação e pouso LOC.
				3	S- Manter vigilância (*3) em relação aos limitantes do procedimento e integridade dos instrumentos utilizados.
				3	S- Determinar posição e trajetória do avião com auxílio dos instrumentos disponíveis.
				3	S- Identificar nível apropriado de automação conforme carga de trabalho (*3).
				3	S- Selecionar nível apropriado de automação.
				3	S- Usar comandos, executar procedimentos adequados nos diversos sistemas e funcionalidades do avião para manter a trajetória de descida de acordo com autorizações e correção de fatores atmosféricos.

				3	S- Comunicar-se de maneira clara, precisa, e concisa [sobre andamento da aproximação, atingimento de fixos, altitudes e perda da integridade dos instrumentos utilizados, se aplicável].
				3	S- Aderir aos limites do procedimento de aproximação e pouso LOC.
				3	S- Atuar conforme previsto no manual do avião (*7).
				5	A- Demonstrar equilíbrio e predição na conjunção de comandos às etapas e manobras do procedimento (considerando controle manual ou automático do avião, quando aplicável).
				3	S- Notificar/Alertar PF discrepâncias na execução da aproximação LOC.
				3	S- Monitorar/Alertar PF na adesão aos procedimentos operacionais da aproximação LOC, vigilância da integridade dos instrumentos utilizados, e na decodificação de informações, limites horizontais e verticais sobre o procedimento.
				3	S- Monitorar/Alertar PF na execução de procedimentos adequados nos diversos sistemas e funcionalidades do avião para manter a trajetória de descida de acordo com autorizações.
				3	S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] na condução do voo conforme manual do avião (*7) e manual do operador aéreo.
				3	S- Monitorar/Alertar PF na determinação da posição e trajetória do avião, VDP e adesão aos limites horizontais e verticais do procedimento de aproximação e pouso.
				3	S- Monitorar/Alertar PF na coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
N/A(*5)	-	~~Executar aproximação ILS Back Course~~ ~~*[Performs ILS back beam approach]*~~	N/A (*5)		N/A(*5)
6.3.5	122	Executar aproximação APV e BARO-VNAV *[Performs APV and BARO-VNAV approach]* *[PF]*	Aderir a trajetória lateral e vertical e manter consciência situacional adequada (*3) *[Adhere to the lateral and vertical path and maintain adequate situational awareness (*3)]*	1	K- Reconhecer requisitos oficiais operacionais e de componentes específicos para executar procedimento de aproximação APV e BARO-VNAV.
				2	K- Demonstrar procedimentos operacionais da aproximação APV e BARO-VNAV, vigilância da integridade dos instrumentos utilizados e de perda de capacidade de navegação, com ênfase à vertical.
				1	K- Citar capacidade RNP do avião.
				2	K- Descrever funcionamento e características dos diversos modos de automação, quando disponíveis.
				1	K- Reconhecer simbologia e limitações específicas das cartas de aproximação e pouso APV e BARO-VNAV específicas.
				4	K- Relacionar possíveis ajustes em funcionalidades [comandos] do avião e mudanças computadas no gerenciamento do voo.
				3	S- Acessar e decodificar informações sobre o procedimento de aproximação e pouso APV e BARO-VNAV.
				3	S- Identificar limites horizontais e verticais do procedimento de aproximação e pouso APV e BARO-VNAV.

				3	S- Manter vigilância (*3) em relação aos limitantes do procedimento.
				3	S- Determinar posição e trajetória do avião com auxílio dos instrumentos disponíveis.
				5	S- Avaliar capacidade da navegação do avião frente ao procedimento.
				3	S- Identificar nível apropriado de automação conforme carga de trabalho (*3).
				3	S- Selecionar nível apropriado de automação.
				3	S- Usar comandos, executar procedimentos adequados nos diversos sistemas e funcionalidades do avião para manter a trajetória de descida de acordo com autorizações e correção de fatores atmosféricos.
				3	S- Comunicar-se de maneira clara, precisa, e concisa [sobre andamento da aproximação, atingimento de fixos, altitudes e perda da integridade/capacidade dos instrumentos utilizados, se aplicável].
				3	S- Aderir aos limites do procedimento de aproximação e pouso APV e BARO-VNAV.
				5	S- Atuar conforme previsto no manual do avião (*7).
				5	A- Demonstrar equilíbrio e predição na conjunção de comandos às etapas e manobras do procedimento (considerando controle manual ou automático do avião, quando aplicável).
				3	S- Notificar/Alertar PF discrepâncias na execução da aproximação APV e BARO-VNAV.
				3	S- Monitorar/Alertar PF na adesão aos requisitos oficiais operacionais e de componentes da aproximação APV e BARO-VNAV, vigilância da integridade dos instrumentos utilizados, e na decodificação de informações, limites horizontais e verticais sobre o procedimento.
				3	S- Monitorar/Alertar PF na execução de procedimentos específicos adequados nos diversos sistemas e funcionalidades do avião para manter a trajetória de descida de acordo com autorizações.
				3	S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] na condução do voo conforme manual do avião (*7) e manual do operador aéreo.
				3	S- Monitorar/Alertar PF na determinação da posição e trajetória do avião, capacidade da navegação APV e BARO-VNAV, inclusive acerca da perda de capacidade [com ênfase à vertical], adesão aos limites horizontais e verticais do procedimento de aproximação e pouso.
				3	S- Monitorar/Alertar PF na coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
6.3.6	123	Executar aproximação RNP APCH e RNP AR *[Performs RNP APCH and RNP AR approach]* *[PF]*	Aderir a trajetória lateral e vertical e manter consciência situacional adequada (*3)	1	K- Reconhecer requisitos oficiais operacionais e de componentes específicos para executar procedimento de aproximação RNP APCH e RNP AR.
				2	K- Demonstrar procedimentos operacionais afetos a aproximação RNP APCH e RNP AR, incluindo aqueles normais e de perda de capacidade de navegação, com ênfase à vertical.

			[Adhere to the lateral and vertical path and maintain adequate situational awareness (*3)*]*	1	K- Citar capacidade RNP APCH e RNP AR do avião.
				2	K- Descrever funcionamento e características dos diversos modos de automação, quando disponíveis.
				2	K- Reconhecer simbologia e limitações específicas das cartas de aproximação e pouso RNP APCH e RNP AR específicas.
				4	K- Relacionar possíveis ajustes em funcionalidades [comandos] do avião e mudanças computadas no gerenciamento do voo.
				3	S- Acessar e decodificar informações sobre o procedimento de aproximação e pouso RNP APCH e RNP AR.
				3	S- Identificar limites horizontais e verticais do procedimento de aproximação e pouso RNP APCH e RNP AR.
				3	S- Manter vigilância (*3) em relação aos limitantes do procedimento.
				3	S- Determinar posição e trajetória do avião com auxílio dos instrumentos disponíveis.
				5	S- Avaliar capacidade da navegação do avião frente ao procedimento.
				3	S- Identificar nível apropriado de automação conforme carga de trabalho (*3).
				3	S- Selecionar nível apropriado de automação.
				3	S- Usar comandos, executar procedimentos adequados nos diversos sistemas e funcionalidades do avião para manter a trajetória de descida de acordo com autorizações e correção de fatores atmosféricos.
				3	S- Comunicar-se de maneira clara, precisa, e concisa [sobre andamento da aproximação, atingimento de fixos, altitudes e perda da integridade/capacidade dos instrumentos utilizados, se aplicável].
				3	S- Aderir aos limites do procedimento de aproximação e pouso RNP APCH e RNP AR.
				3	S- Atuar conforme previsto no manual do avião (*7).
				5	A- Demonstrar equilíbrio e predição na conjunção de comandos às etapas e manobras do procedimento (considerando controle manual ou automático do avião, quando aplicável).
				3	S- Notificar/Alertar PF discrepâncias na execução da aproximação RNP APCH e RNP AR.
				3	S- Monitorar/Alertar PF na adesão aos requisitos oficiais operacionais e de componentes da aproximação RNP APCH e RNP AR, vigilância da integridade dos instrumentos utilizados, e na decodificação de informações, limites horizontais e verticais sobre o procedimento.
				3	S- Monitorar/Alertar PF na execução de procedimentos específicos adequados nos diversos sistemas e funcionalidades do avião para manter a trajetória de descida de acordo com autorizações.
				3	S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] na condução do voo conforme manual do avião (*7) e manual do operador aéreo.
				3	S- Monitorar/Alertar PF na determinação da posição e trajetória do avião, capacidade da navegação RNP APCH e RNP

					AR, inclusive acerca da perda de capacidade [com ênfase à vertical], adesão aos limites horizontais e verticais do procedimento de aproximação e pouso.
				3	S- Monitorar/Alertar PF na coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Given the prior normal operating condition of the aircraft and provisions about abnormal and emergency conditions according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Execute non-precision approach procedure according operational specifications]*

Standard: *[Have executed the non-precision approach procedure upon authorization and standard ATC communication, according to the aircraft manual, adopted SOP [AOM], and operator's manual, adequate level of situational awareness and monitoring of the approach and in adherence to meteorological minima.]*

Task: *[Perform approach with visual reference to ground]* — **Task No :** 6.4

1.Where performed:
[Airplane/Control Zone]

2.Triggering Event:
[Maneuver airplane to comply with visual approach procedure]

3.Terminating Event:
[Make pilot available to monitor flight progress]

4. References/Standards for the task (if any):

ANAC - RBAC 91; IS 91-21-001;
DECEA - ICA 100-12; ICA 100-37; MCA 100-16; MCA 96-3; MCA-96-4; ICA 100-5; ICA 105-12;
Manual do avião [POH; AFM];
Air Operator´s Manual and AOM;

5.No : Sub-Task	5.No : Int Obj	6.Sub-Tasks	7.Performance Difficulties	LoA	8. Summary of K/S/A Requirements
6.4.1	124	Executar aproximação visual padrão *[Performs standard visual approach]* *[PF]*	Manter o avião na trajetória esperada e manter consciência situacional adequada (*3) do tráfego *[Keep airplane on path and maintain adequate situational awareness (*3) of the traffic]*	1	K- Citar mínimos meteorológicos para executar aproximação visual padrão e critérios de aproximação estabilizada.
				1	K- Reconhecer simbologias das cartas de aproximação visual.
				4	K- Relacionar possíveis ajustes em funcionalidades [comandos] do avião e mudanças computadas no gerenciamento do voo.
				3	S- Acessar e decodificar informações sobre o procedimento de aproximação visual.
				3	S- Identificar mínimos meteorológicos para executar aproximação visual padrão.
				3	S- Identificar limites horizontais e verticais do procedimento de aproximação visual.
				3	S- Determinar posição e trajetória do avião com auxílio dos instrumentos disponíveis.
				3	S- Usar comandos, executar procedimentos adequados nos diversos sistemas e funcionalidades do avião para manter a trajetória de descida de acordo com autorizações e correção de fatores atmosféricos.
				3	S- Comunicar-se de maneira clara, precisa, e concisa [sobre andamento da aproximação, atingimento de pontos de referência e altitudes].
				3	S- Aderir aos limites do procedimento de aproximação visual e critérios de aproximação estabilizada.
				3	S- Atuar conforme previsto no manual do avião (*7).
				5	A- Demonstrar equilíbrio e predição na conjunção de comandos às etapas e manobras do procedimento (considerando controle manual ou automático do avião, quando aplicável).
				3	A- Não negligenciar padrões operacionais acerca dos limites e trajetória da aproximação por estar sob condições visuais.

				4	A- Não hesitar e agir prontamente quando extrapolados critérios de aproximação estabilizada ou mínimos meteorológicos.
				3	S- Notificar/Alertar PF discrepâncias na execução da aproximação visual padrão.
				3	S- Monitorar/Alertar PF no relacionamento de possíveis ajustes em funcionalidades [comandos] do avião, e descrição do procedimento normal a ser adotado para aproximação e pouso.
				3	S- Monitorar/Alertar PF na determinação dos mínimos peteorológicos, da posição e trajetória do avião, e adesão aos limites horizontais e verticais do procedimento de aproximação e pouso.
				3	S- Monitorar/Alertar PF sobre adesão aos limites do procedimento de aproximação visual e critérios de aproximação estabilizada.
				3	S- Monitorar/Alertar PF na coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
6.4.2	125	Executar aproximação para circular *[Performs circling approach]* *[PF]*	Manter consciência situacional efetiva (*3) do terreno após transição da condição meteorológica e voo por instrumentos *[Keep effective terrain awareness (*3) after transit from instrument flight rules and meteorological condition]*	1	K- Citar mínimos meteorológicos para executar aproximação para circular e critérios de aproximação estabilizada.
				2	K- Demonstrar procedimentos operacionais da aproximação para circular, com ênfase na arremetida e distinção dos mínimos meteorológicos.
				2	K- Caracterizar simbologias específicas das cartas de aproximação que contenham a opção da aproximação para circular.
				4	K- Relacionar possíveis ajustes em funcionalidades [comandos] do avião e mudanças computadas no gerenciamento do voo.
				3	S- Acessar e decodificar informações sobre o procedimento de aproximação para circular.
				3	S- Identificar mínimos meteorológicos para executar aproximação para circular.
				3	S- Identificar limites horizontais e verticais do procedimento de aproximação para circular.
				3	S- Determinar posição e trajetória do avião com auxílio dos instrumentos disponíveis, sem perder contato visual com a pista.
				3	S- Usar comandos, executar procedimentos adequados nos diversos sistemas e funcionalidades do avião para manter a trajetória de descida de acordo com autorizações e correção de fatores atmosféricos.
				3	S- Comunicar-se de maneira clara, precisa, e concisa [sobre andamento da aproximação, atingimento de fixos e altitudes].
				3	S- Aderir aos limites do procedimento de aproximação para circular e critérios de aproximação estabilizada.
				3	S- Atuar conforme previsto no manual do avião (*7).
				5	A- Demonstrar equilíbrio e predição na conjunção de comandos às etapas e manobras do procedimento (considerando controle manual ou automático do avião, quando aplicável).

				3	A- Não negligenciar padrões operacionais acerca dos limites e trajetória da aproximação por estar sob condições visuais.
				4	A- Não hesitar e agir prontamente quando extrapolados critérios de aproximação estabilizada ou mínimos meteorológicos.
				3	S- Notificar/Alertar PF discrepâncias na execução da aproximação para circular.
				3	S- Monitorar/Alertar PF no relacionamento de possíveis ajustes em funcionalidades [comandos] do avião, e descrição do procedimento normal a ser adotado para aproximação e pouso.
				3	S- Monitorar/Alertar PF na determinação dos mínimos peteorológicos, da posição e trajetória do avião, adesão ao contato visual com a pista e aos limites horizontais e verticais do procedimento de aproximação e pouso.
				3	S- Monitorar/Alertar PF sobre adesão aos limites do procedimento de aproximação visual e critérios de aproximação estabilizada.
				3	S- Monitorar/Alertar PF na coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Given the prior normal operating condition of the aircraft and provisions about abnormal and emergency conditions according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Execute non-precision approach procedure according operational specifications]*

Standard: *[Have executed the visual approach procedure upon authorization and standard ATC communication, according to the aircraft manual, adopted SOP [AOM], and operator's manual, adequate level of situational awareness and monitoring of the approach and in adherence to meteorological minima.]*

Task : *[Monitor flight progress]*					**Task No :** 6.5
1.Where performed: *[Airplane/Control Zone]* **2.Triggering Event:** *[Check approach progress]* **3.Terminating Event:** *[Make pilot available for system operations and procedures]*					**4. References/Standards for the task (if any):** ANAC - RBAC 91; IS 91-001; IS 91-21-001; DECEA - ICA 100-12; ICA 100-37; MCA 100-16; MCA 96-3; MCA-96-4; ICA 100-16; Manual do avião [POH; AFM]; Air Operator´s Manual and AOM;
5.No :		**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
Sub-Task	**Int Obj**				
6.5.1	126 (59)	Garantir precisão da navegação *[Ensures navigation accuracy]* *[PF/PM]*	Manter consciência situacional adequada (*3) acerca da integridade dos sistemas de navegação. *[Maintain adequate situational awareness (*3) regarding navigation systems integrity]*	2 1 2 2 1 3	K- Caracterizar tipo de navegação utilizada. K- Reconhecer requisitos oficiais operacionais e de componentes específicos para o determinado tipo de navegação, quando aplicável. K- Demonstrar procedimentos operacionais normais e anormais do tipo de navegação utilizada. K- Descrever funcionamento e características dos diversos modos de automação, quando disponíveis, associados ao tipo de navegação utilizada. K- Reconhecer simbologia e limitações específicas das cartas de navegação utilizadas. S- Acessar e decodificar informações sobre procedimentos específicos à navegação utilizada, se aplicáveis.

				3	S- Identificar limites horizontais e verticais específicos à navegação utilizada.
				3	S- Determinar posição e trajetória do avião com auxílio dos instrumentos disponíveis.
				3	S- Manter vigilância (*3) em relação aos limitantes da navegação e integridade dos instrumentos utilizados.
				5	S- Avaliar capacidade da navegação do avião frente a requisitos oficiais operacionais e de componentes específicos à navegação, se aplicáveis.
				3	S- Usar comandos, executar procedimentos adequados nos diversos sistemas e funcionalidades do avião para manter a navegação.
				3	S- Comunicar-se de maneira clara, precisa, e concisa [sobre andamento da navegação e perda de integridade e/ou capacidade, se aplicável].
				3	S- Aderir aos limites da navegação.
				3	S- Atuar conforme previsto no manual do avião (*7), quando requerido.
				5	A- Não ser complacente (*3) pelo uso da automação.
				3	S- Notificar/Alertar PF sobre discrepâncias na precisão da navegação.
				3	S- Notificar/alertar PF sobre avaliação e adesão à precisão [desempenho] de navegação específica ao tipo utilzada e integridade dos instrumentos e sistemas utilizados.
				3	S- Notificar/Alertar PF sobre execução de procedimentos e comunicação CTA [no caso de perda da capacidade de navegação].
				3	S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] na precisão da navegação conforme manual do avião (*7).
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
6.5.2	127 (30) (60)	Comunicar com CTA e membros da tripulação *[Communicates with ATC and crew members]* *[PF/PM]* (*8)	Garantir entendimento de todas as mensagens por ambas as partes *[Ensure understanding of all messages by both parties]*	1	K- Citar procedimentos relevantes de comunicação, coordenação aeronáutica e fraseologia aeronáutica.
				1	K- Citar elementos técnicos e aspectos relevantes acerca do avião, fase do voo e segurança em geral utilizados na comunicação com a tripulação de cabine, se aplicável.
				3	S- Manter vigilância na frequência de comunicação CTA.
				3	S- Manter vigilância (*3) em relação a posição do avião.
				3	S- Comunicar-se de maneira clara, precisa, e concisa, considerando, no mínimo os elementos (*3): solicitação, recebimento, verificação e cotejamento das novas instruções, quando aplicável.
				3	S- Comunicar-se com a tripulação de cabine, se aplicável, de maneira clara, precisa e concisa.
				3	S- Utilizar somente elementos técnicos e aspectos relevantes acerca do avião, fase do voo e segurança em geral na comunicação com a tripulação de cabine, se aplicável.
				3	S- Checar (garantir feedback) (*3) entendimento das mensagens trocadas com a tripulação de cabine, se aplicável.

				3	A- Respeito e atenção a desobstrução e congestionamento da frequência de comunicação CTA.
				3	A- Não se comunicar com o CTA de forma complacente (*3) ou automatizada.
				4	A- Disponibilidade para receber, registrar e entender mensagens.
				5	A- Consideração a elementos não técnicos [NOTECHS] (*3) na comunicação com a tripulação de cabine, se aplicável.
				3	S- Notificar/Alertar PF discrepâncias na comunicação padrão com CTA.
				3	S- Notificar/Alertar PF sobre uso de frequências corretas e elementos técnicos e da comunicação relevantes.
				3	S- Monitorar/Verificar, quando aplicável, ações e procedimentos [aderência ao manual do operador] de outros membros da tripulação.
				3	S- Reconhecer e aconselhar, quando aplicável e oportuno, sobre quaisquer erros cometidos [não aderência ao manual do operador] por outros membros da tripulação.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
6.5.3	128 (80)	Monitorar a condição do combustível *[Monitors fuel status]* *[PF/PM]*	Detectar e relacionar variações entre consumo previsto e real para o gerenciamento do voo *[Detect and relate variations among predicted and effective fuel consumption to the flight management]*	1	K- Citar limitações acerca do sistema de combustível do avião, bem como condições para uso do combustível.
				2	K- Demonstrar aspectos e limitações operacionais do avião acerca do consumo do combustível na aproximação.
				4	K- Relacionar possíveis ajustes em funcionalidades [comandos] do avião, parâmetros do grupo moto propulsor e mudanças computadas no gerenciamento do voo.
				3	S- Selecionar consumo ótimo de acordo com as condições técnicas do avião.
				5	S- Avaliar desempenho do avião para o consumo escolhido.
				3	S- Usar comandos e executar alterações adequadas nos diversos sistemas e funcionalidades [comandos] do avião afetos ao consumo de combustível.
				3	S- Manter vigilância (*3) em relação ao consumo, outros parâmetros do grupo moto propulsor e desempenho do avião.
				3	A- Manter avaliação sobre manutenção dos valores alterados e desempenho esperado.
				3	S- Notificar/Alertar PF discrepâncias na monitoração da condição do combustível.
				3	S- Monitorar/Alertar PF sobre consumo em relação aos parâmetros do grupo moto-propulsor, de desempenho [planejado e real] do avião, e sobre o sistema de alimentação de combustível.
				3	S- Monitorar/Alertar PF sobre determinação do consumo ótimo e combustível remanescente [autonomia] acerca do planejamento do voo.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
Task Terminal Objective					
Condition: *[Given the prior normal operating condition of the aircraft and provisions about abnormal and emergency conditions according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*					

Performance: *[Monitor progress and ensure approach´s accuracy.]*

Standard: *[Have monitored and ensured the approach´s accuracy through ATC coordination, according to the aircraft manual, adopted SOP [AOM], and operator's manual, adequate level of situational awareness and monitoring of systems and airplane trajectory.]*

Task: *[Perform systems operations and procedures]* | **Task No :** 6.6

1.Where performed:
[Airplane/Control Zone]

2.Triggering Event:
[Identify need to operate airplane systems]

3.Terminating Event:
[Make airplane available to complete landing]

4. References/Standards for the task (if any):

ANAC - RBAC 91;
Manual do avião [POH; AFM];
Air Operator´s Manual and AOM;

5.No : Sub-Task	5.No : Int Obj	6.Sub-Tasks	7.Performance Difficulties	LoA	8. Summary of K/S/A Requirements
6.6.1	73	Monitorar operação de todos sistemas *[Monitors operation of all systems]* *[PF]*	Manter consciência situacional adequada (*3) mediante realização de outras manobras *[Maintain adequate situational awareness (*3) while performing other maneuvres]*	2	K- Caracterizar o funcionamento de todos sistemas disponíveis.
				2	K- Caracterizar o funcionamento e características dos diversos modos de automação, se disponíveis.
				3	S- Identificar parâmetros normais estabelecidos pelo manual do avião (*7), quando requerido, para todos sistemas.
				3	S- Checar atuação dos sistemas, seus recursos e funcionalidades.
				5	A- Estima à riscos associados à complacência na monitoração da operação dos sistemas.
				3	S- Notificar/Alertar PF discrepâncias na operação de todos os sistemas.
				3	S- Monitorar/Alertar PF sobre parâmetros e condições nos sistemas do avião e suas funcionabilidades.
				3	S- Monitorar/Alertar PF sobre os efeitos de complacência (*3) na monitoração de sistemas.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
6.6.2	74	Operar sistemas conforme requerido *[Operates systems as required]* *[PF]*	Avaliar ação executada e seu resultado conforme esperado *[Evaluate action taken and its outcome as expected]*	2	K- Caracterizar o funcionamento de todos sistemas disponíveis e relevantes à fase do voo.
				2	K- Caracterizar relação entre os sistemas disponíveis e suas funcionalidades [comandos] no gerenciamento do voo.
				3	S- Identificar nível apropriado de automação conforme fase do voo e carga de trabalho (*3), se aplicável.
				3	S- Selecionar nível apropriado de automação, se aplicável.
				3	S- Usar comandos, executar procedimentos e alterações adequadas nos diversos sistemas e funcionalidades [comandos] do avião.
				5	S- Avaliar resultado dos comandos executados conforme o esperado.
				5	A- Não ser complacente (*3) pelo uso da automação.
				3	S- Notificar/Alertar PF discrepâncias na operação dos sistemas cnforme requerido.
				3	S- Monitorar/Alertar PF na diligência na consulta às referências técnicas sobre os sistemas conforme manual do avião (*7).
				3	S- Monitorar/Alertar PF na alterações requeridas aos comandos dos sistemas e avaliação dos resultados esperados conforme manual do avião (*7).

				3	S- Monitorar/Alertar PF sobre os efeitos de complacência pelo uso da automação na operação de sistemas.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Through normal, abnormal or emergency operation of the airplane, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Monitor and operate airplane systems as required.]*

Standard: *[Have monitored and operated airplane systems, according to the aircraft manual, adopted SOP [AOM], and operator's manual, when required.]*

Task: *[Manage abnormal and emergency situations]*					**Task No :** 6.7
1.Where performed: *[Airplane/Terminal and Control Area]* **2.Triggering Event:** *[Identify abnormal or emergency condition of the plane]* **3.Terminating Event:** *[Determine the end of the abnormal or emergency condition of the airplane]*				**4. References/Standards for the task (if any):** ANAC - RBAC 91; DECEA - ICA 100-12; ICA 100-37; MCA-100-16; Manual do avião [POH; AFM]; Air Operator´s Manual and AOM;	
5.No :		**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
Sub-Task	**Int Obj**				
6.7.1	27	Identificar condição anormal e de emergência *[Identifies the abnormal and emergency condition]* *[PF/PM]*	Manter consciência situacional adequada (*3) para caracterizar condição anormal/emergência. *[Maintain adequate situational awareness (*3) to characterize abnormal condition / emergency.]*	2 3 3 3 3 5 3 3 3	K- Demonstrar parâmetros normas e anormais dos sistemas relevantes do avião à fase da operação e condição identificada. S- Identificar alteração de parâmetros e/ou condições normais. S- Atuar conforme previsto no manual do avião (*7), quando requerido. S- Manter vigilância (*3) da subtarefa e de outros elementos do ambiente para manutenção do voo de forma segura. A- Manter-se alerta à possibilidade de eventos anormais e de emergência durante todo o período de operações normais. A- Estima à manutenção do estado de alerta elevado. S- Notificar/Alertar PF sobre ameaças externas. S- Monitorar/Alertar PF sobre condições anormais e de emergência no avião, seus sistemas, funcionabilidades, controles e parâmetros. S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
6.7.2	28	Interpretar a condição anormal e de emergência *[Interprets the abnormal and emergency condition]* *[PF/PM]*	Avaliar impactos operacionais da condição *[Assess the operational impacts of the condition]*	2 2 2 5 3 3 5 3	K- Demonstrar o funcionamento dos sistemas relevantes do avião à fase da operação e condição identificada. K- Descrever influências da condição identificada na operação do avião. K- Demonstrar o checklist ou parte correta do manual do avião (*7) para a lidar com a condição. S- Avaliar impactos da condição na operação do avião. S- Manter adesão ao checklist, padrão operacional adotado ou manual do avião (*7). S- Manter vigilância (*3) da subtarefa e de outros elementos do ambiente para manutenção do voo de forma segura. A- Diligência na consulta às referências técnicas adequadas em caso de dúvidas na interpretação da condição anormal. S- Notificar/Alertar PF discrepâncias na interpretação da condição anormal e de emergência.

				3	S- Monitorar/Alertar PF influência e impactos da condição, consultas tecnicas requeridas e vigilância do ambiente interno e externo.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
6.7.3	29	Executar procedimentos para a condição anormal e de emergência *[Performs the procedure for the abnormal and emergency condition]* *[PF/PM]*	Aderir a padrões operacionais adotados e a listas de verificação *[Adhere to adopted operational standards and checklists]*	2	K- Demonstrar o funcionamento dos sistemas do avião relevantes à fase da operação e condição identificada.
				2	K- Demonstrar conhecimento dos procedimentos anormais e de emergência relacionados com condição identificada.
				3	K- Descrever influências da condição identificada na operação e em outros sistemas do avião.
				3	S- Escolher o checklist ou parte correta do manual do avião (*7) para a lidar com a condição.
				4	S- Atuar conforme avaliação anterior, dos impactos da condição na operação do avião.
				3	S- Gerenciar condição conforme execução correta do checklist, padrão operacional adotado ou manual do avião (*7).
				3	S- Manter adesão ao checklist, padrão operacional adotado ou manual do avião (*7).
				3	S-Comunicar/declarar condição perante CTA, quando aplicável.
				5	S- Manter vigilância (*3) da subtarefa e de outros elementos do ambiente para manutenção do voo de forma segura.
				4	A- Não hesitar e agir prontamente quando atingida condição de emergência e priorizar tarefas [voar, navegar e comunicar], quando aplicável.
				3	S- Notificar/Alertar PF discrepâncias na execução do procedimento da condição anormal e de emergência.
				3	S- Monitorar/Alertar PF nas consultas tecnicas requeridas, coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Given the prior normal operating condition of the aircraft and provisions about abnormal and emergency conditions according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Extinguish the abnormal or emergency condition of the aircraft and define flight continuity.]*

Standard: *[Have performed and completed operational procedures according aircraft manual, adopted SOP [AOM], and operator's manual; extinguished the abnormal or emergency condition of the aircraft; and properly assessed the safety of the flight.]*

Task : *[Perform go-around/missed approach]*	**Task No :** 6.8
1.Where performed: *[Airplane/Final approach segment]*	**4. References/Standards for the task (if any):** ANAC - RBAC 91; IS 91-001; IS 91-21-001; DECEA - ICA 100-12; ICA 100-37; MCA 100-16; MCA 96-3; MCA-96-4; ICA 100-5; ICA 105-12; Manual do avião [POH; AFM]; Air Operator´s Manual and AOM;
2.Triggering Event: *[Check non-adherence to standards and operational requirements for airplane landing]*	
3.Terminating Event: *[Perform go-around and determine the end of the risk condition to the plane and people]*	

5.No :		**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
Sub-Task	**Int Obj**				
6.8.1	129 (114)	Iniciar procedimento de arremetida *[Initiates go-around procedure]*	Gerenciar carga de trabalho *[Workload management]*	2	K- Demonstrar procedimentos operacionais afetos a arremetida conforme manual do avião (*7).
				2	K- Descrever funcionamento e características dos diversos modos de automação, quando disponíveis.

		[PF]		4	K- Relacionar possíveis ajustes em funcionalidades [comandos] do avião e mudanças computadas no gerenciamento do voo.
				3	S- Usar comandos, executar procedimentos adequados nos diversos sistemas e funcionalidades do avião para manter a trajetória de arremetida.
				3	S- Identificar limites horizontais e verticais do procedimento de arremetida.
				3	S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com a ação.
				3	S- Comunicar-se de maneira clara, precisa, e concisa [sobre início do procedimento de arremetida].
				3	S- Aderir aos limites do procedimento de arremetida.
				3	S- Atuar conforme previsto no manual do avião (*7).
				4	S- Gerenciar carga de trabalho (*3) e determinar prioridades adequadamente frente a realização de outras tarefas, se requerido.
				4	A- Não hesitar e agir prontamente quando atingida condição de arremetida e priorizar tarefas [voar, navegar e comunicar], quando aplicável.
				5	A- Demonstrar equilíbrio e predição na conjunção de comandos às etapas e manobras do procedimento (considerando controle manual ou automático do avião, quando aplicável).
				5	A- Não hesitar e agir prontamente quando configurada condição para arremeter.
				3	S- Notificar/Alertar PF discrepâncias no início do procedimento de arremetida.
				3	S- Monitorar/Alertar PF na execução do procedimento correto conforme manual do avião (*7) e na checagem e atuação de sistemas, recursos e funcionalidades do avião associados a arremetida.
				3	S- Monitorar/Alertar PF na adesão aos limites do procedimento de arremetida.
				3	S- Monitorar/Alertar PF na gestão da carga de trabalho (*3) e coordenação CTA.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
6.8.2	130	Navegar conforme procedimento de aproximação perdida *[Navigates according to missed approach procedure]* *[PF]*	Gerenciar carga de trabalho *[Workload management]*	1	K- Reconhecer simbologias das cartas de procedimentos específica ao procedimento de aproximação perdida.
				2	K- Demonstrar procedimentos operacionais afetos a navegação no procedimento de arremetida conforme manual do avião (*7).
				3	S- Identificar limites horizontais e verticais do procedimento de aproximação perdida.
				3	S- Usar comandos, executar procedimentos adequados nos diversos sistemas e funcionalidades do avião para manutenção da navegação, autorizações e correção de fatores atmosféricos.
				5	S- Avaliar desempenho do avião acerca da execução de novas instruções CTA, se requerido.

				3	S- Checar atuação de sistemas, recursos e funcionalidades do avião associados com a navegação do procedimento.
				3	S- Comunicar-se de maneira clara, precisa, e concisa [sobre andamento do procedimento de arremetida]. quando aplicável.
				3	S- Aderir aos limites do procedimento de navegação da aproximação perdida.
				3	S- Atuar conforme previsto no manual do avião (*7).
				3	S- Manter vigilância (*3) em relação a navegação e autorizações.
				5	A- Resiliência (*3) acerca dos ajustes requeridos à configuração do avião e navegação do procedimento de arremetida e nova aproximação e pouso.
				3	S- Notificar/Alertar PF discrepâncias na navegação conforme procedimento de aproximação perdida.
				3	S- Monitorar/Alertar PF a execução do procedimento correto conforme manual do avião (*7) e na checagem e atuação de sistemas, recursos e funcionalidades [comandos] do avião associados a navegação do procedimento da aproximação perdida.
				3	S- Monitorar/Alertar PF na determinação da posição e trajetória do avião, e adesão aos limites horizontais e verticais do procedimento de aproximação perdida.
				3	S- Monitorar/Alertar PF sobre efeitos da automação [controles e modos de gerenciamentos] na condução do voo conforme manual do avião (*7) e manual do operador aéreo.
				3	S- Monitorar/Alertar PF na coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
6.8.3	54	Concluir listas de verificação relevantes *[Completes relevant checklists]* *[PF/PM]*	Manter atenção e garantir confirmações, quando requeridas, a todos itens *[Maintain attention and ensure confirmations, when required, for all items]*	2	K- Demonstrar filosofia operacional adotada na leitura de listas de verificação de operações normais.
				3	S- Executar a lista de verificação.
				3	S- Determinar conclusão de procedimentos e verificações previstas na lista de verificação correspondente.
				5	A- Postura contingente e confirmativa a todos itens das listas de verificação.
				3	S- Notificar/Alertar PF sobre ameaças externas.
				3	S- Monitorar/Alertar PF sobre condições anormais e de emergência no avião, seus sistemas, funcionabilidades, controles e parâmetros.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
6.8.4	131 (103) (104) (105)	Iniciar aproximação ou desvio (alternativa) após arremetida *[Initiates approach or diversion after the go-around]* *[PF]*	Gerenciar carga de trabalho frente a obtenção de dados meteorológicos e determinação de combustível mínimo. *[Workload management*	1	K- Reconhecer fontes disponíveis para determinar condições de combustível remanescente, de autonomia, de meteorologia e de tráfego aéreo do aeródromo de destino e alternativa.
				4	K- Relacionar possíveis ajustes em funcionalidades [comandos] do avião, parâmetros do grupo moto propulsor e mudanças computadas no gerenciamento do voo para início de nova aproximação ou de desvio.
				3	S- Utilizar fontes disponíveis para determinar combustível remanescente e autonomia, validar condições meteorológicas e de tráfego aéreo do aeródromo de destino e alternativa.

			while obtaing meteorological data and determines minimum fuel]	5	S- Avaliar requisitos de combustível necessário para determinar autonomia [tempo máximo de espera e nova aproximação ou prosseguimento para alternativa].
				5	S- Avaliar condições meteorológicas e de tráfego aéreo nos aeródromos de destino e alternativa, relacionando informações sobre combustível remanescente.
				3	S- Escolher opção apropriada conforme critérios técnicos e condições observadas.
				3	S- Usar comandos e executar procedimentos adequados nos diversos sistemas e funcionalidades do avião para nova aproximação no destino ou navegação de desvio (alternativa).
				3	S- Comunicar-se de maneira clara, precisa, e concisa [sobre opção e navegação da opção escolhida].
				3	S- Aderir aos limites do procedimento da nova aproximação [e espera] ou desvio (alternativa) após arremetida.
				3	S- Atuar conforme previsto no manual do avião (*7).
				3	S- Manter vigilância (*3) em relação ao consumo, outros parâmetros do grupo moto propulsor e desempenho do avião.
				5	A- Resiliência (*3) acerca dos ajustes requeridos à configuração do avião e navegação do procedimento de arremetida e navegação para nova aproximação ou de desvio (alternativa).
				5	A- Postura contingente e baseada em ameaças e riscos na análise correta de condições e critérios na escolha da opção apropriada.
				3	S- Notificar/Alertar PF discrepâncias no início de aproximação ou desvio (alternativa) após arremetida.
				3	S- Monitorar/Alertar PF na diligência acerca da validação sobre consumo de combustível e combustível remanescente e necessário [autonomia] para determinar autonomia [tempo máximo de espera [nova aproximação] ou prosseguimento para alternativa] conforme provisões do Manual do Operador Aéreo e AOM.
				3	S- Monitorar/Alertar PF na validação do uso das fontes e condições meteorológicas e de tráfego aéreo do aeródromo de destino e alternativa.
				3	S- Monitorar/Alertar PF na contingencia baseada em ameaças e riscos na análise correta de condições e critérios do possível desvio (alternativa).
				3	S- Monitorar/Alertar PF a execução do procedimento correto conforme manual do avião (*7) e na checagem e atuação de sistemas, recursos e funcionalidades [comandos] do avião associados a navegação do procedimento da aproximação perdida.
				3	S- Monitorar/Alertar PF na adesão aos limites da navegação e autorizações da navegação decidida, assim como na coordenação CTA.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
6.8.5	132 (30) (60)	Comunicar com CTA e membros da tripulação *[Communicates with ATC and crew members]*	Garantir entendimento de todas as mensagens por ambas as partes	1	K- Citar procedimentos relevantes de comunicação, coordenação aeronáutica e fraseologia aeronáutica.
				1	K- Citar elementos técnicos e aspectos relevantes acerca do avião, fase do voo e segurança em geral utilizados na comunicação com a tripulação de cabine, se aplicável.

		*[PF/PM] (*8)*	*[Ensure understanding of all messages by both parties]*	3	S- Manter vigilância na frequência de comunicação CTA.
				3	S- Manter vigilância (*3) em relação a posição do avião.
				3	S- Comunicar-se de maneira clara, precisa, e concisa, considerando, no mínimo os elementos (*3): solicitação, recebimento, verificação e cotejamento das novas instruções, quando aplicável.
				3	S- Comunicar-se com a tripulação de cabine, se aplicável, de maneira clara, precisa e concisa.
				3	S- Utilizar somente elementos técnicos e aspectos relevantes acerca do avião, fase do voo e segurança em geral na comunicação com a tripulação de cabine, se aplicável.
				3	S- Checar (garantir feedback) (*3) entendimento das mensagens trocadas com a tripulação de cabine, se aplicável.
				3	A- Respeito e atenção a desobstrução e congestionamento da frequência de comunicação CTA.
				3	A- Não se comunicar com o CTA de forma complacente (*3) ou automatizada.
				4	A- Disponibilidade para receber, registrar e entender mensagens.
				5	A- Consideração a elementos não técnicos [NOTECHS] (*3) na comunicação com a tripulação de cabine, se aplicável.
				3	S- Notificar/Alertar PF discrepâncias na comunicação padrão com CTA.
				3	S- Notificar/Alertar PF sobre uso de frequências corretas e elementos técnicos e da comunicação relevantes.
				3	S- Monitorar/Verificar, quando aplicável, ações e procedimentos [aderência ao manual do operador] de outros membros da tripulação.
				3	S- Reconhecer e aconselhar, quando aplicável e oportuno, sobre quaisquer erros cometidos [não aderência ao manual do operador] por outros membros da tripulação.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Given the prior normal operating condition of the aircraft and provisions about abnormal and emergency conditions according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Abort landing performing go-around, determine the end of the flight risk condition and start a new approach procedure or diversion navigation (alternate).]*

Standard: *[Have properly recognized the need and feasibility of aborting the landing, have performed go-around procedure according to the aircraft manual, adopted SOP [AOM], and operator's manual, and have started a new approach procedure or performed diversion navigation (alternative).]*

Task: *[Communicate with cabin crew, passengers and company]* — **Task No :** 6.9

1.Where performed:
[Airplane/Control Zone and Area]

2.Triggering Event:
[Consider the need for communication with cabin crew, passengers and air operator]

3.Terminating Event:
[Receive feedback on communication, if appropriate or required]

4. References/Standards for the task (if any):

ANAC - RBAC 91;
Air Operator´s Manual and AOM;

5.No :		**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
Sub-Task	**Int Obj**				

6.9.1	30	Comunicar informação relevante à tripulação de cabine *[Communicates relevant information to cabin crew]* *[PF]*	Aderir a comunicação efetiva *[Adhere to effective communication]*	1 3 3 3 5 3 3	K- Citar elementos técnicos e aspectos relevantes acerca do avião, fase do voo e segurança em geral utilizados na comunicação com a tripulação de cabine, se aplicável. S- Comunicar-se com a tripulação de cabine, se aplicável, de maneira clara, precisa e concisa. S- Utilizar somente elementos técnicos e aspectos relevantes acerca do avião, fase do voo e segurança em geral na comunicação com a tripulação de cabine, se aplicável. S- Checar (garantir feedback) (*3) entendimento das mensagens trocadas com a tripulação de cabine, se aplicável. A- Consideração a elementos não técnicos [NOTECHS] (*3) na comunicação com a tripulação de cabine, se aplicável. S- Monitorar/Verificar, quando aplicável, ações e procedimentos [aderência ao manual do operador] de outros membros da tripulação. S- Reconhecer e aconselhar, quando aplicável e oportuno, sobre quaisquer erros cometidos [não aderência ao manual do operador] por outros membros da tripulação.
6.9.2	31	Comunicar informação relevante ao operador aéreo *[Communicates relevant information to company]* *[PF/PM]*	Aderir a comunicação efetiva *[Adhere to effective communication]*	1 3 3 3 5 3 3 3	K- Citar elementos técnicos e aspectos relevantes acerca do avião, andamento do voo, segurança em geral a outros pertinentes utilizados na comunicação com o operador aéreo. S- Comunicar-se com operador aéreo de maneira clara, precisa e concisa. S- Utilizar somente elementos técnicos e aspectos relevantes acerca do avião, andamento do voo, segurança em geral a outros pertinentes na comunicação com o operador aéreo. S- Checar (garantir feedback) (*3) entendimento das mensagens trocadas com o operador aéreo, quando oportuno. A- Consideração a elementos não técnicos [NOTECHS] (*3) na comunicação com a tripulação de cabine, se aplicável. S- Notificar/Alertar PF discrepâncias na comunicação de informação relevante ao operador aéreo. S- Monitorar/Alertar PF na obtenção e listagem de elementos relevantes para comunicação ao operador aéreo. S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
6.9.3	32	Fazer anúncios a passageiros quando apropriado *[Makes passenger announcements when appropriate]* *[PF]*	Sumarizar e declarar somente informações relevantes *[Summarize and declare only relevant information]*	1 3 3 3 5 3	K- Citar elementos técnicos e aspectos relevantes acerca dos avisos, instruções verbais e proibições relacionados com os anúncios a passageiros, quando apropriado. S- Comunicar-se com passageiros de maneira clara, precisa e concisa, conforme provisões do Manual do Operador Aéreo e AOM. S- Ater-se a elementos técnicos e aspectos relevantes acerca do avião, fase do voo e segurança em geral na comunicação com a tripulação de cabine, se aplicável. S- Checar (garantir feedback) (*3) entendimento das mensagens trocadas com passageiros, se requerido. A- Consideração a elementos não técnicos [NOTECHS] (*3) na comunicação com a tripulação de cabine, se aplicável. S- Notificar/Alertar PF discrepâncias nos anúncios à passageiros quando apropriado.

				3	S- Monitorar/Alertar PF na obtenção e listagem de elementos relevantes para comunicação, comunicação e feedback dos passageiros.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Through normal, abnormal or emergency operation of the airplane, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Communicate cabin crew, passengers and air operator.]*

Standard: *[Have cabin crew, passengers and air operator communicated about relevant aspects of the flight and safety issue elements to their appropriate actions, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Task: *[Land the airplane]* — **Task No :** 7.1

1.Where performed:
[Airplane/Landing runway]

2.Triggering Event:
[Communication with cabin crew, passengers and air operator carried out]

3.Terminating Event:
[Make pilot available for system operations and procedures]

4. References/Standards for the task (if any):

ANAC - RBAC 91;
DECEA - ICA 100-5; ICA 105-12;
Manual do avião [POH; AFM];
Air Operator´s Manual and AOM;

5.No : Sub-Task	Int Obj	6.Sub-Tasks	7.Performance Difficulties	LoA	8. Summary of K/S/A Requirements
7.1.1	133	Manter trajetória de aproximação estabilizada durante segmento visual *[Maintains a stabilized approach path during visual segment]* *[PF]*		2	K- Caracterizar determinação do VDP e a importância de manutenção de trajetória padrão de aproximação.
				1	K- Reconhecer marcações e iluminações de pistas de pouso.
				2	K- Demonstrar procedimentos operacionais afetos a aproximação estabilizada durante segmento visual conforme manual do avião (*7).
				2	K- Caracterizar funcionamento e utilização de auxílios (indicadores) visuais de trajetória de pouso.
				2	K- Caracterizar influências de possíveis ilusões óticas.
				3	S- Aplicar comandos no manche, compensador e pedais para devida correção e manutenção do critério de aproximação estabilizada.
				3	S- Manter trajetória ideal para pouso, realizando correções adequadas conforme critérios de aproximação estabilizada e manual do avião (*7).
				3	S- Aderir aos limites da trajetória de aproximação estabilizada durante segmento visual.
				3	S- Atuar conforme previsto no manual do avião (*7).
				5	S- Manter vigilância (*3) da subtarefa e de outros elementos do ambiente externo para manutenção da trajetória de forma segura.
				3	A- Não reter [calibrar] atenção somente a elementos externos durante o segmento visual.
				3	S- Notificar/Alertar PF discrepâncias na manutenção da trajetória de aproximação estabilizada durante segmento visual.
				3	S- Monitorar/Alertar PF sobre apreciação de influências do vento e inclinação do avião para atingimento dos critérios de aproximação estabilizada.
				3	S- Monitorar/Alertar PF na checagem da atuação de sistemas, recursos e funcionalidades do avião associados a configuração para pouso.

				3	S- Monitorar/Alertar PF na adesão aos critérios de aproximação estabilizada e antecipação de procedimento de arremetida.
				3	S- Monitorar/Alertar PF na coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
7.1.2	134	Reconhecer e agir em alterações de situações de rajada de vento/tesoura de vento *[Recognizes and acts on changing conditions for wind shift/wind shear segment]* *[PF]*	Identificar o fenômeno meteorológico e agir prontamente *[Identify the meteorological phenomenon and promptly act]*	2	K- Caracterizar influências da alteração da direção e intensidade do vento na trajetória de descida do avião.
				2	K- Caracterizar componente de vento e limites do avião conforme manual do avião (*7).
				3	K- Caracterizar indicadores internos e externo dos fenômenos meteorológicos: rajada, tesoura de vento e microburst.
				3	S- Manter vigilância (*3) dos parâmetros do velocímetro, altímetros, razão e ângulo de descida.
				3	S- Determinar componente de vento agindo no avião conforme manual do avião (*7).
				3	S- Identificar indicadores dos fenômenos meteorológicos: rajada, tesoura de vento e microburst.
				3	S- Aderir aos limites do manual do avião (*7).
				3	S- Atuar conforme previsto no manual do avião (*7).
				5	A- Não hesitar e agir prontamente quando reconhecidos fenômenos meteorológicos perigosos ao pouso.
				3	S- Notificar/Alertar PF discrepâncias no reconhecimento e ações em alterações de situações de rajada de vento/tesoura de vento.
				3	S- Monitorar/Alertar PF sobre caracterização de indicadores internos e externo de rajada, tesoura de vento e microburst, e vigilância (*3) dos parâmetros do velocímetro, altímetros, razão e ângulo de descida.
				3	S- Monitorar/Alertar PF na determinação da componente de vento agindo no avião conforme manual do avião (*7).
				3	S- Monitorar/Alertar PF na adesão aos critérios de aproximação estabilizada e antecipação de procedimento de arremetida.
				3	S- Monitorar/Alertar PF na coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
7.1.3	135	Iniciar arredondamento *[Initiates flare]* *[PF]*	Identificar altura correta para o arredondamento *[Identify correct height to flare]*	1	K- Citar fatores que afetam na distância de arredondamento e pouso.
				1	K- Reconhecer marcas da pista e área de pouso e respectivas indicações de distância e limites de comprimento da pista.
				2	K- Caracterizar condições técnicas, configurações do avião, fatores atmosféricos, características e do avião e grupo moto propulsor que influenciam no arredondamento.
				2	K- Caracterizar importância de executar arredondamento na velocidade e atitude correta.
				2	K- Caracterizar influências de possíveis ilusões óticas.

				2	K- Demonstrar procedimentos operacionais e parâmetros afetos ao arredondamento conforme manual do avião (*7).
				3	S- Identificar altura correta para início do arredondamento.
				3	S- Aplicar comandos no manche, compensador (se requerido) e pedais para correção e manutenção da atitude.
				3	S- Iniciar o arredondamento conforme previsto no manual do avião (*7).
				3	A- Proporcionalidade e conforto na aplicação de comandos.
				3	S- Notificar/Alertar PF discrepâncias no início do arredondamento.
				3	S- Monitorar/Alertar PF sobre identificação da altura correta para iniciar o arredondamento.
				3	S- Monitorar/Alertar PF na determinação da componente de vento agindo no avião conforme manual do avião (*7).
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
7.1.4	136	Controlar potência *[Controls thrust]* *[PF]*	Manter consciência situacional adequada (*3) acerca da necessidade de ajustes *[Maintain adequate situational awareness (*3) regarding the need of adjustments]*	2	K- Caracterizar influências de ajustes no controle de potência no arredondamento e controle do avião e toque na zona de toque pista de pouso.
				2	K- Caracterizar fatores atmosféricos que influenciam na necessidade de controlar potência no arredondamento.
				5	S- Apreciar fatores atmosféricos que influenciam na necessidade de controlar potência no arredondamento.
				3	S- Aplicar ajustes no controle de potência para tocar zona de toque da pista de pouso.
				3	S- Atuar conforme previsto no manual do avião (*7).
				3	A- Proporcionalidade, conforto na aplicação de dos ajustes de potência, equilíbrio e predição na conjunção de comandos para controle do avião.
				3	S- Notificar/Alertar PF discrepâncias no controle de potência.
				3	S- Monitorar/Alertar PF sobre apreciação de fatores atmosféricos que influenciam na necessidade de controlar potência no arredondamento.
				3	S- Monitorar/Alertar PF na coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
7.1.5	137	Alcançar toque na zona de toque e eixo central da pista *[Achieves touchdown in touchdown zone on centre line]* *[PF]*	Realizar correções na trajetória lateral e vertical do avião [Make corrections to the airplane's lateral and vertical trajectory]	1	K- Citar a importância da manutenção do eixo central da pista durante arredondamento, toque e pouso.
				1	K- Reconhecer marcas da pista e área de pouso e respectivas indicações de distância e limites de comprimento da pista.
				2	K- Caracterizar relação entre toque fora da zona de toque e distância requerida de pouso.
				5	S- Apreciar fatores atmosféricos que influenciam no atingimento da zona de toque e eixo central da pista.
				3	S- Aplicar comandos no manche, compensador (se requerido) e pedais para alcançar toque na zona de toque e eixo central da pista.
				3	S- Alcançar toque na zona de toque e eixo central da pista.

				3	A- Agilidade, proporcionalidade e conforto na aplicação de comandos.
				3	S- Notificar/Alertar PF discrepâncias no alcançe da zona de toque e eixo central da pista no toque.
				3	S- Monitorar/Alertar PF sobre apreciação de fatores atmosféricos que influenciam no toque na zona de toque e eixo central da pista.
				3	S- Monitorar/Alertar PF na coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
7.1.6	138	Baixar o trem de pouso do nariz do avião *[Lowers nose wheel]* Ajustar atitude correta para toque na pista (*6) *[Adjust correct attitude to touch down (*6)]* *[PF]*	Aderir a procedimentos operacionais *[Adehe to operational procedures]* Julgar atitude correta (*6) *[Judge correct attitude(*6)]*	2	K- Caracterizar procedimentos e padrões operacionais para baixar o trem de pouso do nariz do avião, se aplicável, e característica do avião.
				2	(*6) K- Caracterizar importância da atitude correta do avião para o toque na pista.
				2	(*6) [K- Caracterizar procedimentos e padrões operacionais para o toque na pista.]
				4	S- Determinar velocidade adequada para baixar o trem de pouso, se aplicável, considerando elementos atmosféricos e dinâmica do avião.
				3	(*6) [S- Aplicar comandos no manche, compensador (se requerido) e pedais para correção e manutenção da atitude.]
				4	(*6) [S- Determinar e manter atitude correta para o toque na pista]
				3	S- Baixar o trem de pouso do nariz do avião, se aplicável.
				3	A- Proporcionalidade e conforto na aplicação de comandos, aplicável aos dois casos.
				3	S- Notificar/Alertar PF discrepâncias em baixar o trem de pouso do nariz do avião) ou ajustar atitude correta para toque na pista (*6).
				3	S- Monitorar/Alertar PF sobre velocidade adequada para baixar o trem de pouso considerando elementos atmosféricos e dinâmica do avião.
				3	S- Monitorar/Alertar PF sobre apreciação de fatores atmosféricos que influenciam no ajuste da atitude correta para toque na pista (*6).
				3	S- Monitorar/Alertar PF na coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
7.1.7	139	Manter eixo central da pista *[Maintains center line]* *[PF]*	Usar técnica correta para manter o eixo central da pista *[Use correct technique to maintain the center line]*	1	K- Citar técnicas de controle direcional do avião em condições adversas de vento, conforme previsto no manual do avião (*7), quando requerido.
				1	K- Reconhecer limitações [características especiais] de largura da pista.
				5	S- Apreciar influências do vento na trajetória do avião sobre o eixo central da pista, considerando suas limitações de largura e tipo da pista.
				4	S-Determinar maneira correta de realizar correções devidas.

				3	S- Aplicar comandos no manche, pedais [controle direcional] em função da trajetória do avião e vento presente.
				3	S- Realizar correções adequadas para garantir o alinhamento.
				3	S- Manter eixo central da pista.
				3	A- Agilidade, proporcionalidade e conforto na aplicação de comandos.
				3	S- Notificar/Alertar PF discrepâncias na manutenção do eixo central da pista.
				3	S- Monitorar/Alertar PF na determinação da componente de vento agindo no avião conforme limitações de largura e tipo de pista.
				3	S- Monitorar/Alertar PF na coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
7.1.8	140	Executar procedimentos pós-toque na pista *[Performs after-touchdown procedures]* *[PF]*	Gerenciar carga de trabalho *[workload management]*	2	K- Demonstrar procedimentos normais previstos conforme manual do avião (*7) para o pós-toque na pista.
				1	K- Citar possíveis limitações do grupo moto propulsor, quando aplicável, e de outros sistemas utilizados no pós-toque na pista.
				3	S- Gerenciar carga de trabalho (*3) e determinar prioridades adequadamente frente a realização de outras tarefas, se requerido.
				3	S- Atuar conforme previsto no manual do avião (*7).
				3	S- Executar checklists conforme manual do avião (*7).
				3	S- Manter adesão ao checklist, padrão operacional adotado ou manual do avião (*7).
				4	A- Priorizar controle e posicionamento seguro do avião frente ao início de outros procedimentos pós-toque.
				3	S- Notificar/Alertar PF discrepâncias nos procedimentos pós-toque na pista.
				3	S- Monitorar/Alertar PF no gerenciamento da carga de trabalho (*3) e determinação de prioridades adequadamente frente a realização de outras tarefas, se requerido.
				3	S- Monitorar/Alertar PF na execução de checklists conforme manual do avião (*7).
				3	S- Monitorar/Alertar PF na coordenação CTA e vigilância do posicionamento do avião.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
7.1.9	141	Fazer uso apropriado de freios e reversos *[Makes use of appropriate braking and reverse thrust]* *[PF]*	Gerenciar desaceleração do avião *[Manage airplane deceleration]*	1	K- Citar possíveis limitações do sistema de freios e reversos, quando aplicável, para livrar pista em uso em velocidade adequada de taxi.
				2	K- Caracterizar relação entre diferentes características e condições da pista e capacidade de frenagem.
				2	K- Demonstrar conhecimento da parte específica de distância e outros cálculos de pouso do manual do avião (*7).
				2	K- Caracterizar procedimentos e padrões operacionais para uso de freios e reversos, quando aplicável, e obtenção de máxima desaceleração.

				3	S- Acessar e decodificar distâncias declaradas da pista em uso para a decolagem, assim como seus valores.
				3	S- Aplicar freios e outros recursos conforme necessário para desaceleração adequada.
				3	S- Atuar conforme previsto no manual do avião (*7).
				4	S- Gerenciar taxa de desaceleração do avião.
				3	A- Proporcionalidade e conforto na aplicação de comandos.
				3	S- Notificar/Alertar PF discrepâncias no uso apropriado de freios e reversos.
				3	S- Monitorar/Alertar PF a taxa de desaceleração do avião, limites de freio e sistema de reverso.
				3	S- Monitorar/Alertar PF na apreciação das diferentes características e condições da pista, capacidade de frenagem do avião e utilização da pista.
				3	S- Monitorar/Alertar PF na coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
7.1.10	142	Livrar a pista em velocidade de taxi *[Vacates runway with taxi speed]* *[PF]*	Gerenciar carga de trabalho *[workload management]*	1	K- Citar limitações de velocidade conforme manual do avião (*7) para livrar a pista em velocidade de taxi.
				2	K- Caracterizar procedimentos e padrões operacionais para livrar a pista em velocidade de taxi.
				3	S- Aplicar comandos no controle de potência e freios para livrar a pista em velocidade de taxi.
				3	S- Livrar a pista em velocidade de taxi.
				3	A- Proporcionalidade e conforto na aplicação de comandos.
				3	S- Notificar/Alertar PF discrepâncias ao livrar a pista em velocidade de taxi.
				3	S- Monitorar/Alertar PF sobre velocidade adequada, parâmetros de motor, freios e direção e seus limites para livrar a pista em velocidade de taxi.
				3	S- Monitorar/Alertar PF na coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Given the prior normal operating condition of the aircraft and provisions about abnormal and emergency conditions according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Land the airplane on runway in use]*

Standard: *[Have landed the airplane within the parameters established for its configuration and characteristics of the runway in use and in accordance with the aircraft's manual, operational standard adopted [AOM] and operator's manual, and having cleared the runway in a safe manner.]*

Task: *[Perform systems operations and procedures]*				**Task No :** 7.2
1.Where performed: *[Airplane/Apron and taxiways]* **2.Triggering Event:** *[Identify need to operate airplane systems]* **3.Terminating Event:** *[Make plane available to complete taxi and park]*				**4. References/Standards for the task (if any):** ANAC - RBAC 91; Manual do avião [POH; AFM]; Air Operator´s Manual and AOM;
5.No :	**6.Sub-Tasks**	**7.Performance**	**L**	**8. Summary of K/S/A Requirements**

Sub-Task	Int Obj		Difficulties	oA	
7.2.1	73	Monitorar operação de todos sistemas *[Monitors operation of all systems]* *[PF]*	Manter consciência situacional adequada (*3) mediante realização de outras manobras *[Maintain adequate situational awareness (*3) while performing other maneuvres]*	2	K- Caracterizar o funcionamento de todos sistemas disponíveis.
				2	K- Caracterizar o funcionamento e características dos diversos modos de automação, se disponíveis.
				3	S- Identificar parâmetros normais estabelecidos pelo manual do avião (*7), quando requerido, para todos sistemas.
				3	S- Checar atuação dos sistemas, seus recursos e funcionalidades.
				5	A- Estima à riscos associados à complacência na monitoração da operação dos sistemas.
				3	S- Notificar/Alertar PF discrepâncias na operação de todos os sistemas.
				3	S- Monitorar/Alertar PF sobre parâmetros e condições nos sistemas do avião e suas funcionabilidades.
				3	S- Monitorar/Alertar PF sobre os efeitos de complacência (*3) na monitoração de sistemas.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
7.2.2	74	Operar sistemas conforme requerido *[Operates systems as required]* *[PF]*	Avaliar ação executada e seu resultado conforme esperado *[Evaluate action taken and its outcome as expected]*	2	K- Caracterizar o funcionamento de todos sistemas disponíveis e relevantes à fase do voo.
				2	K- Caracterizar relação entre os sistemas disponíveis e suas funcionalidades [comandos] no gerenciamento do voo.
				3	S- Identificar nível apropriado de automação conforme fase do voo e carga de trabalho (*3), se aplicável.
				3	S- Selecionar nível apropriado de automação, se aplicável.
				3	S- Usar comandos, executar procedimentos e alterações adequadas nos diversos sistemas e funcionalidades [comandos] do avião.
				5	S- Avaliar resultado dos comandos executados conforme o esperado.
				5	A- Não ser complacente (*3) pelo uso da automação.
				3	S- Notificar/Alertar PF discrepâncias na operação dos sistemas cnforme requerido.
				3	S- Monitorar/Alertar PF na diligência na consulta às referências técnicas sobre os sistemas conforme manual do avião (*7).
				3	S- Monitorar/Alertar PF na alterações requeridas aos comandos dos sistemas e avaliação dos resultados esperados conforme manual do avião (*7).
				3	S- Monitorar/Alertar PF sobre os efeitos de complacência pelo uso da automação na operação de sistemas.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Through normal, abnormal or emergency operation of the airplane, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Monitor and operate airplane systems as required.]*

Standard: *[Have monitored and operated airplane systems, according to the aircraft manual, adopted SOP [AOM], and operator's manual, when required.]*

Task: *[Manage abnormal and emergency situations]*				**Task No :** 7.3	
1.Where performed: *[Airplane/Apron and taxiways]* **2.Triggering Event:** *[Identify abnormal or emergency condition of the plane]* **3.Terminating Event:** *[Determine the end of the abnormal or emergency condition of the airplane]*				**4. References/Standards for the task (if any):** ANAC - RBAC 91; DECEA - ICA 100-12; ICA 100-37; MCA-100-16; Manual do avião [POH; AFM]; Air Operator´s Manual and AOM;	
5.No :		**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
Sub-Task	**Int Obj**				
7.3.1	27	Identificar condição anormal e de emergência *[Identifies the abnormal and emergency condition]* *[PF/PM]*	Manter consciência situacional adequada (*3) para caracterizar condição anormal/emergência. *[Maintain adequate situational awareness (*3) to characterize abnormal condition / emergency.]*	2 3 3 3 3 5 3 3 3	K- Demonstrar parâmetros normas e anormais dos sistemas relevantes do avião à fase da operação e condição identificada. S- Identificar alteração de parâmetros e/ou condições normais. S- Atuar conforme previsto no manual do avião (*7), quando requerido. S- Manter vigilância (*3) da subtarefa e de outros elementos do ambiente para manutenção do voo de forma segura. A- Manter-se alerta à possibilidade de eventos anormais e de emergência durante todo o período de operações normais. A- Estima à manutenção do estado de alerta elevado. S- Notificar/Alertar PF sobre ameaças externas. S- Monitorar/Alertar PF sobre condições anormais e de emergência no avião, seus sistemas, funcionabilidades, controles e parâmetros. S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
7.3.2	28	Interpretar a condição anormal e de emergência *[Interprets the abnormal and emergency condition]* *[PF/PM]*	Avaliar impactos operacionais da condição *[Assess the operational impacts of the condition]*	2 2 2 5 3 3 5 3 3 3	K- Demonstrar o funcionamento dos sistemas relevantes do avião à fase da operação e condição identificada. K- Descrever influências da condição identificada na operação do avião. K- Demonstrar o checklist ou parte correta do manual do avião (*7) para a lidar com a condição. S- Avaliar impactos da condição na operação do avião. S- Manter adesão ao checklist, padrão operacional adotado ou manual do avião (*7). S- Manter vigilância (*3) da subtarefa e de outros elementos do ambiente para manutenção do voo de forma segura. A- Diligência na consulta às referências técnicas adequadas em caso de dúvidas na interpretação da condição anormal. S- Notificar/Alertar PF discrepâncias na interpretação da condição anormal e de emergência. S- Monitorar/Alertar PF influência e impactos da condição, consultas tecnicas requeridas e vigilância do ambiente interno e externo. S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
7.3.3	29	Executar procedimentos para a condição anormal e de emergência *[Performs the procedure for the abnormal and emergency condition]*	Aderir a padrões operacionais adotados e a listas de verificação	2 2	K- Demonstrar o funcionamento dos sistemas do avião relevantes à fase da operação e condição identificada. K- Demonstrar conhecimento dos procedimentos anormais e de emergência relacionados com condição identificada.

		[PF/PM]	*[Adhere to adopted operational standards and checklists]*	3 3 4 3 3 3 5 4 3 3 3	K- Descrever influências da condição identificada na operação e em outros sistemas do avião. S- Escolher o checklist ou parte correta do manual do avião (*7) para a lidar com a condição. S- Atuar conforme avaliação anterior, dos impactos da condição na operação do avião. S- Gerenciar condição conforme execução correta do checklist, padrão operacional adotado ou manual do avião (*7). S- Manter adesão ao checklist, padrão operacional adotado ou manual do avião (*7). S-Comunicar/declarar condição perante CTA, quando aplicável. S- Manter vigilância (*3) da subtarefa e de outros elementos do ambiente para manutenção do voo de forma segura. A- Não hesitar e agir prontamente quando atingida condição de emergência e priorizar tarefas [voar, navegar e comunicar], quando aplicável. S- Notificar/Alertar PF discrepâncias na execução do procedimento da condição anormal e de emergência. S- Monitorar/Alertar PF nas consultas tecnicas requeridas, coordenação CTA e vigilância do ambiente interno e externo. S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Given the prior normal operating condition of the aircraft and provisions about abnormal and emergency conditions according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Extinguish the abnormal or emergency condition of the aircraft and define flight continuity.]*

Standard: *[Have performed and completed operational procedures according aircraft manual, adopted SOP [AOM], and operator's manual; extinguished the abnormal or emergency condition of the aircraft; and properly assessed the safety of the flight.]*

Task: *[Perform taxi-in and parking]*	**Task No :** 8.1
1.Where performed: *[Airplane/Apron and taxiways]* **2.Triggering Event:** *[Communicate and obtain ATC authorization to taxi]* **3.Terminating Event:** *[Make pilot available for post-flight airplane operations]*	**4. References/Standards for the task (if any):** ANAC - RBAC 91; IS 91-001; IS 91-21-001; DECEA - ICA 100-12; ICA 100-37; MCA 100-16; MCA 96-3; MCA-96-4; Manual do avião [POH; AFM]; Air Operator´s Manual and AOM;

5.No :		**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
Sub-Task	**Int Obj**				
8.1.1	18	Receber, verificar e aderir à autorização de táxi *[Receives, checks and adheres to taxi clearance]* *[PF/PM] (*8)*	Reconhecer e relacionar elementos da autorização com a etapa do voo. *[Recognize and relate elements of the authorization to the flight stage]*	1 2 3 3 3 3 3	K- Reconhecer simbologias utilizadas nas cartas de aeródromo e estacionamento. K- Demonstrar conhecimento sobre serviços de tráfego aéreo, sobre autorização de taxi e procedimentos padrões de fraseologia aeronáutica. S- Acessar e decodificar cartas de aeródromo e estacionamento relativas ao aeródromo. S- Escolher diferentes frequências de comunicação CTA. S- Comunicar-se de maneira clara, precisa, e concisa, considerando, no mínimo os elementos (*3): solicitação, recebimento, verificação e cotejamento de autorização CTA. S- Coletar e registrar informações da autorização de taxi. S- Verificar e cotejar autorização de taxi.

				4	A- Diligência na solicitação de confirmações em caso de dúvidas.
				5	A- Demonstrar consciência situacional e antecipação acerca da posição atual do avião frente a autorização CTA, trajeto e execução de outras tarefas.
				3	S- Notificar/Alertar PF discrepâncias no recebimento, verificação e adesão à autorização de taxi.
				3	S- Monitorar/Alertar PF sobre discrepâncias na utilização de cartas, uso de frequências de comunicação, coleta, registros de informações da autorização CTA e adesão à mesma.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
8.1.2	19	Taxiar avião, incluindo o uso de iluminação externa *[Taxis the airplane including use of exterior lighting]* *[PF]*	Manutenção de consciência situacional adequada. *[Adequate situational awareness maintenance]*	2	K- Descrever funcionamento do sistema utilizado para manter o controle do avião durante as operações de taxi.
				1	K- Citar velocidade máxima de taxi.
				1	K- Citar elementos da iluminação externa para movimentação do avião no aeródromo.
				2	K- Caracterizar os efeitos do jetblast do avião.
				3	S- Realizar taxi de maneira segura, conforme autorização CTA, utilizando comandos com suavidade e iluminação externa adequada.
				3	S- Manter vigilância (*3) da subtarefa em função de obstáculos na área de movimento do aeródromo, efeitos do jetblast frente a autorização CTA e execução de outras tarefas.
				4	A- Alocar maior atenção a elementos de risco externos.
				5	A- Diligência na comunicação e coordenação requerida em caso de desorientação.
				3	S- Notificar/Alertar PF sobre ameaças externas.
				3	S- Monitorar/Alertar PF sobre discrepâncias na realização do taxi, velocidade, uso de comandos e iluminação.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
8.1.3	143	Controlar velocidade de taxi *[Controls taxi speed]* *[PF/PM]*		1	K- Citar limitações de velocidade conforme manual do avião (*7) acerca da velocidade de taxi.
				2	K- Caracterizar procedimentos e padrões operacionais para controlar velocidade de taxi.
				3	S- Aplicar comandos no controle de potência e freios para controlar velocidade de taxi.
				3	S- Controlar velocidade de taxi.
				3	S- Atuar conforme previsto no manual do avião (*7).
				5	A- Não afetar a velocidade segura de taxi e segurança do avião por pressões externas.
				3	S- Notificar/Alertar PF discrepâncias no controle da velocidade de taxi.
				3	S- Monitorar/Alertar PF sobre velocidade adequada, parâmetros de motor e uso de freios no controle da velocidade de taxi.

				3	S- Monitorar/Alertar PF na coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
8.1.4	144 (22)	Manter eixo central da pista de taxi *[Maintains centre line]* *[PF]*		2	K- Descrever funcionamento e limitações dos sistemas utilizados para manter o controle do avião: grupo moto propulsor, de freios e direção.
				3	S- Gerenciar trajetória do avião, conforme autorização CTA, utilizando comandos de maneira segura, com suavidade e iluminação externa adequada.
				3	S- Manter o eixo central da pista de taxi efetuando correções caso necessário.
				5	A- Postura contingente e cuidadosa acerca do manuseio dos comandos dos sistemas e seus limites.
				3	S- Notificar/Alertar PF discrepâncias na manutenção do eixo central da pista de taxi.
				3	S- Monitorar/Alertar PF sobre correções necessárias no controle direcional no taxi.
				3	S- Monitorar/Alertar PF na coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
8.1.5	21	Manter vigilância acerca de tráfego e obstáculos conflitantes *[Maintains lookout for conflicting traffic and obstacles]* *[PF]*	Identificar perigos e avaliar riscos em meio a execução de outros procedimentos. *[Identify hazards and assess risks while performing other procedures]*	1	K- Reconhecer simbologias utilizadas nas cartas de aeródromos.
				1	K- Reconhecer simbologias utilizadas nas sinalizações verticais e horizontais nos aeródromos.
				3	S- Acessar e decodificar cartas de aeródromo e estacionamento associadas com a posição do avião o aeródromo.
				3	S- Decodificar simbologias utilizadas nas sinalizações verticais e horizontais nos aeródromos.
				3	S- Manter vigilância na frequência de comunicação CTA.
				3	S- Manter vigilância (*3) da subtarefa em função de obstáculos na área de movimento do aeródromo, efeitos do jetblast frente a autorização CTA e execução de outras tarefas.
				5	A- Postura avaliativa e contingente sobre a segurança do avião durante todo o taxi e complexidade do aeródromo.
				5	A- Assertividade na ocorrência de situações de risco a segurança do avião.
				3	S- Notificar/Alertar PF sobre ameaças externas, verbalização de tráfego, obstáculos e desvios.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
8.1.6	145	Identificar posição de parada *[Identifies parking position]* *[PF/PM]*	Manter consciência situacional adequada (*3) acerca da posição do avião *[Maintain adequate situational*	1	K- Reconhecer fonte de consulta oficial e publicações aeronáuticas referentes características, informações e limitações sobre uso de área de movimento do aeródromo.
				1	K- Reconhecer simbologias utilizadas nas cartas de aeródromo e estacionamento.
				3	S- Acessar e decodificar informações sobre área de movimento, cartas de aeródromo e estacionamento associadas com a posição do avião no aeródromo.

			awareness (*3) *regarding airplane position]*	3	S- Comunicar-se de maneira clara, precisa, e concisa [recepção e confirmação de posição de parada].
				4	S- Determinar a posição de parada através da carta de estacionamento e aeródromo ou de outros recursos disponíveis válidos, se aplicável.
				3	S- Orientar-se conforme instruções de taxi e parada CTA, cartas e meios disponíveis.
				3	S- Parar na posição de parada correta.
				5	A- Manter postura consultiva e cuidadosa acerca da confirmação da posição de parada utilizando-se as cartas de aeródromo e estacionamento.
				3	S- Notificar/Alertar PF discrepâncias na identificação da posição de parada.
				3	S- Monitorar/Alertar PF no reconhecimento e uso de cartas, orientação à trajetória do avião e adesão à autorização CTA, incluindo outras fontes apropriadas de verificação e vigilância do ambiente externo.
				3	S- Monitorar/Alertar PF na coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
8.1.7	146	Cumprir instrução de balizador/guia da posição *[Complies with marshaller/stand guidance]* *[PF/PM]*	Aderir a comunicação padrão e ao seu feedback *[Adhere to standard communication and its feedback]*	1	K- Reconhecer simbologias [gestos/sinais] utilizadas na comunicação entre piloto, CTA e equipe de solo.
				3	S- Comunicar-se com equipe de solo e CTA de maneira clara, precisa e concisa, utilizando fraseologia e simbologia padrão.
				3	S- Cumprir instrução de balizador/guia da posição.
				4	S- Gerenciar trajetória do avião, conforme autorização instrução de balizador/guia da posição de maneira segura e com suavidade.
				5	A- Consideração a elementos não técnicos [NOTECHS] (*3) na comunicação com pessoal de solo.
				3	S- Notificar/Alertar PF discrepâncias no cumprimento de balizador/guia da posição.
				3	S- Notificar/Alertar PF sobre uso comunicação com equipe de solo e CTA de maneira clara através de elementos técnicos e da comunicação relevantes e simbologia padrão.
				3	S- Notificar/Alertar PF sobre gerenciamento da trajetória do avião frente a instrução do balizador e elementos do ambiente externo.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
8.1.8	147	Aplicar procedimentos de parada e corte do motor *[Applies parking and engine shut-down procedures]* *[PF]*	Aderir a padrões operacionais adotados e a listas de verificação *[Adhere to adopted operational standards and to checklists]*	1	K- Citar limitações do grupo motopropulsor relacionadas ao corte do motor, incluindo de resfriamento para novo acionamento.
				2	K- Demonstrar procedimentos normais para parada e corte do motor.
				3	S- Executar procedimento de parada e corte do motor cumprindo os itens previstos pelos procedimentos normais.
				4	A – Manter adesão integral ao padrão operacional adotado e lista de verificação conforme manual do avião (*7).

				3	S- Notificar/Alertar PF discrepâncias no procedimento de parada e corte do motor.
				3	S- Notificar/Alertar PF sobre ameaças externas.
				3	S- Monitorar/Alertar PF sobre discrepâncias de parâmetros de motor, sistemas associados, condições anormais e de emergência acerca da parada e corte do motor.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
8.1.9	54	Concluir listas de verificação relevantes *[Completes relevant checklists]* *[PF/PM]*	Manter atenção e garantir confirmações, quando requeridas, a todos itens *[Maintain attention and ensure confirmations, when required, for all items]*	2	K- Demonstrar filosofia operacional adotada na leitura de listas de verificação de operações normais.
				3	S- Executar a lista de verificação.
				3	S- Determinar conclusão de procedimentos e verificações previstas na lista de verificação correspondente.
				5	A- Postura contingente e confirmativa a todos itens das listas de verificação.
				3	S- Notificar/Alertar PF sobre ameaças externas.
				3	S- Monitorar/Alertar PF sobre condições anormais e de emergência no avião, seus sistemas, funcionabilidades, controles e parâmetros.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[In possession of ATC taxi authorization, airport guidance charts and through standard communication procedures with ATC, ground crew, aircraft manual, operational standard adopted [AOM] and operator's manual.]*

Performance: *[Execute airplane taxiing procedure]*

Standard: *[Have safely operated the airplane during the taxi, according ATC taxi authorization, standard communication, and have prepared airplane for the post flight procedures according to the aircraft manual, operational standard adopted [AOM] and operator's manual.]*

Task: *[Perform airplane post-flight operations]* — **Task No :** 8.2

1.Where performed:
[Airplane/Apron]

2.Triggering Event:
[Prepare airplane and pilot for flight completion]

3.Terminating Event:
[Make pilot avaiable for system operations and procedures]

4. References/Standards for the task (if any):

ANAC - RBAC 91;
DECEA - ICA 100-12; ICA 100-37; MCA 100-16;
Manual do avião [POH; AFM];
Air Operator´s Manual and AOM;

5.No : Sub-Task	**Int Obj**	**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
8.2.1	149 (17)	Comunicar com pessoal de solo *[Communicates with ground personnel and crew]* *[PF]*	Aderir a comunicação padrão e ao feedback *[Adhere to standard communication and feedback]*	1	K- Reconhecer simbologias [gestos/sinais] utilizadas na comunicação entre piloto, CTA e equipe de solo.
				2	K- Citar elementos técnicos e aspectos relevantes acerca do avião e voo para serem comunicados com pessoal de solo.
				2	K- Demonstrar conhecimentos sobre diferentes frequências para comunicação CTA em aeródromos controlados ou não.
				3	S- Comunicar-se com equipe de solo e CTA de maneira clara, precisa e concisa, utilizando fraseologia e simbologia [gestos/sinais] padrão.
				3	S- Ater-se a elementos técnicos e aspectos relevantes acerca do avião e voo na comunicação com pessoal de solo e CTA.
				3	S- Checar (garantir feedback) (*3) entendimento das mensagens trocadas.
				5	A- Consideração a elementos não técnicos [NOTECHS] (*3) na comunicação com pessoal de solo.

				3	S- Notificar/Alertar PF discrepâncias na comunicação padrão com a equipe de solo e CTA.
				3	S- Notificar/Alertar PF sobre uso de frequências corretas e elementos técnicos e da comunicação relevantes.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
8.2.2	150	Preencher toda documentação requerida do voo *[Completes all required flight documentation]* *[PF/PM]*	Apontar códigos previstos para preenchimento correto da documentação *[Point out codes for the correct completion of the documents]*	1	K- Listar documentos que devem ser preenchidos após o voo.
				1	K- Reconhecer fontes de consulta oficiais acerca dos documentos que devem ser preenchidos após o voo, incluindo instruções de preenchimento.
				2	K - Demonstrar detalhes de preenchimento da documentação requerida após o voo, inclusive conforme manual do operador (*7).
				3	S- Preencher todos documentos corretamente.
				5	A- Diligência na consulta às referências técnicas adequadas em caso de dúvidas no preenchimento de toda documentação requerida do voo, conforme requisitos e informação técnica pertinente.
				4	A- Diligência sobre uso e interação com estrutura/suporte de manutenção e/ou apoio no caso de dúvidas sobre registro de informações de controle técnico do avião.
				4	A- Resolução de dúvidas sobre condição técnica do avião e aeronavegabilidade para próximo despacho.
				3	S- Notificar/Alertar PF discrepâncias no preenchimento de toda documentação requerida do voo.
				3	S- Monitorar/Alertar PF na diligência na consulta às fontes oficiais acerca da documentação a ser preenchida, seus dados, referências técnicas sobre o voo efetuado, e elementos para registro de informações de controle técnico do avião conforme manual do avião (*7) e manual do operador aéreo.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
8.2.3	151	Garantir acondicionamento [proteção, amarrações e guarda] do avião *[Ensures securing of the aeroplane]* *[PF]*	Registrar códigos e informações pertinentes de controle técnico do avião *[Log pertinent codes and technical data about the technical control about the airplane]*	1	K- Demonstrar procedimentos normais para acondicionamento do avião conforme manual do avião (*7) ou procedimentos afetos ao uso de estrutura/suporte de manutenção e/ou apoio utilizada para acondicionar o avião.
				1	K- Citar elementos importantes para acondicionamento do avião conforme manual do avião (*7) e responsabilidades, incluindo as do piloto, se utilizada estrutura/suporte de manutenção e/ou apoio.
				3	S- Executar acondicionamento do avião conforme manual do avião (*7) e procedimentos afetos ao uso de estrutura/suporte de manutenção e/ou apoio.
				3	A- Manter adesão ao procedimento adotado, conforme manual do avião (*7) ou procedimentos afetos ao uso de estrutura/suporte de manutenção e/ou apoio.
				3	S- Notificar/Alertar PF discrepâncias no condicionamento do avião.
				3	S- Monitorar/Alertar PF na adesão ao procedimento adotado, conforme manual do avião (*7) ou procedimentos afetos ao uso de estrutura/suporte de manutenção e/ou apoio.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

8.2.4	152	Informar assuntos relevantes do voo [pós voo] *[Conducts the debriefings]* *[PF]*	Sumariar elementos críticos de todo o voo *[Summarize critical elements of the entire flight]*	4 2 3 3 4 5 3 3 3	K- Relacionar comunicação efetiva e o bom relacionamento interpessoal (*3). K- Relacionar elementos de informação à tripulação de voo e cabine conforme manual do avião (*7) e operador aéreo (*7). S- Coletar evidências e associar elementos sobre procedimentos e comportamentos de tripulantes específicos ao voo, passageiros e segurança em geral, conforme manual do avião (*7) e operador aéreo (*7). S- Conduzir debriefings abordando procedimentos e comportamentos de tripulantes específicos ao voo, passageiros e segurança em geral, conforme manual do avião (*7) e operador aéreo (*7). A- Estruturação lógica na preparação e execução de debriefings. A- Consideração a elementos não técnicos [NOTECHS] (*3) na condução de briefings. S- Notificar/Alertar PF discrepâncias na informação de assuntos relevantes do voo. S- Monitorar/Alertar PF na associação de evidências à elementos relacionados com procedimentos e comportamentos de tripulantes específicos ao voo, passageiros e segurança em geral, conforme manual do avião (*7) e operador aéreo (*7). S- Reconhecer e aconselhar, quando aplicável e oportuno, sobre quaisquer erros cometidos [não aderência ao manual do operador] por outros membros da tripulação.

Task Terminal Objective

Condition: *[In possession of the information, required data and through standard communication procedures with the ground crew and according to the requirements, SOP [AOM] and operator´s manual.]*

Performance: *[Communicate with ground personnel and fill in post flight documents]*

Standard: *[Have communicated with the ground personnel according to standard communication and having filled out documentation required with correct information and data about the flight according to the requirements, SOP [AOM] and operator´s manual.]*

Task: *[Perform systems operations and procedures]* — **Task No :** 8.3

1.Where performed:
[Airplane/Apron]

2.Triggering Event:
[Identify need to operate aircraft systems]

3.Terminating Event:
[Make airplane ready to cut off engine]

4. References/Standards for the task (if any):

ANAC - RBAC 91;
Manual do avião [POH; AFM];
Air Operator´s Manual and AOM;

5.No : Sub-Task	Int Obj	6.Sub-Tasks	7.Performance Difficulties	LoA	8. Summary of K/S/A Requirements
8.3.1	73	Monitorar operação de todos sistemas *[Monitors operation of all systems]* *[PF/PM]*	Manter consciência situacional adequada (*3) mediante realização de outras manobras *[Maintain adequate situational awareness (*3) while performing other maneuvres]*	2 2 3 3 5 3	K- Caracterizar o funcionamento de todos sistemas disponíveis. K- Caracterizar o funcionamento e características dos diversos modos de automação, se disponíveis. S- Identificar parâmetros normais estabelecidos pelo manual do avião (*7), quando requerido, para todos sistemas. S- Checar atuação dos sistemas, seus recursos e funcionalidades. A- Estima à riscos associados à complacência na monitoração da operação dos sistemas. S- Notificar/Alertar PF discrepâncias na operação de todos os sistemas.

				3	S- Monitorar/Alertar PF sobre parâmetros e condições nos sistemas do avião e suas funcionabilidades.
				3	S- Monitorar/Alertar PF sobre os efeitos de complacência (*3) na monitoração de sistemas.
				3	S- Atuar [procedimentos e chamados (call-outs)] conforme manual do avião (*7) e manual do operador aéreo.
8.3.2	74	Operar sistemas conforme requerido *[Operates systems as required]* *[PF/PM]*	Avaliar ação executada e seu resultado conforme esperado *[Evaluate action taken and its outcome as expected]*	2	K- Caracterizar o funcionamento de todos sistemas disponíveis e relevantes à fase do voo.
				2	K- Caracterizar relação entre os sistemas disponíveis e suas funcionalidades [comandos] no gerenciamento do voo.
				3	S- Identificar nível apropriado de automação conforme fase do voo e carga de trabalho (*3), se aplicável.
				3	S- Selecionar nível apropriado de automação, se aplicável.
				3	S- Usar comandos, executar procedimentos e alterações adequadas nos diversos sistemas e funcionalidades [comandos] do avião.
				5	S- Avaliar resultado dos comandos executados conforme o esperado.
				5	A- Não ser complacente (*3) pelo uso da automação.
				3	S- Notificar/Alertar PF discrepâncias na operação dos sistemas cnforme requerido.
				3	S- Monitorar/Alertar PF na diligência na consulta às referências técnicas sobre os sistemas conforme manual do avião (*7).
				3	S- Monitorar/Alertar PF na alterações requeridas aos comandos dos sistemas e avaliação dos resultados esperados conforme manual do avião (*7).
				3	S- Monitorar/Alertar PF sobre os efeitos de complacência pelo uso da automação na operação de sistemas.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Through normal, abnormal or emergency operation of the airplane, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Monitor and operate airplane systems as required.]*

Standard: *[Have monitored and operated airplane systems, according to the aircraft manual, adopted SOP [AOM], and operator's manual, when required.]*

Task : *[Manage abnormal and emergency situations]*					**Task No :** 8.4
1.Where performed: *[Airplane/Apron]* **2.Triggering Event:** *[Identify abnormal or emergency condition of the plane]* **3.Terminating Event:** *[Determine the end of the abnormal or emergency condition of the airplane]*					**4. References/Standards for the task (if any):** ANAC - RBAC 91; DECEA - ICA 100-12; ICA 100-37; MCA-100-16; Manual do avião [POH; AFM]; Air Operator´s Manual and AOM;
5.No :		**6.Sub-Tasks**	**7.Performance Difficulties**	**LoA**	**8. Summary of K/S/A Requirements**
Sub-Task	**Int Obj**				
8.4.1	27	Identificar condição anormal e de emergência *[Identifies the abnormal and emergency condition]* *[PF/PM]*	Manter consciência situacional adequada (*3) para caracterizar condição	2	K- Demonstrar parâmetros normas e anormais dos sistemas relevantes do avião à fase da operação e condição identificada.
				3	S- Identificar alteração de parâmetros e/ou condições normais.
				3	S- Atuar conforme previsto no manual do avião (*7), quando requerido.

			anormal/emergência. *[Maintain adequate situational awareness (*3) to characterize abnormal condition / emergency.]*	3 3 5 3 3 3	S- Manter vigilância (*3) da subtarefa e de outros elementos do ambiente para manutenção do voo de forma segura. A- Manter-se alerta à possibilidade de eventos anormais e de emergência durante todo o período de operações normais. A- Estima à manutenção do estado de alerta elevado. S- Notificar/Alertar PF sobre ameaças externas. S- Monitorar/Alertar PF sobre condições anormais e de emergência no avião, seus sistemas, funcionabilidades, controles e parâmetros. S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
8.4.2	28	Interpretar a condição anormal e de emergência *[Interprets the abnormal and emergency condition]* *[PF/PM]*	Avaliar impactos operacionais da condição *[Assess the operational impacts of the condition]*	2 2 2 5 3 3 5 3 3 3	K- Demonstrar o funcionamento dos sistemas relevantes do avião à fase da operação e condição identificada. K- Descrever influências da condição identificada na operação do avião. K- Demonstrar o checklist ou parte correta do manual do avião (*7) para a lidar com a condição. S- Avaliar impactos da condição na operação do avião. S- Manter adesão ao checklist, padrão operacional adotado ou manual do avião (*7). S- Manter vigilância (*3) da subtarefa e de outros elementos do ambiente para manutenção do voo de forma segura. A- Diligência na consulta às referências técnicas adequadas em caso de dúvidas na interpretação da condição anormal. S- Notificar/Alertar PF discrepâncias na interpretação da condição anormal e de emergência. S- Monitorar/Alertar PF influência e impactos da condição, consultas tecnicas requeridas e vigilância do ambiente interno e externo. S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
8.4.3	29	Executar procedimentos para a condição anormal e de emergência *[Performs the procedure for the abnormal and emergency condition]* *[PF/PM]*	Aderir a padrões operacionais adotados e a listas de verificação *[Adhere to adopted operational standards and checklists]*	2 2 3 3 4 3 3 3 5	K- Demonstrar o funcionamento dos sistemas do avião relevantes à fase da operação e condição identificada. K- Demonstrar conhecimento dos procedimentos anormais e de emergência relacionados com condição identificada. K- Descrever influências da condição identificada na operação e em outros sistemas do avião. S- Escolher o checklist ou parte correta do manual do avião (*7) para a lidar com a condição. S- Atuar conforme avaliação anterior, dos impactos da condição na operação do avião. S- Gerenciar condição conforme execução correta do checklist, padrão operacional adotado ou manual do avião (*7). S- Manter adesão ao checklist, padrão operacional adotado ou manual do avião (*7). S-Comunicar/declarar condição perante CTA, quando aplicável. S- Manter vigilância (*3) da subtarefa e de outros elementos do ambiente para manutenção do voo de forma segura.

				4	A- Não hesitar e agir prontamente quando atingida condição de emergência e priorizar tarefas [voar, navegar e comunicar], quando aplicável.
				3	S- Notificar/Alertar PF discrepâncias na execução do procedimento da condição anormal e de emergência.
				3	S- Monitorar/Alertar PF nas consultas tecnicas requeridas, coordenação CTA e vigilância do ambiente interno e externo.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.

Task Terminal Objective

Condition: *[Given the prior normal operating condition of the aircraft and provisions about abnormal and emergency conditions according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*

Performance: *[Extinguish the abnormal or emergency condition of the aircraft and define flight continuity.]*

Standard: *[Have performed and completed operational procedures according aircraft manual, adopted SOP [AOM], and operator's manual; extinguished the abnormal or emergency condition of the aircraft; and properly assessed the safety of the flight.]*

Task: *[Communicate with cabin crew, passengers and company]* — **Task No :** 8.5

1.Where performed:
[Airplane/Apron]

2.Triggering Event:
[Consider the need for communication with cabin crew, passengers and air operator]

3.Terminating Event:
[Receive feedback on communication, if appropriate or required]

4. References/Standards for the task (if any):

ANAC - RBAC 91;
Air Operator´s Manual and AOM;

5.No : Sub-Task	5.No : Int Obj	6.Sub-Tasks	7.Performance Difficulties	LoA	8. Summary of K/S/A Requirements
8.5.1	30	Comunicar informação relevante à tripulação de cabine *[Communicates relevant information to cabin crew]* *[PF]*	Aderir a comunicação efetiva *[Adhere to effective communication]*	1	K- Citar elementos técnicos e aspectos relevantes acerca do avião, fase do voo e segurança em geral utilizados na comunicação com a tripulação de cabine, se aplicável.
				3	S- Comunicar-se com a tripulação de cabine, se aplicável, de maneira clara, precisa e concisa.
				3	S- Utilizar somente elementos técnicos e aspectos relevantes acerca do avião, fase do voo e segurança em geral na comunicação com a tripulação de cabine, se aplicável.
				3	S- Checar (garantir feedback) (*3) entendimento das mensagens trocadas com a tripulação de cabine, se aplicável.
				5	A- Consideração a elementos não técnicos [NOTECHS] (*3) na comunicação com a tripulação de cabine, se aplicável.
				3	S- Monitorar/Verificar, quando aplicável, ações e procedimentos [aderência ao manual do operador] de outros membros da tripulação.
				3	S- Reconhecer e aconselhar, quando aplicável e oportuno, sobre quaisquer erros cometidos [não aderência ao manual do operador] por outros membros da tripulação.
8.5.2	31	Comunicar informação relevante ao operador aéreo *[Communicates relevant information to company]* *[PF/PM]*	Aderir a comunicação efetiva *[Adhere to effective communication]*	1	K- Citar elementos técnicos e aspectos relevantes acerca do avião, andamento do voo, segurança em geral a outros pertinentes utilizados na comunicação com o operador aéreo.
				3	S- Comunicar-se com operador aéreo de maneira clara, precisa e concisa.
				3	S- Utilizar somente elementos técnicos e aspectos relevantes acerca do avião, andamento do voo, segurança em geral a outros pertinentes na comunicação com o operador aéreo.
				3	S- Checar (garantir feedback) (*3) entendimento das mensagens trocadas com o operador aéreo, quando oportuno.

				5	A- Consideração a elementos não técnicos [NOTECHS] (*3) na comunicação com a tripulação de cabine, se aplicável.
				3	S- Notificar/Alertar PF discrepâncias na comunicação de informação relevante ao operador aéreo.
				3	S- Monitorar/Alertar PF na obtenção e listagem de elementos relevantes para comunicação ao operador aéreo.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
8.5.3	32	Fazer anúncios a passageiros quando apropriado *[Makes passenger announcements when appropriate]* *[PF]*	Sumarizar e declarar somente informações relevantes *[Summarize and declare only relevant information]*	1	K- Citar elementos técnicos e aspectos relevantes acerca dos avisos, instruções verbais e proibições relacionados com os anúncios a passageiros, quando apropriado.
				3	S- Comunicar-se com passageiros de maneira clara, precisa e concisa, conforme provisões do Manual do Operador Aéreo e AOM.
				3	S- Ater-se a elementos técnicos e aspectos relevantes acerca do avião, fase do voo e segurança em geral na comunicação com a tripulação de cabine, se aplicável.
				3	S- Checar (garantir feedback) (*3) entendimento das mensagens trocadas com passageiros, se requerido.
				5	A- Consideração a elementos não técnicos [NOTECHS] (*3) na comunicação com a tripulação de cabine, se aplicável.
				3	S- Notificar/Alertar PF discrepâncias nos anúncios à passageiros quando apropriado.
				3	S- Monitorar/Alertar PF na obtenção e listagem de elementos relevantes para comunicação, comunicação e feedback dos passageiros.
				3	S- Atuar conforme manual do avião (*7) e manual do operador aéreo.
Task Terminal Objective					
Condition: *[Through normal, abnormal or emergency operation of the airplane, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]* **Performance:** *[Communicate cabin crew, passengers and air operator.]* **Standard:** *[Have cabin crew, passengers and air operator communicated about relevant aspects of the flight and safety issue elements to their appropriate actions, according to the aircraft manual, adopted SOP [AOM], and operator's manual.]*					

NOTE: ADAPTED FROM DOC 9941 AN/478, 1ST EDITION - TRAINING DEVELOPMENT GUIDE COMPETENCY-BASED TRAINING METHODOLOGY (ICAO, 2011)

Appendix 7: ANAC pilot´s proficiency and ICAO competencies relation

ANAC RBAC 61		ICAO DOC 9868 Part II - Appendix 1 to Chapter 1 ICAO COMPETENCY FRAMEWORK		Gap analysis
RBAC 61 – "Tasks statement" [ANAC VFR/IFR proficiency requirement]	RBAC 61 commercial pilot flight training requirements [61.99(a)(1)]; IFR training requirements [61.223(a)(5)(iii)]; and *IS 141-007A Units of content and directives [table 7-9] (*5).*	Competencies and it´s descriptions	Observable behaviors	
Reconhecer e gerenciar ameaças e erros. (*6) *[recognize and manage threats and errors] (*6)* 61.103(a)(1) / 61.223(a)(7)(i)	(i) reconhecimento e gerenciamento de ameaças e erros. *[recognition and management of threats and errors]* *"O CIAC deve proporcionar oportunidades onde o aluno é exposto a cenários ou discussões dirigidas pelo instrutor de forma a desenvolver a capacidade de reconhecer e gerenciar diferentes tipos de ameaça."* *"O CIAC pode ... selecionar acidentes significativos com a mesma classe de aeronave para que o instrutor debata com o aluno ... num briefing ou debriefing, ou pode ser uma leitura recomendada previamente... ao aluno que a discutirá posteriormente com o instrutor. Ou o CIAC pode construir cenários que envolvam, de maneira simulada, alguns tipos de ameaça. Ou o instrutor pode usar ainda de momentos do voo, em determinadas sessões de treinamento, para discutir diferentes tipos de ameaça."* *"Além das ameaças estabelecidas para o curso de piloto privado, é importante um piloto comercial se familiarizar com ameaças específicas para o voo profissional e o voo IFR..."* *"O CIAC deve ensinar ao aluno como gerenciar não só essas ameaças, como também técnicas para redução de erros e dos efeitos dos erros cometidos pelo piloto (TEM - Threat and Error Management). Isso inclui o correto uso de checklists (read-and-do, do-verify e challenge-response), técnicas para interrupção e retomada de checklist, callouts, padronização operacional, condução de briefings durante o voo, antecipação das ações do voo, comunicação assertiva, entre outros."*	Aplicação de procedimentos e conformidade com regulamentos: Identificar e aplicar procedimentos apropriados de acordo com as instruções operacionais publicadas e os regulamentos aplicáveis. *[Application of procedures and compliance with regulations: Identifies and applies appropriate procedures in accordance with published operating instructions and applicable regulations.]*	[OB] 1.1 - Identificar onde encontrar procedimentos e regulamentos. *[Identifies where to find procedures and regulations.]* [OB] 1.2 - Aplicar instruções operacionais, procedimentos e técnicas relevantes em tempo hábil. *[Applies relevant operating instructions, procedures and techniques in a timely manner.]* [OB] 1.3 - Seguir SOPs, a menos que um maior grau de segurança imponha um desvio apropriado. *[Follows SOPs unless a higher degree of safety dictates an appropriate deviation.]* [OB] 1.4 - Operar sistemas do avião e equipamentos associados corretamente. *[Operates aeroplane systems and associated equipment correctly.]* [OB] 1.5 - Monitorar o status dos sistemas da aeronave. *[Monitors aircraft systems status.]* [OB] 1.6 - Cumprir com regulamentos aplicáveis. *[Complies with applicable regulations.]* [OB] 1.7 - Aplicar conhecimento procedimental relevante. *[Applies relevant procedural knowledge.]*	Training need

Aplicar os conhecimentos aeronáuticos. *[apply aeronautical knowledge]* 61.103(a)(5) / 61.223(a)(7)(v) -/- Operar a aeronave dentro de suas limitações de emprego. *[operate the aircraft within its limitations]* 61.103(a)(2) / 61.223(a)(7)(ii) -/- Executar todas as manobras com suavidade e precisão. *[complete all manoeuvres with smoothness and accuracy]* 61.103(a)(3) / 61.223(a)(7)(iii) -/- Manter controle da aeronave durante todo	(ii) procedimentos anteriores ao voo, inclusive determinação de peso e balanceamento, inspeções e serviços de manutenção no avião. *"...planejar um voo em diferentes situações, por meio da exposição a diferentes cenários e missões... A exposição aos diferentes elementos será simulada pelo instrutor;* *...determinar ... peso de decolagem e compará-lo ... para as condições presentes;* *...consultar as diferentes fontes de informações meteorológicas, e interpretá-las de maneira adequada para o planejamento..., inclusive determinando a atualidade e validade das informações;* *...consultar a ficha de pesagem de uma aeronave e determinar seu balanceamento (tripulação e combustível) garantindo que o CG esteja dentro do envelope da aeronave...;* *...consultar as informações referentes aos aeródromos e espaços aéreos envolvidos na operação pretendida..., inclusive determinando a atualidade e validade das informações;* *...consultar e utilizar em seu planejamento as fontes de informação de navegação, inclusive determinando a atualidade e validade das informações;* *...determinar a aeronavegabilidade e os requisitos de manutenção de uma aeronave, por meio da consulta e do preenchimento da documentação normal daquela aeronave, ... identificar a validade e a atualidade das informações. ... identifique quando uma aeronave necessita realizar manutenção, quando ela está e quando ela não está aeronavegável.* *...providenciar o abastecimento de combustível, óleo e outros suprimentos necessários...;* *...efetuar o correto carregamento, acomodação e amarração de cargas e bagagens...;*	Gerenciamento de trajetória de voo do avião, automação: controlar a trajetória do voo por meio da automação. *[Aeroplane Flight Path Management, Automation: Controls the flight path through automation.]*	[OB] 3.1 - Usar gerenciamento de voo apropriado, sistemas de orientação e automação, conforme instalado e aplicável às condições (*2). *[Uses appropriate flight management, guidance systems and automation, as installed and applicable to the conditions (*2).]* [OB] 3.2 - Monitorar e detectar desvios da trajetória de voo pretendida e tomar ações adequadas. *[Monitors and detects deviations from the intended flight path and takes appropriate action.]* [OB] 3.3 - Gerenciar trajetória de voo com segurança para atingir o desempenho operacional ideal. *[Manages the flight path safely to achieve optimum operational performance.]* [OB] 3.4 - Manter a trajetória de voo pretendida durante o voo usando automação enquanto gerencia outras tarefas e distrações. *[Maintains the intended flight path during flight using automation while managing other tasks and distractions.]* [OB] 3.5 - Selecionar nível e modo apropriado de automação em tempo hábil, considerando a fase de voo e carga de trabalho. *[Selects appropriate level and mode of automation in a timely manner considering phase of flight and workload.]* [OB] 3.6 - Monitorar a automação com eficácia, incluindo a ativação e transições dos modos automáticos. *[Effectively monitors automation, including engagement and automatic mode transitions.]*	Training need
		Gerenciamento de trajetória de voo do avião, controle manual: controlar a trajetória de voo por meio do controle manual.	[OB] 4.1 - Controlar a aeronave manualmente com precisão e suavidade conforme apropriado para a situação. *[Controls the aircraft manually with accuracy and smoothness as appropriate to the situation.]* [OB] 4.2 - Monitorar e detectar desvios da trajetória de voo pretendida e tomar ações adequadas. *[Monitors and detects deviations from the intended flight path and takes appropriate action.]*	Training need

o tempo do voo, de modo que não ocorram dúvidas quanto ao êxito de algum procedimento ou manobra. *[maintain control of the aircraft at all times in a manner such that the successful outcome of a procedure or manoeuvre is assured]* 61.103(a)(6) / 61.223(a)(7)(vi) -/- Revelar bom julgamento e aptidão de pilotagem. *[exercise good judgement and airmanship]* 61.103(a)(4) / 61.223(a)(7)(iv)	*...efetuar o embarque de passageiros, incluindo as apropriadas instruções de segurança...;* *...compreender e executar os apropriados procedimentos de segurança da aviação civil (security), em diferentes situações;* *...identificar ... procedimentos de manutenção preventiva passíveis de serem realizados pelo próprio piloto..."* (ii) inspeção de pré-voo, utilização de lista de verificações, táxi e verificações antes da decolagem. *"...executar a inspeção pré-voo atentando para os detalhes relevantes ao voo por instrumento, como a condição de operacionalidade de instrumentos essenciais a esse tipo de voo;* *...executar a inspeção interna, preparação da cabine e configuração dos instrumentos de navegação para a saída (SID) ..., pré-selecionando frequências, rumos e/ou radiais de saída, altitudes de referência do procedimento...* *... taxiar para o ponto de espera executando as verificações antes da decolagem, inclusive o cheque de acuracidade do VOR...;* *...executar o briefing de decolagem destacando pontos críticos do procedimento de saída ... estabelecendo as ações de cada membro da tripulação em caso de emergência;*	*[Aeroplane Flight Path Management, manual Control: Controls the flight path through manual control.]*	[OB] 4.3 - Controlar manualmente o avião usando a relação entre a atitude, velocidade e potência do avião e sinais de navegação ou informações visuais. *[Manually controls the aeroplane using the relationship between aeroplane attitude, speed and thrust, and navigation signals or visual information.]* [OB] 4.4 - Gerenciar a trajetória do voo com segurança para atingir o desempenho operacional ideal. *[Manages the flight path safely to achieve optimum operational performance.]* [OB] 4.5 - Manter a trajetória de voo pretendida durante o voo manual enquanto gerencia outras tarefas e distrações. *[Maintains the intended flight path during manual flight while managing other tasks and distractions.]* [OB] 4.6 - Usar sistemas apropriados de gerenciamento e orientação de voo, conforme instalado e aplicável às condições*. *[Uses appropriate flight management and guidance systems, as installed and applicable to the conditions (*2).]* [OB] 4.7 - Monitorar eficazmente os sistemas de orientação de voo, incluindo a ativação e transições de modos automáticas. *[Effectively monitors flight guidance systems including engagement and automatic mode transitions.]*	

	...utilizar-se do checklist, seja no modo read-and-do ou challenge-response, para a execução das inspeções e verificações acima. (iii) operações em aeródromos e em circuitos de tráfego; precauções e procedimentos relativos à prevenção de colisões; (xiii) operações com origem, destino ou trânsito por aeródromos controlados, cumprindo os procedimentos dos serviços de controle de tráfego aéreo e os procedimentos e fraseologia de radiocomunicação; e (xiv) procedimentos e fraseologia para as comunicações. *"...conduzir operações em aeródromos controlados;* *...conduzir operações em aeródromos dotados de serviço de informação de voo (AFIS); e* *...conduzir operações em aeródromos desprovidos de órgãos ATS.* *...* *Um candidato à licença deve ser capaz de operar em circuitos de tráfego padrão e não padrão...para qualquer aeródromo... Deve manter adequada separação e consciência situacional em relação às outras aeronaves no circuito e na pista.* *...deve ser capaz de utilizar procedimentos de comunicação e fraseologia padrão, em situações normais, anormais e de emergência, bem como aplicar os corretos procedimentos em caso de falha de comunicações, conforme as regras do ar."* (iii) procedimentos e manobras para operações em voo por instrumentos em condições normais, anormais e de emergência que compreendam, no mínimo: (A) transição para voo por instrumentos na decolagem; (B) saídas e aproximações por instrumentos padronizadas; (C) procedimentos de voo por instrumentos em voo de navegação; (D) procedimentos de espera; (E) aproximações por instrumentos nos mínimos especificados; (F) procedimento de aproximação perdida por instrumentos; e (G) aterrissagem a partir de aproximações por instrumentos.	Consciência situacional e gerenciamento de informações: perceber, compreender e gerenciar informações e antecipar seus efeitos na operação. *[Situational awareness and management of information: Perceives, comprehends and manages information and anticipates its effect on the operation]*	[OB] 7.1 - Monitorar e avaliar o estado do avião e seus sistemas. *[Monitors and assesses the state of the aeroplane and its systems.]* [OB] 7.2 - Monitorar e avaliar o estado de energia do avião e sua trajetória de voo prevista. *[Monitors and assesses the aeroplane's energy state, and its anticipated flight path.]* [OB] 7.3 - Monitorar e avaliar o ambiente geral, tal como pode afetar a operação. *[Monitors and assesses the general environment as it may affect the operation.]* [OB] 7.4 - Validar a precisão das informações e verificar erros graves. *[Validates the accuracy of information and checks for gross errors.]* [OB] 7.5 - Manter consciência das pessoas envolvidas ou afetadas pela operação e sua capacidade de desempenhar conforme o esperado. *[Maintains awareness of the people involved in or affected by the operation and their capacity to perform as expected.]* [OB] 7.6 - Desenvolver planos de contingência eficazes com base nos riscos potenciais associados a ameaças e erros. *[Develops effective contingency plans based upon potential risks associated with threats and errors.]* [OB] 7.7 – Responder a indicações de consciência situacional reduzida. *[Responds to indications of reduced situational awareness.]*	
		Liderança e Trabalho em Equipe: Influenciar outras pessoas a contribuir para um propósito comum.	[OB] 5.1 - Encorajar participação da equipe e comunicação aberta. *[Encourages team participation and open communication.]* [OB] 5.2 - Demonstrar iniciativa e fornecer orientação quando necessário.	Training need

	"...realizar procedimento de pouso por instrumentos e execução de callouts, inclusive nos mínimos meteorológicos para o procedimento...; *...realizar procedimento de saída por instrumentos e execução de callouts;* *...planejar, conduzir, gerenciar e adotar procedimentos de contingência durante a navegação entre aeródromos se utilizando de instrumentos de rádio navegação e/ou GNSS;* *...comunicar e cumprir as instruções do controle de tráfego aéreo;* *...realizar procedimento de saída, aproximação e pouso por instrumento com pane simulada em alguns equipamentos e/ou instrumentos...;* *...identificar e realizar um procedimento de espera em órbita;* *...realizar procedimento de aproximação perdida durante o procedimento de pouso por instrumentos e execução de callouts;* *...realizar procedimentos de não-precisão NDB... VOR... VOR/DME, Arco DME, LOC, PBN LNAV, e PBN LNAV/VNAV;* *...realizar procedimentos de precisão ILS... de precisão PBN LPV ou PBN GLS;* *...compreender procedimentos RNP AR e ILS CAT II e III e a necessidade de atender requisitos especiais para a realização destes procedimentos."* (iv) controle do avião utilizando referências visuais externas. *"... conduzir um avião, em todas as fases do voo, utilizando referências visuais....* *O voo deve ser efetivamente controlado, com a aplicação coordenada e apropriada dos comandos...*	Colaborar para cumprir as metas da equipe. *[Leadership and Teamwork: Influences others to contribute to a shared purpose. Collaborates to accomplish the goals of the team.]*	*[Demonstrates initiative and provides direction when required.]* [OB] 5.3 - Envolver outras pessoas no planejamento. *[Engages others in planning.]* [OB] 5.4 - Considerar contribuições dos outros. *[Considers inputs from others.]* [OB] 5.5 - Dar e receber comentários de forma construtiva. *[Gives and receives feedback constructively.]* [OB] 5.6 - Abordar e resolver conflitos e desacordos de maneira construtiva. *[Addresses and resolves conflicts and disagreements in a constructive manner.]* [OB] 5.7 - Exercer liderança decisiva quando necessário. *[Exercises decisive leadership when required.]* [OB] 5.8 - Aceitar responsabilidade por decisões e ações. *[Accepts responsibility for decisions and actions.]* [OB] 5.9 - Executar instruções quando orientado. *[Carries out instructions when directed.]* [OB] 5.10 - Aplicar estratégias de intervenção eficazes para resolver desvios identificados. *[Applies effective intervention strategies to resolve identified deviations.]* [OB] 5.11 - Gerir desafios culturais e de idioma, conforme aplicável. *[Manages cultural and language challenges, as applicable.]*	
		Gerenciamento de carga de trabalho: manter a capacidade de carga de trabalho disponível, priorizando e distribuindo tarefas usando os recursos apropriados.	[OB] 8.1 - Exercer autocontrole em todas as situações. *[Exercises self-control in all situations.]* [OB] 8.2 - Planejar, priorizar e programar tarefas apropriadas de forma eficaz. *[Plans, prioritizes and schedules appropriate tasks effectively.]* [OB] 8.3 - Gerenciar o tempo de forma eficiente ao realizar tarefas. *[Manages time efficiently when carrying out tasks.]*	Training need

	...conhecer a operação correta dos diversos sistemas da aeronave e todos os seus procedimentos normais e de emergência, bem como técnicas de operação para diversas situações...” (iv) manobras em voo e características peculiares de voo. *“...conduzir um avião, em todas as fases do voo, utilizando referências apenas por instrumentos (exceto nos momentos anteriores a decolagem e posteriores ao pouso).* (v) voo em velocidades críticas baixas, reconhecimento e recuperação de pré-estol, estol completo e parafuso; e (vii) voo em velocidades críticas altas e saída de picadas em espiral. *...manter o controle adequado da aeronave em velocidades baixas, próximas ao estol;* *...reconhecer e recuperar um pré-estol, estol completo e parafuso... em diferentes configurações da aeronave, em voo reto, em curva e em subida.* *...reconhecer e evitar os fatores que levam a um estol ou parafuso no circuito de tráfego, numa aproximação, e em voo de cruzeiro;* *...reconhecer e recuperar de uma atitude anormal de nariz cabrado, nariz picado, velocidade anormal e grande inclinação; e* *...reconhecer e recuperar de um mergulho em espiral.”* (viii) decolagens e aterrissagens normais e com vento de través; e (ix) decolagens de máximo desempenho (pista curta e ultrapassagem de obstáculos), aterrissagens em pista curta *“...decolar e pousar o avião em pistas de diferentes tipos e situações. ...experiências reais de decolagem e pouso normais,*	*[Workload Management: Maintains available workload capacity by prioritizing and distributing tasks using appropriate resources]*	[OB] 8.4 - Oferecer e prover assistência. *[Offers and gives assistance.]* [OB] 8.5 - Delegar tarefas. *[Delegates tasks.]* [OB] 8.6 - Solicitar e aceitar assistência, quando apropriado. *[Seeks and accepts assistance, when appropriate.]* [OB] 8.7 - Monitorar, revisar e confirmar ações de forma consciente. *[Monitors, reviews and cross-checks actions conscientiously.]* [OB] 8.8 - Verificar se tarefas são concluídas conforme esperado. *[Verifies that tasks are completed to the expected outcome.]* [OB] 8.9 - Gerenciar e retomar interrupções, distrações, variações e falhas de forma eficaz durante a execução de tarefas. *[Manages and recovers from interruptions, distractions, variations and failures effectively while performing tasks.]*	
		Comunicação: Comunicar-se por meios apropriados no ambiente operacional, em situações normais e não normais. *[Communication: Communicates through appropriate means in the operational environment, in both normal and non-normal situations.]*	[OB] 2.1 - Determinar que o destinatário está pronto e apto para receber informações. *[Determines that the recipient is ready and able to receive information.]* [OB] 2.2 - Selecionar apropriadamente o quê, quando, como e com quem se comunicar. *[Selects appropriately what, when, how and with whom to communicate.]* [OB] 2.3 - Transmitir mensagens de forma clara, precisa e concisa. *[Conveys messages clearly, accurately and concisely.]* [OB] 2.4 - Confirmar que o destinatário demonstra compreensão de informações importantes. *[Confirms that the recipient demonstrates understanding of important information.]* [OB] 2.5 - Escutar ativamente e demonstrar compreensão ao receber informações.	Training need

	com vento de través, curtos e com obstáculos. Obstáculos e pistas curtas podem ser simulados. *...tomar a decisão de arremeter, e executar uma arremetida quando necessário.* *...experiências que envolvam diversos tipos de pavimento...reconhecer os efeitos de diferentes intensidades e direções de vento... altitudes e temperaturas no desempenho de decolagem, pouso e arremetida de um avião."* (x) manobras básicas de voo e recuperação de atitude anormal por referência somente dos instrumentos básicos de voo. *"...realizar curvas padrão niveladas e cronometradas num tempo determinado com velocidade constante, efetuando callouts...corrigir a manobra;* *...executar subidas e descidas com variação de altitude com razão e velocidade constante e pré-especificada, em voo reto ou em curva, efetuando callouts...corrigir a monobra;* *...recuperar o voo normal da aeronave utilizando os instrumentos da aeronave e sem visão ou referência externa;* *...reconhecer e recuperar de uma atitude anormal de nariz cabrado, nariz picado, velocidade anormal e grande inclinação com referência apenas aos instrumentos do painel da aeronave."* (xi) voo de navegação por referências visuais, navegação estimada e, quando aplicável, com auxílio de rádio navegação. *"...utilizar as técnicas de navegação visual... com os procedimentos para estabelecer sua localização...;* *...identificar referências significativas para uso em seu planejamento e identificar diferentes tipos de referências em voo;*		*[Listens actively and demonstrates understanding when receiving information.]* [OB] 2.6 - Fazer perguntas relevantes e eficazes. *[Asks relevant and effective questions.]* [OB] 2.7 - Usar escalonamento (*3) apropriado na comunicação para resolver os desvios identificados. *[Uses appropriate escalation (*3) in communication to resolve identified deviations.]* [OB] 2.8 - Usar e interpretar comunicação não verbal de forma adequada à cultura organizacional e social. *[Uses and interprets non-verbal communication in a manner appropriate to the organizational and social culture.]* [OB] 2.9 – Aderir à fraseologia padrão e procedimentos. *[Adheres to standard radiotelephone phraseology and procedures.]* [OB] 2.10 - Ler, interpretar, elaborar e responder com precisão a mensagens de datalink (*4) em inglês. *[Accurately reads, interprets, constructs and responds to datalink (*4) messages in English.]*	
		Resolução de problemas e tomada de decisão: identificar precursores, mitigar problemas; e tomar decisões. *[Problem-solving and decision-making: Identifies precursors, mitigates problems; and makes decisions]*	[OB] 6.1 - Identificar, avaliar e gerenciar ameaças e erros em tempo hábil. *[Identifies, assesses and manages threats and errors in a timely manner.]* [OB] 6.2 - Buscar informações precisas e adequadas de fontes apropriadas. *[Seeks accurate and adequate information from appropriate sources.]* [OB] 6.3 - Identificar e verificar o quê e por quê coisas deram errado, se apropriado. *[Identifies and verifies what and why things have gone wrong, if appropriate.]* [OB] 6.4 - Perseverar em resolver problemas priorizando a segurança. *[Perseveres in working through problems while prioritizing safety.]*	Training need

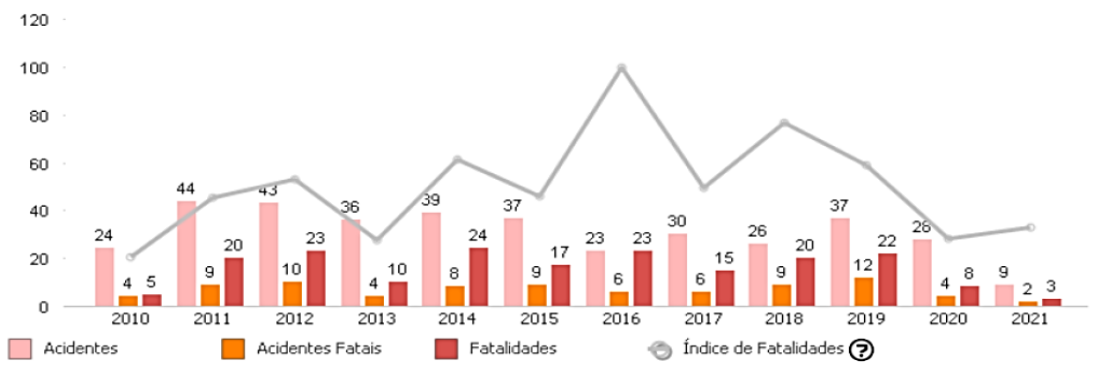
	...planejar seu voo com a seleção de regime de potência, altitude e velocidade apropriados..., incluindo ao menos um regime de alta velocidade e um regime de máximo alcance, com cálculo de distância de decolagem e pouso, tempo de subida e do ponto ideal de descida; *...retomar sua navegação quando afastado da rota pelo ATC ou por outras circunstâncias;* *...determinar se o aeródromo de destino possui condições de aproximação e pouso, e julgar a necessidade de prosseguir para uma alternativa adequada, incluindo o recálculo da navegação em voo...;* *...gerenciar adequadamente seu combustível em um voo de navegação, inclusive com a determinação de combustível mínimo ou crítico e procedimentos a serem realizados nessa situação;* *...reconhecer a degradação das condições meteorológicas e tomar providências para não entrar em condições IMC, bem como recuperar-se de uma entrada inadvertida em IMC, ou de um voo sem contato visual com o solo;* *...planejar e executar um voo de navegação visual de maneira que minimize os riscos em caso de uma falha de motor ou outra falha crítica;* *...utilizar um auxílio de rádio navegação para localizar um aeródromo numa emergência, se necessário;* *...preparar a aeronave para pernoite ou permanência estendida fora de base, em um pátio ou hangar."* (xii) operações de emergência, incluindo falhas simuladas de equipamentos do avião. *...reconhecer e executar os procedimentos apropriados para:* *...emergências de solo, na partida e/ou no táxi, incluindo fogo, pane de freios e/ou perda de controle direcional;*		[OB] 6.5 - Identificar e considerar opções apropriadas. *[Identifies and considers appropriate options.]* [OB] 6.6 - Aplicar técnicas de tomada de decisão apropriadas e oportunas. *[Applies appropriate and timely decision-making techniques.]* [OB] 6.7 - Monitorar, rever e adaptar decisões conforme necessário. *[Monitors, reviews and adapts decisions as required.]* [OB] 6.8 - Adapta-se quando confrontado com situações em que não existe orientação ou procedimento. *[Adapts when faced with situations where no guidance or procedure exists.]* [OB] 6.9 - Demonstrar resiliência ao encontrar um evento inesperado. *[Demonstrates resilience when encountering an unexpected event.]*	

	...emergências na decolagem, ...incursão de pista, perda de reta e/ou falha de motor; *...emergências na subida, voo de cruzeiro e/ou descida, incluindo falhas de motor, falhas de comunicação e panes elétricas, e outras emergências envolvendo os sistemas da aeronave;* *...falhas de motor em geral, em diferentes situações, incluindo voo de planeio e seleção e aproximação para um local adequado para o pouso, com o reconhecimento de diferentes características dos campos abertos...;* *...emergências ou situações críticas envolvendo passageiros;* *...emergências em rota, ou envolvendo aeródromos impraticáveis, incluindo o aeródromo que se torna impraticável após o início da aproximação."*			

Notes:
[Green marked Items] – Observable behaviors supposed to be associated with ANAC available current provisions [tasks and conditions].
[Red marked Items] – Observable behaviors supposed not to be associated with ANAC available current provisions [tasks and conditions], meaning training needs.
[Grey marked Items] – ANAC available current provisions [tasks and conditions] related to the IFR rating training course.

(*1) – The requirement [61.99(a)(1)(vi)] is related to asymmetric power, multi engine rating, not considered in the study.
(*2) – Conditions: An element related to the performance criterion, that qualities the environment where activities or tasks are performed, according FIGURE 12. The conditions are often adapted towards stages of training.
(*3) – The appropriate escalation in communication refers to the assertive behavior depending on the hazards and risks involved on operational environment.
(*4) – Datalink is a digital system that enables air and ground communications between ground stations and aircrafts.
(*5) – The Units of contents texts are only the remarkable part of the full statements listed on IS 141-007A as to support the comparison among ICAO [OB]. Attention must be addresses to the fact that these texts are not considered competencies.
(*6) – The TEM elements on the column of the ICAO previsions are embedded among other competencies descriptions.

Appendix 8: Accidents and incidents data analysis



Contributing factors:	Workgroup culture: 0.70 %
	Support systems: 0.70 %
Pilot judgment: 15.59%	Emotional state: 0.70 %
Flight planning: 9.28%	Interpersonal Relations: 0.70 %
Manual handling: 8.41 %	Managerial planning: 0.70 %
Decision-making process: 7.88 %	Influence of the environment: 0.53 %
Aircraft maintenance: 7.01 %	Communication: 0.53 %
Attitude: 6.13 %	Work´s Organization [inlfuences]: 0.53 %
In-flight indiscipline: 5.95 %	Cabin coordination: 0.53 %
Poor pilot experience: 5.78 %	Support staff: 0.35 %
Managerial supervision: 4.20 %	Others: 0.35 %
Adverse weather conditions: 4.03 %	Unconsciousness: 0.18 %
Perception: 3.85 %	Aircraft Manufacturing: 0.18 %
Attention: 1.93 %	ATS Publications: 0.18 %
Motivation: 1.93 %	Illness: 0.18 %
Airport infrastructure: 1.58 %	ATS knowledge standards: 0.18 %
Disorientation: 1.40 %	Navigation deviation: 0.18 %
Capacitation / training: 1.40 %	Alcohol: 0.18 %
Flight Instruction: 1.40 %	Indications of stress: 0.18 %
Pilot lapses [neglect]: 1.23 %	Radio-comm. phraseology: 0.18 %
Organizational processes: 0.88 %	Organizational climate: 0.18 %
Memory issues: 0.88 %	External influences: 0.18 %
Organizational Culture: 0.88 %	Team Dynamics: 0.18 %

Whereas:
"Acidentes" means accidents.
"Acidentes fatais" means fatal accidents.
"Fatalidades" means fatalities.
"Índice de fatalidade" means a index of sum of fatalities divided by sum of accidents.

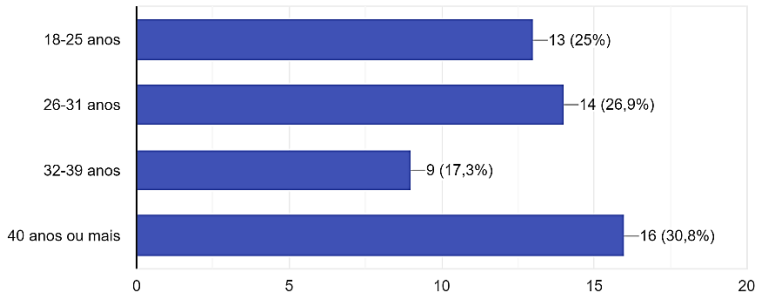
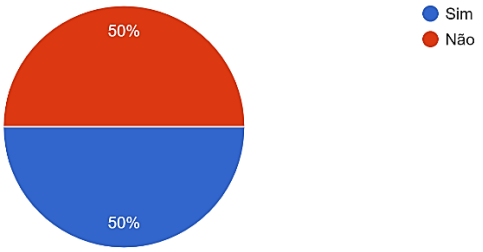
NOTE: ADAPTED FROM SIPAER PAINEL [PANNEL] (CENIPA, 2021).

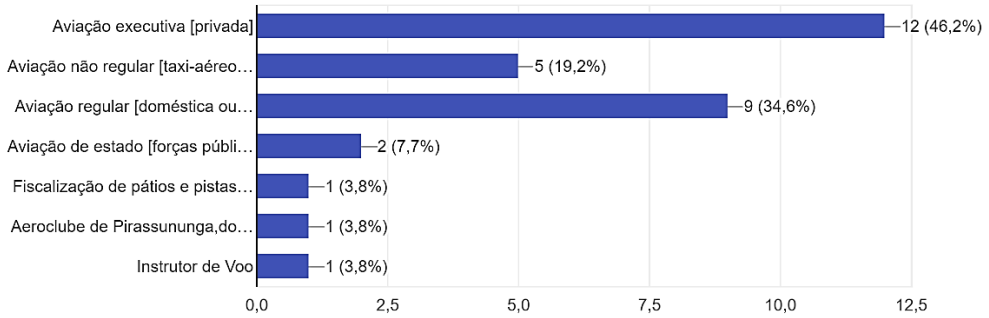
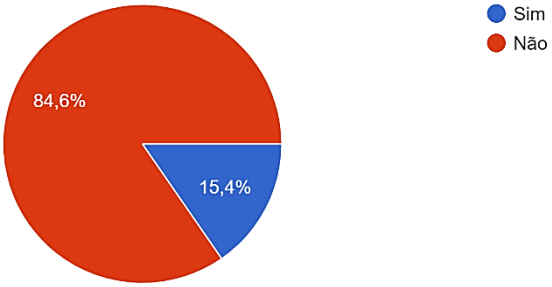
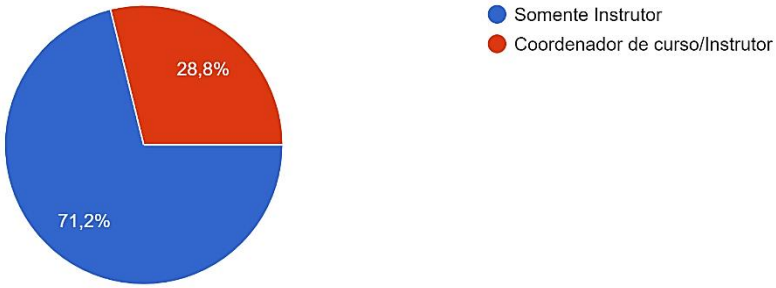
Appendix 9: Flight schools staff inquiry outcome

Inquiry's elements - A demographic and a CBTA inquiry from flight school´s staff

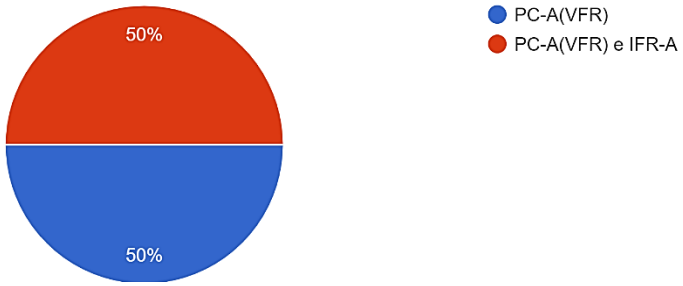
Universe of participants: 52 [42%] answers from the total of 124 flight schools [40 days - May 04th, 21 until June 13th 2021]

Themes:
- 1 - Pilot´s demographical information.
- 2 - Flight school´s characteristics
- 3 - Pilot´s general perceptions about the value of CBT training / Assessment
- 4 - Pilot´s general perceptions about current training syllabus and curriculum
- 5 - ANAC general current provisions regarding CBTA

	Nº	Question	Answer / Options
1	.1	Quantidade de escolas participantes e respostas registradas: *[Number of participating flight schools and registered answers]*	*[No answer must be registered for this question, made for percentage purposes on the participants of each flight school enrolled on the study.]*
		Outcome: 52 answers Considered only the number of participants due to the confidentiality of the answers. 52 answers from 25 [20,16%] different participating flight schools.	
	.2	Idade média dos participantes: *[Participant´s average age]*	13 [18-25 anos *(years)*] 14 [26-31 anos (years)] 09 [32-39 anos (years)] 16 [40 anos ou mais (years or *more)*]
		Outcome: 52 answers  	
	.3	Porcentagem dos participantes que já atuou em outro segmento da aviação civil: *[Percentage of participants who already have worked in another segment of civil aviation]*	26 [Sim *(yes)*] – *go to question 1.3.1* 26 [Não *(no)*] – *go to question 1.4*
		Outcome: 52 answers  	
	.3.1	Somente se [SIM] na pergunta anterior, em quais segmentos: *[Only if (YES) in the previous question, in which segments]*	12 [Aviação executiva (privada)] *(Executive / private)* 05 [Aviação não regular (taxi-aéreo) e/ou Serviço Aéreo Especializado (SAE)] *(Non-scheduled or Specialized Air Service)* 09 [Aviação regular (doméstica ou bandeira)] *(domestic or flag)*

		02 [Aviação de estado (forças públicas, polícia, governos etc.)] *(public forces, police, governments, etc.)* 03 [Outro:] *(others)* *[answers with not significative content]*
Outcome: 26 answers  		
.4	Porcentagem dos participantes que tem alguma habilitação de "tipo" [type-rating] vinculada à sua licença: *[Percentagem of particpants who have a "type-rating" associated to their license]*	08 [Sim (yes)] 44 [Não (no)]
Outcome: 52 answers  		
.5	Função no CIAC dos participantes: *[Participant´s role at the flight school:]*	37 [Somente Instrutor] *(Instructor only)* 15 [Coordenador de curso/Instrutor] *(Coordinator/Instructor)*
Outcome: 52 answers  		
.6	Cursos nos quais os participantes coordenam e/ou instruem: *[Courses in which the participants coordinate and/or instruct]*	26 [PC-A(VFR)] *(CPL/VFR)* 26 [PC-A(VFR) e IFR-A] *(CPL/VFR and IFR)*

Outcome: 52 answers

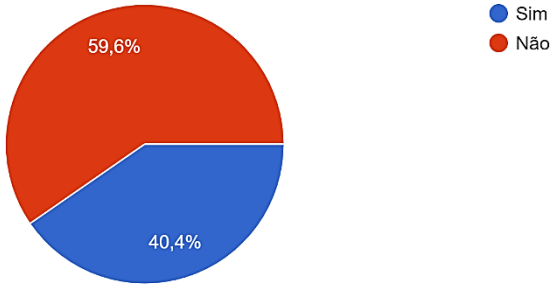


.7	Quantidade de horas de voo acumulas em instrução dos participantes, aproximadamente: *[Approximately quantity of the participant´s accumulated flight hours on instruction]*	09 [menos de 100 a 250] *(less than 100 to 250)* 04 [250 a 500] *(250 to 500)* 16 [500 a 1000] *(500 to 1000)* 22 [mais de 1000 horas de instrução] *(more than 1000)*

Outcome: 51 answers

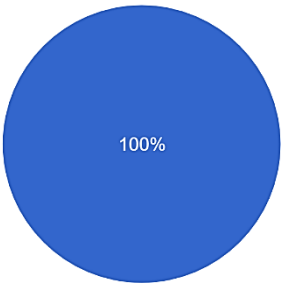
.8	Porcentagem dos participantes que já ouviu falar de treinamento e avaliação baseados em competência (CBTA) antes das informações sobre esse estudo e pesquisa: *[Percentage of participants who already have heard about competency-based training and assessment (CBTA) before this study and research]*	21 [Sim (yes)] – go to question 1.8.2 until 1.8.6 31 [Não (no)] – go to question 1.8.1

Outcome: 52 answers



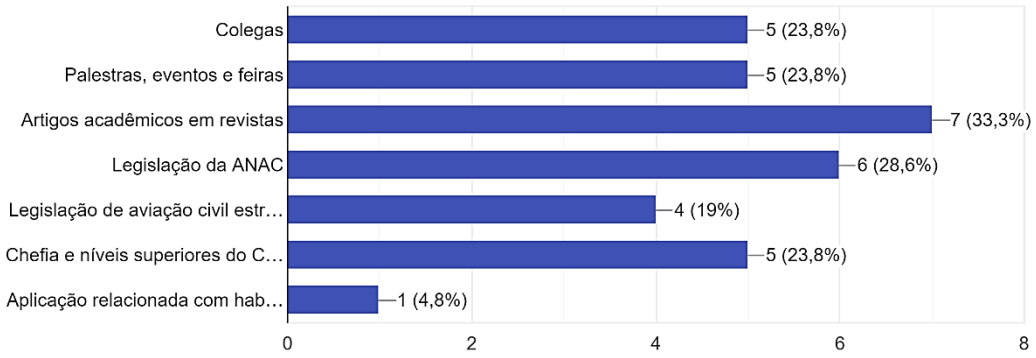
.8.1	Porcentagem dos participantes disposta a conhecer mais sobre o tema: *[Percentage of the participants willing to know more about the topic]*	31 [Sim (yes)] 00 [Não (no)]

Outcome: 31 answers



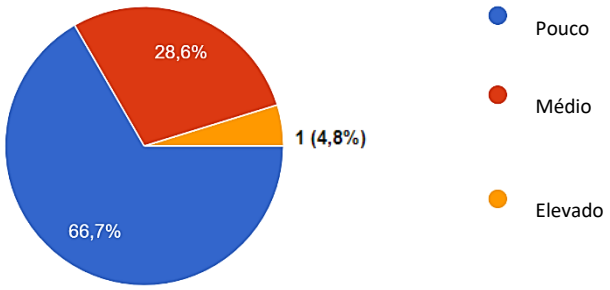
.8.2	Onde os participantes conheceram sobre o tema: *[Where did the participants get to know about the topic]*	05 [Colegas] *(Colleagues)* 05 [Palestras, eventos e feiras] *(Lectures, events and fairs)* 07 [Artigos acadêmicos em revistas] *(Academic papers in journals)* 06 [Legislação da ANAC] *(ANAC legislation)* 04 [Legislação de aviação civil estrangeira] *(Foreign civil aviation legislation)* 05 [Chefia e níveis superiores do CIAC onde atuo] *(Heads and upper levels of where I work)* 01 [Aplicação relacionada com habilitação de tipo vinculada à licença (conf. Pergunta 1.4)] *(According type-rating, related to the question 1.4)*

Outcome: 21 answers



.8.3	Qual o domínio os participantes julgam ter sobre CTBA: *[What domain do the participants judge they know about CBTA]*	14 [Pouco - somente li manchetes, reportagens (textos) em diversas mídias, ouvi falar ou conversei superficialmente] *(Little - I only read headlines, reports [texts] in different media, I heard about or I talked superficially.)* 06 [Médio - já me aprofundei sobre o tema, li e estudei publicações oficiais, artigos, palestras. Mas nunca atuei nem produzi algum trabalho relacionado] *(Medium - I have already studied the topic, read and studied official publications, articles, speeches. But I never acted or produced any related work.)* 01 [Elevado - Já desenvolvi trabalhos acadêmicos, artigos e produzi trabalho/estudo aceito e utilizado na aviação civil] *(High level/broad - I have already developed academic papers, articles and produced work / study accepted and used in civil aviation.)*

Outcome: 21 answers



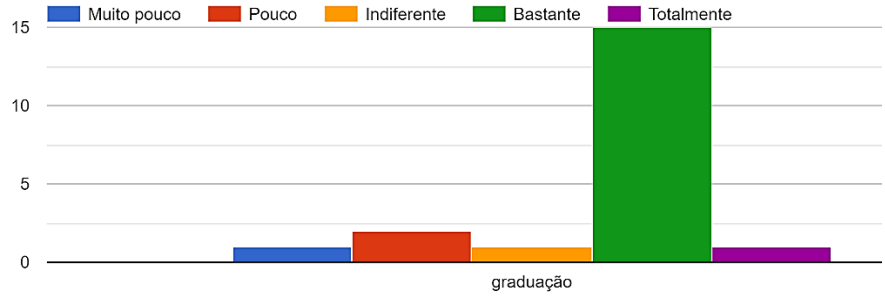
.8.4	Em poucas palavras, o que passou à mente dos participantes quando perguntados para definir o que sabem sobre CBTA: *[Briefly, what passed to the mind of the participants when asked to define what they know about CBTA]*	[Resposta aberta] *(Open answer)*

Outcome: 16 answers

Just 18,7% of the answers were associated and used CBTA related terms and elements, as “use of standards”, “definition of technical and no-technical skills”, “reaching specific objectives” “aiming a expected standard”, “methodology to develop and assess required competencies to a specific function”. 56,2% of the answers had no associated elements and 25,1% were dubious or did not matched substantial association.

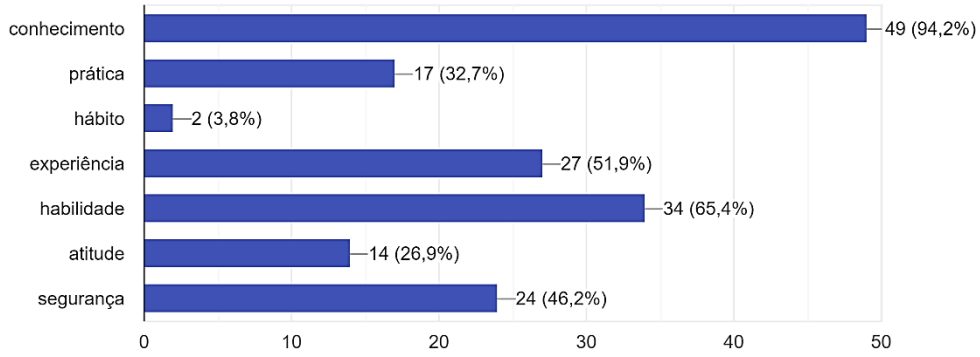
.8.5	O quanto os participantes acreditam que o CBTA difere do treinamento tradicional: *[How much do the participants believe CBTA differs from the traditional training]*	[Graduação] *(scale)*: 01 [Muito pouco] (very little) 02 [Pouco] (little) 01 [Indiferente] (indifferent) 15 [Bastante] (clearly/substantially) 01 [Totalmente] *(totally)*

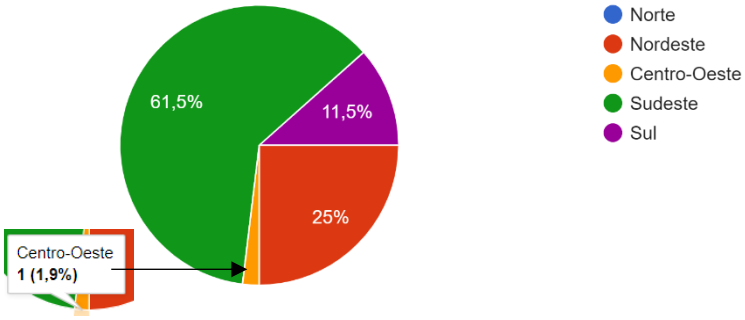
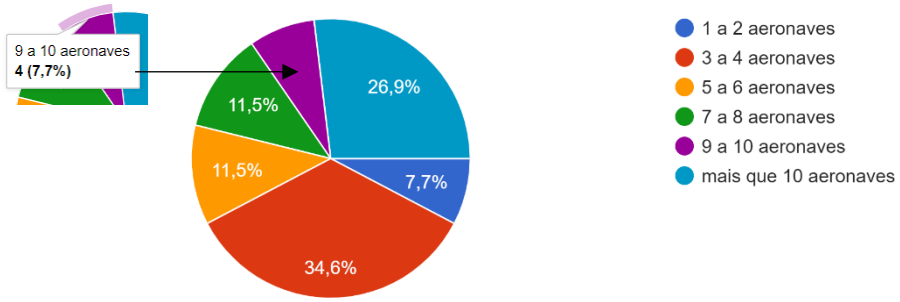
Outcome: 20 answers



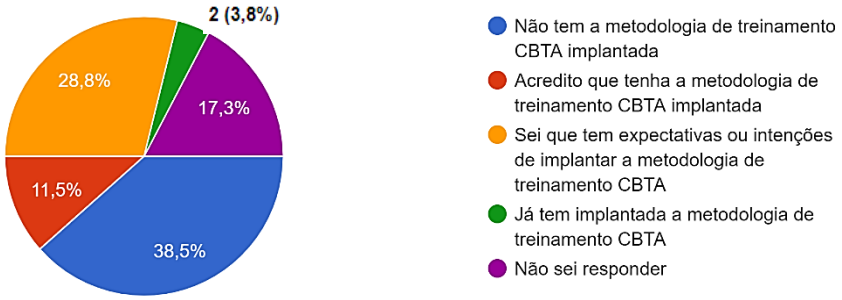
.8.6	O que os participantes julgam definir competência, selecionando até 3 pontos: *[What participants think that defines competence, selecting up to 3 points]*	49 [conhecimento] *(knowledge)* 17 [prática] *(practice)* 02 [hábito] *(habit)* 27 [experiência] *(experience)* 34 [habilidade] *(skill)* 14 [atitude] *(attitude)* 24 [segurança] *(safety)*

Outcome: 52 answers



2	.1	Região do Brasil onde o CIAC opera: *[Region of Brazil where the flight school operates]*	00 [Norte] *(north)* 13 [Nordeste] (*north east)* 01 [Centro-Oeste] *(mid-west)* 32 [Sudeste] *(southeast)* 06 [Sul] *(South)*
	Outcome: 52 answers  		
	.2	Tamanho atual da frota do CIAC: *[Current flight school fleet]*	04 [1 a 2 aeronaves] *(1 to 2 aircrafts)* 18 [3 a 4 aeronaves] *(3 to 4 aircrafts)* 06 [5 a 6 aeronaves] *(5 to 6 aircrafts)* 06 [7 a 8 aeronaves] *(7 to 8 aircrafts)* 04 [9 a 10 aeronaves] *(9 to 10 aircrafts)* 14 [mais que 10 aeronaves] *(more than 10 aircrafts)*
	Outcome: 52 answers  		
	.3	Sobre o CIAC em que estão vinculados, os participantes disseram que: *[About the flight school to which they are associated, the participants said that]*	20 [Não tem a metodologia de treinamento CBTA implantada] *(There is no CBTA training methodology in place)* 06 [Acredito que tenha a metodologia de treinamento CBTA implantada] *(I believe that the CBTA training methodology is in place)* 15 [Sei que tem expectativas ou intenções de implantar a metodologia de treinamento CBTA] *(I know you have expectations or intentions to implement the training methodology CBTA)* 02 [Já tem implantada a metodologia de treinamento CBTA] *(CBTA training methodology has already been implemented) – go to question 2.3.1* 09 [Não sei responder] *(I don't know how to answer)*

Outcome: 52 answers



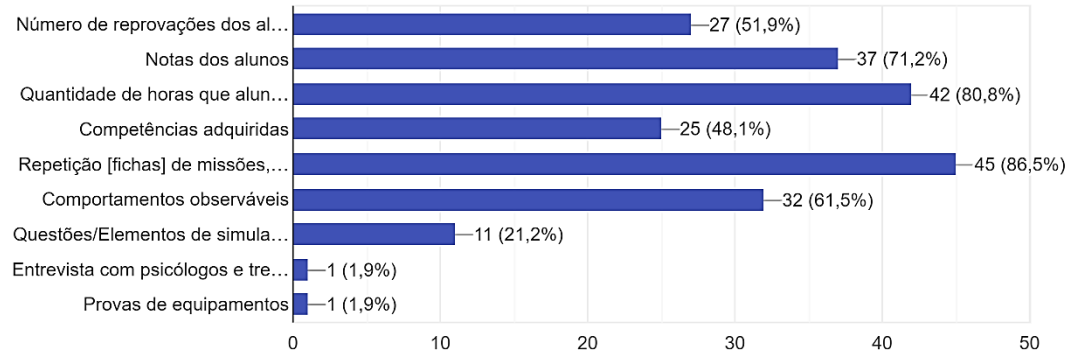
.3.1	Sobre o motivo da implantação, os participantes disseram: *[About the reason for the implantation, the participants said]*	[Resposta aberta] *(Open answer)*

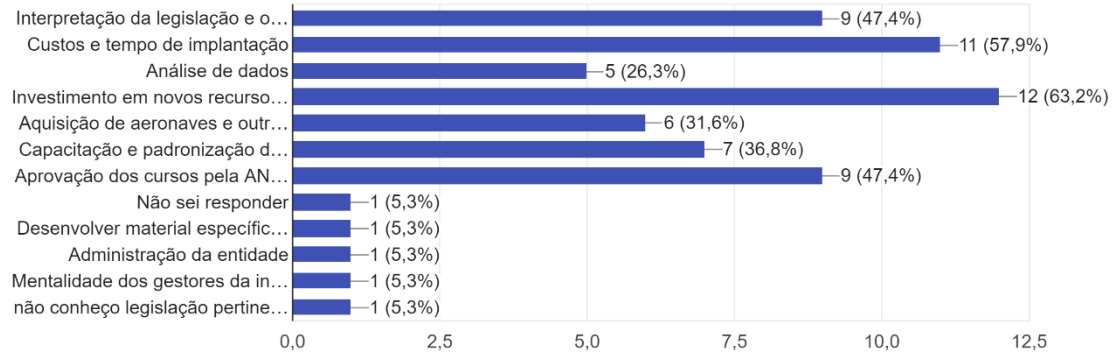
Outcome: 02 answers

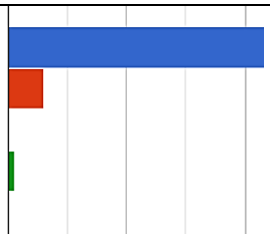
[The two answers associated the flight school´s founder/director experience as airline captain as an element that brought to the flight school´s environment the fundaments of the CBTA activities]

.4	Quais os dados de treinamento, que os participantes saibam, que o CIAC [onde atua] armazena [e considera] atualmente: *[What training data, that participants know, that the flight school where they operate, currently stores and considers]*	27 [Número de reprovações dos alunos] *(Number of students´ mission failures/repetitions)* 37 [Notas dos alunos] *(Student grades)* 42 [Quantidade de horas que alunos levam para concluir o curso] *(Number of hours it takes students to complete the course)* 25 [Competências adquiridas] *(Acquired competencies)* 45 [Repetição [fichas] de missões, manobras e/ou procedimentos até estarem aptos a progredir no programa] *(Repetition [records] of missions, maneuvers and / or procedures until they are able to progress in the program)* 32 [Comportamentos observáveis] *(Observable behaviors)* 11 [Questões/Elementos de simulados (preparação para exame/cheque) que os alunos mais erram] *(Simulated questions / elements [exam preparation / check] that students miss most)* 02 [Outro:] *(Other:)* - Psychologist interviews and training with mentors. - Equipment tests/exams.

Outcome: 52 answers

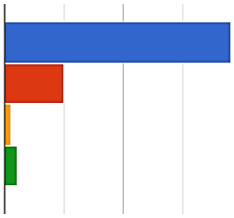


3	.1	[Somente se for Coordenador de curso, conforme pergunta 1.2] Se fosse solicitada aplicação da metodologia CBTA para aprovação do curso que coordena, quais desafios os participantes acreditariam ter na implantação? [List 4, do maior ao menor desafio] *([Only if the participant is a Course Coordinator, as per question 1.2] If application of the CBTA methodology were requested for approval of the course which they coordinate, what challenges would the participants believe they had in implementing it? [List 4, from biggest to least challenge)*	09 [Interpretação da legislação e orientações] *(Interpretation of legislation and instructions)* 11 [Custos e tempo de implantação] *(Development costs and time)* 05 [Análise de dados] *(Data analysis)* 12 [Investimento em novos recursos/tecnologias de controle de treinamento] *(Investment in new training control features / technologies)* 06 [Aquisição de aeronaves e outros recursos instrucionais mais modernos] *(Acquisition of aircraft and other more modern instructional resources)* 07 [Capacitação e padronização dos instrutores] (Training and standardization of instructors) 09 [Aprovação dos cursos pela ANAC] *(Approval of courses by ANAC)* 01 [Não sei responder] *(I do not know how to answer)* [Outro:] *(Other)* -Develop specific training material. -Administration of the entity. -Mentality of the institution's managers, organizational management. -Difficulty in implementing changes, especially those that require financial investments. -I don't know the relevant legislation.
	Outcome: 19 answers		
	.2	Qual a opinião dos participantes sobre as relações abaixo mediante implementação [ou possível implantação] de CBTA no CIAC: *[What is the opinion of the participants about the relationships below upon implementation [or possible implementation] of CBTA at flight schools]*	
	.2.1	O quanto os participantes acreditam que o CIAC pode melhorar sua capacidade de treinamento por ter implementado o CBTA: *[How much do the participants believe that the flight school can improve its training capacity by having implemented the CBTA]*	[Graduação] *(scale)*: 44 [Concordo] (agree) 06 [Neutro] (neutral) 00 [Discordo] *(disagree)* 01 [Não sei responder] *(do not know how to answer)*
	Outcome: 51 answers	Concordo Neutro Discordo Não sei responder	



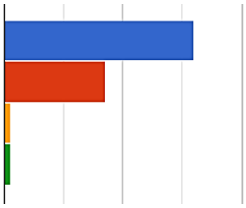
	.2.2	O quanto os participantes acreditam que as atividades de treinamento do CIAC podem ser mais seguras por ter implementado o CBTA: *[How much do participants believe that the flight school´s activities can be safer by having implemented the CBTA]*	[Graduação] *(scale)*: 38 [Concordo] (agree) 10 [Neutro] (neutral) 01 [Discordo] *(disagree)* 02 [Não sei responder] *(do not know how to answer)*

Outcome: 51 answers Concordo Neutro Discordo Não sei responder



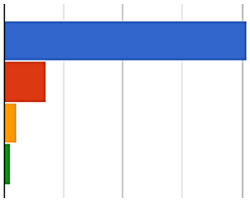
	.2.3	O quanto os participantes acreditam que a relação aluno/instrutor no CIAC pode melhorar por ter implementado o CBTA: *[How much the participants believe that the student/instructor relationship at flight school can improve by having implemented the CBTA]*	[Graduação] *(scale)*: 32 [Concordo] (agree) 17 [Neutro] (neutral) 01 [Discordo] *(disagree)* 01 [Não sei responder] *(do not know how to answer)*

Outcome: 51 answers Concordo Neutro Discordo Não sei responder

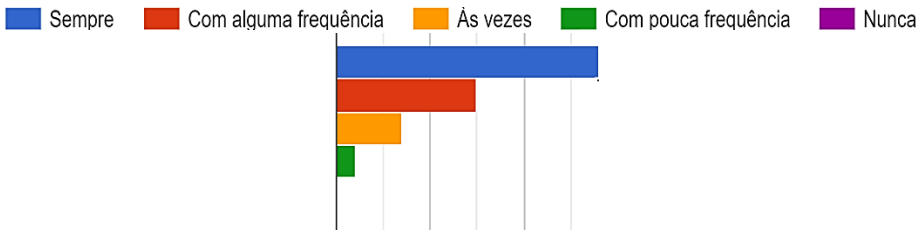
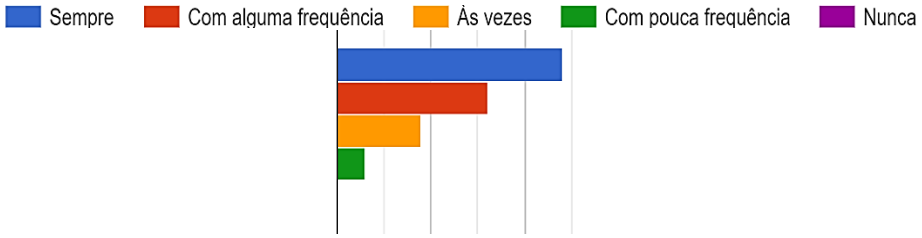
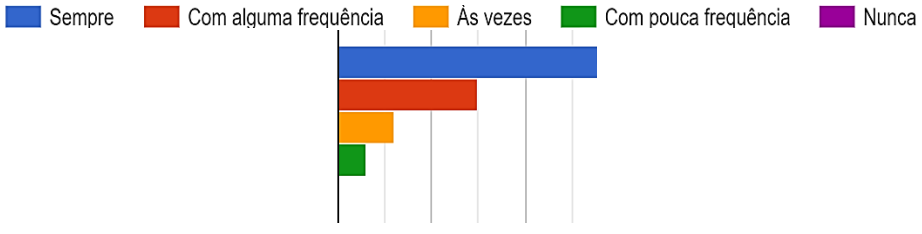


	.2.4	O quanto os participantes acreditam que a instrução pode ter melhor suporte e orientação prática por ter implementado o CBTA: *[How much do participants believe that instruction can have better support and practical guidance for having implemented the CBTA]*	[Graduação] *(scale)*: 41 [Concordo] (agree) 07 [Neutro] (neutral) 02 [Discordo] *(disagree)* 01 [Não sei responder] *(do not know how to answer)*

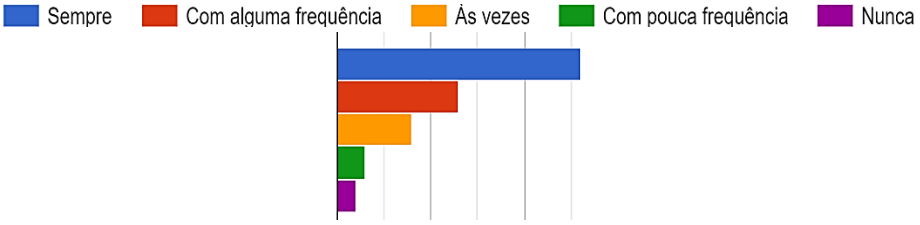
Outcome: 51 answers Concordo Neutro Discordo Não sei responder



4	.1	Respondendo as questões abaixo: [*Answering the questions below:]*	
	.1.1	O quanto dos participantes está satisfeito com o programa de treinamento vigente em que instrui: *[How much of the participants are satisfied with the current training program in which they instruct]*	[Graduação] (scale): 28 [Sempre] (always) 15 [Com alguma Frequência] (With some frequency/generally)

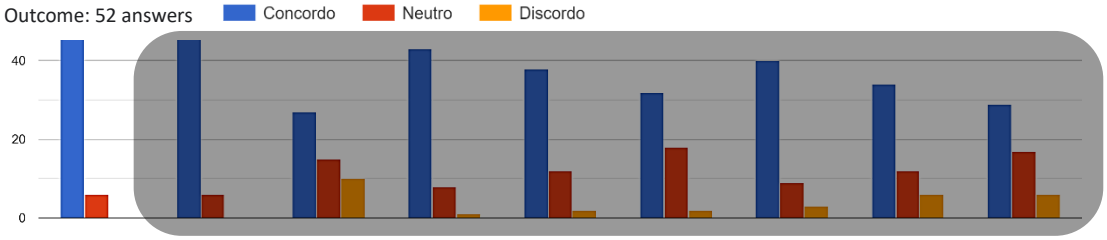
		07 [Às vezes] (At times/sometimes) 02 [Com pouca frequência] (With little Frequency/occasionally) 00 [Nunca] *(never)*
Outcome: 52 answers 		
.1.2	O quanto dos participantes julga que o programa de treinamento vigente é relevante para os desafios/necessidades operacionais atuais: *[How many of the participants believe that the current training program is relevant to current operational challenges/needs]*	[Graduação] (scale): 24 [Sempre] (always) 16 [Com alguma Frequência] (With some frequency/generally) 09 [Às vezes] (At times/sometimes) 03 [Com pouca frequência] (With little Frequency/occasionally) 00 [Nunca] *(never)*
Outcome: 52 answers 		
.1.3	O quanto dos participantes está satisfeito com o método de avaliação do programa de treinamento vigente: *[How much of the participants are satisfied with the evaluation method of the current training program]*	[Graduação] (scale): 28 [Sempre] (always) 15 [Com alguma Frequência] (With some frequency/generally) 06 [Às vezes] (At times/sometimes) 03 [Com pouca frequência] (With little Frequency/occasionally) 00 [Nunca] *(never)*
Outcome: 52 answers 		
.1.4	O quanto dos participantes está satisfeito com a padronização dos instrutores nos programas de treinamento vigentes: *[How many of the participants are satisfied with the standardization of instructors in current training programs]*	[Graduação] (scale): 26 [Sempre] (always) 13 [Com alguma Frequência] (With some frequency/generally) 08 [Às vezes] (At times/sometimes) 03 [Com pouca frequência] (With little Frequency/occasionally) 02 [Nunca] *(never)*

Outcome: 52 answers



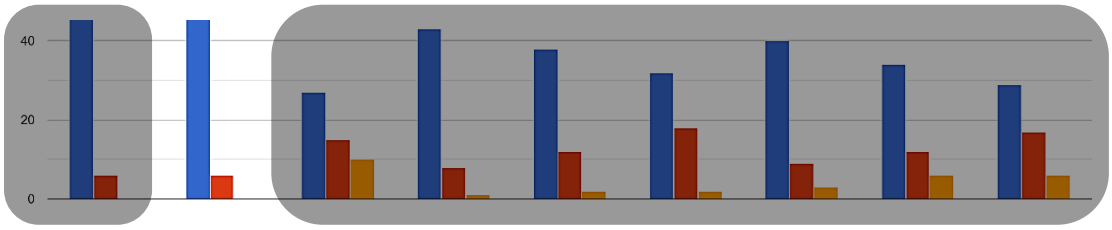
.2	Considerando o programa de treinamento em que os instrutores atuam, o quanto eles podem dizer que o aluno se torna competente nos elementos abaixo: *[Considering the training program in which the instructors act, how much can they say that the student becomes competent in the elements below]*	
.2.1	[Aplicação de procedimentos] *(Application of procedures)*	[Graduação] *(scale)*: 46 [Concordo] *(agree)* 06 [Neutro] *(neutral)* 00 [Discordo] *(disagree)*

Outcome: 52 answers



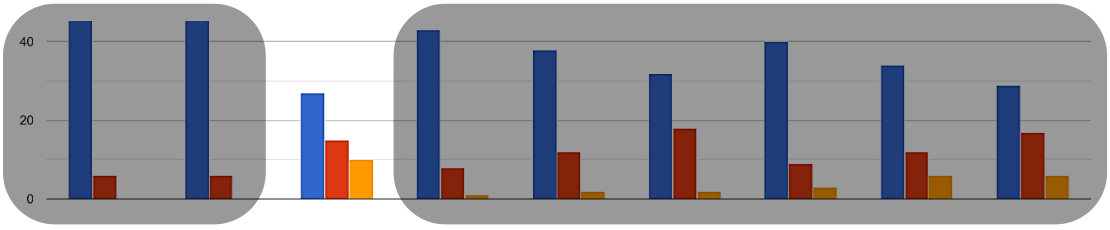
.2.2	[Comunicação] *(Communication)*	[Graduação] *(scale)*: 46 [Concordo] *(agree)* 06 [Neutro] *(neutral)* 00 [Discordo] *(disagree)*

Outcome: 52 answers

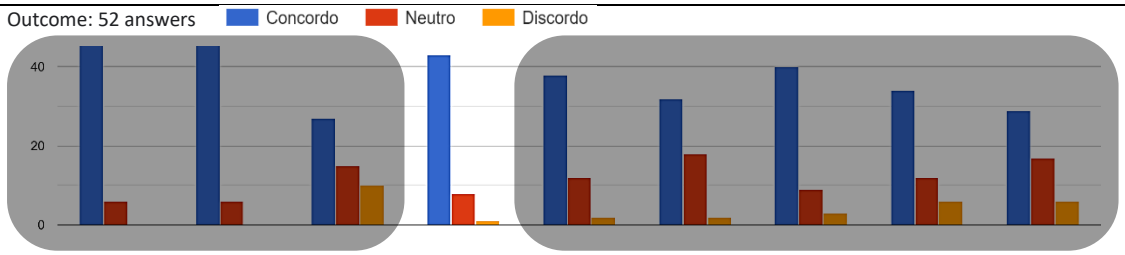


.2.3	[Gerenciamento/manutenção (da trajetória) do voo com uso de automação] *(Aeroplane Flight Path Management, Automation: Controls the flight path through automation)*	[Graduação] *(scale)*: 27 [Concordo] *(agree)* 15 [Neutro] *(neutral)* 10 [Discordo] *(disagree)*

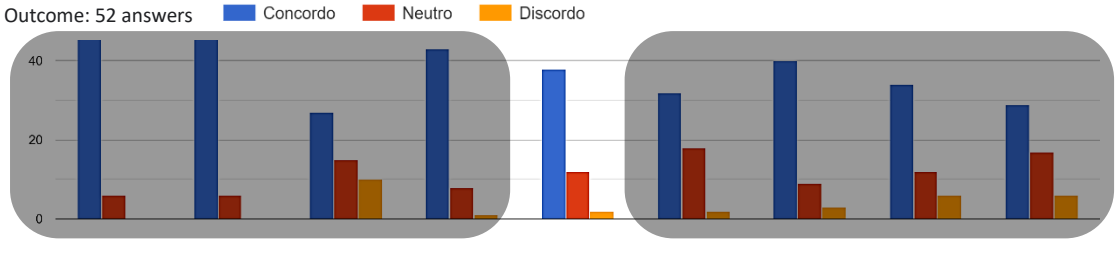
Outcome: 52 answers



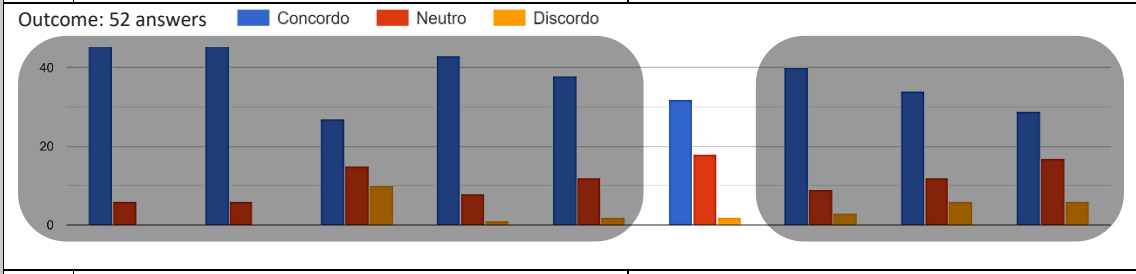
.2.4	[Gerenciamento/manutenção (da trajetória) do voo de maneira manual [sem uso de automação] *(Aeroplane Flight Path Management, manual Control: Controls the flight path through manual control)*	[Graduação] *(scale)*: 43 [Concordo] *(agree)* 08 [Neutro] *(neutral)* 01 [Discordo] *(disagree)*



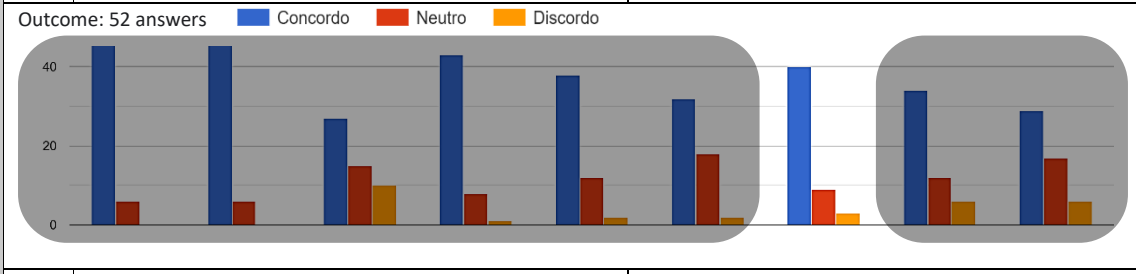
.2.5	[Conhecimentos (obtenção e uso)] *(Knowledge [obtaining and using])*	[Graduação] *(scale)*: 38 [Concordo] *(agree)* 12 [Neutro] *(neutral)* 02 [Discordo] *(disagree)*



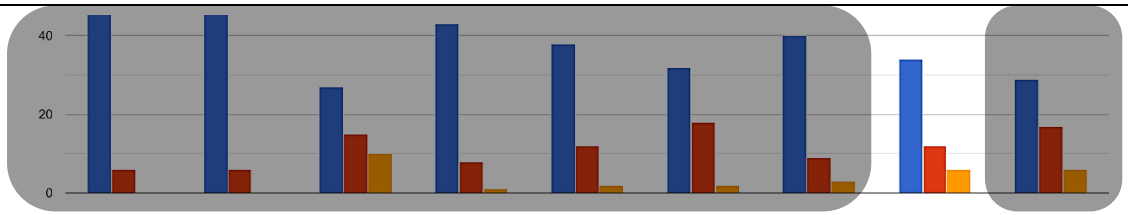
.2.6	[Resolução de problemas e processo decisório] *(Problem-solving and decision-making)*	[Graduação] *(scale)*: 32 [Concordo] *(agree)* 18 [Neutro] *(neutral)* 02 [Discordo] *(disagree)*



.2.7	[Consciência situacional] *(situational awareness)*	[Graduação] *(scale)*: 40 [Concordo] *(agree)* 09 [Neutro] *(neutral)* 03 [Discordo] *(disagree)*

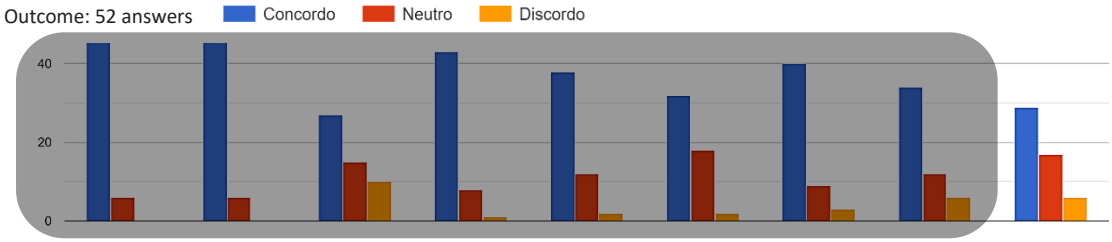


.2.8	[Gerenciamento de carga de trabalho] *(Workload Management)*	[Graduação] *(scale)*: 34 [Concordo] *(agree)* 12 [Neutro] *(neutral)* 06 [Discordo] *(disagree)*



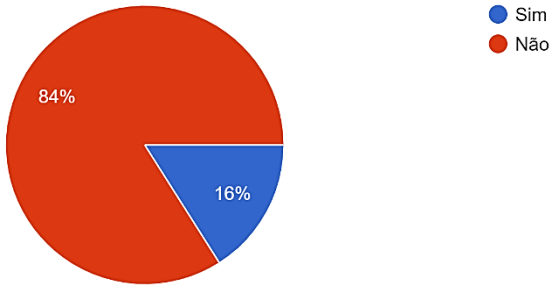
	.2.9	[Liderança e trabalho em equipe] *(Leadership and Teamwork)*	[Graduação] *(scale)*: 29 [Concordo] *(agree)* 17 [Neutro] *(neutral)* 06 [Discordo] *(disagree)*

Outcome: 52 answers



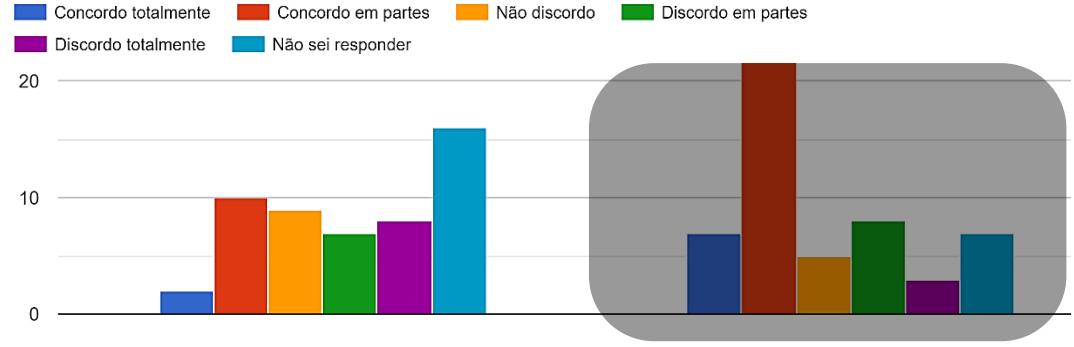
5	.1	Porcentagem de participantes que julga que a ANAC disponibiliza atualmente provisões e instruções adequadas sobre CBTA: *[Percentage of respondents who believe that ANAC currently provides adequate CBTA provisions and instructions]*	42 [Sim (yes)] 16 [Não (no)]

Outcome: 50 answers



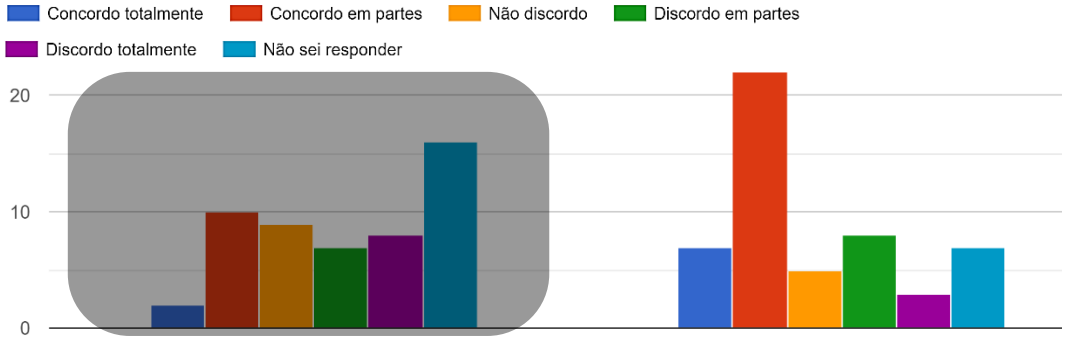
	.2	Responda as questões abaixo: *(Answer the question below)*	
	.2.1	O quanto dos participantes julga que a ANAC atualmente disponibiliza provisões e instruções adequadas sobre CBTA: *[How many of the participants judge that ANAC currently provides adequate provisions and instructions on CBTA]*	[Graduação] *(scale)*: 02 [Concordo totalmente] *(I totally agree)* 10 [Concordo em partes] *(I agree in parts)* 09 [Não discordo] *(I don't disagree)* 07 [Discordo em partes] *(Disagree in parts)* 08 [Discordo totalmente] *(Strongly disagree)* 16 [Não sei responder] *(I do not know how to answer)*

Outcome: 52 answers



	.2.2	O quanto dos participantes julga que a ANAC pode ser considerada alinhada com outras autoridades [de referência] de aviação civil estrangeiras? *[How many of the participants judge that ANAC can be considered aligned with other foreign civil aviation [reference] authorities]*	[Graduação] *(scale)*: 07 [Concordo totalmente] *(I totally agree)* 22 [Concordo em partes] *(I agree in parts)* 05 [Não discordo] *(I don't disagree)* 08 [Discordo em partes] *(Disagree in parts)* 03 [Discordo totalmente] *(Strongly disagree)* 07 [Não sei responder] *(I do not know how to answer)*

Outcome: 52 answers



Appendix 10: Modules outline Forms

MODULE OUTLINE		
STP No: 01	**Location:** Lisbon, Portugal	**Date:** NOV21
	Completed by: Colonese, João - researcher	**Page:** 01 of 02
Module Title: [Theoretical curriculum] Human Performance and Limitations		**Module No:** T-HPL
Markings: - [*] ; [*]	**Task No(s):** N/A	**Sub-Task No(s):** N/A

END- OF-MODULE OBJECTIVE/ MASTERY TEST

Conditions:

[Introducing and to a joint use among the other elements of the theoretical syllabus [modules] of the course, in a customized way to a certain function and characteristic of the air transport service [when applicable]. Complemented by assessments to take place during the development of the other modules]

Performance:

[Allow the pilot to consider knowledge, skills and attitudes associated with human factors, including limitations of behavior and human performance, throughout the other elements of the theoretical syllabus [modules] of the course in building an interim level of competence regarding the execution of tasks inherent to preparation and execution of the flight]

Standard:

[Have the pilot endowed with certain knowledge, skills and attitudes related to the human being behavior and its performance´s limitations in relation to the development of the theoretical syllabus [modules] of the course, according to different functions, characteristics of the air transport service [when applicable]. Have characterizing an accepted interim level of competence regarding the execution of tasks inherent to the preparation and execution of the flight]

Supplementary information on the Mastery Test (e.g. how test is to be conducted, source of case-study material, whether to be conducted as a group activity, etc.)

[The teaching elements of this module were arranged before the other modules with an introductory character. The initiative aims to provide the pilot its incorporation in relation to the elements of the other modules. In this way, evaluations related to elements of this module are also expected in the course of the others. Both initiatives reinforce and favor the construction of the expected final level of competence.]

OUTLINE OF CONTENTS

Interm. Obj. Nº.	Teaching Points	Source of Contents
T-HPL.01 [03:00h]	HUMAN FACTORS: BASIC CONCEPTS .1 Meaning of HF .2 Need of HF / disciplines and applications .3 Application of HF in aviation and flight operations [*] .4 Level of required expertise on HF: individual and crew [*] application	-CAP 719 (CAA, 2002a): [chap. 1, 2, 3 and 4]. -CAP 720 (CAA, 2002b): [Chap. 1, 2]. -CAP 737 (CAA, 2016): [Chap. Introduction to Crew Resource Management (CRM) and Threat and Error Management (TEM)]. -IS 00-010-A (ANAC, 2020a): [5.7.17.1; 5.7.17.2].
T-HPL.02 [16:00h]	BASICS OF AVIATION PHYSIOLOGY – INDIVIDUAL FACTORS .1 Information Processing [*] [*] .2 Perception [*] [*] .3 Attention [*] [*] .4 Vigilance and Monitoring [*] [*] .5 Human error, skill, reliability, and error management [*] [*] .6 Workload [*] [*] .7 Surprise and Startle [*] [*] .8 Situational Awareness [SA] [*] [*] .9 Decision Making [*] [*] .10 Stress in Aviation, Stress Management [*] [*] .11 Sleep and Fatigue [*] [*] .12 Personality and Cultural differences [*] .13 Automation human factors [*]	-CAP 737 (CAA, 2016): [Sec. A, Part 1: Chap. 1 to 12] [Sec. B, Part 1: Chap. 16]. -PAPER 2004/10 (CAA, 2004): [Chap. 1.2; 3.1; 3;2; 4]. - FAA-H-8083-6 Advanced Avionics Handbook (FAA, 2009). -IS 00-010-A (ANAC, 2020a): [5.7.17.3 to 5.7.17.10]. -ALAR Briefing note 1.2 – Automation (FSF, 2000a).

		-ALAR Briefing note 2.1 – Human Factors (FSF, 2000d).
T-HPL.03 [05:00h]	BASICS OF AVIATION PHYSIOLOGY – CREW FACTORS .1 Effects of groups and teams (coordination, teamwork, roles and group decisions) [*] [*] .2 Leadership [*] [*] .3 Communication (communication, language, sharing mental models, assertiveness and verbal intervention) [*] [*]	-CAP 737 (CAA, 2016): [Sec. A, Part 1: Chap. 13 to 15]. -IS 00-010-A (ANAC, 2020a): [5.7.17.3 to 5.7.17.10].
Remarks: - [*] : Yellow marks refers to the teaching points which a given organizational structure [non-public versus public air transport] could influence the performance of a given task, leading to changes on LO, modules contents and elements. - [*] : Blue marks refers to the teaching points which the PF or PM duty could influence the performance of a given task, leading to changes on LO, modules contents and elements. All other non-marked items were considered common and bas independent of the context and duty.		

ADAPTED FROM DOC 9941 AN/478, 1ST EDITION - TRAINING DEVELOPMENT GUIDE COMPETENCY-BASED TRAINING METHODOLOGY (ICAO, 2011)

MODULE OUTLINE		
STP No: 01	**Location:** Lisbon, Portugal	**Date:** NOV21
	Completed by: Colonese, João - researcher	**Page:** 01 of 02
Module Title: [Theoretical curriculum] Threat and Error Management - TEM		**Module No:** T-TEM
Markings: - [*] ; [*]	**Task No(s):** N/A	**Sub-Task No(s):** N/A

END- OF-MODULE OBJECTIVE/ MASTERY TEST

Conditions:

[Introducing and to a joint use among the other elements of the theoretical syllabus [modules] of the course, in a customized way to a certain function and characteristic of the air transport service [when applicable]. Complemented by assessments to take place during the development of the other modules]

Performance:

[Allow the pilot to consider elements of the threat and error management concept customized by a given function and characteristic of the air transport service [when applicable] throughout the other elements of the theoretical syllabus [modules] of the course. Allow the pilot to relate, from an operational perspective, the human performance and safety in his operational context, and build an interim level of competence regarding the execution of tasks associated to the preparation and execution of the flight]

Standard:

[Have the pilot endowed with certain knowledge, skills and attitudes related to the recognition and management of errors and threats according to his operational context [function and characteristics of the air transport service] in relation to the development of the program elements [modules] of the theoretical curriculum of the course. Have characterized an accepted interim level of competence regarding the adoption of countermeasures against threats and errors that may lead the airplane to certain undesirable states, either in execution of the tasks associated with the execution of tasks associated to the preparation and the flight by itself]

Supplementary information on the Mastery Test (e.g. how test is to be conducted, source of case-study material, whether to be conducted as a group activity, etc.)

[The teaching elements of this module were arranged after the human factor´s one and before to the other modules on an introductory and complementary character. The initiative aims to provide the pilot with its incorporation in relation to the elements of the other modules. In this way, evaluations related to elements of this module are also expected in the course of the others. Both initiatives reinforce and favor the construction of the expected final level of competence.]

OUTLINE OF CONTENTS

Interm. Obj. Nº.	**Teaching Points**	**Source of Contents**
T-TEM.01 [08:00h]	FLIGHT SAFETY CONCEPTS .1 SHELL model [individual accident] and Reason model [organizational accident] [*] [*] SAFETY CULTURE [*] [*] .2 National, organizational and professional cultures Safety culture and national culture Open cultures and closed cultures	-DOC 9859 (ICAO, 2012b): [Chap. 1, 4]. -Easy Access and GM - Reg. 376/2014 (EASA, 2014): [Sec. 1: 1.1; Sec. 2: 2.1, 2.3, 2.4; Sec. 3: 3.1, 3.2].

		Safety culture promotion / Important factors	-CAP 719 (CAA, 2002a): [Chap. 1.4]. -CAP 737 (CAA, 2016): [Chap. Introduction to (CRM) and (TEM)]. -IS 00-010-A (ANAC, 2020a): [5.7.17.1]. -IS 121.1225-001-A (ANAC, 2014a). -NSCA 3-3 (CENIPA, 2013): [3.5; 3.6].
		Safety culture 5 components	
		Just culture and non-punitive culture	
		Safety management fundamentals and concepts	
	OCCURRENCE REPORTING		
	.3	State reporting culture	
		Effective safety reporting	
		Safety and hazard reporting system [*]	
		Investigation of accidents and incidents process in the safety management environment [*]	
		SIPAER system: RELPREV and RCSV reports	
T-TEM.02 [08:00h]	THREAT AND ERROR MANAGEMENT [TEM] CONCEPT [*] [*]:		- DOC 9859 (ICAO, 2012b): [Chap.1]. -DOC 9868 (ICAO, 2020): [Part II, Sec. 1, Chap.6]. -CAP 737 (CAA, 2016): [Chap. Introduction to (CRM) and (TEM)]. -ALAR Briefing note 2.2 – Crew Resource Management (FSF, 2000e).
	.1	General	
		Training and licensing requirements for TEM	
		TEM Model and its challenges	
		Threats	
		Errors	
		Undesired Aircraft States – UAS and outcomes	
		Individual and Team Countermeasures	

Remarks:
- [*] : Yellow marks refers to the teaching points which a given organizational structure [non-public versus public air transport] could influence the performance of a given task, leading to changes on LO, modules contents and elements.
- [*] : Blue marks refers to the teaching points which the PF or PM duty could influence the performance of a given task, leading to changes on LO, modules contents and elements.
All other non-marked items were considered common and bas independent of the context and duty.

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MODULE OUTLINE		
STP No: 01	**Location:** Lisbon, Portugal	**Date:** NOV21
	Completed by: Colonese, João - researcher	**Page:** 01 of 03
Module Title: [Theoretical curriculum] Operational Procedures		**Module No:** T-OP
Markings: - [*] ; [*]	**Task No(s):** N/A	**Sub-Task No(s):** N/A

END- OF-MODULE OBJECTIVE/ MASTERY TEST

Conditions:

[Conclusively to the previous elements of the theoretical syllabus [modules] of the course and customized by a given function and characteristics of the air transport service [when applicable]. Complemented by assessments in the module]

Performance:

[Allow the pilot to consider requirements, publications and manuals related to flight operations and elements of the standardization of operational procedures [SOP], on an aggregated way to the previous modules of the theoretical curriculum of the course, in the construction of an interim level of competence about the execution of tasks inherent in the preparation and execution of the flight. Allow the pilot to relate, from an operational perspective, the influence of operational philosophies and [SOP] in support to the threat and error management in both normal, abnormal and emergency operations]

Standard:

[Have the pilot endowed with certain knowledge, skills and attitudes related to the requirements, publications and manuals related to flight operations and elements of the standardization of operational procedures [SOP] in the execution of tasks inherent to the preparation and execution of the flight according to a certain function and characteristic of the air transportation service [where applicable]. Have characterized an accepted interim level of competence regarding the standardization of operational procedures as a measure to manage threats and errors in the execution of tasks associated with the preparation and the flight itself]

Supplementary information on the Mastery Test (e.g. how test is to be conducted, source of case-study material, whether to be conducted as a group activity, etc.)

[The teaching elements of this module were arranged after the other technical modules of the course, now with the character of integrating the prior teaching elements to the expected performance of the pilot for this module. The initiative aims to provide the pilot with the construction of an operational mindset and the concept of competence, the next module]

[Although the module only provides for the interim level of competence, the assessments shall reflect its final objective, which was changed compared to the previous ones to reflect its logical fit with the other modules and tasks required according to the analysis of the pilot's work, considering customization to a given function and characteristic of the air transport service (where applicable)]

OUTLINE OF CONTENTS

Interm. Obj. Nº.	Teaching Points	Source of Contents
T-OP.01 [08:00h]	GENERAL REQUIREMENTS ICAO Annex 6 [*]: .1 Definitions Applicability Laws, regulations and procedures compliance Safety documentation system Requirements for specific operations authorization Air operator certification and surveillance processes Aircraft Operational requirements and documentation: .2 Aircraft Flight Manual [AFM], Pilot Operating Handbook [POH] and Quick Reference Handbook [QRH] Flight Crew Operations Manual [FCOM] [*] Flight Crew Training Manual [FCTM] [*] Master Minimum Equipment List [MMEL] Air Operator documentation system [*]: .3 Operations Manual [MGO] and its volumes Aircraft Operations Manual [AOM] and its parts: Standard Operating Procedures [SOP]; Runway/Performance Analysis; and Minimum Equipment List [MEL] Other associated manuals, programs and guides Correlation among Aircraft and Air Operator documentation [*]: .4 Link on Aircraft and Air Operator documentation	-Annex 6 (ICAO, 2018): [Part I, Chap. 2. APPLICABILITY; Chap. 3.1; Chap. 3.3; Chap. 4.2 (4.2.1, 4.2.2, 4.2.3, 4.2.4); APP. 2; ATTACH. E; ATTACH. F;] [Part II, Sec. 1, Chap. 1.2 APPLICABILITY; [Part II, Sec. 2, Chap. 2.1 (2.1.1);] [Part II, Sec. 3, ATTACH. 3.A; ATTACH. 3.B;]. -AC 120-71-B (FAA, 2017): [Chap. 1.1; 2.1]. -AC 25.1581-1 (FAA, 2012): [Item 4. Definition, 5. Discussion, Paragr. 2. AFM contents]. - FAA-H-8083-25-B - Pilot's Handbook of Aeronautical Knowledge, (FAA, 2015): [Chap. 9 – Flight Manuals and Other Documents]. -RBAC 21 (ANAC, 2018e): [21.5]. -RBAC 91 (ANAC, 2021h): [91.9; 91.213; Subp. N]. -RBAC 121 (ANAC, 2021g): [121.135 (121.135(b)(27)); 121.141; 121.628; Subp. G]. -RBAC 135 (ANAC, 2021i): [135.21; 135.23; 135.23(a)(35); 135.81; 135.179; 135.399]. -IS 119-001-J (ANAC, 2021d): [5.2.9.10]. -IS 119-003-A (ANAC, 2013): [5.1]. -IS 119-004-G (ANAC, 2020b): [5.2.11.10]. -IS 121-003-A (ANAC, 2018a): [5.1; 5.2]. -IS 121-004-A (ANAC, 2018b): [5.1; 5.2; 5.4; App. A]. -IS 121-005-D (ANAC, 2021e): [5.1; 5.2; 5.4; App. B]. -IS 121-006-C (ANAC, 2021f): [5.1.2]. -IS 121-007-B (ANAC, 2020c): [5.2]. -IS 121-010-A (ANAC, 2018c): [5.1; 5.2; App. A]. -IS 135-002-D (ANAC, 2019a):

		[5; 6;]. -IS 135-003-D (ANAC, 2020d): [5.2.1; 5.2.4.5]. -https://www.skybrary.aero/
T-OP.02 [10:00h]	STANDARD OPERATING PROCEDURES [SOP] General aspects [*] [*] .1 SOP elaboration and revision SOP development process Formulating effective procedures Advantages and potential threats [HF and TEM] Operational philosophies [*] [*] .2 Aircraft and Operator´s operating philosophies among flight operations Briefings [*] [*] .3 Purpose, preparation, elements and delivery Human factors approach Pilot Flying and Pilot Monitoring [*] [*] .4 Tasks, subtasks and duties Cockpit areas How we monitor and kinds of monitoring activities Effective monitoring, challenges, barriers and SOP/Briefing relation	-AC 120-71-B (FAA, 2017): [Chap. 3; 4; 6]. -IS 119-003-A (ANAC, 2013): [5.3; 5.4; 5.5; App. A; B and C]. -IS 121-003-A (ANAC, 2018a): [5.3; 5.4; 5.5; 5.7]. -Paper 2013/02 - Monitoring Matters (CAA, 2013): [Part 1; 2; 3.3; ANNEX A to D]. -ALAR Briefing note 1.1 – Operating Philosophy (FSF, 2009). -ALAR Briefing note 1.4 – Standard Calls (FSF, 2000b). -ALAR Briefing note 2.4 – Interruptions/Distractions (FSF, 2000f).
T-OP.03 [04:00h]	Verification Lists - Checklists General requirements and purposes [*] [*] .1 Purpose and use of checklists Formulating effective verifications Management of checklist accomplishment Common errors using checklists Methods, flight phases and operation [*] .2 Do-list [read/call-do-response] Challenge-response [challenge-verification-response] Methods by flight phase Methods by normal or non-normal operation Quick Reference Handbook - QRH .3 Purpose, use and contents of QRH Effective use/reading of QRH	-AC 120-71B (FAA, 2017): [Chap. 5]. -IS 119-003A (ANAC, 2013): [5.2]. -IS 121-003A (ANAC, 2018a): [5.6]. -ALAR Briefing note 1.5 – Normal Checklists (FSF, 2000c).
T-OP.04 [02:00h]	SPECIAL OPERATIONAL PROCEDURES [SOP] General Aspects .1 Purpose and Specific operation´s common requirements [*] [*] Operating Manual [MGO] [*] ANAC´s RBAC and IS – Specific Operations and Procedures [*] .2 Performance Based Navigation [PBN] / Specifications North Atlantic High-Level Airspace [NAT-HLA] Reduced Vertical Separation Minima [RVSM] ILS CAT II and III Approach Mach 1 exceed Steep Approach Head Up Display [HUD] / Enhanced Vision System [EVS] Operations Enhanced Vision System [EVS] approach Extended Twin Operations [ETOPS] Specific Aerodromes – SBRJ/SBSP Electronic Flight Bag [EFB]/Portable Electronic Devices [PED]	-RBAC 91 (ANAC, 2021h): [91.203; 91.213; Subp. N]. -RBAC 121 (ANAC, 2021g): [121.374; App. P]. -IS 119-003-A (ANAC, 2013): [5.5.2.30; 5.5.2.43]. -IS 121-005-D (ANAC, 2021e): [5.1.2; 5.1.3; App. B: B5.; B8.3]. -IS 91-001-E [PBN] (ANAC, 2017). -IS 91-002-D [EFB] (ANAC, 2019b). -IS 91-003-A [ILS CAT-I w/ HGS] (ANAC, 2014b). -IS 91-004-B [ILS CAT-II/III] (ANAC, 2016). -IS 91-005-C [RVSM] (ANAC, 2019c). -IS 91-006-A [NAT-HLA] (ANAC, 2018d). -IS 91.21-001-A [PED – RBAC 121] (ANAC, 2014c).
Remarks:		

- [*] : Yellow marks refers to the teaching points which a given organizational structure [non-public versus public air transport] could influence the performance of a given task, leading to changes on LO, modules contents and elements.
- [*] : Blue marks refers to the teaching points which the PF or PM duty could influence the performance of a given task, leading to changes on LO, modules contents and elements.
All other non-marked items were considered common and bas independent of the context and duty.

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MODULE OUTLINE		
STP No: 01	**Location:** Lisbon, Portugal	**Date:** NOV21
	Completed by: Colonese, João - researcher	**Page:** 01 of 02
Module Title: [Theoretical curriculum] Pilot Competency [KSA]		**Module No:** T-KSA
Markings: - [*] ; [*]	**Task No(s):** N/A	**Sub-Task No(s):** N/A

END- OF-MODULE OBJECTIVE/ MASTERY TEST

Conditions:

[Conclusively to the previous elements of the theoretical syllabus [modules] of the course and customized by a given function and characteristics of the air transport service [when applicable]. Complemented by assessments in the module]

Performance:

[Allow the pilot to consider elements affecting the pilot's competence in an aggregated way to the previous modules of the theoretical curriculum of the course and the task descriptions of the airplane pilot in the construction of an interim level of competence regarding the execution of inherent tasks the preparation and execution of the flight. Allow the pilot to relate, from an operational perspective, the influence of competence in support of threat and error management in both normal, abnormal and emergency operations]

Standard:

[Have the pilot endowed with certain knowledge, skills and attitudes related to his competence in performing tasks inherent to the preparation and execution of the flight according to a certain function and characteristic of the air transport service [when applicable]. Have characterized an accepted interim level of competence in performing all tasks [and subtasks] related to his job as a measure to manage threats and errors in the execution of tasks associated with preparation and the flight itself]

Supplementary information on the Mastery Test (e.g. how test is to be conducted, source of case-study material, whether to be conducted as a group activity, etc.)

[The teaching elements of this module were arranged after the end of all course modules with the character of integrating the teaching elements prior to the pilot competence criterion, still at the interim level, which is expected for this module. The initiative aims to consolidate the concept of competence, which requires bringing together all of the above elements.]

Although the module only provides for the interim level of competence, the assessments should reflect its final objective of integrating the elements of the other modules to consolidate the concept of competence of the pilot in relation to the tasks required according to the analysis of their work, considering customization to a particular function and characteristic of the air transport service (where applicable)]

OUTLINE OF CONTENTS

Interm. Obj. Nº.	Teaching Points	Source of Contents
T-KSA.01 [01:00h]	KNOWLEDGE, SKILLS, ATTITUDES [KSA] AND COMPETENCY .1 Knowledge, skills, attitudes and competency - Definition and applicability	-DOC 9868 (ICAO, 2020): [Part I, Chap. 1, 1.1 – definitions] [Part I, ATTACH. B to Chap. 2]. -Comp. Ass. and Eval. for Pil. Instr. and Evaluators (IATA, 2021): [Definitions].
T-KSA.02 [02:00h]	CBTA METHODOLOGY General Aspects .1 Definitions and goals General procedures and principles Instructional Software Design [ISD] Principles and components of CBTA program Assessment Adapted Competency Model .2 ICAO core competencies [*] [*] Adapted competencies Tasks and competencies relation	-DOC 9868 (ICAO, 2020): [Part I, Chap. 1, 1.1 – definitions] [Part I, Chap. 2, 2.1; 2.2; 2.4; 2.5; 2.6; 2.7] [Part I, ATTACH. A to Chap. 2, item 3]. [Part I, ATTACH. C to Chap. 2, item 1; 2]; [Part II, App. 1 to Chap. 1]; [Part II, App. 2 to Chap. 1]. -Comp. Ass. and Eval. for Pil. Instr. and Evaluators (IATA, 2021): [2.1; 2.2; 3.2].

T-KSA.03 [10:00h]	AIRPLANE PILOT COMPETENCIES [*] [*] Competencies, its descriptions and OB [*] [*] .1 Application of knowledge .2 Application of procedures and compliance with regulations .3 Communication .4 Aircraft flight path management, automation .5 Aircraft flight path management, manual control .6 Leadership and teamwork .7 Problem-solving and decision-making .8 Situational awareness and management of information .9 Workload Management	-DOC 9868 (ICAO, 2020): [Part II, App. 1 to Chap. 1]; [Part II, App. 2 to Chap. 1]; -Comp. Ass. and Eval. for Pil. Instr. and Evaluators (IATA, 2021): [10].
T-KSA.04 [04:00h]	MENTAL MATHS Calculations and estimatives .1 Fuel - mass and volume units - conversion Time, distance and speed - estimatives Distance and time - estimatives of rate of climb/descent Time, distance and fuel mass - addition or subtraction Time and fuel - calculations of fuel burn and flow Operational decision making - calculations of available time TOC/TOD - determination General values that vary by percentage - determinations Heights and distances - 3-degree glideslope - estimatives Heading estimatives - using the 1-in-60 rule Wind speed and direction and runway in use - estimatives of headwind/crosswind components	N/A [No specific source of content is required to aim the teaching point]
T-KSA.05 [07:00h]	PILOT COMPETENCY Threat and Error Management [TEM] [*] [*] .1 Competencies and TEM Embedding TEM in OB Airplane pilot tasks description [*] [*] .2 Flight Phases, KSA and competencies Standard Operating Procedures [*] [*] .3 SOP role on competency Assessing on an adapted competency model .4 OB and assessment	-DOC 9868 (ICAO, 2020): [Part II, Sec. 1, Chap. 6, 6.3]. -Comp. Ass. and Eval. for Pil. Instr. and Evaluators (IATA, 2021): [Chap. 7].

Remarks:
- [*] : Yellow marks refers to the teaching points which a given organizational structure [non-public versus public air transport] could influence the performance of a given task, leading to changes on LO, modules contents and elements.
- [*] : Blue marks refers to the teaching points which the PF or PM duty could influence the performance of a given task, leading to changes on LO, modules contents and elements.
All other non-marked items were considered common and bas independent of the context and duty.

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MODULE OUTLINE		
STP No: 01	**Location:** Lisbon, Portugal	**Date:** NOV21
	Completed by: Colonese, João - researcher	**Page:** 01 of 02
Module Title: [Practical curriculum] Human Performance and Limitations		**Module No:** P-HPL
Markings: - [*] ; [*]	**Task No(s):** N/A	**Sub-Task No(s):** N/A

END- OF-MODULE OBJECTIVE/ MASTERY TEST

Conditions:

[In parallel to the development of the other units of content of the practical syllabus of the course, customized according to a certain functions and characteristic of the air transport service (when applicable)]

Performance:

[Allow the pilot to consider practical elements of human factors, including limitations of human behavior and performance, in a customized by a given function and characteristic of the air transport service [where applicable] throughout all content units of the practical syllabus of the course. Allow the pilot to experiment, from an operational and real perspective, measures of recognition and management of threats and errors arising from the limitations of human behavior and performance in his operational context, and build the final level of competence regarding the execution of tasks associated to preparation and execution of the flight]

Standard:

[Have the pilot competent about the recognition and management of the limitations related to the human behavior and performance according to his operational context [function and characteristics of the air transport service] when executing the tasks associated to the preparation and execution of the flight. Have characterized the final level of competence regarding the adoption of countermeasures against threats and errors arising from limitations of human behavior and performance that may lead the aircraft to certain undesirable states through environmental risk variables, possible abnormal situations, emergency and characteristics of the service of air Transport]

Supplementary information on the Mastery Test (e.g. how test is to be conducted, source of case-study material, whether to be conducted as a group activity, etc.)

[The assessments shall verify the pilot's ability to consider knowledge associated with human factors, including behavioral limitations and human performance during the execution of the various activities and maneuvers expected for this practical part of the course. These assessments should focus on the final level of competence expected from the pilot regarding the final objective of the module]

[The assessments shall ask the pilot to express elements related to human performance, its limitations and behavior when exposed to the execution of preparation tasks and the flight itself, as well as to certain maneuvers. It is foreseen the separation and definition of the elements of the evaluations according to each unit of content of the practical part and criticality of its elements. The assessment can still be complemented by oral questionnaires]

[Assessments shall verify the occurrence of correct and desirable observable behaviors (OB) according to established performance criteria and final level of competence in applying human performance, its limitations and behavior. They should also consider customization to a certain function and characteristic of the air transport service (when applicable)]

OUTLINE OF CONTENTS

End of Module. Obj.	Assessment Points		References
P-HPL.01	HUMAN PERFORMANCE AND LIMITATIONS – HPL [*] [*]		-DOC 9868 (ICAO, 2020): [Part II, Sec. 1, Chap. 6]. -Comp. Ass. and Eval. for Pil. Instr. and Evaluators (IATA, 2021): [Chap. 7]. -CAP 719 (CAA, 2002a): [chap. 4].
	Competent human performance, limitations and behavior application among following units of contents [IS 141-007A (table 7-09)]:		
	.1	Pre-flight procedures; including weight and balance determination, aircraft inspections and maintenance services; including use of the flight manual or equivalent document and documents relevant to air traffic control services for the preparation of a flight plan under instrument flight conditions	
	.2	Operations at aerodromes and on traffic circuits; precautions and procedures relating to the prevention of collisions	
	.3	Pre-flight inspection, use of checklists, taxiing and pre-take-off checks	
	.4	Operations with origin, destination or transit through controlled aerodromes, complying with the procedures of air traffic control services and radiocommunications procedures and phraseology	
	.5	Communication procedures and phraseology	
	.6	Control of the aeroplane by external visual reference	
	.7	Flight at critically slow airspeeds; spin avoidance; recognition of, and recovery from, incipient and full stalls [**]	
	.8	Flight at critically high airspeeds; recognition of, and recovery from, spiral dives [**]	
	.9	Normal and crosswind takeoffs and landings	
	.10	Maximum performance (short field and obstacle clearance) take-offs; short-field landings	
	.11	Basic flight maneuvers and abnormal attitude recovery by reference to basic flight instruments only [**]	
	.12	Navigation flight by visual references, estimated navigation and, when applicable, with the aid of radio navigation	
	.13	Abnormal and emergency procedures and manoeuvres including simulated aeroplane equipment malfunctions	
	.14	Procedures and manoeuvres for IFR operation under normal, abnormal and emergency conditions covering at least: (A) transition to instrument flight on take-off (B) standardized instrument departures and approaches; (C) en-route IFR procedures; (D) holding procedures; (E) instrument approaches to specified minima; (F) missed approach procedure; and (G) [landings from instrument approaches].	
	.15	In-flight IFR maneuvres and particular IFR flight characteristics [**]	

Remarks:

- [*] : Yellow marks refers to the assessment points which a given organizational structure [non-public versus public air transport] could influence the performance of a given task, leading to changes on LO, modules contents and elements.
- [*] : Blue marks refers to the assessment points which the PF or PM duty could influence the performance of a given task, leading to changes on LO, modules contents and elements.
- [**]: ANAC flight training requirements not correlated on the ICAO´s tasks provisions. Items to be stressed on the module due to the fact that they are not stressed on the last module KSAOP to set the trainee´s competency statement.
All other non-marked items were considered common and independent of the context and duty.
Both markings can appear on the title of the module. In this case, all the module´s elements contain different influences related to the marks.

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MODULE OUTLINE		
STP No: 01	**Location:** Lisbon, Portugal	**Date:** NOV21
	Completed by: Colonese, João - researcher	**Page:** 01 of 02
Module Title: [Practical curriculum] Threat and Error Management - TEM		**Module No:** P-TEM
Markings: - [*] ; [*]	**Task No(s):** N/A	**Sub-Task No(s):** N/A

END- OF-MODULE OBJECTIVE/ MASTERY TEST

Conditions:

[In parallel to the development of the other units of content of the practical syllabus of the course, customized according to a certain functions and characteristic of the air transport service (when applicable)]

Performance:

[Allow the pilot to consider elements of the threat and error management practice, in a customized way to a certain function and characteristic of the air transport service [when applicable], throughout all content units of the practical syllabus of the course. Allow the pilot to apply, from an operational and real perspective, the management of errors and threats in the operational context in which it fits and build the final level of competence regarding the execution of tasks inherent to the preparation and execution of the flight.]

Standard:

[Have the pilot competent about the recognition and management of threats and errors according to his operational context [function and characteristics of the air transport service] when executing the tasks associated to the preparation and execution of the flight. Have characterized the final level of competence regarding the adoption of countermeasures related to threats and errors that may lead the aircraft to certain undesirable states through environmental risk variables, possible abnormal situations, emergencies and characteristics of the air transport service]

Supplementary information on the Mastery Test (e.g. how test is to be conducted, source of case-study material, whether to be conducted as a group activity, etc.)

[Assessments shall verify the pilot's ability to apply threat and error management during the execution of the various activities and maneuvers provided for this practical part of the course. These assessments should focus on the final level of competence expected from the pilot regarding the final objective of the module]

[The assessments shall ask the pilot to express elements related to the recognition and management of threats and errors when exposed to the execution of preparation tasks and the flight itself, as well as to certain maneuvers. It is expected the separation and definition of the elements of the evaluations according to each unit of content of the practical part and its critical elements. The assessment can still be complemented by oral questionnaires]

[Assessments shall verify the occurrence of correct and desirable observable behaviors (OB) according to established performance criteria and final level of competence in applying the TEM concept. They should also consider customization to a certain function and characteristic of the air transport service (when applicable)]

OUTLINE OF CONTENTS

Interm. Obj. Nº.	Assessment Points		References
P-TEM.01	THREAT AND ERROR MANAGEMENT – TEM [*] [*]		-DOC 9868 (ICAO, 2020): [Part II, Sec. 1, Chap. 6]. -Comp. Ass. and Eval. for Pil. Instr. and Evaluators (IATA, 2021): [Chap. 7]. -CAP 737(CAA, 2016): [Introd. to TEM and CRM].
	Competent threat and error management application among following units of contents [IS 141-007A (table 7-09)]:		
	.1	Pre-flight procedures; including weight and balance determination, aircraft inspections and maintenance services; including use of the flight manual or equivalent document and documents relevant to air traffic control services for the preparation of a flight plan under instrument flight conditions	
	.2	Operations at aerodromes and on traffic circuits; precautions and procedures relating to the prevention of collisions	
	.3	Pre-flight inspection, use of checklists, taxiing and pre-take-off checks	

	.4	Operations with origin, destination or transit through controlled aerodromes, complying with the procedures of air traffic control services and radiocommunications procedures and phraseology	
	.5	Communication procedures and phraseology	
	.6	Control of the aeroplane by external visual reference	
	.7	Flight at critically slow airspeeds; spin avoidance; recognition of, and recovery from, incipient and full stalls [**]	
	.8	Flight at critically high airspeeds; recognition of, and recovery from, spiral dives [**]	
	.9	Normal and crosswind takeoffs and landings	
	.10	Maximum performance (short field and obstacle clearance) take-offs; short-field landings	
	.11	Basic flight maneuvers and abnormal attitude recovery by reference to basic flight instruments only [**]	
	.12	Navigation flight by visual references, estimated navigation and, when applicable, with the aid of radio navigation	
	.13	Abnormal and emergency procedures and manoeuvres including simulated aeroplane equipment malfunctions	
	.14	Procedures and manoeuvres for IFR operation under normal, abnormal and emergency conditions covering at least: (A) transition to instrument flight on take-off (B) standardized instrument departures and approaches; (C) en-route IFR procedures; (D) holding procedures; (E) instrument approaches to specified minima; (F) missed approach procedure; and (G) [landings from instrument approaches].	
	.15	In-flight IFR maneuvres and particular IFR flight characteristics [**]	

Remarks:
- [*] : Yellow marks refers to the assessment points which a given organizational structure [non-public versus public air transport] could influence the performance of a given task, leading to changes on LO, modules contents and elements.
- [*] : Blue marks refers to the assessment points which the PF or PM duty could influence the performance of a given task, leading to changes on LO, modules contents and elements.
- [**]: ANAC flight training requirements not correlated on the ICAO´s tasks provisions. Items to be stressed on the module due to the fact that they are not stressed on the last module KSAOP to set the trainee´s competency statement.
All other non-marked items were considered common and independent of the context and duty.
Both markings can appear on the title of the module. In this case, all the module´s elements contain different influences related to the marks.

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MODULE OUTLINE			
STP No: 01	**Location:** Lisbon, Portugal		**Date:** NOV21
	Completed by: Colonese, João - researcher		**Page:** 01of 03
Module Title: [Practical curriculum] Pilot Competency [KSA] and Operational Procedures			**Module No:** P-KSAOP
Markings: - [*] ; [*]	**Task No(s):** N/A	**Sub-Task No(s):** N/A	

END- OF-MODULE OBJECTIVE/ MASTERY TEST

Conditions:

[In substitution to the previous competencies' units of the practical syllabus of the course, customized according to a given functions and characteristic of the air transport service (when applicable)]

Performance:

[Allow the pilot to consider elements of the standardization of operational procedures [SOP] added to elements related to the pilot's competence, in a customized manner to a certain function and characteristic of the air transport service [when applicable], during certain episodes of the practical syllabus of the course. Allow the pilot to experience, from an operational and real perspective, the influence of operational philosophies and [SOP] and the competence´s influence in his operational context, and build the final level of competence regarding the execution of tasks associated to the preparation and execution of the flight]

Standard:

[Have the pilot competent about the standardization of operational procedures [SOP] and the elements related to his competence according to their operational context [function and characteristics of the air transport service] when executing the tasks associated to the preparation and execution of the flight. Have characterized the final level of competence regarding the adherence to the [SOP] in the execution of all tasks associated to the preparation and execution of the flight, avoiding having the

aircraft in certain undesirable states due to environmental risk variables, possible abnormal situations, emergency and air transport service characteristics]

Supplementary information on the Mastery Test (e.g. how test is to be conducted, source of case-study material, whether to be conducted as a group activity, etc.)

[The assessments shall verify the pilot's ability to relate, from an operational perspective, the influence of operational philosophies, (SOP) and elements related to his/her competence in support of threat and error management in both normal, abnormal and emergency operations in the execution of the various activities and maneuvers planned for this practical part of the course. These assessments should focus on the final level of competence expected from the pilot regarding the final objective of the module]

[These assessments shall be based on the sequencing and performance criteria of each task [and subtasks] provided for in the pilot work analysis. The evaluations shall verify the incorporation of a standardized operational philosophy to elements of its competence - in its final established level - in the execution of all operational procedures expected in the tasks according to its function. The definition of competency elements should consider the critical elements of each task and associated subtasks]

[The evaluations shall verify the occurrence of correct and desirable observable behaviors (OB) according to the performance criteria established for each task [and subtasks]. They should also consider customization to a certain function and characteristic of the air transport service (when applicable)]

OUTLINE OF CONTENTS

End of Module. Obj.	Assessment Points		References
P-KSAOP .01	Pilot Competency [KSA] and Standard Operating Procedures [*] [*]		-DOC 9868 (ICAO, 2020): [Part II, Sec. 1, Chap.6]. -Comp. Ass. and Eval. for Pil. Instr. and Evaluators (IATA, 2021): [chap. 7; 8; 9 and 10].
	Competent pilot performance and standardized operational procedures on the following:		
	1	PERFORM AEROPLANE GROUND AND PRE-FLIGHT OPERATIONS	
	1.1	Perform dispatch duties	
	1.2	Provide flight crew and cabin crew briefings	
	1.3	Perform pre-flight checks and cockpit preparation	
	1.4	Perform engine start	
	1.5	Perform taxi	
	1.6	Manage abnormal and emergency situations	
	1.7	Communicate with cabin crew, passengers and company	
	2	PERFORM TAKE-OFF	
	2.1	Perform pre-take-off and pre-departure preparation	
	2.2	Perform take-off roll	
	2.3	Perform transition to instrument flight rules	
	2.4	Perform initial climb to flap retraction altitude	
	2.5	Perform rejected take-off	
	2.6	Perform navigation	
	2.7	Manage abnormal and emergency situations	
	3	PERFORM CLIMB	
	3.1	Perform standard instrument departure/en-route navigation	
	3.2	Complete climb procedures and checklists	
	3.3	Modify climb speeds, rate of climb and cruise altitude	
	3.4	Perform systems operations and procedures	
	3.5	Manage abnormal and emergency situations	
	3.6	Communicate with cabin crew, passengers and company	
	4	PERFORM CRUISE	
	4.1	Monitor navigation accuracy	
	4.2	Monitor flight progress	
	4.3	Perform descent and approach planning	
	4.4	Perform systems operations and procedures	
	4.5	Manage abnormal and emergency situations	
	4.6	Communicate with cabin crew, passengers and company	
	5	PERFORM DESCENT	
	5.1	Initiate and manage descent	
	5.2	Monitor and perform en-route and descent navigation	
	5.3	Replanning and update of approach briefing	
	5.4	Perform holding	
	5.5	Perform systems operations and procedures	
	5.6	Manage abnormal and emergency situations	
	5.7	Communicate with cabin crew, passengers and company	
	6	PERFORM APPROACH	
	6.1	Perform approach in general	
	6.2	Perform precision approach	
	6.3	Perform non-precision approach	

	6.4	Perform approach with visual reference to ground	
	6.5	Monitor flight progress	
	6.6	Perform systems operations and procedures	
	6.7	Manage abnormal and emergency situations	
	6.8	Perform go-around/missed approach	
	6.9	Communicate with cabin crew, passengers and company	
	7	PERFORM LANDING	
	7.1	Land the aeroplane	
	7.2	Perform systems operations and procedures	
	7.3	Manage abnormal and emergency situations	
	8	PERFORM AFTER-LANDING AND POST-FLIGHT OPERATIONS	
	8.1	Perform taxi-in and parking	
	8.2	Perform aeroplane post-flight operations	
	8.3	Perform systems operations and procedures	
	8.4	Manage abnormal and emergency situations	
	8.5	Communicate with cabin crew, passengers and company	

Remarks:
- [*] : Yellow marks refers to the assessment points which a given organizational structure [non-public versus public air transport] could influence the performance of a given task, leading to changes on LO, modules contents and elements.
- [*] : Blue marks refers to the assessment points which the PF or PM duty could influence the performance of a given task, leading to changes on LO, modules contents and elements.
All other non-marked items were considered common and independent of the context and duty.
Both markings can appear on the title of the module. In this case, all the module´s elements contain different influences related to the marks.

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Appendix 11: Modules Components

CPL/IR Course module:		
	Part	Components and considerations:
Theoretical Syllabus:	Beginning	Presentation of the End-of-Module objective and the mastery test: The End-of-Module objective on the beginning of the module briefs the trainee on the importance of the module and build bridges on what they will be expected upon the end of the module. Besides that, it keeps the instructor aligned to the module´s objective, avoids deviations on its objectives, sequencing and helps on the instructor´s effectiveness evaluation. The mastery test presentation is supposed only clarifies to the trainee how the mastery test its related to the module objective. Trainees must be aware of **what they are supposed to** do and **what they will be required to do to prove it** (ICAO, 2011).
		Indication of the relevance of the contents: The relevance of the contents is related to the trainee´s motivation. The trainees must be satisfied on taking their time and efforts on the training solution. They must believe on it. The convincing must rely on stating the consequences of not satisfactorily accomplish the module´s objectives and proposed on their job [function]; or on relating the module as prerequisite of the following modules. Anecdotes and real events reports are useful tools.
	Central Body	Presentation of the contents: The technical contents of the module [teaching points] shall be delivered as blocks of instructional events in order to satisfy the intermediate objectives [enabling] and the end-of-module objective, and associated assessments. The instructional events shall be based [vary] on the module´s plan [Form] provisions [modes of delivery, methodology, media and instructions resources and tools].
		Clarification of main points of the contents: The main points among the teaching points of the modules shall be stressed. The group must be asked with questions or explanations about the points. The answers help on the instructor´s decision to revisit and reinforce the points and on the judgment about trainee´s preparation to the practices related to the progress and mastery test.
		Provisions for practices and intermediate assessments [progress tests]: Depending on the teaching point orientation, the appropriated practices and progress test methodology shall be defined. Paper-based options, as schemas completion, organization [presentation], and calculations are more towards to the theoretical aspects [teaching point]. On the other hand, practices and play-acting activities [role-playing including practice and feedback exercises] are more towards to the practical oriented aspects [teaching point]. Practices are intended to prepare the trainee to the intermediate assessments, may combine competencies [KSA] from more than one teaching points and serve to the instructor check the trainee´s evolution. Progress tests shall have strict relation and test only the interim level of competency [KSA] coming from the teaching points and required to the mastery test. Nevertheless, the number of progress tests may be dimensioned to a certain group of teaching points and depending on the nature of the competencies [KSA] to be tested - with no prejudice to the upper statement.
		Provisions of feedback: Practices and intermediate assessment feedbacks are essential elements of the training solution. It must be done as soon as possible after the practice or assessment as to allow the trainees know what they did wrong, discuss with one another, know how to improve and clear the correct performance, reinforcing the learning process.
	End	Assessment [mastery test] performance and feedback: The mastery test come only after all components above were satisfactorily completed. This test shall be strictly related to the end-of-module objective and determined standard of competency. The test´s instructions shall be clear to all trainees and they shall have the same test condition. The test shall be criterion-referred, and its feedback must be done as soon as possible after the event and shall be objective, meaning to be assessed by a scoring key.
Practical Syllabus: [assess-ment only]	Maneuvers phase	Briefing on the competency according the specific unit of content and its critical elements: The briefing about the assessment of the specific competency related to a module shall occur prior each practical activity of the maneuvers phase. The briefing shall relate the most relevant elements of the activities and maneuvers inserted on the unit of content to the final level of competency of the module. The briefing shall relate the criterion-reference of the assessment, and the trainee must be clear about its elements.
		Assessment [mastery test] performance and feedback on the final level of competency for each specific unit of content and its critical elements: Each competency unit of the practical syllabus shall have an assessment event. Each assessment of the maneuvers phase shall collect evidence of the final level of competency of the trainee throughout the activities and maneuvers of each unit based on the end-of-module objective. The test shall be criterion-referred, and its feedback must be done as soon as possible after the event and shall be objective, meaning to be assessed by a scoring key.
	Scenery phase	Briefing on the on the trainee´s final level of standardization of operational procedures [SOP] and the elements related to his competence:

CPL/IR Course module:	
	The briefing about the assessment events related to the final competency related to the entire course must occur prior each practical activity of the scenery phase. The briefing shall relate the most relevant [OB] throughout all tasks and subtasks related to the preparation and execution of the flight to the final level of competency required from the trainee. The briefing shall relate the criterion-reference of the assessment, and the trainee shall be clear about its elements.
	Assessment [mastery test] performance and feedback on the trainee´s final level of standardization of operational procedures [SOP] and the elements related to his competence: The assessment events shall collect evidence of the most relevant [OB] on each task [and subtasks] associated to the preparation and execution of the flight. The quantity and the quality of [OB] characterizes the trainee with the final level of competency regarding the standardization of operational procedures [SOP] and the elements related to his competence according to their operational context. The test shall be criterion-referred, and its feedback must be done as soon as possible after the event and shall be objective, meaning to be assessed by a scoring key.

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Appendix 12: Modules Plan Forms

MODULE PLAN				
STP No: *01*	**Location:** *Lisbon, Portugal*	**Completed by:** *Colonese, João - researcher*	**Page:** *XX* of *XX*	**Date:** *NOV21*
Module Title: [Theoretical curriculum] Human Performance and Limitations			**Module No:** T-HPL	
Markings: [*] ; [*]	**Task No(s):** N/A		**Sub-Task No(s):** N/A	

END- OF-MODULE OBJECTIVE

Conditions:

[Introducing and to a joint use among the other elements of the theoretical syllabus [modules] of the course, in a customized way to a certain function and characteristic of the air transport service [when applicable]. Complemented by assessments to take place during the development of the other modules]

Performance:

[Allow the pilot to consider knowledge, skills and attitudes associated with human factors, including limitations of behavior and human performance, throughout the other elements of the theoretical syllabus [modules] of the course in building an interim level of competence regarding the execution of tasks inherent to preparation and execution of the flight]

Standard:

[Have the pilot endowed with certain knowledge, skills and attitudes related to the human being behavior and its performance´s limitations in relation to the development of the theoretical syllabus [modules] of the course, according to different functions, characteristics of the air transport service [when applicable]. Have characterizing an accepted interim level of competence regarding the execution of tasks inherent to the preparation and execution of the flight]

General notes: *XXX*

Intermediate Objective nº: [T-HPL.01] - HUMAN FACTORS: BASIC CONCEPTS [03:00h]

Session	**Time**	**Units / Teaching Points**	**Elements and Contents**	
Teaching Points :				
N/A	*XX min*	.1 Title: Meaning of HF LO: Explain the meaning of HF.	*.1: XXX* *.2: XXX* *…*	Source of contents: *.1: XXX* *.2: XXX* *…*

Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
XXX	*XXX*	*XXX*	*XXX*	*XXX*

Assessment:	*XXX*
Related competencies and [OB]:	[OB 0.7] [OB 1.7]

N/A	*XX min*	.2	Title: Need of HF / disciplines and applications LO: Characterize the need of HF. LO: List the disciplines of HF. LO: Explain the application of HF.	*.1: XXX* *.2: XXX* *…*		Source of contents: *.1: XXX* *.2: XXX* *…*
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 0.7] [OB 1.7]			
N/A	*XX min*	.3	Title: HF application in aviation and flight operations LO: Explain the application of HF in aviation. LO: Explain application of HF in flight operations [*].	*.1: XXX* *.2: XXX* *…*		Source of contents: *.1: XXX* *.2: XXX*
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 0.7] [OB 1.7]			
N/A	*XX min*	.4	Title: Level of required expertise on HF: individual and crew [*] application LO: Differentiate the level of required expertise on HF on the individual and crew [*] application.	*.1: XXX* *.2: XXX* *…*		Source of contents: *.1: XXX* *.2: XXX*
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 0.7] [OB 1.7]			
Intermediate Objective nº: [T-HPL.02] - BASICS OF AVIATION PHYSIOLOGY – INDIVIDUAL FACTORS [16:00h]							
Session	**Time**	**Units / Teaching Points**		**Elements and Contents**			
Teaching Points :							

N/A	*XX min*	.1	Title: Information Processing LO: State the objective of the information processing. LO: Name and characterize the three fundamental stages of the information processing. LO: Differentiate the role of memory in information processing. LO: Identify the factors that may affect each three stages of the information processing. LO: Consider the application of knowledge – information processing [*] [*]. LO: Consider the application of the information processing on the pilot job performance.	*.1: XXX* *.2: XXX* *…*	Source of contents: *.1: XXX* *.2: XXX* *…*

Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
XXX	*XXX*	*XXX*	*XXX*	*XXX*

Assessment:	*XXX*
Related competencies and [OB]:	[OB 0.2] [OB 1.5] [OB 2.3] [OB 2.4] [OB 3.6] [OB 4.2] [OB 6.2] [OB 6.3] [OB 7.1] [OB 7.4] [OB 8.7] [OB 8.9]

N/A	*XX min*	.2	Title: Perception LO: Name the basis of the perceptual process. LO: Describe the mechanism of the perception process. LO: Illustrate the context influence on the perception process and state the relevant factors that influence interpretation of perceived information. LO: Consider the application of knowledge – Perception. LO: Consider the application of perception on the pilot job performance [*] [*]. LO: Describe some basic perceptual illusions. LO: Relate perception with vigilance, monitoring, human error, workload, SA, decision making, stress, fatigue and other HF areas.	*.1: XXX* *.2: XXX* *…*	Source of contents: *.1: XXX* *.2: XXX* *…*

Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
XXX	*XXX*	*XXX*	*XXX*	*XXX*

Assessment:	*XXX*
Related competencies and [OB]:	[OB 0.3] [OB 1.5] [OB 2.1] [OB 2.4] [OB 2.5] [OB 2.8] [OB 3.2] [OB 3.6] [OB 4.2] [OB 4.5] [OB 4.7] [OB 5.4] [OB 5.9] [OB 5.10] [OB 6.1] [OB 6.3] [OB 6.7] [OB 7.1] [OB 7.3] [OB 8.1] [OB 7.7] [OB 8.7] [OB 8.8]

N/A	*XX min*	.3	Title: Attention	*.1: XXX*	Source of contents:

			LO: Define attention and its critical elements. Differentiate between 'selective' and 'divided' attention. LO: List the factors that affect a person's level of attention. LO: Consider the application of knowledge – Attention. LO: Consider the application of Attention on the pilot job performance [*] [*]. LO: Relate attention with decision making, human error, workload, vigilance, monitoring, SA, decision making and other HF areas.	*.2: XXX* *…*	*.1: XXX* *.2: XXX* *…*

Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
XXX	*XXX*	*XXX*	*XXX*	*XXX*

Assessment:	*XXX*
Related competencies and [OB]:	[OB 0.3] [OB 1.2] [OB 1.5] [OB 2.1] [OB 2.2] [OB 2.5] [OB 2.8] [OB 2.9] [OB 3.3] [OB 3.4] [OB 3.5] [OB 4.1] [OB 4.4] [OB 4.5] [OB 5.2] [OB 5.4] [OB 5.7] [OB 6.2] [OB 6.4] [OB 6.5] [OB 7.2] [OB 7.3] [OB 7.5] [OB 7.7] [OB 8.1] [OB 8.4] [OB 8.9]

N/A	*XX min*	.4	Title: Vigilance and Monitoring LO: Define vigilance and it´s applicability. LO: Differentiate between "attention", "vigilance" and "monitoring". LO: Identify the factors that may affect the state of vigilance. LO: Indicate the signs of reduced vigilance. LO: Relate vigilance with time, task and fatigue. LO: Consider the application of knowledge – vigilance and monitoring. LO: Consider the application of vigilance and monitoring on the pilot job performance [*] [*]. LO: Relate vigilance and monitoring with workload, decision making, SA and other HF areas.	*.1: XXX* *.2: XXX* *…*	Source of contents: *.1: XXX* *.2: XXX* *…*

Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
XXX	*XXX*	*XXX*	*XXX*	*XXX*

Assessment:	*XXX*
Related competencies and [OB]:	[OB 0.6] [OB 1.5] [OB 1.7] [OB 2.1] [OB 2.2] [OB 2.5] [OB 2.8] [OB 3.2] [OB 3.6] [OB 4.2] [OB 4.7] [OB 5.1] [OB 5.11] [OB 6.3] [OB 6.7] [OB 7.1] [OB 7.2] [OB 7.3] [OB 7.5] [OB 7.7] [OB 8.7] [OB 8.9]

N/A	*XX min*	.5	Title: Human error, skill, reliability, and error management LO: Consider basic points about acquiring skills. LO: Describe de skill learning process. LO: Explain the concepts: "error" and "error chain". LO: Differentiate between an isolated error and an error chain.	*.1: XXX* *.2: XXX* *…*	Source of contents: *.1: XXX* *.2: XXX* *…*

			LO: Characterize error types: “skill-based errors”, “knowledge-based mistakes”, “violations”, “routine violations”, “exceptional violations”. LO: Distinguish between the main forms/types of errors. LO: Discuss the above errors and their relevance in flight. LO: Distinguish between an “active” and a “latent” error and give examples. LO: Explain “Error management”. LO: Characterize the error management process, levels and elements. LO: Demonstrate error detection and prevention actions. LO: List and differentiate the “defenses against error”. LO: Consider the application of Human error, skill, reliability, and error management on the pilot job performance [*] [*]. LO: Relate human error and error management with workload, SA, decision making, stress, fatigue, automation and other HF areas.				
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:				
			Related competencies and [OB]:	[OB 0.5] [OB 1.1] [OB 1.3] [OB 1.7] [OB 2.1] [OB 2.4] [OB 2.5] [OB 2.9] [OB 3.3] [OB 3.5] [OB 4.4] [OB 4.6] [OB 5.4] [OB 5.10] [OB 6.1] [OB 6.8] [OB 6.9] [OB 7.3] [OB 7.4] [OB 7.6] [OB 8.7] [OB 8.9]			
N/A	*XX min*	.6	Title: Workload LO: Characterize workload and its types. LO: Recognize and explain the most relevant workload links and associations among HF areas [disciplines]. LO: Characterize the task causes of high workload and underload. LO: Describe the effects of high workload and underload. LO: Consider the application of knowledge – workload. LO: Consider the application of workload on the pilot job performance [*] [*]. LO: Relate workload with decision making, perception, attention, vigilance, monitoring, SA, stress, automation and other HF areas.	*.1: XXX* *.2: XXX* *…*		Source of contents: *.1: XXX* *.2: XXX* *…*	
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 8.1] [OB 8.2] [OB 8.3] [OB 8.4] [OB 8.5] [OB 8.6] [OB 8.7] [OB 8.8] [OB 8.9]			

N/A	*XX min*	.7	Title: Surprise and Startle LO: State that the physiological response to stress is generated by the "fight or flight" response. LO: Describe the function of the autonomic nervous system (ANS) in stress response. LO: State the relationship between stress, surprise and startle. LO: Explain the "flight or fight response" on the pilot job context. LO: Describe the "vicious circle" and state its effects on the pilot job context. LO: Consider the application of knowledge – workload. LO: Consider the application of workload on the pilot job performance [*] [*]. LO: List and characterize the "flight or fight response" countermeasures.	*.1: XXX* *.2: XXX* *…*	Source of contents: *.1: XXX* *.2: XXX* *…*

Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
XXX	*XXX*	*XXX*	*XXX*	*XXX*

Assessment:	*XXX*
Related competencies and [OB]:	[OB 0.3] [OB 2.1] [OB 2.4] [OB 2.7] [OB 2.8] [OB 3.6] [OB 4.7] [OB 5.7] [OB 5.8] [OB 6.6] [OB 6.9] [OB 7.5] [OB 7.7] [OB 8.2] [OB 8.4]

N/A	*XX min*	.8	Title: Situational Awareness [SA] LO: Define the term "situation awareness". LO: State the three levels/stages of situation awareness. LO: List the types of failures at each level. LO: List the cues that indicate loss of situation awareness and name the steps to regain it. LO: List the factors that influence one's SA both positively and negatively and stress the importance of SA in the context of flight safety. LO: Define the term "mental model" in relation to a surrounding complex situation. LO: Describe the advantages/disadvantages of mental models. LO: Consider the application of knowledge – SA. LO: Consider the application of SA on the pilot job performance [*] [*]. LO: Relate SA with decision making, information processing, perception, attention, vigilance, monitoring, decision making and other HF areas.	*.1: XXX* *.2: XXX* *…*	Source of contents: *.1: XXX* *.2: XXX* *…*

			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 7.1] [OB 7.2] [OB 7.3] [OB 7.4] [OB 7.5] [OB 7.6] [OB 7.7]			
N/A	*XX min*	.9	Title: Decision Making LO: List the three types of decision-making. LO: Differentiate and characterize the aspects of the three types of decision-making. LO: Describe the major factors/mechanisms of each three types of decision-making: rational, quicker and very fast decision making. LO: Describe the main human attributes with regard to decision-making. Explain the general idea behind the creation of a model for decision-making based upon: — Definition of the aim; — Collection of information; — Risk assessment; — Development of options; — Evaluation of options; — Decision; — Implementation; — Consequences; — Review and feedback. LO: Consider the application of knowledge – decision making. LO: Consider the application of the three types of decision making on the pilot job performance [*] [*]. LO: Relate decision making with information processing, perception, attention, vigilance, monitoring, SA and other HF areas.	*.1: XXX* *.2: XXX* *…*		Source of contents: *.1: XXX* *.2: XXX* *…*
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 6.1] [OB 6.2] [OB 6.3] [OB 6.4] [OB 6.5] [OB 6.6] [OB 6.7] [OB 6.8] [OB 6.9]			

N/A	*XX min*	.10	Title: Stress in Aviation, Stress Management LO: Define stress. LO: Explain the term 'stress' and why stress is a natural human reaction. LO: Differentiate types of stress. LO: Explain the three stages of the response to acute stress. LO: State the basic categories of stressors. LO: State the basic categories of stressors. LO: Recognize examples of stressor´s categories. LO: List and discuss the major environmental sources of stress in the flight crew compartment [*] [*]. LO: Discuss the concept of "break point" with regard to stress, overload and performance. LO: Explain the relationship between stress and anxiety. LO: Explain the relationship between stress, arousal and vigilance. LO: List the effects of stress. LO: Explain stress management and its strategies. LO: Consider the application of the stress management on the pilot job performance [*] [*].	*.1: XXX* *.2: XXX* *…*	Source of contents: *.1: XXX* *.2: XXX* *…*

Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
XXX	*XXX*	*XXX*	*XXX*	*XXX*

Assessment:	*XXX*
Related competencies and [OB]:	[OB 1.3] [OB 2.7] [OB 3.5] [OB 4.6] [OB 5.6] [OB 6.4] [OB 6.8] [OB 6.9] [OB 7.5] [OB 8.1] [OB 8.4] [OB 8.5] [OB 8.7]

N/A	*XX min*	.11	Title: Sleep and Fatigue LO: Characterize the importance of the sleep. LO: State main requirements of a normal sleep. LO: Differentiate the two types of sleep loss. LO: Characterize the impacts of sleep loss. LO: List the stages of sleep. LO: Explain the relation of sleep, performance and alertness. LO: Explain the term fatigue and sleepiness and state their two principal components. LO: Differentiate the two types of the fatigue. LO: State factors leading to the fatigue. LO: Recognize the symptoms of the fatigue. LO: Recognize the effects of the fatigue. LO: List and describe preventive measures of the fatigue.	*.1: XXX* *.2: XXX* *…*	Source of contents: *.1: XXX* *.2: XXX* *…*

			LO: Consider the application of knowledge – sleep and fatigue. LO: Consider the application of the sleep and fatigue on the pilot job performance [*] [*]. LO: Relate fatigue with decision making, SA, vigilance, monitoring and other HF areas.		
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 1.5] [OB 2.5] [OB 3.6] [OB 4.7] [OB 5.2] [OB 5.4] [OB 5.9] [OB 5.10] [OB 6.1] [OB 6.3] [OB 6.4] [OB 6.6] [OB 6.7] [OB 7.1] [OB 7.3] [OB 7.7] [OB 8.2] [OB 8.3] [OB 8.7] [OB 8.9]		
N/A	*XX min*	.12	Title: Personality and Cultural differences LO: Describe the factors that determine an individual's behavior. LO: Explain the relation between personality and cultural factors. LO: Define and distinguish between "'personality", "attitude" and "behavior". LO: Explain cultural differences. LO: Take account cultural differences among countries, companies and groups [*]. LO: Consider the application of knowledge – personality and cultural differences, with emphasis on operational safety culture. LO: Consider the application of the personality and cultural differences on the pilot job performance [*]. LO: Relate personality and cultural differences with decision making, SA, workload, communication and other HF areas.	*.1: XXX* *.2: XXX* *…*	Source of contents: *.1: XXX* *.2: XXX* *…*
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 2.2] [OB 2.3] [OB 2.5] [OB 2.7] [OB 2.8] [OB 2.9] [OB 5.1] [OB 5.5] [OB 5.11] [OB 7.5]			
N/A	*XX min*	.13	Title: Automation human factors LO: State about automation background and application. LO: Describe automation levels [functionalities, models/combinations, complexity and relation among systems e control units].	*.1: XXX* *.2: XXX* *…*	Source of contents: *.1: XXX* *.2: XXX* *…*

			LO: Consider automation human factors with reduced manual handling skills. LO: Characterize the use of automation. LO: Compare the two basic concepts of automation: — As per Boeing, where the pilot remains the last operator. — And as per Airbus, where automated systems can correct erroneous pilot action. LO: Describe methods to overcome the drawbacks of auto flight systems to be loss of manual flying capabilities, additional workload through programming, risk of slips during programming, and "hypo vigilance" during cruise. LO: Consider the application of knowledge – automation HF. LO: Consider the application of the automation human factors on the pilot job performance [*]. LO: Relate automation usage with SA, workload [cognitive and physical], vigilance, monitoring, decision making and other HF areas.		

Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
XXX	*XXX*	*XXX*	*XXX*	*XXX*

Assessment:	*XXX*
Related competencies and [OB]:	[OB 0.1] [OB 0.2] [OB 0.7] [OB 1.4] [OB 1.7] [OB 3.1] [OB 3.2] [OB 3.3] [OB 3.4] [OB 3.5] [OB 3.6] [OB 7.1] [OB 8.7] [OB 8.8]

Intermediate Objective nº: [T-HPL.03] - BASICS AVIATION PHYSIOLOGY – CREW FACTORS [05:00h]

Session	Time	Units / Teaching Points		Elements and Contents	
Teaching Points :					
N/A	*XX min*	.1	Title: Effects of groups and teams (coordination, teamwork, roles and group decisions) [*] [*] LO: Distinguish between cooperation and coaction. LO: Define the term 'group' and "group behavior". LO: Illustrate the influence of interdependence in a group. LO: List the advantages and disadvantages of teamwork. LO: Explain the term 'synergy'. LO: Explain the term 'cohesion'. LO: Define the term 'groupthink'. LO: State the essential conditions for good teamwork. LO: Explain the function of role and norm in a group. LO: Name the different role patterns which occur in a group situation. LO: Characterize the group decision-making. LO: List and explain the group decision-making effects.	.1: *XXX* .2: *XXX* …	Source of contents: *.1: XXX* *.2: XXX* …

			LO: Consider the application of knowledge - Effects of groups and teams. LO: Consider the application of the effects of groups and teams on the pilot job performance.				
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 2.1] [OB 2.2] [OB 5.1] [OB 5.2] [OB 5.3] [OB 5.4] [OB 5.5] [OB 5.6] [OB 5.7] [OB 5.8] [OB 5.8] [OB 5.9] [OB 5.10] [OB 5.11] [OB 8.5] [OB 8.6]			
N/A	*XX min*	.2	Title: Leadership [*] [*]		.1: *XXX* .2: *XXX* …		Source of contents: *.1: XXX* *.2: XXX* …
			LO: Characterize the modern leader effectiveness. LO: List the leader two distinct orientations. LO: Characterize situational leadership situational traits. LO: Differentiate the three leadership styles. LO: Take account of the three leadership styles into a task or group orientation. LO: Consider the application of knowledge – leadership. LO: Consider the application of the leadership on the pilot job performance.				
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 2.4] [OB 2.7] [OB 5.1] [OB 5.2] [OB 5.3] [OB 5.4] [OB 5.5] [OB 5.6] [OB 5.7] [OB 5.8] [OB 5.8] [OB 5.9] [OB 5.10] [OB 5.11] [OB 6.5] [OB 7.5] [OB 8.2] [OB 8.5] [OB 8.8]			
.							
N/A	*XX min*	.3	Title: Communication (communication, language, sharing mental models, assertiveness and verbal intervention) [*] [*]		*.1: XXX* *.2: XXX* …		Source of contents: *.1: XXX* *.2: XXX* …
			LO: Define the term ‘communication’. LO: List the most basic components of interpersonal communication. LO: Explain the advantages of in-person two-way communication as opposed to one-way communication. LO: Name the importance of non-verbal communication. LO: Describe the general aspects of non-verbal communication. LO: Describe the advantages/disadvantages of implicit and explicit communication.				

			LO: Describe the advantages and possible problems of using 'social' and 'professional' language in high- and low-workload situations. LO: Describe the advantages and possible problems of using 'social' and 'professional' language in high- and low-workload situations. LO: Explain the difference between intrapersonal and interpersonal conflict. LO: Describe the escalation process in human conflict. LO: List the typical consequences of conflicts between crew members. LO: Explain the following terms as part of the communication practice with regard to preventing or resolving conflicts: — inquiry; — active listening; — advocacy; — feedback; — metacommunication; — negotiation. LO: Describe the limitations of communication in situations of high workload in the flight crew compartment in view of listening, verbal, non-verbal and visual effects. LO: Describes the benefits on sharing information and mental models in multi-crew operations. LO: Defines assertiveness. LO: Describe relation among assertiveness and intervention. LO: Differentiate the five levels of assertiveness on the application of the communication.		

Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
XXX	*XXX*	*XXX*	*XXX*	*XXX*

Assessment:	*XXX*
Related competencies and [OB]:	[OB 2.1] [OB 2.2] [OB 2.3] [OB 2.4] [OB 2.5] [OB 2.6] [OB 2.7] [OB 2.8] [OB 2.9] [OB 5.1] [OB 5.4] [OB 5.11]

Remarks:
- [*] : Yellow marks refers to the teaching points which a given organizational structure [non-public versus public air transport] could influence the performance of a given task, leading to changes on LO, modules contents and elements.
- [*] : Blue marks refers to the teaching points which the PF or PM duty could influence the performance of a given task, leading to changes on LO, modules contents and elements.
All other non-marked items were considered common and bas independent of the context and duty.

ADAPTED FROM DOC 9941 AN/478, 1ST EDITION - TRAINING DEVELOPMENT GUIDE COMPETENCY-BASED TRAINING METHODOLOGY (ICAO, 2011)

MODULE PLAN				
STP No: *01*	**Location:** *Lisbon, Portugal*	**Completed by:** *Colonese, João - researcher*	**Page:** *XX* of *XX*	**Date:** *NOV21*
Module Title: [Theoretical curriculum] Threat and Error Management - TEM			**Module No:** T-TEM	
Markings: [*] ; [*]	**Task No(s):** N/A		**Sub-Task No(s):** N/A	

END- OF-MODULE OBJECTIVE

Conditions:

[Introducing and to a joint use among the other elements of the theoretical syllabus [modules] of the course, in a customized way to a certain function and characteristic of the air transport service [when applicable]. Complemented by assessments to take place during the development of the other modules]

Performance:

[Allow the pilot to consider elements of the threat and error management concept customized by a given function and characteristic of the air transport service [when applicable] throughout the other elements of the theoretical syllabus [modules] of the course. Allow the pilot to relate, from an operational perspective, the human performance and safety in his operational context, and build an interim level of competence regarding the execution of tasks associated to the preparation and execution of the flight]

Standard:

[Have the pilot endowed with certain knowledge, skills and attitudes related to the recognition and management of errors and threats according to his operational context [function and characteristics of the air transport service] in relation to the development of the program elements [modules] of the theoretical curriculum of the course. Have characterized an accepted interim level of competence regarding the adoption of countermeasures against threats and errors that may lead the airplane to certain undesirable states, either in execution of the tasks associated with the execution of tasks associated to the preparation and the flight by itself]

General notes: *XXX*

Intermediate Objective nº: [T-TEM.01] – FLIGHT SAFETY CONCEPTS [08:00h]

Session	Time		Units / Teaching Points	Elements and Contents	
Teaching Points :					
N/A	*XX min*	.1	Title: SHELL model [individual accident] and Reason model [organizational accident]	*.1: XXX* *.2: XXX* *…*	Source of contents: *.1: XXX* *.2: XXX* *…*
			LO: Define the focus of the SHELL model. LO: State the components of the SHELL model. LO: State the interface issues of the SHELL model. LO: State the relevance of the SHELL model to the work in the cockpit. LO: Explain James Reason's "Swiss Cheese Model" [*]. LO: State the components of the James Reason's "Swiss Cheese Model" [*]. LO: State the relevance of the James Reason's "Swiss Cheese Model" to the work in the cockpit [*] [*].		

Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
XXX	*XXX*	*XXX*	*XXX*	*XXX*

Assessment:	*XXX*
Related competencies and [OB]:	[OB 0.2] [OB 0.3] [OB 0.7] [OB 2.3] [OB 2.5] [OB 3.1] [OB 4.1] [OB 5.1] [OB 6.2] [OB 6.8] [OB 7.3] [OB 7.5] [OB 7.6] [OB 8.8]

N/A	*XX min*	.2	Title: Safety culture LO: State national culture. LO: State organizational culture [*] [*]. LO: State professional culture [*] [*]. LO: Illustrate how safety culture is reflected in national culture [*]. LO: List and differentiate factors which are affected by and which affects the organizational culture [*]. LO: Distinguish between "open cultures" and "closed cultures" [*]. LO: State the important factors that promote a good safety culture [*]. LO: Name the five components which form safety culture (according to James Reason: informed culture, reporting culture, learning culture, just culture, flexible culture) [*]. LO: Distinguish between "just culture" and "non-punitive culture" [*]. LO: Name the basic concepts of safety management system (SMS) (including hazard identification and risk management) and its relationship with safety culture in order to [*]: — define how the organization is set up to manage risks; — identify workplace risk and implement suitable controls; — implement effective communication across all levels of the organization.	*.1: XXX* *.2: XXX* *…*	Source of contents: *.1: XXX* *.2: XXX* *…*

Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
XXX	*XXX*	*XXX*	*XXX*	*XXX*

Assessment:	*XXX*
Related competencies and [OB]:	[OB 0.2] [OB 0.4] [OB 0.5] [OB 0.6] [OB 1.1] [OB 1.3] [OB 1.6] [OB 1.7] [OB 5.1] [OB 5.2] [OB 5.4] [OB 5.6] [OB 5.8] [OB 6.2] [OB 6.4] [OB 6.5]

N/A	*XX min*	.3	Title: Occurrence Reporting LO: State reporting culture. LO: Characterize effective safety reporting. LO: List the five basic characteristics associates with effective safety reporting system [*]. LO: Characterize the investigation of accidents and incidents process. LO: Differentiate the investigation of accident and incident´s role in the safety management environment [*]. LO: Characterize the use of RELPREV report among SIPAER system [CENIPA]. LO: Characterize the use of RCSV report among SIPAER system [CENIPA].	*.1: XXX* *.2: XXX* *…*	Source of contents: *.1: XXX* *.2: XXX* *…*

			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 0.2] [OB 0.4] [OB 0.5] [OB 0.6] [OB 1.1] [OB 1.3] [OB 1.6] [OB 1.7] [OB 5.1] [OB 5.2] [OB 5.4] [OB 5.6] [OB 5.8] [OB 6.2] [OB 6.4] [OB 6.5]			
Intermediate Objective nº: [T-TEM02] - THREAT AND ERROR MANAGEMENT – TEM CONCEPT [08:00h]							
Session	**Time**	**Units / Teaching Points**		**Elements and Contents**			
Teaching Points :							
N/A	*XX min*	.1	Title: TEM concept [*] [*] LO: State the general TEM concept. LO: Characterize the use of TEM concept as tool on operational context, considering: — safety analysis tool; — licensing tool; — training tool; — operational tool. LO: List the three TEM challenges. LO: Characterize and exemplify threats. LO: Characterize and exemplify errors. LO: Characterize and exemplify Undesired Aircraft States – UAS. LO: Differentiate USA from outcomes. LO: Characterize and exemplify systemic-based, individual and team countermeasures.	*.1: XXX* *.2: XXX* *…*	Source of contents: *.1: XXX* *.2: XXX* *…*		
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 0.7] [OB 1.6] [OB 1.7] [OB 5.10] [OB 6.1] [OB 6.3] [OB 6.7] [OB 7.3] [OB 8.2] [OB 8.3] [OB 8.7]			

Remarks:
- [*] : Yellow marks refers to the teaching points which a given organizational structure [non-public versus public air transport] could influence the performance of a given task, leading to changes on LO, modules contents and elements.
- [*] : Blue marks refers to the teaching points which the PF or PM duty could influence the performance of a given task, leading to changes on LO, modules contents and elements.
All other non-marked items were considered common and bas independent of the context and duty.

ADAPTED FROM DOC 9941 AN/478, 1ST EDITION - TRAINING DEVELOPMENT GUIDE COMPETENCY-BASED TRAINING METHODOLOGY (ICAO, 2011)

MODULE PLAN				
STP No: *01*	**Location:** *Lisbon, Portugal*	**Completed by:** *Colonese, João - researcher*	**Page:** *XX* of *XX*	**Date:** *NOV21*
Module Title: [Theoretical curriculum] Operational Procedures			**Module No:** T-OP	
Markings: [*] ; [*]	**Task No(s):** N/A		**Sub-Task No(s):** N/A	

END- OF-MODULE OBJECTIVE

Conditions:

[Conclusively to the previous elements of the theoretical syllabus [modules] of the course and customized by a given function and characteristics of the air transport service [when applicable]. Complemented by assessments in the module]

Performance:

[Allow the pilot to consider requirements, publications and manuals related to flight operations and elements of the standardization of operational procedures [SOP], on an aggregated way to the previous modules of the theoretical curriculum of the course, in the construction of an interim level of competence about the execution of tasks inherent in the preparation and execution of the flight. Allow the pilot to relate, from an operational perspective, the influence of operational philosophies and [SOP] in support to the threat and error management in both normal, abnormal and emergency operations]

Standard:

[Have the pilot endowed with certain knowledge, skills and attitudes related to the requirements, publications and manuals related to flight operations and elements of the standardization of operational procedures [SOP] in the execution of tasks inherent to the preparation and execution of the flight according to a certain function and characteristic of the air transportation service [where applicable]. Have characterized an accepted interim level of competence regarding the standardization of operational procedures as a measure to manage threats and errors in the execution of tasks associated with the preparation and the flight itself]

General notes: *XXX*

Intermediate Objective nº: [T-OP.01] - GENERAL REQUIREMENTS [08:00h]

Session	Time	Units / Teaching Points		Elements and Contents	
Teaching Points :					
N/A	*XX min*	.1	Title: ICAO Annex 6 [*] LO: Define: Air operator certificate (AOC), Aircraft operating manual, Certification process, Commercial air transport operation, Continuous surveillance, Flight manual, Flight safety documents system, General aviation operation, Large aeroplane, technical requirements, Operations manual, Operator, Specific approval. LO: Differentiate the three types of air operators: RBAC 91, 121 and 135. LO: Explain the compliance with laws, regulations and procedures. LO: Explain the term “flight safety documents system”. LO: Characterize the importance of the “flight safety documents system”. LO: List the most remarkable manuals and programs contained on the “flight safety documents system”. LO: Describe the general aspects for specific operations authorizations [Specific Op. Procedures]. LO: List the three main elements concerned to the SOP authorization.	*.1: XXX* *.2: XXX* *…*	Source of contents: *.1: XXX* *.2: XXX* *…*

			LO: List SOP examples. LO: Demonstrate the importance of air operator certification and surveillance processes and state it´s impact on safety. LO: Explain what the rules applicable to air operator certification are. LO: Name what elements the air operator shall demonstrate adequate for the issue of an air operator certificate. LO: Explain the conditions to be met for the issue or revalidation of an AOC and relate to the supervision process.				
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 0.2] [OB 0.4] [OB 0.5] [OB 0.6] [OB 0.7] [OB 1.1] [OB 1.2] [OB 1.3] [OB 1.6] [OB 1.7] [OB 6.2] [OB 7.4]			
N/A	*XX min*	.2	Title: Aircraft Operational requirements and documentation LO: State the definition and characterize the Aircraft Flight Manual [AFM] and the Pilot Operating Handbook [POH]. LO: Explain the objective of an AFM and POH. LO: List and characterize the AFM and POH sections. LO: State the definition and characterize the Supplements. LO: Explain the importance and applicability of Supplements. LO: Demonstrate the correct use of an AFM or POH. LO: State the Quick Reference Handbook [QRH] definition. LO: Explain the objective of an QRH. LO: Demonstrate the correct use of a QRH. LO: State the definition and characterize the Flight Crew Operations Manual [FCOM] [*]. LO: State the definition and characterize the Flight Crew Training Manual [FCTM] [*]. LO: Differentiate AFM and POH from FCOM and FCTM taking account equipment complexity [*]. LO: Consider the use of AFM, POH, FCOM and FCTM to safety operations [*]. LO: State the Master Minimum Equipment List [MMEL] definition. LO: Explain the objective of a MMEL. LO: Demonstrate the correct use of a MMEL.	*.1: XXX* *.2: XXX* *…*			Source of contents: *.1: XXX* *.2: XXX* *…*
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*

			Assessment:	*XXX*				
			Related competencies and [OB]:	[OB 0.1] [OB 0.2] [OB 0.4] [OB 0.5] [OB 0.6] [OB 0.7] [OB 1.1] [OB 1.2] [OB 1.3] [OB 1.4] [OB 1.6] [OB 1.7] [OB 2.9] [OB 3.1] [OB 4.3] [OB 7.1] [OB 7.3]				
N/A	*XX min*	.3	Title: Air Operator documentation system [*]		*.1: XXX* *.2: XXX* *…*			Source of contents: *.1: XXX* *.2: XXX* *…*
			LO: State the definition and characterize the operations manual [MGO] and its volumes. LO: Explain the objective of the MGO. LO: Explain the general rules for the MGO. LO: Explain the structure and subject headings of the MGO. LO: List and characterize the MGO sections. LO: Demonstrate the correct use of an MGO. LO: State the Aircraft Operating Manual [AOM] definition. LO: Explain the objective of an AOM. LO: Demonstrate the correct use of an AOM. LO: State the definition and characterize the Standard Operating Procedures [SOP]. LO: Demonstrate the correct use of an SOP. LO: State the definition and characterize the Runway/Performance Analysis and Minimum Equipment List [MEL]. LO: Demonstrate the correct use of a Runway/Performance Analysis and MEL. LO: List other manuals, programs and guides associate to the MGO.				
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:	
			XXX	*XXX*	*XXX*	*XXX*	*XXX*	
			Assessment:	*XXX*				
			Related competencies and [OB]:	[OB 0.1] [OB 0.2] [OB 0.4] [OB 0.5] [OB 0.6] [OB 0.7] [OB 1.1] [OB 1.2] [OB 1.3] [OB 1.4] [OB 1.6] [OB 1.7] [OB 2.9] [OB 3.1] [OB 3.6] [OB 4.3] [OB 4.6] [OB 7.1] [OB 7.3]				
N/A	*XX min*	.4	Title: Correlation among Aircraft and Air Operator documentation [*]		*.1: XXX* *.2: XXX* *…*			Source of contents: *.1: XXX* *.2: XXX* *…*
			LO: Demonstrate the link between AFM/POH, QRH and the air operator documents: MGO, AOM, SOP. LO: Characterize safety and operational benefits on the link between AFM/POH, QRH and the air operator documents: MGO, AOM, SOP. LO: Demonstrate the link between FCOM/FCTM/MMEL and the air operator documents: AOM, SOP and MEL.					

			LO: Characterize safety and operational benefits on the link between FCOM/FCTM/MMEL and the air operator documents: AOM, SOP and MEL.				
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 0.1] [OB 0.2] [OB 0.5] [OB 0.6] [OB 0.7] [OB 1.1] [OB 1.2] [OB 1.3] [OB 1.4] [OB 1.6] [OB 1.7] [OB 2.9] [OB 3.1] [OB 3.3] [OB 3.5] [OB 4.3] [OB 4.4] [OB 4.6] [OB 7.1] [OB 7.3] [OB 7.5] [OB 8.3] [OB 8.5] [OB 8.7] [OB 8.8]			
Intermediate Objective nº: [T-OP.02] - STANDARD OPERATING PROCEDURES [SOP] [10:00h]							
Session	**Time**		**Units / Teaching Points**		**Elements and Contents**		
Teaching Points :							
N/A	*XX min*	.1	Title: General aspects LO: Describe the concepts of “standard operating procedures” [SOP], checklists and crew briefings [*] [*]. LO: Describe when SOP shall be elaborated or reviewed. LO: List and explain the three elements related to a SOP development process: — Desirable SOP characteristics; — Collaboration to an effective SOP; — Resources to develop a SOP. LO: Relate the ten topics related to the formulation of effective procedures with safety and operational benefits: — General guidelines; — Organization; — Vocabulary; — Numbers; — Format; — Place keeping; — Emphasis; — Conditional steps; — Cross-references; — Warnings and caution. LO: Explain the advantages of SOPs. LO: Explain how SOPs contribute to avoiding, reducing and managing threats and errors [*] [*]. LO: Explain potential threats of SOPs, for example during company or type conversion (e.g. motor programmes, company culture, hazardous attitudes, developed habits) [*] [*]. LO: Recognize justified SOP deviation motivations.		*.1: XXX* *.2: XXX* *…*		Source of contents: *.1: XXX* *.2: XXX* *…*

			LO: Describe justified SOP deviation situation handling/management aspects.				
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 0.1] [OB 0.2] [OB 0.3] [OB 0.4] [OB 0.5] [OB 0.6] [OB 0.7] [OB 1.1] [OB 1.2] [OB 1.3] [OB 1.4] [OB 1.5] [OB 1.6] [OB 1.7] [OB 2.6] [OB 3.5] [OB 4.6] [OB 5.9] [OB 6.2] [OB 8.8]			
N/A	*XX min*	.2	Title: Operational philosophies LO: State what is operating philosophy. LO: Relate manufacture´s aircraft design philosophy elements [cockpit layout, automation, controls, displays and alerts] with operating philosophy. LO: Differentiate the most common aircraft manufactures operating philosophies. LO: Explain the role of operating philosophies impacts on SOP. LO: Explain the role of operating philosophies impacts on pilot´s tasks. LO: Relate the operating philosophies with HF and TEM embedded concepts and safety [*] [*]. LO: Characterize the benefits of a HF and TEM embedded concepts [approach] on SOP [*] [*]. LO: Recognize HF and TEM elements on SOP [*] [*].	*.1: XXX* *.2: XXX* *…*			Source of contents: *.1: XXX* *.2: XXX* *…*
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 0.2] [OB 0.5] [OB 0.6] [OB 0.7] [OB 1.2] [OB 1.3] [OB 1.4] [OB 1.5] [OB 1.6] [OB 1.7] [OB 2.2] [OB 2.3] [OB 2.4] [OB 2.6] [OB 3.1] [OB 3.2] [OB 3.3] [OB 3.4] [OB 3.5] [OB 3.6] [OB 4.1] [OB 4.2] [OB 4.3] [OB 4.4] [OB 4.5] [OB 4.6] [OB 4.7] [OB 5.1] [OB 5.2] [OB 5.4] [OB 5.5] [OB 5.9] [OB 5.10] [OB 7.5] [OB 8.4] [OB 8.5] [OB 8.6] [OB 8.7] [OB 8.8] [OB 8.9]			
N/A	*XX min*	.3	Title: Briefings [*] [*] LO: Explain the purpose of the briefings. LO: Relate pre-flight activities [dispatch] activities and data with an effective crew briefing. LO: Demonstrate how to prepare and deliver effective briefings.	*.1: XXX* *.2: XXX* *…*			Source of contents: *.1: XXX* *.2: XXX* *…*

			LO: Characterize the benefits of a HF approach on briefings. LO: List HF elements on crew briefings. LO: Describe the elements to conduct an effective crew briefing, including cabin crew briefing when applicable. LO: Describe the elements to conduct an effective passenger´s safety and emergency briefing (including evacuation).				
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 0.3] [OB 0.6] [OB 0.7] [OB 1.3] [OB 2.1] [OB 2.2] [OB 2.3] [OB 2.4] [OB 2.5] [OB 2.6] [OB 2.7] [OB 2.8] [OB 2.9] [OB 5.1] [OB 5.2] [OB 5.3] [OB 5.4] [OB 5.5] [OB 5.6] [OB 5.7] [OB 5.8] [OB 5.9] [OB 5.10] [OB 5.11] [OB 6.5] [OB 6.7] [OB 7.3] [OB 7.5] [OB 7.6] [OB 8.2] [OB 8.4] [OB 8.5] [OB 8.6] [OB 8.7]			
N/A	*XX min*	.4	Title: Pilot Flying and Pilot Monitoring [*] [*]		*.1: XXX* *.2: XXX* *…*		Source of contents: *.1: XXX* *.2: XXX* *…*
			LO: Define Pilot flying [PF] and Pilot monitoring [PM]. LO: Describe PF and PM specific tasks, subtasks and duties. LO: Draw and name PF and PM cockpit areas relating flight phases, tasks and subtasks. LO: Characterize how we monitor and list the kinds of monitoring activities. LO: Recognize the effective monitoring elements and skills. LO: List monitoring challenges and barriers. LO: Relate SOP and briefings with the effective monitoring.				
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 0.2] [OB 0.7] [OB 1.3] [OB 1.4] [OB 1.5] [OB 1.7] [OB 2.3] [OB 2.4] [OB 2.5] [OB 3.1] [OB 3.2] [OB 4.1] [OB 4.2] [OB 5.1] [OB 5.2] [OB 5.4] [OB 5.5] [OB 5.7] [OB 5.8] [OB 5.9] [OB 5.10] [OB 5.11] [OB 6.1] [OB 7.1] [OB 7.2] [OB 7.3] [OB 7.4] [OB 7.5] [OB 7.6] [OB 7.7] [OB 8.2] [OB 8.3] [OB 8.4] [OB 8.5] [OB 8.6] [OB 8.7] [OB 8.8] [OB 8.9]			
Intermediate Objective nº: [T-OP.03] - VERIFICATION LISTS – CHECKLISTS [04:00h]							
Session	**Time**	**Units / Teaching Points**			**Elements and Contents**		
Teaching Points :							
N/A	*XX min*	.1	Title: General requirements and purposes [*] [*]		*.1: XXX* *.2: XXX* *…*		Source of contents: *.1: XXX* *.2: XXX* *…*
			LO: Recognize the purpose of checklists LO: Characterize the main developing aspects to formulate effective checklists [*] [*]: — Consistency; — Type of list and manner of execution;				

<table>
<tr><td></td><td></td><td></td><td colspan="5">— Timing;
— Roles;
— Initiation anchor;
— Completion signal;
— Checklist verification and HF polices.
LO: Describe the methods to manage checklist accomplishment, related to [*]:
— Single-pilot aircraft:
— Multi-pilot aircrafts;
— Interruptions;
— Representative items.
LO: Characterize the “item order” and “phraseology” aspects on the checklist accomplishment.
LO: List the areas where checklist errors can occur [*] [*].
LO: Describe how preventing checklist errors [*] [*].</td></tr>
<tr><td></td><td></td><td></td><td>Training Techniques and Methods:</td><td>Media - Audio Vis. Aids, Instruct. Resources.:</td><td>Facilities / Equipment - support:</td><td>Student´s materials – Hand-outs - references:</td><td>Instructor´s Materials and Guides – references:</td></tr>
<tr><td></td><td></td><td></td><td>XXX</td><td>XXX</td><td>XXX</td><td>XXX</td><td>XXX</td></tr>
<tr><td></td><td></td><td></td><td>Assessment:</td><td colspan="4">XXX</td></tr>
<tr><td></td><td></td><td></td><td>Related competencies and [OB]:</td><td colspan="4">[OB 0.1] [OB 0.2] [OB 0.5] [OB 0.7] [OB 1.1] [OB 1.2] [OB 1.3] [OB 1.4] [OB 1.5] [OB 1.7] [OB 2.3] [OB 2.4] [OB 2.5] [OB 2.6] [OB 2.8] [OB 3.6] [OB 4.7] [OB 5.2] [OB 5.4] [OB 5.9] [OB 5.10] [OB 6.2] [OB 6.3] [OB 6.4] [OB 6.9] [OB 7.1] [OB 7.5] [OB 7.7] [OB 8.7] [OB 8.8] [OB 8.9]</td></tr>
<tr><td colspan="8"></td></tr>
<tr><td>N/A</td><td>XX min</td><td>.2</td><td colspan="3">Title: Methods, flight phases and operation [*]
LO: Characterize Do-list [read/call-do-response] checklists.
LO: Characterize Challenge-response [challenge-verification-response] checklists.
LO: Differentiate most applicable checklists methods by flight phase [tasks/subtasks].
LO: Differentiate most applicable checklists methods either by normal or non-normal operations.
LO: Explain “Memory items”.</td><td>.1: XXX
.2: XXX
…</td><td>Source of contents:
.1: XXX
.2: XXX
…</td></tr>
<tr><td></td><td></td><td></td><td>Training Techniques and Methods:</td><td>Media - Audio Vis. Aids, Instruct. Resources.:</td><td>Facilities / Equipment - support:</td><td>Student´s materials – Hand-outs - references:</td><td>Instructor´s Materials and Guides – references:</td></tr>
<tr><td></td><td></td><td></td><td>XXX</td><td>XXX</td><td>XXX</td><td>XXX</td><td>XXX</td></tr>
<tr><td></td><td></td><td></td><td>Assessment:</td><td colspan="4">XXX</td></tr>
<tr><td></td><td></td><td></td><td>Related competencies and [OB]:</td><td colspan="4">[OB 0.1] [OB 0.2] [OB 1.1] [OB 1.2] [OB 1.3] [OB 1.4] [OB 1.5] [OB 1.7] [OB 3.6] [OB 4.7] [OB 5.2] [OB 5.4] [OB 5.9] [OB 5.10] [OB 6.1] [OB 6.2] [OB 6.3] [OB 6.4] [OB 6.5] [OB 6.8] [OB 6.9] [OB 7.1] [OB 7.3] [OB 7.5] [OB 7.6] [OB 7.7] [OB 8.5] [OB 8.7] [OB 8.8] [OB 8.9]</td></tr>
<tr><td colspan="8"></td></tr>
<tr><td>N/A</td><td>XX min</td><td>.3</td><td colspan="3">Title: Quick Reference Handbook - QRH</td><td>.1: XXX</td><td>Source of contents:</td></tr>
</table>

			LO: Recognize the purpose of QRH use. LO: List QRH contents, including: performance, inflight and maneuvers. LO: Explain main aspects to effective use of QRH: — General guidance and task-sharing on “normal” and “non-normal/emergency” procedures. — Use of index/chapters and its structures. — Conditions, Signs, Ordering, Notes and others.	*.2: XXX* …			*.1: XXX* *.2: XXX* …
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 0.1] [OB 0.2] [OB 0.5] [OB 0.6] [OB 0.7] [OB 1.1] [OB 1.2] [OB 1.3] [OB 1.4] [OB 1.5] [OB 1.7] [OB 2.3] [OB 2.4] [OB 2.5] [OB 2.6] [OB 2.7] [OB 5.1] [OB 5.2] [OB 5.4] [OB 5.8] [OB 5.9] [OB 6.1] [OB 6.2] [OB 6.3] [OB 6.4] [OB 6.5] [OB 6.6] [OB 6.7] [OB 6.8] [OB 6.9] [OB 7.1] [OB 7.2] [OB 7.3] [OB 7.4] [OB 7.5] [OB 7.6] [OB 7.7] [8.1] [OB 8.3] [OB 8.4] [OB 8.5] [OB 8.6] [OB 8.7] [OB 8.8] [OB 8.9]		
Intermediate Objective nº: [T-OP.04] - SPECIAL OPERATIONAL PROCEDURES [02:00h]							
Session	**Time**	**Units / Teaching Points**			**Elements and Contents**		
Teaching Points :							
N/A	*XX min*	.1	Title: General Aspects		*.1: XXX* *.2: XXX* …		Source of contents: *.1: XXX* *.2: XXX* …
			LO: Define Special Operational Procedures [SOP]. LO: Characterize the need of SOP related authorizations, documents and manuals LO: Recognize the SOP common requirements related to [*] [*]: — Aircraft capacity; — Crew qualification; — Operator´s capacity. LO: Relate SPO related information on MGO [*].				
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 0.2] [OB 0.4] [OB 0.5] [OB 0.6] [OB 1.1] [OB 1.4] [OB 1.6]			
N/A	*XX min*	.2	Title: ANAC´s RBAC and IS – Specific Operations and Procedures [*]		*.1: XXX* *.2: XXX* …		Source of contents: *.1: XXX* *.2: XXX* …
			LO: Recognize the main elements [Operation, Aircraft capacity Crew qualification; Operator´s capacity] of the following SOP: — Performance Based Navigation [PBN] / Specifications; — North Atlantic High-Level Airspace [NAT-HLA];				

			— Reduced Vertical Separation Minima [RVSM]; — ILS CAT II and III Approach; — Mach 1 exceed; — Steep Approach; — Head Up Display [HUD] / Enhanced Vision System [EVS] Operations; — Enhanced Vision System [EVS] approach; — Extended Twin Operations [ETOPS]; — Specific Aerodromes – SBRJ/SBSP; — Portable Electronic Devices [PED].				
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 0.2] [OB 0.4] [OB 0.5] [OB 0.6] [OB 1.1] [OB 1.4] [OB 1.6] [OB 1.7]			

Remarks:
- [*] : Yellow marks refers to the teaching points which a given organizational structure [non-public versus public air transport] could influence the performance of a given task, leading to changes on LO, modules contents and elements.
- [*] : Blue marks refers to the teaching points which the PF or PM duty could influence the performance of a given task, leading to changes on LO, modules contents and elements.
All other non-marked items were considered common and bas independent of the context and duty.

Adapted from DOC 9941 AN/478, 1st edition - Training Development Guide Competency-based Training Methodology (ICAO, 2011)

MODULE PLAN				
STP No: *01*	**Location:** *Lisbon, Portugal*	**Completed by:** *Colonese, João - researcher*	**Page:** *XX* of *XX*	**Date:** *NOV21*
Module Title: [Theoretical curriculum] Pilot Competency [KSA]			**Module No:** T-KSA	
Markings: [*] ; [*]; [*practical competency*]	**Task No(s):** N/A		**Sub-Task No(s):** N/A	

END- OF-MODULE OBJECTIVE

Conditions:

[Conclusively to the previous elements of the theoretical syllabus [modules] of the course and customized by a given function and characteristics of the air transport service [when applicable]. Complemented by assessments in the module]

Performance:

[Allow the pilot to consider elements affecting the pilot's competence in an aggregated way to the previous modules of the theoretical curriculum of the course and the task descriptions of the airplane pilot in the construction of an interim level of competence regarding the execution of inherent tasks the preparation and execution of the flight. Allow the pilot to relate, from an operational perspective, the influence of competence in support of threat and error management in both normal, abnormal and emergency operations]

Standard:

[Have the pilot endowed with certain knowledge, skills and attitudes related to his competence in performing tasks inherent to the preparation and execution of the flight according to a certain function and characteristic of the air transport service [when applicable]. Have characterized an accepted interim level of competence in performing all tasks [and subtasks] related to his job as a measure to manage threats and errors in the execution of tasks associated with preparation and the flight itself]

General notes: *XXX*

Intermediate Objective nº: [T-KSA.01] - KNOWLEDGE, SKILLS, ATTITUDES [KSA] AND COMPETENCY [01:00h]

Session	Time	Units / Teaching Points	Elements and Contents	
Teaching Points :				
N/A	*XX min*	.1 Title: Knowledge, Skills, Attitudes and Competency	*.1: XXX* *.2: XXX* *…*	Source of contents: *.1: XXX* *.2: XXX* *…*
		LO: Define and give examples of knowledge. LO: Define and give examples of skills, considering: — Motor skills; — Cognitive Skills; — Metacognitive Skills. LO: Define and give examples of Attitudes. LO: Define and give examples of competency.		

Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
XXX	*XXX*	*XXX*	*XXX*	*XXX*

Assessment:	*XXX*
Related competencies and [OB]:	

Intermediate Objective nº: [T-KSA.02] – CBTA METHODOLOGY [02:00h]

Session	Time	Units / Teaching Points	Elements and Contents
Teaching Points :			

N/A	*XX min*	.1	Title: General Aspects LO: Define CBTA. LO: State the goal of CBTA. LO: Define Training objective. LO: Define ICAO competency framework and draw its structure. LO: Define Instructional systems design [ISD]. LO: Recognize the role of ISD on CBTA program. LO: State the workflow of the ADDIE ISD. LO: List the principles of CBTA. LO: List the components of CBTA Program. LO: Define Performance criteria. LO: Define Observable behavior [OB]. LO: Define Competency standard. LO: Define assessment and assessment guide. LO: Recognize the role of Criterion-referenced test.	*.1: XXX* *.2: XXX* *…*	Source of contents: *.1: XXX* *.2: XXX* *…*

Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
XXX	*XXX*	*XXX*	*XXX*	*XXX*

Assessment:	*XXX*
Related competencies and [OB]:	

N/A	*XX min*	.2	Title: Adapted Competency Model LO: Recognize the ICAO core competencies framework [*] [*]: — Application of procedures and compliance with regulations; — Communication; — Aeroplane flight path management, automation; — Aeroplane flight path management, manual control; — Leadership and teamwork; — Problem-solving and decision-making; — Situational awareness and management of information; — Workload management. LO: Define Adapted competency model. LO: Differentiate Adapted competency model from ICAO competency framework. LO: Draw the elements of the Adapted competency model. LO: Recognize/give examples of single-engine aircraft pilot tasks and subtasks by phase of flight. LO: Explain the relation among Job, functions, tasks, subtasks and [KSA].	*.1: XXX* *.2: XXX* *…*	Source of contents: *.1: XXX* *.2: XXX* *…*

			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:				
Intermediate Objective nº: [T-KSA.03] - ADAPTED AIRPLANE PILOT COMPETENCIES [10:00h]							
Session	**Time**	**Units / Teaching Points**		**Elements and Contents**			
Teaching Points :							
N/A	*XX min*	.1	Title: Application of knowledge [*practical competency*]	*.1: XXX* *.2: XXX* …			Source of contents: *.1: XXX* *.2: XXX* …
			LO: Recognize the competency description. LO: [Appreciate the need of] practical and applicable knowledge of limitations and systems and their interaction. LO: [Appreciate the need of] required knowledge of published operating instructions. LO: [Appreciate the need of] knowledge of the physical environment, the air traffic environment including routings, weather, airports and the operational infrastructure. LO: [Appreciate the need of] appropriate knowledge of applicable Legislation. LO: [Appreciate the need of] know where to source required information. LO: [Appreciate the need of] a positive interest in acquiring knowledge. LO: [Appreciate the need to] apply knowledge effectively.				
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 0.1] [OB 0.2] [OB 0.3] [OB 0.4] [OB 0.5] [OB 0.6] [OB 0.7]			
N/A	*XX min*	.2	Title: Application of procedures and compliance with regulations [*practical competency*]	*.1: XXX* *.2: XXX* …			Source of contents: *.1: XXX* *.2: XXX* …
			LO: Recognize the competency description. LO: [Appreciate the need of] identify where to find procedures and regulations. LO: [Appreciate the need of] apply relevant operating instructions, procedures and techniques in a timely manner.				

			LO: [Appreciate the need of] follows SOPs unless a higher degree of safety dictates an appropriate deviation. LO: [Appreciate the need of] operate aeroplane systems and associated equipment Correctly. LO: [Appreciate the need of] monitor aircraft systems status. LO: [Appreciate the need of] compliances with applicable regulations. LO: [Appreciate the need of] apply relevant procedural knowledge.				
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 1.1] [OB 1.2] [OB 1.3] [OB 1.4] [OB 1.5] [OB 1.6] [OB 1.7]			
N/A	*XX min*	.3	Title: Communication LO: Recognize the competency description. LO: Show the ability to identify whether the recipient is ready and able to receive information. LO: Show the ability to appropriately choose what, when, how and with whom to communicate. LO: Show the ability to conveys messages clearly, accurately and concisely. LO: Show the ability to identify whether the recipient demonstrates understanding of important information. LO: Show the ability to listen actively and demonstrate understanding when receiving information. LO: Show the ability to ask relevant and effective questions. LO: Show the ability to use appropriate escalation in communication to resolve identified deviations. LO: Show the ability to use and interpret non-verbal communication in a manner appropriate to the organizational and social culture. LO: Show the ability to adhere to standard radiotelephone phraseology and procedures. LO: Show the ability to accurately read, interpret, construct and respond to datalink messages in English.	*.1: XXX* *.2: XXX* *…*		Source of contents: *.1: XXX* *.2: XXX* *…*
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			

			Related competencies and [OB]:	[OB 2.1] [OB 2.2] [OB 2.3] [OB 2.4] [OB 2.5] [OB 2.6] [OB 2.7] [OB 2.8] [OB 2.9]
N/A	*XX min*	.4	Title: Aircraft Flight Path Management, automation [*practical competency*]	*.1: XXX* *.2: XXX* *…*
			LO: Recognize the competency description. LO: [Appreciate the need of] use appropriate flight management, guidance systems and automation, as installed and applicable to the conditions. LO: [Appreciate the need of] monitor and detect deviations from the intended flight path and takes appropriate action. LO: [Appreciate the need of] manage the flight path safely to achieve optimum operational performance. LO: [Appreciate the need of] maintain the intended flight path during flight using automation while managing other tasks and distractions. LO: [Appreciate the need of] select appropriate level and mode of automation in a timely manner considering phase of flight and workload. LO: [Appreciate the need of] effectively monitor automation, including engagement and automatic mode transitions.	

Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
XXX	*XXX*	*XXX*	*XXX*	*XXX*

Assessment:	*XXX*
Related competencies and [OB]:	[OB 3.1] [OB 3.2] [OB 3.3] [OB 3.4] [OB 3.5] [OB 3.6]

N/A	*XX min*	.5	Title: Aircraft Flight Path Management, manual control [*practical competency*]	*.1: XXX* *.2: XXX* *…*
			LO: Recognize the competency description. LO: [Appreciate the need of] control the aircraft manually with accuracy and smoothness as appropriate to the situation. LO: [Appreciate the need of] monitor and detect deviations from the intended flight path and takes appropriate action. LO: [Appreciate the need of] manually control the aeroplane using the relationship between aeroplane attitude, speed and thrust, and navigation signals or visual information. LO: [Appreciate the need of] manage the flight path safely to achieve optimum operational performance.	

			LO: [Appreciate the need of] of maintain the intended flight path during manual flight while managing other tasks and distractions. LO: [Appreciate the need of] use appropriate flight management and guidance systems, as installed and applicable to the conditions. LO: [Appreciate the need of] effectively monitor flight guidance systems including engagement and automatic mode transitions.				
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 4.1] [OB 4.2] [OB 4.3] [OB 4.4] [OB 4.5] [OB 4.6] [OB 4.7]			
N/A	*XX min*	.6	Title: Leadership and Teamwork		*.1: XXX* *.2: XXX* *…*		Source of contents: *.1: XXX* *.2: XXX* *…*
			LO: Recognize the competency description. LO: Show the ability to encourage team participation and open communication. LO: Show the ability to demonstrate initiative and provides direction when required. LO: Show the ability to engage others in planning. LO: Show the ability to consider inputs from others. LO: Show the ability to give and receive feedback constructively. LO: Show the ability to address and resolve conflicts and disagreements in a constructive manner. LO: Show the ability to exercise decisive leadership when required. LO: Show the ability to accept responsibility for decisions and actions. LO: Show the ability to carry out instructions when directed. LO: Show the ability to apply effective intervention strategies to resolve identified deviations. LO: Show the ability to manage cultural and language challenges, as applicable.				
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 5.1] [OB 5.2] [OB 5.3] [OB 5.4] [OB 5.5] [OB 5.6] [OB 5.7] [OB 5.8] [OB 5.9] [OB 5.10] [OB 5.11]			

N/A	*XX min*	.7	Title: Problem-solving and Decision-Making LO: Recognize the competency description. LO: Show the ability to identify, assess and manage threats and errors in a timely manner. LO: Show the ability to seek accurate and adequate information from appropriate sources. LO: Show the ability to identify and verify what and why things have gone wrong, if appropriate. LO: Show the ability to persevere in working through problems while prioritizing safety. LO: Show the ability to identify and consider appropriate options. LO: Show the ability to apply appropriate and timely decision-making techniques. LO: Show the ability to monitor, review and adapt decisions as required. LO: Show the ability to adapts when faced with situations where no guidance or procedure exists. LO: Show the ability to demonstrate resilience when encountering an unexpected event.	*.1: XXX* *.2: XXX* *…*	Source of contents: *.1: XXX* *.2: XXX* *…*

Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
XXX	*XXX*	*XXX*	*XXX*	*XXX*

Assessment:	*XXX*
Related competencies and [OB]:	[OB 6.1] [OB 6.2] [OB 6.3] [OB 6.4] [OB 6.5] [OB 6.6] [OB 6.7] [OB 6.8] [OB 6.9]

N/A	*XX min*	.8	Title: Situational awareness and management of Information LO: Recognize the competency description. LO: Show the ability to monitor and assess the state of the aeroplane and its systems. LO: Show the ability to monitor and assess the airplane’s energy state, and its anticipated flight path. LO: Show the ability to monitor and assess the general environment as it may affect the operation. LO: Show the ability to validate the accuracy of information and checks for gross errors. LO: Show the ability to maintain awareness of the people involved in or affected by the operation and their capacity to perform as expected.	*.1: XXX* *.2: XXX* *…*	Source of contents: *.1: XXX* *.2: XXX* *…*

			LO: Show the ability to develop effective contingency plans based upon potential risks associated with threats and errors. LO: Show the ability to responds to indications of reduced situation awareness.				
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 7.1] [OB 7.2] [OB 7.3] [OB 7.4] [OB 7.5] [OB 7.6] [OB 7.7]			
N/A	*XX min*	.9	Title: Workload Management LO: Recognize the competency description. LO: Show the ability to exercise self-control in all situations. LO: Show the ability to plan, prioritize and schedule appropriate tasks effectively. LO: Show the ability to manages time efficiently when carrying out tasks. LO: Show the ability to offer and give assistance. LO: Show the ability to delegate tasks. LO: Show the ability to seek and accept assistance, when appropriate. LO: Show the ability to monitor, review and cross-check actions conscientiously. LO: Show the ability to verify that tasks are completed to the expected outcome. LO: Show the ability to manage and recover from interruptions, distractions, variations and failures effectively while performing tasks.	*.1: XXX* *.2: XXX* *…*		Source of contents: *.1: XXX* *.2: XXX* *…*
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 8.1] [OB 8.2] [OB 8.3] [OB 8.4] [OB 8.5] [OB 8.6] [OB 8.7] [OB 8.8] [OB 8.9]			
Intermediate Objective nº: [T-KSA.04] – MENTAL MATHS [04:00h]							
Session	**Time**		**Units / Teaching Points**		**Elements and Contents**		
Teaching Points :							
N/A	*XX min*	.1	Title: Calculations and estimates		*.1: XXX*		Source of contents:

			LO: Convert between volumes and masses of fuel using range of units. LO: Estimate time, distance and speed. LO: Estimate the rate of climb or rate of descent, distance and time. LO: Add or subtract time, distance, and fuel mass. LO: Calculate fuel burn given time and fuel flow. LO: Calculate the time available (for decision-making) given relevant fuel information. LO: Determine the top of descent using a simple method. LO: Determine the values that vary by a percentage, e.g. dry-to-wet landing distance and fuel burn. LO: Estimate heights at distances on a 3-degree glideslope. LO: Estimate headings using the 1-in-60 rule. LO: Estimate headwind and crosswind components given wind speed and direction and runway in use.	*.2: XXX* *…*	*.1: XXX* *.2: XXX* *…*

Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
XXX	*XXX*	*XXX*	*XXX*	*XXX*

Assessment:	Demonstrate, in non-calculator test scenarios or scenario exercises, the ability in a time-efficient manner to make correct mental calculation approximations for the following.
Related competencies and [OB]:	[OB 0.6] [OB 0.7] [OB 1.5] [OB 1.7] [OB 3.2] [OB 3.3] [OB 4.4] [OB 6.1] [OB 6.6] [OB 6.7] [OB 7.1] [OB 7.2] [OB 8.3] [OB 8.7]

Intermediate Objective nº: [T-KSA.05] – PILOT COMPETENCY [07:00h]

Session	Time	Units / Teaching Points		Elements and Contents	
Teaching Points :					
N/A	*XX min*	.1	Title: Threat and Error Management [TEM] [*] [*] LO: Demonstrate the role of competencies of an adapted competency model as individual and team countermeasures to TEM and UAS avoidance. LO: Exemplify individual and team TEM and UAS avoidance countermeasures among OB of an adapted competency model.	*.1: XXX* *.2: XXX* *…*	Source of contents: *.1: XXX* *.2: XXX* *…*

Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
XXX	*XXX*	*XXX*	*XXX*	*XXX*

Assessment:	
Related competencies and [OB]:	[OB 0.7] [OB 1.3] [OB 1.7] [OB 6.1] [OB 6.7] [OB 7.3] [OB 7.6] [OB 8.2] [OB 8.7]

N/A	*XX min*	.2	Title: Airplane pilot tasks description [*] [*]	*.1: XXX*	Source of contents:

			LO: Appreciate the role of required [desired] competencies and OB among KSA relating tasks and subtasks performance [by phase of flight] of a single-engine aircraft pilot. LO: Differentiate the required [desired] competencies and OB among KSA of tasks and subtasks performance of a single-engine aircraft pilot according the functions: — [1.] PIC on non-public air transport service (VFR/IFR). — [2.] PIC on a public air transport service (VFR/IFR). — [3.] SIC on a public air transport service (VFR/IFR).	*.2: XXX* …		*.1: XXX* *.2: XXX* …
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[ALL OB FROM THE ADAPTED COMPETENCY FRAMEWORK]			
N/A	*XX min*	.3	Title: Standard Operating Procedures [*] [*]	*.1: XXX* *.2: XXX* …		Source of contents: *.1: XXX* *.2: XXX* …	
			LO: Recognize the influence of SOP adherence on the pilot competency. LO: Recognize the influence of SOP adherence as TEM countermeasure. LO: Demonstrate and exemplify the influence of SOP adherence on the pilot competency and as TEM countermeasure.				
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 0.2] [0.7] [OB 1.2] [OB 1.3] [OB 1.7] [OB 3.1] [OB 4.6] [OB 6.1] [OB 7.3] [OB 8.2] [OB 8.7]			
N/A	*XX min*	.4	Title: Assessing on an adapted competency model	*.1: XXX* *.2: XXX* …		Source of contents: *.1: XXX* *.2: XXX* …	
			LO: Define the CBT assessment methodology. LO: Recognize the CBT assessment role based on clear performance criteria and assessment plans based on adapted competency model. LO: Recognize the CBT assessment role based whether on interim and final level of competency. LO: Recognize the CBT assessment role based on valid and reliable competent performance evidence.				

			LO: Recognize the CBT assessment role based on multiple observations, contexts and on integrated performance of competencies. LO: Recognize the CBT assessment role based on observation and allocation of OB to each competency (or competencies) as countermeasures in the TEM model, relating: — The more OB are timely demonstrated when required, the better the threat and error management should be. — Per opposition, the more OB have not been demonstrated when they were required, more accentuated is the mismanagement of the threats and errors.			
			Training Techniques and Methods:	Media - Audio Vis. Aids, Instruct. Resources.:	Facilities / Equipment - support:	Student´s materials – Hand-outs - references:	Instructor´s Materials and Guides – references:
			XXX	*XXX*	*XXX*	*XXX*	*XXX*
			Assessment:	*XXX*			
			Related competencies and [OB]:	[OB 0.7] [OB 1.7] [OB 6.1] [OB 6.5] [OB 6.6] [OB 6.7] [OB 7.3] [OB 8.7]			

Remarks:
- [*] : Yellow marks refers to the teaching points which a given organizational structure [non-public versus public air transport] could influence the performance of a given task, leading to changes on LO, modules contents and elements.
- [*] : Blue marks refers to the teaching points which the PF or PM duty could influence the performance of a given task, leading to changes on LO, modules contents and elements.
All other non-marked items were considered common and bas independent of the context and duty.
- [*practical competency*]: Refers to the more practical oriented [OB], which receive a different action verb on the [LO] set from the other [OB] and associated [LO].

ADAPTED FROM DOC 9941 AN/478, 1ST EDITION - TRAINING DEVELOPMENT GUIDE COMPETENCY-BASED TRAINING METHODOLOGY (ICAO, 2011)

MODULE PLAN				
STP No: *01*	**Location:** *Lisbon, Portugal*	**Completed by:** *Colonese, João - researcher*	**Page:** *XX* of *XX*	**Date:** *NOV21*
Module Title: [Practical curriculum] Human Performance and Limitations			**Module No:** P-HPL	
Markings: [*] ; [*]	**Task No(s):** N/A		**Sub-Task No(s):** N/A	

END- OF-MODULE OBJECTIVE

Conditions:

[In parallel to the development of the other units of content of the practical syllabus of the course, customized according to a certain functions and characteristic of the air transport service (when applicable)]

Performance:

[Allow the pilot to consider practical elements of human factors, including limitations of human behavior and performance, in a customized by a given function and characteristic of the air transport service [where applicable] throughout all content units of the practical syllabus of the course. Allow the pilot to experiment, from an operational and real perspective, measures of recognition and management of threats and errors arising from the limitations of human behavior and performance in his operational context, and build the final level of competence regarding the execution of tasks associated to preparation and execution of the flight]

Standard:

[Have the pilot competent about the recognition and management of the limitations related to the human behavior and performance according to his operational context [function and characteristics of the air transport service] when executing the tasks associated to the preparation and execution of the flight. Have characterized the final level of competence regarding the adoption of countermeasures against threats and errors arising from limitations of human behavior and performance that may lead the aircraft to certain undesirable states through environmental risk variables, possible abnormal situations, emergency and characteristics of the service of air Transport]

General notes: *XXX*

Intermediate Objective nº: [P-HPL.01] – HUMAN PERFORMANCE AND LIMITATIONS [*] [*] [According flight school practical syllabus scheme]

Session	Time	Assessment Points	Elements and Contents
Assessment Points :			

XX | *XX min* | .1

Title: HPL - Pre-flight procedures; including weight and balance determination, aircraft inspections and maintenance services; including use of the flight manual or equivalent document and documents relevant to air traffic control services for the preparation of a flight plan under instrument flight conditions [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]

Instructor´s Tools [Guides, Check-lists, assess. FORMS]:

COMPETENCIES:		Related [OB]
.1	Timely recognize and properly manage practical aspects [limitations] of human behavior and performance on the operational context [*] [*];	[OB 0.3] [OB 0.6] [OB 0.7] [OB 1.2] [OB 1.3] [OB 1.7] [OB 2.1] [OB 2.2] [OB 2.3] [OB 2.6] [OB 2.7] [OB 2.8] [OB 5.2] [OB 5.4] [OB 5.5] [OB 5.6] [OB 5.7] [OB 5.8] [OB 5.9] [OB 5.11] [OB 6.2] [OB 6.3] [OB 6.8] [OB 6.9] [OB 7.1] [OB 7.3] [OB 7.5] [OB 7.7] [OB 8.1] [OB 8.4] [OB 8.6] [OB 8.7] [OB 8.9]
.2	Properly recognize the factors which influence human behavior and know when to call in specialized guidance [*]	
.3	Properly react to advice and adapt their own activities to allow for known human capabilities and limitations [*]	
.4	Support the adoption of countermeasures against threats and errors arising from limitations in human behavior and performance [*] [*]	

Assessment Technique(s) and Method(s):	Assessment resources		Student´s Materials – Hand-outs:
	Media Support / Aids:	Facilities / Equipment:	
.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*

Assessment procedures: *XXX*

XX	*XX min*	.2	Title: HPL - Operations at aerodromes and on traffic circuits; precautions and procedures relating to the prevention of collisions [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]	Instructor´s Tools [Guides, Check-lists, assess. FORMS]:

COMPETENCIES:		Related [OB]
.1	Timely recognize and properly manage practical aspects [limitations] of human behavior and performance on the operational context [*] [*];	[OB 0.3] [OB 0.6] [OB 0.7] [OB 1.2] [OB 1.3] [OB 1.5] [OB 1.7] [OB 2.1] [OB 2.2] [OB 2.3] [OB 2.6] [OB 2.7] [OB 2.8] [OB 3.2] [OB 3.6] [OB 4.2] [OB 4.5] [OB 4.7] [OB 5.2] [OB 5.4] [OB 5.5] [OB 5.6] [OB 5.7] [OB 5.8] [OB 5.9] [OB 5.11] [OB 6.2] [OB 6.3] [OB 6.8] [OB 6.9] [OB 7.1] [OB 7.2] [OB 7.3] [OB 7.5] [OB 7.7] [OB 8.1] [OB 8.4] [OB 8.6] [OB 8.7] [OB 8.9]
.2	Properly recognize the factors which influence human behavior and know when to call in specialized guidance [*]	
.3	Properly react to advice and adapt their own activities to allow for known human capabilities and limitations [*]	
.4	Support the adoption of countermeasures against threats and errors arising from limitations in human behavior and performance [*] [*]	

Assessment Technique(s) and Method(s):	Assessment resources		Student´s Materials – Hand-outs:
	Media Support / Aids:	Facilities / Equipment:	
.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*

Assessment procedures:	*XXX*

XX	*XX min*	.3	Title: HPL - Pre-flight inspection, use of checklists, taxiing and pre-take-off checks [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]	Instructor´s Tools [Guides, Check-lists, assess. FORMS]:

COMPETENCIES:		Related [OB]
.1	Timely recognize and properly manage practical aspects [limitations] of human behavior and performance on the operational context [*] [*];	[OB 0.3] [OB 0.6] [OB 0.7] [OB 1.2] [OB 1.3] [OB 1.5] [OB 1.7] [OB 2.1] [OB 2.2] [OB 2.3] [OB 2.6] [OB 2.7] [OB 2.8] [OB 5.2] [OB 5.4] [OB 5.5] [OB 5.6] [OB 5.7] [OB 5.8] [OB 5.9] [OB 5.11] [OB 6.2] [OB 6.3] [OB 6.8] [OB 6.9] [OB 7.1] [OB 7.3] [OB 7.5] [OB 7.7] [OB 8.1] [OB 8.4] [OB 8.6] [OB 8.7] [OB 8.9]
.2	Properly recognize the factors which influence human behavior and know when to call in specialized guidance [*]	
.3	Properly react to advice and adapt their own activities to allow for known human capabilities and limitations [*]	
.4	Support the adoption of countermeasures against threats and errors arising from limitations in human behavior and performance [*] [*]	

Assessment Technique(s) and Method(s):	Assessment resources		Student´s Materials – Hand-outs:
	Media Support / Aids:	Facilities / Equipment:	
.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*

Assessment procedures:	*XXX*

XX	*XX min*	.4	Title: HPL - Operations with origin, destination or transit through controlled aerodromes, complying with the procedures of air traffic control services and radiocommunications procedures and phraseology [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]	Instructor´s Tools [Guides, Check-lists, assess. FORMS]:

			COMPETENCIES:	Related [OB]	
			.1 Timely recognize and properly manage practical aspects [limitations] of human behavior and performance on the operational context [*] [*]; .2 Properly recognize the factors which influence human behavior and know when to call in specialized guidance [*] .3 Properly react to advice and adapt their own activities to allow for known human capabilities and limitations [*] .4 Support the adoption of countermeasures against threats and errors arising from limitations in human behavior and performance [*] [*]	[OB 0.3] [OB 0.6] [OB 0.7] [OB 1.2] [OB 1.3] [OB 1.5] [OB 1.7] [OB 2.1] [OB 2.2] [OB 2.3] [OB 2.6] [OB 2.7] [OB 2.8] [OB 2.9] [OB 3.2] [OB 3.6] [OB 4.2] [OB 4.5] [OB 4.7] [OB 5.2] [OB 5.4] [OB 5.5] [OB 5.6] [OB 5.7] [OB 5.8] [OB 5.9] [OB 5.11] [OB 6.2] [OB 6.3] [OB 6.8] [OB 6.9] [OB 7.1] [OB 7.2] [OB 7.3] [OB 7.5] [OB 7.7] [OB 8.1] [OB 8.4] [OB 8.6] [OB 8.7] [OB 8.9]	
			Assessment Technique(s) and Method(s):	Assessment resources: Media Support / Aids:	Assessment resources: Facilities / Equipment:	Student´s Materials – Hand-outs:
			.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*
			Assessment procedures: *XXX*			
XX	*XX min*	.5	Title: HPL - Communication procedures and phraseology [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]			Instructor´s Tools [Guides, Check-lists, assess. FORMS]:
			COMPETENCIES:	Related [OB]		
			.1 Timely recognize and properly manage practical aspects [limitations] of human behavior and performance on the operational context [*] [*]; .2 Properly recognize the factors which influence human behavior and know when to call in specialized guidance [*] .3 Properly react to advice and adapt their own activities to allow for known human capabilities and limitations [*] .4 Support the adoption of countermeasures against threats and errors arising from limitations in human behavior and performance [*] [*]	[OB 0.3] [OB 0.7] [OB 1.2] [OB 1.3] [OB 2.1] [OB 2.2] [OB 2.3] [OB 2.6] [OB 2.7] [OB 2.8] [OB 2.9] [OB 4.2] [OB 5.9] [OB 5.11] [OB 6.2] [OB 8.9]		
			Assessment Technique(s) and Method(s):	Assessment resources: Media Support / Aids:	Assessment resources: Facilities / Equipment:	Student´s Materials – Hand-outs:
			.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*
			Assessment procedures: *XXX*			
XX	*XX min*	.6	Title: HPL - Control of the aeroplane by external visual reference [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]			Instructor´s Tools [Guides, Check-lists, assess. FORMS]:
			COMPETENCIES:	Related [OB]		
			.1 Timely recognize and properly manage practical aspects [limitations] of human behavior and performance on the operational context [*] [*];	[OB 0.3] [OB 1.5] [OB 1.7] [OB 3.2] [OB 3.6] [OB 4.2] [OB 4.5] [OB 4.7] [OB 6.8] [OB 6.9]		

			.2	Properly recognize the factors which influence human behavior and know when to call in specialized guidance [*]	[OB 7.1] [OB 7.2] [OB 7.3] [OB 7.7] [OB 8.7] [OB 8.9]	
			.3	Properly react to advice and adapt their own activities to allow for known human capabilities and limitations [*]		
			.4	Support the adoption of countermeasures against threats and errors arising from limitations in human behavior and performance [*] [*]		

Assessment Technique(s) and Method(s):	Assessment resources		Student´s Materials – Hand-outs:
	Media Support / Aids:	Facilities / Equipment:	
.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*
Assessment procedures:	*XXX*		

XX	*XX min*	.7	Title: HPL - Flight at critically slow airspeeds; spin avoidance; recognition of, and recovery from, incipient and full stalls [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]			Instructor´s Tools [Guides, Check-lists, assess. FORMS]:
				COMPETENCIES:	Related [OB]	
			.1	Timely recognize and properly manage practical aspects [limitations] of human behavior and performance on the operational context [*] [*];	[OB 0.3] [OB 1.5] [OB 1.7] [OB 3.2] [OB 3.6] [OB 4.2] [OB 4.5] [OB 4.7] [OB 6.8] [OB 6.9] [OB 7.1] [OB 7.2] [OB 7.3] [OB 7.5] [OB 7.7] [OB 8.1] [OB 8.4] [OB 8.6] [OB 8.7] [OB 8.9]	
			.2	Properly recognize the factors which influence human behavior and know when to call in specialized guidance [*]		
			.3	Properly react to advice and adapt their own activities to allow for known human capabilities and limitations [*]		
			.4	Support the adoption of countermeasures against threats and errors arising from limitations in human behavior and performance [*] [*]		

Assessment Technique(s) and Method(s):	Assessment resources		Student´s Materials – Hand-outs:
	Media Support / Aids:	Facilities / Equipment:	
.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*
Assessment procedures:	*XXX*		

XX	*XX min*	.8	Title: HPL - Flight at critically high airspeeds; recognition of, and recovery from, spiral dives [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]			Instructor´s Tools [Guides, Check-lists, assess. FORMS]:
				COMPETENCIES:	Related [OB]	
			.1	Timely recognize and properly manage practical aspects [limitations] of human behavior and performance on the operational context [*] [*];	[OB 0.3] [OB 1.5] [OB 1.7] [OB 3.2] [OB 3.6] [OB 4.2] [OB 4.5] [OB 4.7] [OB 6.8] [OB 6.9] [OB 7.1] [OB 7.2] [OB 7.3] [OB 7.5] [OB 7.7] [OB 8.1] [OB 8.4] [OB 8.6] [OB 8.7] [OB 8.9]	
			.2	Properly recognize the factors which influence human behavior and know when to call in specialized guidance [*]		
			.3	Properly react to advice and adapt their own activities to allow for known human capabilities and limitations [*]		
			.4	Support the adoption of countermeasures against threats and errors arising from limitations in human behavior and performance [*] [*]		

			Assessment Technique(s) and Method(s):	Assessment resources		Student´s Materials – Hand-outs:
				Media Support / Aids:	Facilities / Equipment:	
			.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*
			Assessment procedures:	*XXX*		
XX	*XX min*	.9	Title: HPL - Normal and crosswind takeoffs and landings [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]			Instructor´s Tools [Guides, Check-lists, assess. FORMS]:
			COMPETENCIES:			Related [OB]
			.1	Timely recognize and properly manage practical aspects [limitations] of human behavior and performance on the operational context [*] [*];		[OB 0.3] [OB 0.7] [OB 1.2] [OB 1.3] [OB 1.5] [OB 1.7] [OB 2.1] [OB 2.3] [OB 2.6] [OB 3.2] [OB 3.6] [OB 4.2] [OB 4.5] [OB 4.7] [OB 5.2] [OB 5.4] [OB 5.5] [OB 5.6] [OB 5.7] [OB 5.8] [OB 5.9] [OB 6.3] [OB 6.8] [OB 6.9] [OB 7.1] [OB 7.2] [OB 7.3] [OB 7.5] [OB 7.7] [OB 8.1] [OB 8.4] [OB 8.6] [OB 8.7] [OB 8.9]
			.2	Properly recognize the factors which influence human behavior and know when to call in specialized guidance [*]		
			.3	Properly react to advice and adapt their own activities to allow for known human capabilities and limitations [*]		
			.4	Support the adoption of countermeasures against threats and errors arising from limitations in human behavior and performance [*] [*]		
			Assessment Technique(s) and Method(s):	Assessment resources		Student´s Materials – Hand-outs:
				Media Support / Aids:	Facilities / Equipment:	
			.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*
			Assessment procedures:	*XXX*		
XX	*XX min*	.10	Title: HPL - Maximum performance (short field and obstacle clearance) take-offs; short-field landings [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]			Instructor´s Tools [Guides, Check-lists, assess. FORMS]:
			COMPETENCIES:			Related [OB]
			.1	Timely recognize and properly manage practical aspects [limitations] of human behavior and performance on the operational context [*] [*];		[OB 0.3] [OB 0.6] [OB 0.7] [OB 1.2] [OB 1.3] [OB 1.5] [OB 1.7] [OB 2.1] [OB 2.3] [OB 2.6] [OB 3.2] [OB 3.6] [OB 4.2] [OB 4.5] [OB 4.7] [OB 5.2] [OB 5.4] [OB 5.5] [OB 5.6] [OB 5.7] [OB 5.8] [OB 5.9] [OB 6.3] [OB 6.8] [OB 6.9] [OB 7.1] [OB 7.2] [OB 7.3] [OB 7.5] [OB 7.7] [OB 8.1] [OB 8.4] [OB 8.6] [OB 8.7] [OB 8.9]
			.2	Properly recognize the factors which influence human behavior and know when to call in specialized guidance [*]		
			.3	Properly react to advice and adapt their own activities to allow for known human capabilities and limitations [*]		
			.4	Support the adoption of countermeasures against threats and errors arising from limitations in human behavior and performance [*] [*]		
			Assessment Technique(s) and Method(s):	Assessment resources		Student´s Materials – Hand-outs:
				Media Support / Aids:	Facilities / Equipment:	
			.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*
			Assessment procedures:	*XXX*		

XX	*XX min*	.11	Title: HPL - Basic flight maneuvers and abnormal attitude recovery by reference to basic flight instruments only [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]	Instructor´s Tools [Guides, Check-lists, assess. FORMS]:

COMPETENCIES:		Related [OB]
.1	Timely recognize and properly manage practical aspects [limitations] of human behavior and performance on the operational context [*] [*];	[OB 0.3] [OB 0.7] [OB 1.3] [OB 1.5] [OB 1.7] [OB 2.2] [OB 2.3] [OB 2.6] [OB 2.7] [OB 3.2] [OB 3.6] [OB 4.2] [OB 4.5] [OB 4.7] [OB 5.2] [OB 5.4] [OB 5.6] [OB 5.7] [OB 5.9] [OB 6.3] [OB 6.8] [OB 6.9] [OB 7.1] [OB 7.2] [OB 7.3] [OB 7.5] [OB 7.7] [OB 8.1] [OB 8.4] [OB 8.6] [OB 8.7] [OB 8.9]
.2	Properly recognize the factors which influence human behavior and know when to call in specialized guidance [*]	
.3	Properly react to advice and adapt their own activities to allow for known human capabilities and limitations [*]	
.4	Support the adoption of countermeasures against threats and errors arising from limitations in human behavior and performance [*] [*]	

Assessment Technique(s) and Method(s):	Assessment resources		Student´s Materials – Hand-outs:
	Media Support / Aids:	Facilities / Equipment:	
.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*

Assessment procedures:	*XXX*

XX	*XX min*	.12	Title: HPL - Navigation flight by visual references, estimated navigation and, when applicable, with the aid of radio navigation [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]	Instructor´s Tools [Guides, Check-lists, assess. FORMS]:

COMPETENCIES:		Related [OB]
.1	Timely recognize and properly manage practical aspects [limitations] of human behavior and performance on the operational context [*] [*];	[OB 0.3] [OB 0.6] [OB 0.7] [OB 1.2] [OB 1.3] [OB 1.5] [OB 1.7] [OB 2.1] [OB 2.2] [OB 2.3] [OB 2.6] [OB 2.9] [OB 3.2] [OB 3.6] [OB 4.2] [OB 4.5] [OB 4.7] [OB 5.2] [OB 5.4] [OB 5.5] [OB 5.9] [OB 6.2] [OB 6.3] [OB 6.8] [OB 6.9] [OB 7.2] [OB 7.3] [OB 7.5] [OB 7.7] [OB 8.1] [OB 8.4] [OB 8.6] [OB 8.7] [OB 8.9]
.2	Properly recognize the factors which influence human behavior and know when to call in specialized guidance [*]	
.3	Properly react to advice and adapt their own activities to allow for known human capabilities and limitations [*]	
.4	Support the adoption of countermeasures against threats and errors arising from limitations in human behavior and performance [*] [*]	

Assessment Technique(s) and Method(s):	Assessment resources		Student´s Materials – Hand-outs:
	Media Support / Aids:	Facilities / Equipment:	
.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*

Assessment procedures:	*XXX*

XX	*XX min*	.13	Title: HPL - Abnormal and emergency procedures and maneuvers including simulated aeroplane equipment malfunctions [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]	Instructor´s Tools [Guides, Check-lists, assess. FORMS]:

COMPETENCIES:		Related [OB]
.1	Timely recognize and properly manage practical aspects [limitations] of human behavior and performance on the operational context [*] [*];	[OB 0.3] [OB 0.6] [OB 0.7] [OB 1.3] [OB 1.5] [OB 1.7] [OB 2.3] [OB 2.7] [OB 3.2] [OB 3.6]

			.2	Properly recognize the factors which influence human behavior and know when to call in specialized guidance [*]	[OB 4.2] [OB 4.5] [OB 4.7] [OB 5.2] [OB 5.4] [OB 5.5] [OB 5.6] [OB 5.7] [OB 5.8] [OB 5.9] [OB 6.2] [OB 6.3] [OB 6.8] [OB 6.9] [OB 7.1] [OB 7.2] [OB 7.3] [OB 7.5] [OB 7.7] [OB 8.1] [OB 8.4] [OB 8.6] [OB 8.7] [OB 8.9]	
			.3	Properly react to advice and adapt their own activities to allow for known human capabilities and limitations [*]		
			.4	Support the adoption of countermeasures against threats and errors arising from limitations in human behavior and performance [*] [*]		
			Assessment Technique(s) and Method(s):	Assessment resources – Media Support / Aids:	Assessment resources – Facilities / Equipment:	Student´s Materials – Hand-outs:
			.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*
			Assessment procedures:	*XXX*		
XX	*XX min*	.14	Title: HPL - Procedures and manoeuvres for IFR operation under normal, abnormal and emergency conditions covering at least: (A) transition to instrument flight on take-off (B) standardized instrument departures and approaches; (C) en-route IFR procedures; (D) holding procedures; (E) instrument approaches to specified minima; (F) missed approach procedure; and (G) [landings from instrument approaches]. [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]			Instructor´s Tools [Guides, Check-lists, assess. FORMS]:
			COMPETENCIES:		Related [OB]	
			.1	Timely recognize and properly manage practical aspects [limitations] of human behavior and performance on the operational context [*] [*];	[OB 0.3] [OB 0.6] [OB 0.7] [OB 1.2] [OB 1.3] [OB 1.5] [OB 1.7] [OB 2.1] [OB 2.2] [OB 2.3] [OB 2.6] [OB 2.9] [OB 3.2] [OB 3.6] [OB 4.2] [OB 4.5] [OB 4.7] [OB 5.2] [OB 5.4] [OB 5.5] [OB 5.8] [OB 5.9] [OB 6.2] [OB 6.3] [OB 6.8] [OB 6.9] [OB 7.1] [OB 7.2] [OB 7.3] [OB 7.5] [OB 7.7] [OB 8.1] [OB 8.4] [OB 8.6] [OB 8.7] [OB 8.9]	
			.2	Properly recognize the factors which influence human behavior and know when to call in specialized guidance [*]		
			.3	Properly react to advice and adapt their own activities to allow for known human capabilities and limitations [*]		
			.4	Support the adoption of countermeasures against threats and errors arising from limitations in human behavior and performance [*] [*]		
			Assessment Technique(s) and Method(s):	Assessment resources – Media Support / Aids:	Assessment resources – Facilities / Equipment:	Student´s Materials – Hand-outs:
			.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*
			Assessment procedures:	*XXX*		
XX	*XX min*	.15	Title: HPL - In-flight IFR maneuvres and particular IFR flight characteristics [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]			Instructor´s Tools [Guides, Check-lists, assess. FORMS]:
			COMPETENCIES:		Related [OB]	

			.1	Timely recognize and properly manage practical aspects [limitations] of human behavior and performance on the operational context [*] [*];	[OB 0.3] [OB 0.6] [OB 0.7] [OB 1.2] [OB 1.3] [OB 1.5] [OB 1.7] [OB 2.1] [OB 2.2] [OB 2.3] [OB 2.6] [OB 2.9] [OB 3.2] [OB 3.6] [OB 4.2] [OB 4.5] [OB 4.7] [OB 5.2] [OB 5.4] [OB 5.5] [OB 5.8] [OB 5.9] [OB 6.2] [OB 6.3] [OB 6.8] [OB 6.9] [OB 7.1] [OB 7.2] [OB 7.3] [OB 7.5] [OB 7.7] [OB 8.1] [OB 8.4] [OB 8.6] [OB 8.7] [OB 8.9]	
			.2	Properly recognize the factors which influence human behavior and know when to call in specialized guidance [*]		
			.3	Properly react to advice and adapt their own activities to allow for known human capabilities and limitations [*]		
			.4	Support the adoption of countermeasures against threats and errors arising from limitations in human behavior and performance [*] [*]		

Assessment Technique(s) and Method(s):	Assessment resources		Student´s Materials – Hand-outs:
	Media Support / Aids:	Facilities / Equipment:	
.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*

Assessment procedures:	*XXX*

Remarks:
- [*] : Yellow marks refers to the assessment points which a given organizational structure [non-public versus public air transport] could influence the performance of a given task, leading to changes on LO, modules contents and elements.
- [*] : Blue marks refers to the assessment points which the PF or PM duty could influence the performance of a given task, leading to changes on LO, modules contents and elements.
All other non-marked items were considered common and bas independent of the context and duty.
Both markings can appear on the title of the module. In this case, all the module´s elements contain different influences related to the marks.

Adapted from DOC 9941 AN/478, 1st edition - Training Development Guide Competency-based Training Methodology (ICAO, 2011)

MODULE PLAN				
STP No: *01*	**Location:** *Lisbon, Portugal*	**Completed by:** *Colonese, João - researcher*	**Page:** *XX* of *XX*	**Date:** *NOV21*
Module Title: [Practical curriculum] Threat and Error Management - TEM			**Module No:** P-TEM	
Markings: [*] ; [*]	**Task No(s):** N/A		**Sub-Task No(s):** N/A	

END- OF-MODULE OBJECTIVE

Conditions:

[In parallel to the development of the other units of content of the practical syllabus of the course, customized according to a certain functions and characteristic of the air transport service (when applicable)]

Performance:

[Allow the pilot to consider elements of the threat and error management practice, in a customized way to a certain function and characteristic of the air transport service [when applicable], throughout all content units of the practical syllabus of the course. Allow the pilot to apply, from an operational and real perspective, the management of errors and threats in the operational context in which it fits and build the final level of competence regarding the execution of tasks inherent to the preparation and execution of the flight.]

Standard:

[Have the pilot competent about the recognition and management of threats and errors according to his operational context [function and characteristics of the air transport service] when executing the tasks associated to the preparation and execution of the flight. Have characterized the final level of competence regarding the adoption of countermeasures related to threats and errors that may lead the aircraft to certain undesirable states through environmental risk variables, possible abnormal situations, emergencies and characteristics of the air transport service]

General notes: *XXX*

Intermediate Objective nº: [P-TEM.01] - Threat and error management - TEM [*] [*] [According flight school practical syllabus scheme]

Session	Time	Assessment Points	Elements and Contents
Assessment Points :			
XX	*XX min*	.1 Title: TEM - Pre-flight procedures; including weight and balance determination, aircraft inspections and maintenance services; including use of the flight manual or equivalent document and documents relevant to air traffic control services for the preparation of a flight plan under instrument flight conditions [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]	Instructor´s Tools [Guides, Check-lists, assess. FORMS]:

COMPETENCIES:		Related [OB]
.1	Anticipate or identify [environmental and organizational] threats [errors or events] [*] [*]	[OB 0.2] [OB 0.4] [OB 0.5] [OB 1.1] [OB 2.4] [OB 2.5] [OB 5.1] [OB 5.3] [OB 5.10] [OB 6.1] [OB 6.4] [OB 6.5] [OB 6.6] [OB 6.7] [OB 7.4] [OB 7.6] [OB 8.2] [OB 8.3] [OB 8.5] [OB 8.8]
.2	Appraise or manage the impact[s] of the [environmental and organizational] threat[s] [*];	
.3	Timely detect the error[s] [actions, inactions, unmanaged or mismanaged] [*] [*];	
.4	Correctly appreciate the error[s] [spontaneous, linked to threats or part of error chain];	
.5	Promptly respond to the error[s] before leading to an UAS and to a potential unsafe outcome [*] [*];	
.6	Effectively manage UAS instead of error management [*] [*];	
.7	Differentiate the UAS from the outcomes;	
.8	Identify or estimate adequate countermeasures [planning, execution or review] to the TEM [crew (individual and team) actions or resources] [*] [*].	

Assessment Technique(s) and Method(s):	Assessment resources		Student´s Materials – Hand-outs:
	Media Support / Aids:	Facilities / Equipment:	
.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*

Assessment procedures: *XXX*

XX	*XX min*	.2	Title: TEM - Operations at aerodromes and on traffic circuits; precautions and procedures relating to the prevention of collisions [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]	Instructor´s Tools [Guides, Check-lists, assess. FORMS]:

COMPETENCIES:		Related [OB]
.1	Anticipate or identify [environmental and organizational] threats [errors or events] [*] [*]	[OB 0.2] [OB 0.4] [OB 0.5] [OB 1.1] [OB 2.4] [OB 2.5] [OB 3.1] [OB 3.4] [OB 3.5] [OB 4.3] [OB 4.4] [OB 4.6] [OB 5.1] [OB 5.3] [OB 5.10] [OB 6.1] [OB 6.4] [OB 6.5] [OB 6.6] [OB 6.7] [OB 7.4] [OB 7.6] [OB 8.2] [OB 8.3] [OB 8.5] [OB 8.8]
.2	Appraise or manage the impact[s] of the [environmental and organizational] threat[s] [*];	
.3	Timely detect the error[s] [actions, inactions, unmanaged or mismanaged] [*] [*];	
.4	Correctly appreciate the error[s] [spontaneous, linked to threats or part of error chain];	
.5	Promptly respond to the error[s] before leading to an UAS and to a potential unsafe outcome [*] [*];	
.6	Effectively manage UAS instead of error management [*] [*];	
.7	Differentiate the UAS from the outcomes;	
.8	Identify or estimate adequate countermeasures [planning, execution or review] to the TEM [crew (individual and team) actions or resources] [*] [*].	

Assessment Technique(s) and Method(s):	Assessment resources		Student´s Materials – Hand-outs:
	Media Support / Aids:	Facilities / Equipment:	
.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*

Assessment procedures:	*XXX*

XX	*XX min*	.3	Title: TEM - Pre-flight inspection, use of checklists, taxiing and pre-take-off checks [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]	Instructor´s Tools [Guides, Check-lists, assess. FORMS]:

COMPETENCIES:		Related [OB]
.1	Anticipate or identify [environmental and organizational] threats [errors or events] [*] [*]	[OB 0.2] [OB 0.4] [OB 0.5] [OB 1.1] [OB 2.4] [OB 2.5] [OB 5.1] [OB 5.3] [OB 5.10] [OB 6.1] [OB 6.4] [OB 6.5] [OB 6.6] [OB 6.7] [OB 7.4] [OB 7.6] [OB 8.2] [OB 8.3] [OB 8.5] [OB 8.8]
.2	Appraise or manage the impact[s] of the [environmental and organizational] threat[s] [*];	
.3	Timely detect the error[s] [actions, inactions, unmanaged or mismanaged] [*] [*];	
.4	Correctly appreciate the error[s] [spontaneous, linked to threats or part of error chain];	
.5	Promptly respond to the error[s] before leading to an UAS and to a potential unsafe outcome [*] [*];	
.6	Effectively manage UAS instead of error management [*] [*];	
.7	Differentiate the UAS from the outcomes;	
.8	Identify or estimate adequate countermeasures [planning, execution or review] to the TEM [crew (individual and team) actions or resources] [*] [*].	

Assessment Technique(s) and Method(s):	Assessment resources		Student´s Materials – Hand-outs:
	Media Support / Aids:	Facilities / Equipment:	
.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*

Assessment procedures:	*XXX*

XX	*XX min*	.4	Title: TEM - Operations with origin, destination or transit through controlled aerodromes, complying with the procedures of air traffic control services and radiocommunications procedures and phraseology [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]	Instructor´s Tools [Guides, Check-lists, assess. FORMS]:

			COMPETENCIES:	Related [OB]	
			.1 Anticipate or identify [environmental and organizational] threats [errors or events] [*] [*] .2 Appraise or manage the impact[s] of the [environmental and organizational] threat[s] [*]; .3 Timely detect the error[s] [actions, inactions, unmanaged or mismanaged] [*] [*]; .4 Correctly appreciate the error[s] [spontaneous, linked to threats or part of error chain]; .5 Promptly respond to the error[s] before leading to an UAS and to a potential unsafe outcome [*] [*]; .6 Effectively manage UAS instead of error management [*] [*]; .7 Differentiate the UAS from the outcomes; .8 Identify or estimate adequate countermeasures [planning, execution or review] to the TEM [crew (individual and team) actions or resources] [*] [*].	[OB 0.2] [OB 0.4] [OB 0.5] [OB 1.1] [OB 1.4] [OB 2.4] [OB 2.5] [OB 3.1] [OB 3.4] [OB 3.5] [OB 4.3] [OB 4.4] [OB 4.6] [OB 5.1] [OB 5.3] [OB 5.10] [OB 6.1] [OB 6.4] [OB 6.5] [OB 6.6] [OB 6.7] [OB 7.4] [OB 7.6] [OB 8.2] [OB 8.3] [OB 8.5] [OB 8.8]	
			Assessment Technique(s) and Method(s):	Assessment resources: Media Support / Aids:	Assessment resources: Facilities / Equipment:	Student´s Materials – Hand-outs:
			.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*
			Assessment procedures:	*XXX*		
XX	*XX min*	.5	Title: TEM - Communication procedures and phraseology [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]			Instructor´s Tools [Guides, Check-lists, assess. FORMS]:
			COMPETENCIES:	Related [OB]		
			.1 Anticipate or identify [environmental and organizational] threats [errors or events] [*] [*] .2 Appraise or manage the impact[s] of the [environmental and organizational] threat[s] [*]; .3 Timely detect the error[s] [actions, inactions, unmanaged or mismanaged] [*] [*]; .4 Correctly appreciate the error[s] [spontaneous, linked to threats or part of error chain]; .5 Promptly respond to the error[s] before leading to an UAS and to a potential unsafe outcome [*] [*]; .6 Effectively manage UAS instead of error management [*] [*]; .7 Differentiate the UAS from the outcomes; .8 Identify or estimate adequate countermeasures [planning, execution or review] to the TEM [crew (individual and team) actions or resources] [*] [*].	[OB 0.2] [OB 2.4] [OB 2.5] [OB 5.1] [OB 5.3] [OB 5.10] [OB 6.1] [OB 6.4] [OB 6.5] [OB 6.6] [OB 6.7] [OB 7.4] [OB 7.6] [OB 8.2] [OB 8.3] [OB 8.5] [OB 8.8]	
			Assessment Technique(s) and Method(s):	Assessment resources: Media Support / Aids:	Assessment resources: Facilities / Equipment:	Student´s Materials – Hand-outs:
			.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*
			Assessment procedures:	*XXX*		
XX	*XX min*	.6	Title: TEM - Control of the aeroplane by external visual reference [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]			Instructor´s Tools [Guides, Check-lists, assess. FORMS]:
			COMPETENCIES:	Related [OB]		
			.1 Anticipate or identify [environmental and organizational] threats [errors or events] [*] [*] .2 Appraise or manage the impact[s] of the [environmental and organizational] threat[s] [*];	[OB 0.2] [OB 0.4] [OB 0.5] [OB 1.1] [OB 1.4] [OB 3.1] [OB 3.4] [OB 3.5] [OB 4.3]		

			.3	Timely detect the error[s] [actions, inactions, unmanaged or mismanaged] [*] [*];	[OB 4.4] [OB 4.6] [OB 5.3] [OB 5.10] [OB 6.1] [OB 6.4] [OB 6.5] [OB 6.6] [OB 6.7] [OB 7.4] [OB 7.6] [OB 8.2] [OB 8.3] [OB 8.5] [OB 8.8]	
			.4	Correctly appreciate the error[s] [spontaneous, linked to threats or part of error chain];		
			.5	Promptly respond to the error[s] before leading to an UAS and to a potential unsafe outcome [*] [*];		
			.6	Effectively manage UAS instead of error management [*] [*];		
			.7	Differentiate the UAS from the outcomes;		
			.8	Identify or estimate adequate countermeasures [planning, execution or review] to the TEM [crew (individual and team) actions or resources] [*] [*].		
			Assessment Technique(s) and Method(s):	Assessment resources: Media Support / Aids:	Assessment resources: Facilities / Equipment:	Student´s Materials – Hand-outs:
			.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*
			Assessment procedures:	*XXX*		
XX	*XX min*	.7	Title: TEM - Flight at critically slow airspeeds; spin avoidance; recognition of, and recovery from, incipient and full stalls [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]			Instructor´s Tools [Guides, Check-lists, assess. FORMS]:
				COMPETENCIES:	Related [OB]	
			.1	Anticipate or identify [environmental and organizational] threats [errors or events] [*] [*]	[OB 0.2] [OB 0.4] [OB 0.5] [OB 1.1] [OB 1.4] [OB 3.1] [OB 3.4] [OB 3.5] [OB 4.3] [OB 4.4] [OB 4.6] [OB 5.1] [OB 5.10] [OB 6.1] [OB 6.4] [OB 6.5] [OB 6.6] [OB 6.7] [OB 7.6] [OB 8.2] [OB 8.3] [OB 8.5] [OB 8.8]	
			.2	Appraise or manage the impact[s] of the [environmental and organizational] threat[s] [*];		
			.3	Timely detect the error[s] [actions, inactions, unmanaged or mismanaged] [*] [*];		
			.4	Correctly appreciate the error[s] [spontaneous, linked to threats or part of error chain];		
			.5	Promptly respond to the error[s] before leading to an UAS and to a potential unsafe outcome [*] [*];		
			.6	Effectively manage UAS instead of error management [*] [*];		
			.7	Differentiate the UAS from the outcomes;		
			.8	Identify or estimate adequate countermeasures [planning, execution or review] to the TEM [crew (individual and team) actions or resources] [*] [*].		
			Assessment Technique(s) and Method(s):	Assessment resources: Media Support / Aids:	Assessment resources: Facilities / Equipment:	Student´s Materials – Hand-outs:
			.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*
			Assessment procedures:	*XXX*		
XX	*XX min*	.8	Title: TEM - Flight at critically high airspeeds; recognition of, and recovery from, spiral dives [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]			Instructor´s Tools [Guides, Check-lists, assess. FORMS]:
				COMPETENCIES:	Related [OB]	
			.1	Anticipate or identify [environmental and organizational] threats [errors or events] [*] [*]	[OB 0.2] [OB 0.4] [OB 0.5] [OB 1.1] [OB 1.4] [OB 3.1] [OB 3.4] [OB 3.5] [OB 4.3] [OB 4.4] [OB 4.6] [OB 5.1] [OB 5.10] [OB 6.1] [OB 6.4] [OB 6.5] [OB 6.6] [OB 6.7] [OB 7.6] [OB 8.2] [OB 8.3] [OB 8.5] [OB 8.8]	
			.2	Appraise or manage the impact[s] of the [environmental and organizational] threat[s] [*];		
			.3	Timely detect the error[s] [actions, inactions, unmanaged or mismanaged] [*] [*];		
			.4	Correctly appreciate the error[s] [spontaneous, linked to threats or part of error chain];		
			.5	Promptly respond to the error[s] before leading to an UAS and to a potential unsafe outcome [*] [*];		

			.6	Effectively manage UAS instead of error management [*] [*];	
			.7	Differentiate the UAS from the outcomes;	
			.8	Identify or estimate adequate countermeasures [planning, execution or review] to the TEM [crew (individual and team) actions or resources] [*] [*].	

Assessment Technique(s) and Method(s):	Assessment resources		Student´s Materials – Hand-outs:
	Media Support / Aids:	Facilities / Equipment:	
.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*

Assessment procedures:	*XXX*

XX	*XX min*	.9	Title: TEM - Normal and crosswind takeoffs and landings [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]		Instructor´s Tools [Guides, Check-lists, assess. FORMS]:
			COMPETENCIES:	Related [OB]	
			.1	Anticipate or identify [environmental and organizational] threats [errors or events] [*] [*]	[OB 0.2] [OB 0.4] [OB 0.5] [OB 1.1] [OB 1.4] [OB 2.4] [OB 2.5] [OB 3.1] [OB 3.4] [OB 3.5] [OB 4.3] [OB 4.4] [OB 4.6] [OB 5.1] [OB 5.3] [OB 5.10] [OB 6.1] [OB 6.4] [OB 6.5] [OB 6.6] [OB 6.7] [OB 7.4] [OB 7.6] [OB 8.2] [OB 8.3] [OB 8.5] [OB 8.8]
			.2	Appraise or manage the impact[s] of the [environmental and organizational] threat[s] [*];	
			.3	Timely detect the error[s] [actions, inactions, unmanaged or mismanaged] [*] [*];	
			.4	Correctly appreciate the error[s] [spontaneous, linked to threats or part of error chain];	
			.5	Promptly respond to the error[s] before leading to an UAS and to a potential unsafe outcome [*] [*];	
			.6	Effectively manage UAS instead of error management [*] [*];	
			.7	Differentiate the UAS from the outcomes;	
			.8	Identify or estimate adequate countermeasures [planning, execution or review] to the TEM [crew (individual and team) actions or resources] [*] [*].	

Assessment Technique(s) and Method(s):	Assessment resources		Student´s Materials – Hand-outs:
	Media Support / Aids:	Facilities / Equipment:	
.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*

Assessment procedures:	*XXX*

XX	*XX min*	.10	Title: TEM - Maximum performance (short field and obstacle clearance) take-offs; short-field landings [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]		Instructor´s Tools [Guides, Check-lists, assess. FORMS]:
			COMPETENCIES:	Related [OB]	
			.1	Anticipate or identify [environmental and organizational] threats [errors or events] [*] [*]	[OB 0.2] [OB 0.4] [OB 0.5] [OB 1.1] [OB 1.4] [OB 2.4] [OB 2.5] [OB 3.1] [OB 3.4] [OB 3.5] [OB 4.3] [OB 4.4] [OB 4.6] [OB 5.1] [OB 5.3] [OB 5.10] [OB 6.1] [OB 6.4] [OB 6.5] [OB 6.6] [OB 6.7] [OB 7.4] [OB 7.6] [OB 8.2] [OB 8.3] [OB 8.5] [OB 8.8]
			.2	Appraise or manage the impact[s] of the [environmental and organizational] threat[s] [*];	
			.3	Timely detect the error[s] [actions, inactions, unmanaged or mismanaged] [*] [*];	
			.4	Correctly appreciate the error[s] [spontaneous, linked to threats or part of error chain];	
			.5	Promptly respond to the error[s] before leading to an UAS and to a potential unsafe outcome [*] [*];	
			.6	Effectively manage UAS instead of error management [*] [*];	
			.7	Differentiate the UAS from the outcomes;	

			.8	Identify or estimate adequate countermeasures [planning, execution or review] to the TEM [crew (individual and team) actions or resources] [*] [*].		

Assessment Technique(s) and Method(s):	Assessment resources		Student´s Materials – Hand-outs:
	Media Support / Aids:	Facilities / Equipment:	
.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*

Assessment procedures:	*XXX*

XX	*XX min*	.11	Title: TEM - Basic flight maneuvers and abnormal attitude recovery by reference to basic flight instruments only [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]			Instructor´s Tools [Guides, Check-lists, assess. FORMS]:
			COMPETENCIES:		Related [OB]	
			.1	Anticipate or identify [environmental and organizational] threats [errors or events] [*] [*]	[OB 0.2] [OB 0.4] [OB 0.5] [OB 1.4] [OB 3.1] [OB 3.4] [OB 3.5] [OB 4.3] [OB 4.4] [OB 4.6] [OB 5.10] [OB 6.1] [OB 6.4] [OB 6.5] [OB 6.6] [OB 6.7] [OB 7.4] [OB 7.6] [OB 8.2] [OB 8.3] [OB 8.5] [OB 8.8]	
			.2	Appraise or manage the impact[s] of the [environmental and organizational] threat[s] [*];		
			.3	Timely detect the error[s] [actions, inactions, unmanaged or mismanaged] [*] [*];		
			.4	Correctly appreciate the error[s] [spontaneous, linked to threats or part of error chain];		
			.5	Promptly respond to the error[s] before leading to an UAS and to a potential unsafe outcome [*] [*];		
			.6	Effectively manage UAS instead of error management [*] [*];		
			.7	Differentiate the UAS from the outcomes;		
			.8	Identify or estimate adequate countermeasures [planning, execution or review] to the TEM [crew (individual and team) actions or resources] [*] [*].		

Assessment Technique(s) and Method(s):	Assessment resources		Student´s Materials – Hand-outs:
	Media Support / Aids:	Facilities / Equipment:	
.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*

Assessment procedures:	*XXX*

XX	*XX min*	.12	Title: TEM - Navigation flight by visual references, estimated navigation and, when applicable, with the aid of radio navigation [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]			Instructor´s Tools [Guides, Check-lists, assess. FORMS]:
			COMPETENCIES:		Related [OB]	
			.1	Anticipate or identify [environmental and organizational] threats [errors or events] [*] [*]	[OB 0.2] [OB 0.4] [OB 0.5] [OB 1.1] [OB 1.4] [OB 3.1] [OB 3.4] [OB 3.5] [OB 4.3] [OB 4.4] [OB 4.6] [OB 5.10] [OB 6.1] [OB 6.5] [OB 6.6] [OB 6.7] [OB 7.4] [OB 7.6] [OB 8.2] [OB 8.3]	
			.2	Appraise or manage the impact[s] of the [environmental and organizational] threat[s] [*];		
			.3	Timely detect the error[s] [actions, inactions, unmanaged or mismanaged] [*] [*];		
			.4	Correctly appreciate the error[s] [spontaneous, linked to threats or part of error chain];		
			.5	Promptly respond to the error[s] before leading to an UAS and to a potential unsafe outcome [*] [*];		
			.6	Effectively manage UAS instead of error management [*] [*];		
			.7	Differentiate the UAS from the outcomes;		
			.8	Identify or estimate adequate countermeasures [planning, execution or review] to the TEM [crew (individual and team) actions or resources] [*] [*].		

	Assessment resources	Student´s Materials – Hand-outs:

			Assessment Technique(s) and Method(s):	Media Support / Aids:	Facilities / Equipment:	
			.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*
			Assessment procedures:	*XXX*		
XX	*XX min*	.13	Title: TEM - Abnormal and emergency procedures and manoeuvres including simulated aeroplane equipment malfunctions [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]			Instructor´s Tools [Guides, Check-lists, assess. FORMS]:
			COMPETENCIES:			Related [OB]
			.1 Anticipate or identify [environmental and organizational] threats [errors or events] [*] [*]			[OB 0.2] [OB 0.4] [OB 0.5] [OB 1.1] [OB 1.4] [OB 2.4] [OB 2.5] [OB 3.1] [OB 3.4] [OB 3.5] [OB 4.3] [OB 4.6] [OB 5.1] [OB 5.3] [OB 5.10] [OB 6.1] [OB 6.4] [OB 6.5] [OB 6.6] [OB 6.7] [OB 7.4] [OB 7.6] [OB 8.2] [OB 8.3] [OB 8.5] [OB 8.8]
			.2 Appraise or manage the impact[s] of the [environmental and organizational] threat[s] [*];			
			.3 Timely detect the error[s] [actions, inactions, unmanaged or mismanaged] [*] [*];			
			.4 Correctly appreciate the error[s] [spontaneous, linked to threats or part of error chain];			
			.5 Promptly respond to the error[s] before leading to an UAS and to a potential unsafe outcome [*] [*];			
			.6 Effectively manage UAS instead of error management [*] [*];			
			.7 Differentiate the UAS from the outcomes;			
			.8 Identify or estimate adequate countermeasures [planning, execution or review] to the TEM [crew (individual and team) actions or resources] [*] [*].			
			Assessment Technique(s) and Method(s):	Assessment resources Media Support / Aids:	Facilities / Equipment:	Student´s Materials – Hand-outs:
			.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*
			Assessment procedures:	*XXX*		
XX	*XX min*	.14	Title: TEM - Procedures and manoeuvres for IFR operation under normal, abnormal and emergency conditions covering at least: (A) transition to instrument flight on take-off (B) standardized instrument departures and approaches; (C) en-route IFR procedures; (D) holding procedures; (E) instrument approaches to specified minima; (F) missed approach procedure; and (G) [landings from instrument approaches]. [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]			Instructor´s Tools [Guides, Check-lists, assess. FORMS]:
			COMPETENCIES:			Related [OB]
			.1 Anticipate or identify [environmental and organizational] threats [errors or events] [*] [*]			[OB 0.2] [OB 0.4] [OB 0.5] [OB 1.1] [OB 1.4] [OB 2.4] [OB 2.5] [OB 3.1] [OB 3.4] [OB 3.5] [OB 4.3] [OB 4.4] [OB 4.6] [OB 5.1] [OB 5.3] [OB 5.10] [OB 6.1] [OB 6.4] [OB 6.5] [OB 6.6] [OB 6.7] [OB 7.4] [OB 7.6] [OB 8.2] [OB 8.3] [OB 8.5] [OB 8.8]
			.2 Appraise or manage the impact[s] of the [environmental and organizational] threat[s] [*];			
			.3 Timely detect the error[s] [actions, inactions, unmanaged or mismanaged] [*] [*];			
			.4 Correctly appreciate the error[s] [spontaneous, linked to threats or part of error chain];			
			.5 Promptly respond to the error[s] before leading to an UAS and to a potential unsafe outcome [*] [*];			
			.6 Effectively manage UAS instead of error management [*] [*];			

			.7	Differentiate the UAS from the outcomes;		
			.8	Identify or estimate adequate countermeasures [planning, execution or review] to the TEM [crew (individual and team) actions or resources] [*] [*].		

Assessment Technique(s) and Method(s):	Assessment resources		Student´s Materials – Hand-outs:
	Media Support / Aids:	Facilities / Equipment:	
.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*
Assessment procedures:	*XXX*		

XX	*XX min*	.15	Title: TEM - In-flight IFR maneuvres and particular IFR flight characteristics [During the performance of the tasks, subtasks [and related KSA] or specific maneuvers associated to operational context of the unit of content:]			Instructor´s Tools [Guides, Check-lists, assess. FORMS]:
				COMPETENCIES:	Related [OB]	
			.1	Anticipate or identify [environmental and organizational] threats [errors or events] [*] [*]	[OB 0.2] [OB 0.4] [OB 0.5] [OB 1.1] [OB 1.4] [OB 2.4] [OB 2.5] [OB 3.1] [OB 3.4] [OB 3.5] [OB 4.3] [OB 4.4] [OB 4.6] [OB 5.1] [OB 5.3] [OB 5.10] [OB 6.1] [OB 6.4] [OB 6.5] [OB 6.6] [OB 6.7] [OB 7.4] [OB 7.6] [OB 8.2] [OB 8.3] [OB 8.5] [OB 8.8]	
			.2	Appraise or manage the impact[s] of the [environmental and organizational] threat[s] [*];		
			.3	Timely detect the error[s] [actions, inactions, unmanaged or mismanaged] [*] [*];		
			.4	Correctly appreciate the error[s] [spontaneous, linked to threats or part of error chain];		
			.5	Promptly respond to the error[s] before leading to an UAS and to a potential unsafe outcome [*] [*];		
			.6	Effectively manage UAS instead of error management [*] [*];		
			.7	Differentiate the UAS from the outcomes;		
			.8	Identify or estimate adequate countermeasures [planning, execution or review] to the TEM [crew (individual and team) actions or resources] [*] [*].		

Assessment Technique(s) and Method(s):	Assessment resources		Student´s Materials – Hand-outs:
	Media Support / Aids:	Facilities / Equipment:	
.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*
Assessment procedures:	*XXX*		

Remarks:
- [*] : Yellow marks refers to the assessment points which a given organizational structure [non-public versus public air transport] could influence the performance of a given task, leading to changes on LO, modules contents and elements.
- [*] : Blue marks refers to the assessment points which the PF or PM duty could influence the performance of a given task, leading to changes on LO, modules contents and elements.
All other non-marked items were considered common and bas independent of the context and duty.
Both markings can appear on the title of the module. In this case, all the module´s elements contain different influences related to the marks.

Adapted from DOC 9941 AN/478, 1st edition - Training Development Guide Competency-based Training Methodology (ICAO, 2011)

MODULE PLAN				
STP No: *01*	**Location:** *Lisbon, Portugal*	**Completed by:** *Colonese, João - researcher*	**Page:** *XX* of *XX*	**Date:** *NOV21*
Module Title: [Practical curriculum] Pilot Competency [KSA] and Operational Procedures			**Module No:** P-KSAOP	
Markings: [*] ; [*]	**Task No(s):** 1 to 8		**Sub-Task No(s):** 1.1 to 8.5	

END- OF-MODULE OBJECTIVE

Conditions:

[In substitution to the previous competencies' units of the practical syllabus of the course, customized according to a given functions and characteristic of the air transport service (when applicable)]

Performance:

[Allow the pilot to consider elements of the standardization of operational procedures [SOP] added to elements related to the pilot's competence, in a customized manner to a certain function and characteristic of the air transport service [when applicable], during certain episodes of the practical syllabus of the course. Allow the pilot to experience, from an operational and real perspective, the influence of operational philosophies and [SOP] and the competence´s influence in his operational context, and build the final level of competence regarding the execution of tasks associated to the preparation and execution of the flight]

Standard:

[Have the pilot competent about the standardization of operational procedures [SOP] and the elements related to his competence according to their operational context [function and characteristics of the air transport service] when executing the tasks associated to the preparation and execution of the flight. Have characterized the final level of competence regarding the adherence to the [SOP] in the execution of all tasks associated to the preparation and execution of the flight, avoiding having the aircraft in certain undesirable states due to environmental risk variables, possible abnormal situations, emergency and air transport service characteristics]

General notes: *XXX*

Intermediate Objective nº: [P-KSAOP.01] - PILOT COMPETENCY [KSA] AND OPERATIONAL PROCEDURES [*] [*] [According flight school practical syllabus scheme]

Session	Time	Assessment Points [Phases and Tasks]	Elements and Contents
Assessment Points :			

XX | *XX min* | .1

Title: KSAOP - PERFORM AEROPLANE GROUND AND PRE-FLIGHT OPERATIONS
[Competent pilot performance and standardized operational procedures on the following:]

TASKS:		Related competencies and [OB]	Instructor´s Tools [Guides, Check-lists, assess. FORMS]:
.1	Perform dispatch duties	[OB 0.1] [OB 0.2] [OB 0.3] [OB 0.4] [OB 0.5] [OB 0.6] [OB 0.7] [OB 1.1] [OB 1.2] [OB 1.3] [OB 1.4] [OB 1.5] [OB 1.6] [OB 1.7] [OB 2.1] [OB 2.2] [OB 2.3] [OB 2.4] [OB 2.5] [OB 2.6] [OB 2.7] [OB 2.8] [OB 2.9] [OB 4.1] [OB 4.2] [OB 5.1] [OB 5.2] [OB 5.3] [OB 5.4] [OB 5.5] [OB 5.6] [OB 5.7] [OB 5.8] [OB 5.9] [OB 5.10] [OB 5.11] [OB 6.1] [OB 6.2] [OB 6.3] [OB 6.4] [OB 6.5] [OB 6.6] [OB 6.7] [OB 6.8] [OB 6.9] [OB 7.1] [OB 7.3] [OB 7.4] [OB 7.5] [OB 7.6] [OB 7.7] [OB 8.1] [OB 8.2] [OB 8.3] [OB 8.4] [OB 8.5] [OB 8.6] [OB 8.7] [OB 8.8] [OB 8.9]	
.2	Provide flight crew and cabin crew briefings		
.3	Perform pre-flight checks and cockpit preparation		
.4	Perform engine start		
.5	Perform taxi		
.6	Manage abnormal and emergency situations		
.7	Communicate with cabin crew, passengers and company		

Assessment Technique(s) and Method(s):	Assessment resources		Student´s Materials – Hand-outs:
	Media Support / Aids:	Facilities / Equipment:	
.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*

Assessment procedures: *XXX*

XX	*XX min*	.2	Title: KSAOP - PERFORM TAKE-OFF [Competent pilot performance and standardized operational procedures on the following:]	Instructor´s Tools [Guides, Check-lists, assess. FORMS]:

TASKS:		Related competencies and [OB]
.1	Perform pre-take-off and pre-departure preparation	[OB 0.1] [OB 0.2] [OB 0.3] [OB 0.4] [OB 0.5] [OB 0.7] [OB 1.1] [OB 1.2] [OB 1.3] [OB 1.4] [OB 1.5] [OB 1.6] [OB 1.7] [OB 2.1] [OB 2.2] [OB 2.3] [OB 2.4] [OB 2.5] [OB 2.6] [OB 2.7] [OB 2.8] [OB 2.9] [OB 3.1] [OB 3.2] [OB 3.3] [OB 3.4] [OB 3.5] [OB 3.6] [OB 4.1] [OB 4.2] [OB 4.3] [OB 4.4] [OB 4.5] [OB 4.6] [OB 4.7] [OB 5.1] [OB 5.2] [OB 5.3] [OB 5.4] [OB 5.5] [OB 5.6] [OB 5.7] [OB 5.8] [OB 5.9] [OB 5.10] [OB 5.11] [OB 6.1] [OB 6.2] [OB 6.3] [OB 6.4] [OB 6.5] [OB 6.6] [OB 6.7] [OB 6.8] [OB 6.9] [OB 7.1] [OB 7.2] [OB 7.3] [OB 7.4] [OB 7.5] [OB 7.6] [OB 7.7] [OB 8.1] [OB 8.2] [OB 8.3] [OB 8.4] [OB 8.5] [OB 8.6] [OB 8.7] [OB 8.8] [OB 8.9]
.2	Perform take-off roll	
.3	Perform transition to instrument flight rules	
.4	Perform initial climb to flap retraction altitude	
.5	Perform rejected take-off	
.6	Perform navigation	
.7	Manage abnormal and emergency situations	

Assessment Technique(s) and Method(s):	Assessment resources		Student´s Materials – Hand-outs:
	Media Support / Aids:	Facilities / Equipment:	
.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*

Assessment procedures: *XXX*

XX	*XX min*	.3	Title: KSAOP - PERFORM CLIMB [Competent pilot performance and standardized operational procedures on the following:]	Instructor´s Tools [Guides, Check-lists, assess. FORMS]:

TASKS:		Related competencies and [OB]
.1	Perform standard instrument departure/en-route navigation	[OB 0.1] [OB 0.2] [OB 0.3] [OB 0.4] [OB 0.5] [OB 0.6] [OB 0.7] [OB 1.1] [OB 1.2] [OB 1.3] [OB 1.4] [OB 1.5] [OB 1.6] [OB 1.7] [OB 2.1] [OB 2.2] [OB 2.3] [OB 2.4] [OB 2.5] [OB 2.6] [OB 2.7] [OB 2.8] [OB 2.9] [OB 3.1] [OB 3.2] [OB 3.3] [OB 3.4] [OB 3.5] [OB 3.6] [OB 4.1] [OB 4.2] [OB 4.3] [OB 4.4] [OB 4.5] [OB 4.6] [OB 4.7] [OB 5.1] [OB 5.2] [OB 5.3] [OB 5.4] [OB 5.5] [OB 5.6] [OB 5.7] [OB 5.8] [OB 5.9] [OB 5.10] [OB 5.11] [OB 6.1] [OB 6.2] [OB 6.3] [OB 6.4] [OB 6.5] [OB 6.6] [OB 6.7] [OB 6.8] [OB 6.9] [OB 7.1] [OB 7.2] [OB 7.3] [OB 7.4] [OB 7.5] [OB 7.6] [OB 7.7] [OB 8.1] [OB 8.2] [OB 8.3] [OB 8.4] [OB 8.5] [OB 8.6] [OB 8.7] [OB 8.8] [OB 8.9]
.2	Complete climb procedures and checklists	
.3	Modify climb speeds, rate of climb and cruise altitude	
.4	Perform systems operations and procedures	
.5	Manage abnormal and emergency situations	
.6	Communicate with cabin crew, passengers and company	

Assessment Technique(s) and Method(s):	Assessment resources		Student´s Materials – Hand-outs:
	Media Support / Aids:	Facilities / Equipment:	
.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*

Assessment procedures: *XXX*

XX	*XX min*	.4	Title: KSAOP - PERFORM CRUISE [Competent pilot performance and standardized operational procedures on the following:]	Instructor´s Tools [Guides, Check-lists, assess. FORMS]:

TASKS:		Related competencies and [OB]
.1	Monitor navigation accuracy	[OB 0.1] [OB 0.2] [OB 0.3] [OB 0.4] [OB 0.5] [OB 0.6] [OB 0.7] [OB 1.1] [OB 1.2] [OB 1.3] [OB 1.4] [OB 1.5] [OB 1.6] [OB 1.7] [OB 2.1] [OB 2.2] [OB 2.3] [OB 2.4] [OB 2.5] [OB 2.6]
.2	Monitor flight progress	

			.3 Perform descent and approach planning .4 Perform systems operations and procedures .5 Manage abnormal and emergency situations .6 Communicate with cabin crew, passengers and company	[OB 2.7] [OB 2.8] [OB 2.9] [OB 3.1] [OB 3.2] [OB 3.3] [OB 3.4] [OB 3.5] [OB 3.6] [OB 4.1] [OB 4.2] [OB 4.3] [OB 4.4] [OB 4.5] [OB 4.6] [OB 4.7] [OB 5.1] [OB 5.2] [OB 5.3] [OB 5.4] [OB 5.5] [OB 5.6] [OB 5.7] [OB 5.8] [OB 5.9] [OB 5.10] [OB 5.11] [OB 6.1] [OB 6.2] [OB 6.3] [OB 6.4] [OB 6.5] [OB 6.6] [OB 6.7] [OB 6.8] [OB 6.9] [OB 7.1] [OB 7.2] [OB 7.3] [OB 7.4] [OB 7.5] [OB 7.6] [OB 7.7] [OB 8.1] [OB 8.2] [OB 8.3] [OB 8.4] [OB 8.5] [OB 8.6] [OB 8.7] [OB 8.8] [OB 8.9]	
			Assessment Technique(s) and Method(s):	Assessment resources Media Support / Aids:	Facilities / Equipment:	Student´s Materials – Hand-outs:
			.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*
			Assessment procedures: *XXX*			
XX	*XX min*	.5	Title: KSAOP - PERFORM DESCENT [Competent pilot performance and standardized operational procedures on the following:]			Instructor´s Tools [Guides, Check-lists, assess. FORMS]:
			TASKS:	Related competencies and [OB]		
			.1 Initiate and manage descent .2 Monitor and perform en-route and descent navigation .3 Replanning and update of approach briefing .4 Perform holding .5 Perform systems operations and procedures .6 Manage abnormal and emergency situations .7 Communicate with cabin crew, passengers and company	[OB 0.1] [OB 0.2] [OB 0.3] [OB 0.4] [OB 0.5] [OB 0.6] [OB 0.7] [OB 1.1] [OB 1.2] [OB 1.3] [OB 1.4] [OB 1.5] [OB 1.6] [OB 1.7] [OB 2.1] [OB 2.2] [OB 2.3] [OB 2.4] [OB 2.5] [OB 2.6] [OB 2.7] [OB 2.8] [OB 2.9] [OB 3.1] [OB 3.2] [OB 3.3] [OB 3.4] [OB 3.5] [OB 3.6] [OB 4.1] [OB 4.2] [OB 4.3] [OB 4.4] [OB 4.5] [OB 4.6] [OB 4.7] [OB 5.1] [OB 5.2] [OB 5.3] [OB 5.4] [OB 5.6] [OB 5.7] [OB 5.8] [OB 5.9] [OB 5.10] [OB 5.11] [OB 6.1] [OB 6.2] [OB 6.3] [OB 6.4] [OB 6.5] [OB 6.6] [OB 6.7] [OB 6.8] [OB 6.9] [OB 7.1] [OB 7.2] [OB 7.3] [OB 7.4] [OB 7.5] [OB 7.6] [OB 7.7] [OB 8.1] [OB 8.2] [OB 8.3] [OB 8.4] [OB 8.5] [OB 8.6] [OB 8.7] [OB 8.8] [OB 8.9]	
			Assessment Technique(s) and Method(s):	Assessment resources Media Support / Aids:	Facilities / Equipment:	Student´s Materials – Hand-outs:
			.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*
			Assessment procedures: *XXX*			
XX	*XX min*	.6	Title: KSAOP - PERFORM APPROACH [Competent pilot performance and standardized operational procedures on the following:]			Instructor´s Tools [Guides, Check-lists, assess. FORMS]:
			TASKS:	Related competencies and [OB]		
			.1 Perform approach in general .2 Perform precision approach .3 Perform non-precision approach .4 Perform approach with visual reference to ground .5 Monitor flight progress .6 Perform systems operations and procedures .7 Manage abnormal and emergency situations .8 Perform go-around/missed approach	[OB 0.1] [OB 0.2] [OB 0.3] [OB 0.4] [OB 0.5] [OB 0.6] [OB 0.7] [OB 1.1] [OB 1.2] [OB 1.3] [OB 1.4] [OB 1.5] [OB 1.6] [OB 1.7] [OB 2.1] [OB 2.2] [OB 2.3] [OB 2.4] [OB 2.5] [OB 2.6] [OB 2.7] [OB 2.8] [OB 2.9] [OB 3.1] [OB 3.2] [OB 3.3] [OB 3.4] [OB 3.5] [OB 3.6] [OB 4.1] [OB 4.2] [OB 4.3] [OB 4.4] [OB 4.5] [OB 4.6] [OB 4.7] [OB 5.1] [OB 5.2] [OB 5.3] [OB 5.4] [OB 5.5] [OB 5.6] [OB 5.7] [OB 5.8] [OB 5.9] [OB 5.10] [OB 5.11] [OB 6.1] [OB 6.2] [OB 6.3] [OB 6.4] [OB 6.5] [OB 6.6] [OB 6.7] [OB 6.8] [OB 6.9] [OB 7.1] [OB 7.2] [OB 7.3] [OB 7.4] [OB 7.5] [OB 7.6] [OB 7.7] [OB 8.1] [OB 8.2] [OB 8.3] [OB 8.4] [OB 8.5] [OB 8.6] [OB 8.7] [OB 8.8] [OB 8.9]	

			.9 Communicate with cabin crew, passengers and company			
			Assessment Technique(s) and Method(s):	Assessment resources: Media Support / Aids:	Assessment resources: Facilities / Equipment:	Student´s Materials – Hand-outs:
			.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*
			Assessment procedures: *XXX*			
XX	*XX min*	.7	Title: KSAOP – PERFORM LANDING [Competent pilot performance and standardized operational procedures on the following:]			Instructor´s Tools [Guides, Check-lists, assess. FORMS]:
			TASKS:	Related competencies and [OB]		
			.1 Land the aeroplane .2 Perform systems operations and procedures .3 Manage abnormal and emergency situations	[OB 0.1] [OB 0.2] [OB 0.3] [OB 0.4] [OB 0.5] [OB 0.7] [OB 1.1] [OB 1.2] [OB 1.3] [OB 1.4] [OB 1.5] [OB 1.6] [OB 1.7] [OB 2.1] [OB 2.2] [OB 2.3] [OB 2.4] [OB 2.5] [OB 2.6] [OB 2.7] [OB 2.8] [OB 2.9] [OB 3.1] [OB 3.2] [OB 3.3] [OB 3.4] [OB 3.5] [OB 3.6] [OB 4.1] [OB 4.2] [OB 4.3] [OB 4.4] [OB 4.5] [OB 4.6] [OB 4.7] [OB 5.1] [OB 5.2] [OB 5.4] [OB 5.5] [OB 5.6] [OB 5.7] [OB 5.8] [OB 5.9] [OB 5.10] [OB 5.11] [OB 6.1] [OB 6.2] [OB 6.3] [OB 6.4] [OB 6.5] [OB 6.6] [OB 6.7] [OB 6.8] [OB 6.9] [OB 7.1] [OB 7.2] [OB 7.3] [OB 7.4] [OB 7.5] [OB 7.6] [OB 7.7] [OB 8.1] [OB 8.2] [OB 8.3] [OB 8.4] [OB 8.5] [OB 8.6] [OB 8.7] [OB 8.8] [OB 8.9]	
			Assessment Technique(s) and Method(s):	Assessment resources: Media Support / Aids:	Assessment resources: Facilities / Equipment:	Student´s Materials – Hand-outs:
			.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*
			Assessment procedures: *XXX*			
XX	*XX min*	.8	Title: KSAOP - PERFORM AEROPLANE GROUND AND PRE-FLIGHT OPERATIONS [Competent pilot performance and standardized operational procedures on the following:]			Instructor´s Tools [Guides, Check-lists, assess. FORMS]:
			TASKS:	Related competencies and [OB]		
			.1 Perform taxi-in and parking .2 Perform aeroplane post-flight operations .3 Perform systems operations and procedures .4 Manage abnormal and emergency situations .5 Communicate with cabin crew, passengers and company	[OB 0.1] [OB 0.2] [OB 0.3] [OB 0.4] [OB 0.5] [OB 0.6] [OB 0.7] [OB 1.1] [OB 1.2] [OB 1.3] [OB 1.4] [OB 1.5] [OB 1.6] [OB 1.7] [OB 2.1] [OB 2.2] [OB 2.3] [OB 2.4] [OB 2.5] [OB 2.6] [OB 2.7] [OB 2.8] [OB 2.9] [OB 3.1] [OB 3.2] [OB 3.3] [OB 3.4] [OB 3.5] [OB 3.6] [OB 4.1] [OB 4.2] [OB 5.1] [OB 5.2] [OB 5.4] [OB 5.5] [OB 5.6] [OB 5.7] [OB 5.8] [OB 5.9] [OB 5.10] [OB 5.11] [OB 6.1] [OB 6.2] [OB 6.3] [OB 6.4] [OB 6.5] [OB 6.6] [OB 6.7] [OB 6.8] [OB 6.9] [OB 7.1] [OB 7.3] [OB 7.4] [OB 7.5] [OB 7.6] [OB 7.7] [OB 8.1] [OB 8.2] [OB 8.3] [OB 8.4] [OB 8.5] [OB 8.6] [OB 8.7] [OB 8.8] [OB 8.9]	
			Assessment Technique(s) and Method(s):	Assessment resources: Media Support / Aids:	Assessment resources: Facilities / Equipment:	Student´s Materials – Hand-outs:
			.1: XXX	*.1: XXX*	*.1: XXX*	*.1: XXX*
			Assessment procedures: *XXX*			

Remarks:
- [*] : Yellow marks refers to the assessment points which a given organizational structure [non-public versus public air transport] could influence the performance of a given task, leading to changes on LO, modules contents and elements.
- [*] : Blue marks refers to the assessment points which the PF or PM duty could influence the performance of a given task, leading to changes on LO, modules contents and elements.
All other non-marked items were considered common and bas independent of the context and duty.
Both markings can appear on the title of the module. In this case, all the module´s elements contain different influences related to the marks.

Adapted from DOC 9941 AN/478, 1st edition - Training Development Guide Competency-based Training Methodology (ICAO, 2011)

Appendix 13: Adapted competency model

ICAO ref.#	ICAO DOC 9868 task statement [Part II - Appendix 2 to Chapter 1]	Adapted competencies and related [OB]
2.	EXECUTAR AS OPERAÇÕES DE SOLO E PRÉ-VOO *[PERFORM AEROPLANE GROUND AND PRE-FLIGHT OPERATIONS]*	[OB] 0.1 - *[Demonstrates practical and applicable knowledge of limitations and systems and their interaction]* [OB] 0.2 - *[Demonstrates required knowledge of published operating instructions]* [OB] 0.3 - *[Demonstrates knowledge of the physical environment, the air traffic environment including routings, weather, airports and the operational infrastructure]* [OB] 0.4 - *[Demonstrates appropriate knowledge of applicable legislation]* [OB] 0.5 - *[Knows where to find required information]* [OB] 0.6 - *[Demonstrates a positive interest in acquiring knowledge]* [OB] 0.7 - *[Is able to apply knowledge effectively]*
2.1	Executar procedimentos de despacho *[Perform dispatch duties]*	[OB] 1.1 - *[Identifies where to find procedures and regulations.]* [OB] 1.2 - *[Applies relevant operating instructions, procedures and techniques in a timely manner.]* [OB] 1.3 - *[Follows SOPs unless a higher degree of safety dictates an appropriate deviation.]* [OB] 1.4 - *[Operates aeroplane systems and associated equipment correctly.]* [OB] 1.5 - *[Monitors aircraft systems status.]* [OB] 1.6 - *[Complies with applicable regulations.]* [OB] 1.7 - *[Applies relevant procedural knowledge.]*
2.2	Fornecer instruções à tripulação de voo e à tripulação de cabine *[Provide flight crew and cabin crew briefings]*	[OB] 2.1 - *[Determines that the recipient is ready and able to receive information.]* [OB] 2.2 - *[Selects appropriately what, when, how and with whom to communicate.]* [OB] 2.3 - *[Conveys messages clearly, accurately and concisely.]* [OB] 2.4 - *[Confirms that the recipient demonstrates understanding of important information.]* [OB] 2.5 - *[Listens actively and demonstrates understanding when receiving information.]* [OB] 2.6 - *[Asks relevant and effective questions.]*
2.3	Executar verificações pré-voo e preparação da cabine *[Perform pre-flight checks and cockpit preparation]*	
2.4	Executar acionamento do motor *[Perform engine start]*	
2.5	Executar taxi *[Perform taxi]*	
2.6	Gerenciar situações anormais e de emergência *[Manage abnormal and emergency situations]*	[OB] 2.7 - Usar escalonamento apropriado na comunicação para resolver os desvios identificados. *[Uses appropriate escalation in communication to resolve identified deviations.]* [OB] 2.8 - Usar e interpretar comunicação não verbal de forma adequada à cultura organizacional e social. *[Uses and interprets non-verbal communication in a manner appropriate to the organizational and social culture.]* [OB] 2.9 – *[Adheres to standard radiotelephone phraseology and procedures.]*
2.7	Comunicar com tripulação de cabine, passageiros e operador aéreo *[Communicate with cabin crew, passengers and company]*	[OB] 4.1 - *[Controls the aircraft manually with accuracy and smoothness as appropriate to the situation.]* [OB] 4.2 - *[Monitors and detects deviations from the intended flight path and takes appropriate action.]* [OB] 5.1 - Encorajar participação da equipe e comunicação aberta. *[Encourages team participation and open communication.]* [OB] 5.2 - Demonstrar iniciativa e fornecer orientação quando necessário. *[Demonstrates initiative and provides direction when required.]*

		[OB] 5.3 - Envolver outras pessoas no planejamento. *[Engages others in planning.]* [OB] 5.4 - Considerar contribuições dos outros. *[Considers inputs from others.]* [OB] 5.5 - Dar e receber comentários de forma construtiva. *[Gives and receives feedback constructively.]* [OB] 5.6 - Abordar e resolver conflitos e desacordos de maneira construtiva. *[Addresses and resolves conflicts and disagreements in a constructive manner.]* [OB] 5.7 - Exercer liderança decisiva quando necessário. *[Exercises decisive leadership when required.]* [OB] 5.8 - Aceitar responsabilidade por decisões e ações. *[Accepts responsibility for decisions and actions.]* [OB] 5.9 - Executar instruções quando orientado. *[Carries out instructions when directed.]* [OB] 5.10 - Aplicar estratégias de intervenção eficazes para resolver desvios identificados. *[Applies effective intervention strategies to resolve identified deviations.]* [OB] 5.11 - Gerir desafios culturais e de idioma, conforme aplicável. *[Manages cultural and language challenges, as applicable.]* [OB] 6.1 - *[Identifies, assesses and manages threats and errors in a timely manner.]* [OB] 6.2 - *[Seeks accurate and adequate information from appropriate sources.]* [OB] 6.3 - *[Identifies and verifies what and why things have gone wrong, if appropriate.]* [OB] 6.4 - *[Perseveres in working through problems while prioritizing safety.]* [OB] 6.5 - *[Identifies and considers appropriate options.]* [OB] 6.6 - *[Applies appropriate and timely decision-making techniques.]* [OB] 6.7 - *[Monitors, reviews and adapts decisions as required.]* [OB] 6.8 - *[Adapts when faced with situations where no guidance or procedure exists.]* [OB] 6.9 - *[Demonstrates resilience when encountering an unexpected event.]* [OB] 7.1 - *[Monitors and assesses the state of the aeroplane and its systems.]* [OB] 7.3 - *[Monitors and assesses the general environment as it may affect the operation.]* [OB] 7.4 - *[Validates the accuracy of information and checks for gross errors.]* [OB] 7.5 - Manter consciência das pessoas envolvidas ou afetadas pela operação e sua capacidade de desempenhar conforme o esperado. *[Maintains awareness of the people involved in or affected by the operation and their capacity to perform as expected.]* [OB] 7.6 - *[Develops effective contingency plans based upon potential risks associated with threats and errors.]* [OB] 7.7 – *[Responds to indications of reduced situational awareness.]* [OB] 8.1 - *[Exercises self-control in all situations.]* [OB] 8.2 - *[Plans, prioritizes and schedules appropriate tasks effectively.]* [OB] 8.3 - *[Manages time efficiently when carrying out tasks.]*

		[OB] 8.4 - Oferecer e prover assistência. *[Offers and gives assistance.]* [OB] 8.5 - Delegar tarefas. *[Delegates tasks.]* [OB] 8.6 - Solicitar e aceitar assistência, quando apropriado. *[Seeks and accepts assistance, when appropriate.]* [OB] 8.7 - Monitorar, revisar e confirmar ações de forma consciente. *[Monitors, reviews and cross-checks actions conscientiously.]* [OB] 8.8 - Verificar se tarefas são concluídas conforme esperado. *[Verifies that tasks are completed to the expected outcome.]* [OB] 8.9 - Gerenciar e retomar interrupções, distrações, variações e falhas de forma eficaz durante a execução de tarefas. *[Manages and recovers from interruptions, distractions, variations and failures effectively while performing tasks.]*
3.	EXECUTAR DECOLAGEM *[PERFORM TAKE-OFF]*	[OB] 0.1 - *[Demonstrates practical and applicable knowledge of limitations and systems and their interaction]* [OB] 0.2 - *[Demonstrates required knowledge of published operating instructions]* [OB] 0.3 - *[Demonstrates knowledge of the physical environment, the air traffic environment including routings, weather, airports and the operational infrastructure]* [OB] 0.4 - *[Demonstrates appropriate knowledge of applicable legislation]* [OB] 0.5 - *[Knows where to find required information]* [OB] 0.7 - *[Is able to apply knowledge effectively]* [OB] 1.1 - *[Identifies where to find procedures and regulations.]* [OB] 1.2 - *[Applies relevant operating instructions, procedures and techniques in a timely manner.]* [OB] 1.3 - *[Follows SOPs unless a higher degree of safety dictates an appropriate deviation.]* [OB] 1.4 - *[Operates aeroplane systems and associated equipment correctly.]* [OB] 1.5 - *[Monitors aircraft systems status.]* [OB] 1.6 - *[Complies with applicable regulations.]* [OB] 1.7 - *[Applies relevant procedural knowledge.]* [OB] 2.1 - *[Determines that the recipient is ready and able to receive information.]* [OB] 2.2 - *[Selects appropriately what, when, how and with whom to communicate.]* [OB] 2.3 - *[Conveys messages clearly, accurately and concisely.]* [OB] 2.4 - *[Confirms that the recipient demonstrates understanding of important information.]* [OB] 2.5 - *[Listens actively and demonstrates understanding when receiving information.]* [OB] 2.6 - *[Asks relevant and effective questions.]* [OB] 2.7 - Usar escalonamento apropriado na comunicação para resolver os desvios identificados. *[Uses appropriate escalation in communication to resolve identified deviations.]* [OB] 2.8 - Usar e interpretar comunicação não verbal de forma adequada à cultura organizacional e social. *[Uses and interprets non-verbal communication in a manner appropriate to the organizational and social culture.]* [OB] 2.9 – *[Adheres to standard radiotelephone phraseology and procedures.]*
3.1	Executar preparação antes da decolagem e saída padronizada *[Perform pre-take-off and pre-departure preparation]*	
3.2	Executar rolagem da decolagem *[Perform take-off roll]*	
3.3	Executar transição para regras de voo por instrumentos *[Perform transition to instrument flight rules]*	
3.4	Executar subida inicial para a altitude de retração do flape] *[Perform initial climb to flap retraction altitude]*	
3.5	Executar decolagem abortada *[Perform rejected take-off]*	
3.6	Executar navegação *[Perform navigation]*	
3.7	Gerenciar situações anormais e de emergência	

	[Manage abnormal and emergency situations]	[OB] 3.1 - *[Uses appropriate flight management, guidance systems and automation, as installed and applicable to the conditions.]* [OB] 3.2 - *[Monitors and detects deviations from the intended flight path and takes appropriate action.]* [OB] 3.3 - *[Manages the flight path safely to achieve optimum operational performance.]* [OB] 3.4 - *[Maintains the intended flight path during flight using automation while managing other tasks and distractions.]* [OB] 3.5 - *[Selects appropriate level and mode of automation in a timely manner considering phase of flight and workload.]* [OB] 3.6 - *[Effectively monitors automation, including engagement and automatic mode transitions.]* [OB] 4.1 - *[Controls the aircraft manually with accuracy and smoothness as appropriate to the situation.]* [OB] 4.2 - *[Monitors and detects deviations from the intended flight path and takes appropriate action.]* [OB] 4.3 - *[Manually controls the aeroplane using the relationship between aeroplane attitude, speed and thrust, and navigation signals or visual information.]* [OB] 4.4 - *[Manages the flight path safely to achieve optimum operational performance.]* [OB] 4.5 - *[Maintains the intended flight path during manual flight while managing other tasks and distractions.]* [OB] 4.6 - *[Uses appropriate flight management and guidance systems, as installed and applicable to the conditions.]* [OB] 4.7 - *[Effectively monitors flight guidance systems including engagement and automatic mode transitions.]* [OB] 5.1 - Encorajar participação da equipe e comunicação aberta. *[Encourages team participation and open communication.]* [OB] 5.2 - Demonstrar iniciativa e fornecer orientação quando necessário. *[Demonstrates initiative and provides direction when required.]* [OB] 5.3 - Envolver outras pessoas no planejamento. *[Engages others in planning.]* [OB] 5.4 - Considerar contribuições dos outros. *[Considers inputs from others.]* [OB] 5.5 - Dar e receber comentários de forma construtiva. *[Gives and receives feedback constructively.]* [OB] 5.6 - Abordar e resolver conflitos e desacordos de maneira construtiva. *[Addresses and resolves conflicts and disagreements in a constructive manner.]* [OB] 5.7 - Exercer liderança decisiva quando necessário. *[Exercises decisive leadership when required.]* [OB] 5.8 - Aceitar responsabilidade por decisões e ações. *[Accepts responsibility for decisions and actions.]* [OB] 5.9 - Executar instruções quando orientado. *[Carries out instructions when directed.]* [OB] 5.10 - Aplicar estratégias de intervenção eficazes para resolver desvios identificados. *[Applies effective intervention strategies to resolve identified deviations.]* [OB] 5.11 - Gerir desafios culturais e de idioma, conforme aplicável. *[Manages cultural and language challenges, as applicable.]* [OB] 6.1 - *[Identifies, assesses and manages threats and errors in a timely manner.]*

		[OB] 6.2 - *[Seeks accurate and adequate information from appropriate sources.]* [OB] 6.3 - *[Identifies and verifies what and why things have gone wrong, if appropriate.]* [OB] 6.4 - *[Perseveres in working through problems while prioritizing safety.]* [OB] 6.5 - *[Identifies and considers appropriate options.]* [OB] 6.6 - *[Applies appropriate and timely decision-making techniques.]* [OB] 6.7 - *[Monitors, reviews and adapts decisions as required.]* [OB] 6.8 - *[Adapts when faced with situations where no guidance or procedure exists.]* [OB] 6.9 - *[Demonstrates resilience when encountering an unexpected event.]* [OB] 7.1 - *[Monitors and assesses the state of the aeroplane and its systems.]* [OB] 7.2 - *[Monitors and assesses the aeroplane's energy state, and its anticipated flight path.]* [OB] 7.3 - *[Monitors and assesses the general environment as it may affect the operation.]* [OB] 7.4 - *[Validates the accuracy of information and checks for gross errors.]* [OB] 7.5 - Manter consciência das pessoas envolvidas ou afetadas pela operação e sua capacidade de desempenhar conforme o esperado. *[Maintains awareness of the people involved in or affected by the operation and their capacity to perform as expected.]* [OB] 7.6 - *[Develops effective contingency plans based upon potential risks associated with threats and errors.]* [OB] 7.7 – *[Responds to indications of reduced situational awareness.]* [OB] 8.1 - *[Exercises self-control in all situations.]* [OB] 8.2 - *[Plans, prioritizes and schedules appropriate tasks effectively.]* [OB] 8.3 - *[Manages time efficiently when carrying out tasks.]* [OB] 8.4 - Oferecer e prover assistência. *[Offers and gives assistance.]* [OB] 8.5 - Delegar tarefas. *[Delegates tasks.]* [OB] 8.6 - Solicitar e aceitar assistência, quando apropriado. *[Seeks and accepts assistance, when appropriate.]* [OB] 8.7 - Monitorar, revisar e confirmar ações de forma consciente. *[Monitors, reviews and cross-checks actions conscientiously.]* [OB] 8.8 - Verificar se tarefas são concluídas conforme esperado. *[Verifies that tasks are completed to the expected outcome.]* [OB] 8.9 - Gerenciar e retomar interrupções, distrações, variações e falhas de forma eficaz durante a execução de tarefas. *[Manages and recovers from interruptions, distractions, variations and failures effectively while performing tasks.]*
4.	EXECUTAR SUBIDA *[PERFORM CLIMB]*	[OB] 0.1 - *[Demonstrates practical and applicable knowledge of limitations and systems and their interaction]* [OB] 0.2 - *[Demonstrates required knowledge of published operating instructions]* [OB] 0.3 - *[Demonstrates knowledge of the physical environment, the air traffic environment including routings, weather, airports and the operational infrastructure]* [OB] 0.4 - *[Demonstrates appropriate knowledge of applicable legislation]* [OB] 0.5 - *[Knows where to find required information]*
4.1	Executar saída por instrumentos padronizadas/navegação em rota *[Perform standard instrument departure/en-route navigation]*	

4.2	Concluir procedimentos de subida e listas de verificações *[Complete climb procedures and checklists]*	[OB] 0.6 - *[Demonstrates a positive interest in acquiring knowledge]* [OB] 0.7 - *[Is able to apply knowledge effectively]* [OB] 1.1 - *[Identifies where to find procedures and regulations.]* [OB] 1.2 - *[Applies relevant operating instructions, procedures and techniques in a timely manner.]* [OB] 1.3 - *[Follows SOPs unless a higher degree of safety dictates an appropriate deviation.]* [OB] 1.4 - *[Operates aeroplane systems and associated equipment correctly.]* [OB] 1.5 - *[Monitors aircraft systems status.]* [OB] 1.6 - *[Complies with applicable regulations.]* [OB] 1.7 - *[Applies relevant procedural knowledge.]* [OB] 2.1 - *[Determines that the recipient is ready and able to receive information.]* [OB] 2.2 - *[Selects appropriately what, when, how and with whom to communicate.]* [OB] 2.3 - *[Conveys messages clearly, accurately and concisely.]* [OB] 2.4 - *[Confirms that the recipient demonstrates understanding of important information.]* [OB] 2.5 - *[Listens actively and demonstrates understanding when receiving information.]* [OB] 2.6 - *[Asks relevant and effective questions.]* [OB] 2.7 - Usar escalonamento apropriado na comunicação para resolver os desvios identificados. *[Uses appropriate escalation in communication to resolve identified deviations.]* [OB] 2.8 - Usar e interpretar comunicação não verbal de forma adequada à cultura organizacional e social. *[Uses and interprets non-verbal communication in a manner appropriate to the organizational and social culture.]* [OB] 2.9 – *[Adheres to standard radiotelephone phraseology and procedures.]* [OB] 3.1 - *[Uses appropriate flight management, guidance systems and automation, as installed and applicable to the conditions.]* [OB] 3.2 - *[Monitors and detects deviations from the intended flight path and takes appropriate action.]* [OB] 3.3 - *[Manages the flight path safely to achieve optimum operational performance.]* [OB] 3.4 - *[Maintains the intended flight path during flight using automation while managing other tasks and distractions.]* [OB] 3.5 - *[Selects appropriate level and mode of automation in a timely manner considering phase of flight and workload.]* [OB] 3.6 - *[Effectively monitors automation, including engagement and automatic mode transitions.]* [OB] 4.1 - *[Controls the aircraft manually with accuracy and smoothness as appropriate to the situation.]* [OB] 4.2 - *[Monitors and detects deviations from the intended flight path and takes appropriate action.]* [OB] 4.3 - *[Manually controls the aeroplane using the relationship between aeroplane attitude, speed and thrust, and navigation signals or visual information.]* [OB] 4.4 - *[Manages the flight path safely to achieve optimum operational performance.]* [OB] 4.5 - *[Maintains the intended flight path during manual flight while managing other tasks and distractions.]* [OB] 4.6 - *[Uses appropriate flight management and guidance systems, as installed and applicable to the conditions.]* [OB] 4.7 - *[Effectively monitors flight guidance systems including engagement and automatic mode transitions.]* [OB] 5.1 - Encorajar participação da equipe e comunicação aberta. *[Encourages team participation and open communication.]* [OB] 5.2 - Demonstrar iniciativa e fornecer orientação quando necessário.
4.3	Ajustar velocidades de subida, razão e altitude de cruzeiro *Modify climb speeds, rate of climb and cruise altitude]*	
4.4	Executar operações e procedimentos de sistemas *[Perform systems operations and procedures]*	
4.5	Gerenciar situações anormais e de emergência *[Manage abnormal and emergency situations]*	
4.6	Comunicar com tripulação de cabine, passageiros e operador aéreo *[Communicate with cabin crew, passengers and company]*	

		[Demonstrates initiative and provides direction when required.]
		[OB] 5.3 - Envolver outras pessoas no planejamento.
		[Engages others in planning.]
		[OB] 5.4 - Considerar contribuições dos outros.
		[Considers inputs from others.]
		[OB] 5.5 - Dar e receber comentários de forma construtiva.
		[Gives and receives feedback constructively.]
		[OB] 5.6 - Abordar e resolver conflitos e desacordos de maneira construtiva.
		[Addresses and resolves conflicts and disagreements in a constructive manner.]
		[OB] 5.7 - Exercer liderança decisiva quando necessário.
		[Exercises decisive leadership when required.]
		[OB] 5.8 - Aceitar responsabilidade por decisões e ações.
		[Accepts responsibility for decisions and actions.]
		[OB] 5.9 - Executar instruções quando orientado.
		[Carries out instructions when directed.]
		[OB] 5.10 - Aplicar estratégias de intervenção eficazes para resolver desvios identificados.
		[Applies effective intervention strategies to resolve identified deviations.]
		[OB] 5.11 - Gerir desafios culturais e de idioma, conforme aplicável.
		[Manages cultural and language challenges, as applicable.]
		[OB] 6.1 - *[Identifies, assesses and manages threats and errors in a timely manner.]*
		[OB] 6.2 - *[Seeks accurate and adequate information from appropriate sources.]*
		[OB] 6.3 - *[Identifies and verifies what and why things have gone wrong, if appropriate.]*
		[OB] 6.4 - *[Perseveres in working through problems while prioritizing safety.]*
		[OB] 6.5 - *[Identifies and considers appropriate options.]*
		[OB] 6.6 - *[Applies appropriate and timely decision-making techniques.]*
		[OB] 6.7 - *[Monitors, reviews and adapts decisions as required.]*
		[OB] 6.8 - *[Adapts when faced with situations where no guidance or procedure exists.]*
		[OB] 6.9 - *[Demonstrates resilience when encountering an unexpected event.]*
		[OB] 7.1 - *[Monitors and assesses the state of the aeroplane and its systems.]*
		[OB] 7.2 - *[Monitors and assesses the aeroplane's energy state, and its anticipated flight path.]*
		[OB] 7.3 - *[Monitors and assesses the general environment as it may affect the operation.]*
		[OB] 7.4 - *[Validates the accuracy of information and checks for gross errors.]*
		[OB] 7.5 - Manter consciência das pessoas envolvidas ou afetadas pela operação e sua capacidade de desempenhar conforme o esperado.
		[Maintains awareness of the people involved in or affected by the operation and their capacity to perform as expected.]
		[OB] 7.6 - *[Develops effective contingency plans based upon potential risks associated with threats and errors.]*
		[OB] 7.7 – *[Responds to indications of reduced situational awareness.]*
		[OB] 8.1 - *[Exercises self-control in all situations.]*

		[OB] 8.2 - *[Plans, prioritizes and schedules appropriate tasks effectively.]* [OB] 8.3 - *[Manages time efficiently when carrying out tasks.]* [OB] 8.4 - Oferecer e prover assistência. *[Offers and gives assistance.]* [OB] 8.5 - Delegar tarefas. *[Delegates tasks.]* [OB] 8.6 - Solicitar e aceitar assistência, quando apropriado. *[Seeks and accepts assistance, when appropriate.]* [OB] 8.7 - Monitorar, revisar e confirmar ações de forma consciente. *[Monitors, reviews and cross-checks actions conscientiously.]* [OB] 8.8 - Verificar se tarefas são concluídas conforme esperado. *[Verifies that tasks are completed to the expected outcome.]* [OB] 8.9 - Gerenciar e retomar interrupções, distrações, variações e falhas de forma eficaz durante a execução de tarefas. *[Manages and recovers from interruptions, distractions, variations and failures effectively while performing tasks.]*
5.	EXECUTAR VOO DE CRUZEIRO *[PERFORM CRUISE]*	[OB] 0.1 - *[Demonstrates practical and applicable knowledge of limitations and systems and their interaction]* [OB] 0.2 - *[Demonstrates required knowledge of published operating instructions]* [OB] 0.3 - *[Demonstrates knowledge of the physical environment, the air traffic environment including routings, weather, airports and the operational infrastructure]* [OB] 0.4 - *[Demonstrates appropriate knowledge of applicable legislation]* [OB] 0.5 - *[Knows where to find required information]* [OB] 0.6 - *[Demonstrates a positive interest in acquiring knowledge]* [OB] 0.7 - *[Is able to apply knowledge effectively]* [OB] 1.1 - *[Identifies where to find procedures and regulations.]* [OB] 1.2 - *[Applies relevant operating instructions, procedures and techniques in a timely manner.]* [OB] 1.3 - *[Follows SOPs unless a higher degree of safety dictates an appropriate deviation.]* [OB] 1.4 - *[Operates aeroplane systems and associated equipment correctly.]* [OB] 1.5 - *[Monitors aircraft systems status.]* [OB] 1.6 - *[Complies with applicable regulations.]* [OB] 1.7 - *[Applies relevant procedural knowledge.]* [OB] 2.1 - *[Determines that the recipient is ready and able to receive information.]* [OB] 2.2 - *[Selects appropriately what, when, how and with whom to communicate.]* [OB] 2.3 - *[Conveys messages clearly, accurately and concisely.]* [OB] 2.4 - *[Confirms that the recipient demonstrates understanding of important information.]* [OB] 2.5 - *[Listens actively and demonstrates understanding when receiving information.]* [OB] 2.6 - Fazer perguntas relevantes e eficazes. *[Asks relevant and effective questions.]* [OB] 2.7 - Usar escalonamento apropriado na comunicação para resolver os desvios identificados.
5.1	Monitorar precisão da navegação *[Monitor navigation accuracy]*	
5.2	Monitorar progresso do voo *[Monitor flight progress]*	
5.3	Executar planejamento da descida e aproximação *[Perform descent and approach planning]*	
5.4	Executar operações e procedimentos de sistemas [Perform systems operations and procedures]	
5.5	Gerenciar situações anormais e de emergência *[Manage abnormal and emergency situations]*	
5.6	Comunicar com tripulação de cabine, passageiros e operador aéreo	

	[Communicate with cabin crew, passengers and company]	*[Uses appropriate escalation in communication to resolve identified deviations.]* [OB] 2.8 - Usar e interpretar comunicação não verbal de forma adequada à cultura organizacional e social. *[Uses and interprets non-verbal communication in a manner appropriate to the organizational and social culture.]* [OB] 2.9 – *[Adheres to standard radiotelephone phraseology and procedures.]* [OB] 3.1 - *[Uses appropriate flight management, guidance systems and automation, as installed and applicable to the conditions.]* [OB] 3.2 - *[Monitors and detects deviations from the intended flight path and takes appropriate action.]* [OB] 3.3 - *[Manages the flight path safely to achieve optimum operational performance.]* [OB] 3.4 - *[Maintains the intended flight path during flight using automation while managing other tasks and distractions.]* [OB] 3.5 - *[Selects appropriate level and mode of automation in a timely manner considering phase of flight and workload.]* [OB] 3.6 - *[Effectively monitors automation, including engagement and automatic mode transitions.]* [OB] 4.1 - *[Controls the aircraft manually with accuracy and smoothness as appropriate to the situation.]* [OB] 4.2 - *[Monitors and detects deviations from the intended flight path and takes appropriate action.]* [OB] 4.3 - *[Manually controls the aeroplane using the relationship between aeroplane attitude, speed and thrust, and navigation signals or visual information.]* [OB] 4.4 - *[Manages the flight path safely to achieve optimum operational performance.]* [OB] 4.5 - *[Maintains the intended flight path during manual flight while managing other tasks and distractions.]* [OB] 4.6 - *[Uses appropriate flight management and guidance systems, as installed and applicable to the conditions.]* [OB] 4.7 - *[Effectively monitors flight guidance systems including engagement and automatic mode transitions.]* [OB] 5.1 - Encorajar participação da equipe e comunicação aberta. *[Encourages team participation and open communication.]* [OB] 5.2 - Demonstrar iniciativa e fornecer orientação quando necessário. *[Demonstrates initiative and provides direction when required.]* [OB] 5.3 - Envolver outras pessoas no planejamento. *[Engages others in planning.]* [OB] 5.4 - Considerar contribuições dos outros. *[Considers inputs from others.]* [OB] 5.5 - Dar e receber comentários de forma construtiva. *[Gives and receives feedback constructively.]* [OB] 5.6 - Abordar e resolver conflitos e desacordos de maneira construtiva. *[Addresses and resolves conflicts and disagreements in a constructive manner.]* [OB] 5.7 - Exercer liderança decisiva quando necessário. *[Exercises decisive leadership when required.]* [OB] 5.8 - Aceitar responsabilidade por decisões e ações. *[Accepts responsibility for decisions and actions.]* [OB] 5.9 - Executar instruções quando orientado. *[Carries out instructions when directed.]* [OB] 5.10 - Aplicar estratégias de intervenção eficazes para resolver desvios identificados.

		[Applies effective intervention strategies to resolve identified deviations.]
		[OB] 5.11 - Gerir desafios culturais e de idioma, conforme aplicável.
		[Manages cultural and language challenges, as applicable.]
		[OB] 6.1 - *[Identifies, assesses and manages threats and errors in a timely manner.]*
		[OB] 6.2 - *[Seeks accurate and adequate information from appropriate sources.]*
		[OB] 6.3 - *[Identifies and verifies what and why things have gone wrong, if appropriate.]*
		[OB] 6.4 - *[Perseveres in working through problems while prioritizing safety.]*
		[OB] 6.5 - *[Identifies and considers appropriate options.]*
		[OB] 6.6 - *[Applies appropriate and timely decision-making techniques.]*
		[OB] 6.7 - *[Monitors, reviews and adapts decisions as required.]*
		[OB] 6.8 - *[Adapts when faced with situations where no guidance or procedure exists.]*
		[OB] 6.9 - *[Demonstrates resilience when encountering an unexpected event.]*
		[OB] 7.1 - *[Monitors and assesses the state of the aeroplane and its systems.]*
		[OB] 7.2 - *[Monitors and assesses the aeroplane's energy state, and its anticipated flight path.]*
		[OB] 7.3 - *[Monitors and assesses the general environment as it may affect the operation.]*
		[OB] 7.4 - *[Validates the accuracy of information and checks for gross errors.]*
		[OB] 7.5 - Manter consciência das pessoas envolvidas ou afetadas pela operação e sua capacidade de desempenhar conforme o esperado.
		[Maintains awareness of the people involved in or affected by the operation and their capacity to perform as expected.]
		[OB] 7.6 - *[Develops effective contingency plans based upon potential risks associated with threats and errors.]*
		[OB] 7.7 – *[Responds to indications of reduced situational awareness.]*
		[OB] 8.1 - *[Exercises self-control in all situations.]*
		[OB] 8.2 - *[Plans, prioritizes and schedules appropriate tasks effectively.]*
		[OB] 8.3 - *[Manages time efficiently when carrying out tasks.]*
		[OB] 8.4 - Oferecer e prover assistência.
		[Offers and gives assistance.]
		[OB] 8.5 - Delegar tarefas.
		[Delegates tasks.]
		[OB] 8.6 - Solicitar e aceitar assistência, quando apropriado.
		[Seeks and accepts assistance, when appropriate.]
		[OB] 8.7 - Monitorar, revisar e confirmar ações de forma consciente.
		[Monitors, reviews and cross-checks actions conscientiously.]
		[OB] 8.8 - Verificar se tarefas são concluídas conforme esperado.
		[Verifies that tasks are completed to the expected outcome.]
		[OB] 8.9 - Gerenciar e retomar interrupções, distrações, variações e falhas de forma eficaz durante a execução de tarefas.
		[Manages and recovers from interruptions, distractions, variations and failures effectively while performing tasks.]
6.	EXECUTAR DESCIDA *[PERFORM DESCENT]*	[OB] 0.1 - *[Demonstrates practical and applicable knowledge of limitations and systems and their interaction]* [OB] 0.2 - *[Demonstrates required knowledge of published operating instructions]*

6.1	Iniciar e gerenciar descida *[Initiate and manage descent]*	[OB] 0.3 - *[Demonstrates knowledge of the physical environment, the air traffic environment including routings, weather, airports and the operational infrastructure]* [OB] 0.4 - *[Demonstrates appropriate knowledge of applicable legislation]* [OB] 0.5 - *[Knows where to find required information]* [OB] 0.6 - *[Demonstrates a positive interest in acquiring knowledge]* [OB] 0.7 - *[Is able to apply knowledge effectively]* [OB] 1.1 - *[Identifies where to find procedures and regulations.]* [OB] 1.2 - *[Applies relevant operating instructions, procedures and techniques in a timely manner.]* [OB] 1.3 - *[Follows SOPs unless a higher degree of safety dictates an appropriate deviation.]* [OB] 1.4 - *[Operates aeroplane systems and associated equipment correctly.]* [OB] 1.5 - *[Monitors aircraft systems status.]* [OB] 1.6 - *[Complies with applicable regulations.]* [OB] 1.7 - *[Applies relevant procedural knowledge.]* [OB] 2.1 - *[Determines that the recipient is ready and able to receive information.]* [OB] 2.2 - *[Selects appropriately what, when, how and with whom to communicate.]* [OB] 2.3 - *[Conveys messages clearly, accurately and concisely.]* [OB] 2.4 - *[Confirms that the recipient demonstrates understanding of important information.]* [OB] 2.5 - *[Listens actively and demonstrates understanding when receiving information.]* [OB] 2.6 - *[Asks relevant and effective questions.]* [OB] 2.7 - Usar escalonamento apropriado na comunicação para resolver os desvios identificados. *[Uses appropriate escalation in communication to resolve identified deviations.]* [OB] 2.8 - Usar e interpretar comunicação não verbal de forma adequada à cultura organizacional e social. *[Uses and interprets non-verbal communication in a manner appropriate to the organizational and social culture.]* [OB] 2.9 – *[Adheres to standard radiotelephone phraseology and procedures.]* [OB] 3.1 - *[Uses appropriate flight management, guidance systems and automation, as installed and applicable to the conditions.]* [OB] 3.2 - *[Monitors and detects deviations from the intended flight path and takes appropriate action.]* [OB] 3.3 - *[Manages the flight path safely to achieve optimum operational performance.]* [OB] 3.4 - *[Maintains the intended flight path during flight using automation while managing other tasks and distractions.]* [OB] 3.5 - *[Selects appropriate level and mode of automation in a timely manner considering phase of flight and workload.]* [OB] 3.6 - *[Effectively monitors automation, including engagement and automatic mode transitions.]* [OB] 4.1 - *[Controls the aircraft manually with accuracy and smoothness as appropriate to the situation.]* [OB] 4.2 - *[Monitors and detects deviations from the intended flight path and takes appropriate action.]* [OB] 4.3 - *[Manually controls the aeroplane using the relationship between aeroplane attitude, speed and thrust, and navigation signals or visual information.]* [OB] 4.4 - *[Manages the flight path safely to achieve optimum operational performance.]* [OB] 4.5 - *[Maintains the intended flight path during manual flight while managing other tasks and distractions.]* [OB] 4.6 - *[Uses appropriate flight management and guidance systems, as installed and applicable to the conditions.]*
6.2	Monitorar e executar navegação de rota e descida *[Monitor and perform en-route and descent navigation]*	
6.3	Replanejar e atualizar instruções de aproximação *[Replanning and update of approach briefing]*	
6.4	Executar esperas *[Perform holding]*	
6.5	Executar operações e procedimentos de sistemas *[Perform systems operations and procedures]*	
6.6	Gerenciar situações anormais e de emergência *[Manage abnormal and emergency situations]*	
6.7	Comunicar com tripulação de cabine, passageiros e operador aéreo *[Communicate with cabin crew, passengers and company]*	

		[OB] 4.7 - *[Effectively monitors flight guidance systems including engagement and automatic mode transitions.]*
		[OB] 5.1 - Encorajar participação da equipe e comunicação aberta.
		[Encourages team participation and open communication.]
		[OB] 5.2 - Demonstrar iniciativa e fornecer orientação quando necessário.
		[Demonstrates initiative and provides direction when required.]
		[OB] 5.3 - Envolver outras pessoas no planejamento.
		[Engages others in planning.]
		[OB] 5.4 - Considerar contribuições dos outros.
		[Considers inputs from others.]
		[OB] 5.6 - Abordar e resolver conflitos e desacordos de maneira construtiva.
		[Addresses and resolves conflicts and disagreements in a constructive manner.]
		[OB] 5.7 - Exercer liderança decisiva quando necessário.
		[Exercises decisive leadership when required.]
		[OB] 5.8 - Aceitar responsabilidade por decisões e ações.
		[Accepts responsibility for decisions and actions.]
		[OB] 5.9 - Executar instruções quando orientado.
		[Carries out instructions when directed.]
		[OB] 5.10 - Aplicar estratégias de intervenção eficazes para resolver desvios identificados.
		[Applies effective intervention strategies to resolve identified deviations.]
		[OB] 5.11 - Gerir desafios culturais e de idioma, conforme aplicável.
		[Manages cultural and language challenges, as applicable.]
		[OB] 6.1 - *[Identifies, assesses and manages threats and errors in a timely manner.]*
		[OB] 6.2 - *[Seeks accurate and adequate information from appropriate sources.]*
		[OB] 6.3 - *[Identifies and verifies what and why things have gone wrong, if appropriate.]*
		[OB] 6.4 - *[Perseveres in working through problems while prioritizing safety.]*
		[OB] 6.5 - *[Identifies and considers appropriate options.]*
		[OB] 6.6 - *[Applies appropriate and timely decision-making techniques.]*
		[OB] 6.7 - *[Monitors, reviews and adapts decisions as required.]*
		[OB] 6.8 - *[Adapts when faced with situations where no guidance or procedure exists.]*
		[OB] 6.9 - *[Demonstrates resilience when encountering an unexpected event.]*
		[OB] 7.1 - *[Monitors and assesses the state of the aeroplane and its systems.]*
		[OB] 7.2 - *[Monitors and assesses the aeroplane's energy state, and its anticipated flight path.]*
		[OB] 7.3 - *[Monitors and assesses the general environment as it may affect the operation.]*
		[OB] 7.4 - *[Validates the accuracy of information and checks for gross errors.]*
		[OB] 7.5 - Manter consciência das pessoas envolvidas ou afetadas pela operação e sua capacidade de desempenhar conforme o esperado.
		[Maintains awareness of the people involved in or affected by the operation and their capacity to perform as expected.]
		[OB] 7.6 - *[Develops effective contingency plans based upon potential risks associated with threats and errors.]*

		[OB] 7.7 – *[Responds to indications of reduced situational awareness.]* [OB] 8.1 - *[Exercises self-control in all situations.]* [OB] 8.2 - *[Plans, prioritizes and schedules appropriate tasks effectively.]* [OB] 8.3 - *[Manages time efficiently when carrying out tasks.]* [OB] 8.4 - Oferecer e prover assistência. *[Offers and gives assistance.]* [OB] 8.5 - Delegar tarefas. *[Delegates tasks.]* [OB] 8.6 - Solicitar e aceitar assistência, quando apropriado. *[Seeks and accepts assistance, when appropriate.]* [OB] 8.7 - Monitorar, revisar e confirmar ações de forma consciente. *[Monitors, reviews and cross-checks actions conscientiously.]* [OB] 8.8 - Verificar se tarefas são concluídas conforme esperado. *[Verifies that tasks are completed to the expected outcome.]* [OB] 8.9 - Gerenciar e retomar interrupções, distrações, variações e falhas de forma eficaz durante a execução de tarefas. *[Manages and recovers from interruptions, distractions, variations and failures effectively while performing tasks.]*
7.	EXECUTAR APROXIMAÇÃO *[PERFORM APPROACH]*	[OB] 0.1 - *[Demonstrates practical and applicable knowledge of limitations and systems and their interaction]* [OB] 0.2 - *[Demonstrates required knowledge of published operating instructions]* [OB] 0.3 - *[Demonstrates knowledge of the physical environment, the air traffic environment including routings, weather, airports and the operational infrastructure]* [OB] 0.4 - *[Demonstrates appropriate knowledge of applicable legislation]* [OB] 0.5 - *[Knows where to find required information]* [OB] 0.6 - *[Demonstrates a positive interest in acquiring knowledge]* [OB] 0.7 - *[Is able to apply knowledge effectively]* [OB] 1.1 - *[Identifies where to find procedures and regulations.]* [OB] 1.2 - *[Applies relevant operating instructions, procedures and techniques in a timely manner.]* [OB] 1.3 - *[Follows SOPs unless a higher degree of safety dictates an appropriate deviation.]* [OB] 1.4 - *[Operates aeroplane systems and associated equipment correctly.]* [OB] 1.5 - *[Monitors aircraft systems status.]* [OB] 1.6 - *[Complies with applicable regulations.]* [OB] 1.7 - *[Applies relevant procedural knowledge.]* [OB] 2.1 - *[Determines that the recipient is ready and able to receive information.]* [OB] 2.2 - *[Selects appropriately what, when, how and with whom to communicate.]* [OB] 2.3 - *[Conveys messages clearly, accurately and concisely.]* [OB] 2.4 - *[Confirms that the recipient demonstrates understanding of important information.]* [OB] 2.5 - *[Listens actively and demonstrates understanding when receiving information.]*
7.1	Executar aproximação em geral *[Perform approach in general]*	
7.2	Executar aproximação de precisão *[Perform precision approach]*	
7.3	Executar aproximação de não-precisão *[Perform non-precision approach]*	
7.4	Executar aproximação com referências visuais do terreno *[Perform approach with visual reference to ground]*	
7.5	Monitorar progresso do voo *[Monitor flight progress]*	
7.6	Executar operações e procedimentos de sistemas *[Perform systems operations and procedures]*	

7.7	Gerenciar situações anormais e de emergência *[Manage abnormal and emergency situations]*	[OB] 2.6 - *[Asks relevant and effective questions.]* [OB] 2.7 - Usar escalonamento apropriado na comunicação para resolver os desvios identificados. *[Uses appropriate escalation in communication to resolve identified deviations.]* [OB] 2.8 - Usar e interpretar comunicação não verbal de forma adequada à cultura organizacional e social. *[Uses and interprets non-verbal communication in a manner appropriate to the organizational and social culture.]*
7.8	Executar arremetida/aproximação perdida *[Perform go-around/missed approach]*	[OB] 2.9 – *[Adheres to standard radiotelephone phraseology and procedures.]* [OB] 3.1 - *[Uses appropriate flight management, guidance systems and automation, as installed and applicable to the conditions.]* [OB] 3.2 - *[Monitors and detects deviations from the intended flight path and takes appropriate action.]* [OB] 3.3 - *[Manages the flight path safely to achieve optimum operational performance.]*
7.9	Comunicar com tripulação de cabine, passageiros e operador aéreo *[Communicate with cabin crew, passengers and company]*	[OB] 3.4 - *[Maintains the intended flight path during flight using automation while managing other tasks and distractions.]* [OB] 3.5 - *[Selects appropriate level and mode of automation in a timely manner considering phase of flight and workload.]* [OB] 3.6 - *[Effectively monitors automation, including engagement and automatic mode transitions.]* [OB] 4.1 - *[Controls the aircraft manually with accuracy and smoothness as appropriate to the situation.]* [OB] 4.2 - *[Monitors and detects deviations from the intended flight path and takes appropriate action.]* [OB] 4.3 - *[Manually controls the aeroplane using the relationship between aeroplane attitude, speed and thrust, and navigation signals or visual information.]* [OB] 4.4 - *[Manages the flight path safely to achieve optimum operational performance.]* [OB] 4.5 - *[Maintains the intended flight path during manual flight while managing other tasks and distractions.]* [OB] 4.6 - *[Uses appropriate flight management and guidance systems, as installed and applicable to the conditions.]* [OB] 4.7 - *[Effectively monitors flight guidance systems including engagement and automatic mode transitions.]* [OB] 5.1 - Encorajar participação da equipe e comunicação aberta. *[Encourages team participation and open communication.]* [OB] 5.2 - Demonstrar iniciativa e fornecer orientação quando necessário. *[Demonstrates initiative and provides direction when required.]* [OB] 5.3 - Envolver outras pessoas no planejamento. *[Engages others in planning.]* [OB] 5.4 - Considerar contribuições dos outros. *[Considers inputs from others.]* [OB] 5.5 - Dar e receber comentários de forma construtiva. *[Gives and receives feedback constructively.]* [OB] 5.6 - Abordar e resolver conflitos e desacordos de maneira construtiva. *[Addresses and resolves conflicts and disagreements in a constructive manner.]* [OB] 5.7 - Exercer liderança decisiva quando necessário. *[Exercises decisive leadership when required.]* [OB] 5.8 - Aceitar responsabilidade por decisões e ações. *[Accepts responsibility for decisions and actions.]* [OB] 5.9 - Executar instruções quando orientado.

		[Carries out instructions when directed.]
		[OB] 5.10 - Aplicar estratégias de intervenção eficazes para resolver desvios identificados.
		[Applies effective intervention strategies to resolve identified deviations.]
		[OB] 5.11 - Gerir desafios culturais e de idioma, conforme aplicável.
		[Manages cultural and language challenges, as applicable.]
		[OB] 6.1 - *[Identifies, assesses and manages threats and errors in a timely manner.]*
		[OB] 6.2 - *[Seeks accurate and adequate information from appropriate sources.]*
		[OB] 6.3 - *[Identifies and verifies what and why things have gone wrong, if appropriate.]*
		[OB] 6.4 - *[Perseveres in working through problems while prioritizing safety.]*
		[OB] 6.5 - *[Identifies and considers appropriate options.]*
		[OB] 6.6 - Aplicar técnicas de tomada de decisão apropriadas e oportunas.
		[Applies appropriate and timely decision-making techniques.]
		[OB] 6.7 - *[Monitors, reviews and adapts decisions as required.]*
		[OB] 6.8 - *[Adapts when faced with situations where no guidance or procedure exists.]*
		[OB] 6.9 - *[Demonstrates resilience when encountering an unexpected event.]*
		[OB] 7.1 - *[Monitors and assesses the state of the aeroplane and its systems.]*
		[OB] 7.2 - *[Monitors and assesses the aeroplane's energy state, and its anticipated flight path.]*
		[OB] 7.3 - *[Monitors and assesses the general environment as it may affect the operation.]*
		[OB] 7.4 - *[Validates the accuracy of information and checks for gross errors.]*
		[OB] 7.5 - Manter consciência das pessoas envolvidas ou afetadas pela operação e sua capacidade de desempenhar conforme o esperado.
		[Maintains awareness of the people involved in or affected by the operation and their capacity to perform as expected.]
		[OB] 7.6 - *[Develops effective contingency plans based upon potential risks associated with threats and errors.]*
		[OB] 7.7 – *[Responds to indications of reduced situational awareness.]*
		[OB] 8.1 - *[Exercises self-control in all situations.]*
		[OB] 8.2 - *[Plans, prioritizes and schedules appropriate tasks effectively.]*
		[OB] 8.3 - *[Manages time efficiently when carrying out tasks.]*
		[OB] 8.4 - Oferecer e prover assistência.
		[Offers and gives assistance.]
		[OB] 8.5 - Delegar tarefas.
		[Delegates tasks.]
		[OB] 8.6 - Solicitar e aceitar assistência, quando apropriado.
		[Seeks and accepts assistance, when appropriate.]
		[OB] 8.7 - Monitorar, revisar e confirmar ações de forma consciente.
		[Monitors, reviews and cross-checks actions conscientiously.]
		[OB] 8.8 - Verificar se tarefas são concluídas conforme esperado.
		[Verifies that tasks are completed to the expected outcome.]
		[OB] 8.9 - Gerenciar e retomar interrupções, distrações, variações e falhas de forma eficaz durante a execução de tarefas.

		[Manages and recovers from interruptions, distractions, variations and failures effectively while performing tasks.]
8.	EXECUTAR POUSO *[PERFORM LANDING]*	[OB] 0.1 - *[Demonstrates practical and applicable knowledge of limitations and systems and their interaction]* [OB] 0.2 - *[Demonstrates required knowledge of published operating instructions]*
8.1	Pousar o avião *[Land the aeroplane]*	[OB] 0.3 - *[Demonstrates knowledge of the physical environment, the air traffic environment including routings, weather, airports and the operational infrastructure]*
8.2	Executar operações e procedimentos de sistemas *[Perform systems operations and procedures]*	[OB] 0.4 - *[Demonstrates appropriate knowledge of applicable legislation]* [OB] 0.5 - *[Knows where to find required information]* [OB] 0.7 - *[Is able to apply knowledge effectively]* [OB] 1.1 - *[Identifies where to find procedures and regulations.]* [OB] 1.2 - *[Applies relevant operating instructions, procedures and techniques in a timely manner.]*
8.3	Gerenciar situações anormais e de emergência *[Manage abnormal and emergency situations]*	[OB] 1.3 - *[Follows SOPs unless a higher degree of safety dictates an appropriate deviation.]* [OB] 1.4 - *[Operates aeroplane systems and associated equipment correctly.]* [OB] 1.5 - *[Monitors aircraft systems status.]* [OB] 1.6 - *[Complies with applicable regulations.]* [OB] 1.7 - *[Applies relevant procedural knowledge.]* [OB] 2.1 - *[Determines that the recipient is ready and able to receive information.]* [OB] 2.2 - *[Selects appropriately what, when, how and with whom to communicate.]* [OB] 2.3 - *[Conveys messages clearly, accurately and concisely.]* [OB] 2.4 - *[Confirms that the recipient demonstrates understanding of important information.]* [OB] 2.5 - *[Listens actively and demonstrates understanding when receiving information.]* [OB] 2.6 - *[Asks relevant and effective questions.]* [OB] 2.7 - Usar escalonamento apropriado na comunicação para resolver os desvios identificados. *[Uses appropriate escalation in communication to resolve identified deviations.]* [OB] 2.8 - Usar e interpretar comunicação não verbal de forma adequada à cultura organizacional e social. *[Uses and interprets non-verbal communication in a manner appropriate to the organizational and social culture.]* [OB] 2.9 – *[Adheres to standard radiotelephone phraseology and procedures.]* [OB] 3.1 - *[Uses appropriate flight management, guidance systems and automation, as installed and applicable to the conditions.]* [OB] 3.2 - *[Monitors and detects deviations from the intended flight path and takes appropriate action.]* [OB] 3.3 - *[Manages the flight path safely to achieve optimum operational performance.]* [OB] 3.4 - *[Maintains the intended flight path during flight using automation while managing other tasks and distractions.]* [OB] 3.5 - *[Selects appropriate level and mode of automation in a timely manner considering phase of flight and workload.]* [OB] 3.6 - *[Effectively monitors automation, including engagement and automatic mode transitions.]* [OB] 4.1 - *[Controls the aircraft manually with accuracy and smoothness as appropriate to the situation.]* [OB] 4.2 - *[Monitors and detects deviations from the intended flight path and takes appropriate action.]* [OB] 4.3 - *[Manually controls the aeroplane using the relationship between aeroplane attitude, speed and thrust, and navigation signals or visual information.]* [OB] 4.4 - *[Manages the flight path safely to achieve optimum operational performance.]*

		[OB] 4.5 - *[Maintains the intended flight path during manual flight while managing other tasks and distractions.]*
		[OB] 4.6 - *[Uses appropriate flight management and guidance systems, as installed and applicable to the conditions.]*
		[OB] 4.7 - *[Effectively monitors flight guidance systems including engagement and automatic mode transitions.]*
		[OB] 5.1 - Encorajar participação da equipe e comunicação aberta.
		[Encourages team participation and open communication.]
		[OB] 5.2 - Demonstrar iniciativa e fornecer orientação quando necessário.
		[Demonstrates initiative and provides direction when required.]
		[OB] 5.4 - Considerar contribuições dos outros.
		[Considers inputs from others.]
		[OB] 5.5 - Dar e receber comentários de forma construtiva.
		[Gives and receives feedback constructively.]
		[OB] 5.6 - Abordar e resolver conflitos e desacordos de maneira construtiva.
		[Addresses and resolves conflicts and disagreements in a constructive manner.]
		[OB] 5.7 - Exercer liderança decisiva quando necessário.
		[Exercises decisive leadership when required.]
		[OB] 5.8 - Aceitar responsabilidade por decisões e ações.
		[Accepts responsibility for decisions and actions.]
		[OB] 5.9 - Executar instruções quando orientado.
		[Carries out instructions when directed.]
		[OB] 5.10 - Aplicar estratégias de intervenção eficazes para resolver desvios identificados.
		[Applies effective intervention strategies to resolve identified deviations.]
		[OB] 5.11 - Gerir desafios culturais e de idioma, conforme aplicável.
		[Manages cultural and language challenges, as applicable.]
		[OB] 6.1 - *[Identifies, assesses and manages threats and errors in a timely manner.]*
		[OB] 6.2 - *[Seeks accurate and adequate information from appropriate sources.]*
		[OB] 6.3 - *[Identifies and verifies what and why things have gone wrong, if appropriate.]*
		[OB] 6.4 - *[Perseveres in working through problems while prioritizing safety.]*
		[OB] 6.5 - *[Identifies and considers appropriate options.]*
		[OB] 6.6 - *[Applies appropriate and timely decision-making techniques.]*
		[OB] 6.7 - *Monitors, reviews and adapts decisions as required.]*
		[OB] 6.8 - *[Adapts when faced with situations where no guidance or procedure exists.]*
		[OB] 6.9 - *[Demonstrates resilience when encountering an unexpected event.]*
		[OB] 7.1 - *[Monitors and assesses the state of the aeroplane and its systems.]*
		[OB] 7.2 - *[Monitors and assesses the aeroplane's energy state, and its anticipated flight path.]*
		[OB] 7.3 - *[Monitors and assesses the general environment as it may affect the operation.]*
		[OB] 7.4 - *[Validates the accuracy of information and checks for gross errors.]*
		[OB] 7.5 - Manter consciência das pessoas envolvidas ou afetadas pela operação e sua capacidade de desempenhar conforme o esperado.

		[Maintains awareness of the people involved in or affected by the operation and their capacity to perform as expected.] [OB] 7.6 - *[Develops effective contingency plans based upon potential risks associated with threats and errors.]* [OB] 7.7 – *[Responds to indications of reduced situational awareness.]* [OB] 8.1 - *[Exercises self-control in all situations.]* [OB] 8.2 - Planejar, priorizar e programar tarefas apropriadas de forma eficaz. *[Plans, prioritizes and schedules appropriate tasks effectively.]* [OB] 8.3 - *[Manages time efficiently when carrying out tasks.]* [OB] 8.4 - Oferecer e prover assistência. *[Offers and gives assistance.]* [OB] 8.5 - Delegar tarefas. *[Delegates tasks.]* [OB] 8.6 - Solicitar e aceitar assistência, quando apropriado. *[Seeks and accepts assistance, when appropriate.]* [OB] 8.7 - Monitorar, revisar e confirmar ações de forma consciente. *[Monitors, reviews and cross-checks actions conscientiously.]* [OB] 8.8 - Verificar se tarefas são concluídas conforme esperado. *[Verifies that tasks are completed to the expected outcome.]* [OB] 8.9 - Gerenciar e retomar interrupções, distrações, variações e falhas de forma eficaz durante a execução de tarefas. *[Manages and recovers from interruptions, distractions, variations and failures effectively while performing tasks.]*
9.	EXECUTAR AS OPERAÇÕES PÓS-POUSO E PÓS-VOO *[PERFORM AFTER-LANDING AND POST-FLIGHT OPERATIONS]*	[OB] 0.1 - *[Demonstrates practical and applicable knowledge of limitations and systems and their interaction]* [OB] 0.2 - *[Demonstrates required knowledge of published operating instructions]* [OB] 0.3 - *[Demonstrates knowledge of the physical environment, the air traffic environment including routings, weather, airports and the operational infrastructure]* [OB] 0.4 - *[Demonstrates appropriate knowledge of applicable legislation]* [OB] 0.5 - *[Knows where to find required information]* [OB] 0.6 - *[Demonstrates a positive interest in acquiring knowledge]* [OB] 0.7 - *[Is able to apply knowledge effectively]* [OB] 1.1 - *[Identifies where to find procedures and regulations.]* [OB] 1.2 - *[Applies relevant operating instructions, procedures and techniques in a timely manner.]* [OB] 1.3 - *[Follows SOPs unless a higher degree of safety dictates an appropriate deviation.]* [OB] 1.4 - *[Operates aeroplane systems and associated equipment correctly.]* [OB] 1.5 - *[Monitors aircraft systems status.]* [OB] 1.6 - *[Complies with applicable regulations.]* [OB] 1.7 - *[Applies relevant procedural knowledge.]* [OB] 2.1 - *[Determines that the recipient is ready and able to receive information.]* [OB] 2.2 - *[Selects appropriately what, when, how and with whom to communicate.]* [OB] 2.3 - *[Conveys messages clearly, accurately and concisely.]*
9.1	Executar taxi e estacionamento *[Perform taxi-in and parking]*	
9.2	Executar operações pós-voo do avião *[Perform aeroplane post-flight operations]*	
9.3	Executar operações e procedimentos de sistemas *[Perform systems operations and procedures]*	
9.4	Gerenciar situações anormais e de emergência *[Manage abnormal and emergency situations]*	

9.5	Comunicar com tripulação de cabine, passageiros e operador aéreo *[Communicate with cabin crew, passengers and company]*	[OB] 2.4 - *[Confirms that the recipient demonstrates understanding of important information.]* [OB] 2.5 - *[Listens actively and demonstrates understanding when receiving information.]* [OB] 2.6 - *[Asks relevant and effective questions.]* [OB] 2.7 - Usar escalonamento apropriado na comunicação para resolver os desvios identificados. *[Uses appropriate escalation in communication to resolve identified deviations.]* [OB] 2.8 - Usar e interpretar comunicação não verbal de forma adequada à cultura organizacional e social. *[Uses and interprets non-verbal communication in a manner appropriate to the organizational and social culture.]* [OB] 2.9 – *[Adheres to standard radiotelephone phraseology and procedures.]* [OB] 4.1 - *[Controls the aircraft manually with accuracy and smoothness as appropriate to the situation.]* [OB] 4.2 - *[Monitors and detects deviations from the intended flight path and takes appropriate action.]* [OB] 5.1 - Encorajar participação da equipe e comunicação aberta. *[Encourages team participation and open communication.]* [OB] 5.2 - Demonstrar iniciativa e fornecer orientação quando necessário. *[Demonstrates initiative and provides direction when required.]* [OB] 5.4 - Considerar contribuições dos outros. *[Considers inputs from others.]* [OB] 5.5 - Dar e receber comentários de forma construtiva. *[Gives and receives feedback constructively.]* [OB] 5.6 - Abordar e resolver conflitos e desacordos de maneira construtiva. *[Addresses and resolves conflicts and disagreements in a constructive manner.]* [OB] 5.7 - Exercer liderança decisiva quando necessário. *[Exercises decisive leadership when required.]* [OB] 5.8 - Aceitar responsabilidade por decisões e ações. *[Accepts responsibility for decisions and actions.]* [OB] 5.9 - Executar instruções quando orientado. *[Carries out instructions when directed.]* [OB] 5.10 - Aplicar estratégias de intervenção eficazes para resolver desvios identificados. *[Applies effective intervention strategies to resolve identified deviations.]* [OB] 5.11 - Gerir desafios culturais e de idioma, conforme aplicável. *[Manages cultural and language challenges, as applicable.]* [OB] 6.1 - *[Identifies, assesses and manages threats and errors in a timely manner.]* [OB] 6.2 - *[Seeks accurate and adequate information from appropriate sources.]* [OB] 6.3 - *[Identifies and verifies what and why things have gone wrong, if appropriate.]* [OB] 6.4 - *Perseveres in working through problems while prioritizing safety.]* [OB] 6.5 - *[Identifies and considers appropriate options.]* [OB] 6.6 - *[Applies appropriate and timely decision-making techniques.]* [OB] 6.7 - *[Monitors, reviews and adapts decisions as required.]*

		[OB] 6.8 - *[Adapts when faced with situations where no guidance or procedure exists.]* [OB] 6.9 - *[Demonstrates resilience when encountering an unexpected event.]* [OB] 7.1 - *[Monitors and assesses the state of the aeroplane and its systems.]* [OB] 7.3 - *[Monitors and assesses the general environment as it may affect the operation.]* [OB] 7.4 - *[Validates the accuracy of information and checks for gross errors.]* [OB] 7.5 - Manter consciência das pessoas envolvidas ou afetadas pela operação e sua capacidade de desempenhar conforme o esperado. *[Maintains awareness of the people involved in or affected by the operation and their capacity to perform as expected.]* [OB] 7.6 - *[Develops effective contingency plans based upon potential risks associated with threats and errors.]* [OB] 7.7 – *[Responds to indications of reduced situational awareness.]* [OB] 8.1 - *[Exercises self-control in all situations.]* [OB] 8.2 - *[Plans, prioritizes and schedules appropriate tasks effectively.]* [OB] 8.3 - *[Manages time efficiently when carrying out tasks.]* [OB] 8.4 - Oferecer e prover assistência. *[Offers and gives assistance.]* [OB] 8.5 - Delegar tarefas. *[Delegates tasks.]* [OB] 8.6 - Solicitar e aceitar assistência, quando apropriado. *[Seeks and accepts assistance, when appropriate.]* [OB] 8.7 - Monitorar, revisar e confirmar ações de forma consciente. *[Monitors, reviews and cross-checks actions conscientiously.]* [OB] 8.8 - Verificar se tarefas são concluídas conforme esperado. *[Verifies that tasks are completed to the expected outcome.]* [OB] 8.9 - Gerenciar e retomar interrupções, distrações, variações e falhas de forma eficaz durante a execução de tarefas. *[Manages and recovers from interruptions, distractions, variations and failures effectively while performing tasks.]*

Notes:

Color markings on the [Adapted competencies and related (OB)] column refers to variations according the functions treated on the study.

- [NO MARKS]:

[1.] *[Act as pilot in command (PIC) on single-engine airplane on non-public air transport services under visual (VFR) or instrument flight rules (IFR)].*

- [YELLOW MARKS]:

[2.] *[Act as pilot in command (PIC) on single-engine airplane, certified for operation with a minimum crew of 1 (one) pilot, on public air transport services under visual (VFR) or instrument flight rules (IFR)].*

-BLUE MARKS]:

[3.] *[Act as second in command (SIC) on single-engine airplane, certified for operation with a minimum crew of 2 (two) pilots, on public air transport services under visual (VFR) or instrument flight rules (IFR)].*

Some [subtasks] and [OB] were translated to portuguese to receive both [YELLOW MARKS] and [BLUE MARKS] whereas the variation was more public air transport [kind of service] related than PIC [PF] or SIC [PM] related, considered applicable to both functions.

NOTE: ADAPTED FROM COMPETENCY ASSESSMENT AND EVALUATION FOR PILOTS, INSTRUCTORS AND EVALUATORS – GUIDANCE MATERIAL (IATA, 2021)

Appendix 14: KSA and learning objectives taxonomy

TRAINING OBJECTIVES TAXONOMY Definition of verbs for each level of accomplishment			
Definition of verbs — Level 0 Requires from the trainee a simple level of awareness.			
Verb	Definition	Example	Level
Demonstrate familiarization	To become acquainted with a subject	To demonstrate familiarization with technical and operational ATM facilities.	0
To demonstrate General awareness of	Condition of being conscious, level of awareness	To demonstrate general awareness of potential hazards to health and safety generated by navigation equipment.	0
Definition of verbs — Level 1 Requires a basic knowledge of the subject. It is the ability to remember essential points; the trainee is expected to memorize and retrieve data.			
Verb	Definition	Example	Level
Define	State what it is and what its limits are; state the definition	Define the global performances for CVOR and DVOR.	1
Draw	Produce a picture, pattern or diagram	Draw the block diagram of the transmitter.	1
List	Say one after the other	List the main SW development processes used in industries.	1
Name	Give name of objects or procedures	Name who is designated to authorize changes in operational data.	1
Quote	Repeat what is written or said to underline	Quote ICAO definition of ATC service.	1
Recognize	To know what it is because you've seen it before	Recognize on a diagram all the elements of the ADS.	1
State	Say or write in a formal or definite way	State who are the local telecom providers and the service characteristics.	1
Definition of verbs — Level 2 Requires an understanding of the subject sufficient to enable the student to discuss intelligently. The individual is able to represent for himself or herself certain objects and events in order to act upon these objects and events.			
Verb	Definition	Example	Level
Characterize	To describe the quality of features in something	Characterize consequences of an OS upgrade.	2
Consider	To think carefully about it	Consider institutional issues and service provider responsibilities.	2
Demonstrate	Describe and explain; logically or mathematically proves the truth of a statement	Demonstrate the possible use of GBAS for approach and landing.	2
Describe	Say what it is like or what happened	Describe the architecture of the ATN network.	2
Differentiate	Show the differences between things	Differentiate on a diagram all the possible elements of the ADS-C system.	2
Explain	Give details about something or describe so that it can be understood	Explain the principles of non-blocking switches.	2
Take account of	Take into consideration before deciding	Take wind influence into account when calculating a ground speed.	2
Definition of verbs — Level 3 Requires a thorough knowledge of the subject and the ability to apply it with accuracy. The student should be able to make use of his or her repertoire of knowledge to develop plans and activate them.			
Verb	Definition	Example	Level
Act	Carry out, execute	Act in accordance with the rules.	3
Apply	Use something in a situation or activity	Apply the appropriate model to the analysis of a relevant aviation system.	3
Appreciate	To understand a situation and know what is involved in a problem-solving situation, to state a plan without applying it	Appreciate criticality of the conditions.	3
Assist	Help somebody to do a job by doing part of it	Handle the operational HMI and assist in the tuning of the screens.	3
Calculate	To discover from information you already have by arithmetic; to think about a possible cause of action in	Calculate the values of the elements of a simple generic antenna system.	3

	order to form an opinion or decide what to do		
Check	Make sure the information is correct (satisfactory)	Check the operational status of the monitor system.	3
Choose	Select out of number, decide to do one thing rather than another	Choose the appropriate type of line for a given specific application.	3
Collect	Assemble, accumulate, bring or come together	Collect remote data.	3
Conduct	Lead, guide	Conduct coordination.	3
Confirm	Establish more firmly, corroborate	Confirm sequence order.	3
Decode	Turn into ordinary writing, Decipher	Decode a transponder message.	3
Encode	Put into code or cipher	Encode a typical ATC data item.	3
Estimate	Form an approximate judgment of a number; form an opinion	Being given an aircraft route, estimate thanks to a software package or/and GPS receiver the availability of the constellation.	3
Execute	Perform action	Execute an arrival sequence.	3
Extract	Copy out, make extracts from, find, deduce	Extract data from a flight plan.	3
Identify	Associate oneself inseparably with, establish the identity	Identify and locate data transmission problems.	3
Inform	Inspire, tell	Inform the planning controller.	3
Initiate	Begin, set going, originate	Initiate a coordination procedure.	3
Input	Enter in the system	Input data.	3
Issue	Send forth, publish	Issue ATC clearance.	3
Maintain	Carry on, keep up, refresh	Maintain flight data display.	3
Measure	Ascertain extent or quality of (thing) by comparison with fixed unit or with object of known size	Measure the typical parameters of lines.	3
Monitor	Keep under observation	Monitor traffic.	3
Notify	Make known, announce, report	Notify runway in use.	3
Obtain	Acquire easily, without research	Obtain aeronautical information.	3
Operate	Conduct work on equipment	Operate test tools to analyze the system.	3
Pass	Move, cause to go, transmit	Pass essential traffic information without delay.	3
Perform	Carry into effect, go through, execute	Perform typical measurements on a receiver.	3
Record	Register, set down for remembrance or reference	Record information by writing effectively.	3
Relay	Arrange in, provide with, replace by	Relay pilot message.	3
Respond	Make answer, perform answering or corresponding action	Respond to the loss of aircraft radar identification.	3
Scan	Look intently at all parts Successively	Scan data display.	3
Transfer	Hand over	Transfer information to receiving controller.	3
Update	Refresh, make up to date	Update professional knowledge and skills.	3
Use	Employ for a purpose, handle as instrument, put into operation	Use the ICAO documentation to explain the principles related to signals in space.	3
Verify	Establish truth of	Verify the impact of the requirements on the location and the type of ground station.	3
Definition of verbs — Level 4 Ability to establish a line, within a unit of known applications, following the correct chronology, and the adequate methods to resolve a problem situation. This involves the integration of known applications in a familiar situation.			
Verb	Definition	Example	Level
Acquire	Gain by oneself and for oneself; obtain after research	Acquire relevant aeronautical information.	4
Adjust	Change to a new position, value or setting	Adjust antenna system.	4
Allocate	Assign, devote	Allocate the responsibility of separation during transfer.	4
Analyse	Examine minutely the constitution of	Analyze the coverage of the radio system.	4
Assign	Allot as a share, make over	Assign take off number.	4

Coordinate	Bring part into proper relation	Coordinate with RCC.	4
Comply	Act in accordance with	Comply with rules.	4
Delegate	Commit authority to somebody	Delegate separation in case of aircraft continuing visually.	4
Design	Conceive mental plans for	Design a NDB station according to operational requirements.	4
Detect	Discover existence of	Detect disturbances.	4
Ensure	Make safe, make certain	Ensure the agreed course of action is carried out.	4
Expedite	Assist the progress of, do speedily	Expedite the traffic.	4
Integrate	Combine into a whole, complete by addition of parts	Integrate adequately components into a LAN.	4
Justify	Show the rightness of a choice or of an option	Justify and theorize the DME/N versus the DME/P.	4
Manage	Handle, wield, conduct	Manage aerodrome surface movements.	4
Organize	Give orderly structure to, frame and put into working order	Organize arrival sequence.	4
Predict	Forecast	Predict evolution of a conflict situation.	4
Provide	Supply, furnish	Provide separation.	4
Relate	Establish link with	Relate a pressure setting to an altitude.	4
Definition of verbs — Level 5 Ability to analyze new situation, in order to elaborate and apply one or other relevant strategy, to solve a complex problem. The defining feature is that the situation is qualitatively different from those previously met, requiring judgment and evaluation of options.			
Verb	Definition	Example	Level
Appraise	Estimate, determine the benefit	Appraise the interest of a traffic management option.	5
Assess	Estimate value or difficulty, evaluate	Assess flight inspection results.	5
Balance	Weigh (a question, two arguments, etc., against each other)	Balance two control actions.	5
Calibrate	Correct and adjust to enable the provision of accurate data	Calibrate the NDB system according to flight inspection.	5
Discuss	Investigate by reasoning or argument	Discuss the distribution of integrity information through GALILEO.	5
Evaluate	Ascertain amount of, find numerical expression for	Evaluate workload.	5
Extemporize	Produce without preparation, improvise	Extemporize phraseology in abnormal situations.	5
Imagine	Form mental image of, conceive	Imagine possible actions to cope with unusual situations.	5
Interpret	To decide on something's meaning or significance when there is a choice	Interpret fault report based on various test tool measures.	5
Resolve	Solve, clear up, settle	Resolve conflict.	5
Review	Survey, look back on	Review previous clearance according to the latest aircraft relative positions.	5
Select	Pick out as best or most suitable	Select the runway in use.	5
Solve	Find answer to	Solve separation problems.	5
Theorize	Extract general principles from a particular experience	Theorize the principles of ILS.	5
Troubleshoot	Trace and correct faults	Troubleshoot wrong bearing indications of a VOR.	5
Validate	Make valid, ratify, confirm	Validate one radar vectoring option to expedite the traffic.	5

ADAPTED FROM DOC 7192-AN/857 TRAINING MANUAL, PART E-2 AIR TRAFFIC SAFETY ELECTRONIC PERSONNEL, APPENDIX A (ICAO, 2004).

Appendix 15: Design and production of printed, projected and e-training instructional material

PRINCIPLES AND TECHNICAL DETAILS RELATED TO THE WRITTEN AND PRINTED INSTRUCTIONAL MATERIAL

- EDITING AND LAYOUT OF TEXT:
  - Improvement of the readability of a text under preparation:
    - Introduction of the main idea as earlier as possible;
    - Start with basic cases or rules, then, present the exceptions;
    - Write as briefly and succinctly as possible;
    - Try to being too comprehensive. Excessive details may be boring to readers;
    - Avoid cross-references to other parts of the training material;
    - Keep the text [it] short and simple – KISS.
  - Highlighting devices to be used to direct attention to key points:
    - Quickly grasp the important contents;
    - Remember and recall key points;
    - Review the material studied.

      Different styles of letters can be used to direct attention to a particular part of the text.

      ✓ UPPER-CASE: Just for individual words or short sentences. They are considered harder to read than lower-case letters.
      ✓ *Italics*: Can make sentences stand-out, but they are considered harder to ready than regular letters.
      ✓ **Bold letters**: Gets more attention than regular and underlined letters and are considered as simple to read than regular letters.
      ✓ Underline: Also gets attention like the bold letter, but not too affective as the bold letters.

      Other ways to highlight texts and sentences:

      ✓ Placing a key word in a box, also directs attention to a | specific part. |
      ✓ Separating a sentence or a paragraph from the rest of the text.
      ✓ Identifying sentences or paragraphs by symbols and numbering:

        B.3 Numbering and/or lettering – used to direct attention to a specific sequence.
        ○ Bullets – used when the intention is not a fixed sequence.
        ↘ (*) Symbols – used to highlight words or very short sentences.

      ✓ Separating a sentence or a paragraph from the rest of the text.
      ✓ Use of color, different fonts or effects. Attention must be addressed to use of not too many differentiations and to the use with standard criteria along the module or content. Indiscriminate use prone to confuse and attract attention of the trainees.
  - Size and format of the paper:
    - The way and purpose the material will be used and covers.
    - Standardized size (A3, A4, Letter), grammage of papers (90 g/m^2, 120…) and margins.

      The following elements impact on the practicality of the use, durability when they are exchanged among trainees and reproduction of printed material.

- Design of Job Aids:

  - **Accessibility**: The material should be organized according to the users need and the information must be easily to be found.
  - **Conciseness**: The material must avoid unnecessary explanations or superfluous nice-to-know information, which are contained on the training material.
  - **Accuracy**: The material shall not bring errors. Errors prone to harmful mistakes on the job.
  - **Durability**: The material must comply with the real job condition which is used. Binding, covers, size and grammage of paper matters.
  - **Modifiability**: The material must allow facilitated updating when required. Codes, revisions and marks matters.

- Coding of a printed material:

  - **Codes of the modules**: Modules and intermediate objectives must be sequentially numbered. Any introductory, opening or accessory activity must be coded [0] if required.
  - **Codes of instructional events**: All instructional event which vary according the training technique or method within the module must be separated and coded plus the sequential numbering. This helps instructor´s to identify their progress on the course and facilitate the access and control of the medias and references.

    - Example, but not limiting to:
      -Handout nº 2 in Module 8: H.8.2.
      -Answer to PT nº 2 in the Module 7: A.PT.7.2.

Item	*Code*
Handout	*H*
Progress Test	*PT (Q)*
Answer	*A*
Exercise	*EX*
Role Play/Session	*RP/SE*
Mastery Test	*MT*

PRINCIPLES AND TECHNICAL DETAILS RELATED TO THE PROJECTED VISUAL MATERIAL

- GENERAL PRINCIPLES

  - LEGIBILITY:
    Well-organized contents and competent instructors do not guarantee an effective training solution. Well-designed visual support is an important element that impacts on the effectiveness of the training. All the computer-generated support amplifies the scope and flexibility of creativeness on the use of projected media, which may balance with standard criteria.
    Size of letters, numbers, symbols and figures should be tested according to the size of the room [farthest trainee] and the size of projected image. A rule of 1/6 can be used. If the last position is 12 meters away, the projection must be 2 x 2 meters.

  - READABILITY:
    Due to the room´s lighting and data-show characteristics, some projected elements may vary, impacting on the trainee´s ability to ready, understand and keep focused on the training. Size and color of letters, numbers, figures and the various color combinations should be tested before producing the copies of the projected materials. At same how, the information should be properly spaced and rated with standardized size, color, style of fonts and symbols. Besides the title, no more than 6 text lines with information is a good practice to avoid the trouble in reading.

  - CONTENT:
    The content of projected material should be carefully chosen. Multiple examples of same things must be avoided. The technical elements of the projected materials should not be [reading] instructions to the instructor just read them, nor be just a look-nice element. The instructor should comment the texts, images, drawings etc using his guide as support.

  - CODING:
    Coding of the projected visual material is a good practice to support the instructor on the easy referencing during the training delivery. The codes to be projected in small fonts on the bottom-sides of the screen shall match with the instructor´s guide coding it´s quickly reference on what and how explore on the topic.

- VIDEO TRAINING MATERIAL

  The use of videos is normally an important resource of any course. They create interest, illustrate real-life situations and ese the use of media. More and more, videos are easily available on the internet. External sources of videos [aviation and equipment manufacturers, training organizations, authorities, government etc.] may provide quality videos, which may save efforts on production and editing time. In this case, the adequacy of the videos must be verified, such as the proper feedback on it.
  However, in-house production could be worthy. Despite it consumes more time, the solution can use the facilitation of, each time easier, technological gadgets to produce tailored and contextualized [familiar to trainees] videos, which normally appreciate the staff. The initiative makes available the production and use of detailed scenarios, elements, focuses and details at flight school´s discretion and does not need to be expensive and professional.

  Videos must consider the following elements:

  - **Keep as short as possible** – 5 to 10 minutes is sufficient to convey a message.
  - **Objectiveness and feedback** – The video must figure as an instructional event with specific objective and valid script on it to enables an effective feedback and its objective.
  - **Clear of distractions** – Avoid long periods of someone talking in front of the camera for long periods and distractions on the set, like irrelevant signs or activities in the background.
  - **Sound** – Ensure all sound recordings and emphasized and appropriate on every moment.

- E-TRAINING MATERIAL

  The consideration of this kind of material is generally positive, but it´ also complex. Various issues involving its design, production and usage, with emphasis on the aviation authority´s acceptance, must be considered to figure this as the most modern and desirable training technique. This step briefly elects some technical elements concerned with its use to support flight schools decision-making on it.
  Despite the various positive aspects [flexibility of implementation, less time of the trainees in flight schools, reduced costs with instructors, higher entry levels on courses, adaptation of the target population, motivation, wide range of applications to produce motivating interactive materials], the high cost of the implementation usually is the main constraint. In addition, the e-training solution must fit with the training context and its elements. When the training requires hand-on practices, social interaction, relevant skills and attitudes, the e-training may not fit in general.
  Normally, the scope of the e-training figure as accessory tools and resides on the use of self-contained teaching applications on portable computers to cover specific role in a training sequence. In large countries as Brazil, where gathering trainees together is harder, or the level of the trainees is mixed, the e-training material is more valuable.

  Most common use of the e-training materials, but not limited to:

  - **Practice and reinforcement**. Normally part of classroom-based modules and activities, can provide support on knowledge and skill areas. Typically, a question-and-answer format, supported by scenarios or schemes produce reinforcement based on of the most economical application to improve trainee´s performance.
  - **Tutorials**. Allows trainees interact with e-training application during the content presentation. The application compares itself with the instructor´s role, but costs more from the flight school to development and production. Normally is used to individualizes and distance training solution, which requires validation from the SME and instructors to be effectively used.
  - **Simulations**. Are more intended to allow the trainees to learn procedures and solve problems, focusing on skills and attitudes. Very often used on commercial aviation to safely handle dangerous situations on training context. Its use is costly and requires a well-defined structure [logistics, process, procedures and trained personnel].
  - **Testing**. Both progress and mastery tests can be integrated on e-training solution. Some applications can provide built-in feedback on questionnaires and add supplementary instructor’s participation after the exams. E-training exams adds the ease on exam´s statistics and controls on attempts and other elements.

Appendix 16: VENN Model

➢ PRINCIPLES RELATED TO THE VENN MODEL

The model ensures consistency and objectivity to the practical assessment activities performed under the proposed training solution. It uses the principle [HOW WELL] to the competencies demonstrated by the trainees during the assessment. The assessment of the [OB] associated to a competency is performed according to the following dimensions:

- **How many [OB] the trainee demonstrated when required.** This dimension evinces the acquisition of the competency.
- **How often the trainees demonstrated the [OB] when required.** This dimension evinces the robustness of the competency.
- **What was the outcome of the specific competency under assessment on the TEM.** This dimension evinces the effectiveness of the competency as a countermeasure against threats and errors and assist the assessor in understanding the interrelationship between safety and the trainee´s performance in the challenging operational context.

By the use of the model, the assessment is the combination of the number of [OB], their frequency and the outcome of the specific competency on the TEM.

- The [HOW MANY] dimension, regarding the number of [OB] were demonstrated, receives the scale:

HOW MANY
few, hardly any
some
many
most
all, almost all

- The [HOW OFTEN] dimension, regarding a frequency of [OB] demonstrated when required, receives the scale:

HOW OFTEN
rarely
occasionally
regularly
regularly* [very often]
always, almost always

- The [OUTCOME OF TEM] dimension, specifically regarding to the competency being assessed, receives the scale:

OUTCOME of TEM	The demonstrated [OB] – relating specifically to the competency being assessed
unsafe situation	☐ Did not allow a timely management of the threats and errors. ☐ This led to [or could have led to**] an unaccepted reduction of the safety margin.
not an unsafe situation	☐ Did not allow, on few occasions, a timely management of the threats or errors. ☐ This led to [or could have led to**] a limited and momentary reduction of the safety margin.
safe	☐ Allowed the anticipation and mitigation of many expected threats, the recognition and mitigation of the unexpected threats and the timely detection and correction of the errors. ☐ This led to [or could have led to**] the maintenance of safety margin.
safe*	☐ Allowed the anticipation and mitigation of most expected threats, the recognition and mitigation of the unexpected threats and the promptly detection and correction of the errors. ☐ This led to [or could have led to**] an improvement of the safety margin.
enhance safety	☐ Allowed the anticipation and mitigation of all expected threats, the recognition and mitigation of the unexpected threats and the immediate detection and correction of the errors. ☐ This led to [or could have led to**] an enhancement of the safety margin.
Notes: [Safe*] - referring to a more pro-active safety level. [or could have led to**] – must be used to integrate the outcome of TEM dimension when the training conditions are significantly limited; and ensure that the outcome relates specifically to the competency under assessment.	

Adapted from IATA – Competency Assessment and Evaluation for Pilots, Instructors and Evaluators – Guidance Material (2021).

➢ COMPETENCY ASSESSMENT USING THE VENN MODEL

The principle [HOW WELL] reflects the lowest level of each dimension [HOW MANY, HOW OFTEN, OUTCOME of TEM] relating specifically to the competency assessed. The trainees must be graded according the examples below:

OBSERVABLE BEHAVIORS		OUTCOME of TEM
HOW MANY	HOW OFTEN	
few, hardly any	rarely	unsafe situation
some	occasionally	not an unsafe situation
many	regularly	safe
most	regularly*	safe*
all, almost all	always, almost always	enhance safety

HOW WELL = LOWEST OF [HOW MANY, HOW OFTEN, OUTCOME of TEM]

COMPETENCY ASSESSMENT
HOW WELL
ineffectively
minimal acceptable
adequately
effectively
exemplary manner

- Examples can be observed, according to the different scenarios:
  - When they were required, the trainee has *occasionally* demonstrated *many of the [OB]* during the assessment. Even if the *safety margins have been maintained* (OUTCOME of TEM is safe), *the frequency* of the [OB] demonstration (HOW OFTEN = occasionally) *indicates a lack of competency's robustness*.

OBSERVABLE BEHAVIORS		OUTCOME of TEM
HOW MANY	HOW OFTEN	
few, hardly any	rarely	unsafe situation
some	occasionally	not an unsafe situation
many	regularly	safe
most	regularly*	safe*
all, almost all	always, almost always	enhance safety

HOW WELL = LOWEST OF [HOW MANY, HOW OFTEN, OUTCOME of TEM]

COMPETENCY ASSESSMENT
HOW WELL
ineffectively
minimal acceptable
adequately
effectively
exemplary manner

  - When they were required, the trainee has *regularly* demonstrated *many of the [OB]* during the assessment. Nevertheless the [OB] *did not allow, on few occasions, a timely management of the threats or errors.* This led to a limited and momentary reduction of the safety margin [OUTCOME of TEM = not an unsafe situation.

OBSERVABLE BEHAVIORS		OUTCOME of TEM
HOW MANY	HOW OFTEN	
few, hardly any	rarely	unsafe situation
some	occasionally	not an unsafe situation
many	regularly	safe
most	regularly*	safe*
all, almost all	always, almost always	enhance safety

HOW WELL = LOWEST OF [HOW MANY, HOW OFTEN, OUTCOME of TEM]

COMPETENCY ASSESSMENT
HOW WELL
ineffectively
minimal acceptable
adequately
effectively
exemplary manner

  - When they were required, the trainee has *regularly** demonstrated *most of the [OB]* during the assessment. This led to an improvement of the safety margin.

OBSERVABLE BEHAVIORS		OUTCOME of TEM
HOW MANY	HOW OFTEN	
few, hardly any	rarely	unsafe situation
some	occasionally	not an unsafe situation
many	regularly	safe
most	regularly*	safe*
all, almost all	always, almost always	enhance safety

HOW WELL = LOWEST OF [HOW MANY, HOW OFTEN, OUTCOME of TEM]

COMPETENCY ASSESSMENT
HOW WELL
ineffectively
minimal acceptable
adequately
effectively
exemplary manner

- There are specific cases when the outcome of TEM may be not relevant to assess the competency. This relates to the dedicated psychomotor skills practices when the assessor takes care of the threat and error management aspects. In this case, the assessment of the associates [OB] of the competency will be determined only by the following dimensions:
  - ✓ **How many [OB] the trainee demonstrated when required.**
  - ✓ **How often the trainees demonstrated the [OB] when required.**

  Examples can be observed as following:

  - When they were required, the trainee has *regularly demonstrated only few of the [OB]* during the assessment. Even if the [OB] have been demonstrated regularly, *the limited number of [OB] indicates a lack of competency´s acquisition* by the trainee.

OBSERVABLE BEHAVIORS	
HOW MANY	**HOW OFTEN**
few, hardly any	rarely
some	occasionally
many	regularly
most	regularly*
all, almost all	always, almost always

HOW WELL = LOWEST OF [HOW MANY, HOW OFTEN]

COMPETENCY ASSESSMENT
HOW WELL
ineffectively
minimal acceptable
adequately
effectively
exemplary manner

  - When they were required, the trainee has *regularly demonstrated many of the [OB]* during the assessment.

OBSERVABLE BEHAVIORS	
HOW MANY	**HOW OFTEN**
few, hardly any	rarely
some	occasionally
many	regularly
most	regularly*
all, almost all	always, almost always

HOW WELL = LOWEST OF [HOW MANY, HOW OFTEN]

COMPETENCY ASSESSMENT
HOW WELL
ineffectively
minimal acceptable
adequately
effectively
exemplary manner

➢ <u>OUTCOMES OF THE VENN MODEL</u>

- GRADING – Means relates the results of the competency assessment to a defined numerical scale to be further used. The grading refers to normal and specific cases when the outcome of TEM is not considered:

COMPETENCY ASSESSMENT	COMPETENCY	TRAINEE PERFORMANCE	FLIGHT SCHOOL
HOW WELL	GRADING	COMPETENT METRIC	REMEDIAL TRAINING
ineffectively	1	NO	required
minimal acceptable	2	YES	refer to the police
adequately	3	YES	not required
effectively	4	YES	not required
exemplary manner	5	YES	not required

- TRAINEES PERFORMANCE and FURTHER CONSIDERATIONS – According to the competency grading, a trainee´s competent metric is stated to address flight schools policies and actions related to a remedial training. Both polices and actions shall be according to the assessment plan and authority´s acceptance.
  - ✓ The **GRADE [3]** was defined as the **prescribed standard** considering the industry´s best practices.
  - ✓ The **GRADE [2]** was defined as the **minimum acceptable standard**.

  - Example of actions related to the management of performance bellow the prescribed standard:
    - ✓ A tailored remedial training is required for:
      - Any competency graded 1;
      - Two successive grades 2 in a same competency; or
      - Any competency grade 2 if the assessor evaluates that the trainee won´t be able to demonstrate an adequate performance [grade 3] during the next assessment activities.

Appendix 17: Instructor and Assessor training and qualification

➢ Competencies domains:

- The first, that encompasses the same [KSA] required from the trainee´s proposed training solution:
  - The acquisition of these competencies masters instructors and assessors on the performance of their routine duties while may manage unforeseen situations.
    - ✓ Instructors and assessors must undergo the same modules of the theoretical and practical curriculums of the proposed training solution to the flight school´s trainees.
    - ✓ Instructors and assessors must undergo the same theoretical and practical assessment activities curriculums of the proposed training solution to the flight school´s trainees.

- The second, that encompasses specific [KSA] related to the instruction and assessing duties:
  - The acquisition of these competencies enables instructors and assessors to effectively perform instructional and assessment duties in dynamic situations and with the proper support and benefits of all available resources. When instructors and assessors carry all relevant competencies, they enhance the consolidation and integration of the various competencies of the trainees. The competencies were based on applicable guidance material related to the competency assessment for pilots, instructors and evaluators (IATA, 2021).
    - ✓ Instructors and assessors must undergo their specific modules of the theoretical and practical curriculums of the extra training and qualification process.
    - ✓ Instructors and assessors must undergo their specific theoretical and practical assessment activities of the extra training and qualification process.
  - The ANAC must consider special conditions concerning the execution of the first [initial] extra training and qualification process due to the lack of previously flight school´s qualified individuals to instruct and assess.
  - Each module must relate the competencies and its related [OB] according to the following elements:

Competency **Description**	**Observable Behaviors**
Management of the learning Environment **Ensures that the instruction, assessment and evaluation are conducted in a suitable and safe environment.**	IOB 2.1 Applies TEM in the context of instruction/evaluation. IOB 2.2 Briefs on safety procedures for situations that are likely to develop during instruction/evaluation. IOB 2.3 Intervenes appropriately, at the correct time and level (e.g., progresses from verbal assistance to taking over control). IOB 2.4 Resumes instruction/evaluation as practicable after any intervention. IOB 2.5 Plans and prepares training media, equipment and resources. IOB 2.6 Briefs on training devices or aircraft limitations that may influence training, when applicable. IOB 2.7 Creates and manages conditions (e.g., airspace, ATC, weather, time, etc.) to be suitable for the training objectives. IOB 2.8 Adapts to changes in the environment whilst minimizing training disruptions. IOB 2.9 Manages time, training media and equipment to ensure that training objectives are met.
Instruction **Conducts training to develop the trainee's competencies.**	IOB 3.1 References approved sources (operations, technical, and training manuals, standards and regulations). IOB 3.2 States clearly the objectives and clarifies roles for the training. IOB 3.3 Follows the approved training program. IOB 3.4 Applies instructional methods as appropriate (e.g., explanation, demonstration, facilitation, discover with assistance, discover without assistance). IOB 3.5 Sustains operational relevance and realism. IOB 3.6 Adapts the amount of instructor inputs to ensure that the training objectives are met. IOB 3.7 Adapts to situations that might disrupt a planned sequence of events. IOB 3.8 Continuously assesses trainee's competencies. IOB 3.9 Encourages the trainee to self-assess. IOB 3.10 Allows trainee to self-correct in a timely manner.

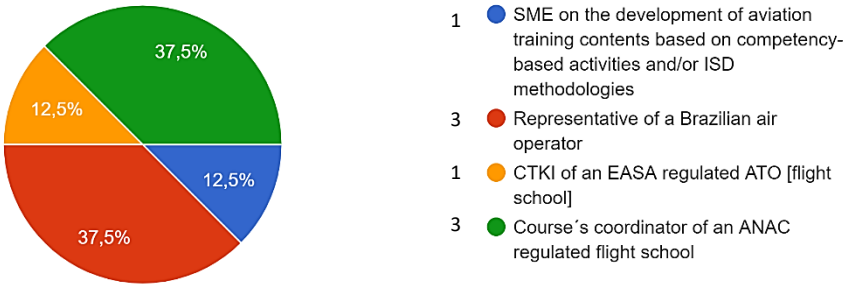
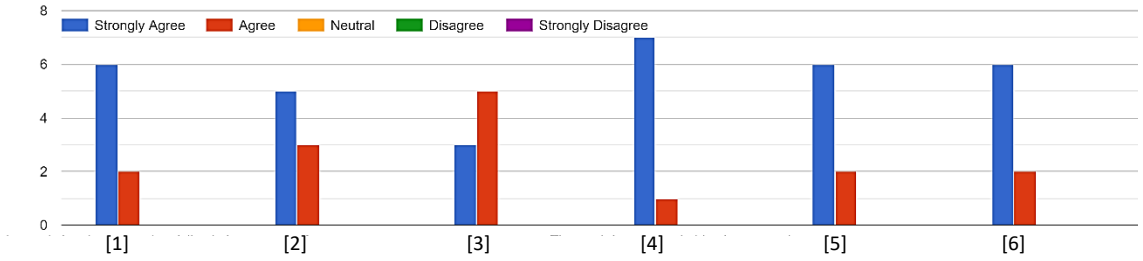
	IOB 3.11 Applies trainee-centered feedback techniques (e.g., facilitation, etc.). IOB 3.12 Provides positive reinforcement.
Interaction with the trainees **Supports the trainees' learning and Development** **and** ***Demonstrates exemplary behaviour (role model)***	IOB 4.1 Shows respect for the trainees (e.g., for culture, language, experience). IOB 4.2 Shows patience and empathy (e.g., by actively listening, reading non-verbal messages and encouraging dialogue). IOB 4.3 Manages trainees' barriers to learning. IOB 4.4 Encourages engagement and mutual support. IOB 4.5 Coaches the trainees. *IOB 4.6 Supports the goal and training policies of the operator/ATO and Authority.* *IOB 4.7 Shows integrity (e.g., honesty and professional principles).* *IOB 4.8 Demonstrates acceptable personal conduct, acceptable social practices, content expertise, a model for professional and interpersonal behaviour.* *IOB 4.9 Actively seeks and accepts feedback to improve own performance.*
Assessment and Evaluation **Assesses the competencies of the trainee** **and** **Contributes to continuous training system improvement**	IOB 5.1 Complies with Operator/ATOs and Authority requirements. IOB 5.2 Ensures that the trainee understands the assessment process. IOB 5.3 Applies the competency standards and conditions. IOB 5.4 Assesses trainee's competencies. IOB 5.5 Performs grading. IOB 5.6 Provides recommendations based on the outcome of the assessment. IOB 5.7 Makes decisions based on the outcome of the summative assessment. IOB 5.8 Provides clear feedback to the trainee. IOB 5.9 Reports strengths and weaknesses of the training system (e.g., training environment, curriculum, assessment/evaluation) including feedback from trainees. IOB 5.10 Suggests improvements for the training system. IOB 5.11 Produces reports using appropriate forms and media.

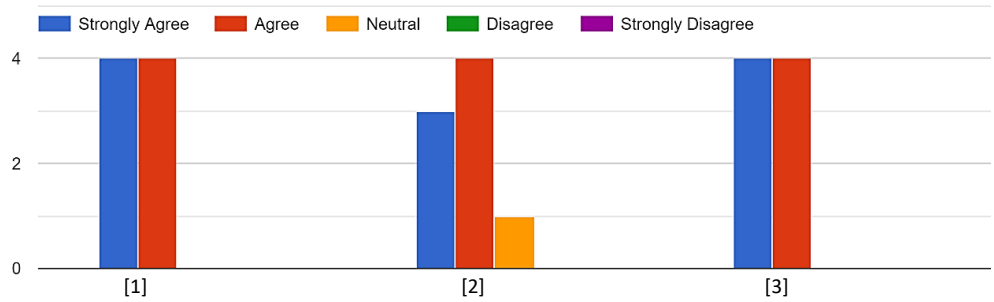
- Each proposal of module outline and plan may be framed according to the proposed training solution directed to the flight school´s trainees. However, the flight school may use the following frame to the proposed extra training modules to be complemented by the statements regarding the relevant instructional and assessment support.

Competency		Performance Criterion		
			Competency Assessment	
Name	Description	[OB]*	Final competency standard*	Conditions*
X1	*Y1*	*X1.1*	*X1.1.1*	*X1.1.2*
		X1.2	*X1.2.1*	*X1.2.2*
X2	…	…	…	…

  - ✓ Some [OB] and competency assessment elements may not be applicable or may vary due to the flight school´s discretion on duties specifications and instructor and assessor training. Flight schools must define the appropriate competency standard for each duty.

Appendix 18: Study´s opportunity inquiry´ feedback

Study´s opportunity Inquiry´ feedback		
Nº	Question	Answer / Options
RESPONDENT´S INFORMATION		
1	Number of participating flight schools and registered answers	No identification of the respondents was required. The sum just intended for percentage purposes only
Outcome: 5 answers		
2	As a "key player", the respondents were divided into:	Among Brazilian Air Operators, were considered the representatives of the following areas: - Flight Standards, Training and Quality. - Flight Standards and Training. - Advanced Qualification Program - AQP.
Outcome: 5 answers  		
POSITIONING ABOUT THE ELEMENTS OF THE STUDY		
1	How do you positionate yourself about the following elements of the study? [1] The theme of the study is relevant on the civil aviation context of any country. [2] The study´s focus and the limited population are relevant on the civil aviation context of any country. [3] About the problem assumed by the study and its possible relation as output of the related courses, I: [4] The study´s proposed objectives are relevant. [5] The gap assumed by the study [among the very new licensed airplane commercial pilots and the air operators´ needs] is real and may be considered a concernment to the air operators. [6] The initiative to allow a safer and smoother transition process of the commercial pilots to the air operators segment, based on CBTA CPL/IR courses, is relevant.	
 		
STEP 1 - A PRELIMINARY STUDY AND A PERFORMANCE PROBLEM		
1	How do you assess the implications of the results of this step? [1] The specified segments´ contribution to the Brazilian safety statistics are relevant. [2] The specific CPL [single-engine] pilots contribution to the Brazilian safety statistics are relevant. [3] The use of an ISD [and its outputs] on the composition of CBTA contents and activities is relevant to the safety and to my operational context.	



2	Do the results above imply on practical reflexes on the entity where you work? How?

- An answer stated [yes]. The respondent stated that the CPL training program must be the moment when a pilot has to develop his/her competencies to solve complex situations, instead of only been introduced to longer and IFR navigations – what currently occur.
- An answer stated [yes], since the basic training of pilots in Brazil must be must comprehensive and focused on the analysis of events, when the skills [referring to the KSA] to the exercise of the function must be pursued.
- An answer stated [yes], affirming that the methodology of the pilot´s initial qualification must be readapted.
- An answer stated that a similar job is already developed by the French State [CAA] on the training courses of the CPL cadets.
- An answer stated [yes]. The use of an ISD on the composition of CBTA contents and activities is relevant and important to improve the safety in the respondent´s operational context
- An answer stated [yes] and on a practical way. The respondent, that claimed working both on the general aviation as a safety director of a flight school and as an airline captain on a regular operator [airlines], where also acts on its training division, stated that the results of the study imply in different ways on both scenarios. The answer related that recently rated pilots have been facing more troubles in getting job positions on PART 91 than on PART 121. By the respondent, most of them, whether recently IR rated or CPL licensed, assumes been not comfortable to fly solo or as PIC under IMC conditions. On the other hand, the respondent assumed that the Brazilian airlines have been spending more time and resources in order to train and fulfill the gap of the new rated pilot's knowledge, skills and attitude as to having them acquiring the competencies expected by the segment as a professional aviator – within a approximately period of the first years in the airline.

3	There are any suggestions of improvement related to the results above, that would positively affect the results above or contribute to future studies on the theme?

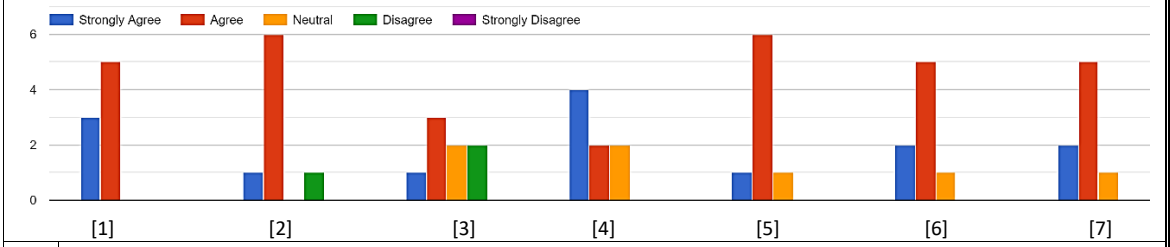
- An answer stated that the correlation between CPL and the accidents are weak and not clear with the outputs of the presented numbers. The answer states that the condition may require more detailed and deep data analysis to clear the study´s correlation with more propriety as may be subject of a future study.
- An answer suggested that the ANAC may use companies [air operators] that already practice systematic training analysis to bring interesting indicators about the simulated problems and the collected evidences of the results of these simulations foc used on competencies.

An answer stated that the results of the study are enough and have real precision to properly work in future studies.

- An answer stated that improvements may be related to the flight school´s staff acceptance that competencies does not revolutionizes the training for the trainees – who will continue to perform the same exercises. But that the focus on the competencies changes the mindset of the instructors - who will have to assess not only the result but the way of the results through competencies.
- An answer stated that the study allows the ANAC to implement the pilot´s qualification program based in competencies with enough data to future studies according the Brazilian´s scenario.

STEP 2 – JOB ANALYSIS	
1	How do you assess the implications of the results of this step?

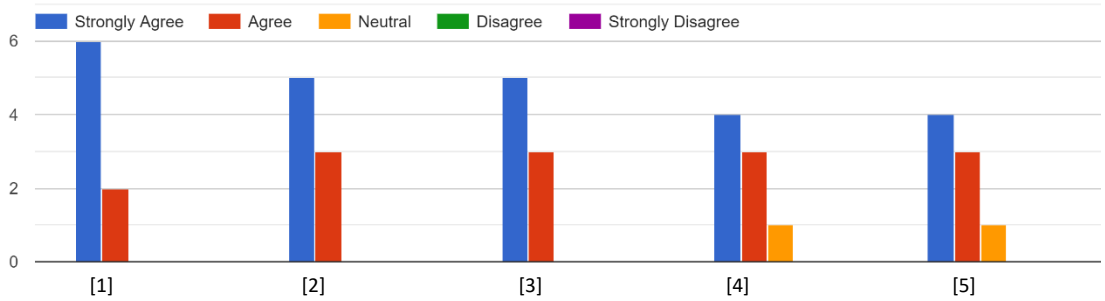
[1] The job break down is relevant to propose CBTA training solutions.
[2] The outcomes of the job break down are sufficient to substantiate a good training solution, that also includes the assessment activities.
[3] There are unnecessary elements used on the job break. Some of them may be remove and it will not jeopardize the assessment of safety of the job.
[4] The adopted variations based on the differences on PF/PM, VFR/IFR, Organizational Structure are relevant on the training solution.
[5] The gaps listed on the 2nd sheet of the Activity-1 [ATTACH-2-JOB-ANALYSIS.PDF] are relevant.
[6] The adopted variations based on the differences among the 3 functions [activity-2] are relevant on the training solution.
[7] The results of the activity 3 are relevant to substantiate the design of the competency-based activities.



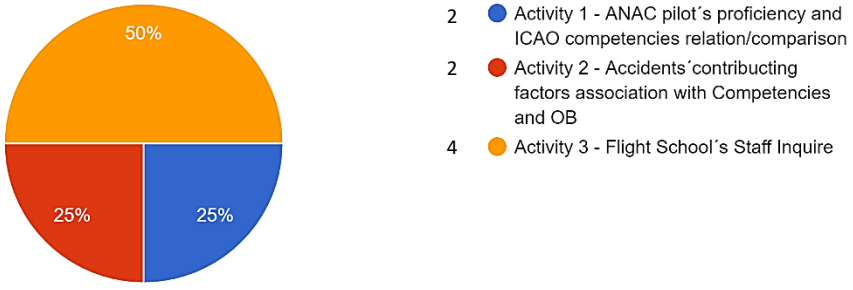
2	There are any suggestions of improvement related to the results above, that would positively affect the results above or contribute to future studies on the theme?

- An answer stated the main gap [Activity 1] are those one related to communications among crew and passengers onboard, and to the system´s operation at different phases of the flight. About the Activities 2 and 3, the respondent´s concernments are the range of tasks performed by a Commercial Pilot, with no much emphasis on each activity according to different aircraft, operation, etc.
- An answer stated that the study as well designed, considering the specifications on single pilot non-commercial services and commercial services plus crew services. At same time, the answer stated no more improvements are required on CPL level and it would be may thought of reinforced crew for long range baptism as another problem.
- An answer stated that the job brake down is important, but requiring a program showing how to train the pilots on these items. The answer strongly suggested a proposal of training based in simulations based in scenarios and problem-solving situations, besides the technical skills, to develop the needed competencies to train the pilots to be PF. In the opinion of the respondent, there should not be differences among the training for PF or PM, since one of the most important task of the PF is to monitor.

STEP 3 – POPULATION ANALYSIS	
1	How do you assess the implications of the results of this step?
	[1] I consider relevant and also recognize as practical the gaps marked on the Activity 1. [2] The gaps assumed [Activity 1] on the association of the ANAC RBAC 61 VFR/IFR proficiency requirements to the ICAO competency framework [and associated OB] are considered relevant to safety. [3] The gaps assumed [Activity 1] on the association of the ANAC RBAC 61 VFR/IFR proficiency requirements to the ICAO competency framework [and associated OB] are considered relevant are relevant to propose CBTA-based training solutions. [4] Most of the assumed gaps [Activity 1] are HF and/or NOTECHs related, assuming relevance on the safety of the job. [5] Most of the contributing factors [Activity 2] matches and are related to the gaps of the pursued OB, assuming relevance on the safety of the job.



2	What the most relevant activity performed on this step according your job characteristics and demands?
	[1] Activity 1 - ANAC pilot´s proficiency and ICAO competencies relation/comparison. [2] Activity 2 - Accidents´ contributing factors association with Competencies and OB. [3] Activity 3 - Flight School´s Staff Inquiry.

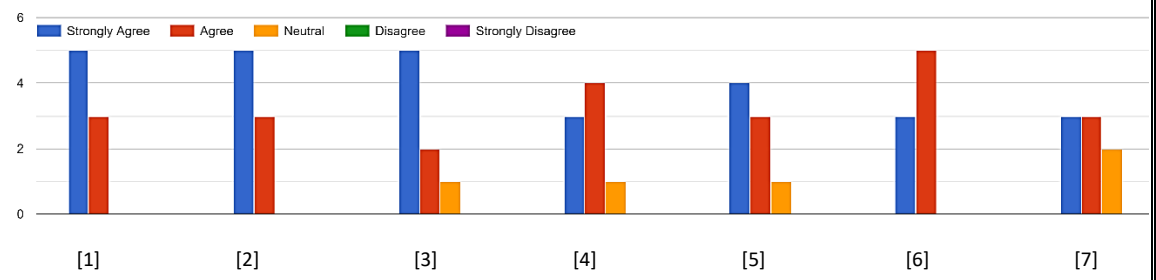


3	There are any suggestions of improvement related to the results above, that would positively affect the results above or contribute to future studies on the theme?

- An answer suggested using more graphics on Activity #2 [accident´s data analysis] and #3 [flight school´s staff inquiry], such as pie charts. The answer referred that the most insightful information of the Activity #3 was about the understanding about "Attitude" and that the CBTA is not necessarily cost-dependent.
- An answer stated that the core of the problem of the CBTA evolution does not resides on the regulatory level. The respondent stated that CBTA can be implement even in a traditional system without the regulatory level even changing the grading system due to the fact that what defines the result of the exams is the condition “pass or fail”.
The respondent stated that the main point is show to the flight schools the interest to develop other required competencies than the traditional ones, since airplanes have been constantly improving, requesting pilots to be improved by an addition layer of competency on all the behaviors and attitude – called [non-technical competencies].
- An answer stated a question relating the possible reasons among the huge difference between the number of accidents on the general aviation and on the commercial air transport segment. The respondent opined that the answer is training related, where general aviation´ pilots have poor training at flying schools and never go to a recurrence program.

STEP 4 – CURRICULUM OUTLINE	
.1	How do you assess the implications of the results of this step?

[1] I consider relevant the proposed training solution to the theoretical curriculum
[2] I consider relevant the proposed training solution to the practical curriculum
[3] I consider relevant the proposed division into phases of the practical curriculum
[4] I consider relevant the proposed use of the ICAO aeroplane tasks list to the scenery phase of the practical curriculum
[5] I consider adequate the proposed class loads and assessment activities of the proposed training solution – to be added to the current provisions of the CPL/IR course?
[6] I consider relevant the teaching points of each module and its Intermediate Objectives.
[7] I consider adequate the proposed source of contents.

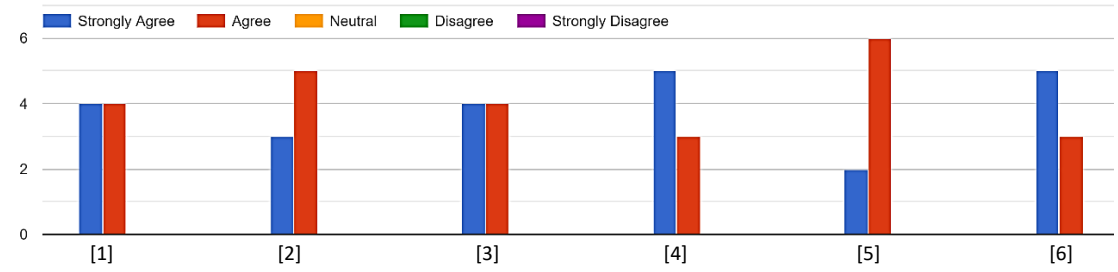


.2	There are any suggestions of improvement related to the results above, that would positively affect the results above or contribute to future studies on the theme?

- An answer stated that the proposed adjustments on contents [TEM and KSA] drive the gap´s closure of the identified issues. The respondent suggested a simplification or content reduction, since he considered it outdated. The answer provoked, as a second step, the identification of the emerging needs of flight training in attempt to understand what the competencies of the future are going to be - based on mobility trends, technology, etc.
- An answer stated that nowadays the aviation skills moved forward when compared to the last years, with focus more on non-technical skills instead of the flying ability. The respondent emphasized the need to have these focuses non-technical skills [and related competencies] during the practical phase of the pilot´s qualification.
- An answer stated that the study is very close to the spirit developed in the MPL training also based on competencies. The respondent highlighted that the exercises must continue to be the vehicle used to train and develop the pilots’ technical and non-technical competencies to properly address the events associated with them.
- An answer stated that, by the opinion of the respondent, both RBAC 61 and ICAO program must be reviewed adding ground lessons and SIMULATOR training due to the fact that is so hard to work on TEM Philosophy when trying to teach someone how to fly. The respondent stated that, by simulation sessions, in a controlled environment, with a pre-defined scenario, the instructor would have better chances to work on the trainee´s competencies.

STEP 5 – DESIGN OF THE MODULES	
1	How do you assess the implications of the results of this step?

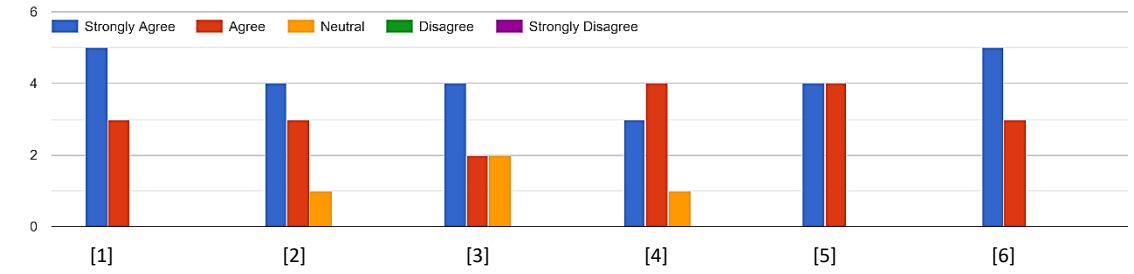
[1] I consider relevant the proposed layout [table-5] to the quality of the competency-based training solution.
[2] I consider important the position [ordering] of the proposed modules on the current CPL/IR modules.
[3] I consider relevant to stress as well adequate the information about how the instructors must deals with HF, TEM, SOP and KSA [competency] modules on the proposed competency-based training solution.
[4] I consider relevant to stress as well adequate the information about the OB to the instructors use them on the modules of the proposed competency-based training solution.
[5] I consider adequate the supportive information to the instructors on the Modules Plan [Activity 1].
[6] I consider adequate the Adapted Competency Frame-work [based on IATA provisions] adopted by the study.



2	There are any suggestions of improvement related to the results above, that would positively affect the results above or contribute to future studies on the theme?

- An answer suggested that some of the proposed modules may be optional, depending on the kind of career and operation the pilot wants to follow, based on the range of careers of a commercial Pilot. The same respondent proposed, since the majority of the proposed modules can be simulator-based, to consider more time in the simulator than airborne in an airplane. The respondent stated himself inclined to say that a well-trained person in a simulator can be more capable of solving real-world challenges than a person with equivalent real flight logged hours without proper training.
- An answer stated that is important to familiarize trainees to all these concepts from the very beginning, but by a progressively way.
- An answer stated that the IATA provisions as the most adequate for the modern aviation training.

STEP 6 – PRODUCTION AND TESTS	
1	How do you assess the implications of the results of this step?
	[1] I consider relevant the instructor´s-oriented information to the quality of the competency-based training solution. [2] I consider sufficient the topics/elements related on the instructor´s-oriented information. [3] I consider relevant the information related to the design and production of the printed material to the quality of the competency-based training solution. [4] I consider sufficient the topics/elements related on the information related to the design and production of the printed material. [5] I consider adequate the provisions related to the trial tests to be performed before the development of the proposed training solution. [6] I consider adequate the information related on the design and production of printed, projected and e-training instructional material [Activity-1].

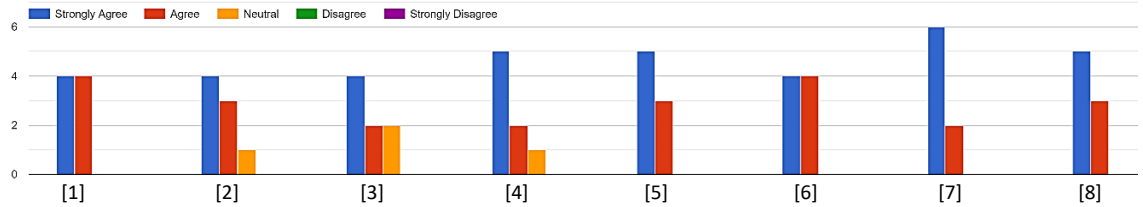


2	There are any suggestions of improvement related to the results above, that would positively affect the results above or contribute to future studies on the theme?

- An answer stated that the tips and techniques of the step are more than welcome. However, the respondent stated that the content and mindset of the proposed training solution still are the core to the success.
- An answer stated that many accidents´ study cases are available on the internet, including many of them involving human factors in aviation on specific web sites. The respondent highlighted that they may be used to develop the trainees´ awareness on these difficulties and to train them on the recognition and anticipation of solutions to avoid traps. The respondent made an allusion to possible contributions regarding the amount of experience of one day of operations of a big operators in contrast to a life of a experience of a pilot, highlighting the need of sharing these experiences to the individuals.
- An answer stated that the content presented in the Appendix-6 is great on the way to convince trainees about the importance of the ground lessons, since the respondent stated that most of them don't like it and due to the fact that the respondent considered them very important.

STEP 7 – ASSESSMENT ACTIVITIES	
1	How do you assess the implications of the results of this step?
	[1] I consider relevant and opportune an Assessment Plan to frame and guide the related activities on the CBTA training solution. [2] I consider sufficient and proper the elements stated on the Assessment Plan. [3] I consider sufficient and proper the assessment activities and methodology of the theoretical phase of the proposed training solution.

	[4] I consider sufficient and proper the assessment activities and methodology of the practical phase of the proposed training solution. [5] I consider sufficient and proper the suggested assessment tools [Evidence Guide, Competency Checklist and Competency assessment FORM] in order to conduct the activities. [6] I consider adequate the use of the VENN Model on the practical assessment activities. [7] I consider relevant an Instructor´s and Assessor´s [extra] training, qualification and evaluation. [8] I consider sufficient and proper the elements stated on the Instructor´s and Assessor´s [extra] training, qualification and evaluation plan.



2	There are any suggestions of improvement related to the results above, that would positively affect the results above or contribute to future studies on the theme?

- An answer stated the following methods/parameters to consider what was called the “assessment problematic” by the respondent´s point-of-view:
As the first outcome (result/indicator), it may be used the “safety perceived by the crew and passengers” as indicator, which measures the “safety provided by the crew” (single or multiple). The respondent stated this as an interesting indicator to the air operators.
As the later outcome, on how the results were obtained, the outcomes shall be individualized to each pilot as to assess the individual´s effort to the success of the crew, indicating strengths and weakness of the assessed pilot on the adequate use of the competencies. The respondent also emphasized that as the most important point to the flight schools to develop individual training plan.
- An answer stated that the related assessment material should consider training on FSTD based on the difficulties to access all the information required in real/normal flights and due to the fact that most of the competencies are demonstrated in non-normal situations.