INDEPENDENT ORBITER ASSESSMENT

ASSESSMENT OF THE ATMOSPHERIC REVITALIZATION PRESSURE CONTROL SUBSYSTEM

19 FEBRUARY 1988

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MCDONNELL DOUGLAS ASTRONAUTICS COMPANY HOUSTON DIVISION

SPACE TRANSPORTATION SYSTEM ENGINEERING AND OPERATIONS SUPPORT

WORKING PAPER NO. 1.0-WP-VA88003-09

INDEPENDENT ORBITER ASSESSMENT
ASSESSMENT OF THE ATMOSPHERIC
REVITALIZATION PRESSURE CONTROL SUBSYSTEM FMEA/CIL

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This Working Paper is Submitted to NASA under Task Order No. VA88003, Contract NAS 9-17650

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Independent Orbiter Assessment Assessment of the Atmospheric Revitalization Pressure Control Subsystem FMEA/CIL

1.0 EXECUTIVE SUMMARY

The McDonnell Douglas Astronautics Company (MDAC) was selected in June 1986 to perform an Independent Orbiter Assessment (IOA) of the Failure Modes and Effects Analysis (FMEA) and Critical Items List (CIL). Direction was given by the STS Orbiter and GFE Projects Office to perform the hardware analysis using the instructions and ground rules defined in NSTS 22206, Instructions for Preparation of FMEA and CIL, 10 October 1986.

The IOA effort first completed an analysis (Reference 10) of the Atmospheric Revitalization Pressure Control Subsystem (ARPCS) hardware, generating draft failure modes and potential critical To preserve independence, this analysis was accomplished without reliance upon the results contained within the NASA FMEA/CIL documentation. The IOA results were then compared to the NASA FMEA/CIL proposed Post 51-L updates based upon the CCB/PRCB presentations (Reference 8) and an informal criticality summary listing (Reference 9). A discussion of each discrepancy from the comparison is provided through additional analysis as required. However, due to the cancellation of the IOA task, the resolution of these discrepancies were not attempted. discrepancies were flagged as issues, and recommendations were made based on the FMEA data available at the time. This report documents the results of that comparison for the Orbiter ARPCS hardware.

The IOA product for the ARPCS analysis consisted of 273 failure mode "worksheets" that resulted in 73 potential critical items being identified. Comparison was made to the NASA baseline (as of 24 December 1987) which consisted of 262 FMEAs and 87 CIL items. The comparison determined if there were any results which had been found by the IOA but were not in the NASA baseline. This comparison produced agreement on all but 124 FMEAs which caused differences in 48 CIL items. Figure 1 presents a comparison of the proposed Post 51-L NASA baseline, with the IOA recommended baseline, and any issues.

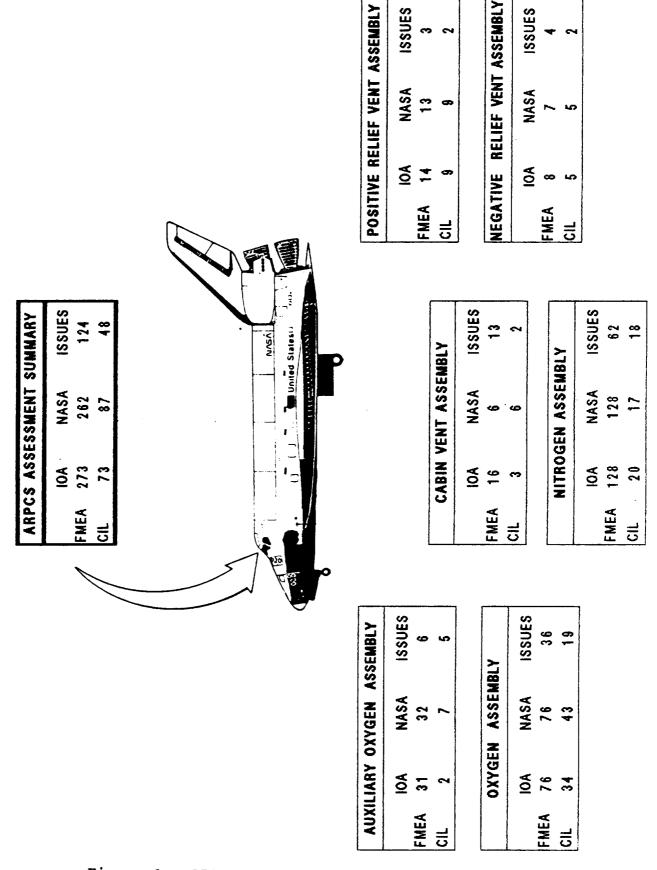


Figure 1 - ARPCS FMEA/CIL ASSESSMENT SUMMARY

2.0 INTRODUCTION

2.1 Purpose

The 51-L Challenger accident prompted the NASA to readdress safety policies, concepts, and rationale being used in the National Space Transportation System (NSTS). The NSTS Office has undertaken the task of reevaluating the FMEA/CIL for the Space Shuttle design. The MDAC is providing an independent assessment of the Orbiter FMEA/CIL for completeness and technical accuracy.

2.2 Scope

The scope of the independent FMEA/CIL assessment activity encompasses those Shuttle Orbiter subsystems and GFE hardware identified in the Space Shuttle Independent FMEA/CIL Assessment Contractor Statement of Work. Each subsystem analysis addresses hardware, functions, internal and external interfaces, and operational requirements for all mission phases.

2.3 Analysis Approach

The independent analysis approach is a top-down analysis utilizing as-built drawings to breakdown the respective subsystem into components and low-level hardware items. Each hardware item is evaluated for failure mode, effects, and criticality. These data are documented in the respective subsystem analysis report, and are used to assess the NASA and Prime Contractor FMEA/CIL reevaluation results. The IOA analysis approach is summarized in the following Steps 1.0 through 3.0. Step 4.0 summarizes the assessment of the NASA and Prime Contractor FMEAs/CILs that will be performed and documented at a later date.

- Step 1.0 Subsystem Familiarization
 - 1.1 Define subsystem functions
 - 1.2 Define subsystem components
 - 1.3 Define subsystem specific ground rules and assumptions
- Step 2.0 Define subsystem analysis diagram
 - 2.1 Define subsystem
 - 2.2 Define major assemblies
 - 2.3 Develop detailed subsystem representations
- Step 3.0 Failure events definition
 - 3.1 Construct matrix of failure modes
 - 3.2 Document IOA analysis results

- Step 4.0 Compare IOA analysis data to NASA FMEA/CIL
 - 4.1 Resolve differences

 - 4.2 Review in-house4.3 Document assessment issues
 - 4.4 Forward findings to Project Manager

2.4 ARPCS Ground Rules and Assumptions

The general ground rules and assumptions used in the IOA are defined in Appendix B.2. The ARPCS specific ground rules and assumptions are presented in Appendix B.3.

3.0 SUBSYSTEM DESCRIPTION

3.1 Design and Function

The ARPCS provides shirt-sleeve environment for the crew by pressurizing the cabin to 14.7 psia with approximately 21% oxygen and 79% nitrogen. Cabin pressure can also be maintained at 8.0 psia for emergency (cabin leak) condition.

For the purpose of this study, the ARPCS was divided into two sections and six assemblies as shown in Figure 2 for which a brief discussion is provided below:

A. Atmospheric Make-up and Control (AMC) - This section uses cryogenic oxygen and gaseous nitrogen for cabin pressure maintenance and crew metabolic requirements. The AMC also provides oxygen or nitrogen for EMU/MMU recharges, water tanks pressurization, payload requirements, and cabin/airlock repressurizations. Figure 3 presents an overview of the AMC and its major hardware components.

This section is further divided into the following three assemblies:

1. Auxiliary Oxygen Assembly - This assembly provides gaseous oxygen (approximately 50 lbm) to the emergency breathing station under emergency conditions and absence of cryogenic oxygen. This assembly consists of one tank, a 300 psi regulator, a motorized valve, and an isolation valve. The assembly interfaces with the oxygen assembly at the crossover manifold and emergency breathing station as shown in Figure 4.

This assembly is only installed on vehicle OV102 as a mission kit, and has not been removed.

2. Oxygen Assembly - The oxygen assembly uses oxygen from the cryogenic oxygen tanks and conditions it for distribution through emergency breathing station, and 14.7 psia cabin regulators. It also provides oxygen for EMU recharges, and spacelab habitable module requirements.

The emergency breathing station regulates and delivers the oxygen to Launch and Entry Helmets (LEHs) during nominal ascent/entry phase, and continuously to LEH-5 during the on-orbit phase. Under cabin leak conditions, this station will also deliver direct (unregulated) cryogenic oxygen to the cabin through direct bleed orifice.

The oxygen is nominally provided to the cabin through either of two redundant loops. Oxygen from the cryogenic tanks is warmed to gaseous state and reduced to 100 psig before delivery to O2/N2 control panel.

The panel delivers 100 psig oxygen to the 14.7 psia cabin regulator, and subsequently into the cabin for pressure maintenance and crew usage. This oxygen interfaces with the 200 psig nitrogen on the panel before entering the cabin regulator.

The oxygen in the cabin is controlled either automatically by one of two controllers, or manually by the crew. In the Auto mode, the controllers sense the partial pressure of oxygen in the cabin. If the PPO2 is below 3.2 +/- 0.2 psia, the controllers will close the O2/N2 control valve allowing 100 psig oxygen to flow to the 14.7 psia cabin regulators. Otherwise, the O2/N2 control valve will be open allowing 200 psig nitrogen to flow to the cabin regulator, thus preventing 100 psig oxygen to flow. In the manual mode, this operation is done by the crew based on continous monitoring of the cabin total pressure and partial pressure of oxygen.

3. Nitrogen Assembly - The nitrogen assembly stores gaseous nitrogen in four supply tanks, and uses it for cabin pressure maintenance, MMU recharges, payload requirements, and supply/waste water tanks pressurization.

The nitrogen tanks are loaded prelaunch storing approximately 262 lbm of nitrogen. Tanks 1 and 2, and Tanks 3 and 4 are manifolded together and referred to as System 1 and System 2, respectively. System 1 and System 2 are operated interchangeably through two dedicated nitrogen loops with identical sets of hardware. Capability is provided for a cross-tie operation of the loops.

The nitrogen from the supply tanks are regulated to 200+/-15 psig before flowing to the 14.7 psia cabin regulator, payload, and water tanks. Nitrogen requirement for MMU recharges is taken upstream of the 200 psig regulation. The cabin pressure maintenance is provided by the 02/N2 control panel through combined operation of the 14.7 psia cabin regulator and 02/N2 control valve. The 200 psig nitrogen interfaces with 100 psig oxygen downstream of 02/N2 control valve before entering the cabin regulator as discussed in the oxygen assembly section.

B. Atmospheric Vent and Control (AVC) - The AVC provides capability to maintain cabin structural integrity under excessive positive or negative pressure gradients. It will also provide capability for rapid cabin depressurization and prelaunch checkout.

This section is further divided into the following three assemblies as shown by Figure 5:

- 1. Positive Relief Vent The positive relief vent is comprised of two separate and redundant loops which provides capability to vent cabin atmosphere under high (16 psia) cabin pressure. Each loop consists of a motorized valve, and a relief valve. The motorized valves are used to isolate the assembly.
- 2. Negative Relief Vent The negative relief vent is comprised of dual redundant lines with self-operating relief valves (one per loop). The relief valves will permit atmospheric air into the cabin when outside pressure rises 0.2 psia above cabin pressure.
- 3. Cabin Vent The cabin vent is comprised of two identical motor driven valves which provide capability to rapidly vent and check crew cabin pressure during prelaunch operations. The vent valves are denied power after liftoff (circuit breakers are pulled) to prevent inadvertent decompression of the cabin.

3.2 Interfaces and Locations

The ARPCS hardware is primarily divided between the mid-fuselage and crew module. Figures 3, 4, and 5 show an overall representation and location of these equipment.

The ARPCS interfaces were established and studied to assess their performance impact due to failure modes. The subsystem interfaces were:

- A. PRSD The ARPCS receives cryogenic oxygen from The Power Reactant, Supply, and Distribution Subsystem at high pressure (800 to 850 psia) and low temperature (-280 F to -220 F) for general usage.
- B. ATCS The Active Thermal Control Subsystem provides heat for thermal conditioning of the cryogenic oxygen to gaseous oxygen through restrictors.
- C. ECLSS The ARPCS interfaces with the Environmental Control and Life Support Subsystem by providing oxygen/nitrogen for airlock support activities, and supply/waste water tanks pressurization.
- D. Payload Payload interfaces are accomplished through

- oxygen/nitrogen ports for EMU/MMU recharges and spacelab pressurization.
- E. EPS The Electrical Power Subsystem provides bus power to drive electrical components, switches, display, and instrumentation throughout the ARPCS subsystem.
- F. ARS The gaseous oxygen and nitrogen are provided to the Atmospheric Revitalization Subsystem for circulation throughout the crew cabin.

3.3 Hierarchy

For the purpose and ease of this analysis, the ARPCS was divided into two main sections and six assemblies as shown in Figure 2.

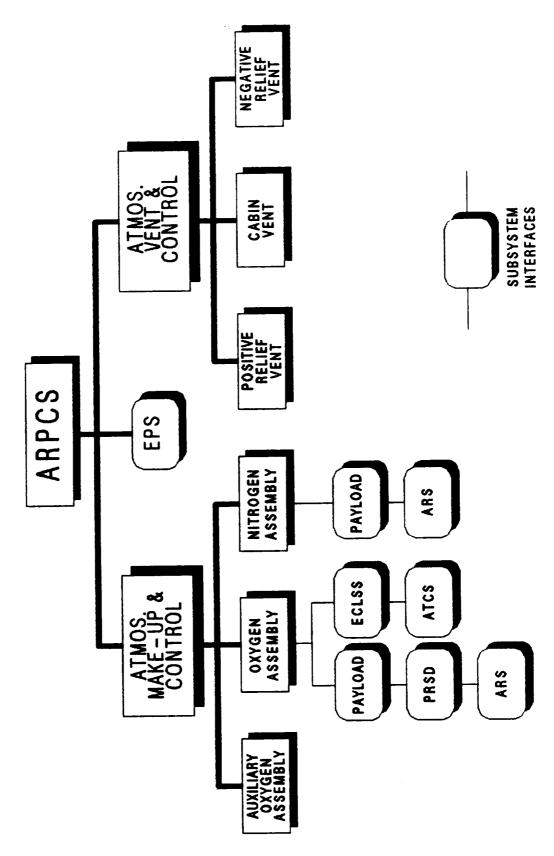


Figure 2 - ARPCS BREAKDOWN

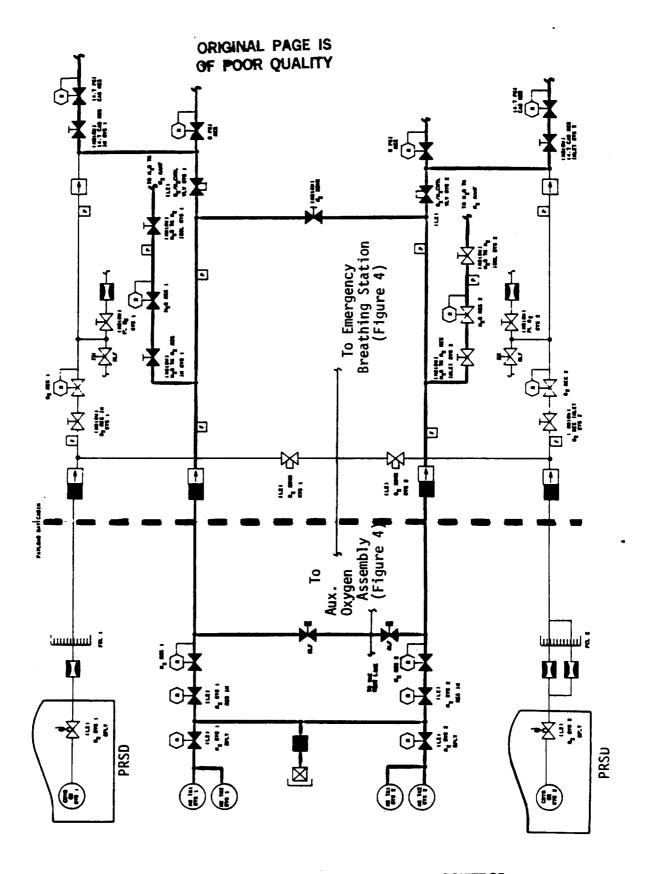


Figure 3 - ATMOSPHERIC MAKE-UP AND CONTROL

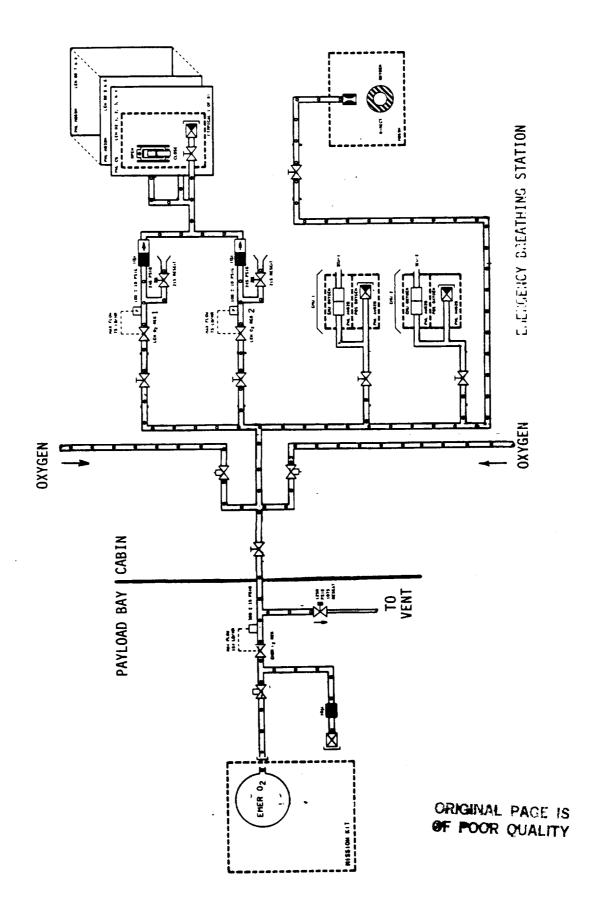


Figure 4 - AUXILIARY OXYGEN ASSEMBLY

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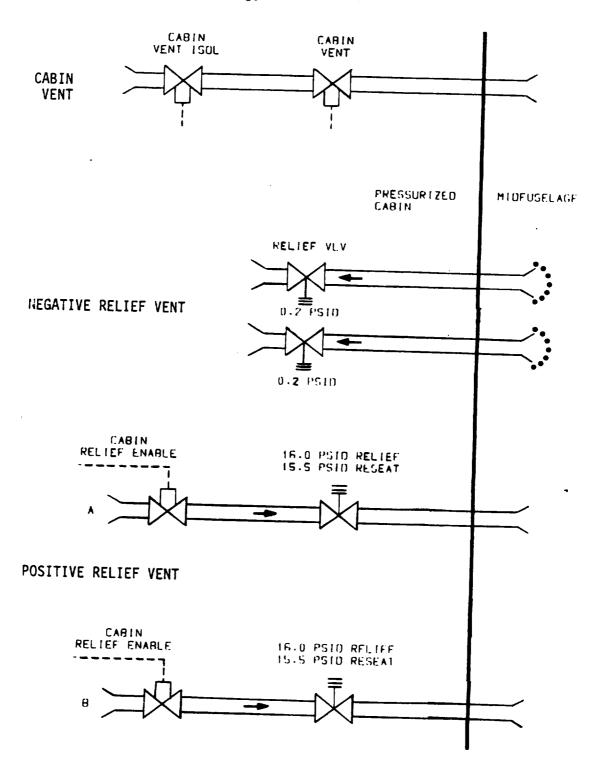


Figure 5 - ATMOSPHERIC VENT AND CONTROL

4.0 ASSESSMENT RESULTS

The IOA assessment was done based on the CCB/PRCB presentations made by Mr. John Whalen and an informal criticality summary listing provided by Mr. Chris Humphry/Boeing dated December 24, 1987. The CCB/PRCB presentations included detailed information on the CIL items which provided for a good comparison of the FMEA and IOA criticality results. For these items if a discrepancy existed, IOA made a specific recommendation either accepting the FMEA results or suggesting a change. The criticality summary listing showed only the criticality, screens, and the failure modes for each mechanical/electrical hardware item. Consequently, it was difficult to understand the rationale behind the criticalities in order to make an adequate assessment between the FMEA and the IOA results. In these cases if a discrepancy was noted, it was flagged as an issue pending receipt of more detailed data. However, due to the termination of the IOA task, this later process was not pursued and the discrepancies remain as marked issues. Also, due to limited time remaining on the task, no FMEA issue was discussed with the subsystem manager in order to resolve them.

Appendix C provides assessment data for each failure mode and respective hardware item. Significant issues noted are discussed below:

o The FMEA considered the LEH panels as emergency systems, and as such it was seen as potential for loss of life/vehicle for any failure which resulted in loss of LEH usage. IOA accepted this assumption with some reservations. First, the LEH panels do not fit into the strict definition of the emergency systems stated in the NSTS-22206 Para. 2.1.e. This definition excludes hardware (such as LEH panels) which performs a function used during any nominal mission phase or during intact abort.

Second, there is no limitation as how broad this definition will be used throughout the ARPCS. That is, any failure of an item upstream of the LEH panels which negates the use of the LEHs is compounded by the assumption that an emergency condition exists. This approach seems to be too conservative which may result in loss of visibility into an item when studied under nominal conditions.

o The FMEA studied "cracked mounting flange" failure mode for the cabin negative relief valve (FMEA 06-1-0203-3) and the cabin positive relief valve (FMEA 06-1-0201-3). The causes are listed as material defect, mechanical shock, and vibration. IOA did not study this failure mode, and considered the failure mode and cause relationship not credible. The material defect is ruled out based on the IOA general project groundrule (Appendix B.2.4), otherwise this

failure mode should be included for all hardware items. the mechanical shock and vibration are not realistic since their magnitude must be very high and far beyond the structural integrity of the vehicle in order to cause such a failure. Also, this condition presumes a failure already in progress (vehicle undergoing severe and dangerous condition) contrary to the NSTS-22206 hardware criticality groundrules.

- o FMEA studied "inability to restrict" as failure of the flow restrictor. IOA considered this failure mode and cause relationship not credible and it was therefore not studied. There was no detailed FMEA information to further investigate this failure mode.
- o FMEA studied "restricted flow" for lines and fittings. IOA studied this failure mode for appropriate hardware items on the line. This was done primarily because the causes of flow restriction (contamination, corrosion) most likely will restrict flow at the hardware items (valves, screens,...etc) before the line. Second, the restricted flow of an item at a particular location on the line may yield different effects and criticalities, and hence easier to investigate.
- o IOA studied electrical solenoids and motors separately from their associated valves, and did not find any reference to them in the FMEA data. However, a match of these items were made based on the FMEA results for the valve. The electrical solenoids and motors may be either covered separately or the failure modes and causes assessed for the valves should address them.

The IOA analysis of the ARPCS hardware initially generated 266 failure mode worksheets and identified 89 Potential Critical Items (PCIs) before starting the assessment process. In order to facilitate comparison, 22 additional failure mode analysis worksheets were generated. These analysis results were compared to the proposed NASA Post 51-L baseline of 262 FMEAs and 87 CIL items. Upon completion of the assessment, of the 273 total IOA failure modes 124 remained as issues to be resolved. The expansion for these issues are provided on individual assessment sheets in Appendix C.

Appendix D highlights the NASA Critical Items and corresponding IOA worksheet ID. Appendix E contains additional IOA analysis worksheets supplementing previous analysis results (Reference 10) that were used to assess the FMEA/CIL. Appendix F provides a cross reference between the NASA FMEA and corresponding IOA assessment worksheet(s).

A summary of the quantity of NASA FMEAs assessed, versus the recommended IOA baseline, and any issues identified is presented in Table I.

Table I Summ	ary of IOA	FMEA Asse	essment
Component	NASA	IOA	Issues
Aux. oxygen	32	31	6
Oxygen	76	76	36
Nitrogen	128	128	62
Cabin Vent	6	16	13
Pos. Relief Vent	13	14	3
Neg. Relief Vent	7	8	4
TOTAL	262	273	124

A summary of the quantity of NASA CIL items assessed, versus the recommended IOA baseline, and any issues identified is presented in Table II.

Table II Summary of IOA CIL Assessment									
Component	NASA	IOA	Issues						
Aux. oxygen	7	2	5						
Oxygen	43	34	19						
Nitrogen	17	20	18						
Cabin Vent	6	3	2						
Pos. Relief Vent	9	9	2						
Neg. Relief Vent	5	5	2						
TOTAL	87	73	48						

Table III presents a summary of the IOA recommended failure criticalities for the Post 51-L FMEA baseline.

TABLE III Summary of IOA Recommended Failure Criticalities									
Component	1/1	2/1R	2/2	3/1R	3/2R	3/3	TOTAL		
Aux. Oxygen	1	1	-	11	-	18	31		
Oxygen	9	23	-	11	14	19	76		
Nitrogen	2	14	3	33	25	51	128		
Cabin Vent	1	2	_	_	-	13	16		
Pos. Relief	_	9	-	_	-	5	14		
Neg. Relief	-	5	-		1	2	8		
TOTAL	13	54	3	55	40	108	273		

Of the failure modes analyzed, 73 were determined to be critical items distributed throughout ARPCS as shown in Table IV.

TABLE IV Summary of IOA Recommended Critical Items									
Criticality:	1/1	2/1R	2/2	3/1R	3/2R	TOTAL			
Aux. Oxygen	1	1	_	_	_	2			
Oxygen	9	23	-	-	2	34			
Nitrogen	2	14	3	1	_	20			
Cabin Vent	1	2	-	-	-	3			
Pos. Relief	-	9	-	-	–	9			
Neg. Relief	_	5	-	-		5			
TOTAL	13	54	3	1	2	73			

A cross reference for assigning identification numbers to the IOA assessment (Appendix C) and analysis worksheets (Appendix E) is shown in Table V.

Table V IOA Worksheet Numbers								
Component	IOA ID Number							
Aux. Oxygen	ARPCS-101 to -136, ARPCS-1131X,-1351X							
0xygen	ARPCS-136 to -212, ARPCS-1461X,-1501X,-1621X,							
Nitrgen	-1761X,-1791X & -2021X ARPCS-212 to -331, ARPCS-2121X,-2161X,-2631X,							
	-2632X,-2661X,-2731X,-2961X,-3291X, -367X,-368X & -369X							
Pos. Relief	ARPCS-331 to -346, ARPCS-3431X							
Cabin Vent	ARPCS-346 to -360, ARPCS-3481X							
Neg. Relief	ARPCS-360 to -366, ARPCS-3611X							

5.0 REFERENCES

- 1. JSC-ECLSS 2102, Environmental Control and Life Support Systems Workbook, November 21, 1983.
- JSC-19935, Environmental Systems Console Handbook, Basic Rev. A, October 15, 1985.
- 3. RI-MC621-0002, Atmospheric Revitalization and Pressure Control System Procurement Specification, April 27, 1982.
- 4. RI-VS70-960102,-96099,-960103,-960104, Integrated Systems Schematics.
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- 7. NSTS-22206, Instruction for Preparation of Failure Modes and Effects Analysis (FMEA) and Critical Items List (CIL), October 1986.
- 8. NASA CCB/PRCB Presentations, Atmospheric Revitalization Pressure Control Subsystem, John Whalen.
- 9. FMEA/CIL Summary Listing, Informal Data, Chris Humphry, December 24, 1987.
- 10. MDAC 1.0-TM-VA86001-30, Independent Orbiter Assessment Analysis Of The Atmospheric Revitalization Pressure Control Subsystem, M. J. Saiidi, December 5, 1986.

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APPENDIX A ACRONYMS

Abort Once Around Atmospheric Revitalization and Pressure Control ARPCS -Subsystem Air Revitalization System ARS -ATCS - Active Thermal Control Subsystem ATO - Abort to Orbit BFS - Back-up Flight System CIL - Critical Item List CO - Carbon Monoxide CO₂ - Carbon Dioxide
CRT - Cathode Ray Tube
C/W - Caution and Warning
CRIT - Criticality dc - Direct Current ECLSS - Environmental Control and Life Support Subsystem EMU - Extravehicular Mobility Unit EPS - Electrical Power Subsystem EVA - Extravehicular Activity F - Fahrenheit FES - Flash Evaporator System FM - Failure Mode FMEA - Failure Mode and Effect Analysis GN₂ - Gaseous Nitrogen GSE - Ground Support Equipment GPC -General Purpose Computer H₂0 - Water ·IÑU -Inertial Measurement Unit Independent Oriber Assessment IOA -LEH - Launch and Entry Helmets
LiOH - Lithium Hydroxide
MDAC - McDonnell Douglas Astronautics Company NA - Not Applicable NASA - National Aeronautics and Space Administration N₂ -NSTS -Nitrogen National Space Transportation System OMRSD - Operational Maintenance Requirements and Specifications Document OPS - Operational Sequence O₂ - Oxygen
OMS - Orbital Maneuvering System 02 PCI - Potential Critical Items PPO₂ - Partial Pressure of Oxy psi - Pounds Per Square Inch - Partial Pressure of Oxygen psia - Pounds Per Square Inch Absolute psid - Pounds Per Square Inch Differential

psig - Pounds Per Square Inch Gage

ACRONYMS

RI - Rockwell International RMS - Remote Manipulator System RTLS - Return to Launch Site
RTLS - Return to Landing Site SM - Systems Management SRB - Solid Rocket Booster
SSME - Space Shuttle Main Engine
STS - Space Transportation System
SW - Software TAL - Trans-Atlantic Landing
TD - Touch Down
WMS - Waste Management System

APPENDIX B

DEFINITIONS, GROUND RULES, AND ASSUMPTIONS

- B.1 Definitions
- B.2 Project Level Ground Rules and Assumptions
 B.3 Subsystem-Specific Ground Rules and Assumptions

APPENDIX B DEFINITIONS, GROUND RULES, AND ASSUMPTIONS

B.1 Definitions

Definitions contained in <u>NSTS 22206</u>, <u>Instructions For Preparation of FMEA/CIL</u>, 10 October 1986, were used with the following amplifications and additions.

INTACT ABORT DEFINITIONS:

RTLS - begins at transition to OPS 6 and ends at transition
to OPS 9, post-flight

<u>TAL</u> - begins at declaration of the abort and ends at transition to OPS 9, post-flight

AOA - begins at declaration of the abort and ends at transition to OPS 9, post-flight

ATO - begins at declaration of the abort and ends at transition to OPS 9, post-flight

<u>CREDIBLE (CAUSE)</u> - an event that can be predicted or expected in anticipated operational environmental conditions. Excludes an event where multiple failures must first occur to result in environmental extremes

<u>CONTINGENCY CREW PROCEDURES</u> - procedures that are utilized beyond the standard malfunction procedures, pocket checklists, and cue cards

 $\underline{\text{EARLY MISSION TERMINATION}}$ - termination of onorbit phase prior to planned end of mission

EFFECTS/RATIONALE - description of the case which generated the
highest criticality

HIGHEST CRITICALITY - the highest functional criticality
determined in the phase-by-phase analysis

<u>MAJOR MODE (MM)</u> - major sub-mode of software operational sequence (OPS)

MC - Memory Configuration of Primary Avionics Software System
(PASS)

MISSION - assigned performance of a specific Orbiter flight with payload/objective accomplishments including orbit phasing and altitude (excludes secondary payloads such as GAS cans, middeck P/L, etc.)

MULTIPLE ORDER FAILURE - describes the failure due to a single cause or event of all units which perform a necessary (critical) function

<u>OFF-NOMINAL CREW PROCEDURES</u> - procedures that are utilized beyond the standard malfunction procedures, pocket checklists, and cue cards

OPS - software operational sequence

<u>PRIMARY MISSION OBJECTIVES</u> - worst case primary mission objectives are equal to mission objectives

PHASE DEFINITIONS:

PRELAUNCH PHASE - begins at launch count-down Orbiter
power-up and ends at moding to OPS Major Mode 102 (liftoff)

<u>LIFTOFF MISSION PHASE</u> - begins at SRB ignition (MM 102) and ends at transition out of OPS 1 (Synonymous with ASCENT)

ONORBIT PHASE - begins at transition to OPS 2 or OPS 8 and ends at transition out of OPS 2 or OPS 8

<u>DEORBIT PHASE</u> - begins at transition to OPS Major Mode 301 and ends at first main landing gear touchdown

<u>LANDING/SAFING PHASE</u> - begins at first main gear touchdown and ends with the completion of post-landing safing operations

APPENDIX B DEFINITIONS, GROUND RULES, AND ASSUMPTIONS

B.2 IOA Project Level Ground Rules and Assumptions

The philosophy embodied in NSTS 22206, Instructions for Preparation of FMEA/CIL, 10 October 1986, was employed with the following amplifications and additions.

1. The operational flight software is an accurate implementation of the Flight System Software Requirements (FSSRs).

RATIONALE: Software verification is out-of-scope of this task.

2. After liftoff, any parameter which is monitored by system management (SM) or which drives any part of the Caution and Warning System (C&W) will support passage of Redundancy Screen B for its corresponding hardware item.

RATIONALE: Analysis of on-board parameter availability and/or the actual monitoring by the crew is beyond the scope of this task.

3. Any data employed with flight software is assumed to be functional for the specific vehicle and specific mission being flown.

RATIONALE: Mission data verification is out-of-scope of this task.

4. All hardware (including firmware) is manufactured and assembled to the design specifications/drawings.

RATIONALE: Acceptance and verification testing is designed to detect and identify problems before the item is approved for use.

5. All Flight Data File crew procedures will be assumed performed as written, and will not include human error in their performance.

RATIONALE: Failures caused by human operational error are out-of-scope of this task.

6. All hardware analyses will, as a minimum, be performed at the level of analysis existent within NASA/Prime Contractor Orbiter FMEA/CILs, and will be permitted to go to greater hardware detail levels but not lesser.

RATIONALE: Comparison of IOA analysis results with other analyses requires that both analyses be performed to a comparable level of detail.

7. Verification that a telemetry parameter is actually monitored during AOS by ground-based personnel is not required.

RATIONALE: Analysis of mission-dependent telemetry availability and/or the actual monitoring of applicable data by ground-based personnel is beyond the scope of this task.

8. The determination of criticalities per phase is based on the worst case effect of a failure for the phase being analyzed. The failure can occur in the phase being analyzed or in any previous phase, whichever produces the worst case effects for the phase of interest.

RATIONALE: Assigning phase criticalities ensures a thorough and complete analysis.

9. Analysis of wire harnesses, cables, and electrical connectors to determine if FMEAs are warranted will not be performed nor FMEAs assessed.

RATIONALE: Analysis was substantially complete prior to NSTS 22206 ground rule redirection.

10. Analysis of welds or brazed joints that cannot be inspected will not be performed nor FMEAs assessed.

RATIONALE: Analysis was substantially complete prior to NSTS 22206 ground rule redirection.

11. Emergency system or hardware will include burst discs and will exclude the EMU Secondary Oxygen Pack (SOP), pressure relief valves and the landing gear pyrotechnics.

RATIONALE: Clarify definition of emergency systems to ensure consistency throughout IOA project.

Appendix B Definitions, Ground Rules, and Assumptions

B.3 ARPCS - Specific Ground Rules and Assumptions

The following subsystem ground rules and assumptions were considered in determining component criticalities:

1. The auxiliary oxygen assembly was assigned criticalities based upon its emergency support function not redundant to cryogenics oxygen supply.

Rationale: The auxiliary oxygen assembly is a mission kit installed on OV102 only. Its usage is under severe cabin leak and loss of cryogenic oxygen.

2. The airlock and wet trash storage vents are considered as part of the Environmental Control and Life Support Subsystem (ECLSS) and therefore not studied in this report.

Rationale: These subsystem interfaces were discussed and decided by the NASA subsystem manager (Mr. John Whalen) to be part of the ECLSS.

3. A single cabin regulation/distribution loop is considered adequate to maintain nominal pressure throughout the mission.

Rationale: Flight Data File procedures have been written, and the subsystem designed to operate on one loop with the other loop in standby redundancy.

4. The oxygen and nitrogen contained within cabin volume are adequate without make-up for safe and nominal return.

Rationale: Under nominal 3.2 psia PPO2 cabin pressure, and return duration (approximately 4 hours from deorbit prep to touchdown), there is adequate oxygen to meet crew metabolic.

5. The PASS/BFS displays are not considered redundant to an on-board meter display when studying the meter failure modes.

Rationale: The PASS/BFS failure is considered unlikely, and if happened it shall be under multiple failure scenarios.

6. Each LEH panel is considered to be dedicated to a crew person, and as such it is not redundant to the others.

Rationale: A crew person is not denied oxygen in order to meet the demand of others.

7. During a cabin leak condition, no oxygen flow is considered through 8/14.7 psia regulators. Oxygen is provided to the crew and cabin through LEH's and direct bleed orifice respectively.

Rationale: Severe cabin leak and oxygen flow through regulators will deplete crogenic oxygen rapidly. Oxygen is only needed to keep the crew alive not to maintain cabin pressure.

8. Pressurization of cabin or any compartment with direct and unregulated oxygen is considered a serious fire hazard, thus creating a potential condition for loss of life/vehicle.

Rationale: Oxygen by itself will not cause fire, but the condition created is volatile for fire.

9. Pressurization of cabin or any compartment with direct and unregulated nitrogen is considered a potential for structural failure. Furthermore, in an event when ARPCS will be depleted of consumable nitrogen, a potentially critical condition is created due to loss of capability to maintain cabin/water tanks pressure.

Rationale: The nitrogen tanks are pressurized at approximately 3300 psia, and any enclosed compartment will be excessively pressurized with a direct leakage. The degree of pressurization, location and severity of failure are moot. The author has taken a conservative view on the subject.

10. Cabin pressure will be adequate to maintain water dump and FES (Flash Evaporator System) operations in the event of pressure loss from ARPCS.

Rationale: Under nominal 14.7 psia cabin pressure, the FES and water dump operations will not be affected, but rather minimized. Adequate pressure exists to expel the water.

11. Nitrogen and oxygen flow sensors are considered mission critical instrumentation needed for quick leak detection and prevention.

Rationale: Loss of these instrumentation creates a condition whereby a cabin leak may not be easily and readily detected for successful completion of the mission.

12. Any voluntary cabin vent is accomplished through airlock/vent valves during on-orbit.

Rationale: Due to high cabin vent rate through the cabin vent/isolation valves, this option is not viable.

13. The prelaunch criticality was considered to be of mission impact only when that failure caused loss of life/vehicle or loss of mission any time from liftoff to landing.

Rationale: No launch was considered performed when a failure may result in loss of life/vehicle or mission after liftoff regardless of time to repair.

APPENDIX C DETAILED ASSESSMENT

This section contains the IOA assessment worksheets generated during the assessment of this subsystem. The information on these worksheets facilitates the comparison of the NASA FMEA/CIL (Pre and Post 51-L) to the IOA detailed analysis worksheets included in Appendix E. Each of these worksheets identifies the NASA FMEA being assessed, corresponding MDAC Analysis Worksheet ID (Appendix E), hardware item, criticality, redundancy screens, and recommendations. For each failure mode, the highest assessed hardware and functional criticality is compared and discrepancies noted as "N" in the compare row under the column where the discrepancy occurred.

LEGEND FOR IOA ASSESSMENT WORKSHEETS

Hardware Criticalities:

- 1 = Loss of life or vehicle
- 2 = Loss of mission or next failure of any redundant item (like or unlike) could cause loss of life/vehicle
- 3 = All others

Functional Criticalities:

- 1R = Redundant hardware items (like or unlike) all of which,
 if failed, could cause loss of life or vehicle
- 2R = Redundant hardware items (like or unlike) all of which, if failed, could cause loss of mission

Redundancy Screens A, B and C:

P = Passed Screen

F = Failed Screen

NA = Not Applicable

NASA Data:

Baseline = NASA FMEA/CIL

New = Baseline with Proposed Post 51-L Changes

CIL Item :

X = Included in CIL

Compare Row:

N = Non compare for that column (deviation)

APPENDIX C ASSESSMENT WORKSHEET

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* CIL R	ETE:	NT.	ION	RATION	ALE:	(If	appl	icabl.		ADEQUATE ADEQUATE]	
REMARKS	:												
THIS FA	ILU	RE	MOD	E (INA	BILI	TY TO) MAK	E/DEM	ATE	ONLY AF	FECT	.'S	

PRELAUNCH SERVICING OF THE TANK. SEE ARPCS-121 FOR INTERNAL LEAKAGE. THIS PROCESS MAY BE OUTSIDE THE MISSION PHASE, AND AS

REPORT DATE 02/18/88 C-21

SUCH IT MAY BE DELETED.

	2/19/88 ARPCS-12 06-1-010		NASA DATA: BASELINE [] NEW [X]							
MDAC ID:	ARPCS 121 QUICK D	SCONNEC	T/GSE (1)							
LEAD ANALYST:	M.J. SA	IIDI								
ASSESSMENT:										
CRITICAL FLIGH		REDUNDA	NCY SCREE	ens	CIL ITEM					
HDW/FU	NC	A	В	С						
NASA [3 /1R IOA [3 /3] [P]	[NA] []	[P] []	[] *					
COMPARE [/N) [и ј	[и]	[и]	[]					
RECOMMENDATIONS:	(If di	fferent	from NAS	SA)						
[/] [1	[]	[] (A)	[] DD/DELETE)					
* CIL RETENTION :	RATIONALE	E: (If a	pplicable	ADEQUATE	. ,					
IOA AGREES WITH	THE FMEA,	SINCE	QD AND CA	AP ARE STUDI	ED TOGETHER.					

ASSESSME ASSESSME NASA FME	NT	II							ŀ	iasa Base	LINE			
SUBSYSTE MDAC ID: ITEM:	M:			ARPO 122 FILT	es er, 1	IM O.	CRONS	5 (1)						
LEAD ANA	LYS	ST	:	M.J.	SAII	DI								
ASSESSME	NT:	:												
	CR:		ICAL LIGH	ITY	F	EDUN	DANC	SCR	EENS			CII		
	1			_	A		I	3	(2				
NASA IOA	[3	/3]]]	[]						ŧ
COMPARE	C	N	/N	3	[]	[)	[]		ľ]	
RECOMMEN	DA!	rI	ons:	()	rf dif	fere	nt fi	com N	ASA)					
	[/]	[]	[]	[)	(A	[.DD/I) DELET	CE)
* CIL RE		NT:	ION	RATI(ONALE:	(If	app	licab		ADEQU ADEQU	IATE IATE	[]	
REMARKS: IOA WITH NO LONGE	DR.	AW FL	S TH OWN	IS AI AND I	NALYSI AS A F	S, S RESUL	INCE	THE E.FAI	AUXII	LIARY MODE	OXY	GEN S No	TANI	K IS

ASSESSMENT DATE: 2/19/88 ASSESSMENT ID: ARPCS-123 NASA FMEA #:									NASA DATA: BASELINE [] NEW [X]						
SUBSYSTE MDAC ID:				ARPC: 123 FILT	_	.O MI	CRONS	(1))						
LEAD ANA	LY	ST	:	M.J.	SAII	DI									
ASSESSMENT:															
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C															
	FLIGHT HDW/FUNC A B											1.1.1	CM.		
NASA IOA	[3	/3]	[]	[]	ĵ []		[] *		
COMPARE	[N	/N]	[]	[]	C]		[]		
RECOMMEN	DA'	TI	ons:	(Ii	f dif	fere	nt fr	om 1	NASA)						
	[/	1	[]	[]	[]	(A] DELETE)		
(ADD/DELETE) * CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []															
REMARKS: IOA WITH NO LONGE	DR	AW: FL	S TH OWN	IS ANA AND AS	LYSI S A R	S, S ESUL	INCE T	THE FAI	AUXIL	IARY	OXY	GEN	TANK IS		

ASSESSMENT DATE: 2/19/88 ASSESSMENT ID: ARPCS-124 NASA FMEA #:									_	asa d Basel		[
SUBSYSTEM: ARPCS MDAC ID: 124 ITEM: CAP/GSE DISCONNEC LEAD ANALYST: M.J. SAIIDI													
LEAD ANA	LYS	T:		M.J. S	SAII	DI							
ASSESSME	NT:												
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM													
				NC NC	A		В		C	!	•		14
NASA IOA	[3	/3]	[]	[]]]		[] *
COMPARE	[N	/N]	[]	[]	[]		[]
RECOMMEN	DAT	'IC	SKS:	(If	dif	fere	nt fro	om N	ASA)				
	[/]	[1	(]	[]	(Al	[D/D] ELETE)
* CIL RE	(ADD/DELETE) * CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []												
REMARKS: IOA WITH NO LONGE	INADEQUATE []												

ASSESSMENT DATE: 2/19/88 ASSESSMENT ID: ARPCS-125 NASA FMEA #: 06-1-0107-3															DAT. ELIN NE	E [x]		
SUBSYSTE MDAC ID: ITEM:					125	PCS 5 P/GS	E	D:	ISCO	ONNE	CT									
LEAD ANA	LY	ST	:	1	M.J	J. S	A:	III	DI											
ASSESSME	ENT	:																		
	CR				ΓY			RI	EDUN	NDAN	CY	SCF	REEN	S				IL TEN	1	
	FLIC HDW/1								A		В			С				•		
NASA IOA	[R			[[P]	[P]	[P]		[x]	*
COMPARE	[N	/N	7]]		[N]	[N]	C	N]		[N]	
RECOMMEN	IDA'	TI(ons	:	((If	đ	ifi	fere	ent	fr	om N	IASA)						
	[/]	1		[]	[]	[]	(1	[ADD,	/DF]	ETE J
* CIL RE		NT:	ION	R.	TI	ONA	LI	€:	(If	f ap	pl:	icab				JATE JATE]]	
IOA AGRE		W	ITH	TH	ΙE	FME.	A	SI	INCE	Е ТН	E :	TANK	(IS	NC	L	ONGE	R FI	LOW	'n.	

ASSESSMENT DATE: 2/19/88 ASSESSMENT ID: ARPCS-1 NASA FMEA #: 06-1-01 SUBSYSTEM: ARPCS						12		-2									DATI ELINI NEV]	
SUBSYSTEMDAC ID:	M:			12		RE	F	ŒGU	JLA	T(DR/	′30	0 P	SI	G	(1)				
LEAD ANA	LYS	T:		M.	J.S	ΑI	II	I													
ASSESSME	NT:	;																			
•	CR]		CAL				RE	DU	NDA	N	CY	sc	REE	NS	3			_	IL TEM	ĭ	
	FLIGHT HDW/FUNC										В				С			_	* 171.1		
NASA IOA	[3	DW/FUNC A 3 /1R] [F 3 /3] [P]		[P]		[[P]		[]	*
COMPARE	[/N]		[N]		[N]		[N]		[]	
RECOMMEN	DAT	PIC	ons:		(If	di	fí	ere	ent	: :	fro	om	NAS	A))						
						[]		[]		[]	(,] ADD	/DE] :LE	TE)
* CIL RETENTION RATIONAL REMARKS: IOA AGREES WITH THE FMEA								(I:	f a	ıpj	p1 :	ica	able				UATE UATE	_]	
IOA AGRE	ES	W]	[TH '	THE	FME	Α.															

ASSESSMENT DATI ASSESSMENT ID: NASA FMEA #:	E: 2/19/88 ARPCS-1 06-1-01	26A		NASA DAT. BASELIN NE	
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 126 PRESSUR	E REGUI	ATOR/300	PSIG (1)	
LEAD ANALYST:	M.J. SA	IIDI			
ASSESSMENT:					
CRITICA FLICA	HT		DANCY SCRE		CIL ITEM
nDM/ I	TUNC	A	В	С	
NASA [3 /1 IOA [3 /3	.R] [P]	[P] []	[P] []	[] *
COMPARE [/h	[]	N]	[N]	[и]	[]
RECOMMENDATIONS	: (If d	ifferen	nt from NA	SA)	
[/] []	[]	[]	[] ADD/DELETE
* CIL RETENTION	RATIONAL	E: (If	applicabl		
DFWADVC •				ADEQUATE INADEQUATE	

IOA AGREES WITH THE FMEA.

ASSESSME ASSESSME NASA FME	ENT	II	D:	ARP	CS-127	-1			r	BASEL		[
SUBSYSTE MDAC ID:				ARP 127 PRE		REGU	LATOR	/300	PSIC	; (1)					
LEAD ANA	LY	ST	:	M.J	. SAII	DI									
ASSESSMI	ENT	:													
	CR			YTI	R	EDUN	DANCY	SCR	EENS				L		
]	_	LIGH W/FU	NC	A		B	3	(3				•	
NASA IOA	[3 1	/3 /1]	[[]	[]]]		[x]	*
COMPARE	[N	/N]	[]	[)	[]		[N]	
RECOMME	NDA	TI	ons:	(If dif	fere	ent fr	om N	ASA)						
	[/]	ſ]	[]	[]	(A		/DI		ETE)
* CIL R	ETE	NT	ION	RATI	ONALE:	(If	appl	icab		ADEQU <i>I</i>	TE	ſ		1	
DEW DEG	_								IN	ADEQU?	ATE	Ĩ		j	
REMARKS IOA AGRI	EES			THE	FMEA,	SINC	CE THE	KUA 3	ILIA	RY 02	TAN	K :	[S	NC)

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	ARPCS-128		NASA DATA: BASELINE [NEW [)	;] ;]								
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 128 PRESSURE REG	GULATOR/300 PSI	G (1)									
LEAD ANALYST:	M.J. SAIIDI											
ASSESSMENT:												
CRITICAL FLIGH		INDANCY SCREENS	CII									
HDW/FU		В	C	.FI								
NASA [2 /1R IOA [1 /1] [P]] []	[P] [1	k] [9 k] [[] *								
COMPARE [N /N] [N]	[N] [1	N] [3								
RECOMMENDATIONS:	(If differ	ent from NASA)										
[3 /1R] [P]	[P] [1	[9 [ADDA))] ELETE)								
* CIL RETENTION	RATIONALE: (I]								
STAGES OF THE REC	INADEQUATE []											

ASSESSME ASSESSME NASA FME	SSESSMENT DATE: 2/19/88 SSESSMENT ID: ARPCS-129 ASA FMEA #: 06-1-0110-2														N#	ASA BASI	ELI		[
SUBSYSTE MDAC ID: ITEM:	M:			AF 12	RPCS																	
LEAD ANA	LY	ST	:	M.	J. 8	SA:	III	ΟI														
ASSESSME	NT	:																				
		F	ICAL LIGH	T								SC	REE	NS						IL PEN		
]	HDI	W/FU	NC			A				В				С							
NASA IOA	[2 1	/1R /1]		[P]		[[P]		[[P]			[X X]	*
COMPARE	[N	/N]		[N]		[N]		[N]			[]	
RECOMMEN	IDA'	TI	ons:		(If	d :	if	fer	rent	: :	fro	om I	NAS	A))							
	[3	/1R]		.[P]		[,	P]		[P	3	٠	(A] DD,	D /DI	ELI	ETE)
* CIL RE	TE	NT:	ION	RAT	CION	ΑL	E:	()	[f a	ıpı	pli	Lca:			Al	DEQU DEQU	JAT	E	[]	
REMARKS:																						
THE FMEA EXTERNAL AFTER FU IOA CRIT	L IRT	EA: HE:	KAGE R RE	M VII	AY RI EW Al	EQI	UII RI	RE EMC	A S OVAI	E	PAI OF	RAT	E F	M	EA.	. :	SEE	A	RP	CS-	-13	31. THE

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-130 06-1-0110			NASA DAT BASELIN NE		;]
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 130 RELIEF VA	LVE, 1250	PSIG.			
LEAD ANALYST:	M.J. SAII	DI				
ASSESSMENT:						
CRITICAL FLIGH HDW/FU	T	EDUNDANCY B		ens C	CIL	
NASA [3 /3 IOA [3 /3] [] []	[]	[] *
COMPARE [/] [] [1	[]	[]
RECOMMENDATIONS:	(If dif	ferent fr	om NAS	A)		
[/] . [] []	[] ([ADD/D] ELETE)
* CIL RETENTION REMARKS:	RATIONALE:	(If appl	icable	ADEQUATE INADEQUATE]

IOA AGREES WITH THE FMEA.

ASSESSMENT ASSESSMENT NASA FMEA # SUBSYSTEM:	DATE: ID: :	2/19/88 ARPCS-1 06-1-01	3 L31 L10-	-2				ASA DATA BASELINE NEW	[
SUBSYSTEM: MDAC ID: ITEM:		ARPCS 131 RELIEF					.			
LEAD ANALYS	T:	M.J. S	AIII	oI						
ASSESSMENT:										
	TICAL:	LTA	RE	EDUNDA	NC	SCRE	ENS		CII	
		AC	A		E	3	С			•••
NASA [] AOI	2 /1R 1 /1]	[P]	[])]	[P]	K]	:] * :]
COMPARE [n /n]	[N]	[]	1]	[N	1	[3
RECOMMENDAT	ions:	(If	dif	ferent	: fı	om NA	SA)			
[3 /1R	1	[P]	[]	?]	[P]]/dd) DELETE)
* CIL RETEN	TION 1	RATIONA	LE:	(If a	ipp]	licabl	A	DEQUATE DEQUATE		
REMARKS: IOA CALLS F BE AS PART LEAKAGE. S THE IOA CRI	OF TH	E FMEA, PCS-129	SII	NCE IT AFTER	D: REI	ON DI LAVOI	SPE	CIFY THE	TYI	PE OF

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	ARPCS-132				SA DATA BASELINE NEW]					
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 132 ISOLATION	VALVE (1)									
LEAD ANALYST:	M.J. SAII	DI										
ASSESSMENT:												
CRITICAL FLIGH	ITY R	EDUNDANC	Y SCRE	ENS		CIL	,					
HDW/FU			В	С		1150	1					
NASA [3 /3 IOA [3 /3] [] []	[]	[] *					
COMPARE [/] [] [1	[]	[]					
RECOMMENDATIONS:	(If dif	ferent f	rom NA	SA)								
1] [] []	[] (AI	[DD/DE] ELETE)					
* CIL RETENTION	RATIONALE:	(If app	licabl	AD	EQUATE EOUATE	[]					
- SEE ALSO ARPCS												

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	ARPCS-13	2 A		ASA DATA: BASELINE [NEW [
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 132 ISOLATIO	N VALVE (L)										
LEAD ANALYST:	M.J. SAI	IDI											
ASSESSMENT:													
CRITICA FLIG		REDUNDANC	SCREENS		IL TEM								
	INC	A 1	з с		. 4 23.4								
NASA [2 /11 IOA [3 /3] [P] []	P] [P] [x] *								
COMPARE [N /N] [и ј []	и] [и] [N]								
RECOMMENDATIONS	(If di	fferent f	com NASA)										
[\	1 (] [1 . [] [(ADE] D/DELETE)								
	RATIONALE	E: (If app		DEQUATE [DEQUATE []								
THIS FMEA (INTERMINABILITY TO CONTINUABILITY TO CONTINUABILITY TO CONTINUABLE OF THE POST 51-L ANALYS WAS ATTEMPTED.	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE [] REMARKS: THIS FMEA (INTERNAL LEAKAGE) WAS CONSIDERED SAME AS THE "INABILITY TO CLOSE" - SEE ARPCS-132 (06-1-0114-1). THE TWO FMEA CRITICALITIES SEEM TO BE ASSIGNED INCONSISTANTLY. DUE TO LIMITED FMEA DATA (ONLY A CRITICALITY SUMMARY LIST FROM POST 51-L ANALYSIS) RECEIVED, NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED. THE DISCREPANCY BETWEEN NASA FMEA AND IOA ANALYSES ARE MARKED AS AN ISSUE UNTIL RESOLVED WITH THE SUBSYSTEM												

MANAGER.

ASSESSME ASSESSME NASA FME	:NT	I	D:	ARP	9/88 CS-133 1-0114					DATA LINE NEW	[x]		
SUBSYSTE MDAC ID:	_			ARP 133 ISO		VAI	LVE (1)							
LEAD ANA	LY	ST	:	M.J	. SAII	DI									
ASSESSME	NT	:													
	CR:		ICAL LIGH	YTI.	R	EDUN	IDANCY	SCF	REENS				IL TEN	м	
	HDW/FUNC				A		В		С			-			
NASA IOA]	3 1	/3 /1]]]	[[]	[]		[x]	*
COMPARE	[N	/N]	[]	ι]	[]		[N]	
RECOMMEN	DA'	ri	ons:	(If dif	fere	ent fro	om N	(ASA)						
	[/]	[]	. []	[]	(AI	[/DC	/DF] ELE	ETE)
* CIL RE	TEI	T	ION	RATI	ONALE:	(If	appl	icab	A		ATE ATE	[]	
REMARKS: IOA AGRE LONGER F	ES LOV	W: NN	ITH •	THE :	FMEA, S	SINC	E THE	AUX		-		•	[S	NO)

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	ARPCS-134	3		N	BASELI N		
MDAC ID:	ARPCS 134 ISOLATION	VALVE (1)				
LEAD ANALYST:	M.J. SAIID	I					
ASSESSMENT:							
CRITICALI FLIGHT		DUNDANC	Y SCR	EENS		CI IT	
HDW/FU			В	c	3		
NASA [1 /1 IOA [1 /1] [] []	[]	[X] * X]
COMPARE [/] [] []	[]	[]
RECOMMENDATIONS:	(If diff	erent f	rom N	ASA)			
[/] [] []	[]] DELETE)
* CIL RETENTION I	RATIONALE:	(If app	licab	P	ADEQUAT	re (x]
REMARKS: IOA AGREES WITH	THE FMEA.						

ASSESSMENT DATE: 2/19/88 ASSESSMENT ID: ARPCS-1 NASA FMEA #: 06-1-15							35 09	-1							DATA LINE NEW	[]		
SUBSYSTE MDAC ID:	EM:			AF 13	RPCS 35				TTIN											
LEAD ANA	LY	ST	:	M.	J.	SA:	II	DI												
ASSESSMENT:																				
	CRITICALITY FLIGHT						R	EDU	NDAN(CY	SCI	REEN	S				CL CEN			
	FLIGHT HDW/FUNC									В			С				. 151	•		
NASA IOA	[2	/1R /1]] [P] [] [] [P]	[P]		[X X]	*	
COMPARE	[N	/N]		[N]	[N]	[N]		[]		
RECOMMEN	DA'	TI	ons:		(If	d:	if	fer	ent :	fro	om N	ASA)							
	[/]		[]	[]	[]	(A	[DD/	DI] ELJ	ETE	:)
* CIL RE	TE	NT:	ION :	RAI	ION	ALI	Ξ:	(I	f app	ol:	icat	ole)						_		
DEWI DVC -												II			ATE ATE]		
REMARKS: IOA AGRE LONGER F THE ISOL 134.	ES LO	WN	. T	HIS	WI	LL	01	1LY	APP	LY	TO	THE	L	NES	DOW	เรท	'RE	CAN	1 O	F PCS

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-136	5				ASA DATA: BASELINE NEW]					
MDAC ID:	ARPCS 136 PRESSURE	SENSO)										
LEAD ANALYST:	M.J. SAII	DI											
ASSESSMENT:													
CRITICALITY REDUNDANCY SCREENS FLIGHT													
HDW/FU		\	В		С		ITEN	1					
NASA [/ IOA [3 /3] []	[]	[]	[] *					
COMPARE [N /N] [3	[]	[]	[]					
RECOMMENDATIONS:	(If dif	feren	t fro	om NAS	SA)								
' [/] []	[]	[] (Al	[DD/DI] ELETE)					
* CIL RETENTION	RATIONALE:	(If	appl:	cable	AI	DEQUATE DEQUATE]					
REMARKS: THIS ITEM WAS RE THEREFORE IOA WI													

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	ARPCS-1	37		NASA DATA BASELINE NEW								
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 137 CROSSOV	ER VALVE	LV4 (2)									
LEAD ANALYST:	M.J. SA	IIDI										
ASSESSMENT:												
CRITICA FLIG	NS	CIL ITEM										
	UNC	A	В	С	IIIM							
NASA [2 /1 IOA [3 /3	R] [P]	[NA] []	[P] []	[X] *							
COMPARE [N /N] [и]	[N]	[N]	[N]							
RECOMMENDATIONS	: (If d	ifferent	from NAS	A)								
[/] []	[]		[] DD/DELETE)							
* CIL RETENTION	RATIONAL	E: (If a	pplicable	<i>!</i>								
DEWI DEG.			:	ADEQUATE INADEQUATE								
REMARKS: DUE TO LIMITED POST 51-L ANALY WAS ATTEMPTED.	SIS) RECE	IVED, NO	DETAIL AS	SSESSMENT OF	THIS ITEM							

ANALYSES ARE MARKED AS AN ISSUE UNTIL RESOLVED WITH THE SUBSYSTEM

MANAGER.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	ARPCS-138			ASELINE (NEW (
MDAC ID:	ARPCS 138 CROSSOVER	VALVE-L	V3 AND LV4	(2)	
LEAD ANALYST:	M.J. SAII	DI			
ASSESSMENT:					
CRITICAL FLIGH		EDUNDANC	Y SCREENS		CIL TEM
	NC A		в с	-	
NASA [2 /1R IOA [2 /1R] [P] [NA] [P P] [P]	[X] * [X]
COMPARE [/] [] [и] []	[]
RECOMMENDATIONS:	(If dif	ferent f	rom NASA)		
(/] [] [] [[] D/DELETE)
* CIL RETENTION	RATIONALE:	(If app	2.1	DEQUATE DEQUATE	[] []
REMARKS: IOA AGREES WITH FOR A SAFE RETUR	THE FMEA A N UNDER TH	SSUMING	THAT CABIN	VOLUME IS	S AVAILABLE

MISSIONS WITH EVA, CAPABILITY TO REPRESS EMUS WILL BE LOST.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:				NASA DATA BASELINE NEW	
MDAC ID:	ARPCS 139 CROSSOVI	ER VALVE	-LV3 AND	LV4 (2)	
LEAD ANALYST:	M.J. SA	IIDI			
ASSESSMENT:					
CRITICAL FLIGH	CIL ITEM				
HDW/FU	_	A	В	С	1101
NASA [1 /1 IOA [2 /1R] [P]	[] [P]	[] [P]	[X] * [X]
COMPARE [N /N] [n j	[N]	[א]	[]
RECOMMENDATIONS:	(If di	ifferent	from NAS	A)	
[2 /1R] [P]	[P]	[P] (A	[] DD/DELETE)
* CIL RETENTION	RATIONALE	E: (If a	pplicable	ADEQUATE	[x]
REMARKS:				INADEQUATE	֓֓֞֞֜֜֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓
A LEAKAGE DOWNST SHUT DOWN CLOSED	REAM OF I	THE VALVENYING O	E WILL FO 2 TO THE	RCE BOTH VA	LVES TO BE REATHING

STATION IF NEEDED. ALSO, FOR FUNCTIONAL CRITICALITY, THE O2 LEAK WILL INCREASE PPO2 IN CABIN POSING SERIOUS FIRE HAZARD - A POTENTIAL FOR LOSS OF LIFE/VEHICLE. OTHERWISE, CABIN VOLUME IS AVAILABLE FOR SAFE RETURN. THESE VALVES ARE NOT CLASSIFIED AS EMERGENCY SYSTEM, AND THUS IT CANNOT BE ASSUMED THAT LEHS ARE IN USE FOR THE EMERGENCY CONDITION STATED IN THE FMEA.

ASSESSMENT DATE: 2/19/88 ASSESSMENT ID: ARPCS-13 NASA FMEA #: 06-1-011 SUBSYSTEM: ARPCS													1	-	SA ASE	LIN	ΙE]	
SUBSYSTE MDAC ID: ITEM:				13	9	VI	ER	VAL	VE-	-LV:	3 A	ND L	.V4	4	(2)						
LEAD ANA	LYS	T	:	M.	J. S	A	III	I													
ASSESSME	NT:																				
	CRITICALITY FLIGHT								DAN	ICY	sc	REEN	S					C]	L EN	ď	
	flight HDW/FUNC									В			(С						•	
NASA IOA	[2 2	/1R /1R]		[P P]	[P]	[]	P P]			[X X]	*
COMPARE	[/]		[]	١]	נ]			[]	
RECOMMEN	I DA T	CIC	ONS:		(If	d :	ifi	fere	nt	fr	om	NASA	١)								
	[/]		[]	1]	[]	į	(AI	[,dc	/DI	ELJ	ETE)
* CIL RE		VT:	ION I	RAI	YION?	AL	E:	(If	a	ppl	ica		ž		EQU EQU			[x]	
IOA AGRI		W:	ITH '	THE	FME	ΞA	•														

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-140 05-6VA-20))11-1	:	NASA DATA BASELINE NEW	▼
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 140 SWITCH-S1	L5 AND S1	8 (2)		
LEAD ANALYST:	M.J. SAII	IDI			
ASSESSMENT:					
	ITY R	REDUNDANC	Y SCREENS		CIL
FLIGH HDW/FU	nc a	\ 1	В	c	ITEM
NASA [2 /1F IOA [3 /3	[P	P]	* [X]		
COMPARE [N /N] [N	[]	и] [1	N]	[N]
RECOMMENDATIONS:	(If dif	ferent f	rom NASA)		
1) [] [] [] (AI	[] DD/DELETE)
* CIL RETENTION	RATIONALE:	(If app			
				ADEQUATE ADEQUATE	[]
REMARKS: DUE TO LIMITED F POST 51-L ANALYS WAS ATTEMPTED. ANALYSES ARE MAR	IS) RECEIV THE DISCRE	PANCY BET	etail assi Pween nasi	ESSMENT OF A FMEA ANI	F THIS ITEM D IOA

MANAGER.

ASSESSMEN ASSESSMEN NASA FMEA	T DA T II . #:	ATE:	2/19/8 ARPCS- 05-6VA	38 -14 \-2	11 201	.1-2						BASELINE NEW	[]		
SUBSYSTEM MDAC ID: ITEM:			ARPCS 141 SWITCE	I-S	515	AND	sı	.8	(2)								
LEAD ANAL	YST	:	M.J. 8	SA]	CIC	I											
ASSESSMEN	ASSESSMENT: CRITICALITY REDUNDANCY SCREENS CIL																
c					RE	DUNDA	NC	Y	SCREE	ens	3		CI	L EM	ľ		
	FLIGHT HDW/FUNC							В			С						
NASA IOA	[3 [2	/1R /1R]	[P P]	[P P]	[P P]]	X X]	*	
COMPARE	[N	/]	[]	[1	[1	[]		
RECOMMEND	ATI	ons:	(If	đ:	iff	erent	: 1	fro	om NAS	SA))						
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* CIL RET	PENT:	ION :	RATION	AL	E:	(If a	pp	, 1:	icable	e) Iì]A]A/	DEQUATE DEQUATE	[]		
REMARKS: DUE TO LI POST 51-I WAS ATTEN ANALYSES MANAGER.	AN.	ALYS	IS) RE	CE:	IVI REI	ED, NO PANCY) B	DE: ETI	TAIL A WEEN 1	ASS NAS	SES SA	SSMENT O	F 1 D 1	[H] [O <i>P</i>	S	ITEM	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:				nasa dat Baselin Ne	
MDAC ID:	ARPCS 142 RESISTO	R-A12R1	& R2/5.1	K (2)	
LEAD ANALYST:	M.J. SA	IIDI			
ASSESSMENT:					
CRITICAI FLIGH HDW/FU	IT	REDUNDA A	ANCY SCRE	ENS C	CIL ITEM
NASA [3 /3 IOA [3 /3] [NA]	[NA] []	[NA] []	[] *
COMPARE [/] [N]	[N]	[и]	[]
RECOMMENDATIONS:	(If d	ifferen	t from NAS	SA)	
[/] []	[]	[]	[] ADD/DELETE)
* CIL RETENTION	RATIONAL	E: (If a	applicable	ADEQUATE	
REMARKS: ALSO SEE ARPCS-3 APPROPRIATE LOCA IOA AGREES WITH	TIONS.		E RESISTO	~	

ASSESSME ASSESSME NASA FME	NТ	II):	AR	19/8 PCS- -6VA	14		10-1							DATA LINE NEW	[]	
SUBSYSTE MDAC ID:				14		T	BI	REAKI	ER-	CB:	19	& CB	20	(2)					
LEAD ANA	LYS	ST	:	M.	J. S	A.	II)I											
ASSESSME	NT:	:																	
	CRITICALITY FLIGHT								DAN	CY	sc	REEN	S			CI	L EN	,	
	1		M/FUI				A			В			С			11	. Est	1	
NASA IOA	[2 2	/1R /1R]		[P P]	[P P]]	P P]		[X X]	*
COMPARE	[/]		[]	(]	(]		[]	
RECOMMEN	IDA'	rI(ONS:		(If	d :	if	fere	nt	fr	om	NASA)						
	ſ		/]		[]	[•	3	[]	(A] .DD/	'DI	ELJ E	ETE)
* CIL RI	•							(If	aŗ	pl.	ica				JATE JATE]	
IOA AGRI	LES	W.	TTH	THE	LM1	ΥŁ	•												

ASSESSME ASSESSME NASA FME					ASA DA' BASELII N	NE	[[x]							
SUBSYSTE MDAC ID:	M:		AR 14 CI		В	REAI	KER-	-CB	19 8	& CB	20	(2)			
LEAD ANA	LYS	r:	М.,	J. SA	II	DI									
ASSESSMENT:															
		R	EDU	IDAI	icy	SCF	REENS	5			CIL ITEN	1			
	HI	DW/FU	NC		A			В			С				-
NASA IOA	[:	3 /1R 3 /3]] [P]	[P]	[[P]		[] *]
COMPARE	[/N]	[N]	(N]	ι	N]		(]
RECOMMEN	DAT	ions:		(If d	if	fere	ent	fr	om N	IASA))				
	[/)	(]	(]	[(ADI	[D/DE] ELETE)
* CIL RE	TENT	NOI	RAT:	IONAL	E:	(If	ap	pl	icab	ole)	AI	DEQUATE	e :	[1
REMARKS:										I		DEQUATE		į	i
DUE TO L											ΓY	SUMMAI	RY I	LISI	FROM

POST 51-L ANALYSIS) RECEIVED, NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED. THE DISCREPANCY BETWEEN NASA FMEA AND IOA ANALYSES ARE MARKED AS AN ISSUE UNTIL RESOLVED WITH THE SUBSYSTEM MANAGER.

ASSESSME ASSESSME NASA FME	NT	ID		ARPCS-145 BASELLI												x]		
SUBSYSTE MDAC ID:				14	5	(–)	.0	MICR	ON	5	(2)								
LEAD ANA	LYS	T:		M.	J. S	A]	IIC	I											
ASSESSME	ENT:	;																	
	CRI		CAL				RE	DUND	AN	CY	SCREE	ENS	3				L EN	1	
	ŀ		/FUI				A			В			С						
NASA IOA			/1R /1R]]	P P]	[P P]]	P P]		[X]	*
COMPARE	[/]		[1	[]	[)		[]	
RECOMME	NDA!	ric	ons:		(If	đ.	if	feren	t	fr	om NAS	SA;)						
	[/	3		[] .	[]	[)	(A	DD,	/D	ELI	ETE)
* CIL R		NT]	ION	RA!	rion	AL	E:	(If	ap	pl	icabl			DEQU <i>I</i> DEQU <i>I</i>		[]	
REMARKS	ě																		

IOA CONCURS WITH FMEA RESULTS.

ASSESSMI ASSESSMI NASA FMI SUBSYSTI MDAC ID ITEM:	ent Ea Em:	ID: #:	ARI 06- ARI 146 FII		5-2 MI	CRONS	(2)			DATA ELINA NEV		x]	
ASSESSMI	ENT	:											
	CR	ITICA FLIC	LITY	R	EDU	ndancy	SCF	REENS			CI		
	I	HDW/I		A		В		C	2		IT	LM	
NASA IOA]	3 /3 3 /3	3]]]]]	[]		[]	*
COMPARE	[/]	C]	[]	[]		ί]	
RECOMMEN	DA'I	rions	i: (If dif	fer	ent fr	om N	ASA)					
	Ε,	./]	. [3	[J	[)	(A	[DD/[] DELE	TE)
* CIL RE REMARKS: IOA AGRE					(Ii	f appl	icab	A	DEQU DEQU		[]	

ASSESSME ASSESSME NASA FME	NT	II		ARPO	/88 S-14 -011		L						SA DA BASELI B		[x]	
SUBSYSTE MDAC ID: ITEM: IN LOOP				ARPO 147 ORIF		(0)	NE 20	L	BM	HR :	IN	LC)OP1,	TWC)]	LO	LB	M/HR
LEAD ANA	LYS	ST:	;	M.J.	SAI	ID	T.											
ASSESSME	INT:	:																
	CR.		CAL:			REI	DUNDA	NC'	Y	SCRE	ENS	3				IL PEN	1	
	1	HDV	/FUI	NC.		A			В			С						
NASA IOA			/1R /1R]	P P]]	[P P]	[P P]		[X]	*
COMPARE	[/]	[)	[]	(1		[]	
RECOMMEN	IDA!	ric	ons:	(1	f di	ffe	erent	f	rc	m NA	SA)						
	[/]	[,]	[]	[]	(AI] ,dc	/DI] ELE	TE)
* CIL RI	ETE	NT:	ION 1	RATIO	NALE	:	(If a	pp	1 i	cabl			DEQUA'		[]	

REMARKS:

IOA AGREES WITH THE FMEA.

ASSESSME ASSESSME NASA FME	ENT	I	D:	A	RPCS	-1	48								ASA BASI	ELI		[
SUBSYSTE MDAC ID: ITEM: IN LOOP2	:			1	48	CE-	- ((ONE	20) :	LBI	M/HR	RIN	L	OOP:	1,	TWO	o :	10	LE	BM/HR
LEAD ANA	'LA	ST	:	M	.J.	SA	III	DI													
ASSESSME	NT	:																			
	CR		ICA:		¥		RI	EDUI	NDA	\N	CY	SCR	EEN	S					IL PEN		
	,						A				В			C				-		•	
NASA IOA	[2 3	/1! /1!	R] R]		[P P]		[P P]]	P P]]	X]	*
COMPARE	[N	/]		[]		[]	[]			[N]	
RECOMMEN	DA'	TI	ons	:	(If	d:	ifi	fer	ent	: :	fro	om N	ASA)							
	[/	J		[]		[1	ſ]		(AI	[/DC/	/DE] ELE	TE)
* CIL RE	TE	NT	ION	RA'	rion	ALI	Ξ:	(I :	f a	p	91 i	icab	•	AI IAN	DEQU DEQU	JAT: JAT:	E E	[]	
REMARKS: THIS COM		DT	SOM	TC	DOM	P 1	P ∩T) T/) (T	2	01	TET									MIITO
FAILURE	OF	0	NE]	FIL	rer i	DOI	ES	NO	r R	Œ	SUI	T I	N T	HE	LOS	5S (OF	TH	JUN IIS	'. S L	OOP
SINCE TH	ER	E.	ARE	TW	OR:	[F]	CE	ES -	- 0	N	E H	HIGH	ER I	DEC	REI	E O	F F	REI	DUN	IDA	NCY
THAN LOO			FUI 442	NCT.	IONAI	ι Ι	109 12-	55 V -147	NIL 7	L	LE	EAVE	CR	EW	WIT	CH (CAE	311	1 A	OL	UME
DUE TO I	IM:	IT	ED I	FME	A DA	ΓA	((DNL	Y A	. (CRI	TIC	ALI'	ΓY	SUN	(MA)	RY	L	SI	F	ROM
POST 51-	L	AN.	ALYS	SIS	REC	CE	EVE	ED,	NO) [DET	CAIL	AS	SES	SME	ENT	OF	ר י	CHI	S	ITEM
WAS ATTE	MP	ľE	D.	TH	E DIS	3CI	ŒΙ	PANC	CY	BI	TV	VEEN	NA:	SA	FME	EA A	ANI)]	OA		

MANAGER.

ANALYSES ARE MARKED AS AN ISSUE UNTIL RESOLVED WITH THE SUBSYSTEM

ASSESSME ASSESSME NASA FME	NT	II		AR	19/88 RPCS-1 5-1-01								ASA D BASEL		[]		
SUBSYSTE MDAC ID: ITEM: IN LOOP2				14	RPCS 19 RIFICE	- (0	ONE 2	20 1	LBN	1/HR	IN	L	OOP1,	TWO	D 1	LO	LB	M/HR	
LEAD ANA	LYS	ST	:	M.	J. SA	III	DI												
ASSESSME	NT	:																	
		F	ICAL: LIGH:	r		RI A		OAN	CY B	SCRE	ENS	s C				[L [EM	ſ		
NASA IOA	[2	/1R /1R]	[P P]	[P P]	[P P]		[X X]	*	
COMPARE	[/]	[]	[]	[]		[]		
RECOMMEN	IDA!	ΓΙ	ons:		(If d	if	fere	nt':	fr	om NA	\SA)							
	ſ		/]	[1	(]	(]	(A)		/DI		TE)	
* CIL RE		NT:	ION I	RAT	IANOIT	E:	(If	ap	pl:	icab]			DEQU <i>I</i> DEQU <i>I</i>		[]		
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IOA AGREES WITH THE FMEA.

ASSESSM		2/19/88 ARPCS-15(06-1-151(ra: ne [] ew [x]
SUBSYSTI MDAC ID: ITEM:		ARPCS 150 LINES AND) FITT	'INGS		
LEAD AND	ALYST:	M.J. SAI	IDI			
ASSESSMI	ENT:					
	CRITICAL FLIGH		REDUND	ANCY SCR	EENS	CIL ITEM
	HDW/FU	NC A	A	В	С	
NASA IOA	[1 /1 [2 /1R] [[)	[] [P]	[] [P]	[X] * [X]
COMPARE	[N /N] []	i]	[N]	[N]	[]
RECOMMEN	NDATIONS:	(If dif	feren	t from N	ASA)	
	[/] []	[]	[]	[] (ADD/DELETE)
REMARKS:	:	RATIONALE:	(If	applicab	le) ADEQUATI INADEQUATI	
TON ACDI	י שיחדש סקי	PUR RMEX				

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-151 06-1-0120-2		NASA DATA BASELINI NEV	
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 151 LEH O2 SUPPLY	VALVE (2)	ı	
LEAD ANALYST:	M.J. SAIIDI			
ASSESSMENT:				
FLIGH	ITY REDUND T NC A	ANCY SCRE	EENS C	CIL ITEM
nDW/FO	NC A	D	ŭ	
NASA [2 /1R IOA [3 /3		[NA] []	[P] []	[X] * []
COMPARE [N /N] [N]	[и]	[N]	[N]
RECOMMENDATIONS:	(If differen	t from NA	ASA)	
[/] []	[]	[]	[] ADD/DELETE)
* CIL RETENTION	PATTONALE: (If	applicabl	le)	
		upp = = o	ADEQUATE INADEQUATE	[]
REMARKS: THIS FAILURE DOE	יים אור די און איים איים איים איים איים איים איים איי	TO ANY T.	FE THREATEN	ING SITUATION.
IT WILL ONLY CAU	ISE THE LOSS OF	ABILITY 7	TO ISOLATE E	MERGENCY
BREATHING STATIC	N. LEH VALVES,	AND/OR (02-XOVR VALV	ES MAY BE USED
TO ISOLATE THE S			r vatrabre	THROUGH
DUE TO LIMITED F	MEA DATA (ONLY	A CRITICA	ALITY SUMMAR	Y LIST FROM
POST 51-L ANALYS	SIS) RECEIVED, N	O DETAIL	ASSESSMENT	OF THIS ITEM
WAS ATTEMPTED. ANALYSES ARE MAR	THE DISCREPANCY RKED AS AN ISSUE	DETWEEN UNTIL RI	MASA FMEA A ESOLVED WITH	THE SUBSYSTEM
MANAGER.				

ASSESSME ASSESSME NASA FME	INT	I		A	RPCS	-1		-1								DATA LIN NE]	
SUBSYSTE MDAC ID:				1	RPCS 52 EH O	2 ;	SU:	PPL	y v	AI	.VI	E (2	2)							
LEAD ANA	LY	ST	:	M	.J.	SA	ΙI	DI												
ASSESSME	:NT	:																		
		F	ICAL: LIGH: W/FUI	r	Y		RI A	EDU	NDAI		Y B	SCI	REEN	s c				I L TEI	М	
NASA IOA	[2	/1R /1R]		[P P]		[NA P]	[P P]		[X X]	*
COMPARE	[/]		[]		[N]	[]		[]	
RECOMMEN	DA!	ΓI	ons:		(If	d:	if	fer	ent	f	rc	om 1	NASA)						
	[/]		[]	!	[]	[]	(1	[ADD,	/DI] ELI	ete:
* CIL RE	TE	NT:	ION I	RAT	TION	AL I	Ε:	(I:	f ap	qq	1i	.cak	·		DEQU DEQU	ATE ATE	[]	

IOA AGREES WITH THE FMEA.

ASSESSMENT DATI ASSESSMENT ID: NASA FMEA #:	ARPCS-153			NASA DATA BASELINI NEV	
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 153 LEH O2 SU	JPPLY VA	LVE (2)		
LEAD ANALYST:	M.J. SAII	DI			
ASSESSMENT:					
CRITICA FLIC HDW/1	SHT	REDUNDAN	CY SCRI	eens C	CIL ITEM
•	L] [LR] [I] [P]	[] [P]	[X] * [X]
COMPARE [N /	4] [<i>1</i>	4] [и ј	[N]	[]
RECOMMENDATION	S: (If di	fferent	from N	ASA)	
. [/] [] [1	[] ([ADD/DELETE)
* CIL RETENTIO	N RATIONALE:	: (If ap	plicab	le) ADEQUATE INADEQUATE	-
REMARKS:	H THE EMPA				

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-154 06-1-0121-1	L	NASA DATA BASELINE NEW	[]
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 154 LEH O2 REGU	JLATOR (2)		
LEAD ANALYST:	M.J. SAIIDI	[
ASSESSMENT:				
CRITICALI FLIGHT HDW/FUN	ľ	DUNDANCY SCREED B	15 C	CIL ITEM
NASA [2 /1R IOA [2 /1R		[NA] [P]	[P] [P]	[X] *
COMPARE [/] []	[N]]	[]
RECOMMENDATIONS:	(If diffe	erent from NASA	7)	
[/] []	[]	[]	[] DD/DELETE
* CIL RETENTION F REMARKS: IOA AGREES WITH T			ADEQUATE NADEQUATE	[]

ASSESSMEN ASSESSMEN NASA FME	I Tr	D:	2/19/8 ARPCS- 06-1-0	-15		-2							DATA: LINE NEW	[x]	
SUBSYSTEM MDAC ID:	M:		ARPCS 155 LEH 02	2 F	REG	ULATO	OR	(2	2)								
LEAD ANA	LYSI	?:	M.J. 8	SA]	II	Ι											
ASSESSME	NT:																
•		CICAL			RE	DUND	AN	CY	SCRE	ENS	3				L CEI	A	
	_	LIGH W/FU			A			В			С			•		•	
NASA IOA	[2	2 /1R 2 /1R]	[P P]	[F P]	[P P]		[X X]	*
COMPARE	[/	1	[]	[N]	[]		[)	
RECOMMEN	DATI	ons:	(If	d:	ifi	eren	t	fro	om NA	SA)						
	[/]	[]	[]	[]	(A		/D		ETE)
* CIL RE						(If	ap	pl:	icabl				JATE JATE		x]	
IOA AGRE	ES V	NT.T.H	THE PM	ĽA	•												

ASSESSME ASSESSME NASA FME	NT	II		AI	RPCS	-1										DATA LINE NEW]	
SUBSYSTE MDAC ID:				15	RPCS 56 EG O	2]	REG	GUL	ATO	R	(2	2)								
LEAD ANA	LY	ST	:	M.	J. :	SA.	III	DI												
ASSESSME	NT	:																		
		FI	ICAL	r	ľ				NDA	NC		SCR	REEN					IL Pen	M	
	J	HUV	/FU	NC			A				В			С						
NASA IOA]	2	/1R /1R]		[P P]		[[N# P]	[P P]		[X X]	*
COMPARE	[/]		[]		[N]	[]		[]	
RECOMMEN	DA:	ric	ONS:		(If	đ:	if	fere	ent	f	rc	om N	IASA)						
	[/]		[]		[]	[]	(A	•	/DI	•	ETE)
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DEWIDEC.													I	IAN	DEQU.	ATE	[]	

IOA AGREES WITH THE FMEA.

ASSESSME ASSESSME NASA FME	NT	II	D:	AF	19/8 RPCS- 5-1-0	-15		-1								ASA BASE	LIN		[]	
SUBSYSTE MDAC ID: ITEM:	M:			15	RPCS 57 LLIEI	· 7	/AI	LVE-	24	5	PS	SIG	; (2)								
LEAD ANA	LYS	ST	:	M.	J. S	SA:	[II	DI														
ASSESSME	NT	:																				
		F	ICALI	ľ			RI A	EDUN	DAI	NC	EY B	SC	REE	NS	c					[L		
	J	ועה	W/FUI																_		_	_
NASA IOA			/1R /1R]		[P P]		[NA P	\]		[P P]			[X]	*
COMPARE	[/]		[]		[N]		[]			[]	
RECOMMEN	DA'	ri	ons:		(If	d :	if	fere	nt	1	fro	om	NAS	A)	I							
	[/]		[]		[1		[]	ı	(AI] D),	/ D]] ELJ	ETE)
* CIL RE	TE	NT:	ION 1	RA?	CION	AL	E:	(If	a	pĮ) 1:	ica	ble			DEQU DEQU			[]	
REMARKS:																		-	٠		•	

IOA AGREES WITH THE FMEA.

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-158 06-1-0122-2		NASA DATA: BASELINE [] NEW [X]
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 158 RELIEF VALVE	-245 PSIG (2)	
LEAD ANALYST:	M.J. SAIIDI		
ASSESSMENT:			
FLIG		NDANCY SCREENS B	CIL ITEM C
NASA [2 /1 IOA [3 /3	R] [P]	[AN] [] []	P] [X] *
COMPARE [N /N] [N]	[N] [1	и) [и]
RECOMMENDATIONS	(If differ	ent from NASA)	
()] []	[] [] [] (ADD/DELETE)
* CIL RETENTION	RATIONALE: (I	,	ADEQUATE [] ADEQUATE []
POST 51-L ANALY WAS ATTEMPTED.	SIS) RECEIVED, THE DISCREPAN	Y A CRITILICAT NO DETAIL ASSI CY BETWEEN NAS	Y SUMMARY LIST FORM ESSMENT OF THIS ITEM

ASSESSMEN ASSESSMEN NASA FME	I TV		2/19/8 ARPCS-		9							ASA DATA BASELINE NEW] :	x]
SUBSYSTEM MDAC ID:	M:		ARPCS 159 FILTER	!-]	LO	MICR	SNC	5	(2)						
LEAD ANA	LYST	:	M.J. S	Al	II	Ι									
ASSESSME	NT:														
•		ICAL			RI	EDUND	AN(CY	SCRE	ens	;		C:	L EM	
	_	W/FUI			A			В			С				
NASA IOA	[2	/ /1R]	[P]	[P]	} [P]]	x] *]
COMPARE	[N	/N]	[N]	[N]	[N]	[N]
RECOMMEN	DATI	ONS:	(If	đ	Ĺfí	feren	t :	fro	om NA	SA))				
	[/	1	[1	[]	[] (2	[ADD,	/DE] LETE)
* CIL RE	TENT	'ION	RATION	AL I	Ξ:	(If	apı	91 :	icabl			DEQUATE DEQUATE	[]
REMARKS:												-	٠		•

THIS FAILURE WILL RESULT IN THE SAME EFFECTS AS DESCRIBED FOR THE

REGULATORS, ARPCS-155.

ASSESSME ASSESSME NASA FME	NT	I			19/88 PCS-160						DATA LINE NEW	[x]	
SUBSYSTE MDAC ID: ITEM:	M:			ARI 160 FII		MIC	CRONS	(2)						
LEAD ANA	LYS	ST	:	M.J	J. SAIII	DI								
ASSESSME	NT:	:												
	CR:			ITY	RI	EDUN	NDANCY	SCI	REENS			CI		
	I		LIGH N/FU		A		В		С			IT:	EM	
NASA IOA]	3	/ /3]	[]	[]	[]		[]	*
COMPARE	[N	/N]	[]	[1	[]		[]	
RECOMMEN	DA'	ric	ons:	((If dif	fere	ent fr	om 1	NASA)					
	[/]						[]	[]	(Al	[\dc] DELE	TE)
* CIL RE	TEN	T	ОИ	RATI	ONALE:	(If	f appl	icak	A	DEQU DEQU		[]	
REMARKS:	NC	ז ר	नवन	ρ τ	י ייסיאי	ZOD	POSST	RT.F	СОМТА	MTNA	тт∩м	^ E	mur	

DOWNSTREAM ITEMS.

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SUBSYSTE MDAC ID:					ARPCS 161 CHECK	V	ALV	/E (2	:)											
LEAD ANA	LYS	ST	:		M.J. 8	SA:	III)I												
ASSESSME	ASSESSMENT:																			
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NASA IOA	[2	,	/1R /3		[P]	[F	יי]	[P]]	x]	*
COMPARE	[N	,	/N]	[N]	ı	N	ī]	[N]		[N]	
RECOMMEN	IDA!	rI(01	NS:	(If	d	if	feren	ıt	fr	:0	m NAS	A))						
	ί	3	,	/2R]	[P]	ĺ	E	ŗ]	[P		AD	[DD,	/D]	EL.	ETE)
* CIL RE	ETE!	NT:	I	ON F	RATION	AL	E:	(If	ap	p]	Li	.cable			DEQUATE DEQUATE		[x]	

REMARKS:

THE FMEA CRITICALITY INDICATES A POSSIBLE LOSS OF LIFE/VEHICLE EXISTS WITH FUNCTIONAL LOSS. IOA CONSIDERS NO MAJOR EFFECT WITH FUNCTIONAL LOSS - CONTINUE TO OPERATE ON THE AFFECTED LEG. FMEA ALSO CONSIDERED THIS FAILURE IN COMBINATION WITH A FAILED OPEN RELIEF VALVE TO ARRIVE AT POSSIBILITY OF LOSS OF LIFE. IOA CONCLUDES THAT THIS IS A MULTIPLE FAILURE SCENARIO, AND AT WORST THE LINES WILL BE CLOSED TO STOP OXYGEN FLOW. EVEN WITH THE RELIEF VALVE FAILURE IN MIND, THE TOTAL LOSS OF REDUNDANCIES (BOTH CHECK VALVES) WILL BE ONE STEP AWAY FROM LOSS OF LIFE. THEREFORE, WITH ONLY A SINGULAR FAILURE, HARDWARE CRITICALITY IS INSIGNIFICANT AND, WITH LOSS OF FUNCTION, MISSION IS TERMINATED TO PREVENT ANY POSSIBILITY OF RELIEF VALVE FAILURE. AT WORST, IOA RECOMMEND A 3/2R CRIT.

ASSESSMENT DAT ASSESSMENT ID: NASA FMEA #:	ARPCS-1	62		nasa Base	DATA: LINE [] NEW [X]
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 162 CHECK V	ALVE (2)		
LEAD ANALYST:	M.J. SA	IIDI			
ASSESSMENT:					
CRITIC FLI		REDUN	DANCY S	CREENS	CIL ITEM
HDW/	FUNC	A	В	С	
NASA [2 / IOA [2 /	LR] [LR] [P] P]	[F] [P]	[P] [P]	[X] * [X]
COMPARE [/] []	[N]	[]	[]
RECOMMENDATION	S: (If d	iffere	nt from	NASA)	
[/] []	[]	[]	[] (ADD/DELETE)
* CIL RETENTION REMARKS: IOA AGREES WITH			applic	able) ADEQU INADEQU	

NASA DATA: ASSESSMENT ID: ARPCS-163
NASA FMEA #: 06-1-1501-2 BASELINE [NEW [X] **ARPCS** SUBSYSTEM: 163 MDAC ID: LEH 02 SHUTOFF VALVE/CREW + PASSENGER (8) ITEM: LEAD ANALYST: M.J. SAIIDI ASSESSMENT: CIL REDUNDANCY SCREENS CRITICALITY ITEM FLIGHT С HDW/FUNC A В NASA [2 /1R] [P] [F] [P]
IOA [3 /3] [] [] COMPARE [N /N] [N] [N] [N] RECOMMENDATIONS: (If different from NASA) [3/2R] [P] [F] [P] (ADD/DELETE) * CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [X] INADEQUATE []

REMARKS:

THE LEHS HAVE DEDICATED SELF-SEALING DISCONNECTS WHICH CLOSES THE O2 FLOW UPON REMOVAL OF THE LEHS. ALSO REGULATOR INLET VALVES, OR THE O2-XOVR VALVES MAY BE USED TO ISOLATE THE LINE. AT ANY RATE, THIS FAILURE WILL FLOW 02 INTO THE CABIN, AND PCS MAY BE OPERATED MANUALLY TO CONTROL 02 LEVEL, OTHERWISE NO MAJOR IMPACT. THE VALVES ARE CONSIDERED NOT REDUNDANT TO EACH OTHER. AT WORST, MANUAL OPERATION OF THE PCS MAY SIGNIFICANTLY IMPACT MISSION TIMELINE (3/2R). THE FMEA REDUNDANCY MIXES INTERNAL LEAKAGE OF THE VALVE WITH THE EXTERNAL LEAKAGE OF THE QD. THE REDUNDANCY IN THIS ANALYSIS SHOULD BE IN REGARD TO THE BLOCKAGE OF THE 02 FLOW. BLOCKAGE OF THE 02 FLOW IS LOST THRU VALVE FAILED OPEN, AND IS COMPENSATED FOR BY THE QD. SUBSEQUENT QD LOSS

WILL BE ALSO INTERNAL LEAKAGE OR FAILED OPEN WHICH WILL FLOW 02 INTO THE HELMET.

ASSESSMEN ASSESSMEN NASA FMEA	nt nt A #	DA II	ATE:	2/19/ ARPCS 06-1-	88 -16 150	4 1-	-1						ASA DAT BASELIN NE	E]	
SUBSYSTEM MDAC ID:	1:			ARPCS 164 LEH C		н	JTOF	F T	/AL	VE/C	REW	+	PASSEN	GE	R (8)	
LEAD ANAI	LYS	T:		M.J.	SAI	ΙI)I										
ASSESSMEN	T:																
C	IGH?				EDUNI	DAI		SCR	EENS				CIL ITE				
	Н	.DW	// FUI	1C	,	A			В			С					
NASA IOA] [2 1	/1R /1]]	P]		N	A]]	P]		[X]	*
COMPARE	[N	/N]	[N]	١	N]	[N	1		[]	
RECOMMEND	TAC	IC	NS:	(If	di	ff	erer	nt	fr	om N	ASA)						
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* CIL RET	EN	TI	ON I	RATION	ALE	:	(If	aŗ	pl	icab	le)	ΑI	EQUATE		[]	
REMARKS:	REMARKS:											ΙΑΙ	EQUATE		[]	
THIS FMEA (ARPCS-16														-1	-150)1-	-3

ASSESSME ASSESSME NASA FME	NT I	D:	2/19/ ARPCS 06-1	5-165	-3			r	BASE		[x]	
SUBSYSTE MDAC ID: ITEM:			ARPCS 165 LEH		JTOF	F VAL	/E/C	REW +	PAS	SENG	ER	(8	;)	
LEAD ANA	LYST	r:	M.J.	SAII	ΟI									
ASSESSME	NT:													
		rical Fligh		RI	EDUN	DANCY	SCR	EENS			CI		ī	
		W/FU		A		В		(2				•	
NASA IOA	[]	l /1 l /1]	[]	[[]	[[]]		[X X]	*
COMPARE	[/]	[]	[]	[]		[]	
RECOMMEN	DAT]	cons:	(I	f dif	fere	ent fr	om N	ASA)						
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* CIL RE	TEN	rion	RATIO	NALE:	(If	appl	icab	1	ADEQU ADEQU		[x]	
REMARKS:		ZDFFM	ารมา พ	ייף איף ד	я ян	MEA.					-			

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	ARPCS-1	66		NASA DATA BASELINE NEW	
MDAC ID:	ARPCS 166 QUICK D	ISCONNECT	S (8)		
LEAD ANALYST:	M.J. SA	IIDI	,		
ASSESSMENT:					
CRITICAL: FLIGHT		REDUNDAN	CY SCREEN	s	CIL ITEM
HDW/FUI		A	В	С	TIEM
NASA [2 /1R IOA [1 /1] [P] [NA] [P]	[X] * [X]
COMPARE [N /N] [и] [N] [и ј	[]
RECOMMENDATIONS:	(If d	ifferent :	from NASA)	
[/] [] [] [[] DD/DELETE)
* CIL RETENTION I	RATIONALI	E: (If app	plicable)	ADEQUATE	1
REMARKS:				NADEQUATE	•
NASA FMEA'S BREAD COMPARTMENT.	K PEAP/LI	EH SERVICI	E INTO 4 (CREW COMP,	4 PASSENGER
SAME EFFECT AS OF CRITICALITY WILL		-3. (ARPO	CS-165), <i>i</i>	AND THE SAM	Æ

ASSESSMEI ASSESSMEI NASA FME	T	ID		AR	19/88 PCS-10 -1-150		·1						SA DA			x]	
SUBSYSTEM MDAC ID:	M:			16	PCS 7 ICK D	ISC	CON	NECT	5	(8)								
LEAD ANA	LYS	T:		м	J. SA	III	Ι											
ASSESSME	NT:	}																
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	ì		/FUI			A			В			С						
NASA IOA	[2	/1R /3]	[[P]	[[N.	A]]	P]		[X]	*
COMPARE	[N	/N]	ι	N]	ſ	N]	[N]		[N]	
RECOMMEN	DA!	rI	SNC:		(If d	if	fer	ent	fr	om N	iasa))						
	[3	/2R)	[P]	[N	A]	[P]	(A)				ETE)
* CIL RE	TE	NT:	ION :	RAT	IANOI	E:	(I	f ap	pl	icak		A IAN	DEQU <i>P</i>	TE TE	[]	
REMARKS:		ne	(OD	EPAT \	WTTT	. N	OT	DESI	т.т	י דא								r TH

THIS FAILURE (OPEN) WILL NOT RESULT IN LOSS OF MISSION. IF THE LEH IS IN USE, THEN THERE IS NO PROBLEM WITH THE QD TO BE OPEN, AND IF IT IS NOT IN USE, THE LEH SOV SHOULD BE CLOSED. VALVES WERE ASSUMED NON-REDUNDANT AND DEDICATED PER CREW PERSON. FUNCTIONAL LOSS WILL BE SAME EFFECT AS EXPLAINED IN ARPCS-163.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-168 06-1-1502-	-1	NASA DATA: BASELINE [] NEW [X]
SUBSYSTEM: MDAC ID:	ARPCS 168	CONNECTS (8)	
LEAD ANALYST:	M.J. SAIID	DI	
ASSESSMENT:			
CRITICALI FLIGHT	TY RE	EDUNDANCY SCREENS	CIL ITEM
HDW/FUN	IC A	В	
NASA [2 /1R IOA [1 /1] [P] [NA] [P] [X] *] [X]
COMPARE [N /N] [и] [и] [и] []
RECOMMENDATIONS:	(If diff	erent from NASA)	
[/] [] [] [] [] (ADD/DELETE)
* CIL RETENTION R	ATIONALE:		
REMARKS:			DEQUATE [] DEQUATE []
FOR EXTERNAL LEAK	E LEAKAGE :	IS TREATED SAME AS IS EXCESSIVE ENOUG	S 06-1-1501-3. GH WHICH DENIES 02 TO

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SUBSYSTE MDAC ID: ITEM:					16	PCS 9 ICK	DI	sc	CON	IECI	'S	(8)									
LEAD ANA	ALY:	ST	:		M.	J. S	[A	ΊΙ	I													
ASSESSMI	ENT	:																				
	CR					•		RE	EDUI	NDAN	C	Y	SCR	EEN	S				[L [EN			
	FLIGHT HDW/FUNC											В			С					-		
NASA IOA	[2	/:	1R 3]]	P]	[:	NZ]	[P]		[X]	*	
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* CIL R	ETE	NT	IO	N I	RAI	NOI	AL	Ε:	(I:	f ap	q	1:	icab	le) I	Ai NAi	DEQUA DEQUA	TE TE	[]		
REMARKS FOR, IN THAT IS FUNCTION 163.	TER	S	TG	NT.	FT(TANT	P	ROI	BLE	M UI	NΕ)E)	₹ A	SIN	GU.	LAK F	ALL	JKI	Ľ,	AI	עוי	

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SUBSYSTE MDAC ID:	M:			ARF 170 LEH		LEEI	O ORIF	'ICE					
LEAD ANA	LYS	ST:	1	M.J	. SAII	DI							
ASSESSME	NT:	:											
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	F		JIGH /FU		A		В	,	C	3	ITI	EM	
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REMARKS:										PPZONI	<u> </u>	1	

IOA WITHDRAWS THIS FAILURE MODE.

ASSESSME ASSESSME NASA FME	NT	II			9/88 CS-171				ì	iasa i Base:	DATA: LINE NEW	[]	
SUBSYSTEMDAC ID:	M:			ARP 171 LEH		LEEC	ORIF	CE							
LEAD ANA	LYS	ST	•	M.J	. SAIII	ΣI									
ASSESSME	NT:	:													
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REMARKS:												-		-	

IOA WITHDRAWS THIS FAILURE MODE.

ASSESSME ASSESSME NASA FME		2/19/88 ARPCS-172					ASA DAT BASELIN NE]
SUBSYSTE MDAC ID:	M:	ARPCS 172 LEH #5, B	LEED	ORIF	ICE				
LEAD ANA	LYST:	M.J. SAII	DI						
ASSESSME	NT:								
	CRITICAL: FLIGH		EDUNI	DANCY	SCRE	ENS		CII	
	HDW/FUI			В		С		LTE	·M
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COMPARE	[N /N] []	[]	[]	[1
RECOMMEN	DATIONS:	(If dif	ferer	nt fr	om NA:	SA)			
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* CIL RE	rention i	RATIONALE:	(If	appl:	icable	Al	DEQUATE DEQUATE]

IOA WITHDRAWS THIS FAILURE MODE.

ASSESSME ASSESSME NASA FME	NT	II							1	NASA DA BASELI 1	INE			
SUBSYSTE MDAC ID: ITEM:				ARP 173 CAP		. DSC	:NT (8)						
LEAD ANA	LY	ST	:	M.J	. SAIII	ΣI								
ASSESSME	NT	:												
	CR:		ICAL LIGH		RI	EDUN	DANCY	SCI	REENS			CIL		
	1			NC	A		В			С				
NASA IOA	[3	/]	[]	[]]]		[]	*
COMPARE	[N	/N]	ι]	[]	[]		[]	
RECOMMEN	IDA'	TI	ons:	• (If dif	fere	ent fr	om 1	NASA)					
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* CIL RE	ETE	NT	ION	RATI	ONALE:	(II	f appl	ica		ADEQUA'	TE TE	[]	
REMARKS: IOA WITH TOGETHER	IDR	AW	s Ti	HIS F	FAILURE	MOI	DE - Q	D &	CAPS	ARE A	NAL	YZEC)	

ASSESSMI ASSESSMI NASA FMI	ENT	ID:	:	ARPO	9/88 CS-174 L-1512	-			1	NASA I BASEI		[x]	
SUBSYSTE MDAC ID:				ARPO 174 SHUT		/ALVI	E/DIRE	CT C	XYGEN	(1)					
LEAD ANA	LYS	ST:		M.J.	SAII	DI									
ASSESSME	ENT:	;													
	CRI		CAL	ITY F	F	REDUN	IDANCY	SCR	EENS				IL CEM	Æ	
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	ARPCS-17	74A			SA DATA: SELINE NEW		
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 174 SHUTOFF	VALVE/I	OIRECT (OXYGEN ((1)		
LEAD ANALYST:	M.J. SA	IIDI					
ASSESSMENT:							
CRITICAL FLIGH	ITY	REDUNDA	ANCY SC	REENS		CIL ITEN	1
HDW/FU		A	В	С			
NASA [2 /1R IOA [1 /1] [P]	[P] []	[P]]]	[X] *]
COMPARE [N /N] [и ј	[N]	[N]	1	[]
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* CIL RETENTION	RATIONAL	E: (If	applica	ירו גר	EQUATE EQUATE	[]
REMARKS: JUDGING FROM JUS DIFFERENTIATE TH (ARPCS-174).	ST A SUMM HE EFFECT	ARY FME OF THI	A DATA S FAILU	PROVIDE	D, IOA I	DID 1	TON

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SUBSYSTEM: MDAC ID: ITEM:		ARPCS 175 SHUTOFF	VALVE	/DIRE	CT OXY	(GEN	(1)							
LEAD ANALYST	r:	M.J. SA	IIDI											
ASSESSMENT:														
CRITICALITY REDUNDANCY SCREENS CI														
HI	W/FUN	C	A	В		С			••					
NASA [2 IOA [2	/1R /1R] [P] P]	[P [P]	[P]	[X]] *]					
COMPARE [/) []	[]	[1	[]					
RECOMMENDATI	ONS:	(If di	ffere	nt fro	om NAS	A)								
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* CIL RETENT REMARKS: IOA AGREES W				appli		AI	DEQUATE DEQUATE	[]					

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SUBSYSTEMDAC ID:				ARE 176 ORI	;	E-	·DI	REC	T I	3LE	ED (1)							
LEAD ANA	LYS	ST	:	M.J	r. s	ΑI	ΊΙ	I											
ASSESSMI	ENT:	:																	
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NASA IOA	[2 2	/1R /1R]]	P P]		[P]	[[P P]		[X]	*
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REMARKS	:																		

IOA AGREES WITH THE FMEA.

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SUBSYST MDAC ID ITEM:				1	RPCS 77 [LTE	R/	CH:	ECK	VAI	VE	(2	2)							
LEAD AN	ALY	ST	:	M	J.	SA	II	DI											
ASSESSMI	ENT	:																	
ASSESSMENT: CRITICALITY REDUNDANCY SCREENS FLIGHT HDW/FUNC A B C																	IL PEI		
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NASA IOA		2	/1F /1F	t]		[P P]]	P P]	[P]		[X X]	*
COMPARE	[/]		[]	[]	[J		[]	
RECOMMEN	IDA'	ric	ons:		(If	đi	Ĺfí	fere	nt	fro	m	nasa	.)						
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REMARKS: IOA AGRE		W]	TH	THE	FME	Α.						•		-2%01		L		1	

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	ARPCS-178	3 3-2		NASA DATA: BASELINE NEW	[x]	
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 178 FILTER/CH	ieck valv	E (2)			
LEAD ANALYST:	M.J. SAI	IDI				
ASSESSMENT:						
CRITICAL FLIGH	ITY 1	REDUNDANC	Y SCREEN	S	CIL ITEM	
HDW/FU		A	В	С		
NASA [3 /1R IOA [3 /3] []	P] [NA] [AN	P]	[] *	
COMPARE [/N] []	и][и	и] [N]	[]	
RECOMMENDATIONS:	(If di	fferent f	rom NAS	7)		
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* CIL RETENTION	RATIONALE	: (If app		ADEQUATE INADEQUATE	[]	
REMARKS: DUE TO LIMITED F 51-L ANALYSIS) F ATTEMPTED. THE	DECETUED	CY BETWEI	L ASSESSI EN NASA	SUMMARY LIMENT OF THI	A ANALYSE	ب.

ARE MARKED AS AN ISSUE UNTIL RESOLVED WITH THE SUBSYSTEM

MANAGER.

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SUBSYSTE MDAC ID:					17	_		СН	EC:	K VA	LV	E	(2)								
LEAD ANA	LY	ST	:		M.	J.	SA	II	DI													
ASSESSME	NT	:																				
	CR:		ICA LIG			7		R	EDI	UNDA	NC	Y	SCI	REEN	S					IL Pen	r	
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NASA IOA	•	.R .R]		[P P]]	P P]	[P P]			[x x]	*		
COMPARE	[/]		[]		[]	[]			ι]	
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* CIL RE									(1	[f a]	pp:	Li	cab				UAT) UAT)		[]	

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SUBSYSTEMDAC ID: ITEM:			ARPCS 180 FLOW	SEI	ısc	R MTI	118	EM'I	12	(2)	l						
LEAD ANA	LYST	:	M.J.	SA:	II)I											
ASSESSME	NT:																
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* CIL RE	TENT	ION :	RATION	AL	E:	(If a	ap)	pl:	ica			AI IA	DEQUATE DEQUATE	[]		
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ASSESSME ASSESSME NASA FME	NT	ID:	ARPC	/88 5-181 VA-20		L]	NASA DA' BASELII N] x]	
SUBSYSTE MDAC ID: ITEM:	M:		ARPC: 181 SWITC	s CH - 02	FLC)W,S5	(1)					
LEAD ANA	LYS	T:	M.J.	SAII	DI							
ASSESSME	NT:											
		TICAL FLIGH		R	EDUN	DANC	SCR	EENS		CII		
		DW/FU	_	A		I	3	C	2	ITH	5M	
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IOA AGREES WITH THE FMEA.

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LEAD AN	ALY:	ST	:	M.J	. SAIII	OI							
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ASSESSMI ASSESSMI NASA FMI	ENT :	ID:	ARP	9/88 CS-183 1-0129	-1		NASA DATA: BASELINE [] NEW [X]								
SUBSYSTI MDAC ID ITEM:			ARPO 183 PRES		SENS	SOR, R	EGUI	ATOR	INLET	- мтз	& MT4				
LEAD AND	ALYS!	r:	M.J	SAII	DI										
ASSESSMI	ENT:														
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SUBSYSTEM: MDAC ID: ITEM:	ARPCS 184 REGULATOR	R INLET SOV	(2)		
LEAD ANALYST:	M.J. SAII	DI			
ASSESSMENT:					
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MDAC ID:	ARPCS-1 06-1-01 ARPCS 185 REGULAT	85 25-1 OR INLET		NASA DATA BASELINE NEW									
ASSESSMENT:													
FLIGHT		REDUNDANO A	CY SCREENS	s c	CIL ITEM								
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REMARKS:													
WAS ATTEMPTED. T	INADEQUATE [] ARKS: TO LIMITED FMEA DATA (ONLY A CRITICALITY SUMMARY LIST FROM T 51-L ANALYSIS) RECEIVED, NO DETAIL ASSESSMENT OF THIS ITEM ATTEMPTED. THE DISCREPANCY BETWEEN NASA FMEA AND IOA LYSES ARE MARKED AS AN ISSUE UNTIL RESOLVED WITH THE SUBSYSTEE												

ASSESSMI ASSESSMI NASA FMI	AF	'19/8 RPCS- 5-1-0	-18		-3					ra: Ne Ew	[x]								
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	ICAL: LIGH: W/FUI	T							B C								IL PEN	1			
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* CIL R		NT:	ION :	RA:	rion	AL	E:	(If	f a	pp	11	icabl			DEQU DEQU			[]	

IOA AGREES WITH THE FMEA.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		-2	NASA DATA: BASELINE [] NEW [X]						
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 187 REGULATOR	- 100 PSIG (2)						
LEAD ANALYST:	M.J. SAIII	oi							
ASSESSMENT:									
CRITICAL FLIGH HDW/FU	r	EDUNDANCY SCRE	ENS C	CIL ITEM					
NASA [3 /1R IOA [3 /1R] [P] [P]] [P]	[P] [P]	[] *					
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IOA AGREES WITH THE FMEA.

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LEAD ANAI	LYST	:	M.J.	SA	III	I									
ASSESSMEN															
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MANAGER.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-189 06-1-0126-3	NASA DAT BASELIN NE	NASA DATA: BASELINE [] NEW [X]							
SUBSYSTEM:	ARPCS 189 REGULATOR - 10									
LEAD ANALYST:	M.J. SAIIDI									
ASSESSMENT:										
FLIGH'			CIL ITEM							
HDW/FU	NC A	В С								
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COMPARE [N /] []	[] []	[N]							
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IOA AGRE	EES	W.	ITH	THE	FM1	٠A	•												

NASA DATA: BASELINE [] NEW [X]						
EM						

REPORT DATE 02/18/88 C-96

MANAGER.

ASSESSME ASSESSME NASA FME	NT I	D:		/88 S-192 -0132-	-1		BASELINE [] NEW [X]								
SUBSYSTE MDAC ID:			ARPO 192 PRES	SURE S	SENS	OR (2)									
LEAD ANA	LYSI	C:	M.J.	SAIII	DI										
ASSESSME	NT:														
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ASSESSMI NASA FMI	E:	2/19/88 ARPCS-193 06-1-0135-2										NASA DATA: BASELINE [] NEW [X]												
SUBSYSTI MDAC ID: ITEM:	EM:				ARI 193	PCS																		
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-19- 06-1-013	4 5-1		NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 194 CHECK VA				
LEAD ANALYST:	M.J. SAI	IDI			
ASSESSMENT:					
CRITICAL FLIGH	ITY	REDUNDANC	Y SCREENS	3	CIL ITEM
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IOA AGREES WITH THE FMEA.

ASSESSME ASSESSME NASA FME):	2/19/ ARPCS 06-1-	-19								SASEL:		[
SUBSYSTE MDAC ID: ITEM:				ARPCS 196 LINES		F	(TTI)	NGS										
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IOA AGREES WITH THE FMEA.

ASSESSME ASSESSME NASA FME	ATE: D:	2, Al	/19/ RPCS 6-1-	/88 5-1 -01	97 34	-2								DAT ELIN	ΙE						
SUBSYSTE MDAC ID: ITEM:	M:			A)	RPCS	3															
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ASSESSME ASSESSME NASA FME	NT II):	2/19/ ARPCS 06-1-	-198					SA DATA SELINE NEW		:]		
SUBSYSTE MDAC ID: ITEM:	M:		ARPCS 198 SHUTO		/ALVE	(2)							
LEAD ANA	LYST:	:	M.J.	SAI	IDI								
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ASSESSMENT: CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C													
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ASSESSMENT ASSESSMENT NASA FMEA #	DATE: ID: :	2/19/88 ARPCS-19 06-1-013	99 34-1		NASA DAT. BASELIN NE									
SUBSYSTEM: MDAC ID: ITEM:		ARPCS 199 SHUTOFF												
LEAD ANALYS	T:	M.J. SA	IIDI											
ASSESSMENT:														
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IOA AGREES WITH THE FMEA.

ASSESSMENT DATE: 2/19/8 ASSESSMENT ID: ARPCS- NASA FMEA #: 06-1-0 SUBSYSTEM: ARPCS								-1									ELI N	NE]	
SUBSYSTI MDAC ID: ITEM:				20		CE.	(2	2)														
LEAD AN	ALY	ST	:	M.	J. S	SA]	III	ΣI														
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ASSESSMENT DAT ASSESSMENT ID: NASA FMEA #:				nasa dat. Baselin Ne	
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 203 ORIFI	CCE (2)			
LEAD ANALYST:	M.J.	SAIIDI			
ASSESSMENT:					
	ALITY GHT	REDUNI	DANCY SCRI	EENS	CIL ITEM
HDW/	FUNC	A	В	С	
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* CIL RETENTIO	N RATION	ALE: (If	applicabl	.e) ADEQUATE	ſ 1
REMARKS:	WAS NOT	FOIIND FOR	TUTO THE	INADEQUATE	[]

ASSESSMEI ASSESSMEI NASA FME	NT	IE) :	ARF		-1			Ŋ	IASA I BASEI		[
SUBSYSTEM MDAC ID:				ARF 204 PRE		SENS	SOR, M	r7 &	MT8	(2)				
LEAD ANA	LYS	T	:	M.J	r. SAIII	ΟI								
ASSESSME	NT:	3												
	CR1				RI	EDUN	IDANCY	SCR	EENS			CIL		
	F		LIGH N/FU	NC	A		В		(2			,	
NASA IOA	[3	/3 /3]	[[]	[]	[]		[] *	t
COMPARE	[/]	[]	[]	[]		[]	
RECOMMEN	DA:	ΓI	ons:		(If dif	fere	ent fr	om N	IASA)					
	[/ ,]	[]	[]	[]		[DD/I] DELET	re)
* CIL RE		NT	ION	RAT	IONALE:	(I:	f appl	icak		ADEQU ADEQU	ATE ATE	[]	
IOA AGRE		W	ITH	THE	FMEA.									

ASSESSMI ASSESSMI NASA FMI	TNE	I	D:	AF	/19/8 RPCS- 5-1-0	205						NASA BASE	LIN	3 [] x]	
SUBSYSTE MDAC ID: ITEM:				20	RPCS 05 1.7 PS	SI	REG	IN	LE:	702 T	7 (2)				
LEAD ANA	LY	ST	:	M.	J. S	AII	DI									
ASSESSME	ENT	:														
	CR:		ICAL LIGH		•	R	EDU	NDA	NC	SCF	REEN	S		CII		
	I	HD	W/FU	NC		A			F	3		С			<i>J</i> . 1	
NASA IOA		3 3	/1R /1R]	[P]		[] []	IA] P]	[[P] P]		[] :	*
COMPARE	[/]	(]		[]	1]	[]		[]	
RECOMMEN	DA!	PIC	ONS:		(If d	lif	fere	ent	fr	om N	ASA))				
	[/]	(]	İ	[]	[]	(A	[.DD/ [] ELET	ΓE)
* CIL RE	TEI	T	ION 1	RAT	IONAI	Æ:	(Ii	f ar	pl	icab	•	ADEQU <i>I</i>		[]	
REMARKS: IOA AGRE	ES	W)	ITH :	THE	FMEA							-		•	•	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	ARPCS-20	6 9 - 1		NASA DATA BASELINE NEW	
	ARPCS 206 14.7 PS	REG INI	LET SOV ((2)	
LEAD ANALYST:	M.J. SA	IDI			
ASSESSMENT:					
CRITICAL FLIGH		REDUNDAL	NCY SCRE	ENS	CIL ITEM
HDW/FU		A	В	С	
NASA [3 /1R IOA [3 /2R		P] P]	[P] [P]	[P] [P]	[] *
COMPARE [/N] []	[]	[]	[]
RECOMMENDATIONS:	(If d	ifferent	from NA	SA)	
[\] [1	[]	[] (2	[] ADD/DELETE)
* CIL RETENTION	RATIONAL	E: (If a	pplicabl	e) ADEQUATE INADEQUATE	
REMARKS: DUE TO LIMITED DOST 51-L ANALYS WAS ATTEMPTED. ANALYSES ARE MAIMANAGER.	SIS) RECE	IVED, NO	BETWEEN DETAIL	NASA FMEA A	ND IOA

ASSESSM ASSESSM NASA FM	ENT	I		ARPO	/88 S-20 -013	-						ASA DA' BASELII N]	
SUBSYST: MDAC ID ITEM:				ARPO 207 14.7		RE	G INI	ET	sov	(2)					
LEAD AN	ALY	ST	:	M.J.	SAI	IDI										
ASSESSMI	ENT	:														
		F	ICAL LIGH W/FU	r		REDI	UNDAN	CY B	SCRE	EN	s c			IL TEN	M	
W) G)			•			_										
NASA IOA		2	/1R /1R]	[]	5]]	NA P	.]]]	P P]	[[x]	*
COMPARE	[N	/]	[]	[N]	[]	[N]	
RECOMMEN	IDA!	ΓΙ	ONS:	(I	f di	fe	rent	fro	m NA	SA))					
	[/]	ĺ]	ŗ]	[] (ADD,	/DF] ELF	ETE.
* CIL RE REMARKS: IOA AGRE						(1	If app	pli	cabl	•		EQUATE]	

ASSESSMENT DA ASSESSMENT ID NASA FMEA #:		-208		NASA DAT. BASELIN NE	
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 208 14.7	PSI REGUL	ATOR		
LEAD ANALYST:	M.J.	SAIIDI			
ASSESSMENT:					
	CALITY LIGHT	REDUND	ancy scri		CIL ITEM
	/FUNC	A	В	С	
NASA [3 IOA [2	/1R] /1R]	[P] [P]	[P] [P]	[P] [P]	[x] *
COMPARE [N	/]	[]	[]	[]	[и]
RECOMMENDATIO	ons: (If	differen	t from N	ASA)	
ι	/]	[]	[]	[] ([] [ADD/DELETE)
* CIL RETENT	ION RATION	ALE: (If	applicab	le) ADEQUATE INADEQUATE	
REMARKS: IOA AGREES W	ITH THE FM	EA.			

MDAC ID:	ARPCS-209 06-1-0140-1 ARPCS 209 14.7 PSI REGUI	LATOR (2)	NASA DATA BASELINE NEW	
ASSESSMENT:				
CRITICAL: FLIGHT HDW/FUR	r	B	ENS C	CIL ITEM
NASA [3 /1R IOA [3 /2R] [P]] [P]	[P] [P]	[P] [P]	[] *
COMPARE [/N] []	[]	[]	[]
RECOMMENDATIONS:	(If differen	t from NA	SA)	
[/] []	[]	[] (A	[] DD/DELETE)
* CIL RETENTION F	RATIONALE: (If	applicable	•	
REMARKS:			ADEQUATE INADEQUATE	[]
DUE TO LIMITED FM POST 51-L ANALYSI	IS) RECEIVED, N THE DISCREPANCY	O DETAIL A BETWEEN N	ASSESSMENT O NASA FMEA ANI	F THIS ITEM

ASSESSMEN ASSESSMEN NASA FME	T	ID:		ARI	19/8 PCS- -1-0	21		·2A								DATA LINE NEW	[
SUBSYSTEM MDAC ID:	4:			21	PCS 0 PSI	RE	EGU	LAT	OR	(2)									
LEAD ANA	LYS	T:		М.,	J. S	AI	II	Ι												
ASSESSME	NT:																			
•			CALI [GHT				RI	EDUN	IDA	NC	Y	SCR	EEN:	5				[L [E]	4	
		_	/FUN				A				В			С						
NASA IOA			/1R /1R			[P P]		[NA P]	[P P]		[X X]	*
COMPARE	[,	/]		[]		[N]	[]		[]	
RECOMMEN	DAT	'IO	NS:		(If	d :	if:	fere	ent	. 1	fro	om N	NASA)						
	[/]		[]		[]	[]	(2	DD.	/D	ELI	ETE)
* CIL RE	TE	VTI:	ON I	RAI	NOI	AL	E:	(I:	fa	pl	91 :	ical				JATE JATE	_]	
REMARKS:																				

IOA IS IN AGREEMENT WITH THE FMEA.

ASSESSMEI ASSESSMEI NASA FMEI	NT I	D:	2/19/ ARPCS 06-1-	5-21							ASA DA BASELI N]	
SUBSYSTEM MDAC ID:	M:		ARPCS 210 8 PS1		GUI	ATOR	(2)							
LEAD ANA	LYST	? :	M.J.	SAI	IDI	[
ASSESSMEN	YT:														
C	F	'ICAL 'LIGH' W/FUI	r		REI A	UNDAN	CY B	SCR	EEN:	s C			IL TE		
Mycy		•				_			_	_					
NASA IOA		/1R]	[]	P]	[NA P	A]]	P P]]]	X X]	*
COMPARE	ί	/	1	[]	C	N]	C]	[]	
RECOMMEND	ITAC	ons:	(If	di	ffe	rent	fro	om Ni	ASA))					
	[/]	[]	[]	[]] (A DD)) ELI	ETE)
* CIL RET								.cab	•		DEQUATI]	
							-								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	ARPCS-21	.1 1-1		NASA DATA: BASELINE NEW	
MDAC ID:	ARPCS 211 8 PSI RE	GULATOR	(2)		
LEAD ANALYST:	M.J. SAI	IDI			
ASSESSMENT:					
		REDUNDA	NCY SCREE	NS	CIL ITEM
FLIGH HDW/FU	NC	A	В	С	
NASA [2 /1R IOA [3 /1R] [P] P]	[P] [P]	[P] [P]	[X] * []
COMPARE [N /] []	[]	[]	[и]
RECOMMENDATIONS:	(If d	ifferent	from NAS	SA)	
[/] [1	[]	[] (A)	[] DD/DELETE)
* CIL RETENTION	RATIONALI	E: (If a	applicable	adequate	[]
REMARKS: IOA CONCURS WITH THIS FAILURE WIL	THE FME	A. HOWE	EVER, UNDI	ER NOMINAL C	IRCUMSTANCES

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-212 06-1-0161-1	NASA DATA: BASELINE [] NEW [X]							
	ARPCS 212 N2 TANKS (4)								
LEAD ANALYST:	M.J. SAIIDI								
ASSESSMENT:									
	ITY REDUNDAN	CY SCREENS	CIL						
FLIGH HDW/FU	NC A	ВС	ITEM						
NASA [3 /1R IOA [2 /1R] [P] [P] [P] P] [F]	[x] *						
COMPARE [N /] [] [) [N]	[N]						
RECOMMENDATIONS:	(If different	from NASA)							
1] [] [[] DD/DELETE)						
* CIL RETENTION	RATIONALE: (If ap	-	_						
		ADEQUATE INADEQUATE	[]						
POST 510L ANALYS:	IS) RECEIVED, NO THE DISCREPANCY B	CRITICALITY SUMMARY DETAIL ASSESSMENT OF ETWEEN NASA FMEA AND NTIL RESOLVED WITH T	F THIS ITEM						

ASSESSMENT ASSESSMENT NASA FMEA	r II	D:	ARPO	S-21	12A	-2							DATA LINE NEW	[]	
SUBSYSTEM: MDAC ID: ITEM:			ARPO 212 N2 T		S ((4)											
LEAD ANALY	YST	:	M.J.	SA	II)I											
ASSESSMENT	r:																
CI		ICAL:			RI	EDUN	IDAN	CY	SCR	REENS	3			CI		ĸ	
	_	LIGH W/FU	_		A			В			С					-	
NASA IOA	[1 [2	/1 /1R]	[P]	[P]]	F]		[X X]	*
COMPARE	[И	/N]	[N]	(N]	[N]		[]	
RECOMMEND	ATI	ons:	(:	If d	if:	fere	ent	fr	om N	NASA))						
	[/]	[]	(]	[)	(2		/D]		ETE)
* CIL RET	ENT	NOI	RATI(ONAL	E:	(I :	f ar	pl	icab				UATE UATE]	
REMARKS: IOA AGREE	s w	/ITH	THE	FMEA													

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	ARPCS-2	13		NASA DAT BASELIN NE	
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 213 TEMPERA	TURE SEN	SOR (4)		
LEAD ANALYST:	M.J. SA	IIDI			
ASSESSMENT:					
FLIG	LITY HT				CIL ITEM
HDW/F	UNC	A	В	С	
NASA [3 /2 IOA [3 /3	R] [P]	[P] []	[P] []	[] *
COMPARE [/N] [N]	[и]	[N]	[]
RECOMMENDATIONS	: (If d:	ifferent	from N	ASA)	
(/] []	[]		[] ADD/DELETE)
* CIL RETENTION	RATIONALI	E: (If a	pplicab		
REMARKS: DUE TO LIMITED	FMEA DATA	(ONLY A	CRITTC	ADEQUATE INADEQUATE	[]
POST 51-L ANALY WAS ATTEMPTED. ANALYSES ARE MA	SIS) RECEI THE DISCE	(VED, NO REPANCY 1	DETAIL BETWEEN	ASSESSMENT (OF THIS ITEM

NASA DATA:

ASSESSMENT DATE: 2/19/88 ASSESSMENT ID: ARPCS-214 NASA FMEA #: 06-1-0191-1 SUBSYSTEM: ARPCS													ASEL	ATA: .INE NEW	[
SUBSYSTI MDAC ID: ITEM:				214	s S & :	FI	rti1	NGS	-	TP2	:7 &	TF	28				
LEAD ANA			:	M.J.	SAI	ID:	I										
	CRI	ITI FI	LIGH	ITY T NC			DUN	DANC	ey B	SCF	REENS	c			CIL		
NASA IOA	[2	/1R /1	:]	[P]	[P]	[[P]		[X]	*
COMPARE	[N	/N	1	[N]	[N]	[N]		[]	
RECOMME	NDA'	ri(ons:	(3	f di	ff	ere	nt i	fr	om 1	NASA)					
	[/	3	[]	[]	[]	(AI	[DD/D	ELE	TE)
* CIL R		NT:	ION	RATIO	ONALE	:	(If	apı	pl:	ical	ole) I	Al IAN	DEQUA	ATE ATE	[]	
REMARKS IOA CON VALVES. STRUCTU AREA. DUE TO POST 51 WAS ATT ANALYSE MANAGER	RAL SEE LIM OL EMP	HI D A IT AN	S LI AMAG LSO ED I ALYS	EAK CASE DUI ARPCASES IS) I	AN NO E TO S-196 DATA RECEI	OV OV (O VE	BE ERP ND NLY D,	STO: RES: 329 A NO Y B	PP SU CR DE ET	ED, RIZ ITI TAI WEE	AND ATIO CALI L AS N NA	M N (TY SE: SA	AY RI OF TI SUMI SSMEI FME	ESUL: HE CO MARY NT OI A ANI	I IN OMPA LIS F TH D IO	I ARTM ST F HIS OA	ENT ROM ITEM

ASSESSME ASSESSME NASA FME	ENT	ID:	2/19/ ARPCS					N	ASA DATA BASELINI NEV] 3	;] ;]
SUBSYSTE MDAC ID:			ARPCS 215 GSE C		DIS	CONNE	CT (1)			
LEAD ANA	LYS'	T:	M.J.	SAII	DI						
ASSESSME	NT:										
		TICAL FLIGH		R	EDUN	DANCY	SCRE	ENS		CII	_
		DW/FU		A		В		С			1A*A
NASA IOA	[:	3 /3]	[]	[[]	[]]] *
COMPARE	[]	N /N]	[]	[]	[]	[]
RECOMMEN	DAT	ions:	(If	dif	fere	nt fro	om NA	SA)			
	[/]	[]	[]	[[.DD/D] ELETE)
* CIL RE	TENT	rion i	RATION	ALE:	(If	appli	icable	A	DEQUATE DEQUATE	[]
IOA WITH	DRAV	VS TH	IS FAI	LURE	MOD	E - OU	JTSIDI	E MI	SSION PH	ASE.	

ASSESSMENT DAY ASSESSMENT ID NASA FMEA #:	;	AR	19/88 PCS-2 -1-01	16	-3						SA DA' ASELII Ni	NE]	
SUBSYSTEM: MDAC ID: ITEM:		AR 21 GS		CK	DI	SCON	1EC	T ((1)						
LEAD ANALYST:		M.	J. SA	III	DI										
ASSESSMENT:															
CRITI				R	EDU	NDAN	CY	SCI	REENS	;			CII		
HDW	IGH /FU			A			В			С					
NASA [2 IOA [1				P]	[P]	[P]		[]	[]	*
COMPARE [N	/N]		[N]	[N)	ſ	N]		[]	
RECOMMENDATIO	ns:	}	(If	lif	fer	rent	fr	om 1	NASA))					
ָ נ	/	3		[]	[3	[]	(A	[.DD/I		ETE)
* CIL RETENTI	ON	RAT	TIONA	LE:	(1	[f ap	pl	ica			DEQUAT DEQUAT		_]	
REMARKS: AFTER FURTHER	R	EVII	EW, I	OA	AGI	REES	WI	TH	THE :	FMI	EA.				

ASSESSMI ASSESSMI NASA FMI	ent	I		•	19/88 PCS-217				N		DATA ELINE NEW] x]	
SUBSYSTI MDAC ID: ITEM:				21	PCS 7 E CAP (1)								
LEAD ANA	LY	ST	:	М.,	J. SAII	DI								
ASSESSME	ENT	:												
	CR		ICAL LIGH		R	EDU	NDANCY	SCF	REENS			CII		
]	HD'	W/FU	NC	A		В		С			111	ari	
NASA IOA	[3	/3]	[]	[]	[]		[]	*
COMPARE	ĺ	N	/N]	[]	[]	[]		[]	
RECOMMEN	DA:	ri(ons:		(If dif:	fer	ent fr	om N	IASA)					
	1		/]	[]	[]	[]	(A	[DD/I] DELE	TE)
* CIL RE	TEI	VT:	ION :	RAT	IONALE:	(I:	f appl:	icab	A	DEQU DEQU	ATE ATE	[]	
IOA WITH	DRA	WS	TH:	IS E	AILURE	MOI	DE - OU	JTSI	DE MI	ssio	N PH	ASE.		

ASSESSMEN ASSESSMEN NASA FME	T	ID		2/19/8 ARPCS-						ASA DATA: BASELINE NEW	[ζ :]
SUBSYSTEM MDAC ID:	M:			ARPCS 218 GSE CA	.P (1								
LEAD ANA	LYS	T:		M.J. S	AIIC	Ι							
ASSESSME	NT:	:											
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITE													
	F			NC	A	В		С					
NASA IOA	[1	/1]	[]	[]	[]	[:	X] *]
COMPARE	[N	/N	1	[]	[]	[]	[]	N]
RECOMMEN	DA!	ric	ons:	(If	dif	ferent	t fr	om NAS	SA)				
	[/]	[]	(]	[] (A	[DD/	DE] :LETE)
* CIL RE	TE	NT:	ION	RATION	ALE:	(If	appl	icable	A	DEQUATE	[]
REMARKS: IOA AGRE THE RELA	ES.	W: D:	ITHD PD A	RAWS T	HIS A	ANALY	SIS. 0166	THE -4 (A)	ITE RPCS	EM IS ANA S-2161X).	LYZ	EC) WITH

ASSESSM ASSESSM NASA FM	ENT	ľ	D:	,	.9/88 PCS-219					NASA D BASEL		x]	
SUBSYST MDAC ID ITEM:				ARF 219 GSE		R (1)-10	MICI	RONS				
LEAD AN	ALY	ST	':	M.J	. SAII	DI							
ASSESSMI	ENT	:											
	CR		ICAI LIGH	ITY	R	EDU	NDANCY	SCI	REENS			IL TEM	
		HD	W/FU	NC	A		В			С	-	LEM	
NASA IOA		3	/3]]]	[]	[]	[]	*
COMPARE	(N	/N]	[]	[]	[]	[)	
RECOMMEN	IDA'	TI	ons:	(If dif	fere	ent fro	om N	IASA)				
	[/]	[]]	[]	[(ADD/] 'DEL	ETE
* CIL RE	ETE:	NT:	ION	RATI	ONALE:	(I1	f appli	icab	-				
REMARKS:										ADEQUAT ADEQUAT]	
THIS ITE	EM I	VAS IO	S RE	CLAS: THDR	SIFIED AWS ITS	ANI S RE	MOVEI	TO ANA	ANOT	THER SU FROM	BSYST	EM.	s.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-220					SA DATA ASELINE NEW]
MDAC ID:	ARPCS 220 GSE FILTER	R (1)-	10 M	ICRON	s			
LEAD ANALYST:	M.J. SAIII	OI						
ASSESSMENT:								
CRITICAL		EDUNDA	NCY	SCREE	NS		CIL	r
FLIGH HDW/FU			В		С		TIEF	1
NASA [/ IOA [3 /3] []	[]	[[]]] *
COMPARE [N /N] [)	[]	[1	[]
RECOMMENDATIONS:	(If dif	ferent	fro	m NAS	A)			
[/] []	[]	[] (A	[DD/DI] ELETE)
* CIL RETENTION	RATIONALE:	(If a	ppli	cable	Αľ	DEQUATE DEQUATE	[]
REMARKS: THIS ITEM WAS RE THEREFORE IOA WI	CLASSIFIED THDRAWS IT:	AND M S RELA	OVED	TO A	NOTI SIS	IER SUBS FROM TH	YSTEN E ARI	M. PCS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:				NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 221 PRESSUR	E SENSOF	₹ (2)		
LEAD ANALYST:	M.J. SA	IIDI			
ASSESSMENT:					
CRITICAI FLIGH	CIL ITEM				
		A	В	С	TIEM
NASA [3 /2R IOA [3 /3] [[] *			
COMPARE [/N] [и ј	[N]	[N]	[]
RECOMMENDATIONS:	(If d	ifferent	from NAS	SA)	
[/] [1	[]		[] DD/DELETE)
* CIL RETENTION	RATIONAL	E: (If a	applicable	ADEQUATE INADEQUATE	[]
REMARKS: DUE TO LIMITED F POST 51-L ANALYS WAS ATTEMPTED. ANALYSES ARE MAR MANAGER.	IS) RECE THE DISC	IVED, NO REPANCY	DETAIL A BETWEEN N	LITY SUMMARY ASSESSMENT OF NASA FMEA AN	LIST FROM F THIS ITEM D IOA

ASSESSME	SSESSMENT DATE: 2/19/88 SSESSMENT ID: ARPCS-222 ASA FMEA #: 06-1-0230-2 UBSYSTEM: ARPCS													ASELIN NE	E			
SUBSYSTE MDAC ID:	M:			22		יוכ	М	VAL	VE	(2)	l							
LEAD ANA	LYS	T	:	М.,	J. S	A)	[II	ΟI										
ASSESSME	NT:	:																
	CR:		ICALI LIGHT				RI	EDUN	IDAN	CY	SCR	EENS	3			CIL		
	I		W/FUI				A			В			С					
NASA IOA	[3	/2R /2R]		[P P]]	P P]]	P P]		[]	*
COMPARE	[/]		[]	[]	[]		[]	
RECOMMEN	IDA!	rI(ons:		(If	d	if:	fere	ent	fr	om N	IASA)					
•	[/	1		[]	[]	[]	(A	[DD/D)ELJ	ETE)
* CIL RE	ETE:	NT	ION :	RAT	'ION	AL	E:	(Ii	f ap	pl	icab			DEQUATI		[]	
REMARKS:	EN .	AG	REEM	ENT	WI	TH	T	HE I	FMEA	١.								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	ARPCS-22		NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 223 ISOLATION	N VALVE (2)		
LEAD ANALYST:	M.J. SAI	IDI		
ASSESSMENT:				
CRITICAL: FLIGH	ITY I	REDUNDANCY	SCREENS	CIL ITEM
	NC I	A B	С	TIEM
NASA [3 /1R IOA [3 /2R] []	P] [P] [P]] [P]	[] *
COMPARE [/N] [J [] []	[]
RECOMMENDATIONS:	(If dif	fferent fro	m NASA)	
[/] [] [] [] ·	[] DD/DELETE)
* CIL RETENTION I	RATIONALE:	(If appli		
REMARKS: DUE TO LIMITED FM POST 51-L ANALYSI WAS ATTEMPTED. TANALYSES ARE MARK	(S) RECEIV THE DISCRE	YED, NO DET. PANCY BETW	AIL ASSESSMENT OF EEN NASA FMEA AND	LIST FROM THIS ITEM

ASSESSMEN ASSESSMEN NASA FMEA	II TV		06-1-0230-3 ARPCS										DATA: LINE NEW	[]	
SUBSYSTEM MDAC ID:	M:		223	CS LATIC)N	VALV	/E ((2)	ı								
LEAD ANA	LYST	:	M.J	. SAI	ΊD	I											
ASSESSMEI	T:																
(ICAL:			RE	DUNE	ANC	CY.	sc	CREENS	3			CI	L		
			В			С			11	LIVI							
NASA IOA	[3 [3	/1R /2R]]	P P]	[F P]	[P P]		[X] *	•
COMPARE	[/N]	[]	[N]	[]		[N]	
RECOMMEN	DATI	ons:	(If di	ff	erer	nt 1	fro	om.	NASA)						
	[3	/2R]	[P]	[F]	[P]	(AI	[DD/	'DE] LEI	TE)
* CIL RE	TENT:	ION 1	RATI	ONALI	E:	(If	apı	91 i	ica				ATE ATE	[x]	
IOA AGRE	ES W	ITH S	THE	FMEA	EX	PLAN	TAI	[0]	١,	HOWE	VEI	R, D	ISAGE	Œ	ES	ОИ	THE

ASSIGNMENT OF CRITICALITY.

ASSESSME ASSESSME NASA FME	NT NT A	D. I:	ATE: D:	2/19 ARPC 06-1	/88 5-22 -023	24 30-	-4						ASA DATA BASELINE NEW	[
SUBSYSTE MDAC ID:				ARPC 224 ISOL		NC	VAL	VE	(2)						
LEAD ANA	LY	ST	:	M.J.	SA	[II	DI									
ASSESSMENT:																
CRITICALITY REDUNDANCY SCREENS														IL Pen	4	
	•	IID	n/ FO						В			C				
NASA IOA	[3 2	/1R /1R]]	P P]		P]	[P P]]	x] *]
COMPARE	[N	/]	[]	1]	[]	ĺ	N]
RECOMMEN	'DA'	ri(ons:	(I:	f d	ifi	ferer	nt	fr	om N	IASA)					
	[/]	[]	١]	(/DI] ELETE)
* CIL RE	TE	NT:	ION 1	RATIO	NALI	Ξ:	(If	aŗ	pl	icab	•		DEQUATE			j
REMARKS: DUE TO L POST 51- WAS ATTE	L	AN.	ALYS:	IS) R	ECE:	[VI	ED, N	O	DE'	TAII	CALIT L ASS	Y Es	SUMMARY SSMENT OF	L: F :	[H]	IS ITEM

ANALYSES ARE MARKED AS AN ISSUE UNTIL RESOLVED WITH THE SUBSYSTEM

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	ARPCS-225			1	NASA DATA BASELINI NEV		
	ARPCS 225 POSITION	INDICAT	PION, D	S8&D8	S9 (2)		
LEAD ANALYST:	M.J. SAII	DI					
ASSESSMENT:							
CRITICAI FLIGH		EDUNDAN	CY SCR	EENS		CII	_
HDW/FU		•	В	C	2		
NASA [3 /3 IOA [3 /3] [] []]]	[] *]
COMPARE [/] [] []	C	1	[]
RECOMMENDATIONS:	(If dif	ferent	from N	ASA)			
[/] [·] [1	[[] ELETE)
* CIL RETENTION REMARKS: IOA AGREES WITH		(If ap	plicab	A	DEQUATE DEQUATE]

ASSESSME ASSESSME NASA FME	NT	ID	:	ARPO						ASA 1 BASE:	LINE]	
SUBSYSTE MDAC ID: ITEM:	M:			ARPO 226 DIOI	CS DE, DS	8&DS	9 (4)							
LEAD ANA	LYS	T:		M.J	. SAII	DI								
ASSESSME	NT:	}												
	CRI		CAI	LITY	R	DANCY	SCR	EENS			CII			
	F		i/FU		A		В		C					
NASA IOA	[3	/3 /3]	[]]]	[]		[]	*
COMPARE	[/]	[]	[]	[3		[]	
RECOMMEN	DA'	ric)NS	; (If dif	fere	ent fr	om N	IASA)					
	[/].	[]	[]	[]	(A] I\DD.) DELE	TE)
* CIL RE						(If	appl	icab	A	ADEQU ADEQU]	
IOA AGRE	ES	W]	LTH	THE	FMEA.									

NASA DATA:

ASSESSMEN	SESSMENT DATE: 2/19/88 SESSMENT ID: ARPCS-227 SA FMEA #: 05-6Y-203000-1									ASEL	ATA: INE NEW]					
SUBSYSTEM MDAC ID:				ARI 227 RES	7	OR	١,	DS8	&S9,	. 5 .	1K	(4)						
LEAD ANAI	LYS	r:		M.	J. S	AI	ID	I										
ASSESSME	NT:																	
(CRI'		CAL IGH				RE	EDUN	DANG	CY	SCI	REENS	3			CIL		
			_	NC			A			В			С					
NASA IOA	[3 3	/1R /3]]	P]	[P]]	P]		[]	*
COMPARE	[/N				N		[N]	[N]		[]	
RECOMMEN	DAT	'IO	NS:		(If	đ	Ĺf	fere	ent	fr	om 1	NASA)					
	[/]		[]	[]	[]	(A)	[DD/D		ETE)
* CIL RE	TEN	ΤI	:ON	RAT	'ION	AL	E:	(I 1	f ap	pl	ica		A		ATE ATE]	
REMARKS: DUE TO I POST 51- WAS ATTE ANALYSES MANAGER. THIS FME FAILURE	LIMI -L A EMPI 5 AF EA S	ANA PEI RE SHO	ALYS O. MAI OULI	THE RKEI	RE DI AS	SC:	IV RE N	ED, PANG ISS	NO CY E UE U	ET NT	WEE IL	N NA RESO	SA LV	FME ED W	A AN	D IC	A SUI	BSYSTEM

ASSESSM ASSESSM NASA FM SUBSYST MDAC ID ITEM:	EM:	; D #:		AF 22	RPCS								K (.	4 \		asa i Basei		[]	
LEAD AN	ALY	ST	:						045	,	,	• 4.	., (.	~,						
ASSESSMI																				
		F	ICAI LIGH W/FU	T			R: A		INDA	NC	CY B	S	CREI	en:	s C			CIL ITE		
NASA IOA]	3 3	/1R /3]		[P]		[P]]	P]		[]	*
COMPARE	[/N]		[N]	ļ	[N]		[N]		[]	
RECOMMEN	IDA'	ΓI	ons:		(If	đi	Ĺfi	fer	ent	f	ro	o m	NAS	SA)	1					
	[/]		[]		•]		[]	(AD	[D/DE		TE)
* CIL RE		T	ION	RAT	IONA	LE	::	(I	f ap	q	li	.ca			AC	EQUA'	TE TE	[]	
DUE TO I POST 51- WAS ATTE ANALYSES MANAGER.	IMI L A MPI	E	LLIS	THE	DIS	CR	VE EF	D, ANG	NO Cy f	D E	ET TW	'AI EE	CAL L A	II SS	Y Es	SUMM SMEN'	ARY I OF	LIST THI	S	ITEM
THIS FME FAILURE	A S MOI	HC ES	ULD	BE	BRO	KE	N	INT	TO A	P	PR	OP	RIA	TE	I	TEMS	AND	THE	IR	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-22 05-6Y-20	28 33000 - 1		NASA DATA: BASELINE NEW					
MDAC ID:	ARPCS 228 SWITCH-S	S10&S11,	L VLV (2)						
LEAD ANALYST:	M.J. SA	IDI							
ASSESSMENT:									
CRITICAL FLIGH	ITY	REDUNDAN	ICY SCREI	ens	CIL	<u> </u>			
	NC	A	В	С		-			
NASA [3 /1R IOA [3 /2R] [P] P]	[P] [P]	[P] [P]					
COMPARE [/N] []	[]	[]	[]			
RECOMMENDATIONS:	(If d	ifferent	from NAS	SA)					
(/] [1	[]	[] (A] [D/DD] ELETE)			
* CIL RETENTION	RATIONAL	E: (If a	pplicable	e) ADEQUATE INADEQUATE	[]			
POST 51-L ANALYS	REMARKS: DUE TO LIMITED FMEA DATA (ONLY A CRITICALITY SUMMARY LIST FROM POST 51-L ANALYSIS) RECEIVED, NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED. THE DISCREPANCY BETWEEN NASA FMEA AND IOA ANALYSES ARE MARKED AS AN ISSUE UNTIL RESOLVED WITH THE SUBSYSTEM								

ASSESSME ASSESSME NASA FME	NT NT A # :	DATE: ID: :	2/19/ ARPCS 05-6Y	ARPCS-228A BASELI 05-6Y-203000-2							ASA DATA BASELINE NEW	-]	
SUBSYSTE MDAC ID:	M:		ARPCS 228 SWITC						OL V	'L'	V (2)			
LEAD ANA	LYST	r:	M.J.	SAII	DI									
ASSESSME	NT:													
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM														
	HI	OW/FU	NC	A B C										
NASA IOA	[3	3 /1R 3 /2R]	[P	,]	[P P]	[P P]	[]	*
COMPARE	[/N]	[1	[]	ſ		1	[]	
RECOMMEN	DATI	ONS:	(If	dif	feren	t f	rc	om N.	ASA)					
	[/]	[]	[]	[[DD/D] ELE	TE)
* CIL RE	TENT	ION E	NOITAS	ALE:	(If	app	li	.cab	le)					
REMARKS:	ADEQUATE [] INADEQUATE []													
DUE TO L. POST 51-: WAS ATTE	DUE TO LIMITED FMEA DATA (ONLY A CRITICALITY SUMMARY LIST FROM POST 51-L ANALYSIS) RECEIVED, NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED. THE DISCREPANCY BETWEEN NASA FMEA AND IOA													

ANALYSES ARE MARKED AS AN ISSUE UNTIL RESOLVED WITH THE SUBSYSTEM

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-22 05-6Y-20	9 3000 - 1	NASA DATA: BASELINE NEW					
	ARPCS 229 SWITCH-S	:10&S11, 1	MMU ISOL	VLV (2)				
LEAD ANALYST:	M.J. SAI	IDI						
ASSESSMENT:								
CRITICAL FLIGH		REDUNDAN	CY SCREEN	ıs	CIL ITEM			
	NC	A	В	С				
NASA [3 /1R IOA [3 /2R] [P] [P] [P] P]		[] *			
COMPARE [/N] [] [] ([]	[]			
RECOMMENDATIONS:	(If d	ifferent	from NASA	A)				
[/] [] []	[] (A)	[] DD/DELETE)			
* CIL RETENTION	RATIONAL	E: (If ap) ADEQUATE INADEQUATE				
REMARKS: DUE TO LIMITED FMEA DATA (ONLY A CRITICALITY SUMMARY LIST FROM POST 51-L ANALYSIS) RECEIVED, NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED. THE DISCREPANCY BETWEEN NASA FMEA AND IOA ANALYSES ARE MARKED AS AN ISSUE UNTIL RESOLVED WITH THE SUBSYSTEM								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	ARPCS-229	AASELINE 8000-2	N	ASA DATA NEW	: [x]			
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 229 SWITCH-S1	.0&S11, MM	u ISOL VL	V (2)					
LEAD ANALYST:	M.J. SAII	DI							
ASSESSMENT:									
CRITICAL FLIGH	ITY R	EDUNDANCY	SCREENS		CIL	_			
HDW/FU		В	С		ITEM				
NASA [3 /1R IOA [3 /2R] [P	P [P] [P]	[] *]			
COMPARE [/N] [] [] []	[]			
RECOMMENDATIONS:	(If dif	ferent fro	om NASA)						
[/	J (] [] [] (AI	[DD/DE] LETE)			
* CIL RETENTION I	RATIONALE:	(If appl:			_	_			
DEWI DVC -				DEQUATE DEQUATE	[]			
REMARKS: DUE TO LIMITED FMEA DATA (ONLY A CRITICALITY SUMMARY LIST FROM POST 51-L ANALYSIS) RECEIVED, NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED. THE DISCREPANCY BETWEEN NASA FMEA AND IOA ANALYSES ARE MARKED AS AN ISSUE UNTIL RESOLVED WITH THE SUBSYSTEM MANAGER.									

ASSESSMEN ASSESSMEN NASA FMEA	T DA	ATE: O:	2/: ARI 05:	19/8 PCS- -6Y-	8 23 20	0 02	-1						SA DATA ASELINE NEW	E	[[X			
SUBSYSTEM MDAC ID: ITEM:	[:		AR:	PCS 0						369&(CB74	-M	MU ISOI	լ ւ	VLV	(2)	
LEAD ANAI	YST	:	М.	J. S	Al	II	I											
ASSESSMEN	IT:																	
c		ICAL LIGH				RE	EDUND.	ANG	CY	SCR	EENS	5			CIL ITEM	ſ		
		W/FU				A			В			С						
NASA IOA	[3 [3	/1R /2R]		[P P]	[P P]]	P P]		[]	*	
COMPARE	[/N]		(]	[]	[1		[]		
RECOMMENI	DATI	ons:		(If	d :	ifi	feren	t:	fr	om N	ASA))	ζ,					
	[/]		[]	[]	[] (2		[D/DI		TE)	
* CIL RE	rent	ION	RAT	CION	AL	E:	(If	ap;	pl:	icab	le) II	IA IAN	DEQUATE DEQUATE		[]		
REMARKS: DUE TO L POST 51- WAS ATTE ANALYSES MANAGER.	L AN	ALYS	IS)	RE	CE	IV RE	ED, N PANCY	IO MB	DE' ET	TAII WEEN	ALI' AS	TY SES SA	SUMMAR SSMENT FMEA A	Y OF ND	LIST	r f Is A	TTE	M.

ASSESSM ASSESSM NASA FM	ENT ENT EA #	DATE ID:	: 2/: ARI 05-	19/88 PCS-2: -6Y-20	31	2-2							DATA ELINE NEW	[
SUBSYST MDAC ID ITEM:	EM:		231	PCS 1							4 –]	MM U	ISOL	ATA	(2)
LEAD AN	ALYS	T:	M.J	J. SA	III	ΣI										
ASSESSM	ENT:															
		TICA FLIG	HT		RI	EDUN	IDAN	CY	sci	REEN	s			CIL		
	H	DW/F	JNC		A			В			С					
NASA IOA	[[3 /21 3 /3	R]	[[P]	[P]	[P]		[]	*
COMPARE	[/N	1	[N]	[N]	[N]		[]	
RECOMME	NDAT	IONS	: ([If di	ff	ere	nt i	fro	om 1	NASA)					
	[/]	[]	[J [`]	[]	(AD	[DD/D	_	ETE)
* CIL RI		TION	RATI	ONALE	:	(If	app)li	.cak	·			UATE UATE]	
DUE TO 1 POST 51-	REMARKS: DUE TO LIMITED FMEA DATA (ONLY A CRITICALITY SUMMARY LIST FROM POST 51-L ANALYSIS) RECEIVED, NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED. THE DISCREPANCY BETWEEN NASA FMEA AND IOA															

ANALYSES ARE MARKED AS AN ISSUE UNTIL RESOLVED WITH THE SUBSYSTEM

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-232 06-1-0231	2 1-1		ASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 232 LINES & I	FITTINGS			
LEAD ANALYST:	M.J. SAI	IDI			
ASSESSMENT:					
CRITICAL FLIGH		REDUNDANC	Y SCREENS		CIL ITEM
	NC 1	A	в с		
NASA [3 /1R IOA [2 /1R	[]	P] [P] [NA] [P P] [P]	[x] *
COMPARE [N /] [] [и][]	[N]
RECOMMENDATIONS:	(If di	fferent f	rom NASA)		
[/] [] [] [] (AI	[] DD/DELETE)
* CIL RETENTION	RATIONALE	: (If app	A	DEQUATE	
REMARKS: DUE TO LIMITED F POST 51-L ANALYS WAS ATTEMPTED. ANALYSES ARE MAF	IS) RECEITHE DISCR	VED, NO I EPANCY BE	CRITICALITY DETAIL ASSE ETWEEN NASA	SUMMARY SSMENT OF	LIST FROM F THIS ITEM D IOA

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-233 06-1-0165-	-3	NASA DATA: BASELINE [] NEW [X]						
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 233 N2 SYSTEM	SUPPLY ISOL.	. VLV-LV3&LV4	(2)					
LEAD ANALYST:	M.J. SAIII)I							
ASSESSMENT:									
CRITICALI FLIGHT HDW/FUN	ני	EDUNDANCY SCR B	REENS C	CIL ITEM					
NASA [3 /1R IOA [3 /3] [P]] []	[P] []	[] *					
COMPARE [/N] [N] [N]	[N]	[]					
RECOMMENDATIONS:	(If diff	erent from N	IASA)						
[/] [] []	[]	[] ADD/DELETE)					
* CIL RETENTION F			ADEQUATE INADEQUATE	[]					

DUE TO LIMITED FMEA DATA (ONLY A CRITICALITY SUMMARY LIST FROM POST 51-L ANALYSIS) RECEIVED, NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED. THE DISCREPANCY BETWEEN NASA FMEA AND IOA ANALYSES ARE MARKED AS AN ISSUE UNTIL RESOLVED WITH THE SUBSYSTEM MANAGER.

NASA DATA:

ASSESSMENT	DATE: 2/19/88 ID: ARPCS-234 #: 06-1-0165-1				NASA DATA: BASELINE [] NEW [X]							
SUBSYSTEM: MDAC ID: ITEM:		ARPCS 234 N2 SYSTI	ЕМ	SUPPL	Y I	SOL	. VI	V-I	.V3&L7	74 (2)	
LEAD ANALYS	ST:	M.J. SA	IID	Ι								
ASSESSMENT:												
CRI	TICAL		RE	DUNDA	NCY	sc.	REEN	S			CIL ITEM	
H	IDW/FU		A		F	3		С				
NASA [IOA [3 /1R 2 /1R] [P P]	[I	?]	() ()	P P]		[x) *)
COMPARE [N /] []	(]	[)		[N]
RECOMMENDAT	TIONS:	(If d	ifí	ferent	fı	com	NASA	۲)				
ſ	/] []	[]	(•]	(AI	[DD/DE] LETE)
* CIL RETER	NTION	RATIONAL	E:	(If a	pp:	lica		A	DEQUA'		-]
REMARKS: DUE TO LIMI POST 51-L	ITED F ANALYS	MEA DATA IS) RECE	(VI	ONLY A	CI DI	RITI ETAI	CAL	TY SSE:	SUMM SSMEN	ARY T O	LIST F THI	FROM S ITEM

WAS ATTEMPTED. THE DISCREPANCY BETWEEN NASA FMEA AND IOA

ANALYSES ARE MARKED AS AN ISSUE UNTIL RESOLVED WITH THE SUBSYSTEM

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-235 06-1-0165-2	nasa dati Baselini Net						
	235	PLY ISOL. VLV-LV3&LV4	(2)					
LEAD ANALYST:	M.J. SAIIDI							
ASSESSMENT:								
CRITICAL FLIGH		DANCY SCREENS	CIL					
	NC A	В С	ITEM					
NASA [3 /1R IOA [2 /1R] [P]] [P]	[P] [P] [P] [P]	[] * [x]					
COMPARE [N /] []	[] []	[N]					
RECOMMENDATIONS:	(If differen	nt from NASA)						
[/] []		[] ADD/DELETE)					
* CIL RETENTION	RATIONALE: (If	•						
REMARKS: DUE TO LIMITED F	MEA DATA (ONLY	ADEQUATE INADEQUATE A CRITICALITY SUMMARY	-					
WAS ATTEMPTED.	TON TON							
ANALISES ARE MAR	KEU AS AN ISSUE	E UNTIL RESOLVED WITH	THE SUBSYSTEM					

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	ARPCS-236	-3	NASA DATA: BASELINE [] NEW [X]								
	ARPCS 236 SINGLE PH	36 INGLE PHASE MOTOR/N2-SYSTEM ISOL. VLV									
LEAD ANALYST: M.J. SAIIDI											
ASSESSMENT:											
CRITICAL		EDUNDANCY	SCREENS		CIL ITEM						
FLIGHT HDW/FUR		В	С		ITEM						
NASA [3 /1R IOA [3 /3] [P] [P] [P]	[] *						
COMPARE [/N] [N] [N	ן ו	1	[]						
RECOMMENDATIONS:	(If dif	ferent fro	om NASA)								
[/] [) [] [] (AD	[] DD/DELETE)						
* CIL RETENTION H	RATIONALE:	(If appl:	ΑI	DEQUATE	[]						
REMARKS: IOA STUDIED THE I			PARATELY I	FROM THE	VALVE, AND						

VALVE.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-23 06-1-016	7 5 - 1	NASA DATA: BASELINE [] NEW [X]								
MDAC ID:	ARPCS 237 SINGLE P										
LEAD ANALYST:	M.J. SAI	IDI									
ASSESSMENT:											
FLIGH	r		NCY SCREENS	c c	CIL ITEM						
HDW/FU	NC	A	В	C							
NASA [3 /1R IOA [2 /1R] [P] P]	[P] [[P] [P] P]	[] * [X]						
COMPARE [N /] [1	[] []	[N]						
RECOMMENDATIONS:	(If di	fferent	from NASA)	ı							
[/] []	[] [] (Al	[] DD/DELETE)						
* CIL RETENTION	RATIONALE	: (If a		ADEQUATE NADEQUATE	[]						
REMARKS: IOA STUDIED THE THIS COMPARISON VALVE.			SEPARATELY	FROM THE	VALVE, AND						

	ARPCS-23	2/19/88 NASA DATA: ARPCS-238 BASELINE 05-6VA-2015-1 NEW									
MOLG TD:	ARPCS 238 POSITION										
LEAD ANALYST:	M.J. SA	IIDI									
ASSESSMENT:											
CRITICAL FLIGH		REDUND	ANCY SCRE	ENS	CIL ITEN						
HDW/FU		A	В	С							
NASA [3 /3 IOA [3 /3] [NA]	[AN] []	[NA] []	[] *]					
COMPARE [/] [и]	[N]	[N]	[]					
RECOMMENDATIONS:	(If d	ifferen	nt from NA	.SA)							
[/] [1	[]	[] (1	[ADD/D] ELETE)					
* CIL RETENTION	RATIONAL	Æ: (If	applicabl	.e) ADEQUATE INADEQUATE]					
REMARKS: IOA AGREES WITH APPROPRIATE LOCA	THE FMEA	A, BUT S	STUDIED TH ARPCS-109	HESE ITEMS A	T THE	IR					

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	ARPCS-2			NASA DATA: BASELINE [] NEW [X]						
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 239 DIODE,	DS6&DS10	(4)							
LEAD ANALYST:	M.J. SA	IIDI								
ASSESSMENT:										
CRITICAL: FLIGHT	ľ	REDUNDA	NCY SCRE	ENS	CIL ITEM					
HDW/FU	1C	A	В	С						
NASA [3 /3 IOA [3 /3] [NA]	[NA]	[NA] []	[] *					
COMPARE [/] [иј	[N]	[N]	[]					
RECOMMENDATIONS:	(If d	ifferent	from NA	SA)						
1] [] (]		[] D/DELETE					
* CIL RETENTION R	ATIONALE	E: (If ap	plicable	∍)						
REMARKS:				ADEQUATE INADEQUATE	•					
IOA AGREES WITH T APPROPRIATE LOCAT	HE FMEA, IONS-SEE	BUT STU ALSO AR	DIED THE	ESE DIODES AT -251 AND -3	THEIR					

NASA DATA:

ASSESSMEN ASSESSMEN NASA FME	I TN	D:	ARPCS	2/19/88 NASA DATA: ARPCS-240 BASELINE [] 05-6VA-2013-1 NEW [X]										
SUBSYSTEM MDAC ID:			ARPCS 240 SWITC		13 & S2	21/N2·	-sys	TEM ISOL V	LV (2)					
LEAD ANA	LYST	?:	M.J.	SAII	DI									
ASSESSME	NT:													
		CAL		R	EDUN	DANCY	SCF	REENS	CIL ITE	4				
		LIGH W/FU		A		В		С						
NASA IOA	[3	3 /1R 3 /2R]	[P]	[P [P]	[P] [P]	[] *]				
COMPARE	[/N]	[]	[]	[]	[1				
RECOMMEN	DAT	ions:	(II	f dif	fere	nt fr	om 1	NASA)						
	[/	1	[]	[]	[]	[(ADD/D] ELETE)				
* CIL RE	TEN!	TION	RATIO	NALE:	(If	appl	ical	ole) ADEQUA INADEQUA]				
REMARKS:			n Titeli	ODEI	שמת ז	T AIINC	'U	AND CONTINU	IE TO OP	ERATE TH				

THE VALVES ARE DRIVEN OPEN PRELAUNCH, AND CONTINU PCS WITH THE FAILED SWITCH. WITH FUNCTIONAL REDUNDANCY LOSS, ONLY TWO TANKS REMAIN FOR COMPLETION OF MISSION. THIS MAY NOT BE ADEQUATE FOR SOME MISSION WITH HIGH N2 DEMAND (EVAS). CABIN VOLUME IS AVAILABLE FOR SAFE RETURN. DUE TO LIMITED FMEA DATA (ONLY A CRITICALITY SUMMARY LIST FROM POST 51-L ANALYSIS) RECEIVED, NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED. THE DISCREPANCY BETWEEN NASA FMEA AND IOA ANALYSES ARE MARKED AS AN ISSUE UNTIL RESOLVED WITH THE SUBSYSTEM MANAGER.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	NASA D BASEL	SA DATA: ASELINE [] NEW [X]				
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 241 SWITCH, S13&S	521/N2-SYS	TEM ISOL V	LV (2)		
LEAD ANALYST:	M.J. SAIIDI					
ASSESSMENT:						
RT.TCUM	TY REDUK	IDANCY SCR		CIL ITEM		
HDW/ FOR	IC A	В	С			
NASA [3 /1R IOA [2 /1R] [P]] [P]	[P] [P]	[P] [P]	[x] *		
COMPARE [N /] []	[]	[]	[и]		
RECOMMENDATIONS:	(If differe	ent from N	ASA)			
[/] []	[]	[]	[] (ADD/DELETE)		
* CIL RETENTION R	ATTONALE: (Tf	annlicah	16)			
REMARKS:	(11	applicab	ADEQUAT INADEQUAT	E []		
IOA CONSIDERED SW CONTACT WHICH WOU LOOP WILL BE LOST WITH FUNCTIONAL L ONE STEP AWAY FRO DECOMPRESSION WER	LD DRIVE VALV , AND ONLY ON OSS, CABIN VO M LOSS OF LIF	E CLOSED. E N2 LOOP LUME IS AI	IN THIS C AND CABIN DEQUATE FOR	ASE, ONE N2 VOLUME REMAIN.		
DECOMPRESSION WER DUE TO LIMITED FM POST 51-L ANALYSI WAS ATTEMPTED. TO ANALYSES ARE MARK MANAGER.	EA DATA (ONLY S) RECEIVED, I HE DISCREPANC	NO DETAIL Y BETWEEN	ASSESSMENT	OF THIS ITEM		

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	ARPCS-242	NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM: (2)	ARPCS 242 CIRCUIT BREAKE	R CB17& CB18/N2 SUPPL	Y ISOL. VLV.
LEAD ANALYST:	M.J. SAIIDI	·	
ASSESSMENT:			
FLIGH			CIL ITEM
HDW/FU	INC A	ВС	
NASA [3 /3 IOA [3 /3] [NA]] []	[AN] [AN] [] []	[] *
COMPARE [/] [N]	[и] [и]	[]
RECOMMENDATIONS:	(If differen	t from NASA)	
[/] []	[] [] (A	[] .DD/DELETE)
* CIL RETENTION	RATIONALE: (If	applicable) ADEQUATE INADEQUATE	
REMARKS: FMEA FAILURE ALS PREMATURELY, SHO		ERTENT OUTPUT, CONDUC	TS

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-243 05-6VA-201	12-1	NASA DATA: BASELINE [] NEW [X]							
SUBSYSTEM: MDAC ID:	ARPCS 243	ISOL. VLV.								
LEAD ANALYST:	M.J. SAIII	DI								
ASSESSMENT:										
CRITICALI FLIGHT HDW/FUN		EDUNDANCY E		s c	CIL ITEM					
NASA [3 /1R IOA [3 /3] [P] []) [P]	[] *					
COMPARE [/N] []] []] [N]	[]					
RECOMMENDATIONS:	(If diff	ferent fr	om NASA)						
[/] [] [] [] (AI	[] DD/DELETE)					
* CIL RETENTION R	RATIONALE:	(If appl	•	ADEQUATE	[]					
REMARKS: LOSS OF POWER TO PRELAUNCH, AND WI LOSS OF POWER WII NEEDED (LEAK DOWN	LL REMAIN LL CAUSE LO ISTREAM).	OPEN THE OSS OF AE THIS SCE	YES, BUT ROUGHOUT BILITY TO RNARIO W	MISSION. O CLOSE THE ILL DEPLETE	S ARE OPENED THEREFORE E LINE IF E N2, AND					
MISSION WILL RETU										

MANAGER.

POST 51-L ANALYSIS) RECEIVED, NO DETAIL ASSESSMENT OF THIS ITEM

ANALYSES ARE MARKED AS AN ISSUE UNTIL RESOLVED WITH THE SUBSYSTEM

WAS ATTEMPTED. THE DISCREPANCY BETWEEN NASA FMEA AND IOA

ASSESSME ASSESSME NASA FME	NT I	D:	ARPC	2/19/88 NASA DATA: ARPCS-244 BASELINE [] 05-6VA-2009-1 NEW [X]									
SUBSYSTE MDAC ID: ITEM: (2)			ARPO 244 RESI										
LEAD ANA	LYST	:	M.J.	M.J. SAIIDI									
ASSESSME	NT:												
	CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM												
			NC	A		В		•	С				
NASA IOA	[3	/3 /3]	[N	A]	[N]	A]	[]	NA]		[] *]	
COMPARE	[/	1	[N]	[N	3	[и]		[3	
RECOMMEN	IDATI	ons:	(3	f dif	fere	ent fr	om	NASA)					
	[/]	[1	[]	[3	(Al	[DD/DI] ELETE)	
* CIL RI	ETENI	'ION	RATIO	NALE:	(If	appl	ica		ADEQU ADEQU	JATE JATE	[]	
REMARKS: ALSO SEI AT APPRO	ARE	CS-1	L15, COCAT	l16, 2 IONS.	56 <i>I</i>	AND 34	ο.	THE	RESIS	STORS	ARE	STUDIED	

ASSESSME ASSESSME NASA FME	INT	II) :	AF	2/19/88 NASA DATA: ARPCS-245 BASELINE 06-1-0171-3 NEW									[
SUBSYSTE MDAC ID:				24	RPCS 45 EGULATOR INLET VALVE LV1 & LV2/ N2 SYSTEM (2)														
LEAD ANALYST: M.J. SAIIDI																			
ASSESSMENT:																			
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM																			
	1		/FUI				A			В			С			TTE	M		
NASA IOA	[3 3	/1R /3]		[P]	[P]	[P]		[]	*	
COMPARE	[/N	3		[N]	[N]	[N]		[]		
RECOMMEN	DA?	ric	ns:		(If	d:	if	fere	ent	fr	om	NASA	.)						
	[/]		[]	[]	[]	(Al	[DD/D		TE)	
* CIL RE	TEI	TI	ON I	TAS	'ION	ALI	Ξ:	(If	ap	pl	ica	ıble)				_			
												I		DEQU <i>A</i> DEQU <i>A</i>		[]		
REMARKS: DUE TO LIMITED FMEA DATA (ONLY A CRITICALITY SUMMARY LIST FROM POST 51-L ANALYSIS) RECEIVED, NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED. THE DISCREPANCY BETWEEN NASA FMEA AND IOA ANALYSES ARE MARKED AS AN ISSUE UNTIL RESOLVED WITH THE SUBSYSTEM																			

MANAGER.

ASSESSMEN ASSESSMEN NASA FMEA	T	II		AR	19/8 PCS- -1-0	24		1						ASA DA BASEL:		[]	
SUBSYSTEM MDAC ID:	1:			24	PCS 6 GULA	тc	R	INLE	T '	VAI	LVE	LV1	&	LV2/	N2	SY	ST	'EM	(2)
LEAD ANA	LYS	ST:	:	M.	J. S	AJ	II	I											
ASSESSME	NT:	:																	
•	CR:		CAL:		•		RE	DUND	AN	CY	SCR	EEN	S			CI I'I	L EM	1	
	I		/FU				A			В			С						
NASA IOA	[3 2	/1R /1R]		[P P]	[P P]	[P P]		[x]	*
COMPARE	[N	/]		[]	[]	[]		[И]	
RECOMMEN	DA'	rI(ons:		(If	d :	ifi	feren	t	fr	om N	IASA	.)						
	[,]		[]	[]	[]	(A	DD,	/DI] ELE	TE)
* CIL RE	TE	NT	ION	RAT	TION?	AL	E:	(If	ap	pl.	icak		A	DEQUA		[]	
REMARKS:																			

IOA AGREES WITH THE FMEA.

ASSESSME	SSESSMENT DATE: 2/19/88 NASA DATA SSESSMENT ID: ARPCS-247 BASELINE ASA FMEA #: 06-1-0171-2 NEW										
SUBSYSTE MDAC ID:			ARPO 247 REGI		R INI	ET V	LVE	LV1 &	LV2/ N	2 SY	STEM (2)
LEAD ANA	LYS	r:	M.J.	SAII	DI						
ASSESSME	NT:										
		FICAL FLIGH		R	EDUN	IDANCY	SCR	EENS		CI	_
	H	DW/FU	NC	A		E	1	c	!		L171
NASA IOA	[;	2 /1R 2 /1R]	[P]	[F]	[P [P	'] ']	[2	X] * X]
COMPARE	[/]	[]	[]	[]	C]
RECOMMEN	DAT:	ons:	(1	f dif	fere	nt fr	om N	ASA)			
·	[/]	[]	[]	[] (2	[ADD/I] DELETE)
* CIL RE	TENT	TION I	RATIO	NALE:	(If	appl	icab	A	DEQUATE	-]
REMARKS: IOA IS I	N AG	REEM	ENT W	ITH T	HE F	MEA.		INA	DEQUATE	[]

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-248 06-1-0171-1	L	NASA DATA: BASELINE [] NEW [X]								
MDAC ID:	ARPCS 248 SINGLE PHAS	SE MOTOR/N2	REGULATOR INI	LET VALVE (2							
LEAD ANALYST:	M.J. SAIID	.									
ASSESSMENT:											
CRITICAL FLIGH	ITY REI	DUNDANCY SCI	REENS	CIL ITEM							
	NC A	В	С	11211							
NASA [3 /1R IOA [3 /3] [P]	[P]] []	[P] []	[] *							
COMPARE [/N] [N]	ן (א	[א]	[]							
RECOMMENDATIONS:	(If diffe	erent from 1	NASA)								
· [/] [] []	[]	[] ADD/DELETE)							
* CIL RETENTION	RATIONALE:	(If applical	ADEOUATE	[]							
REMARKS: IOA CONSIDERED T BUT BASE ON THE THE FMEA.	HE MOTOR SEIVALVE THE FI	PARATELY FROMEA MATCH IS	INADEQUATE OM THE VALVE S MADE. IOA	(ARPCS-246),							

ASSESSMENT DASSESSMENT INASA FMEA #:	D: AR				nasa Base	LINE [
SUBSYSTEM: MDAC ID: ITEM:	24	•	ASE MOT	OR/N2	REGULATOR	INLET	VALVE	(2)		
LEAD ANALYST	: м.	J. SAIII	DI							
ASSESSMENT:										
F	ICALITY LIGHT W/FUNC		EDUNDAN	CY SC	REENS	CI	L EM			
	•				•	_				
NASA [3 IOA [3	/1R] /3]	[P] [P]	[P] []	[[] *]			
COMPARE [/n]	[N] [и ј	[иј	Ε	3			
RECOMMENDATIO	ONS:	(If diff	ferent	from 1	NASA)					
1	/]	[) []	[]] DELETE)		
* CIL RETENT	ION RAT	IONALE:	(If ap	olical	ole)					
			(<u>-</u>		ADEQUA INADEQUA	•]			
REMARKS: IOA STUDIED 'S IS FOR THE VA				FROM !	THE VALVE.	THE F	MEA SH	OWN		

ASSESSME ASSESSME NASA FME					15-1				NASA DATA BASELINE NEW		-
SUBSYSTE MDAC ID: ITEM:			ARPCS 250 POSITI	ON 3	INDIC	ATIOI	N, DS	7 8	DS11 (2)		
LEAD ANA	LYST	:	M.J. S	AIII	DI						
ASSESSME	NT:										
		ICAL LIGH		R	EDUND	ANCY	SCRE	ENS		CIL ITE	
	HD	W/FU	NC	A		В			С		
NASA IOA	[3 [3	/3 /3]	[N2	A]	[N.	A]	[NA]	[] *]
COMPARE	[/	1	[N	1	[N	3	[n j	[]
RECOMMEN	DATI	ons:	(If	dif	feren	t fr	om NA	SA))		
	[/	1	[]	[]	[] (2	[ADD/D] ELETE)
* CIL RE		ION	RATION!	ALE:	(If	appl	icabl		ADEQUATE NADEQUATE]
REMARKS: IOA AGRE APPROPRI	EES W	ITH	THE FMI	EA, SEE	BUT S	TUDI	ED TH S-109	IES	ITEMS AT	THE -334	ł.

ASSESSMENT I ASSESSMENT I NASA FMEA #:	D: ARPCS	-251	NASA DATA: BASELINE [] NEW [X]								
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 251										
LEAD ANALYST	. M.J.	SAIIDI									
ASSESSMENT:											
F	CICALITY CLIGHT W/FUNC	REDUND	DANCY SCR	EENS C	CIL ITEM						
IOA [3	/3] /3]	[NA] []	[NA] []	[NA] []	[] *						
COMPARE [/ 1	[и]	[N]	[N]	[]						
RECOMMENDATI	ONS: (If	differen	t from N	ASA)							
[/ 1	[]	[]		[] ADD/DELETE)						
* CIL RETENT	ION RATION	ALE: (If	applicab:								
DEM DVC -				ADEQUATE INADEQUATE	[]						
REMARKS: IOA AGREES W APPROPRIATE	ITH THE FM LOCAITONS	EA, BUT S - SEE ALS	TUDIED TO O APRCS-	HESE DIODES . 110, -239, -	AT THEIR 341.						

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-252 05-6VA-2019-1	NASA D BASEL	ATA: INE [] NEW [X]
SUBSYSTEM: MDAC ID: ITEM:	252	522/REG. INLET VAL	VE (2)
LEAD ANALYST:	M.J. SAIIDI		
ASSESSMENT:			
CRITICAL: FLIGH	ITY REDUNDA	ANCY SCREENS	CIL ITEM
	NC A	В С	
NASA [3 /1R IOA [3 /3] [P]] []	[P] [P] [] []	[] *
COMPARE [/N] [N]	[N] [N]	[]
RECOMMENDATIONS:	(If different	t from NASA)	<u>, .</u>
[/] []	[] []	[] (ADD/DELETE)
* CIL RETENTION	RATIONALE: (If a		me r i
		ADEQUA INADEQUA	
POST 51-L ANALYS WAS ATTEMPTED.	IS) RECEIVED, NO THE DISCREPANCY	A CRITICALITY SUMM D DETAIL ASSESSMEN BETWEEN NASA FMEA UNTIL RESOLVED WI	T OF THIS ITEM . AND IOA

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		NASA DATA: BASELINE [] NEW [X]								
	ARPCS 253 SWITCH, S14	& S22/REG. IN	LET VALVE ((2)						
LEAD ANALYST:	M.J. SAIIDI									
ASSESSMENT:										
CRITICALI FLIGHT HDW/FUN	r	NDANCY SCREEN	s c	CIL ITEM						
NASA [3 /1R IOA [2 /1R] [P]	[P] [[P] [P] P]	[
COMPARE [N /] []	[] []	[N]						
RECOMMENDATIONS:	(If differ	ent from NASA)							
[/] []	[] [] (AI	[] DD/DELETE)						
* CIL RETENTION F	RATIONALE: (1		ADEQUATE NADEQUATE	[]						

THIS FAILURE MODE RESULTS IN THE SAME SCENARIO AS WAS DISCUSSED IN THE FMEA 06-1-0171-1 (ARPCS-246). UNDER FUNCTIONAL REDUNDANCY, CABIN VOLUME (UNLIKE REDUNDANCY) IS AVAILABLE FOR A SAFE RETURN. FOUR N2 TANKS ARE STILL AVAILABLE TO CONTINUE THE MISSION WITH ONE N2 LOOP. IOA AGREES WITH THE FMEA.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	ARPCS-25			BASELINE NEW	[x]
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 254 CIRCUIT	BREAKER C	B20 & CB	21/REG. INI	LET VALVE (2)
LEAD ANALYST:	M.J. SA	IDI			
ASSESSMENT:					
CRITICAL		REDUNDANC	Y SCREEN	ıs	CIL ITEM
FLIGH HDW/FU		A	В	С	
NASA [3 /3 IOA [3 /3] [NA] [NA] [NA]	[] *
COMPARE [/] [N] [и] [ן א ן	[]
RECOMMENDATIONS:	(If d	ifferent i	from NASA	A)	
] [] [) 1	[] (A)	[] DD/DELETE)
* CIL RETENTION	RATIONAL	E: (If ap) ADEQUATE INADEQUATE	
REMARKS: FMEA ALSO COVERS AGREEMENT WITH F	"CONDUC	TS PREMAT	URELY, SI	HORTS". IO	A IS IN

ASSESSMI ASSESSMI NASA FMI	ent i ent : ea #:	DATE: ID: :	2/19/ ARPCS 05-6V	′88 -2 ′A-	55 20	18-1	1					asa d Basel	INE				
SUBSYSTI MDAC ID: ITEM:			ARPCS 255 CIRCU		В	REAI	KER (СВ	20	& CB	21,	/REG.	IN	LET	VAI	LVE	(2)
LEAD ANA	\LYS1	r:	M.J.	SA	II	DI											
ASSESSME	ENT:																
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C																	
	HL)W/FU	NC		A			В			C						
NASA IOA	[3	/1R /3]	[[P]	[P]	[P]		[]	*	
COMPARE	[/N	1	[N]	(N]	ĺ	N	1.		[]		
RECOMMEN	DATI	ONS:	(If	di	Lf1	fere	nt 1	fro	om :	NASA)						
	[/]	[]	[]	[]	(AD	[D/D		TE)	
* CIL RE	TENT	ION I	RATION	ALE	:	(If	app)li	cal	-		EQUAT		[]		
REMARKS: LOSS OF REMAIN I ABILITY (SUCH AS ONLY ONE	N IT TO D LEA	S NOM RIVE K) DO	IINAL (THE VI WNSTRI	OPE ALV EAM	E E	POS TO FU	ITIC CLOS NCTI	N ED ON	PR: P(AL	E. H IOR T DSITI REDU	HOW TO TON	EVER FAILU AFTE	VAL RE.	VE 1	WIL OSS ALU	OF	AVE

LOSS OF POWER TO THE MOTOR DRIVEN VALVE. HOWEVER VALVE WILL REMAIN IN ITS NOMINAL OPEN POSITION PRIOR TO FAILURE. LOSS OF ABILITY TO DRIVE THE VALVE TO CLOSED POSITION AFTER A FIALURE (SUCH AS LEAK) DOWNSTREAM. FUNCTIONAL REDUNDANCY LOSS WILL LEAVE ONLY ONE N2-LOOP TO MAINTAIN NOMINAL MISSION. THIS MAY NOT BE ADEQUATE TO SUPPORT A MISSION WITH HIGH N2 DEMANDING ACTIVITIES (EVA) AND LEAVE ADEQUATE RESERVES FOR EMERGENCY DEORBIT. DUE TO LIMITED FMEA DATA (ONLY A CRITICALITY SUMMARY LIST FROM POST 51-L ANALYSIS) RECEIVED, NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED. THE DISCREPANCY BETWEEN NASA FMEA AND IOA ANALYSES ARE MARKED AS AN ISSUE UNTIL RESOLVED WITH THE SUBSYSTEM MANAGER.

ASSESSME ASSESSME NASA FME	NT I	D:	ARPC	5-256	;)09 - 1			NASA DATA BASELINI NEV]
SUBSYSTE MDAC ID: ITEM: LATCH (2			ARPC 256 RESI		A181	R1 & A	11R1 (5	.1K)/REG	. INLE	CT VALVE
LEAD ANA	LYST	:	M.J.	SAII	DI					
ASSESSME	NT:									
		ICAL LIGH		F	REDUN	DANCY :	SCREENS	3	CIL ITEN	ſ
	_		NC	7						
NASA IOA	[3 [3	/3 /3]	[]]	NA]	[NA [] [NA]	[] *
COMPARE	[/]	[]	4]	[14] [N]	[]
RECOMMEN	DATI	ons:	(I	f di	ffere	nt fro	m NASA)			
	[/]	[]	[] [1 ([ADD/DI] ELETE)
* CIL RE	TENT	ION	RATIO	NALE	(If	appli	cable)		_	
							IN	ADEQUATE IADEQUATE	[]
REMARKS: ALSO SEE AT THEIR	ARP	CS-1 ROPR	15, 1 IATE	16, 2 LOCA:	244, CIONS	AND 34	O. THE	E RESITOR	S ARE	STUDIED

ASSESSME	ENT DATE: 2/19/88 ENT ID: ARPCS-257 EA #: 06-1-0172-2										NASA DATA: BASELINE [] NEW [X]										
SUBSYSTE MDAC ID:	M:			25		GE)	N I	R E GU:	LA!	TC)R	VAI	LVE	(2	00	PSIG	;)				
LEAD ANA	LY	ST	:	M.	J. 5	SA:	II	DI													
ASSESSME	NT	:																			
		F	ICAL LIGH W/FU	r	?		RI A	EDUN	DAI	NC	Y B	SCI	REEN	s c					[L [E]	1	
NASA			/1R			Г	P	1		r		.1	ſ	_				r		1	*
IOA	•		/1R	j		į	P	j		[[]	P	j]	P	j			Ĺ	x	j	
COMPARE	[N	/]		[]	-	[N]	[]			[N]	
RECOMMEN	DA!	ric	ons:		(If	d :	if	fere	nt	f	rc	m N	NASA)							
	[/	Ì		[]	1	[]	[]	(_	'DE] ELF	ETE)
* CIL RE REMARKS: IOA AGRE								(If	ay	qq	li	cab				UATE UATE		[]	

ASSESSMEN ASSESSMEN NASA FMEA	T	ID):	AF	19/ RPCS 5-1-	-25		·1				•		A DATA SELINE NEW]	
SUBSYSTEM MDAC ID: ITEM:	:			25	RPCS 8 TRO		I F	REGU	LATO	R	VAL	/E (200	PSIG)			
LEAD ANAI	LYS	T:	;	M.	J.	SAI	ΊΙ	ΟI									
ASSESSMEN	IT:	;															
(CR]			LITY	ľ		RE	EDUN	IDANC	Y:	SCRI	EENS	,		CII		
	ŀ		LIGI V/F	JNC			A			В			С				
NASA IOA	[3	/11/	R]		[P P]	[P P]	[P P		[3	(]	*
COMPARE	[N	/]		[]	C]	[l	[]	1]	
RECOMMEN	DA'	rI(ONS	:	(11	f d	if	fer	ent 1	fr	om N	ASA)					
	[/]		(]	[]	[] (2	[ADD/I	DEL	ETE)
* CIL RE	TE:	NT	ION	RA	TIO	NAL	E:	(I:	f app	ρl	icab			EQUATE EQUATE]	
REMARKS:	ES	W	ITH	тн	E FI	MEA	•										

ASSESSM ASSESSM NASA FM	ENT	I	D:	AR	19/ PCS -1-	-2	59							ASA DA BASELI N		[]	
SUBSYST MDAC ID ITEM:				25	_	GE:	N :	REGU	LAT	or	VAI	LVE	(20	00 PSI	(G)				
LEAD AN	ALY	ST	:	M.	J. :	SA	II	DI											
ASSESSMI	ENT	:																	
	CR		ICAL LIGH				R	EDUN	DAN(CY	SCF	REEN	S				IL Fei		
		HD	W/FU	NC			A			В			С			_		•	
NASA IOA		3 2	/1R /1R]		[P P]	[P P]	[P P]]	x]	*
COMPARE	[N	/]		(]	[]	[]		[N]	
RECOMMEN	VDA!	ric	SMC:	((If	đ	ifi	fere	nt 1	fro	om N	(ASA))						
	[/]		[]	[]	[]	(ADI	[D/	'DF] ELF	ETE)
* CIL RE REMARKS: IOA AGRE								(If	app	oli	cab	•		EQUATI		[]	
TOU WREE	دعر	Π.	LIU]	.ne	rmt	Α.													

ASSESSME ASSESSME NASA FME	ידיאי	D:	ARPCS	3-260) 2-3				SA DATA ASELINE NEW		_	
SUBSYSTE MDAC ID: ITEM:			ARPCS 260 NITRO		REGU	LATOR	VAI	LVE (20	O PSIG)			
LEAD ANA	LYSI	r:	M.J.	SAI	IDI .							
ASSESSME	NT:											
		TICAL FLIGH		1	REDUN	DANCY	SCI	REENS		CII		
			NC	1	A	В		С				
NASA IOA	[3	3 /3 3 /3]	[[]	[]	[]	[]	*
COMPARE	[/]	[]	[]	[]	[]	
RECOMMEN	IDAT:	cons:	(I	f di	ffere	nt fr	om 1	NASA)				
	[/]	[]	[]	[] (A	[.DD/[TE)
* CIL RE	ETEN:	rion	RATIO	NALE	: (If	appl.	ical	λΓ	EQUATE	[]	
REMARKS: THE AFFE PROBLEM WILL REG IOA AGRE	OR S	SWITC TE TH	H TO	THE SSUR	REDUN	DANT	LEG	OPERAT	E WITHO	UT A	YNY	AT OR

ASSESSMEN ASSESSMEN NASA FMEA SUBSYSTEN MDAC ID: ITEM:	ARP 06- ARP 261 NIT	ROGE	61 73· N	RELI	EF V	/ A]	LVE	(27	1	BASE	DATA LINE NEW	[x]			
LEAD ANAI	LYST	:	M.J	. SA	II	DI											
ASSESSMEN	T:																
Ć	ICAL: LIGH: W/FUI	r		RI A	EDUN	IDANG	EY B	sc	REEN	s C				IL PEN	1		
NASA IOA	•	/1R /1R]]	P P]	[[P P]	[P P]		[x]	*
COMPARE	[и	/]	[]	[]	(]		[N]	
RECOMMENI	ITAC	ons:	(If d	if	fere	ent i	rc	m	NASA)						
	[/]	[]	[)	[]	(A	[DD,	/DI] ELI	ETE
* CIL RET	rent:	ION 1	RATI	ONAL	E:	(If	apr	1 1	ca				ATE ATE	[]	

IOA AGREES WITH THE FMEA.

NASA DATA:

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	ARPCS-26	2		NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 262 NITROGEN	RELIEF	VALVE (2	75 PSIG) (2))
LEAD ANALYST:	M.J. SAI	IDI			
ASSESSMENT:					
FLIGH	T		NCY SCREE	ns C	CIL ITEM
HDW/FU	NC	A	В	C	
NASA [3 /1R IOA [2 /1R] [P] P]	[NA] [P]	[P] [P]	[x] *
COMPARE [N /] []	[и]	[]	[N]
RECOMMENDATIONS:	(If di	fferent	from NAS	SA)	
[3 /2R	ן בּ	P]	[P]	[P] (A	[] DD/DELETE)
* CIL RETENTION	RATIONALE	E: (If a	applicable	2)	
				ADEQUATE INADEQUATE	[]
REMARKS: FUNCTIONAL LOSS PRESSURIZATION I CONTROLLED. BUT	F THE HIG CABIN VO	SH PRESS DLUME IS	SURE LINES S ADEQUATE	S COULD NOT	FOR CABIN BE ETURN. HIGH
N2 PRESSURE IS C	CONTAINED	IN THE	LINE(S).	zmy cinavany	TICM PDOM

DUE TO LIMITED FMEA DATA (ONLY A CRITICALITY SUMMARY LIST FROM POST 51-L ANALYSIS) RECEIVED, NO DETAIL ASSESSMENT OF THIS ITEM

ANALYSES ARE MARKED AS AN ISSUE UNTIL RESOLVED WITH THE SUBSYSTEM

WAS ATTEMPTED. THE DISCREPANCY BETWEEN NASA FMEA AND IOA

MANAGER.

ASSESSMI ASSESSMI NASA FMI	ENT	' I		AI	/19/88 RPCS-2 5-1-0:	263							A DAT SELII NI	NE [x]	
SUBSYSTI MDAC ID: ITEM:				26	RPCS 53 INES 8	F	ITI	INGS									
LEAD AND	ALY	ST	:	M.	J. S	II	DI										
ASSESSMI	ENT	:											•				
		F	ICAI LIGH W/FU	T	?	R A		NDAN	CY B	SCI	REENS	s C		_	IL TEN	1	
NASA			/1F		[P]	ι	P]]	P]		[x]	*
IOA	[1	/1]	[]	[]	[]		[X]	
COMPARE	[N	/N]	[N]	(N]	[N]		[]	
RECOMMEN	IDA'	TI	ons:		(If d	if	fer	ent	fro	om N	(ASA						
	[•	/]	[]	ĺ		1	[]	([ADD,	/DE] LE	ETE)
* CIL RE							(I	f ap	pli	icab	•		UATE UATE]	

NASA FMEA #:	ARPCS-263A 06-1-0193-			ASA DATA: BASELINE NEW	-]
	ARPCS 263 LINES & FI	TTINGS				
LEAD ANALYST:	M.J. SAIID)I				
ASSESSMENT:						
CRITICAL: FLIGH HDW/FU	r	DUNDANCY	SCREENS		CIL	ſ
		_			ιχ	1 *
NASA [2 /1R IOA [1 /1] [P] [P] [P]	[X	1
COMPARE [N /N] [N] [N] [N]	[]
RECOMMENDATIONS:	(If diff	erent fro	om NASA)			
[/] [] [] [] (AI	[DD/DI] ELETE)
* CIL RETENTION	RATIONALE:	(If appli	P	DEQUATE	[]
REMARKS:						

IOA AGREES WITH THE FMEA.

ASSESSME ASSESSME NASA FME	/88 S-2 -01	64 74	-2						ASA DA BASELI N	NE							
SUBSYSTE MDAC ID:			ARPO 264 FILT		СН	ECK	VAL	VΕ	, <i>1</i>	AFTER	N:	REGU	LA:	ror '	VAI	LVE	(2)
LEAD ANA	LYSI	r:	M.J.	SA	II	DI											
ASSESSME	NT:																
			ITY		R	EDU	NDAN(CY	sc	REEN	S			CIL			
	FLIGHT HDW/FUNC										С			TIE	M		
NASA IOA	[3	3 /1R 3 /3]	[[P]	[P]	[P]		[]	*	
COMPARE	[/N]	ĺ	N]	[N]	[N]		(]		
RECOMMEN	DAT1	ons:	(I	fd	if:	fer	ent :	fro	om	NASA)						
	[/]	[]	C]	[]	(AI	[DD/D		TE)	
* CIL RE	TENI	ON:	RATIO	NAL	E:	(I	f app	1:	ica	•	AI IAI	EQUAT	E F	[]		
REMARKS: DUE TO I POST 51- WAS ATTE ANALYSES MANAGER.	IMIT L AN	IALYS: ED. '	IS) R THE D	ECE:	IVI REI	ED, PAN	NO I	ETV	rai Vee	CALIT L ASS N NAS	ΓΥ SES	SUMMA SMENT FMEA	RY OF ANI	LIST THE	r f IS	ITE:	M

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-265 06-1-0174-	·1		NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 265 FILTER/CHE	ECK VALV	E AFTER	N2 REGULATO	OR VALVE (2)
LEAD ANALYST:	M.J. SAIII)I			
ASSESSMENT:					
CRITICAL		EDUNDANC	CY SCREE	ns	CIL ITEM
FLIGH HDW/FU			В	С	
NASA [3 /1R IOA [2 /1R] [NA] P]	[P] [P]	[x] *
COMPARE [N /] [] [и]	[]	[и]
RECOMMENDATIONS:	(If dif	ferent	from NAS	SA)	
[/] [] [)	[] (A	[] DD/DELETE)
* CIL RETENTION	RATIONALE:	(If ap	plicable	ADEQUATE	[]
REMARKS: IOA AGREES WITH NOT BE DETECTED	THE FMEA.	THE FA	ILURE II	N THE STANDE OPERATIONAL.	SY ITEM WILL

ASSESSMI NASA FMI	ASSESSMENT DATE: 2/19/88 ASSESSMENT ID: ARPCS-266 NASA FMEA #: 06-1-0174 SUBSYSTEM: ARPCS MDAC ID: 266 ITEM: FILTER/CH												ASA DAT BASELII NI]		
MDAC ID:				2	66	СН	ECK	VAL	VE	AF	TER	N2	REGULA	ATOR	V.	AL'	VE	(2)
LEAD ANA	ALY	ST	• .	M	.J. SA	II	DI											
ASSESSME	ENT	:																
	CR		ICAL LIGH		Y	R	EDUI	NDAN	CY	sc	REEN	S			IL Pen	e		
]	HD	W/FU	NC		A			В			С			LEF	1		
NASA IOA	[3 2	/1R /1R]]	P P]	[[P P]	[P P]	[x]	*	
COMPARE	[N	/]	£]	[]	[]	[N]		
RECOMMEN	'DA'I	ľIC	ons:		(If di	.f:	fere	ent i	fro	om 1	NASA)							
	[/]	[]	[]	(] (2	[ADD/	DE		TE)
* CIL RE REMARKS: IOA AGRE						:	(If	app	oli	cal			EQUATE EQUATE	[]		

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-267 06-1-0180-1		NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID:	ARPCS 267 FLOW SENSOR			
LEAD ANALYST:	M.J. SAIIDI			
ASSESSMENT:				
CRITICAL FLIGH	CIL ITEM			
	NC A	В	С	IILM
NASA [3 /3 IOA [3 /2R] []] [P]	[] [P]	P]	[] *
COMPARE [/N] [N]	[N]	N]	[]
RECOMMENDATIONS:	(If diffe	erent from NASA	۷)	
[/] []	[] [[] (A)	[] DD/DELETE)
* CIL RETENTION	RATIONALE: ([]
REMARKS:		1	ADEQUATE NADEQUATE	i i
DUE TO LIMITED FOOT 51-L ANALYS				
WAS ATTEMPTED. ANALYSES ARE MAR MANAGER.	THE DISCREPA	NCY BETWEEN NA	ASA FMEA AN	D IOA

ASSESSME ASSESSME NASA FME	NT I		2/19/ ARPCS 06-1-	-26		-1						SA DATA ASELINE NEW	3	•]	
SUBSYSTEMDAC ID:	M:		ARPCS 268 PRESS		e s	SENS	SOR	(2)							
LEAD ANA	LYST	!:	M.J.	SA	III	DI										
ASSESSME	NT:															
			RI A	EDUN	IDA		SCI	REENS				IL TE	M			
	FLIGHT HDW/FUNC							В			С					
NASA IOA	[3 [3	/3]	[N2	\]		N.	A]]	NA]	[:]	*
COMPARE	ſ	/]	[N]		N]	[N]	(•]	
RECOMMEN	DATI	ons:	(If	d:	if	fere	ent	fr	om 1	NASA))					
	[/]	[]	1	•	J	[] (2) ADE	D/DI] ELE	ete:
* CIL RE	TENT	'ION	RATION	ALI	E:	(If	f ap	pl	ical	-		EQUATE EQUATE		· ·]	

IOA AGREES WITH THE FMEA.

NASA DATA:

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	ARPCS-269			SA DATA: ASELINE [NEW [X	
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 269 SHUTOFF V	VALVE (2)	(PNL MO10W	")	
LEAD ANALYST:	M.J. SAII	DI			
ASSESSMENT:					
CRITICAL		REDUNDANC	Y SCREENS	CII	
FLIGH HDW/FU		A.	в с		
NASA [3 /1R IOA [3 /2R] []	P] [] [] *	
COMPARE [/N] [] [и] [] [3
RECOMMENDATIONS:	(If di	fferent f	rom NASA)		
[/] [] [] [] DELETE)
* CIL RETENTION	RATIONALE	: (If app	Al	DEQUATE []
REMARKS: DUE TO LIMITED F POST 51-L ANALYS WAS ATTEMPTED. ANALYSES ARE MAI MANAGER.	SIS) RECEI	VED, NO L	DETAIL ASSEN ETWEEN NASA	SMENT OF I	OA

ASSESSMENT DATE: 2/19/88 ASSESSMENT ID: ARPCS-1 NASA FMEA #: 06-1-01 SUBSYSTEM: ARPCS							-1						ASA Base	LIN		,] x]	
SUBSYSTI MDAC ID ITEM:				270	cs Toff	V2	ALVI	E (:	2)								
LEAD AND	ALY	ST	:	M.J.	. SAI	II	DI										
ASSESSMI	ENT	:															
	EDUN	IDAI	NC:	Y SCI	REEN	s			CI IT								
)	HD	W/FU	NC		A]	В		С			11	EM	
NASA IOA	•	3	/2R /2R]	[P P]	 	[]	NA] P]	[P P]		[]	*
COMPARE	[/	J	[]	([]	1]	[]		[]	
RECOMMEN	DA'	ric	ONS:	(I	f di	ff	ere	nt	fı	com N	ASA)					
	[/]	[]	[•] -	[]	(A) DELET	re)
* CIL RE REMARKS:	TEN	T	ON F	OITAS	NALE	:	(If	ap	pl	icab.			EQU <i>I</i>		[]	
IOA AGRE	ES	WI	TH T	HE F	MEA.												

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-27 06-1-015	1 2-3				SA DATA: ASELINE NEW	[x			
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 271 SHUTOFF	71 HUTOFF VALVE (2)								
LEAD ANALYST:	M.J. SAI	IDI								
ASSESSMENT:										
CRITICAL		REDUNDA	NCY	SCREE	NS		CIL	Į.		
FLIGH HDW/FU		A	В		C					
NASA [3 /1R IOA [2 /1R] [P] P]	[P]	[P [P]	[x] *		
COMPARE [N /] []	[]	[1	[N]		
RECOMMENDATIONS:	(If di	ifferent	fr	om NAS	A)					
[/]] (A	[DD/DI] ELETE)		
* CIL RETENTION	RATIONAL	E: (If a	appl	icable	Λ.	DEQUATE DEQUATE	[]		
REMARKS: DUE TO LIMITED FMEA DATA (ONLY A CRITICALITY SUMMARY LIST FROM POST 51-L ANALYSIS) RECEIVED, NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED. THE DISCREPANCY BETWEEN NASA FMEA AND IOA WAS ATTEMPTED. THE DISCREPANCY BETWEEN PROPERTY OF THE SUBSYST										

ANALYSES ARE MARKED AS AN ISSUE UNTIL RESOLVED WITH THE SUBSYSTEM

MANAGER.

ASSESSMENT ASSESSMENT NASA FMEA	'ID:	2/19/88 ARPCS-27 06-1-015			NASA DATA: BASELINE [] NEW [X]					
SUBSYSTEM: MDAC ID: ITEM:		ARPCS 272 ORIFICE	10 LB	M/HR (2)		-	•			
LEAD ANALY	ST:	M.J. SAI	IDI							
ASSESSMENT	:									
	ITICALI FLIGHT HDW/FUN	?	REDUNI A	DANCY SCR	EENS	CIL ITEM				
NASA [IOA [3 /2R 3 /2R] [P] P]	[NA] [P]	[P] [P]] *]			
COMPARE [/] []	[א]	[]	[])			
RECOMMENDAT	TIONS:	(If di	fferer	t from N	ASA)					
ſ	/] []	[]	[]	[] ADD/DEI	LETE			
* CIL RETEN REMARKS: IOA AGREES			: (If	applicab	le) ADEQUATE INADEQUATE					

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-273 06-1-0158-3	NASA DATA: BASELINE [] NEW [X]							
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 273 ORIFICE 10 LBM/	HR (2)							
LEAD ANALYST:	M.J. SAIIDI								
ASSESSMENT:									
CRITICAL FLIGHT	r	NCY SCREENS B C		CIL ITEM					
HDW/FUI		_	1	r 1 *					
NASA [3 /1R IOA [2 /1R] [P]] [P]	[NA] [P [F] [P	j	[X]					
COMPARE [N /] []	[и]]	[N]					
RECOMMENDATIONS:	(If different	from NASA)							
[/] []	[] [] (AI	[] OD/DELETE)					
* CIL RETENTION :	RATIONALE: (If a	A	DEQUATE	[]					

ASSESSM	SSMENT DATE: 2/19/88 SSMENT ID: ARPCS-274 FMEA #: 06-1-0178-2									nasa da Baseli N		,] x]	
SUBSYST				ARE 274 CRO	· -	. VA:	LVE (1)					
LEAD AN	ALY	ST	:	M.J	. SAII	DI							
ASSESSM	ENT	:											
	CR		ICA:	LITY	R	EDU	NDANCY	SCF	REENS		CI	_	
	1		W/F		A		В		(С	IT	EM	
NASA IOA	[[3 3	/3 /3]]]	[]]]]]	*
COMPARE	[/]	[]	[]	[]	ſ]	
RECOMMEN	VDA!	ΓI	ONS:	: (If dif	fere	ent fr	om N	IASA)				
	[/]	[]	[]	[[(ADD/	DELI	ETE)
* CIL RE	}					(II	f appl	icab	1	ADEQUATI ADEQUATI]	
IOA AGRE	LLS	W.	LTH	THE	rmea.								

ASSESSME ASSESSME NASA FME	NT	ID:	ARF	2/19/88 NASA DATA ARPCS-275 BASELINE 06-1-0178-1 NEW]	
SUBSYSTE MDAC ID:			ARP 275 CRO		VAI	LVE (1))							
LEAD ANA	LYS	ST:	M.J	. SAIII	ΟI									
ASSESSME	NT:	:												
	CRI	TICA FLIC	ALITY	RI	EDUI	NDANCY	SCR	EENS			CI	L EM		
	F		FUNC	A		В			С					
NASA IOA	[3 /3 3 /3	3] 3]] []	[]] []		[]	*
COMPARE	[/	1	C]	[)	[3		[]	
RECOMMEN	[ADI	CIONS	5: (If dif:	fer	ent fr	om N	IASA)						
	[/]	C]	[1 .	. [3	· (A	[DD/] LE	TE)
* CIL RE					(I:	f appl	icab		ADEQU ADEQU		[]	
IOA AGRE	LE D	MT.I.	n THE	rmea.										

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-2' 06-1-01'	76 78-3		NASA DATA: BASELINE [] NEW [X]						
SUBSYSTEM: MDAC ID:	ARPCS 276 CROSSOVI									
LEAD ANALYST:	M.J. SA	IIDI								
ASSESSMENT:										
CRITICA: FLIG	LITY IT	REDUNDA	NCY SCREE	ns	CIL ITEM					
HDW/F	INC	A	В	С						
NASA [3 /11 IOA [1 /1] [P]	[P] []	[P] []	[x] *					
COMPARE [N /N] [N]	[и]	[N]	[N]					
RECOMMENDATIONS	(If d	ifferent	from NAS	(A)						
[2 /2] []	[] ,	[] (A	[A] DD/DELETE)					
* CIL RETENTION	RATIONAL	E: (If a	pplicable	<u>.</u>)						
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REMARKS:		. v DD DD	OW DOMES I							
AT WORST CASE TO CAN BE ISOLATED CABIN VOLUME.										
DUE TO LIMITED	OUE TO LIMITED FMEA DATA (ONLY A CRITICALITY SUMMARY LIST FORM POST 51-L ANALYSIS) RECEIVED, NO DETAIL ASSESSMENT OF THIS ITEM									
WAS ATTEMPTED.	THE DISCI	REPANCY	BETWEEN N	ASA FMEA AN	D IOA					

ANALYSES ARE MARKED AS AN ISSUE UNTIL RESOLVED WITH THE SUBSYSTEM

MANAGER.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	100CS-277	NASA DATA: BASELINE [] NEW [X]								
SUBSYSTEM: MDAC ID: ITEM: (2)	ARPCS 277 SHUTOFF VALVE	277 SHUTOFF VALVE, H20 TANK REGULATOR IN								
LEAD ANALYST:	M.J. SAIIDI									
ASSESSMENT:										
CRITICA	LITY REDUN	DANCY SCREENS	CIL ITEM							
FLIG HDW/F	UNC A	ВС								
NASA [3 /1 IOA [3 /3	R] [P]	[NA] [P] [] []	[] *							
COMPARE [/N		[и] [и]	[]							
RECOMMENDATIONS	: (If differe	ent from NASA)								
		[NA] [P]	[] (ADD/DELETE)							
* CIL RETENTION	RATIONALE: (I	nDLQ.								
N2 ISOLATION VIPERSURIZATION PRESSURE IF THE CIRCUMSTANCES GENERALLY LEFT DUE TO LIMITED POST 51-L ANAL	INADEQUATE []									

MANAGER.

ASSESSMENT DATE: 2/19/88 ASSESSMENT ID: ARPCS-278 NASA FMEA #: 06-1-0221-1 SUBSYSTEM: ARPCS MDAC ID: 278 ITEM: SHUTOFF VALVE, (2)								NASA DATA: BASELINE [] NEW [X] H20 TANK REGULATOR INLET VALVE							
LEAD ANALYST: M.J. SAIIDI															
ASSESSMI	ENT	:													
		F	ICAL LIGH W/FU	T		RE A	EDUNDAI	ICY B			С		CII	-	
NASA IOA	[[3	/1R /2R]	[P P] [P]	[]	P] P]		[]	*
COMPARE	[/N]	[] (]	[]		[]	
RECOMMEN	DA'I	ric	ONS:	(If di	ff	erent	fro	om N	(ASA)					
* CTI DE			/ 		-] [_]	(AI	[DD/D:] ELE	TE)
* CIL RE	TEN	17.1	ON E	(ITAS	ONALE	:	(If ap	pli	cab		DEQU	ATE	[7	
REMARKS:										INA	DEQU	ATE	Ĭ]	
CABIN VOI WITH COMI DUE TO LI POST 51-1 WAS ATTEN ANALYESS MANAGER.	IMI L A	TE NA ED	D FM LYSI	EA I	DATA RECEIV	LOS (ON /EI	NLY A (E F CRI DET	TIC.	CANNO ALITY ASSE	T BE SUM SSME	OPER MARY NT OF	ATEI LIST THI	o. C fi [S]	TEM

ASSESSMI ASSESSMI NASA FMI	ENT	II	D:	AR		79	-2	NASA DATA: BASELINE [NEW [X							[
SUBSYSTIMDAC ID: ITEM: (2)				27		V.	ALVE	, 1	H20) !	TANK	RE	GU	LATOR	IN	ILET	V	ALVE
LEAD AN	ALY	ST	:	M.	J. SA	II	DI											
ASSESSM	ENT	:																
		F	ICAL: LIGH: W/FUI	r		R A		DA		2 : 3	SCREE	ens	c			CIL		
			-														,	_
NASA IOA	[3	/1R /1R]] [P]		[I	A.P]]	[P]		[]	-
COMPARE	[/]	[]		[]	1]	[]		[]	
RECOMME	NDA	TI	ons:		(If d	if	fere	nt	fı	ro	m NAS	SA)	•					
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* CIL R		NT:	ION 1	RAT	'IONAI	E:	(If	` a ;	pp]	li	cable			EQUAT EQUAT		[]	

IOA AGREES WITH THE FMEA FOR EXTERNAL LEAKAGE.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-280 06-1-0222		NASA DATA: BASELINE [] NEW [X]					
	ARPCS 280 REGULATOR	, 15.5-17	PSIG (2)					
LEAD ANALYST:								
ASSESSMENT:								
CRITICALI FLIGHT		EDUNDANCY	SCREENS	CIL ITEM				
HDW/FUI	NC A	В	С					
NASA [3 /1R IOA [3 /1R] [P] [P]	[] *				
COMPARE [/] [] [] []	[]				
RECOMMENDATIONS:	(If dif	ferent fro	om NASA)					
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* CIL RETENTION FREMARKS: IOA AGREES WITH T		(If appli	icable) ADEQI INADEQI					

ASSESSME ASSESSME NASA FME	NT I NT I A #:	ATE:	2/19, ARPC: 06-1	/88 5-281 -0222	-1			NASA DATI BASELINI NEV			
SUBSYSTEMDAC ID:			ARPC: 281 REGU	S LATOR							
LEAD ANA	LYSI	:	M.J.	SAII	DI						
ASSESSMENT:											
		TICAL FLIGH		R	EDUN	IDANCY	SC	REENS	CII		
			NC	A		В		С			
NASA IOA	[:	3 /1R 3 /2R]	[P]	[P [P]	[P] [P]	[] *	
COMPARE	[/N]	[]	[]	[]	[)	
RECOMMEN	DAT:	ions:	(I	f dif	fere	ent fro	om	NASA)			
	[/]	ſ]	. [.]	[] (] DELETE)	
* CIL RE	TEN'	rion	RATIO	NALE:	(II	f appl	ica	1000000	[]	
REMARKS: DUE TO LIMITED FMEA DATA (ONLY A CRITICALITY SUMMARY LIST FORM POST 51-L ANALYSIS) RECEIVED, NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED. THE DISCREPANCY BETWEEN NASA FMEA AND IOA											

ANALYSES ARE MARKED AS AN ISSUE UNTIL RESOLVED WITH THE SUBSYSTEM

MANAGER.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:			NASA DATA: BASELINE [] NEW [X]					
	ARPCS 282 REGULATOR, 15	.5-17 PSIG	(2)					
LEAD ANALYST:	M.J. SAIIDI							
ASSESSMENT:								
CRITICAL: FLIGHT		DANCY SCRE	ENS	CIL				
HDW/FUN	=	В	С	ITEM				
NASA [3 /1R IOA [3 /1R] [P]] [P]	[P] [P]	[P] [P]	[]*				
COMPARE [/] []	[]	[]	[]				
RECOMMENDATIONS:	(If differen	nt from NA	SA)					
[/] []	[,]		[] ADD/DELETE)				
* CIL RETENTION F	RATIONALE: (If	applicabl	e) ADEQUATE INADEQUATE					

ASSESSME ASSESSME NASA FME	NT	ID		AR:	19/88 PCS-2 -1-02	28		2]			DATA LINI NEV	E	[[x] :]		
SUBSYSTE MDAC ID:				28	PCS 3 LIEF	V.	ΑL	VE														
LEAD ANA	LYS	ST:		M.	J. S	ΑI	ID	I														
ASSESSMI	ENT	:																				
	CR		CAL				RE	DUN	DAN	IC	Y	SC	REE	NS	;				CII			
	1		LIGH V/FUI				A				В				С							
NASA IOA	[3	/1R /1R]		[P P]	1		NA P]		[P P]			[;]	*
COMPARE	[/]		[]	!	[N]		[]			[]	
RECOMME	NDA	TI	ons:		(If	đ	Ĺf	fere	nt	1	fro	m	NAS	A))							
	. [/)		[]		[]		[3	((AI	[DD/:	DE] LE	ETE)
* CIL R	ETE	TN	ION	RA?	rion <i>i</i>	L	E:	(If	a	pl	21 :	ica	able				ITAU(ITAU([]	

REMARKS:

ASSESSM ASSESSM NASA FM	ENT	'I	D:	Al	/19/88 RPCS-2 6-1-02	84							ASA DA BASELI N		[[X]	
SUBSYST MDAC ID ITEM:				28	RPCS 84 ELIEF	VA	LVE	E									
LEAD AN	ALY	ST	:	M.	J. SA	ΙI	DI										
ASSESSMI	ENT	:															
		F	LIG	LITY HT UNC	Ž.	R A		NDAN	CY B	SCI	REEN	s c			CIL ITEN	1	
NASA IOA		3	/1 /1	R]	[P P]	[NZ P	A]	[P P]	[:]	*
COMPARE	[/]	[]	ι	N]	[]	[]	
RECOMMEN	IDA'	ric	ons	:	(If d	if:	fer	ent :	fro	om N	(ASA))					
	[/]	ſ]	[]	[]] DDA))/DE] :LE	TE
* CIL RE REMARKS: IOA AGRE			-				(I	f apı	pli	cab	-		EQUATI EQUATI		x]	

ASSESSME ASSESSME NASA FME	NТ	ID:	ARP	9/88 CS-285 L-0224				N		DATA LINE NEW	[[
SUBSYSTE MDAC ID:			ARPO 285 PRES	CS SSURE	SENS	SOR (2	2) .						
LEAD ANA	LYS	ST:	M.J	. SAII	DI								
ASSESSME	NT:	:											
	CR]	TICAI FLIGH		R	EDUN	IDANCY	SCR	EENS			CII		
	I	HDW/FU	INC	A		E	3	C	3				
NASA IOA	[3 /3 3 /3]	[]]]	[]		[] ;	*
COMPARE	[/]	[]	C]	[]		[]	
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* CIL RE	ETEI	NTION	RATI	ONALE:	(If	f appl	licab	2	ADEQU ADEQU	ATE	[]	
DEMADEC .	,												

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		-2	NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 286 ISOLATION	VALVE-REGULA	TOR OUTLET	
LEAD ANALYST:	M.J. SAIII	DI		
ASSESSMENT:				
CRITICAL FLIGH		EDUNDANCY SCR	EENS	CIL
	NC A	В	С	ITEM
NASA [3 /1R IOA [3 /3] [P] [NA]] [[P] []	[] *
COMPARE [/N) [N] [N]	[N]	[]
RECOMMENDATIONS:	(If dif	ferent from N	ASA)	
[/] [] []	[] (A	[] DD/DELETE)
* CIL RETENTION	RATIONALE:	(If applicab	•	
			ADEQUATE INADEQUATE	
REMARKS: DUE TO LIMITED F. POST 51-L ANALYS WAS ATTEMPTED. ANALYSES ARE MAR	IS) RECEIVI THE DISCREI	ED, NO DETAIL PANCY BETWEEN	ASSESSMENT O	F THIS ITEM D IOA

MANAGER.

ASSESSMENT ASSESSMENT NASA FMEA	ID:	ARPCS	-287	-1				SA DATA ASELINE NEW			
SUBSYSTEM: MDAC ID: ITEM:		ARPCS 287 ISOLA		VALVI	E-RI	EGULATO	R OU	TLET			
LEAD ANALY	ST:	M.J.	SAII	DI							
ASSESSMENT	:										
CR	ITICAL FLIGH		F	REDUNDA	ANC	Y SCREE	ens		CIL ITE		
		INC	P	4	1	В	С				
NASA [IOA [3 /1F 3 /2F	R]	[]	P]		NA] P]	[P]	[] *	
COMPARE [/N	1	[1	[и]	[]	[]	
RECOMMENDA	TIONS	(1:	f di:	fferen	t f	rom NA	SA)				
	. /	1	[3	[1	[] (2	[ADD/I] ELETE)	
* CIL RETI	ENTION	RATIO	NALE	: (If	app	licabl	Ω	DEQUATE DEQUATE]	
REMARKS: DUE TO LIM POST 51-L WAS ATTEM ANALYSES A MANAGER.	ANALY	SIS) R	ECEI	VED, I	, pr	MUREN MUREN	MYCY	FMEA A	ND I	DA	:M

ASSESSMENT DAT ASSESSMENT ID: NASA FMEA #:	ARPC	/88 5-288 -0227-:	3			A DATA: SELINE NEW	[]
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 288 ISOL		VALVE-	REGUL	ATOR OUT	LET	
LEAD ANALYST:	M.J.	SAIID	τ				
ASSESSMENT:							
CRITIC FLI	GHT	REI	UNDAN	CY SCR	REENS		CIL ITEM
HDW/	FUNC	A		В	С	•	
NASA [3 / IOA [3 /	1R] 1R]	[P]]	NA] P]	[P] [P]		* []
COMPARE [/]	[]	[N]	[]	l	[]
RECOMMENDATION	S: (If	diffe	rent :	from N	ASA)		
]		C	3	[]] D/DELETE)
* CIL RETENTION	N RATION	ALE: (If app	olicab		QUATE []
REMARKS: IOA AGREES WITH	THE FM	EA.			TWODE	CONTE [J

ASSESSME ASSESSME NASA FME	NΤ	II		ARP	cs-	289		2							ASA Base	ELIN	ΙE	-	x]	
SUBSYSTE MDAC ID:	M:			ARP 289 H2O		ΓEI	RNA	ATE	P	RE	SS	URE	VA	LV:	E (1	L)					
LEAD ANA	LYS	ST	:	M.J	. s	AI:	[D]	ַ													
ASSESSME	NT:	:																			
		F	ICAL: LIGH: N/FUI	r		1		NUC	DA		Y B	SCRE	EN	s c					IL PEN	4	
NASA IOA	[3	/1R			[[]]	P :]		[P]	[P]			[x]	*
COMPARE	[N	/N]		[]	N :]		[N]	[N]			[N]	
RECOMMEN	DA!	ΓΙ	ons:	(If (di:	ffe	ere	nt	f	rc	om NA	SA	.)							
. •	[/	1		[]		[]	[]	((AI	[,dc	/DI	ELJ	ETE)
* CIL RE	TE	NT:	ION 1	RATI	ONA	LE	:	(If	a	pp	13	icabl			DEQU DEQU			[]	
REMARKS:																					

ASSESSME ASSESSME NASA FME	NT	I		Αĺ	/19/8 RPCS- 6-1-0	-29		-1								DAT ELII NI	NE	[}	()	
SUBSYSTE MDAC ID:				29	RPCS 90 20 Al	L' T 'I	ERI	NATE	E Pi	RE	SS	URE	Z VA	LV:	E (:	1)				
LEAD ANA	LY	ST	:	M	.J. 8	SA:	II	DI												
ASSESSME	NT	:																		
		F	ICAL LIGH W/FU	r	ť		RI A	EDUN	IDAI		Y B	SCR	EEN	s c				CII ITE		
			•								_			_						
NASA IOA	[3	/1R /1R]		[P P]		[P P]	[P P]			[]	*
COMPARE	[/]		[]		[]	[]			[]	
RECOMMEN	DA'	ri	ons:		(If	d:	if	fere	ent	f	rc	om N	ASA)						
•	[/]		[]		[]	[]	((AD	[D/C) EL	ETE.
* CIL RE	TEI	NT:	ION 1	R A T	TION?	\L	Ξ:	(If	ar	g	li	.cab				JATE JATE		[[]	

ASSESSMEN ASSESSMEN NASA FMEA	T ID):	2/19 ARPO 05-6	:S-2	29	1 02	4-1							LINE NEW			
SUBSYSTEM MDAC ID: ITEM:			ARPO 291 SWIT		,	S2	8 (:	1)									
LEAD ANAL	YST:		M.J.	Si	ΑI	ID	I										
ASSESSMEN	T:																
C	FI	LIGH					DUN	DAI	ICY B		REENS	S C			CII		
		V/FU				A										_	
NASA IOA	[3 [3	/1R /1R]] [P P]		[P]	[P P]		[]	*
COMPARE	[/	1		(]		[1	(]		[]	
RECOMMENI)ATI	ons:	(Ιf	di	Ĺfi	fere	nt	fr	om 1	NASA)					
	[/]		[]		[)	[]	(A	[[ETE)
* CIL RET	rent:	ION	RATI	ona	LI	€:	(If	a	ppl	ica				ATE ATE]	
REMARKS: IOA AGRE	ES W	ITH	THE	FME	A.	•											

ASSESSMENT DE ASSESSMENT II NASA FMEA #:		292		NASA DA BASELI N	
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 292 SWITCH,	S28 (1)		
LEAD ANALYST	M.J. SA	IIDI			
ASSESSMENT:					
FI	CALITY LIGHT J/FUNC	REDUN	DANCY SC	REENS C	CIL ITEM
NASA [3		P]		-	[] *
IOA [1	/1] [j	[P] []	[P] []	[X]
COMPARE [N	/N] [и ј	[N]	[N]	[N]
RECOMMENDATIO	NS: (If d	iffere	nt from	NASA)	
[/] []	[]	[]	[] (ADD/DELETE)
* CIL RETENTI REMARKS: IOA AGREES WI			applica	ble) ADEQUAT INADEQUAT	

ASSESSMEN ASSESSMEN NASA FME	T	ID		ARI	PCS-	29		3-1						SA DA'. ASELII Ni	NE	[x]	
SUBSYSTEM MDAC ID:				ARI 293 CII	3	T	BR	EAKE	ER,	CE	15	(1)						
LEAD ANA	LYS	T:		м.:	J. S	ΑI	ΊΙ	I										
ASSESSME	NT:	}																
	CR]		CAL				RI	EDUNI	OAN	CY	SCF	REENS	3			CIL		
	I		LIGH' V/FUI				A			В			С					
NASA IOA	[3	/1R /1R]		[P P]	[P P]	[[P P]		[]	*
COMPARE	[/	1		[]	[]	[]		[]	
RECOMMEN	IDA ⁱ	TI	ons:		(If	đ	if	fere	nt	fr	om 1	NASA)					
	[/	}		[]	[]	[]	(A	[DD/[) ELE	TE)
* CIL RI	ETE	NT	ION	RAT	ION	ΑL	E:	(If	ap	pl	ica		n	DEQUA' DEQUA'		[]	
REMARKS	: EES	W	ITH	THE	E FM	EA	٠.											

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-294 05-6VA-2023-2	NASA DATA: BASELINE [] NEW [X]
145 5 6	ARPCS 294 CIRCUIT BREAKER, CB15 (1)	
LEAD ANALYST:	M.J. SAIIDI	
ASSESSMENT:		
FLIGHT		CIL ITEM C
NASA [3 /2R IOA [3 /3] [P] [P] [:	P] []*
COMPARE [/N		v] []
RECOMMENDATIONS:	(If different from NASA)	
[/] [] [] [] [] (ADD/DELETE)
* CIL RETENTION R	ATIONALE: (If applicable)	
REMARKS:	INA	ADEQUATE [] ADEQUATE []
WAS ATTEMPTED. T	EA DATA (ONLY A CRITICALITY S) RECEIVED, NO DETAIL ASSE HE DISCREPANCY BETWEEN NASA ED AS AN ISSUE UNTIL RESOLV	SSMENT OF THIS ITEM

ASSESSMENT II NASA FMEA #:	D: ARPCS		NASA DATA: BASELINE [] NEW [X]									
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 295 RESIS	STOR, A3R3	,5.1K (1)									
LEAD ANALYST	: M.J.	SAIIDI										
ASSESSMENT:												
F	ICALITY LIGHT W/FUNC	REDUND A	ANCY SCRE B	ENS C	CIL ITEM							
NASA [3 IOA [3	/3] /3]	[NA] []	[NA] []	[NA] []	[] *							
COMPARE [/]	[и]	[и]	[N]	[]							
RECOMMENDATI	ONS: (I	f differen	t from NA	ASA)								
]	/ 1	[]	[]	[]	[ADD/DELETE)							
* CIL RETENT	ION RATIO	NALE: (If	applicabl	e) ADEQUATE INADEQUATE	[]							

ASSESSME ASSESSME NASA FME	ENT	I		ΑÍ	/19/88 RPCS-296 6-1-0228-3						NASA DATA: BASELINE [] NEW [X]									
SUBSYSTE MDAC ID:				29	RPCS 96 ILTER .J. SAIIDI															
LEAD ANA	LY	ST	:	M.	J.	SA	II	DI												
ASSESSME	NT	:																		
		F	ICAL LIGH W/FU	T	?		R:		NDA	N	CY B	SCI	REEN	s C				IL TEM	Ī	
NASA IOA			/1R /1R]		[P P]		[NA P]]	P P]		[]	*
COMPARE	[/]		[]		[N]	ι]		[]	
RECOMMEN	DA?	ric	SNC:		(If	d :	if:	fer	ent	: 1	fro	m l	NASA)						
	[/]		[]		[]	[]	(2	[ADD/	/DE] LE	TE
* CIL RE REMARKS: IOA AGRE								(I	fa	p	pli	cal				UATE UATE	•]	

NASA FME SUBSYSTE MDAC ID:	NT A # M:	ID	•	AR 06 AR 29	ARPCS-297 06-1-0149-2 ARPCS 297					NASA DA BASELI N VALVE, LV1&LV2 (2)							LINI NEV					
ITEM:	TVC	· .							L	/AI	LVI	Ξ,	LV1	&I	LV2	2 (2)						
ASSESSME				n.		JA.																
		FL	CALI IGHT	ľ	•		RI A		NDA	ANC	CY B	sc	CREE	NS	s C				II T	L EM	[
NASA IOA	[3	/1R /1R]		[P P]]	NA P	4]]	P P]		[:]	*
COMPARE	[,	/	3		(]		[N]		[]		(•]	
RECOMMEN	[ADI	OI	ns:		(If	d :	if	fer	ent	= 1	fro	om	NAS	A)	l							
	[/]		[]		[]		[]	(1) ADE	5/	DE] LF	ETE)
* CIL RE	TEN	ITI	ON I	RAT	'ION	AL	E:	(I	fa	p	91 :	ica	able			DEQU <i>I</i>]	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-298 06-1-0149-	-1	NASA DATA: BASELINE [] NEW [X]										
	ARPCS 298 02/N2 CONT	ROL VALVE, LV	71&LV2 (2)										
LEAD ANALYST:	M.J. SAIID)I											
ASSESSMENT:													
CRITICALI FLIGHT HDW/FUN	?	DUNDANCY SCRE	EENS C	CIL ITEM									
NASA [3 /1R IOA [2 /1R] [P] [NA]] [P]	[P] [P]	[x] *									
COMPARE [N /] [] [N]	[]	[N]									
RECOMMENDATIONS:	(If diff	erent from NA	.SA)										
[, /] [] []		[] DD/DELETE									
* CIL RETENTION F	RATIONALE:	(If applicabl	e) ADEQUATE INADEQUATE	[]									

	2/19/88 ARPCS-299 06-1-0149		NASA DATA: BASELINE [] NEW [X]											
	ARPCS 299 02/N2 CONT	TROL VALV	Æ, LV1	&LV2 (2)										
LEAD ANALYST:	M.J. SAIII)I												
ASSESSMENT:														
CRITICAL FLIGH HDW/FU	T	EDUNDANC!	SCREE	ns C	CIL									
•] [P] [1	NA] P]	[P] [P]	[[x] *								
COMPARE [N /] [] [1	4]	[]	[N]								
RECOMMENDATIONS:	(If dif:	ferent f	rom NAS	A)										
[/] [] [1	[] (A)	[DD/D] ELETE)								
* CIL RETENTION	RATIONALE:	(If app) ADEQUATE INADEQUATE	_]								
REMARKS:														

2/19/88 ARPCS-300		NASA DATA: BASELINE [] NEW [X]							
ARPCS 300 POSITION	INDICATO	R/N2/02	controller	VALVE					
M.J. SAIII	DI								
	EDUNDANC	Y SCREE	ens	CIL					
iC A		В	С	ITEM					
] [] []	[]	[] *					
] [] []	[]	[]					
(If diff	ferent f	rom NAS	SA)						
] [] []	[] A)	[] DD/DELETE)					
RATIONALE:	(If app	licable	ADEQUATE	[]					
	ARPCS-300 ARPCS 300 POSITION M.J. SAIII TY RI CTY	ARPCS-300 ARPCS 300 POSITION INDICATO M.J. SAIIDI TY REDUNDANC C A [] [] [] [] [] (If different f	ARPCS-300 ARPCS 300 POSITION INDICATOR/N2/02 M.J. SAIIDI TY REDUNDANCY SCREE C A B [] [] []] [] [] (If different from NAS	ARPCS-300 ARPCS 300 POSITION INDICATOR/N2/02 CONTROLLER M.J. SAIIDI TY REDUNDANCY SCREENS C A B C [

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-301 05-6VA-2002-1	nasa da Baseli N	
mag TD.	ARPCS 301 SWITCH, S16&S	519/02/N2 CONTROLLER	VALVE (2)
LEAD ANALYST:	M.J. SAIIDI		
ASSESSMENT:			
CRITICAL FLIGH		NDANCY SCREENS	CIL ITEM
HDW/FU	NC A	в с	
NASA [3 /1R IOA [2 /1R	[P] [P]	[P] [P] [P] [P]	[x] *
COMPARE [N /] []	[] []	[и]
RECOMMENDATIONS:	(If differ	ent from NASA)	
ι /] []	[] []	[] (ADD/DELETE)
* CIL RETENTION	RATIONALE: (I	f applicable) ADEQUA: INADEQUA:	re [] re []
THE CALL CALL	ייי אסווודגים עייייי	D ON EXPLANATION GIVE O TRANSFER NEEDS TO ON THE POSITION OF SWI	DE DIAIDED INIC

ASSESSMI ASSESSMI NASA FMI SUBSYSTI	ent Ent Ea	D :	ATE: D:	2/19/ ARPCS 05-6	/88 5-30 VA-2	1 A 002-	2		NASA DA BASELI N	
SUBSYSTE MDAC ID:				301					CONTROLLER	VALVE (2)
LEAD ANA	LY	ST	:	M.J.	SAI	IDI				
ASSESSME	NT	:								
		F	LIGH'	ITY I NC		REDU:	NDANCY E			CIL ITEM
***							_		С	
NASA IOA	[3 2	/1R /1R]	[]	P] P]] []]	[P] [P]	[] * [X]
COMPARE	(N	/]	[]	[]	[]	[N]
RECOMMEN	DA?	ric	ons:	(If	di	ffer	ent fr	om 1	NASA)	
	(/]	[]	[]	[]	[] (ADD/DELETE)
* CIL RE	TEN	(Tr	ON F	RATION	ALE:	(I1	f appl	ical		•
REMARKS:						,	FF-		ADEQUATI INADEQUATI	
IOA CONC	URS	S V	VITH RECO	FMEA	BASE S TH	ED ON	EXPL	ANA:	FION GIVEN FO	OR ARPCS-317.

FAILURE MODES: "INADVERTENTLY OPENS", AND "INADVERTENTLY CLOSES". THESE TWO MODES WILL RESULT IN TWO DIFFERENT

CORRECTING ACTIONS, EVEN IF THE CRITS ARE THE SAME.

ASSESSMENT DA ASSESSMENT II NASA FMEA #:	ATE:	2/19/8 ARPCS- 05-6VA	8 30 - 2	2 00	2-1	NASA DATA: BASELINE [] NEW [X]									
SUBSYSTEM: MDAC ID: ITEM:		302						'N2 C	נאכ	RO	LLER VA	LVE (2)		
LEAD ANALYST:	:	M.J. S	ΑI	ID	I										
ASSESSMENT:															
	ICALI LIGHT	TY		RE	DUNDA	NC	CY	SCRE	ENS	5		CIL			
		ic		A			В			С					
NASA [3 IOA [3	/1R /1R]	[P P]]	P P]	[P P]	[]	*	
COMPARE [/]	[]	[]	[1	[]		
RECOMMENDATION	ons:	(If	di	lff	erent	: 1	fro	om NA	SA)					
[/]	[]	[]	[] (A	[DD/DI		ETE)	
* CIL RETENT	ION 1	RATIONA	LE	፤:	(If a	ıpı	pl:	icabl			DEQUATE DEQUATE]		
REMARKS: IOA CONCURS BROKEN INTO CLOSE" RESUL IF CRITS ARE	TWO :	FAILURI TWO SI	7 7	1Or	DES S	EN(CE	"FAI	LS	TC	OPEN"	AND '	" F Z	TITO IO	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-302 05-6VA-20	A 02-2	NAS BA	NASA DATA: BASELINE [] NEW [X]							
SUBSYSTEM:	ARPCS 302			LER VALVE (2)							
LEAD ANALYST:	M.J. SAII	DI									
ASSESSMENT:											
CRITICALITY REDUNDANCY SCREENS CIL ITEM											
HDW/FU	NC A	В	С								
NASA [3 /1R IOA [3 /1R] [P] [P] [P]	[] *							
COMPARE [/] [] [] []	[]							
RECOMMENDATIONS:	(If dif	ferent fro	om NASA)								
[/] [] [] []	[] (ADD/DELETE)						
* CIL RETENTION DREMARKS:	RATIONALE:	(If appli	ADE	QUATE [] QUATE []							
IOA CONCURS WITH BROKEN INTO TWO	FMEA, BUT FAILURE MOI	RECOMMEND DES SINCE	S THAT 05-6	VA-2002-1 BE PPEN" AND "FAILS	S T(

CLOSE" RESULT IN TWO SEPARATE EFFECTS AND CORRECTING ACTION EVEN IF CRITS ARE THE SAME.

ASSESSMI ASSESSMI NASA FMI	ENT	ID:		9/88 CS-303		NASA DATA: BASELINE [] NEW [X]									
SUBSYSTE MDAC ID:			ARP 303 SWI		L,6&S	19/02,	/N2	CONTR	OLLER	≀ VA	LVE	(2)			
LEAD ANA	ALYS	ST:	M.J	. SAIII	ΟI										
ASSESSMI	ENT:	:													
		TICAL FLIGH	T	RI A	EDUN	DANCY B	SC	REENS C	ı		CII				
	r	IDW/FU	INC	A		D			•						
NASA IOA	[3 /3]	[[]	[]]]		[]	*		
COMPARE	[N /N]	[]	[]	[]		[]			
RECOMME	NDA	rions:	(If diff	fere	ent fr	om 1	NASA)							
	[/]	[]	[]	[1	(A	[DD/I) DELE	TE		
* CIL R	ETEI	NTION	RATI	ONALE:	(If	appl	ica	A	DEQU <i>I</i>]]			

REMARKS:

ASSESSMENT DATE: 2/19/88 ASSESSMENT ID: ARPCS-304 NASA FMEA #: 05-6VA-2008-1					NASA DATA: BASELINE [] NEW [X]										
SUBSYSTEMDAC ID:			ARPCS 304 RESIS		R,	5.1	.K/02/	N2 VA	LV]	E S	SWITC	:H (!	5)		
LEAD ANA	ALYS'	r:	M.J.	SA	III)I									
ASSESSMI	ENT:														
		TICAL FLIGH	T		RI	EDUN	DANCY	SCRE	ENS	3			CIL		
HDW/FUNC A							В			С					
NASA IOA	[]	3 /3 3 /3]	[N2	A]	[N	A]	[NA	\]		[]	*
COMPARE	[/]	[N]	[N	1	[N]		[]	
RECOMMEN	IDAT:	ions:	(If	d :	Lf1	ere	nt fr	om NA	SA))					
	[/	1	[]	[]	[]	(AI	[[] ELE	TE
* CIL RE	TEN	rion :	RATION	ALI	€:	(If	appl	icabl	e)						
REMARKS:									I		EQUA EQUA		[]	
ALSO SEE APPROPRI	ARI			31	L5.	T	HESE I	RESIS	TOI	RS	ARE	APPI	LIED	ΑT	1

ASSESSMEN ASSESSMEN NASA FMEA	II TV		2/19/6 ARPCS- 05-6V	-305	03-2	NASA DATA: BASELINE [] NEW [X]							
SUBSYSTER MDAC ID: ITEM:	4:		ARPCS 305 SWITC	H S1	7/PPC	D2 SE	NSOR	A&B (1)				
LEAD ANA	LYST	:	M.J.	SAII	DI								
ASSESSME	T:												
CRITICALITY REDUNDANCY SCREENS CIL ITEM													
		/FU		A		В		С					
NASA IOA		/1R /3		[P]	[P]	[P]	[] *		
COMPARE	[/N]	[N]	[N]	ΙИ]	[]		
RECOMMEN	DATI(ons:	(If	dif	fere	nt fr	om N	ASA)					
	[/	1	(]	[)	[] (A)	[DD/DE] ELETE)		
	CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []												
REMARKS: DUE TO L	IMIT	ED F	MEA DA	TA (ONLY	A CR	ITIC	ALITY	SUMMARY	LIST	FROM		

POST 51-L ANALYSIS) RECEIVED, NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED. THE DISCREPANCY BETWEEN NASA FMEA AND IOA ANALYSES ARE MARKED AS AN ISSUE UNTIL RESOLVED WITH THE SUBSYSTEM MANAGER.

ASSESSME ASSESSME NASA FME	TN	TI	٦.	λD	ARPCS-306 BASELI									NE	-]		
SUBSYSTE MDAC ID:				30		s1 [.]	7/PI	PO2	SE	NSO:	R A	&B	3 ((1)				
LEAD ANA	LYS	ST:	:	M.	J. SA	II	DI											
ASSESSME	NT:	:																
CRITICALITY REDUNDANCY SCREENS FLIGHT												CIL ITEM						
	HDW/FUNC A B C																	
NASA IOA	[3 3	/1R /3]	[[P]]	P]		[P]		[[]	*
COMPARE	[/N]	[N]	[N]		[N]		[]	
RECOMMEN	DAT	'IC	NS:		(If di	Ĺfí	fere	ent	fr	om l	NAS	A)						
	[/]	[]	[]		[]	(AI	[DD/D] ELE	TE)
	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []																	
DUE TO L	INADEQUATE [] EMARKS: UE TO LIMITED FMEA DATA (ONLY A CRITICALITY SUMMARY LIST FROM OST 51-L ANALYSIS) RECEIVED, NO DETAIL ASSESSMENT OF THIS ITEM																	

WAS ATTEMPTED. THE DISCREPANCY BETWEEN NASA FMEA AND IOA ANALYSES ARE MARKED AS AN ISSUE UNTIL RESOLVED WITH THE SUBSYSTEM MANAGER.

ASSESSME ASSESSME NASA FME	NT	II):	AR	2/19/88 ARPCS-307 06-1-0147-2											DATA LINI NEV	E	[[x		
SUBSYSTE MDAC ID: ITEM:	M:			30	PCS 7 /N2	CC	נאכ	ROL	LEF	₹	(2	!)								
LEAD ANA	LYS	ST:	:	М.	J. S	A]	III)I												
ASSESSME	NT:	;																		
CRITICALITY RED FLIGHT HDW/FUNC A								EDUNDANCY SCREENS B C							CIL ITEM					
NASA IOA]	3	/2R /2R]		[P P]	[]	NA P]	[P P]			[]	*
COMPARE	[/]		[3		[N]	[]			[]	
RECOMMEN	DA'	ΓΙ	ons:		(If	d :	if	fere	nt	f	ro	m	nasa))						
	[/]		[]	1	[1	[]	(.		[D/D	ELI	ETE)
* CIL RE								(If	' a]	ÞÞ)1:	ica		Al NA	DEQI DEQI	JATE JATE		[]	
TON MOUT	-110	44					-													

ASSESSMENT DASSESSMENT IN NASA FMEA #:	ATE: 2, D: AI	2/19/88 NASA DATA: ARPCS-308 BASELINE [] 06-1-0147-3 NEW [X]									
SUBSYSTEM: MDAC ID: ITEM:	30	RPCS 08 2/N2 CON	PROLLER	(2)							
LEAD ANALYST	: M.	.J. SAIII	DI								
ASSESSMENT:											
CRIT:		CIL ITEM									
HD											
NASA [3 IOA [3	/2R] /1R]	[P [P] [NA] P]	[P]	[] *]			
COMPARE []	[]								
RECOMMENDATIO	ons:	(If diff	ferent i	rom NAS	SA)						
Į.	/]	[] []	[[DD/DE] LETE)			
* CIL RETENT	ION RAT	TIONALE:	(If app	licable	2)						
REMARKS:						EQUATE EQUATE	[]			
REMARKS: CHERE IS A POSSIBILITY OF HIGHTER PPO2 IN THE CABIN FOR CUNCTIONAL REDUNDANCY LOSS. THIS FAILURE WILL CLOSE 02/N2 VALVE ALLOWING ONLY 02 TO FLOW INTO THE CABIN RESULTING EVENTUALLY IN COURT CABIN-FIRE HAZARD. COURT TO LIMITED FMEA DATA (ONLY A CRITICALITY SUMMARY LIST FROM COST 51-L ANALYSIS) RECEIVED, NO DETAIL ASSESSMEN TOF THIS ITEM CAS ATTEMPTED. THE DISCREPANCY BETWEEN NASA FMEA AND IOA CONTROL OF THE DISCREPANCY BETWEEN NASA FMEA AND IOA CONTROL OF THE DISCREPANCY BETWEEN NASA FMEA AND IOA CONTROL OF THE SUBSYSTEM CANAGER.											

ASSESSME	ASSESSMENT DATE: 2/19/88 ASSESSMENT ID: ARPCS-309 NASA FMEA #: 06-1-0147-1								NASA DATA BASELINI NEV		;]
SUBSYSTE MDAC ID: ITEM:			ARPCS 309 02/N2	CON	FROL:	LER (2)				
LEAD ANA	LYS	T:	M.J. 5	SAII	DI						
ASSESSME	NT:										
	1	TICALI FLIGHT DW/FUI	Ri A	EDUNI	DANCY B	SCRE		c	CII		
NASA IOA	[•]	[P]			[]	P] P]	[] *
COMPARE	[/]	[]	[N]	[1	[]
RECOMMEN	DAT	ions:	(If	dif	fere	nt fr	om NA	SA)			
	[/]	[1	[3	[] (2	[ADD/I] DELETE)
* CIL RE	TEN'	TION 1	RATION	ALE:	(If	appl	icabl	Ž	ADEQUATE ADEQUATE	-]
REMARKS:											

IOA AGREE WITH THE FMEA.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	ARPCS-310	NASA DATA: BASELINE [] NEW [X]										
MDAC ID:	ARPCS 310 PPO2 SENSORS A+B	(2)										
LEAD ANALYST:	M.J. SAIIDI											
ASSESSMENT:												
CRITICAL: FLIGH HDW/FU		CY SCREENS B C	CIL ITEM									
NASA [3 /1R IOA [3 /1R] [P] [P] [P P]		*								
COMPARE [/] [] [] [] []									
RECOMMENDATIONS:	(If different	from NASA)										
[/] [] [) [] [] (ADD/DEI	LETE)								
* CIL RETENTION 1	CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []											
	EMARKS: DA AGREES WITH THE FMEA EFFECTS WITH THE POSSIBILITY OF 02 RICH ABIN RESULTING FROM 02/N2 VALVE TO GO CLOSED ALLOWING ONLY 02 TO											

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	ARPCS-31	1 6-1		NASA DATA: BASELINE NEW								
MDAC ID:	ARPCS 311 PPO2 SEN	ISORS A+B	(2)									
LEAD ANALYST:	M.J. SAI	IDI										
ASSESSMENT:												
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM												
	NC	A	В	С								
NASA [3 /1R IOA [3 /2R] [P] [P] [P] [P] [P] P]	[] *							
COMPARE [/N] [] [) []	[]							
RECOMMENDATIONS:	(If d	ifferent	from NASA	V)								
[/] [] [] [[] (A)	[] DD/DELETE)							
* CIL RETENTION	RATIONAL	E: (If ap		ADEQUATE	[]							
POST 51-L ANALYS	REMARKS: DUE TO LIMITED FMEA DATA (ONLY A CRITICALITY SUMMARY LIST FROM POST 51-L ANALYSIS) RECEIVED, NO DETAIL ASSESSMEN TOF THIS ITEM											

MANAGER.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	ARPCS-31	12	NASA DATA: BASELINE NEW								
	312	NSOR-C (1)									
LEAD ANALYST:	M.J. SAI	IIDI									
ASSESSMENT:											
CRITICAL FLIGH		CIL									
HDW/FU		A B	С	ITEM							
NASA [3 /1R IOA [2 /2	NASA [3/1R] [P] [P] [P] [OA [2/2] []										
COMPARE [N /N] [иј [иј [n]	[и]							
RECOMMENDATIONS:	(If di	ifferent from NASA)	ı								
[/	J [) [] [[] D/DELETE)							
	RATIONALE		ADEQUATE ADEQUATE	[] []							
REMARKS: IOA CONSIDERED A SEPARATE ANALYSIS ON PPO2-C SENSOR SINCE IT IS NOT USED FOR O2/N2 CONTROLLER OPERATION. ITS CRITICALITY WAS ASSIGNED BASED ON ITS VOTING CAPABILITY AND AFTER PPO2-A AND B ARE NO LONGER OPERATIONAL. DUE TO LIMITED FMEA DATA (ONLY A CRITICALITY SUMMARY LIST FROM POST 51-L ANALYSIS) RECEIVED. NO DETAIL ASSESSMENT OF WITH THEM											
MUS WITTWLIFD.	THE DISCR	EPANCY BETWEEN NAS	A PMA AND T	COD BURK KOT							

ASSESSMEN ASSESSMEN NASA FME	VT	ID			/19/88 NASA DATA: RPCS-313 BASELINE [] NEW [X]									
SUBSYSTEM MDAC ID:	M:			ARP 313 SWI		2 02	CONTRO	LLE	R (2)					
LEAD ANA	LYS	T:		M.J	. SAIII)I								
ASSESSME	NT:	;												
•	CR1			ITY	RI	EDUN	DANCY	SCR	EENS			CII		
	F	_	LIGH V/FU	NC	A		В		C	!				
NASA IOA	[3	/]	[]	[]]]		[]	*
COMPARE	(N	/N]	[]	[]	[]		[]	
RECOMMEN	DA'	ric	ONS:	: (If dif	fere	ent fr	om N	ASA)					
	[/	1		1	ſ	1	[]	(A	[DD/I) DELE	TE)
* CIL RE	TE	NT:	ION	RATI	ONALE:	(11	f appl	icab		ADEQU ADEQU		[]	
REMARKS:														

ASSESSM ASSESSM NASA FM	D:	2/1 ARI	19/88 PCS-31				nasa Basi	ELIN) x]				
SUBSYST MDAC ID ITEM:				ARI 314 SWI		PPO2	CONTE	ROLLI	ER (2)				
LEAD AN	ALY	ST	:	M.J	. SAI	IDI								
ASSESSMI	ENT	:												
	CR		ICAI LIGH	LITY	F	REDUI	NDANCY	SCI	REENS			CI:	_	
		HD	W/FU	INC	P	1	E	3	(2		11.	em -	
NASA IOA	[[3	/3]	[]]]]]		[]	*
COMPARE	[N	/N]	[]	C	1	C]		[]	
RECOMMEN	IDA'	ri(ons:	(If dif	fere	ent fr	om N	IASA)					
	[•	/]	[]	[]	[]	(A	[DD/I] DELE	TE)
* CIL RE	TE	T.	ION	RATI	ONALE:	(If	appl	icab	le)					
REMARKS.										DEQU.		[]	

REMARKS:

ASSESSMEN ASSESSMEN NASA FME	NT II		2/19/ ARPCS 05-6V	-315				N	ATA: JINE NEW]		
SUBSYSTEM MDAC ID: ITEM:	1:		ARPCS 315 RESIS		/10K	(2)							
LEAD ANA	LYST	:	M.J.	SAII	DĪ								
ASSESSME	T:												
(ICAL: LIGH:		R	EDUN	DANCY	SCF				CIL ITEM		
	HD	W/FUI	NC	A		E	3	C	}				
NASA IOA	[3 [3	/3 /3]	[N [A]	[]	[A]	()]	IA]]		[] *	t
COMPARE	[/]	[N]	[N	[]	[]	1]		[]	
RECOMMEN	DATI	ons:	(11	f dif	fere	nt fr	om 1	NASA)					
	[/) .	[]	[]	[)	(AD	[D/D] ELET	ΓE)
* CIL RE	ren't	ION I	RATION	VALE:	(If	appl	.ical	P	ADEQU <i>I</i>		[]	
REMARKS: ALSO SEE	ARP	CS-3	04 ANI	142	. т	HESE	RESI	ISTORS	ARE	CONS	IDE	RED	AT

THEIR APPROPRIATE LOCATIONS.

ASSESSME NASA FME	D:		5/88 CS-316 5VA-20	!		1	BASELII N		k]				
SUBSYSTE MDAC ID:			ARPO 316 CIRO	CS CUIT B	REAK	ŒR, C	CB18&	CB19	(2)				
LEAD ANA	LYSI	Γ:	M.J.	SAII	DI								
ASSESSME	NT:												
	1	rical Fligh	T	R	EDUN	IDANCY	SCR	EENS			CIL ITEM		
	HI	OW/FU	NC	A		I	3	(3				
NASA IOA	[3	3 /3]	[]	[]	[]	[[] *		
COMPARE	[/]	[]	(]	. []	ſ]		
RECOMMEN	DATI	cons:	(1	f dif	fere	nt fr	om N	ASA)					
·	[/]	ſ]	[)	[1	[(ADD/I] DELETE		
* CIL RE	TENT	TION :	RATIC	NALE:	(If	appl	.icab	2	DEQUATI	•]		

IOA AGREES WITH THE FMEA.

ASSESSMENT D ASSESSMENT I NASA FMEA #:	SSMENT DATE: 2/19/88 SSMENT ID: ARPCS-317 FMEA #: 05-6VA-2001-1 NEW [X]									
SUBSYSTEM: MDAC ID: ITEM:	,	ARPCS 317 CIRCUIT	BREAKE	R, CB18&CE	319 (2)					
LEAD ANALYST	' : 1	M.J. SAI	IDI							
ASSESSMENT:										
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM										
_		C	A	В	С	11211				
NASA [3 IOA [2	/1R /1R] [P] P]	[P] [P]	[P] [P]	[x] *				
COMPARE [N	/] [1	[]	[]	[N]				
RECOMMENDATI	ons:	(If di	.fferen	t from NAS	5 A)					
. [/] []	[]	[]	[] DD/DELETE)				
* CIL RETENT	'ION R	ATIONALE	E: (If	applicable	adequate INADEQUATE					
REMARKS: IOA CONCURS	שדייו	EMEA CRI	TTCALT	TY CONSIDE	ERING THAT C	ABIN VOLUME				
IS ADEQUATE JUDGMENTAL/S FIRST FAILUR	FOR RUBJEC E KNO CLE. GHT A	ETURN. TIVE DEC WING THA ON THE FTER THE	HOWEVE CISION AT THE OTHER E FIRST ACT AND	R, IT BECO TO CONTINU SECOND FAI HAND, IF TO FAILURE, IOA CRITI	OMES JE THE MISSIC LURE MAY RES THE MISSION D THEN THAT WO LCALITY WOUL	ON AFTER THE SULT IN LOSS MOVES INTO A OULD BE				

ASSESSME NASA FME	NT	I	D:	ARPC	S-318				,	NASA DAT BASELIN NE]
SUBSYSTE MDAC ID:				ARPC: 318 SWITE		6/PP	02 SE	LECT	OR (:	1)		
LEAD ANA	LYS	ST	:	M.J.	SAII	DI						
ASSESSME	NT:	:										
	CR.		ICAL LIGH	ITY T	R	EDUN	DANCY	SCR	EENS		CII	
	I	HDI	W/FU	NC	A		В		(C		
NASA IOA	[3 3	/3 /3]	[]	[]	[]]	[] *
COMPARE	[/]	[]	[]	[1	[]
RECOMMEN	DAT	ric	ons:	(I:	f dif	fere	nt fr	om N	ASA)			
	[/	1	[]	[]	[[ADD/D] ELETE)
* CIL RE	TEI	VT:	ION	RATIO	NALE:	(If	appl	icab:	1	ADEQUATE ADEQUATE]
REMARKS: IOA AGRE	ES	W:	ITH	THE F	MEA.						-	•

ASSESSME ASSESSME NASA FME	NT	ID		AR	19/8 PCS- -6VA	31		6-1						ŀ	NASA D BASEL	INE]	
SUBSYSTE MDAC ID: ITEM:				31	PCS 9 TER,	M	[4/	PPO:	2 F	RΕ	AC	ING	; (1	.)					
LEAD ANA	LYS	T:	;	М.	J. s	ΑI	ΙI	I											
ASSESSME	NT:																		
	CRI		CAL LIGH					EDUN	DAI	NC		SCF	REEN				CIL		
	F	IDV	/FU	NC			A				В			,	С				
NASA IOA	[3 3	/3 /3]		[NZ	A]]		[N	A]	1		NA]		[]	*
COMPARE	[1.	1		[N]		[N]			N]		[]	
RECOMME	NDA!	rI	ons:		(If	đ	if	fere	ent	1	fr	om 1	NAS	A)					
	[/]		[]		[]		[]	(A	[.DD/I) DELE	TE
* CIL R	ETE!	NT:	ION	RAT	ION	AL	E:	(If	ŧ a	Pl	ρl	ica			ADEQU IADEQU		[]	
REMARKS IOA AGR	: EES	W	ITH	THI	E FM	EΑ	•												

ASSESSM ASSESSM NASA FM	ENT	ID:	ARP	9/88 CS-320 6VA-20		1			NASA DA BASELI 1		x]
SUBSYST MDAC ID ITEM:			ARP 320 SWI		5/0	2/N2	FLOW	SELE	CTOR (1	L)		
LEAD AN	ALYS	T:	M.J	. SAII	DI							
ASSESSM	ENT:											
		TICAL		R	EDUN	IDANC'	Y SCF	REENS		c	IL	
		FLIGH DW/FU		A	•	1	В	•	С	Ι	TEM	
NASA AOI	[3 /3 3 /3]]]	[]]]]] *]
COMPARE	[/]	[]	[)	ι]	[)
RECOMMEN	IDAT	ions:	(:	If dif	fere	ent fi	com N	ASA)				
	[/	3	[]	[]	[]] (ADD)	/DEI] LETE)
* CIL RE	TEN	TION	RATIO	ONALE:	(If	appl	icab	•				
DEWARDS.									ADEQUAT ADEQUAT]	

IOA AGREES WITH THE FMEA.

ASSESSME ASSESSME NASA FME	NT I	D:	ARPO)/88 CS-321 SVA-20				•	ASA DATA BASELINI NEV		-
SUBSYSTE MDAC ID:	M:		ARPO 321 METE	es er, m3	G (1)						
LEAD ANA	LYSI	r:	M.J.	SAII	DI						
ASSESSME	NT:										
	1	rical Fligh DW/FU	T	R A		IDANCY B		EENS C		CIL	
NASA IOA	[3	3 /3]	[N ['A]	[N	[A]	[N	A]	[] *]
COMPARE	[/	3	[N]	[N]	[И]	[]
RECOMMEN	DAT:	ions:	(3	f dif	fere	ent fr	om N	ASA)			
	[/	1	C)	[]	(] (2	[ADD/I] ELETE
* CIL RE		rion	RATI(ONALE:	(If	appl	icab.	A	DEQUATE DEQUATE	_]
REMARKS:											

IOA AGREES WITH THE FMEA.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-3: 06-1-02	22 14 - 1		NASA DATA BASELINE NEW	
	322	RESSURE S	ENSOR (1)		
LEAD ANALYST:	M.J. SA	IIDI			
ASSESSMENT:					
CRITICALI FLIGHT		REDUNDAN	CY SCREEN	5	CIL ITEM
HDW/FUN		A	В	С	IIEM
NASA [2 /1R IOA [3 /2R] [P] [P] [P] [P] P]	[X] *
COMPARE [N /N] [] [] []	[N]
RECOMMENDATIONS:	(If d	ifferent	from NASA)	
\]) [) [] [) (AI	[] DD/DELETE)
* CIL RETENTION F	RATIONAL	E: (If ap	•	ADEQUATE ADEQUATE	
REMARKS: IOA CONSIDERED THOP/DT, AIRLOCK DEWITHOUT SUCH REDUTO ASSESS THE CARWAS FELT TO BE SE	P SENSOR JNDANT II BIN PRESS	, OR O2/N NSTRUMENT SURE INTE	BE MET BY 2 FLOW RAT ATION THE GRITY. THE	MONITORING TE SENSORS. CREW WILL HIS FUNCTION	G CABIN HOWEVER, NOT BE ABLE

DUE TO LIMITED FMEA DATA (ONLY A CRITICALITY SUMMARY LIST FROM POST 51-L ANALYSIS) RECEIVED, NO DETAIL ASSESSMENT OF THIS ITEM

ANALYSES ARE MARKED AS AN ISSUE UNTIL RESOLVED WITH THE SUBSYSTEM

WAS ATTEMPTED. THE DISCREPANCY BETWEEN NASA FMEA AND IOA

MANAGER.

ASSESSMENT ASSESSMENT NASA FMEA	DATE: ID: #:	2/19/88 ARPCS-3 05-6VA	ARPCS-323 BASEL 05-6VA-2027-1							SA DATA: ASELINE NEW	[
SUBSYSTEM: MDAC ID: ITEM:		ARPCS 323 METER,	M4/	CABIN	P	RE	SSURE	R	EA	DING (1)			
LEAD ANALY	ST:	M.J. S.	AIID	I									
ASSESSMENT	:												
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM													
	HDW/FU		A			В			С				
NASA [IOA [3 /1R 3 /3]	[P]	[P]	[P]	[]	*
COMPARE [/N	1	[]	1	[N]	[N]		3	
RECOMMENDA	TIONS:	(If	diff	erent	: f	rc	om NAS	A)					
	/]	[]	[]	[] (A)	[DD/DI		
* CIL RETE	NTION	RATIONA	LE:	(If a	pp	1	icable			EQUATE			
REMARKS: DUE TO LIMITED FMEA DATA (ONLY A CRITICALITY SUMMARY LIST FROM POST 51-L ANALYSIS) RECEIVED, NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED. THE DISCREPANCY BETWEEN NASA FMEA AND IOA ANALYSES ARE MARKED AS AN ISSUE UNTIL RESOLVED WITH THE SUBSYSTEM MANAGER.													

ASSESSM ASSESSM NASA FM	ENT ENT EA	; D #:	ATE:	2/1 ARP 06-	9/88 CS-3 1-02	24 11-	1					ASA DA' BASELII Ni			
SUBSYST MDAC ID ITEM:	EM:			ARP 324	CS		T SENS								
LEAD AN	ALY	ST	:	M.J	. SA	IID	I								
ASSESSM	ENT	:													
	CR	IT F	ICAL LIGH	ITY T		RE	DUNDAN	CY	sci	REENS	5		CI:		
		HD	W/FU	NC		A		В			С		11.	5M	
NASA IOA	[2	/1R /2R]	[P P] [P P]	[P P]	[:	K]	*
COMPARE	[N	/N]	[] []	[]	[1	1]	
RECOMMEN	IDA!	ri	ONS:	(1	f di	ffe	erent	fro	om N	VASA)					
	[/]	[1 (]	[[ADD/I		ETE)
* CIL RE	TEI	NT]	ION I	RATIC	NALE	: (If ap	pli	cab	ole)					
REMARKS:							. •				AD AD	EQUATE EQUATE	[]	
THE IOA		1 S]	DERI	ED TH	ат т	ΉE	IOSS (CAN	T R F	יים או	, ID	V CART	N DDE	COT	IDE.
SENSUK,	WII	XLX.	JCK I	JP SE	NSOR	. C	R HIG	HC)2 /N	17 FT.	$\mathbf{\Lambda}\mathbf{u}$	DAMEG	UC	TITES.	JRE TER.
MILHOOL	200	Jn.	KEDU	JNDAN	T IN	STF	ANSIENSIND	ኒጥ ፣	ON.	THE	_	DEM CO	TIT D N	TO	-
EVALUATE FELT TO	BE	A	RISE	CY SI	TUAT	ION	REOU	S A Crt	NG	A CA	BI	N LEAK	. TH	IS	IS
TEWNING	TU	ΑŅ	1 ABC	JKT D	ECIS	ION	[_								
DUE TO L POST 51-		77.7	TUIDI	DI K	LCEL	V PH	I. NO I	1877	דד באי	. ACC	rc	CMPNM /	OP MI	TO	ROM
WAS ATTE ANALYSES MANAGER.	m_{P1}	. LL). T	THE D	$\mathbf{I}\mathbf{S}\mathbf{C}\mathbf{R}$	I:PA	NCV RI	COLUMN TO SERVICE	FFN	MAG	λ	THE A A	ND TA	3	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	ARPCS-325	5-1		ASELINE [] NEW [X]
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 325 METER, M3/I	OP/DT REAL	DING (1)	
LEAD ANALYST:	M.J. SAIID	[
ASSESSMENT:				
CRITICAL FLIGH	ITY REI	OUNDANCY :	SCREENS	CIL ITEM
HDW/FU		В	С	
NASA [3 /1R IOA [3 /3] [P]] [P]] [P]	[] *
COMPARE [/N] [N]] [N] [и]	[]
RECOMMENDATIONS:	(If diffe	erent from	m NASA)	
. (/] [:] [] [:	[] (ADD/DELETE)
* CIL RETENTION	RATIONALE:	(If appli		
			ADI INADI	EQUATE [] EQUATE []
POST 51-L ANALYS WAS ATTEMPTED.	IS) RECEIVED THE DISCREPA	D, NO DET. ANCY BETW	AIL ASSESS EEN NASA 1	SUMMARY LIST FROM SMENT OF THIS ITEM FMEA AND IOA D WITH THE SUBSYSTEM

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	2/19/8 ARPCS- 05-6V	88 -325 A -20	A 26-2				ASA DATA BASELINE NEW		
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 325 METER				ADING	(1)			
LEAD ANALYST:	M.J. S	SAII	DI						
ASSESSMENT:									
CRITICA		R	EDUND	ANCY	SCRE	ENS		CIL	
FLIG HDW/F	UNC	A		В		С		ITE	M
NASA [/N. IOA [3 /3	A]]	[]	[]			<u>(</u>] *
COMPARE [N /N]	[]	[]	[]	ָ เ]
RECOMMENDATIONS	: (If	dif	feren	t fr	om NAS	SA)			
\ 1]	[]	[]	[[.DD/DI] ELETE
* CIL RETENTION	RATIONA	ALE:	(If a	appl	icable				
DEMA DVC.						A INA	DEQUATE DEQUATE	[]
REMARKS: THE FMEA CRITICATHEREFORE, IOA									•

ASSESSME ASSESSME NASA FME	NT I	D:	ARPO)/88 CS-326 SVA-20		!			ASA DAT BASELIN NE]
SUBSYSTE MDAC ID: ITEM:	M:		ARPO 326 CIRO	CS CUIT B							
LEAD ANA	LYSI	?:	M.J.	. SAII	DI						
ASSESSME	NT:										
	F	TICAL TLIGH DW/FU	r	R A		IDANCY E		EENS C		CII	
NASA IOA	[3	3 /3]	[N	A]	[]	[A]	[N [A]	[] *
COMPARE	[/	, 1	[И]	[]	1]	[N]	[]
RECOMMEN	DATI	ons:	(:	f dif	fere	ent fr	om N	ASA)			
	[/]	[]	[]	[[ADD/I] DELETE
* CIL RE	TENT	rion :	RATI(ONALE:	(Ii	app]	licab	A	DEQUATE. DEQUATE	-]

IOA IS IN AGREEMENT WITH THE FMEA.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-3: 05-6VA-	27 2022 - 1				ASA DATA BASELINE NEW					
	ARPCS 327 CIRCUIT	BREAKEI	R, C	B16/DP/	DT	(1)					
LEAD ANALYST:	M.J. SA	IIDI									
ASSESSMENT:											
CRITICALITY REDUNDANCY SCREENS CIL											
FLIGHT ITEM HDW/FUNC A B C											
NASA [2 /1R IOA [2 /2] [P]	[P] [P]	[X [X] *			
COMPARE [/N] [и ј	[N] [N]	[]			
RECOMMENDATIONS:	(If d	ifferent	fro	om NASA)						
. [/] []	[] [] (A	[DD/D] ELETE)			
* CIL RETENTION	RATIONAL	E: (If a	ppl	icable)			_				
				I		DEQUATE DEQUATE]			
REMARKS: DUE TO LIMITED FMEA DATA (ONLY A CRITICALITY SUMMARY LIST FROM POST 51-L ANALYSIS) RECEIVED, NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED. THE DISCREPANCY BETWEEN NASA FMEA AND IOA											

ANALYSES ARE MARKED AS AN ISSUE UNTIL RESOLVED WITH THE SUBSYSTEM

MANAGER.

ASSESSME ASSESSME NASA FME	ENT	II			19/88 PCS-328				1	NASA Base	DATA: LINE NEW	[[]	
SUBSYSTI MDAC ID: ITEM:				32	PCS 8 AXON/DP,	/DT	(1)							
LEAD AND	ALY:	ST	:	M.	J. SAII	DI								
ASSESSMI	ENT	:												
	CAL LIGH N/FU	T	R: A		idancy B	sc		c		CII	_			
NASA IOA	[3	/]	[]	[]	· []		[]	*
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RECOMME	NDA'	TI	ons:		(If dif	fere	ent fr	om	NASA)					
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* CIL R	ETE	NT:	ION	RAI	CIONALE:	(11	f appl	ica	,	ADEQU ADEQU		[]	

REMARKS:

ASSESSME ASSESSME NASA FME	NT NT A #	DATE: ID: :	2/19/8 ARPCS- 06-1-0	8 32 19	9 91-	-1						ASA DATA BASELINE NEW	[
SUBSYSTE MDAC ID:	M:		ARPCS 329 LINES													
LEAD ANA	LYS'	T:	M.J. S	AI	II)I										
ASSESSME	NT:															
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM																
	DW/FUI		A			В			С				•			
NASA IOA	[;	2 /1R 2 /1R]]	P P]	[P P]	[P P]	[X X]	*
COMPARE	[/	1	[]	[]	[]	[]	
RECOMMEN	DAT:	ions:	(If	di	ff	erent	: 1	fro	om NA	SA))					
	[/]	[]	[]	[/DE		ETE)
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REMARKS:										I	IAI	EQUATE EQUATE	Ĩ		j	
IOA CONS REGULATO SAFE RET	RS.	WITH	H FUNCT	ΙO	NA	L LOS	s,	. (ABIN	VC	LU	ME IS A	ZA]	LA	B	CABIN LE FOR

MANIFOLD, IT WILL ALSO RESULT IN 02 LEAK - FIRE HAZARD AND LOSS OF ONE 02/N2 REGULATION. SEE ARPCS-196 & -214.

IOA AGREES WITH THE FMEA.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-330 06-1-0201-2	nasa da Baseli N								
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 330 ISOLATION VALV	E/MOTOR DRIVEN (2)								
LEAD ANALYST:	M.J. SAIIDI									
ASSESSMENT:										
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM										
HDW/FU	NC A	ВС								
NASA [2 /1R IOA [3 /2R] [P]] [P]	[NA] [P] [P] [P]	[X] *							
COMPARE [N /N	1 []	[N] []	[N]							
RECOMMENDATIONS:	(If differen	t from NASA)								
. [/] []	[] []	[] (ADD/DELETE)							
* CIL RETENTION	RATIONALE: (If	applicable) ADEQUAT	יוב ן ז							
		INADEQUAT								
REMARKS: IOA CONSIDERED T FROM THE RELIEF THE FMEA.		SOLATION VALVE FAILU SEE ARPCS-342. IO	RE SEPARATELY DA AGREES WITH							

ASSESSME ASSESSME NASA FME	TN	I		AI	RPCS-	-3:		-1							ASA DA BASEL:		[]	
SUBSYSTE MDAC ID:				33		ric	ON	VAL	VE/	MO	TOR	DR	ZIV	ÆN.	ī (2)					
LEAD ANA	LYS	ST	:	M.	J. S	SA:	III)I												
ASSESSME	NT:	:																		
		F	ICAL: LIGH:	r	Ž.		RI	EDUNI	OAN	CY	SC	REE	NS	3				IL Per	I	
	I	HDI	W/FUI	NC			A			В				С						
NASA IOA	[2 2	/1R /1R]]	P P]]	N. P	A]] [P P]		[X X]	*
COMPARE	[/]		[]	[N],	. '	[1		[]	
RECOMMEN	DA'	ric	ons:		(If	d:	ifí	fere	nt	fr	om 1	NAS	A)							
·	[/]		[]	[]		[]	(AI	[DD,	/DI] ELF	ETE)
* CIL RE		YT:	ION 1	RAT	NOI	λLi	E:	(If	ap	pl.	ical	ble			EQUAT		[]	

IOA IS IN AGREEMENT WITH THE FMEA.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-332 06-1-0201			NASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 332 MOTOR/ISC	LATION '	VALVE (2)		
LEAD ANALYST:	M.J. SAII	DI			
ASSESSMENT:					
CRITICAL FLIGH	r		CY SCREENS		CIL ITEM
HDW/FU	NC A	A	В	С	
NASA [2 /1R IOA [3 /2R] [F	?] [NA] [P] [P] P]	[X] * []
COMPARE [N /N] [] [иј []	[N]
RECOMMENDATIONS:	(If di	fferent	from NASA)	
. [/] [] [] [] (AI	[] DD/DELETE)
* CIL RETENTION	RATIONALE	(If ap		ADEQUATE	[]
REMARKS: IOA CONSIDERED T (ARPCS-330), BUT VALVE. IOA AGRE	HE ELECTRI THE MATCH ES WITH TH	HING IS	OR SEPARA	NADEQUATE FILLY FROM TO ON THE FI	THE VALVE.

ASSESSME	ASSESSMENT DATE: 2/19/88 ASSESSMENT ID: ARPCS-333 NASA FMEA #: 06-1-0201-1 SUBSYSTEM: ARPCS									N		DATA SELINI NE		x]	
SUBSYSTE MDAC ID:				33:	3	501	LAI	rion v	LVE	(2)						
LEAD ANA	LY	ST	:	м.:	J. SAI	[]	ΟI									
ASSESSME	NT	:														
		F	ICAL LIGH W/FU	T		RI A	EDU	INDANCY E		REENS	•			IL PE		
Maga			•				•	_		_			_		_	
NASA IOA			/1R /3		[P]	[N [F))	[F	,] ,]]	Х]	*
COMPARE	(N	/N]	[]	[N]	[]		[N]	
RECOMMEN	'DA'	ΓI	ons:	((If di	iff	er	ent fr	om 1	NASA)						
·	[/]	ſ]	[]	[3	(2	[ADD/	/ D]	ELI	ETE)
* CIL RE	TEI	NT:	ION 1	RAT1	ONALE	E :	(I	f appl	ical	•	DEQ	UATE	ſ		1	
REMARKS:										INA	DEQ	UATE	Ī		j	
IOA CONS IOA AGRE	IDI ES	ERI W:	ED TI	HE E THE	ELECTR FMEA.	RIC	AL	MOTOR	SEI	PARATE	LY	FROM	THE	2 1	VAI	LVE.

ASSESSMENT ASSESSMENT NASA FMEA	T DATE T ID: #:	2/19/8 ARPCS- 05-6VA	8 334 -20	4 015 - 1				NASA D BASEL	INE]	
SUBSYSTEM MDAC ID: ITEM:		ARPCS 334 POSITI	ON	INDIC	ATIO	I, DS	1,	DS2 (2)			
LEAD ANAL	YST:	м.ј. s	AI:	IDI								
ASSESSMEN	T:											
C	RITICA FLIG	HT		REDUND	ANCY B	SCRE	ENS	s c		CIL		
		UNC			_			_				
NASA IOA	[3 /3 [3 /3]	[1	NA]	[N2	A]]	[NA]		[[]	*
COMPARE	, ı	3	[]	и ј	[1]	[иј		[]	
RECOMMEND	ATIONS	: (If	di	fferen	t fr	om NA	SA)				
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* CIL RET	ENTION	RATIONA	LE	: (If	appl	icabl		ADEQUA	TE	Ĺ	j	
REMARKS: IOA AGREE APPROPRIA	S WITH	THE FMI ATIONS -	EA, - A	BUT S RPCS-1	TUDII	ED TH -238,	ES!	NADEQUA NADEQUA E ITEMS ND -250	AT		IR	

ASSESSMENT I ASSESSMENT I NASA FMEA #	D:	ARPCS-3	35							ASA DATA BASELINE NEW]] 	
SUBSYSTEM: MDAC ID: ITEM:		ARPCS 335 SWITCH,	S	1&S2/F	∾s:	II	IVE	ŔEL	ΙI	EF VALVE	(2)			
LEAD ANALYS	r:	M.J. SA	II	DI										
ASSESSMENT:														
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM														
	W/FU		A		•	В			С			14.1		
NASA [2 IOA [3	2 /1R 3 /2R] [P P]	[P P]	[[P P]	x]]	[]	*	
COMPARE [1	N /N] []	[]	[3	[N]		
RECOMMENDAT	ons:	(If d	if	ferent	f	ro	m NA	SA)						
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* CIL RETENT	CION 1	RATIONAL	E:	(If a	pp.	li	cabl	•	ΑĽ	EQUATE	ſ	1		
REMARKS:										EQUATE	į	j		
IOA CONSIDER SWITCH FAILU	JRE W		UL!	TS IN	LO	SS	OF	ABI	LI		LOSE			THE

ASSESSME ASSESSME NASA FME	NT	II			/88 S-336				N	IASA DA' BASELI N]	
SUBSYSTEM MDAC ID:	M:			ARPC 336 SWIT		1&S2,	/POSI	TIVE	REL	EF VAL	VE (2)		
LEAD ANA	LYS	ST	:	M.J.	SAII	DI							
ASSESSME	NT	:											
	CR:			ITY	R	EDUN	DANCY	SCR	EENS		CII		
	1		LIGH W/FU		A		E	3	(2	111	14*1	
NASA IOA	[3	/3]	[]]]	[]	[] *	
COMPARE	[N	/N	3	[1	[]	[1	C]	
RECOMMEN	DA'	ΓI	ons:	(I	f dif	fere	nt fr	om N	ASA)				
	[/	3	[]	[]	[]	[(ADD/I] DELETE)	
* CIL RE	TE	NT	ION	RATIC	NALE:	(If	appl	licab	7	ADEQUAT ADEQUAT]	
REMARKS: IOA WITH BY ARPCS				IS AN	IALYSI	S WH	ICH I	s Mc	RE A	PPROPRI	ATELY	COVERE	D

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SUBSYSTE MDAC ID:			ARPCS 337 SWITCH	н, я	S1&S	52/PO	SI	rive	RELI	EF V	/ALVE	(2)		
LEAD ANA	LYST	':	M.J. 8	SAI	IDI									
ASSESSME	NT:													
		ICALI	TTY .	1	REDU	INDAN	CY	SCR	EENS			CIL		
			4C	1	A		В		C	:		ITE	M	
NASA IOA	[2 [2	/1R /1R]	[]	P]	[P P]	[E))		(X)] *	•
COMPARE	[/]	[]	ſ]	[]		[]	
RECOMMEN	DATI	ons:	(If	di	ffer	ent :	fro	om Na	ASA)			•		
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* CIL RE	TENT	ION F	RATIONA	ALE:	: (I	f app	pl i	.cab	•	DEQU	ATE	٢	1	
REMARKS:											ATE	į	j	
IOA AGRE CAUSES I	ES W	ITH 1 ERTEN	THE FME	EA. SINC	IO G OF	A COI	NSI VE.				FAII ME AS			

ASSESSME ASSESSME NASA FME	ASSESSMENT DATE: 2/19/8 ASSESSMENT ID: ARPCS- NASA FMEA #: 05-6VA SUBSYSTEM: ARPCS													ASA D BASEI		[
	EM:			AR 33	PCS 8			REAKEI				B2:	2	(2)					
LEAD ANA	LY:	ST	:	M.	J. S	SA)	II)I											
ASSESSME	ENT	:																	
		ICAL: LIGH: W/FUI	r				EDUNDA	AN	CY B	SCRE	EN	s C			C]	L PEN			
NASA IOA	[2	/1R /2R]		[P P]	[P P]	[P P]		[x]	*
COMPARE	[N	/N]		[]	[]	[]		[N]	
RECOMMEN	VDA'	TI	ons:		(If	đ:	if	feren	t :	fro	om NA	SA)						
	[/]		[]	[]	[]	(Al		/DI		ETE)
* CIL RI	ETE:	NT:	ION 1	RAT	'ION	A LI	Ε:	(If	ap)	pl:	icabl	e) I	Ai NAi	DEQU <i>A</i> DEQU <i>A</i>	ATE ATE	[]	
REMARKS: THE VALVE FAILURE MAJOR EN OPERATION SHOULD OPEN, TO FMEA.	VES TH FFE NG BE	EY CT NO IN	CAN SIN MINA ITIA	NOT CE LLY TED	BE THE	CI RI HOI ECI	LOS EL: WE'S AUS	SED II IEF V VER, I SE IF	F AL FU T	NEI VE NCI HE	EDED. DOWN TIONA RELI	ST LL EF	NOI REZ Y Z	MINAI AM IS AN AE ALVE	LLY, S ASS SORT WERI	TI SUR DI E	HEI MEI ECI I'O	RE) (S: F)	IS NO ION AIL

ASSESSME ASSESSME NASA FME	NT ID:	ARPCS-			nasa data Baselini Nev]
SUBSYSTE MDAC ID:		ARPCS 339 CIRCUI	r break	ER, CB17&	CB22 (2)		
LEAD ANA	LYST:	M.J. S	AIIDI				
ASSESSME	NT:						
	CRITICA:		REDUNI	DANCY SCR	EENS	CIL	
	HDW/F		A	В	С	ITEM	
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COMPARE	[/]	[и]	[N]	[и]	[1.
RECOMMEN	DATIONS	: (If (differe	nt from N	ASA)		
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REMARKS:						٠.	,

IOA AGREES WITH THE FMEA.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	ARPCS-340		NASA DATA: BASELINE NEW	-	
	ARPCS 340 RESISTOR, A1R1	& A2R1, 5.1	K (2)		
LEAD ANALYST:	M.J. SAIIDI				
ASSESSMENT:					
CRITICAL: FLIGH		ANCY SCREENS		CIL ITEM	
HDW/FU		В	С		
NASA [3 /3 IOA [3 /3] [NA]] []	[AA] [] [NA]	[] *	
COMPARE [/] [N]	[N] [n]	[]	
RECOMMENDATIONS:	(If differen	t from NASA)			
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* CIL RETENTION	RATIONALE: (If		ADEQUATE		
REMARKS:		IN	ADEQUATE	[]	
ALSO SEE ARPCS-1 STUDIED AT THEIR	15, -116, -244, APPROPRIATE LO	& -256. TH CATIONS.	E RESISTO	RS ARE	

ASSESSME NASA FME	NT ID:	ARPCS-	-341					BASEL	INE]
SUBSYSTE MDAC ID:		ARPCS 341 DIODE,	DS:	L & D	S2 (4	1)					
LEAD ANA	LYST:	M.J. S	BAIII)I							
ASSESSME	NT:										
	CRITICAL FLIG	IT		EDUND		SCRE	ENS			CIL ITE	
	HDW/F	JNC	A		В			С			
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COMPARE	[/]	[N]	[N	1	[и ј		[]
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SUBSYSTEM MDAC ID:	1:			ARP 342 REL		V.	ΑĽ	VE,	16	, 1	PS:	ſΆ									
LEAD ANA	LYS	ST:		M.J	. si	ΑI	ID	I													
ASSESSME	NT:	:																CI	T		
	CR.		CAL				RE	DUN	DAN	1C	Y	SC	REE	NS	1			IT			
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SUBSYST	EM:	;		ARPC	œ.										,	
MDAC ID	:			343												
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LEAD AND	ALY	ST	:	M.J.	SA	II	DI									
ASSESSMI	ENT	:														
		F	LIGH			R	EDUN	DAI	1C	Y SCR	REEN	s		CII	_	
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IOA IS IN	I A	GRI	EEME	NT WIT	H 7	PH.	E FMI	EA.							•	

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SUBSYSTEM MDAC ID:	M:			34	PCS 4 LTER	٤ ((2)	l														
LEAD ANA	LYS	ST	:	M.	J. S	A	II	ΟI														
ASSESSME	NT	:																				
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COMPARE	[N	/N]		ſ	N]	•	[N	3		[N]			[N]	
RECOMMEN	DA'	TI	ons:		(If	d :	if	fer	ent	: 1	fro	om 1	NAS	A)								
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* CIL RE	TE	NT:	ION 1	RA'I	ION?	λL	Е:	(I:	f a	pp) 1:	ical				DEQI DEQI			[]	
REMARKS:													,			×			٠		•	

ASSESSMENT DA ASSESSMENT ID NASA FMEA #:							NASA DATA BASELINE NEW		x]
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 345 FILTE)						
LEAD ANALYST:	M.J.	SAII	DI						
ASSESSMENT:									
	CALITY	RI	EDUN	DANCY	SCRE	ENS		CII	
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NASA [IOA [3	/] /3]	[]	[]	[]	[] *
COMPARE [N	/N]	[]	[]	[]	[]
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t .	/]	[]	ξ]	[[.DD/[] DELETE)
* CIL RETENTION REMARKS:	ON RATION	ALE:	(If	appl	icabl		ADEQUATE ADEQUATE]]

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ASSESSME ASSESSME NASA FME		2/19/88 ARPCS-34	6				SA DATA ASELINE NEW]
SUBSYSTE MDAC ID:	M:	ARPCS 346 FILTER (1)						
LEAD ANA	LYST:	M.J. SAI	IDI						
ASSESSME	NT:								
	CRITICAL FLIGH	T	REDUN A	DANCY B	SCREE	ns C		CIL	
	HDW/FU	NC	A	Б		C			
NASA IOA	[/ / 3] []	[[]	[]	[[] *
COMPARE	[N /N]]	[]	[]	[]
RECOMMEN	DATIONS:	(If di	ffere	nt fr	om NAS	A)			
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* CIL RE	TENTION	RATIONALE	: (II	app1		AD	EQUATE EOUATE	[]

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SUBSYSTE MDAC ID:			ARPO 347 FIL	CS TER (1	.)								
LEAD ANA	LYS	ST:	M.J	. SAII	DI								
ASSESSME	NT:	:											
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	ŀ	IDW/FC	NC	A	•	E	3	(2				
NASA IOA]	3 /3]	[]	[]	[]	1]	*
COMPARE	[N /N]	[]	[]	[]	1	[]	
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* CIL RE	TEN	TION	RATIO	ONALE:	(If	appl	icab.	1	ADEQUAT ADEQUAT		-]	

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SUBSYSTE MDAC ID: ITEM:			ARPC: 348 VENT		E, N	OTORI 2	ED	(2)			
LEAD ANA	LYST	:	M.J.	SAII	DI						
ASSESSME	NT:										
			ITY	R	EDUN	IDANCY	SCR	EENS		CIL	
	_	LIGH W/FU	NC	A	•	В		С		110	.1
NASA IOA	[2	/1R /1R]	[P]	[N <i>I</i> [P]	[F [P]	[X [X] *]
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REMARKS: IOA IS I REDUNDAN	N AG	REEM	ENT W	ITH I	HE I	FMEA, I EXPLAII	EXCE 1 TH	PT FOR	THE S	CREEN	

ASSESSMI NASA FMI	ENT	I	D:	ARPCS	-3	48A BASELINE []											
SUBSYSTI MDAC ID: ITEM:				ARPCS 348 VENT		LV:	Ε,	MOTOR	IZ	ED (2)						
LEAD ANA	LY	ST	:	M.J.	SA	II	DI										
ASSESSMI	ENT	:															
	CR:		ICAL LIGH	ITY I		R	EDI	UNDANC	Y S	SCRE	ENS	S			IL TEN	м	
	1	HDI	W/FUI	NC		A			В			С		_		•	
NASA IOA		2 2	/1R /1R]	[P P]	[]	P P]	[P P]	[x x]	*
COMPARE	(/]	[]	(•]	[]	[]	
RECOMMEN	IDA!	ric	ONS:	(If	d:	if	feı	rent f	roi	a NA	SA))					
	(/]	[]	[]]	[] (A		/DE		ete:
* CIL RE		NT:	ION I	RATION	ALI	Ξ:	()	[f app]	lic	cabl	•		DEQUATE DEQUATE	[x]	
IOA IS I THE FMEA COMBINED	N A	06-	-1-02	203-1					ARE	тн	E S	AN	E AND M	ΑY	BE	E	

ASSESSME ASSESSME NASA FME	NT ID:	2/19/88 ARPCS-34	9				ASA DATA BASELINE NEV		;] ;]
SUBSYSTE MDAC ID:		ARPCS 349 VENT VAL	VE, M	OTORI:	ZED (2	2)			
LEAD ANA	LYST:	M.J. SAI	IDI						
ASSESSME	NT:								
	CRITICAL FLIGH HDW/FU	T		DANCY B	SCREI	ENS C		CII	
NASA	·			r	1	r	ו	r	ן *
IOA	[3 /3] [j	Ϊ	j	į	i]	j
COMPARE	[N /N] []	[]	[]	[]
RECOMMEN	DATIONS:	(If di	ffere	nt fr	om NAS	SA)			
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* CIL RE	TENTION	RATIONALE	: (If	appl	icable				
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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-350 06-1-0203) 3 -1	ŀ	NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID:	ARPCS 350 SINGLE PH				
LEAD ANALYST:	M.J. SAII	DI			
ASSESSMENT:					
CRITICAL: FLIGH HDW/FU	r	REDUNDANCY B			CIL ITEM
NASA [2 /1R IOA [3 /3] [P) [P] [[?]]	[X] *
COMPARE [N /N] [N	и] [и] []	1]	[N]
RECOMMENDATIONS:	(If dif	ferent fr	om NASA)		
. [/] [] [] [] (AI	[] DD/DELETE)
* CIL RETENTION I	RATIONALE:	(If appl	Ä	DEQUATE	[]
REMARKS: IOA STUDIED THE					
(ARPCS-349). DUI SUMMARY LIST FROM	E TO LIMIT	ED FMEA DA	ATA (ONLY	A CRITIC	CALITY
ASSESSMENT OF THE	IS ITEM WA	S ATTEMPT	ED. THE	DISCREPAN	CY BETWEEN
IOA ANALYSES ARE SUBSYSTEM MANAGEI		AN ISSUE	UNTIL RE	SOLVED W	тн тне

ASSESSMEN ASSESSMEN NASA FME	II TN		2/19 ARPC	/88 S-351					ASA DAT BASELIN NE			
SUBSYSTEM MDAC ID:	M:		ARPO 351 SWIT	SCH, S	3 & :	S 4						
LEAD ANA	LYST	:	M.J.	SAII	DI							
ASSESSME	NT:											
	CRIT:	ICAL LIGH		R	EDUN	DANCY	SCR			CII		
	HD	/FU	NC	A		В		C				
NASA IOA	[3	/3]	[[]	[]	[]	[] *]	
COMPARE	[N	/N	3	[]	[]	[1	ĺ	1	
RECOMMEN	DATI	ons:	(If dif	fere	nt fr	om N	IASA)				
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ASSESSMI	SSESSMENT DATE: 2/19/88 SSESSMENT ID: ARPCS-352 ASA FMEA #:								NASA DA Baseli N		x]	
SUBSYSTEMDAC ID:				ARP 352 SWI		3 &	S4					
LEAD ANA	LY	ST	:	M.J	. SAII	DI						
ASSESSME	ENT	:										
	CR			LITY	R	EDU	NDANCY	SCF	REENS		CII	L
	1		LIGI W/F		A		E	3	(2	ITI	EM
NASA IOA	[[3	/ /3]	[]	[]	[]	[] *
COMPARE	[N	/N]	[]	[]	C]	[]
RECOMMEN	DA:	ric	ONS:	: (:	If dif	fere	ent fr	om N	ASA)			
	[/]	[]	[]	[]	[(ADD/D] ELETE
* CIL RE	TEI	YT]	CON	RATIO	ONALE:	(If	appl	icab	2	DEQUAT:]

ASSESSME ASSESSME NASA FME	ENT	II			L9/88 PCS-353				1	NASA 1 BASE1		[x]	
SUBSYSTEMDAC ID:				ARI 353 SWI		3 &	S4								
LEAD ANA	\LY:	ST	:	м.5	J. SAII	DI									
ASSESSMI	TNE	:													
		F	LIGH		_		IDANCY	SCF		c			[L CEM	ſ	
		HDI	W/FU	INC	2	.	В		`	-					
NASA IOA]	3	/3]	[]	[]	((]		[]	*
COMPARE	[N	/N	1	[]	[1	ι.]		[]	
RECOMME	NDA'	TI	ons:		(If dif	fere	ent fr	om 1	NASA)		,				
	[/	3	[]	ſ	3	[]	(A)	[DD,	/DI	ETI	ETE
* CIL R	ETE	NT:	ION	RAT:	IONALE:	(If	appl	ical	Ž	ADEQU. ADEOU		[]	

ASSESSME ASSESSME NASA FME	ENT I	T ID: ARPCS-354					NASA DATA: BASELINE [] NEW [X]						
SUBSYSTE MDAC ID:			ARPC: 354 SWITE		3 &	S4							
LEAD ANA	LYST	r:	M.J.	SAII	DI								
ASSESSME	ENT:												
	1	FICAL FLIGH	T	F		DANCY			_		CII		
	U	DW/FU	NC	P.	.	F	•	•	2				
NASA IOA	[:	3 /3]]]	[[]	[]		[] *	k
COMPARE	[]	и /и]	[]	[.]	C]		[]	
RECOMMEN	IDAT]	cons:	(I:	f dif	fere	nt fr	om N	ASA)					
·	[/	1	[]	[]	[]	(A)	[DD/D] ELEI	ſE)
* CIL RE	TENT	CION	RATIO	NALE:	(If	appl	icab.	7	ADEQUA ADEQUA		[]	

ASSESSMI ASSESSMI NASA FMI	ENT	ID:		9/88 CS-355				ì	IASA DAT BASELIN NE		x]	
SUBSYSTI MDAC ID: ITEM:			ARPOS 355 POS		IDNI	CATIO	N, D	S3, I	OS4 (2)			
LEAD AN	ALYS	T:	M.J	. SAIII	DI							
ASSESSMI	ENT:	:										
		TICA: FLIGI IDW/F	HT	RI A	EDUN	idancy B	SCR		3	CI		
NASA IOA	[3 /3]	[]]]	[]	[] *	
COMPARE	[n /n]	[)	[]	[]	[]	
RECOMME	rda'i	rions	: (If dif	fere	ent fr	om N	ASA)				
	[/]	[]	[]	[]	[(ADD/] DELETE	3)
* CIL R	ETEI	NTION	RATI	ONALE:	(If	appl	icab	7	ADEQUATI	_]	

ASSESSME	ASSESSMENT DATE: 2/19/88 ASSESSMENT ID: ARPCS-356 NASA FMEA #:						NASA DATA: BASELINE [] NEW [X]						
SUBSYSTE MDAC ID:			ARPO 356 RESI		A3I	R1, A4	R1,	5.1K	(2)				
LEAD ANA	LYS	ST:	M.J.	SAII	DI								
ASSESSME	NT:	:											
	CRI	TICAL FLIGH		R	EDUN	IDANCY	SCR	EENS			CII		
	H	IDW/FU		A		В		•	С				
NASA IOA	[3 /3]	[]]]]	[]		[] *	
COMPARE	[N /N]	[]	[]	[]		[j	
RECOMMEN	DAT	CIONS:	(1	f dif	fere	ent fr	om N	ASA)					
·	[/]	[]	[]	[]	(A)] ELET	Έ
* CIL RE	TEN	TION	RATIC	NALE:	(If	appl	icab	1	ADEQUA ADEQUA		[]	

ASSESSME ASSESSME NASA FME	NT	ID:			9/88 NASA DATA: CS-357 BASELINE [NEW [X							;]
SUBSYSTE MDAC ID:			3	RPCS 57 IODE,	DS3	8 &D	S4 (4))				
LEAD ANA	LYS	ST:	M	.J. S	AIII)I						
ASSESSME	ENT:	:										
		FLI	ALIT GHT FUNC		RI A	EDUN	DANCY B	SCRE		c	CII	
NASA IOA		•			[]	[]	[]	ĵ [] *]
COMPARE	. [N /	ת]		[]	[1	[]	ί	1
RECOMMEN	NDA!	rion	is:	(If	dif:	fere	nt fr	om NA	SA)			
·	[/	']		[1	[]	[] (4	[ADD/I] DELETE)
* CIL RI	e te i	NTIC	N RA	TIONA	LE:	(If	appl	icabl		ADEQUATE ADEQUATE]]

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		NASA DATA: BASELINE [] NEW [X]					
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 358 CIRCUIT BREAKER,	CB22 & CB34 (2)					
LEAD ANALYST:	M.J. SAIIDI						
ASSESSMENT:							
CRITICAL: FLIGHT HDW/FUI	r	CY SCREENS B C	CIL ITEM				
•] [P] [] [] [[X] *				
			•				
COMPARE [N /N] [N] [N] [N]	[N]				
RECOMMENDATIONS:	(If different f	from NASA)					
. [/] [] [[] DD/DELETE)				
* CIL RETENTION I	RATIONALE: (If app	olicable) ADEQUATE INADEQUATE	[]				
REMARKS: ALSO SEE ARPCS-35 SEPARATELY.	59. IOA CONSIDERE	ED FAILED CLOSED AND					
POST 51-L ANALYSI WAS ATTEMPTED.	IS) RECEIVED, NO D THE DISCREPANCY BE	CRITICALITY SUMMARY DETAIL ASSESSMENT OF TWEEN NASA FMEA AND	THIS ITEM				
ANALYSES ARE MARI MANAGER.	CED AS AN ISSUE UN	TIL RESOLVED WITH T	THE SUBSYSTEM				

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-359 05-6VA-20010	NASA 1 BASE: 00-1	DATA: LINE [] NEW [X]			
	359	S59 CIRCUIT BREAKER, CB22 & CB34 (2)				
LEAD ANALYST:	M.J. SAIIDI					
ASSESSMENT:						
CRITICAL FLIGH		JNDANCY SCREENS	CIL ITEM			
HDW/FU		ВС				
NASA [2 /1R IOA [3 /3] [P]] []	[P] [P] [] []	[X] *			
COMPARE [N /N] [N]	[и] [и]	[N]			
RECOMMENDATIONS:	(If differ	rent from NASA)				
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* CIL RETENTION	RATIONALE: (If applicable) ADEQU	አ ጥም []			
		INADEQU.	ATE [] ATE []			
POST 51-L ANALYS WAS ATTEMPTED.	IS) RECEIVED, THE DISCREPAN	LY A CRITICALITY SUM , NO DETAIL ASSESSME NCY BETWEEN NASA FME SUE UNTIL RESOLVED W	NT OF THIS ITEM A AND IOA			

ASSESSMENT DATE: 2/19/88 ASSESSMENT ID: ARPCS-360 NASA FMEA #: 06-1-0206-2				-2	NASA DATA: BASELINE [] NEW [X]							
SUBSYSTEMDAC ID:	M:		ARPCS 360 RELIE	F VAI	CVE ((2)						
LEAD ANA	LYST	:	M.J. 8	SAIII	Ι							
ASSESSME	NT:				•							
•		ICAL		RI	EDUNI	DANC	SCRI	EENS	5		IL TEM	
	HD	W/FUI	NC	A		1	3		C			
NASA IOA	[2 [2	/1R /1R]	[P]	[]	NA] P]	[P] P]	[X X] *]
COMPARE	[/] .	[]	[1	1]	[]	(]
RECOMMEN	DATI	ons:	(If	diff	ferer	nt fi	com NA	ASA)	1			
٠	[/]	[]	[1	[]] (ADD	/DE] LETE)
* CIL RE	TENT	ION I	RATIONA	ALE:	(If	app]	licabl	•	ADEQUAT]
REMARKS:									-			•

IOA IS IN AGREEMENT WITH THE FMEA.

	2/19/88 ARPCS-3 06-1-02	61		NASA DAT BASELIN NE	
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 361 RELIEF	VALVE ((2)		
LEAD ANALYST:	M.J. SA	IIDI			
ASSESSMENT:					
CRITICA FLIG		REDUNI	DANCY SCRE	EENS	CIL ITEM
HDW/F	UNC	A	В	С	
NASA [2 /1] IOA [2 /1]	R] [R] [P] P]	[NA] [P]	[P] [P]	[X] * [X]
COMPARE [/] [1	[N]	[]	[]
RECOMMENDATIONS	: (If d	iffere	nt from NA	ASA)	
· [/] [1	[]	[] ([] ADD/DELETE
* CIL RETENTION REMARKS:	RATIONAL	E: (If	applicabl	le) ADEQUATE INADEQUATE	
IOA IS IN AGREE	MENT WITH	THE FI	MEA.		

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-3 06-1-02	NASA DATA BASELINE NEW			
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 362 CAP (2)				
LEAD ANALYST:	M.J. SA	IIDI			
ASSESSMENT:					
CRITICAL FLIGH		REDUNDA	ANCY SCREI	ens	CIL ITEM
	NC	A	В	С	IIEM
NASA [2 /1R IOA [2 /1R] [P] P]	[NA] [F]	[P] [P]	[X] * [X]
COMPARE [/] []	[N]	[]	[]
RECOMMENDATIONS:	(If d	ifferen	t from NAS	SA)	
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* CIL RETENTION	RATIONAL	E: (If a	applicable	e) ADEQUATE INADEQUATE	[]
REMARKS: IOA IS IN AGREEM WOULD FAIL, SINC SHOULD POP. THE (WITHOUT CREW AC DIFFERENTIAL.	E IT IS : CAPS AN:	NOT REAL D RELIE	DILY DETEC F VALVES V	F FOR SCREEN CTABLE AS WHI WORK AUTOMAT	B. SCREEN B EN THE CAP ICALLY

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-363 06-1-0207					ASA DAT BASELIN NE		x]	,
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 363 CAP (2)								
LEAD ANALYST:	M.J. SAII	DI							
ASSESSMENT:									
CRITICAI FLIGH		EDUND	ANCY	SCRE			CI	EM	
HDW/FU	INC A		В		С				
NASA [3 /3 IOA [3 /3] []] []]]]]]	*
COMPARE [/] [3	[]	[1	[]	ı
RECOMMENDATIONS:	(If dif	feren	t fr	om NAS	SA)				
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* CIL RETENTION	RATIONALE:	(If	appl:	icable	A	DEQUATE		x j	
REMARKS:				٠	INA	DEQUATE	· L	ا	

IOA IS IN AGREEMENT WITH THE FMEA.

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ASSESSME NASA FME			D:		RPCS-									BAS	ELII Ni	NE EW	[x]	
SUBSYSTE MDAC ID: ITEM:	M:			3	RPCS 53 AP (3	2)														
LEAD ANA	LY	ST	:	M	.J. :	SA	ΙΙ	DI												
ASSESSME	NT	:																		
	CR		ICAL LIGH		ľ		R	EDU	INDAN	CY	SCI	REEN	s					IL TEN	۷ſ	
	3	_	W/FU				A			В			С						-	
NASA IOA			/1R /3			[P]	[F]	[P]]	x]	*
COMPARE	[N	/N]		[N]	[N	3	. [N]			[N]	
RECOMMEN	DA'	TI:	ons:		(If	đ	if:	fer	rent	fr	om 1	NASA)							
٠	ĺ		/]		[]	(]	[]		(AI] (DC		E L I	ETE J
* CIL RE	TE	NT:	ION :	RA!	CION	AL	E:	(I	f ap	pl	ical	•			UAT UAT		[x]	
IOA IS I	N.	AG:	REEM	EN'	r WI	гн	T	HE	FMEA	•										

ASSESSMI ASSESSMI NASA FMI	ENT	II			19/88 RPCS-3		4								ASA DA' BASELII N		[x]	
SUBSYSTI MDAC ID: ITEM:				36	RPCS 4 BRIS	S	CF	REEN	(2)										
LEAD AN	ALY	ST	:	M.	J. S	\I	II)I												
ASSESSMI	ENT	:																		
		F	ICAL: LIGH' W/FU	r	?		RI A	EDUN	DAN	CY B	S	CREE	NS	c				IL PEN	1	
NASA IOA	[2	/ /1R]		• • •	P]	[F]]	P]		[x]	*
COMPARE	[N	/N]	1		N	3	[N]		[N]		[N]	
RECOMME	NDA'	TI	ons:		(If o	li	fí	fere	nt	fr	om	NAS	A)	١						
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* CIL R	e t e:	NT:	ION 1	RAI	IANOI	Œ	:	(If	ap	pl.	ic				EQUAT		[]	

ASSESSME ASSESSME NASA FME	NT	I			9/88 CS-365				1	NASA BASE	LINE			
SUBSYSTE MDAC ID:				ARP 365 DEB		REEN	V (2)							
LEAD ANA	LY	ST	:	M.J	. SAII	DI								
ASSESSME	ENT	:												
	CR			ITY	R	EDUN	NDANCY	SCR	EENS			CII		
	1		LIGH W/FU		A		В		(2		ITE	M	
NASA IOA	[3	/3]	[]	[]	[]		[]	*
COMPARE	[N	/N]	[]	[]	[1		[]	
RECOMMEN	IDA'	TI(ons:	(If dif	fere	ent fr	om N	ASA)					
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* CIL RE	ETE:	NT.	ION	RATI	ONALE:	(If	f appl	icab	1	ADEQU.		[]	

ASSESSMENT ASSESSMENT NASA FMEA	r ID):	ARPCS	-36	56 35-	2						SA DATA: ASELINE NEW			
SUBSYSTEM MDAC ID: ITEM:			ARPCS 366 CHECK	V2	\LV	E (2)									
LEAD ANAL	YST:		M.J.	SAI	[ID	I									
ASSESSMEN	T:														
С			TTY		RE	DUND	MC	CY	SCREE	ENS	3		CIL		
		LIGH! V/FUI	NC		A			В			С				
NASA IOA	[3 [3	/1R /2R]	[P P]	[P P]]	P P]	[]	*
COMPARE	[/N]	[3	[1	[]	[]	
RECOMMEND	ATI	ons:	(If	đ	ifí	feren	t :	fro	om NAS	SA)				
	[/	1	[]	[1	[] (A	[DD/DI		ETE)
* CIL RET	ENT	ION	RATION	IAL	E:	(If	apj	pl:	icabl		Δ I	DEQUATE DEQUATE	[]	
REMARKS: DUE TO LI POST 51-I WAS ATTEM ANALYSES MANAGER. SEE ALSO	L ANA APTE: ARE	ALYS D. MAR	IS) RI THE DI KED AS	ECE	REI	ED, N Pancy	O B	DE' ET'	WEEN :	AS NA	SE: SA	SSMENT O FMEA AN	D IO	A	IIEM

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-36 06-1-022	57X 29-1		NASA DATA BASELINE NEW	
MDAC ID:	ARPCS 367 QUICK DI	SCONNECT			
LEAD ANALYST:	M.J. SAI	IDI			
ASSESSMENT:					
CRITICAL: FLIGHT		REDUNDANC	CY SCREENS	;	CIL ITEM
HDW/FU		A	В	С	IIEM
NASA [3 /1R IOA [3 /2R] [F] [F] [F] [F] [P] P]	[X] * [X]
COMPARE [/N] [] [] []	[]
RECOMMENDATIONS:	(If di	fferent f	rom NASA)		
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* CIL RETENTION F	RATIONALE	: (If app			
				ADEQUATE ADEQUATE	[X]
REMARKS: IOA CONSIDERS LOS UNASSOCIATED WITH MAY ONLY NEGATE I	I THE LOS	S OF QD/C	AP. FUNC	TIONAL LOS	S OF OD/CAP

MISSION LOSS.

NASA DATA:

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-36 06-1-022	58X 29 - 2		NASA DATA BASELINE NEW	
	ARPCS 368 QUICK DI	(SCONNEC	T		
LEAD ANALYST:	M.J. SAI	IDI			
ASSESSMENT:					
CRITICAL		REDUNDA	NCY SCREI	ens	CIL ITEM
FLIGH HDW/FU	NC	A	В	С	IILM
NASA [3 /1R IOA [3 /2R] [F] F]	[F] [F]	[P] [P]	[X] * [X]
COMPARE [/N] []	[]	[]	[]
RECOMMENDATIONS:	(If di	ifferent	from NAS	5 A)	
[3 /2R] [F]	[F]	[P] (A	[X] DD/DELETE)
* CIL RETENTION	RATIONALI	E: (If a	pplicable	e) ADEQUATE INADEQUATE	[]
REMARKS: IOA CONSIDERS LO UNASSOCIATED WIT MAY ONLY NEGATE MISSION LOSS. F THE 06-1-0229-1	H THE LOS THE FES (URTHERMO)	SS OF QD OPERATION RE, THIS	/CAP. FU N AND THE FMEA IS	MONIA BOILER UNCTIONAL LO IS IS POTENT IDENTICAL T	SYSTEMS SS OF QD/CAP TAL FOR

ANALYSIS.

						E [
ARPCS 369 SWITCH -	LOOP	1 (2)				
M.J. SAII	DI						
	REDUND	ANCY	SCR	EENS		CII	
	\	В		С		TIE	SM.
R] [A] []	[]	[]	[] *]
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(If dif	feren	t fr	om N	ASA)			
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RATIONALE:	(If	appl	icab	· A]
							HIS ITEM
	ARPCS 369 SWITCH - M.J. SAII LITY F HT JNC F A] [] [] (If diff] (RATIONALE:	ARPCS 369 SWITCH - LOOP M.J. SAIIDI LITY REDUND HT JNC A R] [] A] [] C [ARPCS 369 SWITCH - LOOP 1 (2 M.J. SAIIDI LITY REDUNDANCY HT JNC A B R] [] [A] [] [C (If different fr C] [] [C RATIONALE: (If appl	ARPCS 369 SWITCH - LOOP 1 (2) M.J. SAIIDI LITY REDUNDANCY SCR TONC A B R] [] [] A] [] [] C [] []	ARPCS 369 SWITCH - LOOP 1 (2) M.J. SAIIDI LITY REDUNDANCY SCREENS HT JNC A B C R] [] [] [] A] [] [] [C [] [] [] C	ARPCS 369 SWITCH - LOOP 1 (2) M.J. SAIIDI LITY REDUNDANCY SCREENS HT JNC A B C R] [] [] [] A] [] [] C (If different from NASA) C (If different from NASA) C RATIONALE: (If applicable) ADEQUATE INADEQUATE C DATA PROVIDED, IOA COULD NOT IDENT	O5-6U-2027-3 NEW [] ARPCS 369 SWITCH - LOOP 1 (2) M.J. SAIIDI LITY REDUNDANCY SCREENS CITED ITE UNC A B C R] [] [] [] [] A] [] [] [] [] C (If different from NASA) C (ADD/I

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-11 05-6VA-2	131X 2017-2		NASA DATA: BASELINE NEW	
	ARPCS 1131 SWITCH-S	S12			
LEAD ANALYST:	M.J. SA	IDI			
ASSESSMENT:					
CRITICAL: FLIGH		REDUNDAN	CY SCREENS	3	CIL ITEM
HDW/FU		A	В	С	112
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COMPARE [/N] [N] [иј [иј	[N]
RECOMMENDATIONS:	(If d	ifferent	from NASA)	· •	
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* CIL RETENTION	RATIONALI	E: (If ap	•	ADEQUATE	
REMARKS: DUE TO LIMITED F. POST 51-L ANALYS WAS ATTEMPTED. ANALYSES ARE MAR SUBSYSTEM MANAGE	IS) RECE: THE DISCI KED AS AI	IVED, NO REPANCY B	CRITICALIS DETAIL ASS SETWEEN NAS	SESSMENT OF SA FMEA AND	LIST FROM F THIS ITEM D IOA

ASSESSME ASSESSME NASA FME	NT	ID:		-135				ŀ	IASA DATA BASELINE NEW]
SUBSYSTE MDAC ID:			ARPCS 1351 LINES	AND	FITT	INGS					
LEAD ANA	LYS	T:	M.J.	SAII	DI						
ASSESSME	NT:										
		TICAL FLIGH		R	EDUND	ANCY	SCRE	ENS		CIL	
			NC	A		В		C	2	ITE	M
NASA IOA	•	3 /3 /NA]	[]	[]	[]	[] *
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RECOMMEN	DAT	IONS:	(If	dif	feren	t fr	om NA	SA)		•	
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* CIL RE	TEN	TION :	RATION	ALE:	(If	appl	icabl	. 7	ADEQUATE]
REMARKS: IOA CONS THEREFOR	IDE								FLOW) N		REDIBLE, HIS FMEA.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	ARPCS-1461X		NASA DATA: BASELINE NEW	[x]
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 1461 FILTER, 10 MICE	RON (2)		
LEAD ANALYST:	M.J. SAIIDI			
ASSESSMENT:				
CRITICAL FLIGH	T .	ANCY SCREEN	s c	CIL ITEM
HDW/FU	NC A	B	C	
NASA [2/1R IOA [/NA] [P]] []	[P] [P]]	[X] * []
COMPARE [N /N] [N]	[N] [N]	[N]
RECOMMENDATIONS:	(If different	t from NASA	.)	
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* CIL RETENTION	RATIONALE: (If		ADEQUATE NADEQUATE	[]
REMARKS: IOA CONSIDERED E FITTINGS ANALYSI		OF THE FIL L LEAKAGE F	TER UNDER TOR THE FIL	THE LINES AND TER ALONE IS

NOT CREDIBLE.

NASA DATA:

ASSESSMENT DATE: 2/19/88

ASSESSME NASA FME				CS-150					BASELIN NE	E []
SUBSYSTE MDAC ID:			ARP 150 LIN		D FII	TING	5			
LEAD ANA	LYS	T:	M.J	. SAI	IDI					
ASSESSME	NT:	;								
	CRI	TICA:	LITY	I	REDUN	IDANC	c scr	REENS		CIL
	H	IDW/F		2	A	I	3	(2	ITEM
NASA IOA	_	1 /1 /N] A]	[[]]]]]	[X] *
COMPARE	[N /N]	[]	[]	[]	[N]
RECOMMEN	DAT	'IONS	: (:	If di	fere	nt fi	om N	IASA)		
	[/]	[]	C]	[] (2	[] ADD/DELETE)
* CIL RE	TEN	TION	RATIO	ONALE:	(If	appl	icab	-		
REMARKS:									DEQUATE DEQUATE	• •
	IDE E I	RED T	THIS	FAILUR STUDI	E MO	DE (F	ESTR	ICTEL	FLOW) I	NOT CREDIBLE

RELATIONSHIP DOES NOT LEND ITSELF TO BE REALISTIC UNDER NOMINAL CIRCUMSTANCES. CORROSION IS NOT ACCEPTABLE CAUSE SINCE ALL MATERIALS ARE STAINLESS STEEL AND NON-CORROSIVE. CONTAMINATION IS RULED OUT, SINCE FILTERS PROVIDED IN THE LINE FOR THAT PURPOSE; THE RESTRICTED FLOW IS COVERED FOR THE FILTERS. ALSO, THE DEFORMED LINE PRESUMES CREW/WORKERS ERROR IN HANDLING THE MATERIAL, AND THIS IS RULED OUT BY NSTS-22206. IOA SUGGESTS THIS FAILURE TO BE MORE APPROPRIATE FOR FILTERS, OR VALVE (FAILED CLOSED).

ASSESSME ASSESSME NASA FME	ENT	I		ARF	.9/88 PCS-162: -1-0123				N		DATA LINE NEW	[x]	
SUBSYSTE MDAC ID: ITEM:				ARF 162 CHE		VE ((2)								
LEAD ANA	ALY:	ST	:	M.J	. SAII	DI									
ASSESSME	ENT	:													
	CR		ICAI LIGH		RI	EDUN	IDANCY	SCI	REENS			CI	CL CEM	1	
	1	HD	W/FU	INC	A		В		C	!					
NASA IOA		1	/1 /1]	[]	[]]]		[X X]	*
COMPARE	. [/]	[]	[j	.]		[]	
RECOMMEN	NDA'	TI	ons:	(If dif	fere	ent fr	om 1	NASA)						
·	[/	3	[]	[]	(]	(Al	[DD/	/DI] ELI	ETE)
* CIL RI		NT:	ION	RATI	ONALE:	(II	f appl:	ical	A	DEQU DEQU		[x]	
REMARKS:	•														

IOA AGREES WITH THE FMEA.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	ARPCS-17612		NASA DATA: BASELINE NEW	
	ARPCS 1761 ORIFICE, D	IRECT BLEED (1)		
LEAD ANALYST:	M.J. SAIID	I		
ASSESSMENT:				
CRITICAL: FLIGHT	r	DUNDANCY SCREEN	s	CIL ITEM
HDW/FUI	NC A	В	С	
NASA [2 /1R IOA [/NA] [P]] [P] [] [] [P]]	[X] * []
COMPARE [N /N] [N] [N] [и ј	[и]
RECOMMENDATIONS:	(If diffe	erent from NASA)	
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* CIL RETENTION 1	RATIONALE:		ADEQUATE NADEQUATE	[]
REMARKS: THIS FAILURE MODI	•	O RESTRICT - EX		

ASSESSME ASSESSME NASA FME	NT	II):	ARPO)/88 CS-1791 L-0118-	X -3			_		DATA: LINE NEW	[
SUBSYSTE MDAC ID:				ARPO 1791 FILT		CK	VALVE							
LEAD ANA	LYS	ST	:	M.J	. SAIII	Ι								
ASSESSMI	ENT	:												
	CR		ICAI LIGH	YTI	RE	DU	NDANCY	SCI	REENS			CIL		
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COMPARE	ĺ		/	1	[]	ſ]	[1		[]	
RECOMME	NDA'	TI	ONS:	: (If dif	fer	ent fr	om 1	NASA)					
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* CIL R	ETE	NT	ION	RATI	ONALE:	(I	f appl	ica			JATE JATE]	
REMARKS IOA AGR THE OPE	EES	W IN	ITH G L	THE	FMEA, AY NOT	BUI BE	RECOG	NIZ TED	ING TI	HAT '	THIS	FAI]	LURI	e on

ASSESSMI ASSESSMI NASA FMI	ENT ID:	ARPO	S-2021	X 2		1	NASA DAT. BASELIN NE		x]
SUBSYSTE MDAC ID:		ARPC 2021 FLOW		ICTOR,	SPACI	E LAB	OXYGEN		
LEAD ANA	ALYST:	M.J.	SAIID	I					
ASSESSME	ent:								
	CRITIC	ALITY	REI	DUNDAN	CY SCF	REENS		CII	
		FUNC	A		В	(2	ITI	EM
NASA IOA	[3 /:	3] NA]	[]] []]]	[] *
COMPARE	[N /I	4]	[]] []	[]	[]
RECOMMEN	DATIONS	S: (I:	f diffe	erent	from N	(ASA)			
	[/]	[]	[]	[[.DD/E] ELETE)
* CIL RE	TENTION	RATIO	NALE: (If app	plicab				
REMARKS:							DEQUATE]
IOA CONS CREDIBLE	IDERED	THIS FA	AILURE T WAS N	MODE OT STU	(INABI JDIED.	LITY	TO RESTR	ICT)	NOT

ASSESSME ASSESSME NASA FME	NT	II):	ARP	CS-2	12:	1X -3						ASA D BASEI	LINE			
SUBSYSTE MDAC ID:				212		N S	TANI	K AS	SY.	•							
LEAD ANA	LYS	ST	:	M.J	. SA	II	DI										
ASSESSME	NT:	:															
	CR:		ICAL: LIGH			R	EDUI	NDAN	CY	SC	REENS	3			CIL		
	1	HDI	/FU	NC		A			В			С					
NASA IOA	[3	/1R /NA]]	P]] [P]	[P]		[]	*
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	(/]	(]	[)	[]	(A	[DD/D		
* CIL RE	TE	NT:	ION :	RATI	ONAL	E:	(I:	f ap	pl.	ica		A NAI	DEQU <i>I</i> DEQU <i>I</i>	ATE ATE	[]	
REMARKS: IOA DID CREDIBLE	NO	T TH	CONS EREF	IDER ORE	THI IT W	S AS	FAI:	LURE T SI	Me UD	ODE IED	(RE) BE

ASSESSME ASSESSME NASA FME	NT	I		A	/19/8 RPCS- 6-1-	-2	16]		A DAT SELIN NI		[x]	
SUBSYSTE MDAC ID:				2	RPCS 161 SE QI	UI:	CK	DI	sco	NN	Œ	T	(1)								
LEAD ANA	LY	ST	:	M	.J. :	SA:	II	DI													
ASSESSME	NT	:																			
		F	ICAL: LIGH' W/FU	r	Y		RI A	EDU	NDA	NC	Y B	sc	CREE		c			CI IT	L	Ī	
NASA IOA			/1R /1R			[P P]		[[F]	[P]			((X X]	*
COMPARE	[/]		[]		[]	ı]			[]	
RECOMMEN	DA'	ri¢	ons:		(If	d :	if:	fer	ent	f	ro	om	NASA	Y)							
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* CIL RE	TE	NT:	ION 1	RAT	rion	AL	Е:	(I	f a	pp	11	ica		1		QUATE QUATE		[]	
REMARKS:																					

IOA AGREES WITH THE FMEA.

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	ARPCS-2	631X		NASA DATA BASELINI NEV	
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 2631 LINES A	ND FIT	rings		
LEAD ANALYST:	M.J. SA	IIDI			
ASSESSMENT:					
CRITICA		REDUNI	DANCY S	CREENS	CIL ITEM
FLIG HDW/F		A	В	С	1164
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COMPARE [N /N] [N]	[и]	[N]	[]
RECOMMENDATIONS	: (If d	iffere	nt from	NASA)	
. [/) []	[]	[] (2	[] ADD/DELETE)
* CIL RETENTION	RATIONAL	E: (If	applic		
				ADEQUATE INADEQUATE	
REMARKS: IOA CONSIDERED SEPARATELY. TH LOCATIONS WHERE CRITICALITY.	IS WAY TH	E FAIL	URE MOD	E WILL APPLY TO	O PARTICULAR

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-2632 06-1-0193-			ASA DATA: BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 2632 LINES AND	FITTINGS			
LEAD ANALYST:	M.J. SAIII	DI			
ASSESSMENT:					
CRITICAL: FLIGHT		EDUNDANCY	SCREENS		CIL ITEM
HDW/FUI		В	С	-	LIEM
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COMPARE [N /N] [N	ן [א] [N] (N]
RECOMMENDATIONS:	(If diff	ferent fro	om NASA)		
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* CIL RETENTION I	RATIONALE:	(If appl:	AD	DEQUATE [DEQUATE []
REMARKS: IOA ANALYZED REST HARDWARE ON THE I PARTICULAR LOCATION	LINE. THIS	WAY THE	PPROPRIATE FAILURE M	CLY WITH I	NDIVIDUAL APPLIED ON

ASSESSMEN ASSESSMEN NASA FMEA	T ID:	E: 2/19 ARPO 06-1	:S-266				N	BASE		[]	
SUBSYSTEM MDAC ID: ITEM:		ARPO 2661 CHEC		VE/F	ILTER							
LEAD ANAI	LYST:	M.J.	SAII	DI								
ASSESSMEN	NT:											
c	RITIC		R	EDUN	DANCY	SCRE	ENS			CII		
	FLIC HDW/		A		В		(3				
NASA IOA	[3 /	3] 3]	[]	[]	[[]		[] *	
COMPARE	[/]	[]	[]	[)		ſ]	
RECOMMENI	DATION	s: (1	f dif	fere	ent fr	om NA	SA)					
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* CIL RET	rentio:	N RATIO	ONALE:	(If	appl	icab]	1	ADEQU ADEQU		[]	
REMARKS:							T 147	TDEĞO	AID	L	J	

IOA AGREES WITH THE FMEA.

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	ARPCS-273	31X	NASA DATA BASELINE NEW								
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 2731 ORIFICE,	10 LBM/HR (2)									
LEAD ANALYST:	M.J. SAII	IDI									
ASSESSMENT:											
FLIG		REDUNDANCY SCREI	ENS C	CIL ITEM							
•		_	C								
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RECOMMENDATIONS	(If dif	ferent from NAS	SA)								
\]] [] []	[] (A)	[] DD/DELETE)							
* CIL RETENTION	RATIONALE:	(If applicable	e) ADEQUATE	[]							
REMARKS:			INADEQUATE								
THIS FAILURE MOI FLOW RESTRICTOR	EMARKS: HIS FAILURE MODE, INABILITY TO RESTRICT, IS NOT REASONABLE FOR A LOW RESTRICTOR AND THEREFORE NOT CONSIDERED BY IOA. THE 06-1- 158-1 ALREADY COVERS RESTRICTED FLOW FAILURE MODE.										

ASSESSME ASSESSME NASA FME	NT I	ID:	ARPO	9/88 CS-296: L-0228				N	iasa i Basei		[) ()	
SUBSYSTE MDAC ID:	M:		ARPO 2961 FILT	L									
LEAD ANA	LYS	r:	M.J.	SAII	DI								
ASSESSME	NT:												
		TICAL FLIGH		R	EDUN	IDANCY	SCR	EENS			CII		
		DW/FU		A		В		C	:				
NASA IOA	[:	3 /3 3 /3]]]]]	[]		[]	*
COMPARE	[/]	[]	[]	[]		[3	
RECOMMEN	DAT:	ions:	(3	If dif	fere	ent fr	om N	IASA)					
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* CIL RE	TEN'	TION	RATIO	ONALE:	(If	appl	icab	7	ADEQUA		[]	
DEMADKS.								TW	PDEACY	AIL	L	j	

IOA AGREES WITH THE FMEA.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1/26/88 ARPCS-3291 06-1-0191-		1	NASA DATA: BASELINE NEW	[[X]
SUBSYSTEM: MDAC ID: ITEM:	ARPCS 3291 LINES & FI	TTINGS				
LEAD ANALYST:	M.J. SAII)I				
ASSESSMENT:						
CRITICALI FLIGHT HDW/FUN	c	EDUNDANCY		c	CIL ITEM	1
NASA [2/1R IOA [/NA] [P] [P] [1	P]	x]] *
COMPARE [N /N] [N] [N] [1	N]	[1]
RECOMMENDATIONS:	(If diff	erent fro	om NASA)			
\]	J (] [] [[D/DE] LETE)
* CIL RETENTION F	RATIONALE:	(If appli	1	ADEQUATE ADEQUATE	<u>[</u>]

IOA ANALYZED RESTRICTED FLOW MORE APPROPRIATELY WITH INDIVIDUAL HARDWARE ON THE LINE. THIS WAY THE FAILURE MODE WILL APPLIED ON PARTICULAR LOCATIONS ON THE LINE FOR WHICH THE EFFECTS MAY VARY.

ASSESSMENT DATE: 2/1 ASSESSMENT ID: ARP NASA FMEA #: 06-			ARPC											
SUBSYSTE MDAC ID: ITEM:			ARPC 3431 RELI		LVE,	16 I	PSIA							
LEAD ANA	LYST	:	M.J.	SAII	DI									
ASSESSME	NT:													
		CAL		F	REDUN	DANC	SCR	EENS				L CEM	•	
		LIGH W/FU	NC	2	\	I	3	(2		1.1	LEM		
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RECOMMEN	IDATI	ons:	(I	f dif	fere	nt f	com N	IASA)						
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* CIL RE		CION	RATIC	NALE:	(If	app.	licab	7	ADEQU. ADEQU.	ATE ATE]	x]	
REMARKS: IOA CONS BE CREDI	IDEF	ED T	HIS F	AILUI ES TI	A TAI	HAR	DWARE	ITE	OUNTI	BUIL	T	ИС	Tŀ	NOT TO

O DESIGN SPEC. THEREFORE MATERIAL DEFECT CANNOT BE A CAUSE. ALSO, SHOCK AND VIBRATION IF OCCURRED TO CAUSE SUCH A FAILURE, THE VEHICLE IS BELIEVED TO BE UNDERGOING A SERIOUS AND VERY DANGEROUS CONDITION. THIS IS MULTIPLE FAILURE SCENARIO, AND NOT ACCEPTABLE TO IOA. THIS FAILURE MODE IS TO BE DELETED.

ASSESSMEN NASA FMEA	T ID:	, ,	-348				ı	NASA DA'I BASELIN NI] K]]	
SUBSYSTEM MDAC ID:	:	ARPCS 3481 VENT		E, MC	TORI	ZED (2)					
LEAD ANAI	LYST:	M.J.	SAII	DI								
ASSESSMEN	T:											
c	RITICAL		R	EDUNI	DANCY	SCRE	ENS			CIL		
FLIGHT HDW/FUNC			A		В		(:	-	[TE	M	
NASA IOA	[1 /1 [1 /1]	[]	[]	[]	 	X	;] * ;]	
COMPARE	[/]	[]	[]	[]	1	•]	
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* CIL RET	ENTION	RATION	ALE:	(If	appl	icabl	7	ADEQUATE ADEQUATE		X]	

IOA AGREES WITH THE FMEA.

NASA DATA:

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	2/19/88 ARPCS-361 06-1-0206	1X -3		NASA BASE	DATA: LINE [] NEW [X]
SUBSYSTEM: MDAC ID:					
LEAD ANALYST:	M.J. SAII	DI			
ASSESSMENT:					
CRITICAL: FLIGH	ITY R	EDUNDAN	CY SCREE	ens	CIL ITEM
	NC A		В	С	
NASA [1 /1 IOA [/NA] [] []	[]	[X] * []
COMPARE [N /N] [] [1	. 1	[א]
RECOMMENDATIONS:	(If dif	ferent :	from NAS	SA)	
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* CIL RETENTION	RATIONALE:	(If app	plicable	ADEQU INADEQU	•
CREDIBLE AND ASS SPEC. THEREFORE AND VIBRATION IF	UMES THAT , MATERIAL OCCURRED	A HARDWA DEFECT TO CAUS	ARE ITEN CANNOT E SUCH ?	MOUNTI IS BUI BE A CA	NG FLANGE) NOT BE LT ON THE DESIGN USE. ALSO, SHOCK

CONDITION. THIS IS MULTIPLE FAILURE SCENARIO, AND NOT ACCEPTABLE

TO IOA. THIS FAILURE MODE IS TO BE DELETED.

APPENDIX D

CRITICAL ITEMS

APPENDIX D POTENTIAL CRITICAL ITEMS

NASA FMEA	MDAC-ID	ITEM	FAILURE MODE
06-1-0114-3	124	ISOLATION VALVE	EXTERNAL LEAKAGE
06-1-0114-3		LINES & FITTINGS	EXTERNAL LEAKAGE
		CROSSOVER VALVE	
06-1-0111-2			FAILED CLOSED
06-1-0111-3			EXTERNAL LEAKAGE
06-1-0111-4			EXTERNAL LEAKAGE
05-6VA-2011-2		SWITCH	SWITCH FAILED CLOSED
05-6VA-2010-1		CIRCUIT BREAKER	FAILED OPEN
06-1-0115-1	145	FILTER	RESTRICTED FLOW
06-1-0116-1	147	ORIFICE	RESTRICTED FLOW
06-1-0116-3	149	ORIFICE	EXTERNAL LEAKAGE
06-1-1510-1	150	LINES AND FITTINGS	EXTERNAL LEAKAGE
06-1-0120-1	152	LEH O2 SUPPLY VALVE	FAILED CLOSED
06-1-0120-3	153	LEH O2 SUPPLY VALVE	EXTERNAL LEAKAGE
06-1-0121-1	154	LEH O2 REGULATOR	FAILED OPEN
06-1-0121-2	155	LEH O2 REGULATOR	FAILED CLOSED
06-1-0121-3	156	LEG O2 REGULATOR	EXTERNAL LEAKAGE
06-1-0116-1 06-1-0116-3 06-1-1510-1 06-1-0120-1 06-1-0121-1 06-1-0121-2 06-1-0121-3 06-1-0122-1 06-1-0123-2 06-1-0123-1	157	RELIEF VALVE	FAILED OPEN/INT LEAK
06-1-0123-2	161	CHECK VALVE	FAILED OPEN
06-1-0123-1	162	CHECK VALVE	FAILED CLOSED
06-1-1501-2	163	LEH O2 SHUTOFF VALVE	FAILED OPEN/INT LEAK
06-1-1501-1	164	LEH O2 SHUTOFF VALVE	FAILED CLOSED
06-1-1501-3	165	LEH 02 SHUTOFF VALVE	
06-1-1502-2		QUICK DISCONNECTS	INABILITY TO MATE
06-1-1502-1		QUICK DISCONNECTS	
06-1-1512-2		SHUTOFF VALVE/DIR 02	FAILED OPEN
06-1-1512-3		SHUTOFF VALVE/DIR 02	FAILED OPEN
		SHUTOFF VALVE/DIR 02	FAILED CLOSED
		ORIFICE/DIR O2	RESTRICTED FLOW
06-1-0118-1	177	FILTER/CHECK VALVE	FAILED CLOSED
06-1-0118-4	179	FILTER/CHECK VALVE	EXTERNAL LEAKAGE
06-1-0125-3	186	REGULATOR INLET SOV	EXTERNAL LEAKAGE
06-1-0191-1 06-1-0141-2A	196		EXTERNAL LEAKAGE
		8 PSI REGULATOR	FAILED OPEN
06-1-0141-2B	210	8 PSI REGULATOR	FAILED OPEN
06-1-0141-1		8 PSI REGULATOR	FAILED CLOSED
06-1-0161-2	212	N2 TANKS	RUPTURE, EXTERNAL LEAK
06-1-0161-1	212	N2 TANKS	RUPTURE, EXTERNAL LEAK
06-1-0191-1	214	LINES & FITTINGS	EXTERNAL LEAKAGE
06-1-0166-3	216	GSE QUICK DISCONNECT	EXTERNAL LEAKAGE
06-1-0230-3	223	ISOLATION VALVE	FAILED OPEN/INT LEAK
06-1-0230-4	224	ISOLATION VALVE	EXTERNAL LEAKAGE
06-1-0231-1	232	LINES & FITTINGS	EXTERNAL LEAKAGE
	234	N2 ISOLATION VALVE	FAILED CLOSED
06-1-0165-2	235	N2 ISOLATION VALVE	EXTERNAL LEAKAGE
06-1-0165-1	237	N2 ISOL VALVE MOTOR	INABILITY TO OPERATE

NASA FMEA MDAC-ID		ITEM	FAILURE MODE	
05-6VA-2013-2	241	SWITCH S13 & S21	FAILED CLOSED	
06-1-0171-2	247	REGULATOR INLET VALVE	EXTERNAL LEAK	
06-1-0192-1	263	LINES & FITTINGS	EXTERNAL LEAK	
06-1-0193-1		LINES & FITTINGS	EXTERNAL LEAK	
06-1-0152-3	271	SHUTOFF VALVE	EXTERNAL LEAKAGE	
06-1-0178-3	276	CROSSOVER VALVE	EXTERNAL LEAKAGE	
06-1-0146-1	312	PPO2 SENSOR C	OUT OF TOLERANCE	
05-6VA-2022-1	327	CIRCUIT BREAKER		
	329			
06-1-0201-2	330	ISOLATION VALVE	FAILED OPEN/INT LEAK	
06-1-0201-2 06-1-0201-1 06-1-0201-2	331	ISOLATION VALVE	FAILED CLOSED	
06-1-0201-2	332	MOTOR/ISOLATION VALVE		
06-1-0201-1	333	MOTOR/ISOLATION VALVE	LOSS OF OUTPUT	
05-6VA-2021-1		SWITCH, S1&S2	FAILED ENABLED	
05-6VA-2021-2	337	SWITCH, S1&S2	PREMATURELY CLOSES	
05-6VA-2020-1	338	CIRCUIT BREAKER	FAILED OPEN	
06-1-0201-2	342 343	CIRCUIT BREAKER RELIEF VALVE RELIEF VALVE	FAILED OPEN/INT LEAK	
06-1-0201-1	343	RELIEF VALVE	FAILED CLOSED	
	344	FILTER	RESTRICTED FLOW	
06-1-0203-2		VENT VALVE		
06-1-0203-1	348	VENT VALVE	FAILED OPEN/INT LEAK	
06-1-0206-2	360	RELIEF VALVE		
06-1-0206-1		RELIEF VALVE	FAILED CLOSED	
06-1-0207-1		CAP	INABILITY TO POP	
06-1-0207-3	363	CAP	INTERNAL LEAKAGE	
	364		RESTRICTED FLOW	
06-1-0229-1				
06-1-0229-2	368	QUICK DISCONNECT	EXTERNAL LEAKAGE	
06-1-0123-3	1621	CHECK VALVE	EXTERNAL LEAKAGE	
06-1-0166-4	2161	CHECK VALVE GSE QUICK DISCONNECT	INTERNAL LEAKAGE	
06-1-0203-3	3481	VENT VALVE	EXTERNAL LEAKAGE	

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APPENDIX E ADDITIONAL ANALYSIS WORKSHEET

This appendix contains the IOA analysis worksheets supplementing previous results reported in STSEOS Working Paper 1.0-WP-VA86001-30, Analysis of the ARPCS dated December 5, 1986. Prior results were obtained independently and documented before starting the FMEA/CIL assessment activity. Supplemental analysis was performed to address failure modes not previously considered by the IOA. Each sheet identifies the hardware item being analyzed, parent assembly and function performed. For each failure mode possible causes are identified, and hardware and functional criticality for each mission phase are determined as described in NSTS 22206. Instructions for Preparation of FMEA and CIL, 10 October 1986. Failure mode effects are described at the bottom of each sheet and worst case criticality is identified at the top.

LEGEND FOR IOA ANALYSIS WORKSHEETS

Hardware Criticalities:

- 1 = Loss of life or vehicle
- 2 = Loss of mission or next failure of any redundant item
 (like or unlike) could cause loss of life/vehicle
- 3 = All others

Functional Criticalities:

- 1R = Redundant hardware items (like or unlike) all of which,
 if failed, could cause loss of life or vehicle.
- 2R = Redundant hardware items (like or unlike) all of which, if failed, could cause loss of mission.
 - 3 = All others

Redundancy Screen A:

- 1 = Is Checked Out PreFlight
- 2 = Is Capable of Check Out PreFlight
- 3 = Not Capable of Check Out PreFlight
- NA = Not Applicable

Redundancy Screens B and C:

- P = Passed Screen
- F = Failed Screen
- NA = Not Applicable

HIGHEST CRITICALITY HDW/FUNC DATE:

SUBSYSTEM: ARPCS FLIGHT: 3/3 ABORT: MDAC ID: 1131 3/3

SWITCH-S12 ITEM:

FAILURE MODE: PREMATURE OPERATION, INADVERTENTLY CLOSES/OPENS

LEAD ANALYST: M.J. SAIIDI SUBSYS LEAD: M. SAIIDI

BREAKDOWN HIERARCHY:

- 1) ARPCS
- 2) AMC
- 3) AUX. O2 ASSY. (O2 SUPPLY PANEL)
- 4)
- 5)
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/3	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	: 3/3		•

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: CREW MODULE PART NUMBER: ME452-0102-7205

CAUSES: SHOCK, VIBRATION

EFFECTS/RATIONALE:

NO EFFECT, SINCE THE TANK IS NO LONGER FLOWN.

HIGHEST CRITICALITY HDW/FUNC DATE: FLIGHT: /NA SUBSYSTEM: ARPCS /NA ABORT: MDAC ID: 1351 LINES AND FITTINGS ITEM: FAILURE MODE: RESTRICTED FLOW LEAD ANALYST: M.J. SAIIDI SUBSYS LEAD: M. SAIIDI BREAKDOWN HIERARCHY: 1) ARPCS 2) AMC 3) AUXILIARY O2 ASSEMBLY 4) 5) 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: TAL: AOA: ATO: /NA /NA PRELAUNCH: /NA /NA /NA LIFTOFF: /NA ONORBIT: /NA /NA DEORBIT: LANDING/SAFING: /NA REDUNDANCY SCREENS: A [] B [] C [] LOCATION: CREW MODULE PART NUMBER: CAUSES: EFFECTS/RATIONALE: THE RESTRICTED FLOW WAS STUDIED UNDER INDIVIDUAL ITEMS ON THE LINE.

HIGHEST CRITICALITY HDW/FUNC DATE: SUBSYSTEM: ARPCS

FLIGHT: /NA MDAC ID: 1461 ABORT: /NA

ITEM: FILTER, 10 MICRON (2)

FAILURE MODE: EXTERNAL LEAKAGE

LEAD ANALYST: M.J. SAIIDI SUBSYS LEAD: M. SAIIDI

BREAKDOWN HIERARCHY:

- 1) ARPCS
- 2) AMC 3) O2 ASSEMBLY
- 4)
- 5)
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	/NA	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFING	: /NA		•

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: MID-FUSELAGE PART NUMBER: ME286-0061-0001

CAUSES:

EFFECTS/RATIONALE:

THE EXTERNAL LEAKAGE FOR THE FILTER ALONE WAS CONSIDERED NOT CREDIBLE AND ALREADY COVERED BY THE SAME FAILURE MODE FOR THE LINES AND FITTINGS.

HIGHEST CRITICALITY HDW/FUNC DATE: FLIGHT: /NA SUBSYSTEM: ARPCS /NA ABORT: 1501 MDAC ID: LINES AND FITTINGS ITEM: FAILURE MODE: RESTRICTED FLOW LEAD ANALYST: M.J. SAIIDI SUBSYS LEAD: M. SAIIDI BREAKDOWN HIERARCHY: 1) ARPCS AMC 2) O2 ASSEMBLY 3) 4) 5) 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: TAL: /NA /NA PRELAUNCH: /NA /NA LIFTOFF: AOA: /NA /NA ONORBIT: /NA ATO: /NA DEORBIT: LANDING/SAFING: /NA REDUNDANCY SCREENS: A [] B [] C [] LOCATION: PART NUMBER: CAUSES: EFFECTS/RATIONALE: THIS FAILURE MODE IS COVERED UNDER INDIVIDUAL ITEMS ON THE LINE.

DATE: HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARPCS FLIGHT: 1/1

MDAC ID: 1621 FLIGHT: 1/1
ABORT: 1/1

ITEM: CHECK VALVE (2)
FAILURE MODE: EXTERNAL LEAKAGE

LEAD ANALYST: M.J. SAIIDI SUBSYS LEAD: M. SAIIDI

BREAKDOWN HIERARCHY:

- 1) ARPCS
- 2) AMC
- 3) O2 ASSY.
- 4) EMERGENCY BREATHING

5)

6)

7)

8) 9)

CRITTCALTTTES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	1/1
LIFTOFF:	1/1	TAL:	$\frac{1}{1}$
ONORBIT:	1/1	AOA:	1/1
DEORBIT:	1/1	ATO:	1/1
LANDING/SAFING:	3/3	33244	-/ -

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: CREW MODULE PART NUMBER: MC250-0002

CAUSES: MECHANICAL SHOCK, VIBRATION

EFFECTS/RATIONALE:

PREVENTS O2 FLOW THROUGH THE LEH WHEN NEEDED. UNREGULATED FLOW OF O2 TO CABIN THEREBY INCREASING POTENTIAL FOR LOSS OF LIFE/VEHICLE DUE TO FIRE.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/26/88 SUBSYSTEM: ARPCS FLIGHT: /NA ABORT: /NA 1761 MDAC ID: ORIFICE, DIRECT BLEED (1) ITEM: FAILURE MODE: UNABLE TO RESTRICT LEAD ANALYST: M.J. SAIIDI SUBSYS LEAD: M. SAIIDI BREAKDOWN HIERARCHY: 1) ARPCS 2) AMC 3) O2 ASSEMBLY 4) EMERGENCY BREATHING 5) 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: PRELAUNCH: /NA /NA /NA TAL: /NA LIFTOFF: /NA /NA ONORBIT: AOA: /NA ATO: /NA DEORBIT: LANDING/SAFING: /NA REDUNDANCY SCREENS: A [] B [] C [] LOCATION: CREW MODULE PART NUMBER: CAUSES: NA EFFECTS/RATIONALE:

THIS FAILURE MODE WAS CONSIDERED NOT CREDIBLE AND THEREFORE NOT

REFERENCES:

STUDIED.

HIGHEST CRITICALITY HDW/FUNC DATE:

FLIGHT: 3/3 ABORT: 3/3 SUBSYSTEM: ARPCS MDAC ID: 1791

FILTER/CHECK VALVE ITEM: FAILURE MODE: DAMAGED ELEMENT

LEAD ANALYST: M.J. SAIIDI SUBSYS LEAD: M. SAIIDI

BREAKDOWN HIERARCHY:

- 1) ARPCS
- 2) AMC
- 3) 02 ASSY.
- 4) 02/N2 CONTROL PANEL
- 5)
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/3	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING	: 3/3		•

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: CREW MODULE PART NUMBER: MC250-0002

CAUSES: SHOCK, VIBRATION

EFFECTS/RATIONALE:

POSSIBLE CONTAMINANTS DOWNSTREAM.

HIGHEST CRITICALITY HDW/FUNC DATE: FLIGHT: SUBSYSTEM: ARPCS /NA /NA ABORT: MDAC ID: 2021 FLOW RESTRICTOR, SPACE LAB OXYGEN ITEM: FAILURE MODE: INABILITY TO RESTRICT LEAD ANALYST: M.J. SAIIDI SUBSYS LEAD: M. SAIIDI BREAKDOWN HIERARCHY: 1) ARPCS 2) AMC 3) O2 ASSEMBLY 4) O2/N2 CONTROL PANEL - P/L INTERFACE 5) 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: TAL: AOA: /NA PRELAUNCH: /NA /NA /NA /NA LIFTOFF: /NA ONORBIT: DEORBIT: /NA LANDING/SAFING: /NA ATO: /NA REDUNDANCY SCREENS: A [] B [] C []

LOCATION: CREW MODULE PART NUMBER: MC250-0002

CAUSES:

EFFECTS/RATIONALE:

THIS FAILURE MODE IS CONSIDERED NOT CREDIBLE, AND THEREFORE IT WAS NOT STUDIED.

DATE: HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARPCS FLIGHT: /NA MDAC ID: 2121 ABORT: /NA ITEM: NITROGEN TANK ASSY. FAILURE MODE: RESTRICTED OUTPUT LEAD ANALYST: M.J. SAIIDI SUBSYS LEAD: M. SAIIDI BREAKDOWN HIERARCHY: 1) ARPCS 2) AMC 3) N2 ASSEMBLY 4) N2 SUPPLY TANKS 5) 6)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC		
PRELAUNCH:	/NA	RTLS:	/NA		
LIFTOFF:	/NA	TAL:	/NA		
ONORBIT:	/NA	AOA:	/NA		
DEORBIT:	/NA	ATO:	/NA		
LANDING/SAFING	: /NA		•		

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: MID-FUSELAGE PART NUMBER: MC282-0082-0040

CAUSES: CORROSION, CONTAMINATION

EFFECTS/RATIONALE:

IOA DID NOT CONSIDER THIS FAILURE MODE CAUSE RELATIONSHIP TO BE CREDIBLE, AND THEREFORE NOT STUDIED.

REFERENCES:

7) 8) 9)

DATE: 1/26/88 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARPCS FLIGHT: 3/1R MDAC ID: 2161 ABORT: 3/1R

ITEM: GSE QUICK DISCONNECT (1)

FAILURE MODE: INTERNAL LEAKAGE

LEAD ANALYST: M.J. SAIIDI SUBSYS LEAD: M. SAIIDI

BREAKDOWN HIERARCHY:

- 1) ARPCS
- 2) AMC
- 3) N2 ASSEMBLY
- 4) N2 SUPPLY TANKS

5)

6)

7)

8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC	
PRELAUNCH:	3/3	RTLS:	3/1R	
LIFTOFF:	3/1R	TAL:	3/1R	
ONORBIT:	3/1R	AOA:	3/1R	
DEORBIT:	3/1R	ATO:	3/1R	
LANDING/SAFING:	3/3		•	

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: MID-FUSELAGE
PART NUMBER: MC276-0010-0380

CAUSES: VIBRATION, SHOCK

EFFECTS/RATIONALE:

THE CAP WILL PREVENT N2 LEAKAGE. HOWEVER, UNDER FUNCTIONAL LOSS, IT WILL RESULT IN POTENTIAL LOSS OF LIFE/VEHICLE DUE TO LOSS OF NITROGEN TO MAINTAIN CABIN PRESSURIZATION.

DATE: 1/26/88 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARPCS FLIGHT: /NA ABORT: MDAC ID: 2631 /NA ITEM: LINES AND FITTINGS FAILURE MODE: LEAD ANALYST: M.J. SAIIDI SUBSYS LEAD: M. SAIIDI BREAKDOWN HIERARCHY: 1) ARPCS 2) AMC 3) N2 ASSEMBLY 4) N2/O2 SUPPLY PANEL - REGULATOR ASSEMBLY 5) 6) 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: /NA RTLS: /NA LIFTOFF: /NA TAL: /NA ONORBIT: /NA AOA: /NA DEORBIT: /NA ATO: /NA LANDING/SAFING: /NA REDUNDANCY SCREENS: A [] B [] C [] LOCATION: CREW MODULE AND MID-FUSELAGE PART NUMBER: V070-634465

CAUSES: NA

EFFECTS/RATIONALE:

THE RESTRITED FLOW WAS COVERED BY IOA FOR EACH ITEM ON THE LINE

IN SEPARATE ANALYSIS SHEETS.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/26/88 FLIGHT: /NA SUBSYSTEM: ARPCS ABORT: /NA MDAC ID: 2632 LINES AND FITTINGS ITEM: FAILURE MODE: RESTRICTED FLOW LEAD ANALYST: M.J. SAIIDI SUBSYS LEAD: M. SAIIDI BREAKDOWN HIERARCHY: 1) ARPCS 2) AMC 3) N2 ASSEMBLY 4) FLEXIBLE LINE 5) 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: TAL: AOA: ATO: /NA /NA PRELAUNCH: /NA /NA /NA LIFTOFF: /NA ONORBIT: /NA /NA DEORBIT: LANDING/SAFING: /NA REDUNDANCY SCREENS: A [] B [] C [] LOCATION: PART NUMBER: CAUSES: NA EFFECTS/RATIONALE: THE RESTRICTED FLOW WAS COVERED BY IOA FOR EACH ITEM ON THE LINE IN SEPARATE ANALYSIS SHEETS.

DATE: HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARPCS FLIGHT: 3/3

MDAC ID: 2661 ABORT: 3/3

ITEM: CHECK VALVE/FILTER

FAILURE MODE: DAMAGED ELEMENT - FILTER

LEAD ANALYST: M.J. SAIIDI SUBSYS LEAD: M. SAIIDI

BREAKDOWN HIERARCHY:

- 1) ARPCS
- 2) AMC
- 3) N2 ASSEMBLY
- 4) N2/O2 SUPPLY PANEL
- 5)
- 6)
- 7)
- 8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/3	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		·

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: CREW MODULE PART NUMBER: MC250-0002

CAUSES: SHOCK, VIBRATION

EFFECTS/RATIONALE:

POSSIBLE CONTAMINATION OF DOWNSTREAM COMPONENTS.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/26/88 FLIGHT: /NA SUBSYSTEM: ARPCS /NA MDAC ID: 2731 ABORT: ORIFICE, 10 LBM/HR (2) ITEM: FAILURE MODE: INABILITY TO RESTRICT LEAD ANALYST: M.J. SAIIDI SUBSYS LEAD: M. SAIIDI BREAKDOWN HIERARCHY: 1) ARPCS 2) AMC 3) N2 ASSEMBLY 4) 02/N2 CONTROL PANEL - PAYLOAD INTERFACE 5) 6) 7) 8)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC	
PRELAUNCH:	/NA	RTLS:	/NA	
LIFTOFF:	/NA	TAL:	/NA	
ONORBIT:	/NA	AOA:	/NA	
DEORBIT:	/NA	ATO:	/NA	
LANDING/SAFING	: /NA		-	

REDUNDANCY SCREENS: A [] B [] C []

9)

LOCATION: CREW MODULE

PART NUMBER:

CAUSES: NA

EFFECTS/RATIONALE:

THIS FAILURE MODE IS JUDGED NOT TO BE CREDIBLE FOR AN ORIFICE. THE RESTRICTION CAPABILITY IS INHERENT WITHIN THE DESIGN OF THE ORIFICE AND IOA DID NOT SEE HOW THIS CAPABILITY COULD FAIL.

DATE: 12/17/86 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARPCS FLIGHT: 3/3 MDAC ID: 2961 ABORT: 3/3 ITEM: FILTER FAILURE MODE: DAMAGED FILTER LEAD ANALYST: M.J. SAIIDI SUBSYS LEAD: M. SAIIDI BREAKDOWN HIERARCHY: 1) ARPCS 2) AMC 3) N2 ASSEMBLY 02/N2 CONTROL PANEL, WATER MANAGEMENT 4) 5) 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: 3/3 3/3 TAL: 3/3 FLIGHT PHASE PRELAUNCH: TAL: LIFTOFF: 3/3 3/3 3/3 ONORBIT: 3/3 AOA: DEORBIT: 3/3 ATO: 3/3

LOCATION: CREW MODULE PART NUMBER: MC250-0002

LANDING/SAFING: 3/3

CAUSES: VIBRATION, SHOCK, CONTAMINATION, CORROSION, PIECE PART

FAILURE

EFFECTS/RATIONALE:

NO EFFECT, POSSIBLY CAUSING RESTRICTED FLOW IN THE ITEMS DOWNSTREAM.

REDUNDANCY SCREENS: A [] B [] C []

DATE: 1/26/88 HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARPCS FLIGHT: /NA

MDAC ID: 3291 ABORT: /NA

ITEM: LINES & FITTINGS FAILURE MODE: RESTRICTED FLOW

LEAD ANALYST: M.J. SAIIDI SUBSYS LEAD: M. SAIIDI

BREAKDOWN HIERARCHY:

- 1) ARPCS
- 2) AMC
- 3) N2 ASSEMBLY
- 4) 02/N2 CONTROL PANEL

5)

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	/NA	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFING	: /NA		

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: CREW MODULE PART NUMBER: V070-613130

CAUSES: NA

EFFECTS/RATIONALE:

THE RESTRITED FLOW WAS COVERED BY IOA FOR EACH ITEM ON THE LINE IN SEPARATE ANALYSIS SHEETS.

10/29/86 HIGHEST CRITICALITY HDW/FUNC DATE: SUBSYSTEM: ARPCS FLIGHT: /NA MDAC ID: 3431 ABORT: /NA RELIEF VALVE, 16 PSIA ITEM: FAILURE MODE: EXTERNAL LEAKAGE (CRACKED MOUNTING FLANGE) LEAD ANALYST: M.J. SAIIDI SUBSYS LEAD: M. SAIIDI BREAKDOWN HIERARCHY: 1) ARPCS AMC 2) 3) POSITIVE RELIEF VENT 4) 5) 6) 7) 8)

CRITICALITIES

HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: TAL: PRELAUNCH: /NA /NA LIFTOFF: /NA /NA /NA /NA ONORBIT: AOA: /NA DEORBIT: ATO: /NA LANDING/SAFING: /NA

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: CREW MODULE
PART NUMBER: MC250-0002-0050

CAUSES: SHOCK, VIBRATION, MATERIAL DEFECT

EFFECTS/RATIONALE:

NON-CREDIBLE FAILURE/CAUSE SCENARIO - IOA DID NOT STUDY.

REFERENCES:

9)

DATE: 10/29/86 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARPCS FLIGHT: 1/1

MDAC ID: 3481 ABORT: 1/1

ITEM: VENT VALVE, MOTORIZED (2)

FAILURE MODE: EXTERNAL LEAKAGE

LEAD ANALYST: M.J. SAIIDI SUBSYS LEAD: M. SAIIDI

BREAKDOWN HIERARCHY:

- 1) ARPCS
- 2) AMC
- 3) CABIN VENT
- 4)
- 5)
- 6)
- 7)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	1/1
LIFTOFF:	1/1	TAL:	1/1
ONORBIT:	1/1	AOA:	1/1
DEORBIT:	1/1	ATO:	1/1
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: CREW MODULE
PART NUMBER: MC250-0002-0090

CAUSES: SHOCK, VIBRATION, CORROSION

EFFECTS/RATIONALE:

THE FAILURE ON ISOL VALVE HAS NO EFFECT, SINCE THE VENT VALVE WILL BE CLOSED TO PREVENT OUTBOARD FLOW. HOWEVER, THE EXTERNAL LEAKAGE ON THE VENT VALVE MAY DEPRESSURIZE THE CABIN VERY RAPIDLY (CAPABLE OF 900 lbm/hr), THUS CREATING A SERIOUS CONDITION FOR LOSS OF LIFE/VEHICLE.

10/29/86 DATE: HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARPCS FLIGHT: /NA ABORT: MDAC ID: /NA 3611 ITEM: RELIEF VALVE (2) FAILURE MODE: EXTERNAL LEAKAGE (CRACKED MOUNTING FLANGE) LEAD ANALYST: M.J. SAIIDI SUBSYS LEAD: M. SAIIDI BREAKDOWN HIERARCHY: 1) ARPCS 2) AMC 3) NEGATIVE RELIEF VENT 4) 5) 6) 7) 8) 9) CRITTCALITTES

	CRITICA	LITIES	
FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	/NA	RTLS:	/NA
LIFTOFF:	/NA	TAL:	/NA
ONORBIT:	/NA	AOA:	/NA
DEORBIT:	/NA	ATO:	/NA
LANDING/SAFING:	/NA		·

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: CREW MODULE, BELOW HATCH

PART NUMBER: MC250-0002-0075

CAUSES:

EFFECTS/RATIONALE:

NON-CREDIBLE FAILURE SCENARIO - IOA DID NOT STUDY THIS.

HIGHEST CRITICALITY HDW/FUNC 1/26/88 DATE:

FLIGHT: 3/2R SUBSYSTEM: ARPCS 3/2R ABORT: MDAC ID: 367

ITEM: QUICK DISCONNECT FAILURE MODE: EXTERNAL LEAKAGE

LEAD ANALYST: M.J. SAIIDI SUBSYS LEAD: M. SAIIDI

BREAKDOWN HIERARCHY:

- 1) ARPCS
- 2) AMC
- 3) N2 ASSEMBLY
- 4) 02/N2 CONTROL PANEL WATER MANAGEMENT

5) 6)

7)

8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/2R
LIFTOFF:	3/2R	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING	*		

REDUNDANCY SCREENS: A [3] B [F] C [P]

LOCATION: PART NUMBER:

CAUSES: SHOCK, VIBRATION, CORROSION

EFFECTS/RATIONALE:

SINGLE FAILURE HAS NO SIGNIFICANT EFFECT. FUNCTIONAL LOSS WILL NEGATE USE OF THE PRIMARY N2 PRESSURIZATION SYSTEM. CABIN PRESSURE IS AVAILABLE FOR WATER MANAGEMENT. AT WORST, LOSS OF MISSION MAY BE ANTICIPATED DUE TO DEGRADED OR LOSS OF THE FES OPERATION.

DATE: 1/26/88 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARPCS FLIGHT: 3/2R MDAC ID: 368 ABORT: 3/2R

ITEM: QUICK DISCONNECT FAILURE MODE: EXTERNAL LEAKAGE

LEAD ANALYST: M.J. SAIIDI SUBSYS LEAD: M. SAIIDI

BREAKDOWN HIERARCHY:

- 1) ARPCS
- 2) AMC
- 3) N2 ASSEMBLY
- 4) 02/N2 CONTROL PANEL WATER MANAGEMENT

5)

6)

7)

8) 9)

CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC
3/3	RTLS:	3/2R
3/2R	TAL:	3/2R
3/2R	AOA:	3/2R
3/2R	ATO:	3/2R
3/3		,
	3/3 3/2R 3/2R 3/2R 3/2R	3/3 RTLS: 3/2R TAL: 3/2R AOA: 3/2R ATO:

REDUNDANCY SCREENS: A [3] B [F] C [P]

LOCATION: PART NUMBER:

CAUSES: SHOCK, VIBRATION, CORROSION

EFFECTS/RATIONALE:

SINGLE FAILURE HAS NO SIGNIFICANT EFFECT. FUNCTIONAL LOSS WILL NEGATE USE OF THE PRIMARY N2 PRESSURIZATION SYSTEM. CABIN PRESSURE IS AVAILABLE FOR WATER MANAGEMENT. AT WORST, LOSS OF MISSION MAY BE ANTICIPATED DUE TO DEGRADED OR LOSS OF THE FES OPERATION.

DATE: 1/26/3 SUBSYSTEM: ARPCS MDAC ID: 369	88		CICALITY LIGHT: BORT:	HDW/FUNC /NA /NA
ITEM: SWITCH FAILURE MODE: FAILURE SHORTS TO GROUND		"AUTO" OR "N	ian" posi	TION,
LEAD ANALYST: M.J.	SAIIDI SUB	SYS LEAD: M.	SAIIDI	
BREAKDOWN HIERARCHY 1) ARPCS 2) N2 ASSEMBLY 3) 4) 5) 6) 7) 8)	:			
	CRITICAL	TIES		
FLIGHT PHASE	HDW/FUNC		HDW/FUN	rc .
PRELAUNCH:	/NA /NA /NA	RTLS:	/NA	
LIFTOFF:	/NA	TAL:	/NA	
ONORBIT:	/NA	AOA:		
DEORBIT:	/NA	ATO:		
LANDING/SAFI			•	•
REDUNDANCY SCREENS:	A []	3 []	c []	
LOCATION: PART NUMBER:				
CAUSES:				
EFFECTS/RATIONALE: IOA COULD NOT FIND FAILURE MODE.	THIS ITEM IN ORD	ER TO ACCOUNT	FOR OR	MATCH ITS

APPENDIX F

NASA FMEA TO IOA WORKSHEET CROSS REFERENCE/RECOMMENDATIONS

This section provides a cross reference between the NASA FMEA and corresponding IOA analysis worksheet(s) included in Appendix E. The Appendix F identifies: NASA FMEA Number, IOA Assessment Number, NASA criticality and redundancy screen data, and IOA recommendations.

Appendix F Legend

Code Definition

- 1 IOA recommends changing the second failure mode described in the effects field.
- 2 IOA recommends deleting the IOA failure mode.

CRIGINAL PAGE IS OF POOR QUALITY

APPENDIX F

NASA FNEA TO IDA WORKSHEET CROSS REFERENCE / RECOMMENDATIONS

ASSESSMENT NUMBER ARPCS-102 ARPCS-103	}	HWIF	5 A	CREEN	 S	11	CRIT	SCREENS	! OTHER	: 155UE
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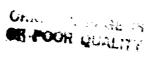
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04-1-0125-1	ARPSS-185 ARPSS-184	11 3/1R		11 /	1 1		; X				
06-1-0125-2		11 2/1R		11 /	1 1		1 "				
06-1-0125-3				11 /	1 1		! Y				
05-1-0125-1		11 3/1R	: 1 :111 .	11 /	1 1	•					
06-1-0126-2		11 3/1R		$\frac{11}{11}$ $\frac{7}{7}$	1		t. 1				
06-1-0126-3		11 3/1R		11 7	1 1		: X				
04-1-0127-1		11 3/1R		11 /	· · · · · · · · · · · · · · · · · · ·						
06-1-0127-2		11 3/1R	IPPP		1 1		1				
06-1-0129-1		11 3/3	i	11 /	1		1				
06-1-0132-1		11 3/3		11 /	1		! 1				
06-1-0134-1		11 3/2R	IPPP	11 /	i i		: A				
	! ARPCS-200	11 3/28	1 P P P	11 /	i (: , y				
06-1-0134-2		11 3/2R	1111	11 /	1		t Λ				
	ARPCS-198	11 3/2R	IPPP	11 /	i i						
06-1-0134-3	1 ARPCS-201	11 3/1R	1 P P P	11 /	i		: ! V				
04-1-0135-1		11 3/18		11 /	1		1 X				
06-1-0135-2		11 3/1R		11 /	i i		1 1				
		11 3/1R		11 /	i		. A				
06-1-0135-3			IPPP	11 /	i						
06-1-0136-1		11 3/3	1	11 /	i i		1				
04-1-0138-1		11 3/2R	IPPP	11 /			1 4				
04-1-0138-2		11 3/3		11 /	1		; X				
06-1-0139-1		11 3/1R		11 /	i .		1 X				
06-1-0139-2			I P NA P	11 /	1						
06-1-0139-3			1 P NA P	11 /	i						
06-1-0140-1		11 3/1R		11 /	: :		1 X				
06-1-0140-2		11 3/1R		11 /			i F				
05-1-0141-1		11 2/1R		11 /	: :		i !				
06-1-0141-2A		11 2/1R		H = I			i I				
06-1-0141-28		11 2/18		11 /	1		i				
06-1-0146-1		11 3/1R		11 /	1		; , , , , ,				
	•	11 3/1R		11 /			i i				
		11 3/1R		E /	1		; X				
06-1-0147-1	1 ARPCS-309		I P NA P	H = I			1				
	†	11	į		: !		;				



198	INTIFIERS	1	IASA					IDA RECOMP	MENDATIONS *	
NASA FYEA NUMBER	! IDA ! ASSESSMENT MUMBER		S	CREEN 9	_			SCREENS A B C	OTHER (SEE LEBEND CODE)	ISSUE
	! ARPCS-307	1 3/2R	! P	NA	p	:	::			
06-1-0147-3	ARPCS-308		! P			11 /	!		!	χ
06-1-0149-1		3/1R	. P	NA						
06-1-0149-2		3/1R	 ! P			1	!			
06-1-0149-3		3/1R	; P				,	!	· !	
06-1-0152-1		11 3/2R	! P	NA		1 /	,		: !	
05-1-0152-2	· · · · · · · · · ·	: 3/1R	P			\mathbb{R}^{-1}	1		: :),
04-1-0152-3		3/1R	1 P			1 /	:		; !	X X
	ARPCS-272	. 3/1R	; P			1 /	:		: :	٨
06-1-0158-1		3/2R	1 P	NA NA		3 Z	1		:	X
06-1-0158-2			P			$\frac{\alpha}{4} = \frac{C}{I}$!			A
06-1-0158-3		3/18				1 /	1	:		ų
06-1-0161-1			; P	F			i			X
06-1-0161-2		1/1		_		1 1			, ,	u
06-1-0151-3			1 P		•	1 1	i		i	χ
04-1-0162-1		1 3/2R	P	P		1 /	i	:		Ĭ,
04-1-0144-1		1 3/2R	1 P			1 /	1	9		X
06-1-0165-1		3/1R	P	p	•	1 /	1			χ
		1 3/18	: P	Þ		1 /	ì	}	1	Ž
06-1-0165-2		1 J/1R	1 P	Ρ		1 /	;	:	†	X
06-1-0165-3		1 3/1R	1 P	P		1 /		į E	ļ	X
		1 3/18	! P	P		1 /	ŧ	!	!	X
06-1-0166-3	ARPCS-216	1 2/1R	! P	P		1 /	;	•		
06-1-0166-4	: ARPCS-2161X	1 3/1R	1.2	F		1 /	;	!	1	
06-1-0171-1	ARPCS-246	1 3/1R	; P	P	P	1 /	!			
	: ARPCS-248	1 3/1R	1 P	P	P	1 /	1	;	1	
06-1-0171-2	: ARPCS-247	1 2/1R	: P	Ρ	P	1 /	1	į		
06-1-0171-3	: ARPCS-245	1 3/1R	1 P	Ρ	P	1 /	!		! ;	X
	ARPCS-249	1 3/1R	1 P	P	۶	1 /	1	•	:	X
06-1-0172-1	1 ARPCS-258	1 3/1R	1.8	þ	٩	1 /		!	•	
06-1-0172-2	: ARPCS-257	3/18	; P	NA	P	1 /	1	1	!	
06-1-0172-3	: ARPS5-260	1 3/3	!		!	1 /	ž	!	!	
06-1-0172-4	: ARPCS-259	1 3/18	<u> </u>	P	P 1	1 /	:	:	•	
06-1-0173-1	ARPCS-262	1 3/1R	! P	NA	P	1 3/2	1 25	P P P	!	X
06-1-0173-2	ARPES-251	1 3/18	; P	P	P !	1 1	!		!	
06-1-0174-1	ARPCS-265	1 3/1R	į P	NA	P	<u> </u>	ţ	;	4 :	
05-1-0174-2	! ARPCS-264	1 3/1R	P	P	P	1 /	•	•		χ
04-1-0174-3	: ARPOS-2661X	1 3/3	! !			1 /	;	!	!	
06-1-0174-4	ARPCS-266	1 3/1R	P	P	P :	1 /	!	1	•	
08-1-0175-1	: ARPCS-258	3/3	: N	A NA	NA 1	1 - I	:	:	3 2	
06-1-0179-1	1 ARPC5-275	1 3/3	i			1 /	1	1	!	
05-1-0179-2	ARPCS-274	1 3/3	!		1	1 1	1 i	1		
06-1-0175-3		i 3/1R	; P	P	P :	1 2/2	1	•	!	X
06-1-0180-1		1 3/3	ì		!	1 /	!	;	1 i	X
06-1-0191-1		1 2/1R	1 P	p	P Y	: 7	1	1 :	!	
		1 2/1R		P	P	1 1	1	!	;	X
		1 2/1R		P		i = I	1	1	! !	-
05-1-0191-2		3/1R				1 /	1			X
·-· -		2/1R		Þ		1 7	!			Y.
04-1-0192-1		1 2/18				1 7	;	:	:	
06-1-0193-1		1 2/18			P		,	!	1	
va i vije i	1							,	1	

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IDENTIFIERS		1 1	IASA		11	1 IDA RECOMMENDATIONS *				
NASA FMEA NUMBER	IDA ABBESSMENT NUMBER		I SC	REENS B 0		CRIT HW/F		REENS :	(SEE LEGEND CODE)	 ! [SSU !
======================================	:===)		_	9 2	=]: !!	; ;	==== 	=====	=======================================	:===== !
06-1-0201-1		2/1R		NA P	11	i			•	1
A0-1-07A1-1		1 2/1R		NA P	11	,	1			!
			1 p	NA P	1 4	,	: !		! !	!
08-1-0201-2	22	1 2/1R	1 P	NA P	11	7	•		• •	1
AG-1-ATA1-7		1 2/1R	. P	NA P	!!	j	1	:		1
	•=	2/18		MA P	11	,	1			,
05-1-0201-3		1/1	1		11	/NA	1			X
05-1-0203-1		1 2/1R	l P	РΡ	11	1	† !		!	!
vo : vave .		1 2/1R		рр	11	1	I L		!	i X
06-1-0203-2	==	11 2/1R	: P	NA F	* *	!	!		}	:
04-1-0203-3		1/1	1		!!	1	1			!
04-1-0206-1		1 2/1R	1 P	NA P	1 1	1	!		!	!
06-1-020 6-2		2/1R		NA P	11	1	•			!
06-1-0206-3	, ,,,,, e.e	1/1	1	-	11	/NA) 		ì	ł X
06-1-0207-1		2/18	P	NA P	11	1	1		!	!
04-1-0207-2		3/3	1		11	1	Į į		• !	:
06-1-0207-3		11 2/1R	1 P	F P	1 1	1	!		<u>!</u>	Į.
06-1-0211-1		11 2/18	1 P	p p	11	1	ļ		! !	į X
06-1-0214-1		2/1R	1 P	P P	11	1	!		! !	į X
04-1-0221-1		11 3/1R		p p	11	7	1		!	<u> </u>
04-1-0221-2		3/1R	1 P	NA P	! !	3/2R	! P	NA P		<u> </u>
** .		11 3/1R	1 P	NA P	11	7	1		! !	!
04-1-0222-1	: ARPCS-281	3/1R	1 P	РΡ	! !	1	!		• •	X :
06-1-0222-2	ARPCS-280	11 3/1R	; P	рр	1 8	1	1			
06-1-0222-3	ARPCS-282	3/1R	1 P	РР	!!	7	!		! :	:
06-1-0223-1	ARPCS-284	11 3/1R	P	NA P	1 1	1	1		† !	t
06-1-0223-2	ARPCS-283	11 3/1R	1 P	NA P	1 !	1	1		! :	t :
06-1-0224-1	ARPOS-285	3/3	!		1 1	1	!		! !	1
05-1-0227-1	ARPCS-287	3/1R	1.9	NA P	1 1	1	!		1	; X
06-1-0227-2	ARPCS-296	11 3/1R	! P	NA P	1 1	1	1		1	l X
06-1-0227-3	ARPCS-288	3/1R	P	NA P	11	1	ţ		! :	
05-1-0228-1	: ARPCS-290	11 3/1R	P	p p	1.1	1	1			:
06-1-0229-2	: ARPCS-259	11 3/1R	P	p p	!!	1	!) !	:
06-1-0228-3	! ARPCS-296	1 3/1R	1 P	NA P	1 1	1	1		!	
04-i-022 8-4	ARPCS-2951X	11 3/3	i i		1 1	7	!		1	!
04-1-0229-1	: ARPCS-367X	11 3/1R	1 F	FP	: 1			E P	i	! X
06-1-0229-2	ARPCS-368X	11 3/1R	1 F	F P	1 1	3/2R	! F	F P	!	1 1
06-1-0230-1	! ARPCS-223	11 3/18	P	P P	1 !	- 7	1		() X
04-1-0230-2	==	11 3/2R	: P	P P	1 !	1	1		!	:
04-1-0230-3		11 3/1R		F P	1 1		1 P	FP	1	1 X
06-1-0230-4		11 3/1R		0 0	1.1	1	!		1	; X
06-1-0231-1		11 3/1R		NA P	1 1	1	1		† •	' X
04-1-1501-1		11 2/1R		NA P	1 1	1	1		1	(X
04-1-1501-2		11 2/1R	P	F P	11	3/2R	0	FP	1	, X
06-1-1501-3		171	!		1 1	1	1		! ·	
06-1-1502-1		11 2/1R		NA P	1 1	3/2R	1 P	NA P	• •	i X
		11 2/1R		NA P	!!	/	!		1	! X
	· · · · · · - - · ·	11 2/1R		NA P	[]		F .	NA P	:	. Y
04-1-1502-2		II 2/1R.	. I P	NA P	[] []	i	!		! :	X
	•	1 F	1		1 1				ı	:

†	IDENTIFIERS	11		SAY				11				ENDATIONS *			
NASA FMEA NUMBER	: IOA : ASSESSMENT NUMBER		CRIT HW/F	1	SCR A	EE B	NS C	11	CRIT HW/F	!	SCREENS !	(SEE LEGEND CODE)		990E	1
04-1-1509-1	ARPDS-135	-11			P	_	P	-(:	 /	- ! ·	1		!		- !
04-1-1509-2	1 ARPCS-1351X	1 1	3/3	E k				!!	/NA	l i	!		1	χ	1
1 06-1-1510-1	: ARPSS-150	1 1	1/1	1				11	1	1	1		!		:
1 04-1-1510-2	: ARPCS-1501X	11	1/1	!				:1	1	!	;		ì	X	į
06-1-1511-1	: ARPCS-176	1 1	2/1R	1	P	p	P	11	1	f			i i		:
1 06-1-1511-2	: ARPCS-1761X	: :	2/1R	1	p	P	٩	1 !	1	į	!		! !	X	1
1 06-1-1512-1	: ARPCS-175	i i	2/1R	!	P	P	Ρ	11	1	1	: i		!		1
06-1-1512-2	: ARPCS-174	1 1	1/1	l i				: :	1	!	ļ i		:		1
1 05-1-1512-3	: ARPCS-174A	: !	2/1R	1	P	P	P	11	1	1	:		ļ	X	1 5

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