An Evaluation into Pilot Proficiency Assessment and the Current State of Training in the Industry

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Abstract:

Pilot proficiency assessment has been a debated topic, especially in recent years. Determining effective ways to assess proficiency has been the focus of many industries, including similar high-risk industries such as health care and nuclear power industries. For the purposes of this paper, a comprehensive investigation into the current state of pilot training was conducted to analyze and compare curriculum components, proficiency levels, assessment methods and overall safety outcomes of each instructional program. This analysis includes pilot training programs from the United States, Australia and the European Union, as they relate to pilot licensing. As flight training technology and hour requirements increase, alternate methods of instruction have become more prominent in the industry worldwide. Evaluating the mechanisms that comprise the various international instructional programs, such as the training devices and hours accrued in these devices, is important in understanding how they affect and influence proficiency levels and safety.

Introduction

The Federal Aviation Administration (FAA) has a stated goal to reduce the commercial air carrier fatalities by 24 percent over a 9-year period; resulting in no more than 6.2 deaths per 100 million persons on board by 2018[1]. Pilot proficiency is related to aviation accidents. This long-term research project focuses on pilot proficiency assessment for training programs and for self-assessment. The initial phase of this research describes the current state of pilot training to analyze and compare curriculum components, proficiency levels, assessment methods and overall safety outcomes of each instructional program. This poster compares the highest pilot licensing levels in the United States, Australia and the European Union.

Research Question

What are the certification requirements for the highest pilot licensing levels in the United States, Australia and the European Union?

Methodology

For each certifying body, the following steps are performed:

- Identify the licensing requirements for the ATP or equivalent license.
- Identify the training curriculum components required to move from the next highest license to the ATP equivalent (such as commercial to ATP).
- Describe the proficiency level required and the assessments used.
- Collect data on the safety outcomes.
- Compare these data with the data from the other certifying bodies (Table 2).

Table 1. License Name

Organizations	License	Number of Pilots with License
Federal Aviation Administration (FAA)	Airline Transport Pilot (Aircraft)	145,590 (2012)
European Aviation Safety Agency (EASA)	Airline Transport Pilot License (aeroplane)	Unknown*** ***61% of the total 12,408 UK pilots converted to JAR ATPL license (2008)
Civil Aviation Safety Authority (CASA)	Airline Transport Pilot License (aeroplane)	6,024 (2006)

Table 2. License Requirements

Organization	Requirements	
FAA 14 CFR Part 61 [5,6]	61.159 • 23 years old • 1500 hr total time (TT) • 500 cross country • 100 night flight time • 50 of flight in airplane class • 75 instrument time (actual/simulated) • 250 Pilot in command (PIC) • 100 cross country as PIC • 25 night flight time as PIC	61.160 (Restricted) • *750 hr total time from US military OR • 21 years of age • 1000 hr TT • Bachelor's degree with an aviation major from an approved institution with 60 credit hours of aviation-related course work • Commercial pilot certificate, airplane with Instrument rating (Part 141 only) OR • 1250 hr TT • Associate's degree with an aviation major from an approved institution with 30 semester credit hours of aviation-related course work • Commercial pilot certificate, airplane with Instrument rating (Part 141 only)
EASA FCL.500 [4,7]	Air Transport Pilot (Aeroplane) License • 21 years of age • MPL or CPL with multi-engine instrument rating (A) • 1500 hr TT • 500 have to be in a multi-pilot operations in an aeroplane • 500 as PIC under supervision, 250 as PIC, or 250 with at least 70 as PIC and the remainder as PIC under supervision • of those hours as PIC • 200 of cross-country • 75 of instrument time • 100 of night flight time	

CASA CASR Part 61 [2,3]	Air Transport Pilot (Aeroplane) License
	• 21 years of age
	• 1500 hr TT
	• 750 hours in an aeroplane, of which either
	  • 250 are PIC or
	  • 500 are PIC under supervision or
	  • 250 are a combination of PIC (at least 70) and PIC under supervision
	• 200 cross country and
	• 75 instrument flight time
	• 100 night as PIC or co-pilot	

Results

An exploratory study into the licensing requirements of three aviation organizations was completed and the results are as follows:

- There are distinct similarities between the EASA and CASA requirements for age, PIC and supervised PIC hours, cross country hours, night flight hours, and specific requirement of flight in an aeroplane. The three organizations were only similar in TT and instrument hours.
- The main difference, as seen by these researchers, was the requirement for a minimum number of hours in an airplane for EASA and CASA versus in any aircraft for the FAA. Other dissimilarities found were mainly hour based or age, such as 25 hours versus 100 for night flight and 21 years old versus 23.
- The FAA has alternate requirements for a restricted ATP designed for lower hour pilots in academic or military settings.
- Each EU country has their own individual requirements for an ATP-type rating that can be converted into the JAR and EASA equivalent (Table 1).

Discussion and Future Work

- This exploratory study into licensing requirements found that there are strong similarities between the three organizations regarding total time, instrument time, and night flight. However, there were differences in cross country time, hours in a type of aircraft, and age limit.
- In addition to incorporating more country-specific data, particularly the European Union, future research into (1) an in-depth comparison of curricular, (2) assessment or examination requirements, and (3) safety comparison for different organizations will be conducted.
- The curriculum comparison will include an investigation into the training devices, hour requirements for these training devices, and course content.

References

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