INDEPENDENT ORBITER ASSESSMENT

ASSESSMENT OF THE LIFE SUPPORT & AIRLOCK SUPPORT SYSTEMS VOLUME 1 OF 2

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INDEPENDENT ORBITER ASSESSMENT ASSESSMENT OF THE LIFE SUPPORT AND AIRLOCK SUPPORT SYSTEMS

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Independent Orbiter Assessment Assessment of the Life Support and Airlock Support System FMEA/CIL

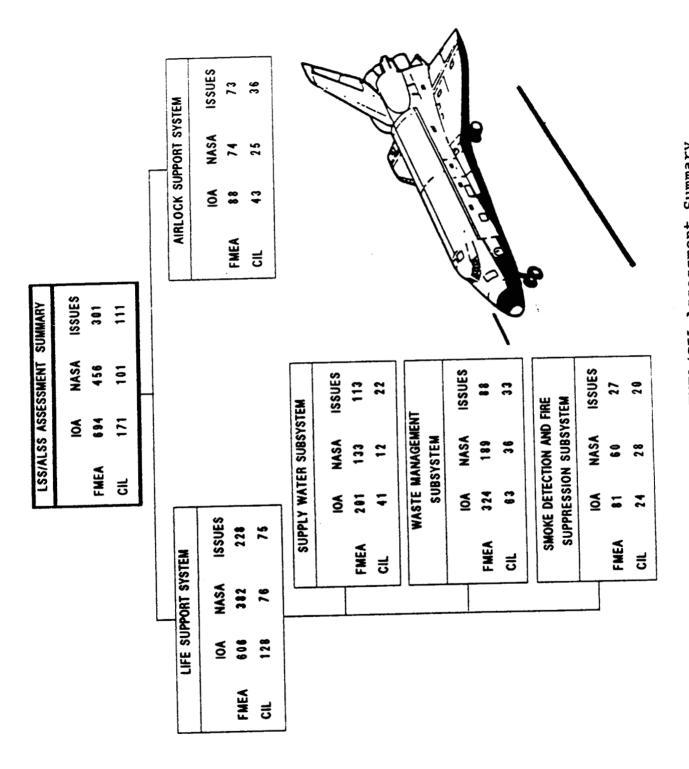
1.0 EXECUTIVE SUMMARY

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 <u>NSTS 22206</u>, Instructions for Preparation of FMEA and CIL, 10 October 1986.

The IOA effort first completed an analysis of the Life Support and Airlock Support Systems (LSS and ALSS) hardware, generating draft failure modes and potential critical items. 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 baseline with proposed Post 51-L updates included. The resolution of the discrepancies from the comparison was not completed due to a contract termination. However, the discrepancies were flagged for potential future resolution. This report documents the results of that comparison for the Orbiter LSS and ALSS hardware.

The IOA product for the LSS and ALSS analysis consisted of 511 failure mode "worksheets" that resulted in 140 potential critical Comparison was made to the NASA baseline dated 1 October items. 1987 which consisted of 456 FMEAs and 101 CIL items. After the assessment process the number of IOA analysis worksheets rose to 694 which included a total of 171 CIL items. The difference in the number of IOA analysis worksheets and the NASA FMEAs can be explained by the different levels of analysis detail performed to identify failure modes. The comparison was used to determine if there were any results which had been found by the IOA but were not in the NASA baseline. The IOA analysis identified 39 failure modes, 6 of which were classified as CIL items, for components not covered by the NASA FMEAs. It was recommended that these failure modes be added to the NASA FMEA baseline. The overall assessment produced agreement on all but 301 FMEAs which caused differences in 111 CIL items. Figure 1 presents a comparison of the proposed Post 51-L NASA data, with the IOA recommended baseline, and any issues.

Figure 1 - LSS and ALSS FMEA/CIL Assessment Summary



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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 reevaluation results 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 proposed Post 51-L NASA and Prime Contractor FMEA/CIL. 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 FMEA/CIL which is documented in this report.

Step	1.0	Subsystem	Familiarization
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- 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

2.3 Analysis Approach (concluded)

- Step 4.0 Compare IOA analysis data to NASA FMEA/CIL
 - 4.1 Resolve differences
 - 4.2 Review in-house
 - 4.3 Document assessment issues
 - 4.4 Forward findings to Project Manager

2.4 LSS and ALSS Ground Rules and Assumptions

The LSS and ALSS ground rules and assumptions used in the IOA are defined in Appendix B.

3.0 SUBSYSTEM DESCRIPTION

3.1 Design and Function

The LSS provides for the collection and management of the supply water, collection of the metabolic waste, management of the waste water, smoke detection and fire suppression. The ALSS provides water, oxygen, and electrical power to support an Extravehicular Activity (EVA) in the airlock. Below is a brief description of each of these categories.

 Supply Water Subsystem - The SWS provides ullage for the storage and the management of fuel cell generated water throughout the mission. The water is used to meet the Flash Evaporator System (FES) requirements, crew usage, and EVA requirements. For the purpose of this study the SWS was divided into five main assemblies as shown in Figures 2 through 5.

The tank assembly is made up of four tanks (A, B, C, and D) and associated plumbing which interconnects them as shown in Figure 2. Each tank is constructed of thin-wall aluminum with Inconel steel bellows pressurized by the gaseous nitrogen from the Atmospheric Revitalization Pressure Control System (ARPCS). Each tank can be isolated from the line by an inlet valve and an outlet valve in the event of a The fuel cells generated water flows into the tanks leak. A, B, C, and D respectively after passing through two hydrogen separators. The flow to a given tank is accomplished automatically by use of two 1.5 psid relief Before flowing into Tank A the water passes through valves. a microbial filter/check valve which prevents passage of micro-organisms into the potable water tank.

The galley line assembly contains the plumbing for the transport of the potable water from Tank A to the Environmental Control and Life Support System (ECLSS) bay for connection to the galley or the water dispenser as shown in Figure 3. The water is available at the bay either directly (70 F) or chilled. Chilled water is accomplished by interfacing the potable water with the ARS water coolant loops through a heat exchanger called water chiller.

The FES line assembly is comprised of two separate FES feed water lines supplying water, as shown in Figures 4 and 5, to meet FES requirement. The two lines may be isolated from each other by a crossover valve or an isolation valve on Line B. All the associated hardware beyond this isolation valve is considered as part of the ATCS analysis, and therefore not covered in this report.

The dump line assembly, shown in Figures 2 and 4, provides for expulsion of excess water through a dump nozzle during on-orbit dump operation. The line incorporates an isolation valve, a dump valve, and line and nozzle heaters. Also, capability exists to cross-tie the supply water dump line to the waste water dump line in the event one dump line becomes inoperative. The line and nozzle heaters provide thermal conditioning of the dump line and nozzle to prevent ice formation in the area. The line heaters are thermostatically controlled.

The gaseous nitrogen line assembly pressurizes the tanks with the nitrogen from the ARPCS storage tanks as shown in Figure 3. Cabin atmosphere may also be used to pressurize the tanks if the GN2 pressurization is lost. Most of the hardware in this assembly are covered in the ARPCS analysis except for the Tank A pressure/vent panel which is included in this report.

2. Waste Management Subsystem - The WMS is made up of Waste Collection Subsystem (WCS), Waste Water Subsystem (WWS), and the Vacuum Vent Subsystem (VVS) as shown in Figure 6. These subsystems are used in an integrated process for the collection and storage of the crewmember biowaste and the overboard dumping of the waste fluid and gases. The schematics for these subsystems are shown in Figures 7 through 10.

The WCS, shown in Figure 7, is an integrated multifunctional zero-q device used to collect and process biowaste from the crewmembers, gases from the wet trash stowage area, and waste water from the EMU/Airlock support station. The WCS accommodates both male and female crewmembers and is comprised of the commode assembly, urinal assembly, interconnecting plumbing, mounting framework, crew restraints, and instrumentation. The subsystem uses a system of valves to direct cabin air flow through the urinal and fecal collection systems to draw the biowaste into the collection chamber. In the case of the waste fluids, a centrifugal separator is used to separate the waste fluids from the transport air flow. The waste fluids are then directed into the waste water subsystem and the separated air passes through the muffler assembly for bacteria and odor removal. This air is then injected into the crew cabin atmosphere. The WCS incorporates two redundant fan/separator units with one unit being operational at a time.

The WWS, shown in Figure 8, provides storage and overboard dump capability for urine, atmospheric condensate, EMU waste water, and contingency cooling water to the FES. The waste water storage is a single thin wall aluminum tank shell surrounding an Inconel steel bellows. The tank is identical to the supply water tanks. The bellows is pressurized with nitrogen gas to facilitate waste water expulsion. All tubing is stainless steel. Flow control into and out of the tank is via the inlet valve. The outlet valve is used only during GSE operation. Both valves are electrically operated solenoid latching type valves.

The WWS provides control for the overboard dump of the waste water through a dump nozzle at the mid fuselage as shown in Figure 9. All plumbing exterior to the crew module is protected by electrical heaters and thermal insulation. The subsystem also contains a provision to cross-tie the waste dump line to the supply water dump line which make it possible to provide waste water to the FES or supply water dump nozzle under contingency cases. The use of the supply water dump line or FES line poses serious contamination problems. Further, a Contingency Water Container (CWC) is flown which provides additional ullage to the waste water tank.

The VVS, shown in Figure 10, provides voluntary and involuntary venting of the ECLSS gases. Voluntary use of the vacuum vent occurs during airlock and cabin depressurization, and the WCS use. During on-orbit operation, the VVS may also be utilized in order to regain automatic pressure control of the cabin atmosphere in the event that the cabin pressure should exceed 14.7 psia. Involuntary venting is available for hydrogen gas from the H2/H2O separators, fecal vapors from the WCS, and wet trash vapors from the trash stowage.

The VVS consists of a 2.0 inch O.D., 302 stainless steel duct, two independent line heaters, thermostats, an isolation valve, a 1.93 inch O.D. nozzle, and a single nozzle heater. The isolation valve was analyzed under the ALSS in this report. The line heaters are continuously wrapped together for the full length of the line. Each of the heaters contains a single thermostat.

3. Smoke Detection and Fire Suppression Subsystems - These two subsystems are emergency subsystems within the shuttle Caution and Warning (C&W) system. The smoke detection uses electronic sensors to provide on-board annunciation of an impending fire pre-smoke phase. Indications are provided through a light matrix, siren tone, and various CRT data. Fire suppression is provided by fire suppressant (Halon) bottles to suppress the ignition source. The schematic for these subsystems are shown in Figures 11 through 14.

The Smoke Detection Subsystem consists of nine smoke detectors. A typical detector is shown in Figure 11. Six detectors provide redundant sensing within Avionics Bays 1, 2, and 3 and three detectors sense the cabin atmosphere. Each avionics bay has two redundant sensors (Sensors A&B). The cabin sensors are two sensors in the flight deck at the left and right return air ducts, and one sensor in the cabin fan plenum outlet. The cabin fan plenum sensor is considered to provide redundancy to the left and right flight deck sensors. Further, a fire sensed by the left or right sensor will be followed by an indication on the cabin sensor. Another detector input is also available for certain types of payloads such as Spacelab modules.

Smoke detection operation is based upon sensing of invisible submicron particles emitted from materials subjected to abnormal energy levels. The detectors measure current flow in a measuring chamber, and the current flow in a reference chamber, shown in Figure 12. Air molecules in each chamber are ionized by a radiation source and in the measuring chamber the interaction of particles with the air molecules reduces current flow. The difference in the level sensed provides an indication of the particle level present. If either a preset level (2000+/- 200 micro g per m3) for five seconds or an increase in rate build-up (22 micro g per m3 per sec) for twenty seconds is maintained, then a continuous alarm signal is output until a reset signal is issued. The system is powered from circuit breakers on Panel 014, 015, and 016. The indicator light matrix is located on Panel L1A1 in the CDRs station and CRT data is available on the flight deck CRTs. The siren alarm is output through speakers in the flight and middeck and through headset assemblies via the Audio Terminal Units. The sensed concentration level analog signal which was originally sent to the ground for monitoring has been included in the Fault Detection Annunciation software to provide redundant alarm capability. This software generated alarm is output when the concentration level reaches 2000 micro g per m3.

A test circuit controlled by a switch on Panel L1A1 provides for sensor and alarm checkout, excluding the concentration level analog signal. The actual sensing capability is not checked but the electronics which process the measuring and reference chamber current outputs are verified by inducing signals representative of the sensor trip levels. Reset of a test or actual sensor trip is through a switch also located on Panel L1A1. In this test mode, three conditions must be present to indicate an operable sensor namely: pump running, particle concentration, and the particle rate of change greater than the preset levels.

The Fire Suppression Subsystem consists of three permanently mounted fire suppressant bottles mounted in Avionics Bay 1, 2, and 3. A typical bottle is shown in Figure 13. These bottles are permanently attached within each bay and remotely activated from panel L1A1 since access to the bay is difficult. Activation requires an Arm/Fire sequence from a switch and push-button indicator to a Pyrotechnic Initiator Controller (PIC) that ignites a NASA Standard Initiator (NSI) opening the suppressant container. A pressure switch on the bottle is used to indicate bottle discharge. The power for the system comes through circuit breakers on panels 014, 015, and 16. The agent discharge indication is part of the Push-Button indicator on Panel L1A1. The PIC capacitor voltage and bottle empty indications are telemetered to the ground. In addition to the permanently mounted bottles, the crew has available portable bottles mounted in the crew compartment. A typical portable bottle is shown in Figure 14. These are used by the crew to dispense suppressant to the source of ignition within the cabin area and behind panels through the fire holes.

4. Airlock Support System - The airlock is a modular cylindrical structure with two hatch openings as shown in Figure 15. It provides oxygen, water, and electrical interfaces to accommodate EVA operation. It is also equipped with pressure equalization valves on each hatch and a decompression system. The vacuum vent isolation valve is also included with the airlock analysis even though it is mounted at the Xo576 bulkhead.

The interface between the airlock and an Extravehicular Mobility Unit (EMU) is provided by the Service and Cooling Umbilical (SCU), shown in Figure 16. The SCU is composed of hoses and electrical wiring to supply the oxygen, water, and electricity to the EMU while in the airlock. The SCU also contains valving which allows supply and waste water flow through a single connection at the SCU/EMU interface. The SCU is bolted to the airlock, leak proved and checked prior to launch and is permanently attached for the duration of the mission.

The oxygen interface is used by the crew while in the airlock and it is used to recharge the EMU oxygen tanks. The water in the three EMU tanks can be dumped through the SCU into the orbiter waste water tank and the quantity observed on the orbiter water tank gauge. They are then refilled from tank C of the supply water system. During the refilling process (approximately 15 minutes), the supply water system crossover valve is opened, the FES is disabled and tank C is isolated so the quantity of water loaded into the EMU can be checked by the tank C gauge.

The airlock depressurization is controlled by a three position valve, the valve and system are shown in Figures 16 and 17. The valve is connected to a 2 inch, stainless steel, overboard vacuum vent line. The closed position prevents any airflow from escaping the airlock. The second position, labeled "5", opens the smallest orifice which allows the pressure to decrease to 5 psi at an initial rate of 0.09 psi/sec. The third valve position, labeled "0", reduces the airlock pressure to 0.2 psi. At this pressure the airlock can be opened. When not in use, the valve is covered with a pressure/dust cap. Prior to removing the cap, it is necessary to equalize the pressure across it with the cap vent valve.

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The airlock repressurization is controlled by two pressure equalization valves on the hatch to the cabin, a typical set is shown in Figure 17. Normal repressurization is accomplished by placing one valve in the "normal" position. When completed, the airlock and the cabin are pressurized to approximately 14 psia. The orbiter environmental control system will automatically compensate for the lower pressure and repressurize the cabin and airlock to 14.7 psia. The equalization valves on the payload bay hatch may be used to depressurize the airlock in the event of depress valve failure.

The EMU power supply/battery charger provides 17.0 volts dc at 5 amps at the airlock interface. The Electrical System is shown in Figure 18. MAIN Bus A or B must be selected with the bus select switch and the mode selection switch must be in the POWER position to supply the power to the SCU. The mode switch in the POWER position makes the power available at the SCU connector and also closes a circuit that provides a battery feedback voltage charger control. This circuit inhibits EMU power when any discontinuity is sensed in the SCU/EMU circuitry. The mode switch in the POWER position also supplies power through the SCU for the EMU microphone amplifiers for hard-line communication.

The vacuum vent isolation valve is mounted at the Xo576 bulkhead which provides capability to isolate the waste management vent lines and the airlock vent line. However, the valve has an internal bleed port to vent the hydrogen separator and waste collection gases when it is in the closed position. The valve is designed to close within 2 seconds in the event of an excessive cabin pressure loss rate. This is accomplished via the cabin oxygen system 1 and 2 flow sensor circuitry. The valve can also be opened on demand through a bus selection and control switches (S10 & S11) mounted in the panel ML31C and shown in Figure 19.

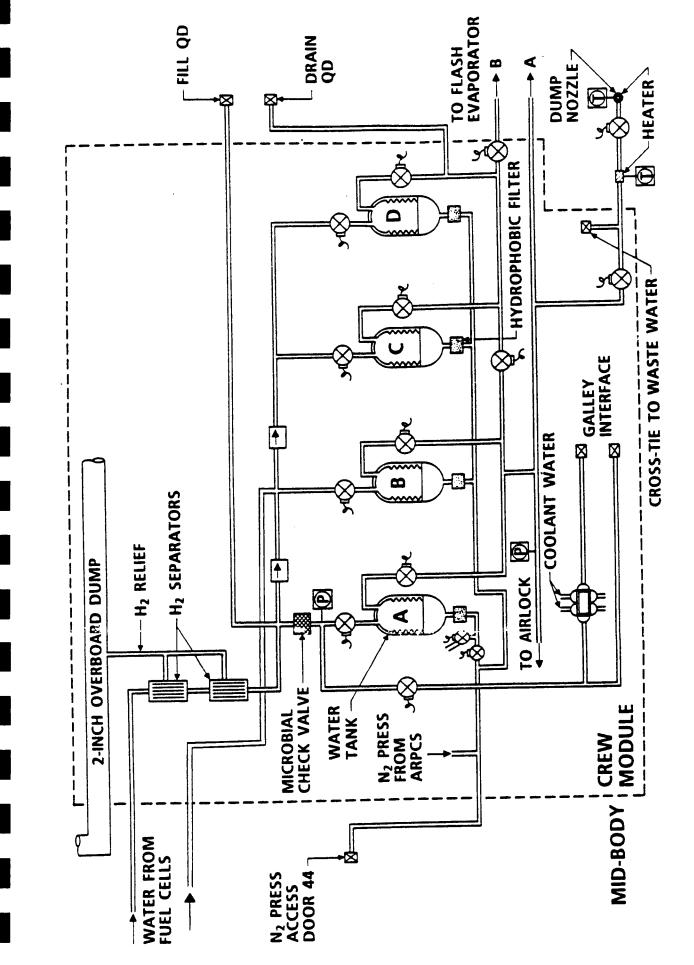
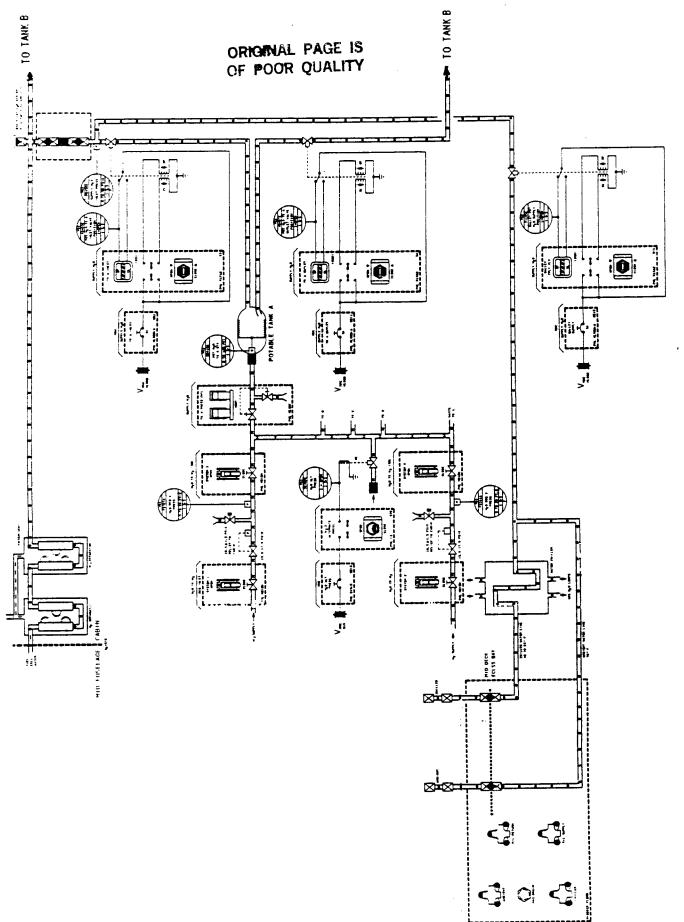
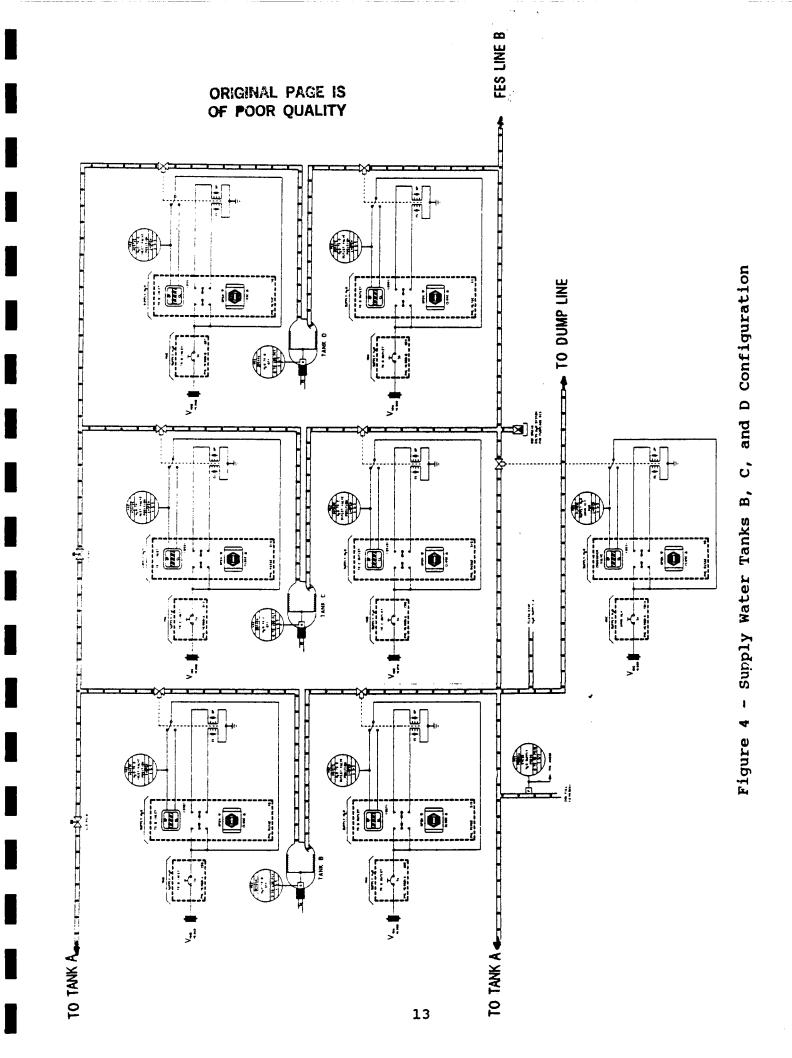


Figure 2 - The Supply Water Subsystem Schematic



Supply Water Pressurization and Galley Lines ł Figure 3



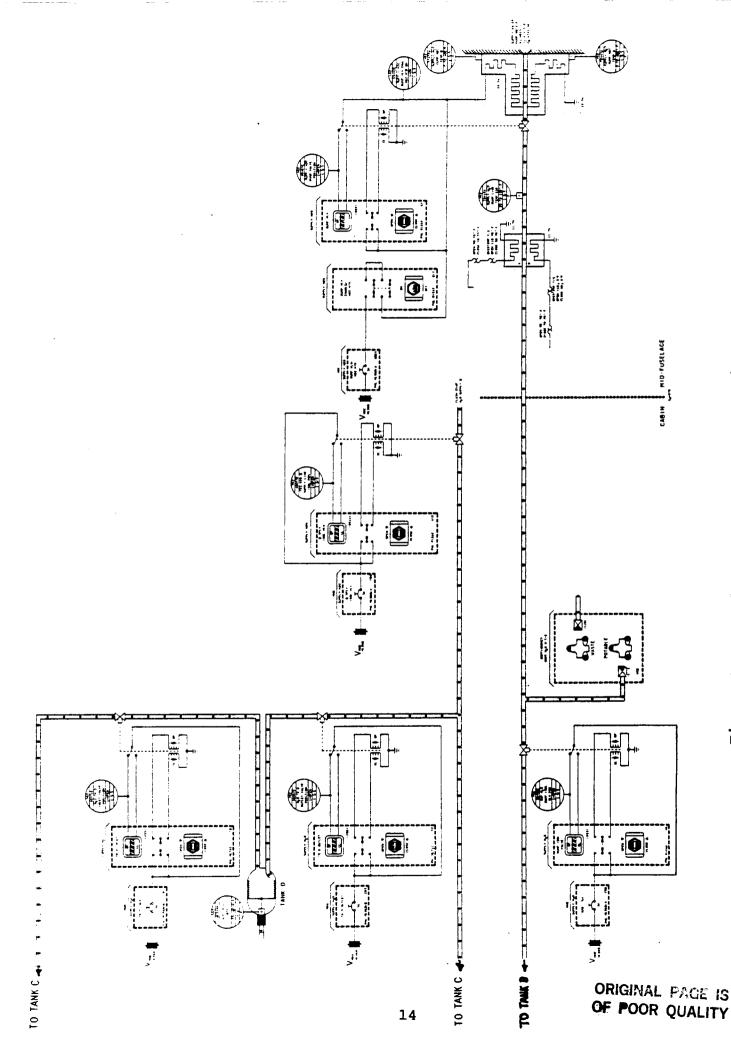
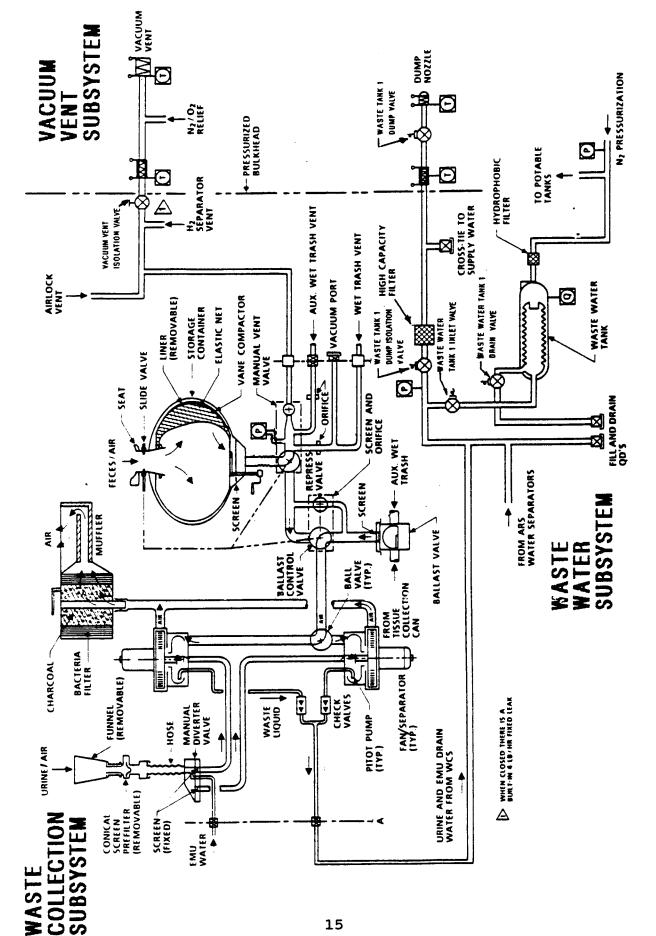


Figure 5 - Supply Water FES and Dump Lines



- Waste Management Subsystem Integrated Schematic Figure 6

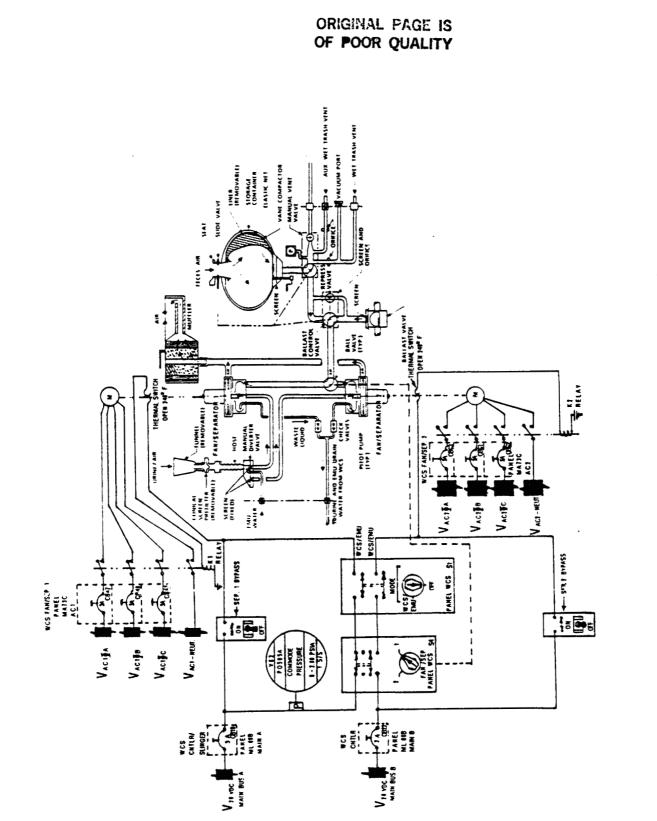
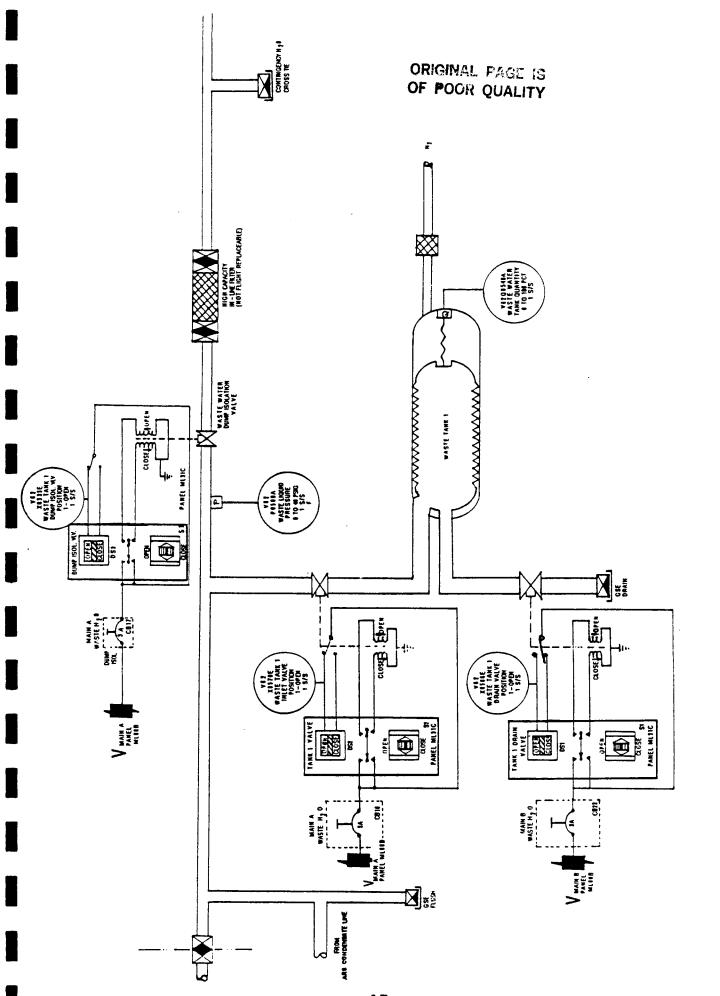


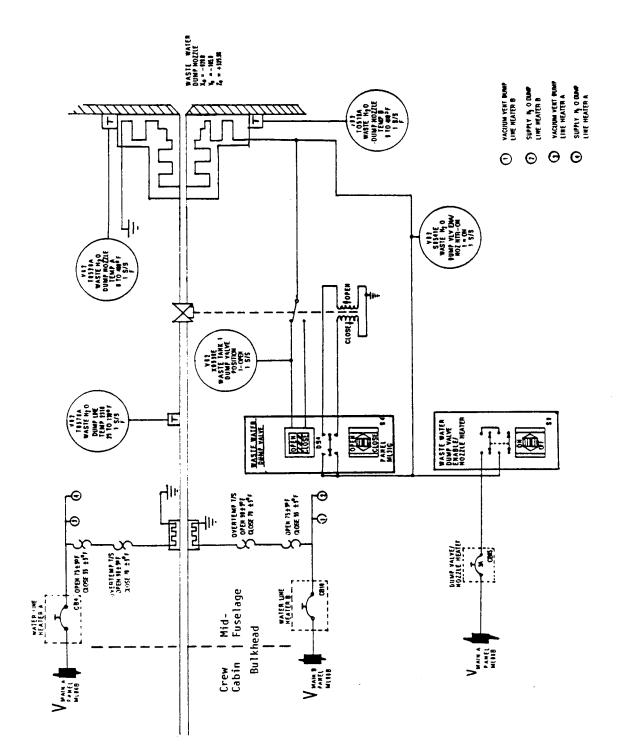
Figure 7 - Waste Collection Subsystem Schematic

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- Waste Water Subsystem Storage Assembly Schematic Figure 8

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Waste Water Subsystem Dump Line Assembly Schematic I σ Figure

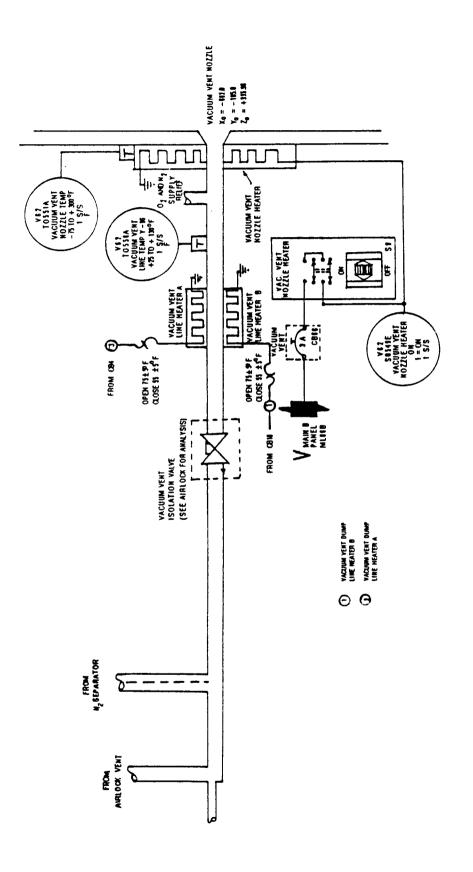


Figure 10 - Vacuum Vent Subsystem Schematic

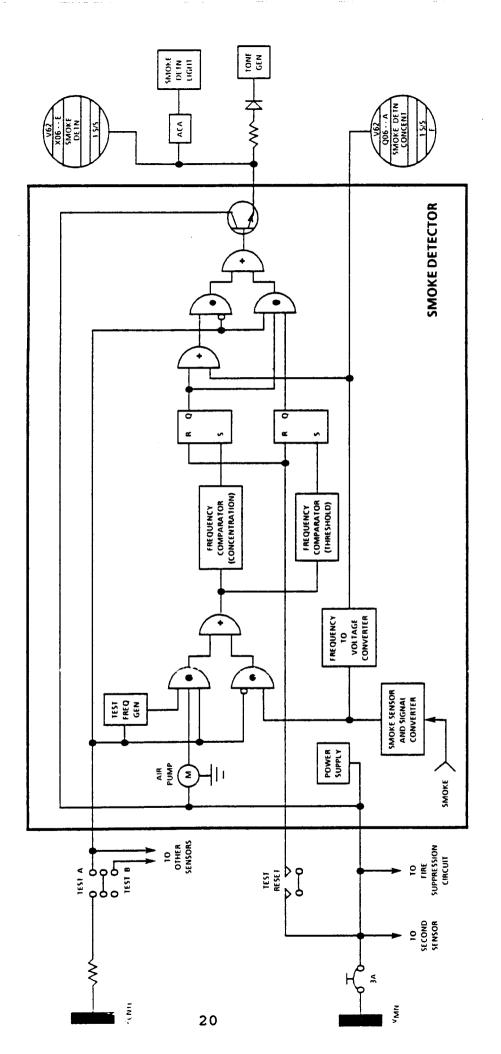


Figure 11 - Typical Smoke Detector Schematic

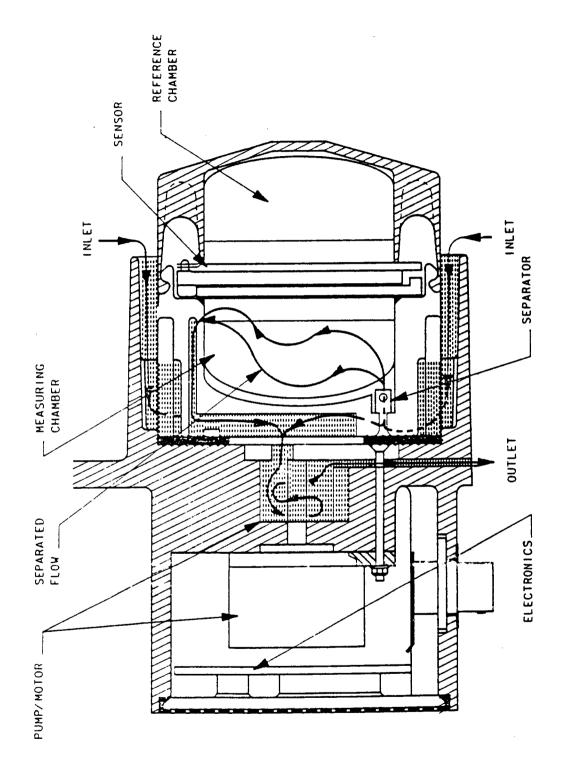


Figure 12 - SD/FS Typical Smoke Detector

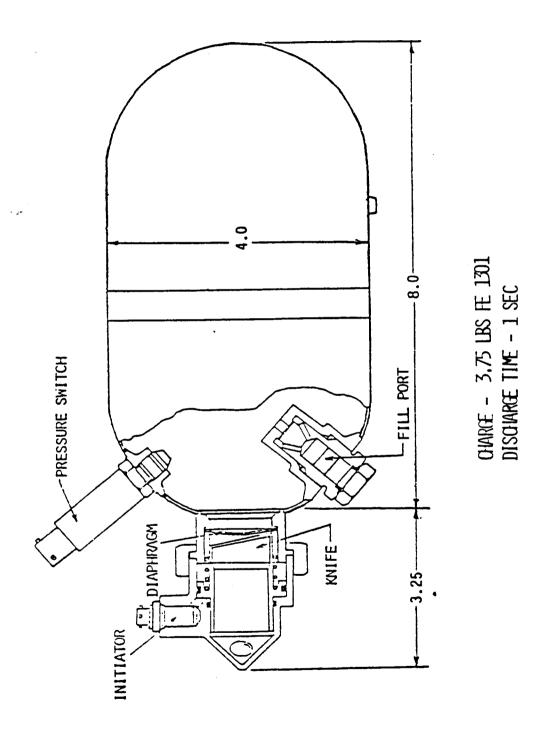


Figure 13 - SD/FS Active Fire Suppressant Bottle

PORTABLE FIRE EXTINGUISHER TOTAL WT. 6.6 LBS FREON 1301 WT. 2.8 LBS. BASIC DESIGN MIL-E-52031B (ME) DISCHARGE TIME 1-6 16 ±2 SEC. 0-6 30 ±5 SEC.

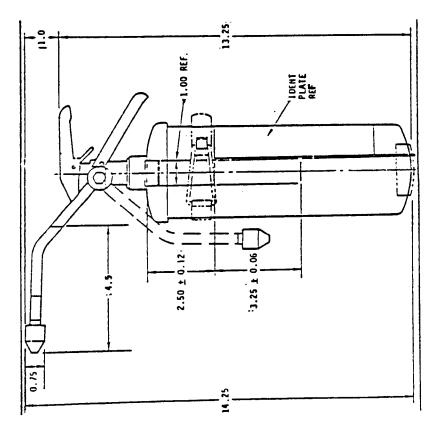


Figure 14 - SD/FS Portable Fire Extinguisher

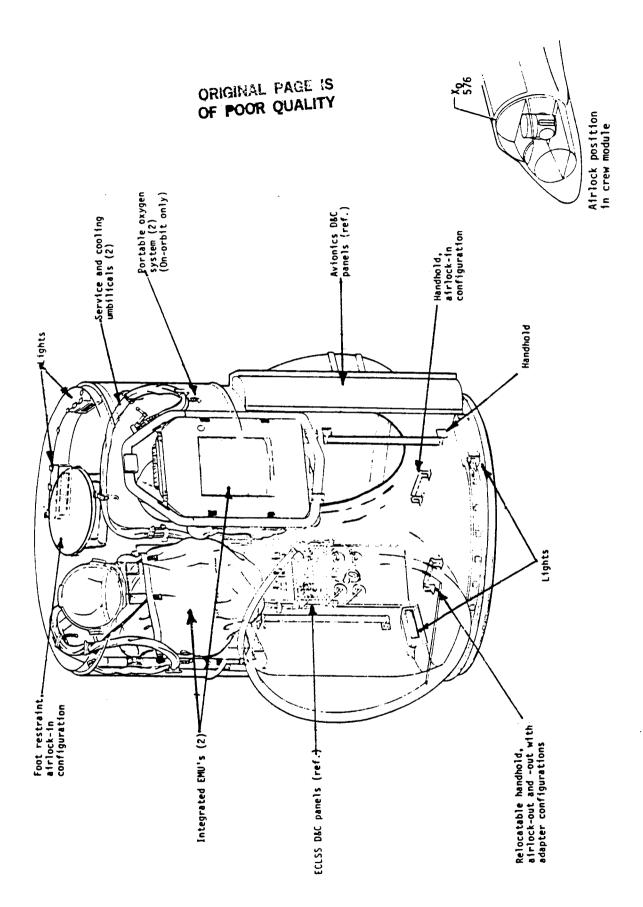
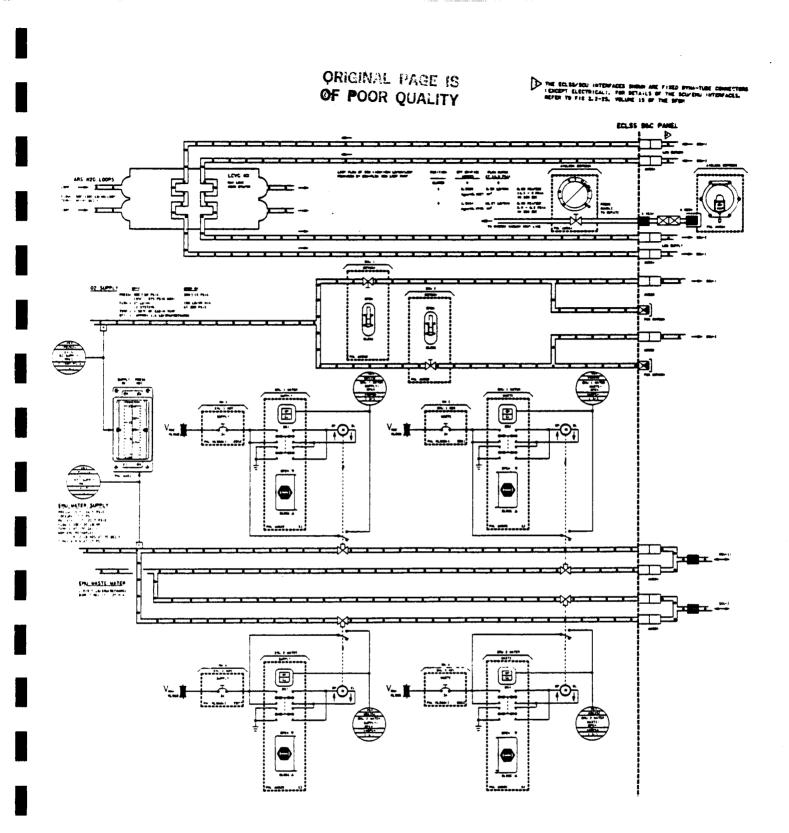
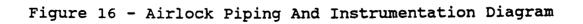


Figure 15 - Airlock Support System





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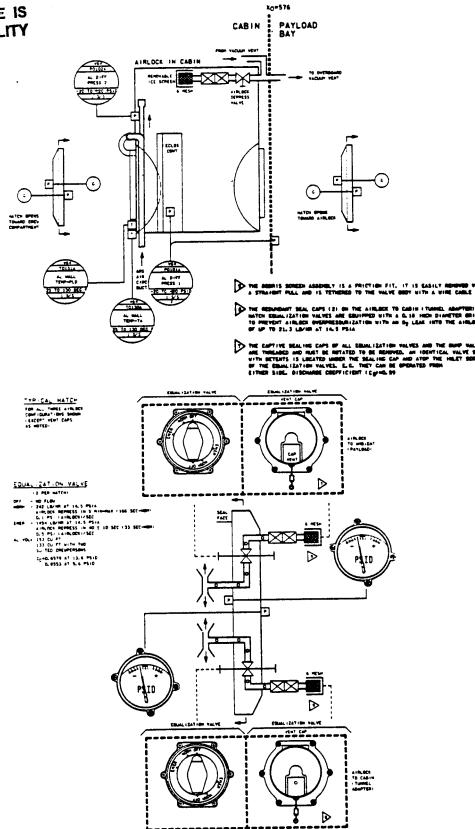
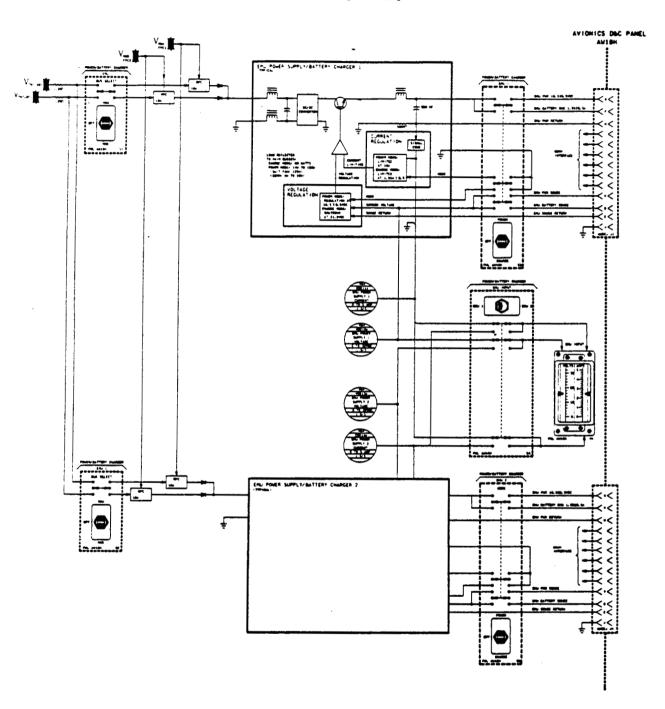
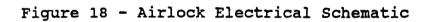


Figure 17 - Airlock Vacuum Vent and Pressure Equalization Valves

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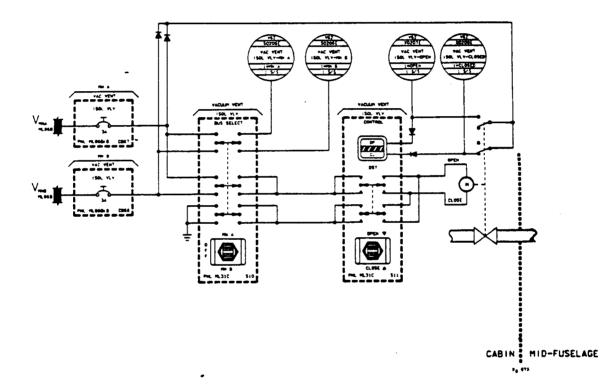


Figure 19 - Vacuum Vent Isolation Valve

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3.2 Interfaces and Locations

The life support and airlock support items are located at various places within the crew compartment, and avionics bays as shown in Figures 20 to 22. The FES and dump nozzles are located outside the payload bay past 576 bulkhead.

The LSS and ALSS interfaces with the adjoining subsytems were identified, and are explained below:

- 1. EPS The Electrical Power Subsystem provides bus power to drive valves, switches, instrumentation, and heaters throughout the systems. Also, the EPS recharges the EMU batteries in the airlock at the SCU.
- 2. ARPCS Gaseous nitrogen from the ARPCS storage tanks are used to pressurize the supply/waste water tanks. It is also used to recharge the MMU nitrogen tanks. Cabin pressure may be used to maintain pressure in the water tanks in the event that gaseous nitrogen is not available.
- 3. ARS The water coolant loops from the ARS chills the potable water through the water chiller heat exchanger. They are also used to cool the EMU suites while in the airlock.
- 4. ATCS The Flash Evaporator System (FES) uses water from the water tanks to provide thermal cooling of the freon loops.
- 5. PRSD The Power Reactant Storage and Distribution System provides oxygen for recharge of the EMU bottles in the airlock at the SCU interface.
- 6. EMU The EMU interfaces with the ALSS through the SCU for water, oxygen, and electrical power recharges.
- 7. CE Crew Equipment such as galley or water dispenser is connected to the potable lines at the ECLSS bay in the crew compartment.

3.3 Hierarchy

Figures 23 and 24 illustrates the hierarchy of the LSS and ALSS hardware and the corresponding subcomponents.

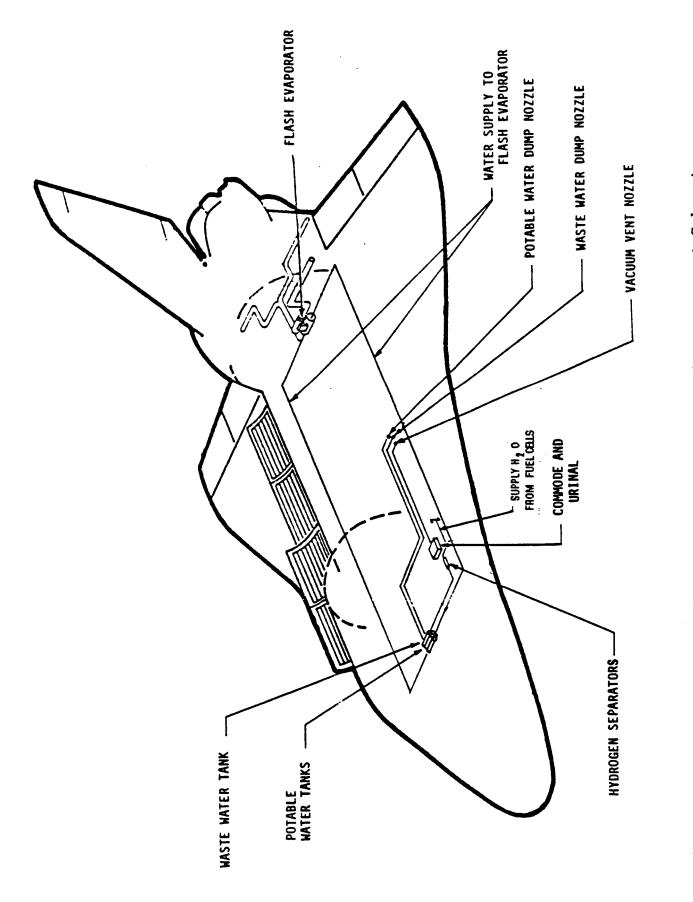
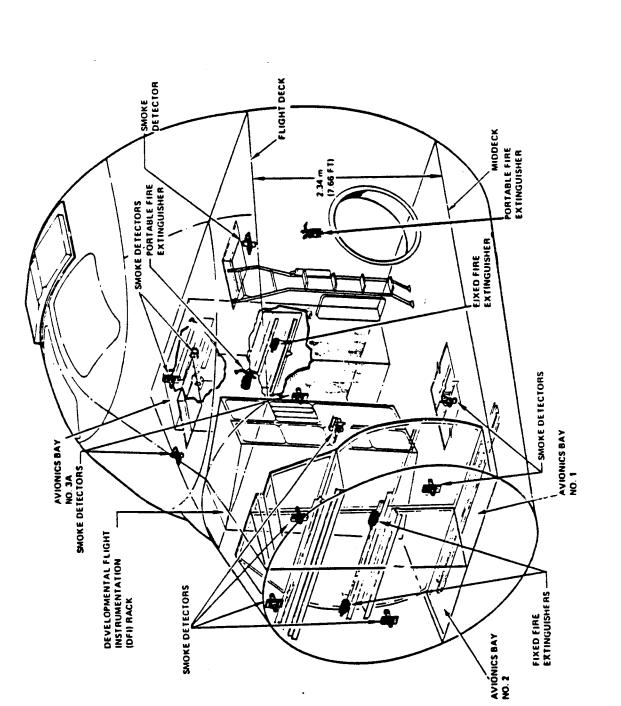
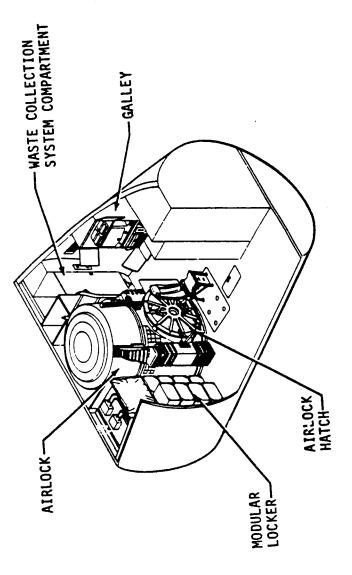


Figure 20 - General Location of the Supply and Waste Management Subsystems



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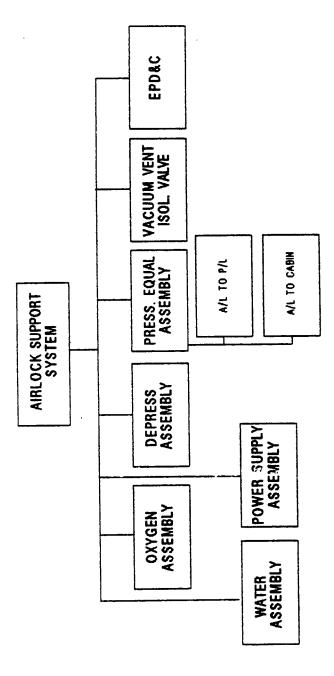




SUPPRESSION DETECTION ASSEMBLY ECTINGUISHER ASSEMBLY PORT. FIRE EPD&C SMOKE/FIRE SUBSYSTEM ASSEMBLY WASTE WATER Subsystem ASSEMBLY DUMP LINE WATER STORAGE EPD&C LIFE SUPPORT SYSTEM WASTE MANAGEMENT SUBSYSTEM HARDWARE EPD&C VACUUM VENT SUBSYSTEM URINE/WASTE FLUID ASSEMBLY ALT. WASTE COOLECTION ASSEMBLY EPO&C ASSEMBLY ASSEMBLY ASSEMBLY RESTRANT liquid/ Air line FE CAU CREW EMISIS SUBSYSTEM COLLECTION WASTE GALLEY LINE ASSEMBLY GN2 LINE ASSEMBLY ASSEMBLY ASSEMBLY ASSEMBLY STORAGE DUMP LINE SUPPLY WATER SUBSYSTEM FES LINE EPD&C

- Life Support System Hierarchy

Figure 23





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4.0 ASSESSMENT RESULTS

The IOA analysis of the LSS and ALSS hardware initially generated 511 failure mode worksheets and identified 140 Potential Critical Items (PCIs) before starting the assessment process. In order to facilitate comparison, 183 additional failure mode analysis worksheets were generated. These analysis results were compared to the proposed NASA Post 51-L baseline.

The NASA FMEAs and the IOA analyses were matched where possible, however due to the limited information provided in the NASA FMEA summary data packages, no resolution of most of the criticality discrepancies was attempted. In some cases the deliverable #2 IOA analysis (Ref 1.) criticality was revised to reflect the additional information gained in the discussions with the Subsystem Managers during the CCB and PRCB presentation development process.

Thirty-nine failure modes were generated by the IOA analysis that were not covered under the NASA FMEAs. The IOA recommended the addition of these failure modes to the NASA FMEA baseline. It should be noted that several of these failure modes and the respective hardware may be covered under other NASA analysis systems.

In the IOA analysis report the Life Support System included four subsystems according to hardware and function. The sub-divisions in the IOA analysis did not exactly match the corresponding four subsystems analyzed by the NASA FMEA. The vacuum vent isolation valve analysis for the electrical components were analyzed in the Airlock Support System (ALSS) for the IOA analysis, however those components were covered under the NASA Waste Management System EPD&C FMEAs. The circuit breakers which control all of the dump line heaters were analyzed in the NASA Supply Water EPD&C FMEAs, but the same components were covered in the IOA Waste Management Subsystem analysis. Such discrepancies were accounted for in the appropriate subsystem as identified by the NASA analyses.

A summary of the quantity of NASA FMEAs assessed, versus the recommended IOA baseline, and any issues identified is presented in Table I. In the tabulation, the IOA column is the raw number of IOA assessment sheets generated for the assessment process. The "issues" column indicates the number of IOA failure mode assessments where the criticalities either did not match the NASA FMEA or no applicable NASA FMEA was listed.

Table I Summary of IOA FMEA Assessment						
Component	NASA	IOA	Issues			
o LSS SWS WMS SD/FS o ALSS	133 189 60 74	201 324 81 88	113 88 27 73			
TOTAL	456	694	301			

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	Component NASA IOA Issues							
o LSS SWS WMS SD/FS o ALSS	12 36 28 25	41 63 24 43	22 33 20 36					
TOTAL	101	171	111					

Table III presents a summary of the IOA recommended failure criticalities for the Post 51-L FMEA baseline. Further discussion of each of these subdivisions and the applicable failure modes is provided in subsequent paragraphs.

TABLE III Summary of IOA Recommended Failure Criticalities							
Criticality:	1/1	2/1R	2/2	3/1R	3/2R	3/3	TOTAL
o LSS							
SWS	0	7	25	38	72	59	201
WMS	6	12	32	31	163	80	324
SD/FS	12	10	0	24	0	29	75
O ALSS	1	7	33	4	16	27	88
TOTAL	19	36	90	97	251	195	688

Of the failure modes analyzed, 171 were determined to be critical items. A summary of the IOA recommended critical items is presented in Table IV.

TABLE IV Summary of IOA Recommended Critical Items							
Criticality:	1/1	2/1R	2/2	3/1R	3/2R	3/3	TOTAL
o LSS SWS WMS SD/FS o ALSS	0 6 12 1	7 12 10 7	25 32 0 33	0 3 2 2	9 10 0 0	0 0 0 0	41 63 24 43
TOTAL	19	36	90	7	19	0	171

The scheme for assigning IOA assessment (Appendix C) and analysis (Appendix E) worksheet numbers is shown in Table V.

Table	e V IOA Worksheet Numbers
Component	IOA ID Number
o LSS SWS WMS SD/FS o ALSS	LS-1000 Series LS-2000 Series LS-3000 Series LS-5000 Series

Appendix C presents the detailed assessment worksheets for each failure mode identified and assessed. Appendix D highlights the NASA Critical Items and the corresponding IOA worksheet identification. Appendix E contains additional IOA analysis worksheets supplementing previous analysis results reported Reference 1. Appendix F provides a cross reference between the NASA FMEA and corresponding IOA worksheets. IOA recommendations are also summarized.

4.1 SWS Assessment Results

The Supply Water Subsystem (SWS) assessment was done based on the CCB/PRCB presentations and the two criticality summary listings provided informally by the subsystem manager, dated October 1, 1987. The CCB/PRCB data included detailed information on the CIL items which provided for a good comparison of the analyses and assessment of the issues. The two criticality summary listings (Hardware and EPD&C items) showed only the criticality, redundancy screens and failure modes for each item. Without an understanding of the criticality rationale it was difficult to make an adequate assessment between the NASA FMEAs and the IOA analysis. In those cases that a discrepancy was noted, it was flagged as an issue pending discussions with the subsystem manager or receipt of more detailed information. However, due to the termination of the IOA task, adequate time was not available to complete the assessment process.

One of the major discrepancies noted between the NASA FMEA approach and the IOA analysis was the use of multiple failure scenarios and its application in assigning the functional The IOA approach was to determine what the criticalities. redundancies were for the hardware item under study, and then assign the functional criticality consistent with NSTS-22206. The NASA FMEA approach seemed to define the redundancy to the effect after the item had failed. In this fashion, IOA believes that the functional criticalities become so broad that visibility into a particular hardware item will be lost. For example, the NASA FMEA 06-2-1131-2 (GSE Drain QD/Cap for internal leakage) relates the loss of Radiators and the Ammonia Boiler System to the loss of the Flash Evaporator System and assigns a 1R functional criticality due to the total loss of the Active Thermal Control System. On the other hand the IOA analysis considered the QD and Cap as being redundant in preventing the failure mode of internal leakage. If these redundancies were lost, the Flash Evaporator System may be deprived of water which was considered a mission loss condition or a 2R criticality. Loss of the radiators and the ABS is considered unassociated with the functional loss of the QD and Cap in the IOA analysis.

Another major discrepancy between the IOA analysis and the NASA FMEA approaches was over the determination of functional criticality for total loss of all redundancies in conjunction with the failure mode under study. For example, on the fuel cell outlet lines, the NASA FMEA treated the functional loss to receive fuel cell water into the water storage area due to external leakage the same as the case for restricted flow of the IOA agreed with the scenario for restricted flow to result line. in "dead-heading" of the fuel cells, thus potentially a loss of life or vehicle condition. However, the IOA approach for criticality for an external leakage was considered only a mission impact for the functional loss. Please refer to the FMEAs 06-2-1132-1 and 06-2-1132-2 and the other NASA FMEAs for lines and fittings for further discussion of this condition.

4.1 SWS Assessment Results (concluded)

In general the criteria that IOA used in assigning criticalities for the SWS were:

- Total loss of function to expel the fuel cell generated water is a potential loss of life or vehicle,
- 2. Total loss of water for flash evaporator operations was a mission loss,
- 3. Total loss of function to remove hydrogen from the supply water system was a mission loss,
- 4. Total loss of function to provide water to the galley was a mission loss, and
- 5. Continuous flow of water into the cabin/mid-body cavity as a result of external leakage was a mission loss.

Please refer to the individual assessment sheets for the detailed information on each item and the failure modes.

4.2 WMS Assessment Results

The Waste Management Subsystem (WMS) assessment was done based on the CCB/PRCB presentation packages and the two criticality summary packages provided informally by the subsystem manager. The summary packages (hardware and EPD&C items) were dated 1 October 1987 with corrections and contained only the criticality, redundancy screens and failure modes for each item. In those cases that a discrepancy between the NASA FMEA and the IOA analysis did occur, a flag was set in the Appendix F listing. The issues were scheduled to be discussed with the appropriate subsystem manager, however due to contract termination there was not sufficient time to resolve the noted issues.

The eighty-eight discrepancy issues were grouped into fifteen categories. The six major categories are discussed in the following text.

- 1. The IOA analysis of hardware not covered by the NASA FMEA for the WMS. (21 issues)
- 2. The condition of a potential loss of the WCS was viewed as a 3/2R criticality by IOA for any "off nominal" condition. The condition of "off nominal" was defined as any failure which could potentially require use of contingency waste collection methods if another failure occured. However the NASA FMEA listed these as non-mission essential failure

4.2 WMS Assessment Results (concluded)

criticality. In conjunction with this discrepancy issue, it is suggested to increase the UCD supplies on board to enable the continuation of the mission in the event of an WCS failure. This will preclude an early termination of the mission due to loss of the WCS system or any of the redundancy. (15 issues)

- The disagreement in the redundancy screen settings was due to a lack of detailed discussion in the NASA FMEA summary. (6 issues)
- 4. The IOA analysis viewed of loss of the Vacuum Vent Dump line by blockage or by loss of the heaters as a potential loss of life/vehicle condition. A potentially hazardous atmosphere of hydrogen and oxygen could occur in the vacuum vent line if it were blocked by debris or ice. It is recommended to add a redundant line/nozzle heater if the scenario of a blocked vacuum vent line is plausible. (6 issues)
- 5. The IOA analysis team could not determine any apparent redundant paths for the functional criticality. However these same analyses were listed as relying on redundant hardware paths in the NASA FMEAs. (6 issues)
- 6. There was a disagreement in the hardware criticality for hardware with functional redundancy. IOA analysis viewed the hardware failure to be a nonmisson essential criticality, however subsequent failures in the functional path could create major problems. The NASA FMEA criticality viewed the first hardware failure to be at least a mission loss, if not a life threatening condition. (6 issues)

4.3 SD/FS Assessment Results

The Smoke Detection and Fire Suppression (SD/FS) subsystem assessment was based upon multiple data packages. The NASA SD/FS mechanical data was obtained from a criticality summary listing published 1 October 1987 in conjunction with the 2 October 1987 CCB presentation package. The CCB package provided CIL data which the listing substantiated, as well as provided the FMEA criticalities. CCB data for EPD&C as not available for assessment. The NASA data used for the EPD&C assessment was based upon a criticality summary listing also published 1 October 1987 in conjunction with a 19 August 1987 set of boiler room review comments and the pre-51L data package. Since much of the data did not contain the total rationale, it was difficult to make the assessments between the NASA data and the IOA data. As with the water subsystems, discrepancies were flagged as an issue pending discussions with the subsystem manager. Again, termination of the IOA task precluded completion of the assessment processes.

The assessment contains thirty seven (37) matches between the IOA analysis data and the NASA data, eleven (11) IOA failure modes revised to match the associated NASA criticalities, twenty two (22) IOA criticalities recommended over the NASA criticalities, five (5) additions to the IOA failure modes to cover all NASA analysis modes, and six (6) IOA failure modes deleted because the failures are not considered credible for the particular items. Of the twenty two IOA recommended criticalities, ten (10) recommended deletions as CIL items, two (2) recommended CIL item additions, and ten (10) made revisions which did not effect the CIL count.

The major outcome of the analysis and assessment points up the criticality of the Avionics Bay Fire Suppressant containers. The concern of these single string circuits is during the ascent and entry phases when the crew has no opportunity to use the portable extinguishers in the event the primary bottles fail to discharge. Another consideration is the common power source for the smoke detectors and the reset signal. Isolation of the two should increase the possibilities of bypassing a reset circuit problem. As previously stated, the assessment results were not discussed with the subsystem manager and therefore the overall results are incomplete.

4.4 ALSS Assessment Results

The Airlock Support System (ALSS) assessment was attempted based on the data presented by H. Rotter at the December 1987 PRCB, and documented in "SSV-87-92, Airlock Support System" (Ref. 5). Except for the items requiring waivers, the data available for assessment was limited. The pre 51-L FMEAs were available and when necessary for completeness of assessment they were used as the basis for the assessment.

Assessment of those items not found in either document was not made, thus they were left blank (IOA assessment numbers 5022, 5056 through 5064, 5076, 5082 and 5083).

The following is a discussion of the principle reason for assessment discrepancies between the NASA FMEA and the IOA analysis of the ALSS. The Airlock is not, and should not be, a system classified as emergency hardware. It may be true that the crew can use it for emergency EVAs, but this is part of the procedure that has been devised to solve an emergency in another system. To compound that failure, that is, failing the airlock along with the emergency failure, to increase the criticalities is like assigning criticalities to procedures devised to solve the original emergency. With the same logic the EMU suits will have to be declared an emergency system which is also unacceptable because this was not the original intent for either system, Airlock or EMU. As is, without the Airlock being classified as an emergency system, the failure of any item, during an emergency in the payload bay is considered a second failure and not acceptable per NSTS 22206, Paragraphs 2.3.2.d and 2.3.3.f.

5.0 References

Reference documentation available from NASA and Rockwell was used in the analysis. The documentation used included the following:

- MDAC, 1.0-WP-VA87001-02, Independent Orbiter Assessment Analysis of the Life Support and Airlock Support Systems, M.J. Saiidi, 2 November 1987
- 2. NASA-CCB presentation, Water Management Subsystem, H. Rotter
- 3. "Presentation to NSTS Level I/II Review Board: Water Management Subsystem FMEA/CIL Review", (NASA-PRCB presentation), H. Rotter, December 1987
- 4. "Presentation to NSTS Level I/II Review Board: Waste Collection Subsystem (WCS) FMEA/CIL Review, Hardware and EPD&C," (NASA-PRCB presentation), H.E. Winkler, December 1987
- 5. "SSV-87-92, Presentation to NSTS Level I/II Review Board: Airlock Support System FMEA/CIL Review", (NASA-PRCB presentation), H. Rotter, December 1987
- 6. "Presentation to NSTS Level I/II Review Board: Smoke Detection and Fire Suppression Subsystem (SD/FS) FMEA/CIL Review, Hardware," (NASA-PRCB presentation), H. Rotter, October 1987
- 7. "Accumulated Results from Table Water, Mechanical Hardware FMEA/CIL Summary," (Informal Data for Life Support - Water Management Subsystem), received from J. Betters/ Boeing Reliability, 1 October 1987
- 8. "Accumulated Results from Table Water, EPD&C Hardware FMEA/CIL Summary," (Informal Data for Life Support -Water Management Subsystem), received from J. Betters/ Boeing Reliability, 1 October 1987
- 9. "Accumulated Results from Table Waste, Mechanical Hardware FMEA/CIL Summary," (Informal Data for Life Support - Waste Management Subsystem), received from J. Betters/ Boeing Reliability, 1 October 1987
- 10. "Accumulated Results from Table Waste, EPD&C Hardware FMEA/CIL Summary," (Informal Data for Life Support -Waste Management Subsystem), received from J. Betters/ Boeing Reliability, 1 October 1987
- 11. "Accumulated Results from Table Smoke, Mechanical Hardware FMEA/CIL Summary," (Informal Data for Life Support - Smoke Detection and Fire Suppression Subsystem), received from J. Betters/ Boeing Reliability, 1 October 1987

5.0 References (Concluded)

- 12. "Accumulated Results from Table Smoke, EPD&C Hardware FMEA/CIL Summary," (Informal Data for Life Support -Smoke Detection and Fire Suppression Subsystem), received from J. Betters/ Boeing Reliability, 1 October 1987
- 13. "Accumulated Results from Table Smoke, EPD&C Hardware FMEA/CIL Summary," (Informal Data for Life Support -Smoke Detection and Fire Suppression Subsystem), received from Boeing Reliability, 19 August 1987
- 14. "Accumulated Results from Table Airlock, Mechanical Hardware FMEA/CIL Summary," (Informal Data for Life Support - Airlock Support Subsystem), received from J. Betters/ Boeing Reliability, 1 October 1987
- 15. "Accumulated Results from Table Airlock, EPD&C Hardware FMEA/CIL Summary," (Informal Data for Life Support - Airlock Support Subsystem), received from J. Betters/ Boeing Reliability, 1 October 1987

The following references were used in the generation of the IOA analysis worksheets.

- 16. JSC-ECLSS 2102, Environmental Control and Life Support Systems Workbook, November 21, 1983.
- 17. JSC-19935, Environmental Systems Console Handbook, Basic Rev A, October 15, 1985.
- 18. RI-VS70-960102,-960103,-960104, Integrated Systems Schematics.
- 19. JSC-12820, STS Operational Flight Rules, Final PCN-3, June 28, 1985.
- 20. JSC-V61-File III, Operations Maintenance Requirements and Specification Document, February 6, 1986.
- 21. NSTS-22206, Instruction for Preparation of Failure Modes and Effects Analysis (FMEA) and Critical Items List (CIL), October 10, 1986, Changes 1 and 2.
- 22. JSC-12770, Shuttle Flight Operation Manual, EVA System, Basic Rev A, Volume 15, January 6, 1984.

- 23. JSC-12770, Shuttle Flight Operation Manual, Crew Systems, Rev A, Volume 12, August 16, 1985.
- 24. JSC-2102C, Waste Collection System Workbook, November 26, 1984.

APPENDIX A ACRONYMS

A	Amperes
AAP	Airlock Adapter Plate
ABS	Ammonia Boiler Subsystem
ac	Alternating Current
ACA	Annunciator Control Assembly
ADPTR	Adapter
ALSS	Airlock Support System
ALT	Alternate
AOA	Abort Once Around
AOS	Acquisition of Signal
ARPCS	Atmospheric Revitalization Pressure Control System
ARS	Atmospheric Revitalization System
ASSY	Assembly
ATCS	Active Thermal Control System
ATO	Abort to Orbit
AUX	Auxillary
AV	Avionics
CB CCB CCH CDR CE CIL CL CNTL CNTRL CON CONCENT COND CONT CRIT CRT CV CWC C&W CWS	Circuit Breaker Configuration Control Board Commode Control Handle Commander Crew Equipment Critical Items List Close Control Control Control Concal Concentration Conditioner Contingency Criticality Cathode Ray Tube Check Valve Contingency Water Container Caution and Warning Caution and Warning System
dc	Direct Current
DETN	Detection
DISCH	Discharge
DMP	Dump
ECLSS EI EMU ENA EPDC, or	
EPD&C	Electrical Power Distribution and Control
EPS	Electrical Power Subsystem
EVA	Extravehicular Activity

ACRONYMS (continued)

F	Functional
Fan/Sep	Fan/Separator
FDA	Fault Detection Annunciation
FES	Flash Evaporator System
FLD	Fluid
FLT	Flight
FLTR	Filter
FMEA	Failure Modes and Effects Analysis
FREQ	Frequency
g	grams
G	Gravitational Acceleration
GEN	Generator
GFE	Government Furnished Equipment
GN2	Gaseous Nitrogen
GO2	Gaseous Oxygen
GSE	Ground Support Equipment
	Heater Hardware Hydrogen Water
INDCTR	Indicator
IOA	Independent Orbiter Assessment
ISOL	Isolation
JUNCT	Junction
JSC	Johnson Space Center
LNS	Lines
LSS	Life Support System
LT	Left
LTS	Lights
LVL	Level
MDAC	McDonnell Douglas Astronautics Company
MECO	Main Engine Cut-off
MET	Mission Elapsed Time
m3	Cubic Meters
MM	Major Mode
MMU	Manned Maneuvering Unit
MNU	Main
NA	Not Applicable
NASA	National Aeronautics and Space Administration
NOZ	Nozzle
NSI	NASA Standard Initiator
NSTS	National Space Transportation System
N2	Nitrogen

ACRONYMS (continued)

OP, or OPN OPS	Open Operations Sequence
P PCI PCS PIC P/L PLB PLSS PNL PORT POS POT PRCB PRESS PRSD psi psia psia	Pressure Transducer Potential Critical Items Pressure Control System Pyrotechnic Initiator Controller Payload Payload Bay Portable Life Support Subsystem Panel Portable Position Potable Program Requirements Control Board Pressure Power Reactant Storage and Distribution Pounds per Square Inch Pounds per Square Inch, Absolute Pounds per Square Inch, Differential
psid psig QD	Pounds per Square Inch, Differential Pounds per Square Inch, Gauge Quick Disconnect
QD QR QTY	Quick Release Quantity
REG REPRES RESIS RT RTLS	•
SCRN SCU SD/FS sec SENS SMK SON SON SON SON SPLY S/S STS SUPPT SW SWS	Screen Service and Cooling Umbilical Smoke Detection and Fire Suppression Subsystem second Sensor System Management Smoke Solenoid Secondary Oxygen Pack Supply Samples per Second Space Transportation System Suppression Switch Supply Water Subsystem

ACRONYMS (continued)

I

T	Temperature Transducer
TAL	Transoceanic Abort Landing
Temp	Temperature
Thermo	Thermostat
TK	Tank
TM	Telemetry
Typ	Typical
UCD	Urine Collection Device
VAC	Volts - AC
VLV	Valve
VVS	Vacuum Vent Subsystem
WCS	Waste Collection Subsystem
WMS	Waste Management Subsystem
WRS	Waste Removal Subsystem
WTNK	Waste Tank 1
WWS	Waste Water Subsystem
X-DCR	Transducer
XOVR	Cross-over

APPENDIX B

DEFINITIONS, GROUND RULES, AND ASSUMPTIONS

B.1 Definitions

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

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APPENDIX B DEFINITIONS, GROUND RULES, AND ASSUMPTIONS

B.1 Definitions

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

INTACT ABORT DEFINITIONS:

<u>RTLS</u> - 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

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

<u>ATO</u> - 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

EARLY MISSION TERMINATION - termination of onorbit phase prior to planned end of mission

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

<u>HIGHEST CRITICALITY</u> - the highest functional criticality determined in the phase-by-phase analysis

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

<u>MC</u> - Memory Configuration of Primary Avionics Software System (PASS)

<u>MISSION</u> - 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.) <u>MULTIPLE ORDER FAILURE</u> - 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:

<u>PRELAUNCH PHASE</u> - 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)

<u>ONORBIT PHASE</u> - 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 Project Level Ground Rules and Assumptions

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

 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 Subsystem Specific Ground Rules and Assumptions

The IOA analysis was performed to the component or assembly level of the LSS and ALSS subsystem. The analysis considered the worst case effects of the hardware or functional failure on the subsystem, mission, and crew and vehicle safety.

- 1. The Flash Evaporator System (topper only) was considered an unlike but redundant operation to the supply water dump operation during on-orbit phase.
 - RATIONALE: Past missions have adequately demonstrated the use of FES for dumping excess water without significant impact to the mission timeline.
- 2. The fuel cells dedicated dump line was considered an unlike but redundant way of expelling the generated water.
 - RATIONALE: The fuel cells dedicated line has not been flight tested, but the NSTS-22206 (para 2.3.2.d) considers interfacing subsystems to be operating within their specified tolerances.
- 3. The cross-tie capability was considered an unlike but redundant to the supply water dump line.
 - RATIONALE: The use of cross-tie capability is anticipated to be under severe circumstances when no other method is available to expel the water.
- 4. The newly added water line from the fuel cells to Tank B was considered in this study.

RATIONALE: This line is an approved design change and will be incorporated on all vehicles.

5. The airlock analysis assumed two crewman for a typical EVA activity.

RATIONALE: Rule 2-24 of the JSC-12820, STS Operational Flight Rules.

6. The airlock analysis did not consider emergency EVA to close the payload bay doors.

RATIONALE: The payload bay door failure was considered to constitute a second failure.

- 7. The Apollo Fecal Bags and the Urine Collection Devices (UCD) are considered as unlike redundant hardware to the WCS.
 - RATIONALE: The Apollo Fecal Bags or UCD are not employed unless the WMS is non-functional. There are adequate contingency waste collection supplies for every crew member for at least 3 days usage of the UCD and enough Apollo Fecal Bags for the mission life. If there is a generic material failure present in the contingency waste collection supplies, a mission loss would be developed at that time.
- 8. The Contingency Water Container (CWC) is emergency hardware and if failed requires a change in the mission schedule and loss of waste collection methods.
 - RATIONALE: The CWC is not employed unless the waste water storage and dump subsystems are inoperative. There is a mission schedule impact.
- 9. If either the Vacuum Vent line or nozzle heater fails, a mission critical failure is assumed to have occured.
 - RATIONALE: If the heaters fail, there is a potential for line or nozzle freezing and the possibility of line blockage due to ice formation. The line blockage would cause H2 contamination of the supply water due to excessive H2 pressure. There could be a life or vehicle critical condition if the hydrogen concentration in the vacuum vent dump line reaches an explosive concentration.
- 10. Noxious gases released into the cabin atmosphere was not considered a mission loss event.
 - RATIONALE: There is a crew discomfort judgement and the effects on the crew is to be determined on a real-time basis.

11. The siren is the primary indication of a fire with FDA as a redundant indication.

RATIONALE: The annunciator requires someone at the CDR station to know a fire exists if the siren fails. Telemetry data requires AOS.

- 12. The Flight Deck RT and LT sensors are parallel redundant to each other and the Cabin sensor is serial redundant to both the RT and LT sensors. The time lag in sensor triggers could be a problem.
 - RATIONALE: The ECLSS ductwork where the RT, LT and Cabin sensors are located, is such that the other flight deck sensor would not be triggered until the airflow had proceeded to the middeck and back up to the flight deck. By the time the contaminated air reaches the other flight deck sensor, any incipient fire condition could be a well developed fire base, thus producing a possible loss of life condition.
- 13. The Test and Reset switches were not considered as emergency hardware, i.e., do not need to function during a fire situation.
 - RATIONALE: The consideration is that once used after lift-off, they could create situations where redundancy was lost and therefore directly affect the emergency system.
- 14. Loss of fire sensor checkout capabilities was considered a condition for mission termination.

RATIONALE: The fear of a loss of crew as a result of the safety hardware failure.

- 15. The portable fire-suppression bottles were not considered redundant to the AV Bay bottles during ascent or entry.
 - RATIONALE: The mission event loads preclude crew motion about the cabin during these mission phases.

- 16. A ground rule for the SD/FS analysis was that the only failure modes for the portable fire extinguishers were premature operation or inoperative. No component level analysis was performed.
 - RATIONALE: The details of the portable fire extinguishers were not available at the time the analysis was performed, thus no component analysis was possible.

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 = Pre 51-L FMEA/CIL
New = Proposed Post 51-L FMEA/CIL Changes
```

CIL Item : X = Included in CIL

```
Compare Row :
N = Non compare for that column (deviation)
```

C.1

SUPPLY WATER SUBSYSTEM

ASSESSMENT WORKSHEETS

	12/28/87 LS-1100 06-2-1101-1	NASA DATA: BASELINE [] NEW [X]
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 1100 H2 SEPARATOR (2)	

LEAD ANALYST: M.J. SAIIDI

ASSESSMENT:

	CRITICALITY FLIGHT	RI	EDUNDANC	CY SCREE	NS	CIL ITEM
	HDW/FUNC	A		В	С	
NASA IOA	[3 /1R] [2 /2]	[P [] [] [P]]	[P] []	[]* [X]
COMPARE	[N/N]	[N] [N]	[N]	[N]

RECOMMENDATIONS: (If different from NASA)

[2 /1R]	[P]	[P]	[P]	[A]
				(ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [] INADEQUATE []

REMARKS:

THE CAPABILITY TO REMOVE H2 FROM THE WATER IS LOST, AND THERE IS NO OTHER WAY TO PROVIDE FOR THIS LOSS. THE PRESENCE OF H2 IN THE WATER MAY CAUSE PROBLEMS WITH FES AND DUMP OPERATIONS, AND CREATE CREW ILLNESS. THIS MAY HAVE POTENTIAL MISSION IMPACT SPECIALLY FOR THE EMU/EVA MISSION - RECHARGING THE EMU WATER TANKS WITH THE H2/H2O MIXTURE IS HAZARDOUS AND NOT BE DONE. ALTERNATE WATER LINE PLUS FCP RELIEF LINE ARE AVAILABLE TO EXPEL WATER. LOSS OF ALL REDUNDANCIES WITH THIS FAILURE WILL DEAD-HEAD FUEL CELLS, THUS POTENTIAL LOSS OF LIFE/VEHICLE.

· · · · .	12/28/87 LS-1100A 06-2-1132-1	NASA DATA: BASELINE [] NEW [X]
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 1100 H2 SEPARATOR (2)	

LEAD ANALYST: M.J. SAIIDI

ASSESSMENT:

	CRITICALITY FLIGHT			REDUNDANCY			SCREENS				CIL ITEM							
	1		W/FUI	-		A			В			С		•			•	
NASA IOA	[[3 2	/1R /2]]	[[P]]	[[Ρ]]	[[Ρ]]		[[x]]	*
COMPARE	[N	/N]	[N]	[N]	[N]		[N]	

RECOMMENDATIONS: (If different from NASA)

[2/1R] [P] [P] [P] [A] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [] INADEQUATE []

REMARKS:

THE CAPABILITY TO REMOVE H2 FROM THE WATER IS LOST, AND THERE IS NO OTHER WAY TO PROVIDE FOR THIS LOSS. THE PRESENCE OF H2 IN THE WATER MAY CAUSE PROBLEMS WITH FES AND DUMP OPERATIONS, AND CREATE CREW ILLNESS. THIS MAY HAVE POTENTIAL MISSION IMPACT SPECIALLY FOR THE EMU/EVA MISSION - RECHARGING THE EMU WATER TANKS WITH THE H2/H2O MIXTURE IS HAZARDOUS AND NOT BE DONE. ALTERNATE WATER LINE PLUS FCP RELIEF LINE ARE AVAILABLE TO EXPEL WATER. LOSS OF ALL REDUNDANCIES WITH THIS FAILURE WILL DEAD-HEAD FUEL CELLS, THUS POTENTIAL LOSS OF LIFE/VEHICLE. THIS FMEA WAS CONSIDERED SAME AS 06-2-1101-1 FOR THE FAILURE MODE STUDIED, AND MAY THEREFOR BE COMBINED.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1101	12/28/87 NASA DAT LS-1101 BASELIN 06-2-1101-2 NE							
SUBSYSTEM: MDAC ID: ITEM:	1101	LIFE SUPPORT 1101 H2 SEPARATORS (2)							
LEAD ANALYST:	M.J. SA	IIDI							
ASSESSMENT:									
CRITICAL FLIGH HDW/FU	т	REDUND A	ANCY SCRE B	ENS C	CIL ITEM				
NASA [2 /1R IOA [2 /2] [] [P]]	[P] []	[P] []	[X]* [X]				
COMPARE [/N] [N]	[N]	[N]	[]				
RECOMMENDATIONS: (If different from NASA)									
[2 /2] []	[]	[]	[] ADD/DELETE)				
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [X] INADEQUATE []									
REMARKS: IOA DOES NOT SEE HOW THE FAILURE OF THIS ITEM WILL HAVE ANY EFFECT ON THE OPERATION OF THE RADIATORS OR AMMONIA BOILER IN OPPER TO LOOSE TOTAL COOLING CAPABILITY LOSS OF WATER TO									

EFFECT ON THE OPERATION OF THE RADIATORS OF AMMONIA BOILER IN ORDER TO LOOSE TOTAL COOLING CAPABILITY. LOSS OF WATER TO REPLENISH THE TANKS, WILL FORCE MISSION TO BE SHORTED (FLIGHT RULE 9-24). SINCE ADDITIONAL WATER WILL NOT BE AVAILABLE FOR ON-ORBIT FES USE AND CREW REQUIREMENT. FUEL CELLS WILL NOT BE DEAD-HEADED SINCE THIS FAILURE WILL ALWAYS RELIEVE THE WATER OUT.

C-5

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1102	: [x]								
	1102	LIFE SUPPORT 1102 H2 SEPARATORS (2)								
LEAD ANALYST:	M.J. SAII	DI								
ASSESSMENT:										
CRITICAL FLIGH		EDUNDANC	Y SCREEN	S	CIL ITEM					
HDW/FU		1	3	С						
NASA [3 /1R IOA [2 /2] []	P] [] [P]]	[] * [X]					
COMPARE [N /N] [N] [1	A] [И]	[N]					
RECOMMENDATIONS: (If different from NASA)										
[2 /2] [] [] [[A] .DD/DELETE)					
* CIL RETENTION	RATIONALE:	(If app)	·	ADEQUATE NADEQUATE	[] []					
REMARKS: IOA ASSESSMENT I	S BASED ON	ASSUMPT:	ION THAT	': - WATER	WILL FLOW					

IOA ASSESSMENT IS BASED ON ASSUMPTION THAT: - WATER WILL FLOW THROUGH TO THE TANKS; - LOSS OF ONE SEPARATOR IS SIGNIFICANT. THE BACKUP SEPARATOR IS NOT ADEQUATE TO REMOVE ALL OF THE HYDROGEN (WORST CASE). THE INABILITY TO REMOVE H2 (WITH WATER FLOWING) WILL HAVE POTENTIAL MISSION IMPACT AS EXPLAINED IN MDAC-1100.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1103	-4	NASA DATA: BASELINE [] -4 NEW [X]						
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPP 1103 H2 SEPARA								
LEAD ANALYST:	M.J. SAII	DI							
ASSESSMENT:									
CRITICAL FLIGH	т	EDUNDANC			CIL ITEM				
HDW/FU	NC A	L	В	с					
NASA [2 /1R IOA [2 /2] [P] [) [] [P]]	[P] []	[X] * [X]				
COMPARE [/N] [N] [И]	[N]	[]]				
RECOMMENDATIONS: (If different from NASA)									
[/] [] []	[] (A	[] DD/DELETE)				
* CIL RETENTION	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [X] INADEQUATE []								
IOA AGREES WITH	THE FMEA.	LOSS OF	CABIN	PRESSURE WI	LL BE				

IOA AGREES WITH THE FMEA. LOSS OF CABIN PRESSURE WILL BE DETECTED THRU C&W, AND THE CREW WILL PERFORM NOMINAL PROCEDURE TO ISOLATE AND STOP THE LEAK. IF LEAK PERSISTS, THE MISSION WILL BE SHORTED AND RETURNED. THE VACUUM ISOLATION VALVE POSITION FROM OPEN (5 LB/HR) TO CLOSED (4 LB/HR) WILL HAVE VERY LITTLE IMPACT. POTENTIAL LOSS OF LIFE EXISTS, IF ADEQUATE CONSUMABLE IS NOT AVAILABLE TO MAINTAIN CABIN PRESSURE.

REPORT DATE 03/10/88

C-7

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/87 LS-1103A 06-2-1103	-2	NASA DATA: BASELINE [] NEW [X]						
MDAC ID:	LIFE SUPPO 1103 H2 SEPARA								
LEAD ANALYST:	M.J. SAII	DI							
ASSESSMENT:									
CRITICAL FLIGH HDW/FU	Г	EDUNDANCY B	SCREENS C	CIL ITEM					
NASA [2 /1R IOA [2 /2] [P]] [P]] [P]] [[X]* [X]					
COMPARE [/N] [N] [N] [М]	1 []					
RECOMMENDATIONS: (If different from NASA)									
[/] [] [) [[] (ADD/DELETE)					
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [X] INADEQUATE [] REMARKS:									

IOA AGREES WITH THE FMEA. LOSS OF CABIN PRESSURE WILL BE DETECTED THRU C&W, AND THE CREW WILL PERFORM NOMINAL PROCEDURE TO ISOLATE AND STOP THE LEAK. IF LEAK PERSISTS, THE MISSION WILL BE SHORTED AND RETURNED. THE VACUUM ISOLATION VALVE POSITION FROM OPEN (5 LB/HR) TO CLOSED (4 LB/HR) WILL HAVE VERY LITTLE IMPACT. POTENTIAL LOSS OF LIFE EXISTS, IF ADEQUATE CONSUMABLE IS NOT AVAILABLE TO MAINTAIN CABIN PRESSURE. THIS FMEA MAY BE COMBINED WITH THE 06-2-1101-4 FOR THE FAILURE MODE STUDIED.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/8 LS-1104 06-2-11	:		NASA DAT BASELIN NE					
SUBSYSTEM: MDAC ID: ITEM:	LIFE SU 1104 MICROBI								
LEAD ANALYST:	M.J. SA	IIDI							
ASSESSMENT:									
CRITICAI FLIGH		REDUNI	DANCY SCRI	EENS	CIL ITEM				
HDW/FU		A	В	С	I I EM				
NASA [3 /1F IOA [3 /2F		P] P]	[P] [P]	[P] [P]	[] *				
COMPARE [/N] [1	[]	[]	[]				
RECOMMENDATIONS: (If different from NASA)									
[3 /2F] [P]	[P]		[] ADD/DELETE)				
* CIL RETENTION	RATIONAL	E: (If	applicabl	le) ADEQUATE INADEQUATE					
REMARKS: LOSS OF WATER TO REPLENISH TANK A AND SUPPLY GALLEY. LOSS OF									

LOSS OF WATER TO REPLENISH TANK A AND SUPPLY GALLEY. LOSS OF MICROBIAL REMOVAL CAPABILITY, HOWEVER THE WATER DISPENSERS HAVE BUILT-IN FILTERS, AND IODINE TABLETS ARE ALSO AVAILABLE. LOSS OF ALL THESE DOES NOT POSE LOSS OF LIFE.

	NT	ID:	12/28/87 NASA DATA LS-1104A BASELINE 06-2-1146-1 NEW] X]			
SUBSYSTE MDAC ID: ITEM:			1104	LIFE SUPPORT 1104 MICROBIAL FILTER (1)									
LEAD ANA	LYS	T:	M.J.	SAII	DI								
ASSESSME	NT:												
	CRI	TICAL		R	EDUN	DANCY	SCRI	EENS	5		CI IT		
	Н	DW/FU		A		В			С		11	см	
NASA IOA	[[3 /1R 3 /2R]]	[P [P]	[P [P]]	[[P P]]	[[]]	*
COMPARE	۵	/N]	נ]	C]	۵]	[]	
RECOMMEN	RECOMMENDATIONS: (If different from NASA)												
	[3 /2R]	[P]	[P]	[P] (] ADD/] DELI	ETE)
* CIL RE	TEN	TION	RATIC)NALE:	(If	appl	icabl			DEQUATE DEQUATE]	
REMARKS:											-	-	

LOSS OF WATER TO REPLENISH TANK A AND SUPPLY GALLEY. LOSS OF MICROBIAL REMOVAL CAPABILITY, HOWEVER THE WATER DISPENSERS HAVE BUILT-IN FILTERS, AND IODINE TABLETS ARE ALSO AVAILABLE. LOSS OF ALL THESE DOES NOT POSE LOSS OF LIFE. THIS FMEA IS COVERED BY INDIVIDUAL COMPONENTS, AND MAY BE DELETED-SEE FMEA 06-2-1146-1, (LS-1104) AND FMEA 06-2-1117-1 (LS-1179).

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/87 NASA DATA: LS-1105 BASELINE [] 06-2-1132-2 NEW [X]							
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 1105 MICROBIAL FILTER	(1)						
LEAD ANALYST:	M.J. SAIIDI							
ASSESSMENT:								
CRITICAL FLIGH		CI SCREENS CI						
HDW/FU	NC A I	з с						
NASA [2 /1R IOA [2 /2		P] [P] [] [] [X] * X]					
COMPARE [/N] [N] [M	и] [И] []					
RECOMMENDATIONS:	(If different fr	com NASA)						
[2 /2] [] [] [] [(ADD/)] DELETE)					
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [X] INADEQUATE []								
REMARKS: SEE MDAC-1233. THIS FMEA COVERS SEVERAL ITEMS AS LINES AND FITTINGS.								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1106							
SUBSYSTEM: MDAC ID: ITEM:	1106	CROBIAL FILTER QUICK DISCONNECT						
LEAD ANALYST:	M.J. SAIII	DI						
ASSESSMENT:								
CRITICAL FLIGH HDW/FU	T	EDUNDANCY SCREEN B	s C	CIL ITEM				
NASA [2 /1R IOA [2 /2] [P] [] [] [P]]	[X] * [X]				
COMPARE [/N] [М] [М] [N]	[]				
RECOMMENDATIONS:	(If diff	ferent from NASA)					
[2 /2] [] [] [[] DD/DELETE)				
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [X] INADEQUATE [] REMARKS: SEE MDAC-1233. THIS FMEA COVERS SEVERAL ITEMS AS LINES AND								
FITTINGS.								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/87 LS-1107				NASA DATA BASELINE NEW	[]]
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPP 1107 MICROBIAL		ER QU	SCONNECT			
LEAD ANALYST:	M.J. SAII	DI					
ASSESSMENT:							
CRITICAL		EDUND	ANCY	SCREEN	5	CIL	
FLIGH HDW/FU			В		с	ITEM	1
NASA [/ IOA [3 /3] [] []]	[[] [] []]	[[] *]
COMPARE [N /N] []	[] []	[]
RECOMMENDATIONS:	(If dif	ferent	c fro	m NASA))		
[/] []	[] [] (Al	[DD/DE] Elete)
* CIL RETENTION	RATIONALE:	(If a	appli	•	ADEQUATE VADEQUATE]
REMARKS:	TS FATLUPF	MODE		±1	MODYONIE	L	ſ

IOA WITHDRAWS THIS FAILURE MODE.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1108	2		: [] [X]
	LIFE SUPPO 1108 TANKS INLE	RT T SOLENOID VALVI	ES (4)	
LEAD ANALYST:	M.J. SAIID	I		
ASSESSMENT:				
CRITICAL FLIGH		DUNDANCY SCREENS	3	CIL ITEM
HDW/FUI		В	С	
NASA [3 /1R IOA [3 /3] [P] [] [NA] [] [] [P]]	[] * []
COMPARE [/N] [N] [И] [N]	[]
RECOMMENDATIONS:	(If diff	erent from NASA))	
[3 /2R] [P] [NA] [P] (AI	[] DD/DELETE)
* CIL RETENTION N	RATIONALE:		ADEQUATE NADEQUATE	[] []

LOSS OF FUNCTION (INABILITY TO ISOLATE THE TANK) WILL FORCE N2 INTO THE TANKS POSING SAME PROBLEM AS H2 IN TANKS FOR FES/DUMP OPS AND CREW USAGE. AT WORST, POTENTIAL MISSION LOSS. IOA CONSIDERED ALL INLET VALVES (4) IN ONE ANALYSIS.

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	LS-1108	BA	NASA DATA: BASELINE [] NEW [X]					
SUBSYSTEM: MDAC ID: ITEM:	LIFE SU 1108 TANKS I		LENOID VAI	LVES (4)				
LEAD ANALYST:	M.J. SAIIDI							
ASSESSMENT:								
CRITICA FLIG		REDUND	ANCY SCREE	INS	CIL ITEM			
HDW/F	JNC	A	В	с				
NASA [3 /1 IOA [3 /3	R] [] [[P] []	[NA] []	[P] []	[]*			
COMPARE [/N] (נא]	[N]	[И]	[]			
RECOMMENDATIONS	: (If d	lifferen	t from NAS	SA)				
[3 /2	R] ([P]	[NA]		[] NDD/DELETE)			
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []								
REMARKS: LOSS OF FUNCTION (INABILITY TO ISOLATE THE TANK) WILL FORCE N2 INTO THE TANKS POSING SAME PROBLEM AS H2 IN TANKS FOR FES/DUMP								

2 Р OPS AND CREW USAGE. AT WORST, POTENTIAL MISSION LOSS. IOA CONSIDERED ALL INLET VALVES (4) IN ONE ANALYSIS.

REPORT DATE 03/10/88 C-15

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ASSESSME ASSESSME NASA FME	NT ID:	LS-1109	•	-1							DATA LINE NEW			
SUBSYSTE MDAC ID: ITEM:		LIFE SU 1109 TANKS I			LE	NO	ID VA	LVE	C i	(4)				
LEAD ANA	LYST:	M.J. SZ	AII)	DI										
ASSESSMENT:														
	CRITICAI FLIGH	T			AN		SCRE	ENS				CIL ITE		
	HDW/FU	NC	Α			В			С					
NASA IOA	[3 /1F [3 /2F		P P]]	[[P P]]	[[P P]]		[[]]	*
COMPARE	[/N] [•]	٢]	[]		[]	
RECOMMEN	DATIONS:	(If d	lif	feren	t	fro	om NA	SA)						
	[/] [-]	[]	[]	(A)	[DD/D] ELE	TE)
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE []														
DEMADYCA								IN			ATE	-]	
REMARKS: IOA AGRE TOTAL LO														

IOA AGREES WITH THE FMEA, IF LOSS OF FUNCTION IS CONSIDERED TO BE TOTAL LOSS OF ULLAGE TO ACCEPT THE FCP WATER AND NO FCP RELIEF LINE AVAILABLE TO EXPEL THE GENERATED WATER. THE FMEA-1106-1 AND -1106-3 ARE THE SAME AND MAY BE COMBINED. IOA CONSIDERED ALL INLET VALVES IN ONE ANALYSIS.

ASSESSME	NT ID:	12/28/87 LS-11097 06-2-110	A			NASA DAT BASELIN NE]	
SUBSYSTE MDAC ID: ITEM:		LIFE SUE 1109 TANKS IN		LENOI	D VALVI	E (4)			
LEAD ANALYST: M.J. SAIIDI									
ASSESSMENT:									
	CRITICAL FLIGH	JITY T	REDUND	ANCY	SCREENS	5	CIL ITE		
	HDW/FU		A	В		С			
NASA IOA	[3 /1R [3 /2R	2] [2] [P] P]	[P [P] [] [P] P]	[[] *]	
COMPARE	[/N] []	[] []	[]	
RECOMMEN	DATIONS:	(If di	fferen	t from	m NASA)				
	[/] []	[] [] ([ADD/D] ELETE)	
* CIL RE	TENTION	RATIONALE	2: (If	applio	·	ADEQUATE	-]	
	INADEQUATE []								

IOA AGREES WITH THE FMEA, IF LOSS OF FUNCTION IS CONSIDERED TO BE TOTAL LOSS OF ULLAGE TO ACCEPT THE FCP WATER AND NO FCP RELIEF LINE AVAILABLE TO EXPEL THE GENERATED WATER. THE FMEA-1106-1 AND -1106-3 ARE THE SAME AND MAY BE COMBINED. IOA CONSIDERED ALL INLET VALVES IN ONE ANALYSIS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1109B	3			ASA DATA BASELINE NEW]]	
MDAC ID:	LIFE SUP 1109 TANKS IN		LENOID	VALVE	(4)			
LEAD ANALYST:	M.J. SAI	IDI						
ASSESSMENT:								
CRITICAI FLIG	LITY IT	REDUND	ANCY S	CREENS		CIL ITEI		
HDW/FU	INC	A	В	С				
NASA [3 /11 IOA [3 /21	2] [2] [P] P]	[P] [P]	[P [P]]	[[] *]	
COMPARE [/N] []	[]	ſ		[1	
RECOMMENDATIONS	(If di	fferen	t from	NASA)				
[/] [3	[]	[[DD/D] ELETE)	
* CIL RETENTION	RATIONALE	2: (If	applic	A	DEQUATE DEQUATE	[[]]	
REMARKS: IOA AGREES WITH THE FMEA, IF LOSS OF FUNCTION IS CONSIDERED TO								

TO BE TOTAL LOSS OF ULLAGE TO ACCEPT THE FCP WATER AND NO FCP RELIEF LINE AVAILABLE TO EXPEL THE GENERATED WATER. THE FMEA-1106-1 AND -1106-3 ARE THE SAME AND MAY BE COMBINED. IOA CONSIDERED ALL INLET VALVES IN ONE ANALYSIS.

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		NASA DATA: BASELINE [] -2 NEW [X]					
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 1110 TANKS INLET ISC	DLATION VALVE (4)					
LEAD ANALYST:	LEAD ANALYST: M.J. SAIIDI						
ASSESSMENT:							
CRITICAL FLIGH	Т	ANCY SCREENS	CIL ITEM				
HDW/FU	NC A	B C					
NASA [2 /1R IOA [2 /2		[P] [P] [] []	[X]* [X]				
COMPARE [/N] [N]	[N] [N]	[]				
RECOMMENDATIONS:	(If different	: from NASA)					
[2 /2] []	[][]	[] (ADD/DELETE)				
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [X] INADEQUATE []							
REMARKS: SEE MDAC-1233. THIS FMEA COVERS SEVERAL ITEMS AS LINES AND FITTINGS.							

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ASSESSME ASSESSME NASA FME	NT I	D:	LS-11	11	′ _	2							DATA ELINE NEW			
SUBSYSTE MDAC ID: ITEM:			LIFE 3 1111 TANKS				OL	AT	' NOI	VAI	LVE	E (4	!)			
LEAD ANA	LYST	:	M.J. :	SAII	D	I										
ASSESSME	ASSESSMENT:															
CRITICALITY REDUNDANCY SCREENS FLIGHT						CIL ITEM										
			NC	7	7			В			С					
NASA IOA	[3 [3	/1R /2R]]	[] []	2]	[[NA P]	[[P P]		[[]]	*
COMPARE	[/N]	נ]	[N]	נ]		[]	
RECOMMEN	DATI	ONS:	(If	dif	f	erent	f	rc	om NAS	SA)					
	[3	/2R]	[]	2]	[Ρ]	[Ρ]	(A] DELI	ETE)
* CIL RE	TENT	ION I	RATION	ALE:	;	(If a	pp	li	.cablo				JATE JATE]]	
REMARKS: THE FMEA 06-2-1107-2/-3 ARE THE SAME AND MAY BE COMBINED. LOS OF FUNCTION (INABILTY TO ISOLATE THE TANK) WITH THIS FAILURE W																

SS WILL OF FUNCTION (INABILTY TO ISOLATE THE TANK) WITH THIS FAILURE WILL HAVE PRESENCE OF N2 GAS INTO THE TANKS. AND, THE TANK CAN STILL BE DRAINED THRU THE NEXT TANKS. IOA CONSIDERED ALL VALVES IN ONE ANALYSIS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/87 LS-1111A 06-2-1107-3	NASA DATA: BASELINE [] NEW [X]					
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUDDOL	סידי					
LEAD ANALYST:							
ASSESSMENT:							
CRITICAL FLIGH		DUNDANCY SCREE	NS	CIL ITEM			
	NC A	В	С	LIEM			
NASA [3 /1R IOA [3 /2R] [P]] [P]] [P]] [P]	[P] [P]	[]*			
COMPARE [/N] []	ניו	[]	[]			
RECOMMENDATIONS:	(If diffe	erent from NAS	A)				
[3 /2R] [P]] [P]		[] DD/DELETE) ·			
* CIL RETENTION	RATIONALE: (<i>c</i> ,			
			ADEQUATE INADEQUATE				
REMARKS: THE FMEA 06-2-1107-2/-3 ARE THE SAME AND MAY BE COMBINED. LOSS OF FUNCTION (INABILTY TO ISOLATE THE TANK) WITH THIS FAILURE WILL HAVE PRESENCE OF N2 GAS INTO THE TANKS. AND, THE TANK CAN STILL BE DRAINED THRU THE NEXT TANKS.							

BE DRAINED THRU THE NEXT TANKS. IOA CONSIDERED ALL VALVES IN ONE ANALYSIS.

i.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/87 LS-1111B 06-2-1111-2	NASA DATA BASELINE NEW					
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 1111 TANKS OUTLET	ISOLATION VALVE (4)					
LEAD ANALYST:	M.J. SAIIDI						
ASSESSMENT:							
CRITICAL FLIGH		NDANCY SCREENS	CIL ITEM				
HDW/FU	NC A	B C					
NASA [3 /1R IOA [3 /2R] [P]] [P]	[NA] [P] [P] [P]	[]*				
COMPARE [/N] []	[N] []	[]				
RECOMMENDATIONS:	(If differ	ent from NASA)					
[3 /2R] [P]	[P] [P] (A)	[] DD/DELETE)				
* CIL RETENTION	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE []						
INADEQUATE [] REMARKS: THE FMEA 06-2-1107-2/-3 ARE THE SAME AND MAY BE COMBINED. LOSS OF FUNCTION (INABILTY TO ISOLATE THE TANK) WITH THIS FAILURE WILL HAVE PRESENCE OF N2 GAS INTO THE TANKS. AND, THE TANK CAN STILL							

BE DRAINED THRU THE NEXT TANKS.

IOA CONSIDERED ALL VALVES IN ONE ANALYSIS.

ASSESSME ASSESSME NASA FME	NT ID:	LS-1112	-1112 BASELINE [] -2-1107-1 NEW [X]										
SUBSYSTE MDAC ID: ITEM:		LIFE SU 1112 TANKS (ISOLATION	VALVE (4)								
LEAD ANA	LYST:	M.J. SP	AIIDI										
ASSESSME	NT:												
	CRITICAL FLIGH	T		DANCY SCRE		CIL ITEM							
	HDW/FU	NC	A	В	C								
NASA IOA	[3 /1R [3 /2R] [[P] [P]	[P] [P]	[P] [P]	[] * []							
COMPARE	[/N) ([]	[]]	[]	[]							
RECOMMEN	DATIONS:	(If d	liffere	nt from NA	SA)								
	[/] [[]]	[]	[] (A	[] ADD/DELETE)							
* CIL RE	* CIL RETENTION RATIONALE: (If applicable)												
					ADEQUATE INADEQUATE	[]							
					(4) IN ONE A								

IOA CONSIDERED ALL OF THE OUTLET VALVES (4) IN ONE ANALYSIS. IOA AGREES WITH THE FMEA, WHEN LOSS OF FUNCTION IS CONSIDERED TOTAL LOSS OF CAPABILITY TO EXPEL WATER (TANK PLUS FCP RELIEF LINE).

REPORT DATE 03/10/88

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ASSESSME ASSESSME NASA FME	NT ID:		2A	-1			1	NASA DAT BASELIN NE]
SUBSYSTE MDAC ID: ITEM:		LIFE S 1112 TANKS			SOLA	TION -	VAL	VE (4)		
LEAD ANA	LYST:	M.J. S	AIII	DI						
ASSESSME	NT:									
	CRITICA FLIG	łT		DUND		SCRE		_	CIL ITE	
	HDW/F	JNC	Α		В		(С		
NASA IOA	[3 /1] [3 /2]	R] R]	[P [P]]	[P [P]]	[]	P] P]	[[] *]
COMPARE	[/N]	[]	[]	[]	[]
RECOMMEN	DATIONS	: (If	diff	eren	t fro	om NA	SA)			
	[/]	[]	[]	[] ADD/D] ELETE)
* CIL RE	TENTION	RATIONA	LE:	(If ;	appl	icabl		ADEQUATE ADEQUATE	-]
REMARKS:									•	-

IOA CONSIDERED ALL OF THE OUTLET VALVES (4) IN ONE ANALYSIS. IOA AGREES WITH THE FMEA, WHEN LOSS OF FUNCTION IS CONSIDERED TOTAL LOSS OF CAPABILITY TO EXPEL WATER (TANKS PLUS FCP RELIEF LINE).

ASSESSMENT ASSESSMENT NASA FMEA	ID:	LS-111	-1112B BASELINE [] -2-1165-1 NEW [X]										
SUBSYSTEM: MDAC ID: ITEM:		1112	NKS OUTLET ISOLATION VALVE (4)										
LEAD ANALYS	ST:	M.J. S	AII	DI									
ASSESSMENT	:												
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C													
I	HDW/FUI	NC	A										
NASA [IOA [3 /1R 3 /2R]]	[P [P]]	[P [P	']]	[] []	?] ?]	[[] *]			
COMPARE [/N]	[]	[]	[]	[]			
RECOMMENDAT	TIONS:	(If d	dif	ferent	t fr	om NA	SA)						
٢	1]	[]	[]	[] ([ADD/D] ELETE)			
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []													
REMARKS: IOA CONSIDE IOA AGREES													

IOA CONSIDERED ALL OF THE OUTLET VALVES (4) IN ONE ANALYSIS. IOA AGREES WITH THE FMEA, WHEN LOSS OF FUNCTION IS CONSIDERED TOTAL LOSS OF CAPABILITY TO EXPEL WATER (TANKS PLUS FCP RELIEF LINE).

ASSESSME ASSESSME NASA FME	NT	II):	LS-1																
SUBSYSTE MDAC ID: ITEM:				1113	KS OUTLET ISOLATION VALVE (4)															
LEAD ANA	LYS	ST :	:	M.J.	SAI	ID	I													
ASSESSME	ASSESSMENT:																			
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM																				
	H			NC		A				B				С			-		•	
NASA IOA	•		/1R /2]]	[[P]]		[[₽]]		[[P]		[[x]	*
COMPARE	[N	/N]	[N]		[N]		[N]		[N]	
RECOMMEN	DAI	'IC	ONS:	[]	f di	ff	er	ent	f	rc	om N	IAS	A)							
	[2	/2]	[]		[]		[]	(A		A / Di		ETE)
* CIL RE	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []																			
REMARKS: SEE MDAC FITTINGS		35	5. 1	THIS	FMEA	С	ovi	ERS	S	EV	'ERA	L :	II	EM	is a	S LI	NE	Si	ANI)

ASSESSMENT DATE: 12/28/87 NASA DATA: ASSESSMENT ID: LS-1114 BASELINE [] NASA FMEA #: 05-6VD-2031-1 NEW [X]											
SUBSISTEM:	1114	PPORT	ISOL VALV	7E (4)							
LEAD ANALYST:	M.J. SA	IIDI									
ASSESSMENT:											
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C											
HDW/FU	INC	A	В	С							
NASA [3 /1F IOA [3 /2F	2] [2] [P] P]	[P] [P]	[P] [P]	[]*						
COMPARE [/N] []	[]]	[]	[]						
RECOMMENDATIONS:	(If d	ifferen	t from NA	SA)							
[/] []	[]		[] ADD/DELETE)						
* CIL RETENTION RATIONALE: (If applicable)											
REMARKS :	REMARKS:										
REMARKS: BASED ON VERY LIMITED FMEA-EPD&C DATA (ONLY A CRIT SUMMARY WAS AVAILABLE), NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED.											

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ASSESSME ASSESSME NASA FME	ASSESSMENT DATE:12/28/87NASA DATA:ASSESSMENT ID:LS-1115BASELINE []NASA FMEA #:05-6VD-2031-1NEW [X]SUBSYSTEM:LIFE SUPPORT													
SUBSYSTE MDAC ID: ITEM:	T.T 0		LIFE S 1115 SWITCH	.011	01/1				E	(4))			
LEAD ANA	LYST	:	M.J. S	AII	DI									
ASSESSME	ASSESSMENT:													
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM														
									TTE	M				
NASA IOA	[3 [3	/1R /2R]]	[P [P]]		P P]]	[[P P]]	[[] *]	t
COMPARE	۵	/N]	[]	1]	[]	[]	
RECOMMEN	DATI	ons:	(If	dif	feren	t	fro	om NAS	SA)				
	[/]	[]	[•]	[[.DD/D		CE)
* CIL RE	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []													

ASSESSMENT DATE: 12/28/87 NASA DATA: ASSESSMENT ID: LS-1116 BASELINE [NEW (X] NASA FMEA #: 05-6VD-2031-2 SUBSYSTEM: LIFE SUPPORT MDAC ID: 1116 ITEM: SWITCH, INLET ISOL VALVE (4) LEAD ANALYST: M.J. SAIIDI ASSESSMENT: CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM A B C HDW/FUNC

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 [NA]
 [P]

 IOA
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 []* 1 COMPARE [/N] [N] [N] ſ] **RECOMMENDATIONS:** (If different from NASA) [] (ADD/DELETE) * CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE [1 **REMARKS:** BASED ON VERY LIMITED FMEA-EPD&C DATA (ONLY A CRIT SUMMARY WAS AVAILABLE), NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED.

REPORT DATE 03/10/88

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ASSESSMENT DATE: 12/28/87 ASSESSMENT ID: LS-1117 NASA FMEA #: 05-6VD-2039-1 SUBSYSTEM: LIFE SUPPORT															
SUBSYSTEM:LIFE SUPPORTMDAC ID:1117ITEM:POSITION INDICATION, ISOL VALVE SWITCH (8)LEAD ANALYST:M.J. SAIIDI															
LEAD ANA	LYST	:	M.J.	SAII	DI										
ASSESSME	NT:														
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM															
	HD	W/FU	NC	A			В			С					
NASA IOA	[3 [3	/1R /3]]	[P []]	[[P]]	[[Ρ]]		[[] *]	
COMPARE	נ	/N]	[N]	[N]	[N]		[]	
RECOMMEN	DATI	ons:	(If	dif	feren	t	fro	om NZ	ASA)						
	[1]	[]	[]	[(AD)	[D/ DI] Elete	S)
* CIL RE	TENT	ION	RATION	ALE:	(If	ap	pli	icab]	le)						
	ADEQUATE [] INADEQUATE []														
REMARKS: BASED ON AVAILABL															ls

ASSESSME ASSESSME NASA FME	I TMS	DATE:		8/87 L17A 7D-20	39-2				NASA DAT. BASELIN NE		x]
SUBSYSTE MDAC ID: ITEM:			LIFE 1117	SUPP	ORT			SOL	VALVE SW	ітсн	(8)
LEAD ANA	LYSI	:	M.J.	SAII	DI						
ASSESSME	NT:										
			ITY	R	EDUNI	DANCY	SCRI	EENS		CII	
		'LIGH W/FU		A		E	3		с	ITI	SM
NASA IOA	[3 [3	/3]]	[[]]	[[]]	[[]]	[[] *]
COMPARE	[/]	[]	[]	٢	3	[]
RECOMMEN	DATI	ONS:	(If	dif	ferei	nt fr	om N2	ASA)			
	[/]	[]	[]	[[ADD/D] DELETE)
* CIL RE	TENT	'ION	RATION	IALE:	(If	appl	icabl		ADEQUATE ADEQUATE]]
IOA AGRE	ES W	ITH	THE FM	EA.							

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/87 LS-1117B 05-6VD-2040-1	NASA DAT BASELIN . NE	
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 1117 POSITION INDI	CATION, ISOL VALVE SW	ITCH (8)
LEAD ANALYST:	M.J. SAIIDI		
ASSESSMENT:			
CRITICA FLIG		IDANCY SCREENS	CIL ITEM
HDW/FU		B C	
NASA [3 /11 IOA [3 /3	E] [P]] []	[P] [P] [] []	[] * []
COMPARE [/N] [N]	[N] [N]	[]
RECOMMENDATIONS	(If differe	ent from NASA)	
[/] []		[] ADD/DELETE)
* CIL RETENTION	RATIONALE: (If	applicable) ADEQUATE	[]

INADEQUATE []

REMARKS: BASED ON VERY LIMITED FMEA-EPD&C DATA (ONLY A CRIT SUMMARY WAS AVAILABLE), NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/87 LS-1117C 05-6VD-20	NASA DATA: BASELINE [] NEW [X]									
	LIFE SUPP 1117 POSITION	PORT			OL	VALVE	SWI	гсн	(8)		
LEAD ANALYST:	M.J. SAII	DI									
ASSESSMENT:											
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM											
HDW/FU		•	E	3		с	LIEM				
NASA [3 /3 IOA [3 /3] [] []	[[]	[[]]		[[] *]		
COMPARE [/] []	[]	[]		[]		
RECOMMENDATIONS:	(If dif	feren	t fr	om NA	SA)						
[/] []	[]	[ן	(Al	[DD/D] DELETE)		
* CIL RETENTION REMARKS: IOA AGREES WITH		(If	appl	icabl.		ADEQUA ADEQUA]]		

ASSESSMENT DATE: 12/28/87 NASA DATA: ASSESSMENT ID: LS-1118 BASELINE [] NASA FMEA #: 05-6VD-2044-1 NEW [X]											
SUBSYSTEM:LIFE SUPPORTMDAC ID:1118ITEM:RESISTOR, ISOL VALVE SWITCH (8)											
LEAD ANALYST:	M.J. SAIID	I									
ASSESSMENT:											
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM											
HDW/FU		В		с	I I EM						
NASA [3 /3 IOA [3 /3] [] [] [] []]	[] []	[] * []						
COMPARE [/] [] []	[]	[]						
RECOMMENDATIONS:	(If diff	erent fr	om NAS	A)							
[/] [] [.]	[] (A	[] DD/DELETE)						
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE [] REMARKS: IOA AGREES WITH THE FMEA.											

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1119	48-1		NASA DAT BASELII NI]					
SUBSYSTEM: MDAC ID: ITEM:	C ID: 1119 M: DIODE, ISOL VALVE SWITCH (8)										
LEAD ANALYST:	M.J. SAII	DI									
ASSESSMENT:											
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM											
HDW/FU	NC A		В	С							
NASA [3 /3 IOA [3 /3] [] []	[] []	[] []	[[] *]					
COMPARE [/] []	[]	[]	ſ]					
RECOMMENDATIONS:	(If dif	ferent	from NA	ASA)							
[/] []	[]	[]]	[ADD/DE] LETE)					
* CIL RETENTION	RATIONALE:	(If a	pplicabl	e) ADEQUATI INADEQUATI]					
IOA AGREES WITH	THE FMEA.										

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REPORT DATE 03/10/88 C-35

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/87 LS-1120 06-2-1106	5-2		NASA DATA BASELINE NEW	: [] [X]					
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPF 1120 SOLENOID,		SOL VALVI	E (4)						
LEAD ANALYST:	M.J. SAII	IDI								
ASSESSMENT:										
CRITICAI FLIGH HDW/FU	T		CY SCREENS B	c	CIL ITEM					
NASA [3 /1F IOA [3 /3		?] [] [NA] [] [P]]	[]*					
COMPARE [/N] [N	1 J [N][и ј	[]]					
RECOMMENDATIONS:	RECOMMENDATIONS: (If different from NASA)									
[3 /2F	2] [F	?] [и] [и	-	[] DD/DELETE)					
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []										
REMARKS: THE IOA CONSIDER	ED THIS IT	TEM SEPAR	ATELY AS	PART OF T	HE EPD&C.					

THE IOA CONSIDERED THIS ITEM SEPARATELY AS PART OF THE EPD&C. HOWEVER BASED ON THE ASSESSMENT OF ITS HARDWARE ITEM, THE ABOVE RECOMMENDATION IS MADE.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1120A	NASA DATA BASELINE NEW						
SUBSYSTEM: MDAC ID: ITEM:	1120							
LEAD ANALYST:	M.J. SAIIDI							
ASSESSMENT:								
CRITICAL FLIGH HDW/FU	Т	ANCY SCREENS B C	CIL ITEM					
nbw/r0	NC A	B C						
NASA [3 /1R IOA [3 /3] [P]] []	[NA] [P] [][]	[] * []					
COMPARE [/N] [N]	[и] [и]	[]					
RECOMMENDATIONS:	(If differen	t from NASA)						
[3 /2R] [P]		[] DD/DELETE)					
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE []								
REMARKS:		INADEQUATE						
THE IOA CONSIDER	THE ASSESSMENT	PARATELY AS PART OF T OF ITS HARDWARE ITEM						

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1121	-3				ATA: INE [NEW []			
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 1121 SOLENOID, INLET ISOL VALVE (4)								
LEAD ANALYST:	M.J. SAII	DI							
ASSESSMENT:									
						CI			
			2		U				
NASA [3 /1R IOA [3 /2R] [P]] [P]]]	[P [P] [] [P] P]	[[] *]		
COMPARE [/N] []	[3 (]	[]		
RECOMMENDATIONS:	(If dif	ferent	: fro	m NASA	7)				
[/] []	[] []] DELETE)		
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []									
REMARKS: THE IOA CONSIDER	ED THIS IT	EM SEF	PARAT	ELY AS	PART OF	THE	EPD&C.		

THE IOA CONSIDERED THIS ITEM SEPARATELY AS PART OF THE EPD&C. HOWEVER BASED ON THE ASSESSMENT OF ITS HARDWARE ITEM, IOA AGREES WITH THE FMEA.

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	LS-1121A					ASA DAT BASELIN NE		
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUP 1121 SOLENOID		ET IS	OL VAI	VE	(4)		
LEAD ANALYST:	M.J. SAI	IDI						
ASSESSMENT:								
CRITICA FLIG	LITY : IT	REDUNE	DANCY	SCREE	INS		CII ITE	
HDW/FU	JNC 2	A	В		С			
NASA [3 /11 IOA [3 /21	2] [2 2] [2	P] P]	[P [P]]	[P [P]]	[[] *]
COMPARE [/N] []	C]	[]	[]
RECOMMENDATIONS	(If di	fferen	t fr	om NAS	A)			
[/] []	[]	[]	[ADD/D] DELETE)
* CIL RETENTION	RATIONALE	: (If	appl	icable	À	DEQUATE DEQUATE]]
REMARKS: THE IOA CONSIDER HOWEVER BASED ON								

HOWEVER BASED ON THE ASSESSMENT OF ITS HARDWARE ITEM, IOA AGREES WITH THE FMEA.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1122	-2		NASA DATA BASELINE NEW	-			
	1122	LIFE SUPPORT 1122 SOLENOID, OUTLET ISOL VALVE (4)						
LEAD ANALYST:	M.J. SAII	DI						
ASSESSMENT:								
CRITICAI FLIGH	CIL ITEM							
HDW/FU	NC A	L	В	С				
NASA [3 /1R IOA [3 /3] [P] [) [NA] [] [P]]	[]*			
COMPARE [/N] [N	r) [N] [N]	[]			
RECOMMENDATIONS:	(If dif	ferent f	from NASA)				
[3 /2R] [P	·) [P] [[] .DD/DELETE)			
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []								
REMARKS: THE IOA CONSIDER HOWEVER BASED ON	THE ASSES							

RECOMMENDATION IS MADE.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		ł		NASA DATA BASELINE NEW				
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUF 1122 SOLENOID		ISOL VAL	/E (4)				
LEAD ANALYST:	M.J. SAI	IIDI						
ASSESSMENT:								
CRITICAL FLIGH		REDUNDAN	CY SCREENS	3	CIL ITEM			
HDW/FU		A	В	С				
NASA [3 /1R IOA [3 /3] [] [P][][NA] [] [P]]	[] * []			
COMPARE [/N] [ัท] [и] [N]	[]			
RECOMMENDATIONS: (If different from NASA)								
[3 /2R] [P] [P] [P] (Al	[] DD/DELETE)			
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []								
REMARKS: THE IOA CONSIDERED THIS ITEM SEPARATELY AS PART OF THE EPD&C.								
THE TOA CONSIDER	T CTUTO T	. TOM ODFAI	WIEDI WO	FARI OF TI	IL LFDAC.			

HOWEVER BASED ON THE ASSESSMENT OF ITS HARDWARE ITEM, THE ABOVE RECOMMENDATION IS MADE.

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ASSESSME ASSESSME NASA FME	NT I	D:	LS-11	22B	-2						ASA DAT BASELIN NE	ΙE	[[X]]	
SUBSYSTE MDAC ID: ITEM:	M:		LIFE 1122 SOLEN			LET	IS	SOL V	AL	VE	(4)				
LEAD ANA	LYST	:	M.J.	SAII	DI										
ASSESSME	NT:														
CRITICALITY REDUNDANCY SCREENS FLIGHT							CIL ITEM								
	HD	W/FUI	NC	A			В			С					
NASA IOA	[3 [3	/1R /3]	[P []]	[[NZ	A]]	[[P]]		[[] *]	
COMPARE	[/N]	[N]	[N]	[N]		[]	
RECOMMEN	DATI	ons:	(If	dif	ferer	nt	fro	om NA	SA)					
	[3	/2R]	[P]	[P]	[P		AD	[D/DI] ELETI	E)
* CIL RE	TENT	ION I	RATION	ALE:	(If	ap	pli	icabl	•		DEQUATE		[]	
REMARKS:									τı	IAN	DEQUATE		[1	

THE IOA CONSIDERED THIS ITEM SEPARATELY AS PART OF THE EPD&C. HOWEVER BASED ON THE ASSESSMENT OF ITS HARDWARE ITEM, THE ABOVE RECOMMENDATION IS MADE.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1123	LS-1123 BASELINE [
SUBSYSTEM: MDAC ID: ITEM:	1123							
LEAD ANALYST:	M.J. SAIIDI							
ASSESSMENT:								
CRITICAL FLIGH		CY SCREENS	CIL ITEM					
HDW/FU	NC A	B C						
NASA [3 /1R IOA [3 /2R	[P] [] [P] [P] [P] P] [P]	[] * []					
COMPARE [/N] [] [] []	[]					
RECOMMENDATIONS:	(If different :	from NASA)						
[/] [] [] [] (A	[] DD/DELETE)					
* CIL RETENTION	RATIONALE: (If app	ADEQUATE						
INADEQUATE [] REMARKS: IOA AGREES WITH THE FMEA IOA CONSIDERED THIS ITEM SEPARATELY AS PART OF THE EPD&C. HOWEVER, BASED ON THE ASSESSMENT OF ITS HARDWARE ITEM, IOA AGREES WITH THE FMEA.								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/87 LS-1123A 06-2-1111-1	A: E [] W [X]						
SUBSYSTEM: MDAC ID: ITEM:	1123							
LEAD ANALYST:	M.J. SAIIDI							
ASSESSMENT:								
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM								
HDW/FU	NC A	B C						
NASA [3 /1R IOA [3 /2R] [P] [] [P] [P] [P] P] [P]	[] *					
COMPARE [/N] [] [] []	[]]					
RECOMMENDATIONS:	(If different	from NASA)						
[/] [] [] [] ([] ADD/DELETE)					
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE []								
		ADEQUATE INADEQUATE						
REMARKS:								
IOA AGREES WITH THE FMEA IOA CONSIDERED THIS ITEM SEPARATELY AS								
	PART OF THE EPD&C. HOWEVER, BASED ON THE ASSESSMENT OF ITS HARDWARE ITEM, IOA AGREES WITH THE FMEA.							

ASSESSMENT DATE: 12/28/87 NASA DATA: ASSESSMENT ID: LS-1124 BASELINE [] NEW [X] NASA FMEA #: 05-6VD-2006-1 SUBSYSTEM: LIFE SUPPORT MDAC ID: 1124 ITEM: CB, INLET ISOL VALVE (4) LEAD ANALYST: M.J. SAIIDI ASSESSMENT: REDUNDANCY SCREENS CRITICALITY CIL FLIGHT ITEM HDW/FUNC A В С [P] NASA [3/1R][P] [] [P]] * I IOA [3/3] Ĩ Î ۲ I 1 COMPARE [/N] [N] [N] ſ 1 RECOMMENDATIONS: (If different from NASA)] [(ADD/DELETE) * CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE [1 **REMARKS:** BASED ON VERY LIMITED FMEA-EPD&C DATA (ONLY A CRIT SUMMARY WAS AVAILABLE), NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED.

C-45

12/28/87 LS-1125 05-6VD-200	06-2				BASELIN	3 [] K]			
1125	.125									
M.J. SAII	DI									
	EDUND	ANCY	SCRE	ENS		CII				
		В			с	111	2M			
] [] []]	[[]]	[[]]	[[] *]			
] []	נ	3	٢	3	נ	3			
RECOMMENDATIONS: (If different from NASA)										
] []	[]	[]] ADD/I] DELETE)			
	(If	appl	icabl]]			
	LS-1125 05-6VD-200 LIFE SUPPO 1125 CB, INLET M.J. SAII M.J. SAII T NC A] [] [] [] [] [] [] [] [] [LS-1125 05-6VD-2006-2 LIFE SUPPORT 1125 CB, INLET ISOL M.J. SAIIDI ITY REDUND T NC A] []] []] []] []] [] REDUND T NC]] []] []] [] REDUND	LS-1125 05-6VD-2006-2 LIFE SUPPORT 1125 CB, INLET ISOL VAL M.J. SAIIDI ITY REDUNDANCY T NC A B] [] [] [] [LS-1125 05-6VD-2006-2 LIFE SUPPORT 1125 CB, INLET ISOL VALVE (4 M.J. SAIIDI ITY REDUNDANCY SCRET NC A B] [] []] [] []] [] []] [] []	LS-1125 05-6VD-2006-2 LIFE SUPPORT 1125 CB, INLET ISOL VALVE (4) M.J. SAIIDI ITY REDUNDANCY SCREENS T NC A B] [] [] [] [] [] [] [] [(If different from NASA)] [] [] [] [RATIONALE: (If applicable) IN	LS-1125 DS-6VD-2006-2 LIFE SUPPORT 1125 CB, INLET ISOL VALVE (4) M.J. SAIIDI ITY REDUNDANCY SCREENS T NC A B C] [] [] [] []] [] [] [] []] [] [] [] []] [] [] [] [] (If different from NASA)] [] [] [] [] (If different from NASA)] [] [] [] [] (ADEQUATE INADEQUATE	LS-1125 05-6VD-2006-2 LIFE SUPPORT 1125 CB, INLET ISOL VALVE (4) M.J. SAIIDI ITY REDUNDANCY SCREENS T NC A B C] [] [] [] [] []] [] [] [] [] []] [] [] [] [] [] []] [] [] [] [] [] [] (If different from NASA)] [] [] [] [] [] [] [ADD/I RATIONALE: (If applicable) ADEQUATE [

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/87 LS-1126 05-6VD-200	07-1		NASA DATA BASELINE NEW	-	
SUBSYSTEM: MDAC ID:	LIFE SUPPO 1126 CB, OUTLE	ORT				
LEAD ANALYST:	M.J. SAII	DI				
ASSESSMENT:						
FLIGH	ITY RI T NC A		Y SCREENS B	s c	CIL ITEM	
nDw/ FO	NC A		D			
NASA [3 /1R IOA [3 /3] [P]] [P] [] [P]]	[] * []	
COMPARE [/N] [N] []	и] [N]	[]	
RECOMMENDATIONS:	(If dif	ferent f	rom NASA)	I		
[/] [] [] [] (A)	[] DD/DELETE)	
* CIL RETENTION RATIONALE: (If applicable)						
			IN	ADEQUATE IADEQUATE		
REMARKS: BASED ON VERY LI AVAILABLE), NO D						

ASSESSME	NT	I	D:	LS-	12/28/87 NASA DATA: LS-1127 BASELINE 05-6VD-2007-2 NEW							[;]	
SUBSYSTE MDAC ID: ITEM:				112	LIFE SUPPORT L127 CB, OUTLET ISOL VALVE (4)									
LEAD ANA	LYS	ST	:	M.J	. SAII	DI								
ASSESSME	NT :	:												
	CRJ			ITY	R	EDUN	IDANCY	SCR	REENS			CII		
	H		LIGH W/FU	NC	A B				(С		ITEM		
NASA IOA	[[3 3	/3 /3]]	[[]]	[[]]	[[]]		[[] *]	
COMPARE	[/]	[]	[]	[]		[]	
RECOMMEN	DAJ	CI (ons:	(If dif	fere	ent fr	om N	IASA)					
	[/]	C]	[]	Ľ]	(A] DELETE)	
* CIL RE						(11	f appl	icab		ADEQU <i>I</i> ADEQU <i>I</i>		[[]]	
IOA AGRE	ES	W.	T.I.H	THE	FMEA.									

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1128	3		NASA DATA BASELINI NEV			
SUBSYSTEM: MDAC ID: ITEM:	1128		AND D (4)				
LEAD ANALYST:	M.J. SA	AIIDI					
ASSESSMENT:							
CRITICALITY REDUNDANCY SCREENS FLIGHT					CIL ITEM		
HDW/FU	NC	A	В	С			
NASA [3 /1R IOA [3 /2R] [] [P] P]	[P] [P]	[P] [P]	[] * []		
COMPARE [/N] []	[]	[]	[]		
RECOMMENDATIONS:	(If d	lifferen	t from NA	SA)			
[3 /2R] [P]	[P]		[] .DD/DELETE)		
* CIL RETENTION	RATIONAL	E: (If	applicabl	•			
				ADEQUATE INADEQUATE			
REMARKS: LOSS OF FUNCTION (BLADDER AND HYDROPHOBIC FILTER) TO PREVENT WATER TO THE CABIN, WILL BE MISSION LOSS.							

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1129	-3		NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPP 1129 TANKS A,		AND D (4)		
LEAD ANALYST:	M.J. SAII	DI			
ASSESSMENT:					
CRITICAL FLIGH		EDUNDA	NCY SCRE	ENS	CIL ITEM
HDW/FU			В	С	
NASA [3 /1R IOA [3 /1R] [P]] [P]	[P] [P]	[P] [P]	[] * []
COMPARE [/] []	[]	[]	[]
RECOMMENDATIONS:	(If dif	ferent	: from NA	SA)	
[/] []	[]	[] (A	[] DD/DELETE)
* CIL RETENTION T	RATIONALE:	(If a	applicabl	e) ADEQUATE INADEQUATE	[] []
IOA IS IN AGREEM	ENT WITH T	HE FME	EA.		

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ASSESSMENT DATH ASSESSMENT ID: NASA FMEA #:	LS-1130		ATA: INE [] NEW [X]			
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 1130 TANKS A, B, C	2 AND D (4)				
LEAD ANALYST:	M.J. SAIIDI					
ASSESSMENT:						
FLIC	HT	DANCY SCREENS	CIL ITEM			
HDW/I	UNC A	B C				
NASA [3 /1 IOA [3 /2	R] [P] R] [P]	[P] [P] [P] [P]	[] * []			
COMPARE [/M] []	[][]	[]]			
RECOMMENDATIONS	: (If differe	ent from NASA)				
[/] []	[]][]]	[] (ADD/DELETE)			
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []						
REMARKS: IOA AGREES WITH THE FMEA, IF NO WATER CAN BE EXPELLED INCLUDING THRU FCP RELIEF LINE.						

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1131	NASA DATA: BASELINE [] NEW [X]
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 1131 SENSOR, TANKS QUANTITY	Y (4)
LEAD ANALYST:	M.J. SAIIDI	
ASSESSMENT:		
CRITICAL		
FLIGH HDW/FUI		ITEM C
NASA [3 /2R IOA [3 /2R] [P] [P]] [P] [P]	[P] []* [P] []
COMPARE [/] [] []	[]][]
RECOMMENDATIONS:	(If different from 1	NASA)
[/] [] []	[] [] (ADD/DELETE)
REMARKS:	RATIONALE: (If applica) ENT WITH THE FMEA.	ble) ADEQUATE [] INADEQUATE []

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/87 LS-1132 06-2-1124-	-1	N	IASA DATA: BASELINE NEW			
SUBSYSTEM:	LIFE SUPPO 1132	LIFE SUPPORT					
LEAD ANALYST:	M.J. SAIII	DI					
ASSESSMENT:	ASSESSMENT:						
		EDUNDANC	Y SCREENS		CIL		
FLIGH HDW/FU	NC A	1	в с	;	ITEM		
NASA [3 /1R IOA [3 /2R] [P]] [P] []	P] [P P] [P		[] []	*	
COMPARE [/N] [] [] []	[]		
RECOMMENDATIONS:	(If diff	ferent fi	rom NASA)				
[/] [] [] [] (AD	[] DD/DEL		
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []							
REMARKS: IOA AGREES WITH THE FMEA, IF FUNCTIONAL LOSS (INABILITY TO EXPEL WATER) IS CONSIDERED INCLUDING FCP RELIEF LINE.							

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1133	-2	NASA DATA BASELINE NEW	-
	LIFE SUPPO 1133 FILTER, GN	ORT N2-TANKS INLE	T (4)	
LEAD ANALYST:	M.J. SAIII	DI		
ASSESSMENT:				
CRITICAL FLIGH HDW/FU	T	EDUNDANCY SCR B	EENS C	CIL ITEM
-			[P]	[X]*
NASA [3 /2R IOA [3 /3	j į] [F]] []	ī ī	[X]* []
COMPARE [/N] [N] [N]	[N]	[N]
RECOMMENDATIONS:	(If dif:	ferent from N	ASA)	
[/] [] []	[]	[] ADD/DELETE)
* CIL RETENTION T			ADEQUATE INADEQUATE	

IOA AGREES WITH NASA (IOA DID NOT CONSIDER THE TANK BLADDER TO BE REDUNDANT TO THE FILTER), BUT FEELS THAT THE SCREEN B SHOULD BE "NA". THE HYDROPHOBIC CHARACTER OF THE FILTER IS IN STANDBY UNTIL THE BLADDER RUPTURE OCCURS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1134	NASA DAT BASELIN NE					
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 1134 SENSOR, PRESSURE	(1)					
LEAD ANALYST:	M.J. SAIIDI						
ASSESSMENT:							
CRITICAL FLIGH HDW/FU	Т	CY SCREENS B C	CIL ITEM				
NASA [3 /1R IOA [3 /3] [P] [] [] [P] [P]] []	[]*				
COMPARE [/N] [N] [N] [N]	[]				
RECOMMENDATIONS:	(If different :	from NASA)					
[3 /2R	[] [P] [P] [P] ([] ADD/DELETE)				
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []							
REMARKS: LOSS OF SENSOR CAN BE COMPENSATED FOR BY QUANTITY SENSORS IN THE TANK. LOSS OF WATER INSTRUMENTATION MAY BE, AT VERY WORST, MISSION IMPACT. SEE QUANTITY SENSORS, 06-2-1109-1 (LS-1131).							

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/87 LS-1135 06-2-1123-1	NASA DATA: BASELINE [] NEW [X]
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 1135 RELIEF VALVE, 1.5 PSI	D (2)
LEAD ANALYST:	M.J. SAIIDI	

ASSESSMENT:

CRITICALITY REDUNDANCY SCREENS FLIGHT									CIL ITEM											
		_	W/FUI	_			A				В			С				614	•	
NASA IOA	[[3 2	/1R /2]]		[[P]]		[[NA]	[[Ρ]]		[х]]	*
COMPARE	[N	/N]		[N]		[N]	[N]		[N]	
RECOMMEN	RECOMMENDATIONS: (If different from NASA)																			
	[2	/2]		[]		[]	[]					TE)
* CIL RI	ETE:	NT	ION	RAI	TION	٩L	Ē:	(1	fa	p	pli	cab:	•		DEQUAT		Į]	
REMARKS	:												11	IAN	DEQUAT	ĽE	l]	

LOSS OF LIKE AND UNLIKE REDUNDANCIES (FCP WATER LINES) WITH THIS FAILURE WILL STILL PROVIDE TANK A ULLAGE TO MANAGE THE WATER. MISSION TERMINATION IS EMMINENT, RETURN ON TANKS C AND D, OR JUST TANK A. ALTERNATE FCP LINE WILL NOT PROVIDE HYDROGEN REMOVAL. IOA CONSIDERED BOTH RELIEF VALVES IN ONE ANALYSIS-SEE FMEA 06-2-1141 (LS-1135A).

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/87 LS-1135A 06-2-1141	-1	NASA DATA BASELINE NEW	-			
SUBSYSTEM: MDAC ID: ITEM:	1135						
LEAD ANALYST:	M.J. SAII	DI					
ASSESSMENT:							
CRITICAL FLIGH		EDUNDANCY SCRE	CENS	CIL ITEM			
	NC A	В	С				
NASA [3 /1R IOA [2 /2] [P]] [NA]] []	[P] []	[] * [X]			
COMPARE [N /N] [N] [N]	[N]	[N]			
RECOMMENDATIONS:	(If dif:	ferent from NA	SA)				
[2 /2] [] []		[A] DD/DELETE)			
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []							
REMARKS: LOSS OF LIKE AND FAILURE WILL STI MISSION TERMINAT	LL PROVIDE	TANK A ULLAGE	P WATER LINES TO MANAGE T	S) WITH THIS HE WATER.			

AND D, OR JUST MISSION TERMINATION IS EMMINENT, RETURN ON TANKS C AND D, OR JUS TANK A. ALTERNATE FCP LINE WILL NOT PROVIDE HYDROGEN REMOVAL. IOA CONSIDERED BOTH RELIEF VALVES IN ONE ANALYSIS-SEE FMEA 06-2-1123-1 (LS-1135).

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1135B			NASA DATA: BASELINE NEW				
SUBSYSTEM: MDAC ID: ITEM:	1135	IFE SUPPORT 135 ELIEF VALVE, 1.5 PSID (2)						
LEAD ANALYST:	M.J. SAII	DI						
ASSESSMENT:								
CRITICALITY REDUNDANCY SCREENS FLIGHT					CIL ITEM			
HDW/FU			В	С	1154			
NASA [3 /1R IOA [2 /2] [P] [] [] [P][][P]]	[] * [X]			
COMPARE [N /N] [N] [И] [N]	[N]			
RECOMMENDATIONS:	(If dif:	ferent f	rom NASA))				
[2 /2] [] [] [[A] DD/DELETE)			
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []								
REMARKS: LOSS OF LIKE AND UNLIKE REDUNDANCIES (FCP WATER LINES) WITH THIS FAILURE WILL STILL PROVIDE TANK A ULLAGE TO MANAGE THE WATER. MISSION TERMINATION IS EMMINENT PETURN ON TANKS C AND D OR JUST								

MISSION TERMINATION IS EMMINENT, RETURN ON TANKS C AND D, OR JUST TANK A. ALTERNATE FCP LINE WILL NOT PROVIDE HYDROGEN REMOVAL. THE FMEA COVERS SEVERAL ITEMS AS ONE LINES & FITTINGS ANALYSIS.

ASSESSMENT DATE: 12 ASSESSMENT ID: LS NASA FMEA #: 06	2/28/87 N S-1136 6-2-1123-2	IASA DATA: BASELINE [] NEW [X]					
MDAC ID: 11	IFE SUPPORT 136 ELIEF VALVE, 1.5 PSID (2)						
LEAD ANALYST: M.J. SAIIDI							
ASSESSMENT:							
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C							
	[P] [P] [P [] [] [) [X]*] []					
COMPARE [N /N]		[и]					
RECOMMENDATIONS:	(If different from NASA)						
[3 /1R]	[P] [P] [P) [D] (ADD/DELETE)					
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [X] INADEQUATE []							
REMARKS:		• •					
IOA DOES NOT AGREE WITH THE STATEMENT THAT THE FUEL CELLS WILL BE DEAD ENDED AFTER R. VALVE FAILURE. CHECK VALVES IN THE FCP WATER LINE WILL PREVENT BACK FLOW TO THE CELLS. FES OPERATION WILL BE MAINTAINED BY COMBINED WATER IN TANKS A AND B DRAWING							
APPROXIMATELY 80 LB	B/HR OF WATER IN TANKS A AND B/HR OF WATER. FAILURE OF ONSIDERED UNASSOCIATED WIT	THE RELIEF VALVES IN					

THE FCP LINE ARE CONSIDERED UNASSOCIATED WITH THE FAILURE OF 1.5 PSID VALVE. NO PROBLEM IS ANTICIPATED POST MECO. FUNCTIONAL LOSS (NO C.V.) WILL RESULT IN FLOW OF WATER THRU THE FCP VENT LINE FOR 8-10 MINUTES DURING PRE-MECO. IOA CONSIDERED BOTH VALVES IN ONE ANALYSIS-SEE FMEA 06-2-1141-2 (LS-1136A).

REPORT DATE 03/10/88

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1136A	LS-1136A BASELINE						
SUBSYSTEM: MDAC ID: ITEM:	1136							
LEAD ANALYST: M.J. SAIIDI								
ASSESSMENT:	ASSESSMENT:							
CRITICAL FLIGH	CIL ITEM							
	NC A	ВС	11EM					
NASA [3 /1R IOA [3 /3] [P]] []	[P] [P] [] []	[X]* []					
COMPARE [/N] [N]	[N] [N]	[И]					
RECOMMENDATIONS:	(If differen	nt from NASA)						
[/] []	[][](2)	[] NDD/DELETE)					
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEONATE []								
	INADEQUATE []							

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:				[] [X]		
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 1137 RELIEF VALVE,	1.5 PSID (2)				
LEAD ANALYST:	M.J. SAIIDI					
ASSESSMENT:						
CRITICAL FLIGH HDW/FU	Т	DANCY SCREENS		CIL ITEM		
		D				
NASA [2 /1R IOA [2 /2] [P]] []	[P] [[] [P]]	[X]* [X]		
COMPARE [/N] [N]	[N] [[И	[]]		
RECOMMENDATIONS:	(If differen	t from NASA)				
[2 /2] []	[]][] (AD	[] D/DELETE)		
* CIL RETENTION	RATIONALE: (If			[X] []		
REMARKS: SEE MDAC-1233. ' AND FITTINGS ANA		ERED SEVERAL	ITEMS IN	ONE LINES		

REPORT DATE 03/10/88 C-61

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ASSESSME ASSESSME NASA FME	NT	I			28/87 1138					NASA BASI	DATA ELINE NEW	[]]	
SUBSYSTE MDAC ID: ITEM:				113	E SUPP 8 GSE F			(2))					
LEAD ANA	LY	XST: M.J. SAIIDI												
ASSESSME	ASSESSMENT:													
CRITICALITY REDUNDANCY SCREENS FLIGHT							CIL ITEM							
]			NC	A		В			с		***		
NASA IOA	[[3	/ /3]]	[[]]	[[]]	[[]]		[[] *]	
COMPARE	נ	N	/N]	٢]	٢]	[]		[]	
RECOMMEN	DA	TI	ons:	(If dif	fer	ent fr	oml	NASA)					
	[/]	[]	[]	[]	(A] DD/I] DELET	E)
* CIL RE	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []													

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:								
SUBSYSTEM: MDAC ID: ITEM:	1139							
LEAD ANALYST: M.J. SAIIDI								
ASSESSMENT:								
CRITICAL FLIGH	ENS		CIL ITE					
	NC A	E	3	С		TIC	M	
NASA [3 /3 IOA [3 /3] [] [] [] []]	[[]	[[] *]	
COMPARE [/] [] []	[]	[]	
RECOMMENDATIONS:	(If dif	ferent fr	om NAS	SA)				
[/] [] []	[] (A] DD/D] ELETE)	
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []								
REMARKS: IOA AGREES WITH THE FMEA. HOWEVER THESE FMEAS MAY BE COMBINED AS: 1) 06-2-1130-1 AND 06-2-1162-1 FILL LINE, 2) 06-2-1131-1 AND 06-2-1164-1 DRAIN LINE.								

REPORT DATE 03/10/88

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	NT DATE: NT ID: NA #:			ATA: INE [NEW [X					
	:M:	LIFE SU 1139	LIFE SUPPORT 139 2D, GSE FILL/DRAIN (2)						
LEAD ANA	LYST:	M.J. SP	AIIDI						
ASSESSME	INT:								
CRITICALITY REDUNDANCY SCREEN FLIGHT					EENS		CIL		
		NC	A	В		С	:	ITE	M
NASA IOA	[3 /3 [3 /3] [[[]]			[[] *]
COMPARE	[/] [:]	ſ]	[]	ſ]
RECOMMEN	DATIONS:	(If d	liffer	ent fr	om N2	ASA)			
	[/] (]	ſ]	[]	[(ADD/D] DELETE)
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []									
REMARKS: IOA AGREES WITH THE FMEA. HOWEVER THESE FMEAS MAY BE COMBINED AS: 1) 06-2-1130-1 AND 06-2-1162-1 FILL LINE, 2) 06-2-1131-1 AND 06-2-1164-1 DRAIN LINE									

AS: 1) 06-2-1130-1 AND 06 06-2-1164-1 DRAIN LINE.

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1139B	S-1139B BASELINE []						
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 1139 QD, GSE FILI							
LEAD ANALYST:	LEAD ANALYST: M.J. SAIIDI							
ASSESSMENT:								
CRITICAL FLIGH	CIL ITEM							
HDW/FU	NC A	В	С					
NASA [3 /3 IOA [3 /3] []] []	[] []	[] []	[] * []				
COMPARE [/] []	[]	[]	[]]				
RECOMMENDATIONS:	(If differ	cent from NA	SA)					
[/] []	[]]		[] ADD/DELETE)				
* CIL RETENTION	RATIONALE: (1	If applicabl	•	r 7				
			ADEQUATE INADEQUATE					
REMARKS: IOA AGREES WITH THE FMEA. HOWEVER THESE FMEAS MAY BE COMBINED AS: 1) 06-2-1130-1 AND 06-2-1162-1 FILL LINE, 2) 06-2-1131-1 AND 06-2-1164-1 DRAIN LINE.								

ASSESSME ASSESSME NASA FME	NT :	ID:	LS-11	39C	-1			N	IASA D BASEL	INE]
SUBSYSTE MDAC ID: ITEM:			1139	IFE SUPPORT 139 D, GSE FILL/DRAIN (2)								
LEAD ANA	LYS	г:	M.J.	SAII	DI							
ASSESSME	NT:											
CRITICALITY REDUNDANCY SCREE FLIGHT					ENS			CIL ITE				
		DW/FU		A		в		C	2			••
NASA IOA	[]	3 /3 3 /3]	[[]]	[[]]	[[]]		[[] *]
COMPARE	[1]	E]	[]	[]		נ]
RECOMMEN	DAT	IONS:	(If	dif	ferer	nt fro	om NA	SA)				
	[1]	[]	[]	נ]	(A)	[DD/D] ELETE)
* CIL RE	* CIL RETENTION RATIONALE: (If applicable)											
									DEQUA DEQUA]]
REMARKS: IOA AGRE												

IOA AGREES WITH THE FMEA. HOWEVER THESE FMEAS MAY BE COMBINED AS: 1) 06-2-1130-1 AND 06-2-1162-1 FILL LINE, 2) 06-2-1131-1 AND 06-2-1164-1 DRAIN LINE.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/87 LS-1140 06-2-1130-2	28/87 NASA DATA: 1140 BASELINE [] 2-1130-2 NEW [X]						
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 1140 QD, GSE FILL/DR2							
LEAD ANALYST: M.J. SAIIDI								
ASSESSMENT:								
CRITICALITY REDUNDANCY SCREENS CIL								
FLIGH HDW/FU		B C	ITEM					
NASA [3 /1R IOA [3 /3] [F] [] [] [[F] [P] [] []	[X]* []					
COMPARE [/N] [И] [[N] [N]	[N]					
RECOMMENDATIONS:	(If different	from NASA)						
[3 /2R] [F] [[] ADD/DELETE)					
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE []								
ADEQUATE [] INADEQUATE [] REMARKS: IOA CONSIDERED LOSS OF REDUNDANCIES TO BE LOSS OF FIRST O-RING (QD) AND SECOND O-RING (CAP) WITH NO OTHER REDUNDANCIES. THE MOST SEVERE EFFECT OF THIS FUNCTIONAL LOSS IS TO LOOSE CAPABILITY TO REPLENISH THE SUPPLY TANKS FOR CONTINUOUS FES USAGE. OPERATIONALLY, TANKS C AND D ARE ISOLATED FOR CONTINGENCY								

PURPOSES OR UNTIL NOMINAL DEORBIT. THEREFORE, FES IS ONLY PARTIALLY LOST DURING ON-ORBIT WHICH MAY HAVE IMPACT ON THE MISSION (P/L REQUIREMENT, MISSION REQUIREMENT). FAILURE OF THE RADIATOR OR ABS ARE NON-REDUNDANT ITEMS AND UNASSOCIATED WITH THE QD/CAP UNDER ANALYSIS. IOA CONSIDERED QD & CAP SEPARATELY, BUT AGREES TO STUDY THEM AS ONE UNIT.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1140A	LS-1140A BASELINE []						
SUBSYSTEM: MDAC ID: ITEM:	1140	LIFE SUPPORT 1140 QD, GSE FILL/DRAIN (2)						
LEAD ANALYST: M.J. SAIIDI								
ASSESSMENT:								
CRITICAL FLIGH	ITY I	REDUNDANC	Y SCREEN	5	CIL ITEM			
	NC 2	A	В	с	T T D13			
NASA [3 /1R IOA [3 /3] [1] [F] [] [F] [] [P]]	[X]* []			
COMPARE [/N] [1	м] [м] [N]	[N]			
RECOMMENDATIONS:	(If dia	fferent f	rom NASA)				
[3 /2R] []	F] [F] [[] DD/DELETE)			
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE []								
INADEQUATE [] REMARKS: IOA CONSIDERED LOSS OF REDUNDANCIES TO BE LOSS OF FIRST O-RING (QD) AND SECOND O-RING (CAP) WITH NO OTHER REDUNDANCIES. THE MOST SEVERE EFFECT OF THIS FUNCTIONAL LOSS IS TO LOOSE CAPABILITY TO REPLENISH THE SUPPLY TANKS FOR CONTINUOUS FES USAGE. OPERATIONALLY, TANKS C AND D ARE ISOLATED FOR CONTINGENCY								

OPERATIONALLY, TANKS C AND D ARE ISOLATED FOR CONTINGENCY PURPOSES OR UNTIL NOMINAL DEORBIT. THEREFORE, FES IS ONLY PARTIALLY LOST DURING ON-ORBIT WHICH MAY HAVE IMPACT ON THE MISSION (P/L REQUIREMENT, MISSION REQUIREMENT). FAILURE OF THE RADIATOR OR ABS ARE NON-REDUNDANT ITEMS AND UNASSOCIATED WITH THE QD/CAP UNDER ANALYSIS. IOA CONSIDERED QD & CAP SEPARATELY, BUT AGREES TO STUDY THEM AS ONE UNIT.

ASSESSMENT DATE: 12/28/87 NASA DATA: ASSESSMENT ID: LS-1141 BASELINE [] NEW [NASA FMEA #:] SUBSYSTEM: LIFE SUPPORT MDAC ID: 1141 ITEM: QD, GSE FILL/DRAIN (2) LEAD ANALYST: M.J. SAIIDI ASSESSMENT: CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A В С NASA [1 1 [] [] [[] *] [IOA [2 /2] ίxi Ĩ COMPARE [N /N] Γ [[] 1 1 [N] **RECOMMENDATIONS:** (If different from NASA)] [1 (ADD/DELETE) * CIL RETENTION RATIONALE: (If applicable) ADEQUATE [INADEQUATE 1 [**REMARKS:** IOA WITHDRAWS THIS. IT IS ALREADY COVERED BY LS-1233 AND -1235.

ASSESSMENT DAT ASSESSMENT ID: NASA FMEA #:	LS-114	2			NASA DATA BASELINE NEW		
SUBSYSTEM: MDAC ID: ITEM:	LIFE S 1142 QD, GS		r L/drain	(2)			
LEAD ANALYST:	M.J. S	AIIDI					
ASSESSMENT:							
						CIL ITEM	
HDW/		A	В		С		
NASA [3 / IOA [3 /	R] R]	[F] [P]	[F [P] [P] P]	[X]* []	
COMPARE [/	1	[и]	[N] []	[N]	
RECOMMENDATION	: (If	diffe	rent fr	om NASA	.)		
[3/	R]	[F]	[F] [P] (A	[] DD/DELETE)	
* CIL RETENTIO	RATIONA	LE: ()	If appl	·	ADEQUATE NADEQUATE	[X] []	
REMARKS:							

IOA CONSIDERED LOSS OF REDUNDANCIES TO BE LOSS OF FIRST O-RING (QD) AND SECOND O-RING (CAP) WITH NO OTHER REDUNDANCIES. THE MOST SEVERE EFFECT OF THIS FUNCTIONAL LOSS IS TO LOOSE CAPABILITY TO REPLENISH THE SUPPLY TANKS FOR CONTINUOUS FES USAGE. OPERATIONALLY, TANKS C AND D ARE ISOLATED FOR CONTINGENCY PURPOSES OR UNTIL NOMINAL DEORBIT. THEREFORE, FES IS ONLY PARTIALLY LOST DURING ON-ORBIT WHICH MAY HAVE IMPACT ON THE MISSION (P/L REQUIREMENT, MISSION REQUIREMENT). FAILURE OF THE RADIATOR OR ABS ARE NON-REDUNDANT ITEMS AND UNASSOCIATED WITH THE QD/CAP UNDER ANALYSIS. IOA STUDIED FILL AND DRAIN TOGETHER WITH OD & CAP ANALYZED SEPARATELY.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		NASA DATA: BASELINE [] NEW [X]								
LEAD ANALYST: M.J. SAIIDI										
ASSESSMENT:										
CRITICAL FLIGH		CIL ITEM								
HDW/FU		C								
NASA [3 /1R IOA [3 /2R] [F] [F] [] [P] [P] [P] [X]* P] []								
COMPARE [/N] [N] [N] [] [N]								
RECOMMENDATIONS:	(If different from NASA)									
[3 /2R] [F] [F] [P] [] (ADD/DELETE)								
		ADEQUATE [X] ADEQUATE []								
INADEQUATE [] REMARKS: IOA CONSIDERED LOSS OF REDUNDANCIES TO BE LOSS OF FIRST O-RING (QD) AND SECOND O-RING (CAP) WITH NO OTHER REDUNDANCIES. THE MOST SEVERE EFFECT OF THIS FUNCTIONAL LOSS IS TO LOOSE CAPABILITY TO REPLENISH THE SUPPLY TANKS FOR CONTINUOUS FES USAGE. OPERATIONALLY, TANKS C AND D ARE ISOLATED FOR CONTINGENCY PURPOSES OR UNTIL NOMINAL DEORBIT. THEREFORE, FES IS ONLY PARTIALLY LOST DURING ON-ORBIT WHICH MAY HAVE IMPACT ON THE MISSION (P/L REQUIREMENT, MISSION REQUIREMENT). FAILURE OF THE RADIATOR OR ABS ARE NON-REDUNDANT ITEMS AND UNASSOCIATED WITH THE										

RADIATOR OR ABS ARE NON-REDUNDANT ITEMS AND UNASSOCIATED WITH THE QD/CAP UNDER ANALYSIS. IOA STUDIED FILL AND DRAIN TOGETHER WITH QD & CAP ANALYZED SEPARATELY.

ASSESSME ASSESSME NASA FME	NT	I		12/28 LS-11			: []]]						
SUBSYSTE MDAC ID: ITEM:				LIFE 1143 CAP,)							
LEAD ANA	LY	ST	:	M.J.	1.J. SAIIDI									
ASSESSMENT:														
CRITICALITY REDUNDANCY SCREENS FLIGHT								ENS			CIL ITEI	M		
]	HD	W/FU	NC	A		В		(C				
NASA IOA] [3	/ /3]]	[[]]	[[]]	[[]]		[[]]	*
COMPARE	[N	/N	3	[]	C]	[1		[]	
RECOMMEN	'DA'	FI (ons:	(If	dif	feren	t fro	om NA	SA)					
	[/]	[]	[]	[]	(AI	[נס/סכ] ELH	TE)
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []														
APPLICAB	REMARKS: APPLICABLE DURING PRELAUNCH AND POSTLANDING ONLY. FMEA DID NOT COVER THIS FAILURE MODE.													

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/87 LS-1144 06-2-1130-2	NASA DATA: BASELINE [] NEW [X]							
SUBSYSTEM: MDAC ID:									
LEAD ANALYST:	M.J. SAIIDI								
ASSESSMENT:									
CRITICAL FLIGH	CREENS CIL ITEM								
HDW/FU	NC A B	C							
NASA [3 /1R IOA [3 /2R] [F] [F]] [P] [P]	[P] [X]* [P] []							
COMPARE [/N] [N] [N]	[] [И]							
RECOMMENDATIONS:	(If different from	NASA)							
[3 /2R] [F] [F]	[P] [] (ADD/DELETE)							
* CIL RETENTION	RATIONALE: (If applic	•							
DEMODKS .		ADEQUATE [] INADEQUATE []							
REMARKS: IOA CONSIDERED LOSS OF REDUNDANCIES TO BE LOSS OF FIRST O-RING (QD) AND SECOND O-RING (CAP) WITH NO OTHER REDUNDANCIES. THE MOST SEVERE EFFECT OF THIS FUNCTIONAL LOSS IS TO LOOSE CAPABILITY TO REPLENISH THE SUPPLY TANKS FOR CONTINUOUS FES USAGE. OPERATIONALLY, TANKS C AND D ARE ISOLATED FOR CONTINGENCY PURPOSES OR UNTIL NOMINAL DEORBIT. THEREFORE, FES IS ONLY PARTIALLY LOST DURING ON-ORBIT WHICH MAY HAVE IMPACT ON THE MISSION (P/L REQUIREMENT, MISSION REQUIREMENT). FAILURE OF THE									

MISSION (P/L REQUIREMENT, MISSION REQUIREMENT). FAILURE OF THE RADIATOR OR ABS ARE NON-REDUNDANT ITEMS AND UNASSOCIATED WITH THE QD/CAP UNDER ANALYSIS.

IOA COVERED QD AND CAP SEPARATELY-SEE LS-1140.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/87 LS-1144A 06-2-1131-2		NASA DATA: BASELINE [] NEW [X]						
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 1144 CAP, GSE QD (2)								
LEAD ANALYST:	M.J. SAIIDI								
ASSESSMENT:									
CRITICAI FLIGH	LITY REDUNDA	NCY SCREEN	S	CIL ITEM					
	INC A	В	С						
NASA [3 /1F IOA [3 /2F	E] [F] E] [P]	[F][[P][P] P]	[X] * []					
COMPARE [/N	ן אן	[м] []	[N]					
RECOMMENDATIONS:	(If different	from NASA)						
[3 /2F	2] [F]	[F] [[] DD/DELETE)					
	RATIONALE: (If a	·		[] []					
ADEQUATE [] INADEQUATE [] REMARKS: IOA CONSIDERED LOSS OF REDUNDANCIES TO BE LOSS OF FIRST O-RING (QD) AND SECOND O-RING (CAP) WITH NO OTHER REDUNDANCIES. THE MOST SEVERE EFFECT OF THIS FUNCTIONAL LOSS IS TO LOOSE CAPABILITY TO REPLENISH THE SUPPLY TANKS FOR CONTINUOUS FES USAGE. OPERATIONALLY, TANKS C AND D ARE ISOLATED FOR CONTINGENCY PURPOSES OR UNTIL NOMINAL DEORBIT. THEREFORE, FES IS ONLY PARTIALLY LOST DURING ON-ORBIT WHICH MAY HAVE IMPACT ON THE MISSION (P/L REQUIREMENT, MISSION REQUIREMENT). FAILURE OF THE RADIATOR OR ABS ARE NON-REDUNDANT ITEMS AND UNASSOCIATED WITH THE									

QD/CAP UNDER ANALYSIS. IOA COVERED QD AND CAP SEPARATELY-SEE LS 1140A.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1145	S-1145 BASELIN								
MDAC ID:	LIFE SUPPORT 1145 TANK A PRESSUR	E CONTROL V	ALVE (1)							
LEAD ANALYST:	M.J. SAIIDI									
ASSESSMENT:										
CRITICAL FLIGH	ITY REDUND. T	ANCY SCREEN	S	CIL ITEM						
HDW/FU		В	С							
NASA [3 /2R IOA [2 /2	[P]] []	[NA] [[] [P]]	[] * [X]						
COMPARE [N /N] [N]	[N][N]	[N]						
RECOMMENDATIONS:	(If differen	t from NASA)							
[/] []	[]][]	[] DD/DELETE)						
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []										
REMARKS: IOA AGREES WITH ADEQUATELY SUPPL			S UNAVAILA	BLE TO						

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1146	S-1146 BASELIN									
	1146										
LEAD ANALYST:	AD ANALYST: M.J. SAIIDI										
ASSESSMENT:											
FLIG	ſT	REDUNDANCY		CIL ITEM							
HDW/FU	INC	A E	5	С							
NASA [3 /2H IOA [3 /3	2] [] [P] [F] [) [] [P]]	[] *						
COMPARE [/N	J [и] [и	() (и ј	[]]						
RECOMMENDATIONS	(If di	fferent fr	om NASA)								
[3 /11	2] [P] [F	·] [P] (A)	[] DD/DELETE)						
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []											
REMARKS: DURING ASCENT (1	RE-MECO),	THE WATER	FROM TA	NK A MAY	BACK FLOW						

DURING ASCENT (PRE-MECO), THE WATER FROM TANK A MAY BACK FLOW AND CHECK AGAINST THE FCP C. VALVES WITH 3GS ACTING ON THE LINES (SAME SCENARIO AS 06-2-1123-2, MDAC-1136). FCP RELIEF VALVE MAY BE FORCED OPEN AND RELIEF THE WATER OVERBOARD. WITH SUBSEQUENT FAILURE OF THIS VALVE, THE FCP WILL BE DEAD-HEADED IN VERY SHORT TIME.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/87 LS-1147			1	NASA D BASEL		[]]			
SUBSYSTEM: MDAC ID: ITEM:	1147	IFE SUPPORT 147 ANK A PRESSURE CONTROL VALVE (1)									
LEAD ANALYST: M.J. SAIIDI											
ASSESSMENT:											
CRITICALITY REDUNDANCY SCREENS FLIGHT								1			
HDW/FU	NC A	L	В	C	2						
NASA [/ IOA [2 /2] [] []]	[] []	[[]]		[[x] *]			
COMPARE [N /N] []	[]	[]		[N]			
RECOMMENDATIONS:	(If dif	ferent	: from	NASA)							
[/] []	[]	[]	(AD	[D/DE] ELETE)			
* CIL RETENTION	RATIONALE:	(If a	applica	A	DEQUA		[[]]			
REMARKS: IOA WITHDRAWS TH	IS ANALYSI	S-IT 1	IS ALRI	EADY CO	VERED	BY	LS-1	.145.			

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		S-1148 BASELINE									
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 1148 TANK A PRESSU	148 ANK A PRESSURE CONTROL VALVE (1)									
LEAD ANALYST: M.J. SAIIDI											
ASSESSMENT:											
CRITICAL FLIGH	DANCY SCREENS	CIL ITEM									
HDW/FU	NC A	B C									
NASA [3 /1R IOA [2 /2] [P]] []	[P] [P] [] []	[] * [X]								
COMPARE [N /N] [N]	[N] [N]	[N]								
RECOMMENDATIONS:	(If differe	ent from NASA)									
[3 /2R] [P]	[P] [P]	[] (ADD/DELETE)								
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []											
REMARKS: LOSS OF N2 PRESS	URIZATION WITH	THE BLADDERS EXPOSE	ED TO THE CABI								

LOSS OF N2 PRESSURIZATION WITH THE BLADDERS EXPOSED TO THE CABIN PRESSURE. NO ADDITIONAL FAILURE IN THE SWS WILL NEGATE THE TANKS PRESSURIZATION BY THE CABIN ATMOSPHERE, UNLESS THE CABIN ATMOSPHERE IS LOST. THIS IS NOT REALISTIC WHEN APPLIED TO THE SWS. LOSS OF BLADDER WILL RESULT IN FLOW OF WATER INTO CABIN - MISSION LOSS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/87 LS-1149 06-2-1157-1	NASA BASI	DATA: Eline [] New [X]								
SUBSYSTEM: MDAC ID:	LIFE SUPPORT 1149										
ITEM:	TANK A VENT VAL	VE (1)									
LEAD ANALYST: M.J. SAIIDI											
ASSESSMENT:											
CRITICAL FLIGH	CIL										
HDW/FU	-	ВС	ITEM								
NASA [3 /1R IOA [2 /2] [P]] []	[P] [P] [] []	[] * [X]								
COMPARE [N /N] [И]	[И] [И]	[N]								
RECOMMENDATIONS:	(If different	from NASA)									
[3 /2R] [P]	[P] [P]	[] (ADD/DELETE)								
* CIL RETENTION H	RATIONALE: (If a										
		ADEQU INADEQU	JATE [] JATE []								
REMARKS: CONTINUOUS FLOW (OF N2 INTO CABIN	UNLESS TANK A H	RESSURE VALVE IS								
CLOSED, THUS LOSS AVAILABLE AS BACK											
PRESSURE VALVE, 1	THE N2 WILL CONTE	INUOUSLY FLOW IN	TO CABIN UNLESS								
THE REGULATOR INI	JET VALVE IS CLOS	SED THUS LOSS OF	F PRIMARY N2								

THE REGULATOR INLET VALVE IS CLOSED THUS LOSS OF PRIMARY N2 SYSTEM TO PRESSURIZE ALL TANKS. ALL WATER MANAGEMENT FUNCTIONS ARE STILL AVAILABLE. WATER FLOW TO GALLEY DIMINISHED BADLY AND MAY IMPACT MISSION IF NOT ADEQUATE. ALSO, OPERATIONALLY FLOW OF N2 INTO THE CABIN WILL NEGATE AUTOMATIC O2/N2 CONTROL.

REPORT DATE 03/10/88

C-79

ASSESSME ASSESSME NASA FME	ENT	I	D:	LS-	115	0		NASA DATA: BASELINE [] NEW [X]											
SUBSYSTE MDAC ID: ITEM:				115	LIFE SUPPORT L150 CANK A VENT VALVE (1)														
LEAD ANA	EAD ANALYST: M.J. SAIIDI																		
ASSESSMENT:																			
		F	ICAL LIGH W/FUI	Г			RE A	EDUN	DA	NC	CY B	SCREI	EN:	s c			CIL ITE		
NASA			•			ſ	P	1		[A]	[1		ſ	ı	*
IOA	Ì	3	/1R /3	j		Ì	P	j		Ì	NZ	j	Ĩ	P	j		Ì	j	
COMPARE	נ		/N]		[N]		[N]	[N]		[]	
RECOMMEN	IDA'	FI	ons:	(If	di	.ff	fere	nt	t	fro	om NAS	5 A])					
	[3	/2R]		[P]		[NZ	A]	[P]	(AI] ם/סכ] ELJ	ETE)
* CIL RE	TE	NT	ION	RATI	ONA	LE	:	(If	a	pr	51	icable	•		DEQUAT		[[]	

LOSS OF CAPABILITY TO VENT TANK A TO CABIN. THIS IS DONE PRELAUNCH FOR ASCENT OPERATION. THE UPSTREAM VENT VALVE (DOWNSTREAM OF 18 PSIG REG) IS AVAILABLE TO PROVIDE FOR THE LOSS. SUBSEQUENT LOSS OF THIS VALVE, WILL PREVENT MOVEMENT OF TANKS BLADDER FOR FILLING AND DUMPING UNLESS THE TANKS ARE CONFIGURED TO CABIN PRESSURE. FLOW OF WATER FOR GALLEY WILL BE VERY SLOW, AND IF NOT ADEQUATE IT MAY HAVE POTENTIAL MISSION IMPACT.

REMARKS:

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1151	NASA DATA: BASELINE [] NEW [X]
MDAC ID:	LIFE SUPPORT 1151 TANK A VENT VALVE (1)	
LEAD ANALYST:	M.J. SAIIDI	
ASSESSMENT:		
CRITICALI FLIGHT HDW/FUN		CIL ITEM
NASA [3 /1R IOA [2 /2		P] []*] [X]
COMPARE [N /N] [N] [N] []	N] [N]
RECOMMENDATIONS:	(If different from NASA)	
[3 /2R] [P] [P] []	?] [] (ADD/DELETE)
* CIL RETENTION R		ADEQUATE [] ADEQUATE []
CLOSED, THUS LOSS	F N2 INTO CABIN UNLESS TAN OF PRIMARY PRESSURIZATION	SYSTEM. CABIN IS

CONTINUOUS FLOW OF N2 INTO CABIN UNLESS TANK A PRESSURE VALVE IS CLOSED, THUS LOSS OF PRIMARY PRESSURIZATION SYSTEM. CABIN IS AVAILABLE AS BACK-UP. WITH THE SUBSEQUENT FAILURE OF THE PRESSURE VALVE, THE N2 WILL CONTINUOUSLY FLOW INTO CABIN UNLESS THE REGULATOR INLET VALVE IS CLOSED THUS LOSS OF PRIMARY N2 SYSTEM TO PRESSURIZE ALL TANKS. ALL WATER MANAGEMENT FUNCTIONS ARE STILL AVAILABLE. WATER FLOW TO GALLEY DIMINISHED BADLY AND MAY IMPACT MISSION IF NOT ADEQUATE. ALSO, OPERATIONALLY FLOW OF N2 INTO THE CABIN WILL NEGATE AUTOMATIC 02/N2 CONTROL.

ASSESSME ASSESSME NASA FME	NT I	D:	LS-11	2/28/87 NASA DATA S-1152 BASELINE 6-2-1139-1 NEW								[]
SUBSYSTE MDAC ID: ITEM:	M:		1152	LIFE SUPPORT 152 ROSSOVER VALVE (1)								
LEAD ANA	LYSI	LYST: M.J. SAIIDI										
ASSESSMENT:												
			DANCY		EENS				CIL ITEM			
	HC	W/FU	NC	A	•	B			С			
NASA IOA		/1R /3		[F [)]	[N [A]]	[[Ρ]	[[] *]
COMPARE	[/N	3	[N]	[N]	[N	1	C]
RECOMMEN	DATI	ONS:	(If	dif	fere	nt fr	om NZ	ASA))			
	[3	/3]	[]	[]	[] (2	[ADD/I] DELETE)
* CIL RE	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE []											
REMARKS: LOSS OF OPERATIO								DUR	TA		ONCE] 2.

MAINTAINED.

ASSESSME ASSESSME NASA FME	NT I		LS-11	L2/28/87 NASA DATA: LS-1152A BASELINE [D6-2-1165-1 NEW [X]]		
SUBSYSTE MDAC ID: ITEM:	M:		1152	IFE SUPPORT 152 ROSSOVER VALVE (1)											
LEAD ANALYST: M.J. SAIIDI															
ASSESSME	ASSESSMENT:														
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM											1				
	HD	W/FU	NC	2	A			B			С				
NASA IOA		/1R /3]]	[] [P]]	((P]]	[[Ρ]]	[[] *]
COMPARE	[/N]	[]	1]	[N]	۵	N]	[]
RECOMMEN	DATI	ons:	(If	dif	ff	erent	t	fro	om NA	SA)				
	[3	/3]	[]	[]	[]	[ADD/	DE] LETE)
	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []														
LOSS OF	REMARKS: LOSS OF CAPABILITY TO DRAW WATER FROM FOUR TANKS AT ONCE. OPERATION OF DUMP AND FES AND WATER MANAGEMENT IS STILL														

LOSS OF CAPABILITY TO DRAW WATER FROM FOUR TANKS AT ONCE. OPERATION OF DUMP AND FES AND WATER MANAGEMENT IS STILL MAINTAINED. THIS FAILURE MODE WAS ALSO COVERED BY THE FMEA 06-2-1139-1 (LS-1152).

ASSESSME ASSESSME NASA FME	NT ID:	LS-11	53	-2			NASA DATA BASELINE NEW	[]]		
SUBSYSTE MDAC ID: ITEM:	M:	LIFE S 1153 CROSSO									
LEAD ANALYST: M.J. SAIIDI											
ASSESSME	ASSESSMENT:										
1	CRITICAI FLIGH		R	EDUN	DANCY S	CREENS	5	CIL ITE			
	HDW/FU	INC	A		В		С				
NASA IOA	[3 /1F [3 /3	2]	[P [)]	[P] []	[[P]]	[[] *]		
COMPARE	[/N]	[N]	[א]	[N]	٢]		
RECOMMEN	DATIONS:	(If	dif	fere	nt from	NASA))				
	[3 /2]	2]	[P]	[P]	[P] (A	[DD/D] ELETE) [.]		
* CIL RE	TENTION	RATION	ALE:	(If	applic	able)					
						IN	ADEQUATE NADEQUATE	[[]]		

REMARKS: LOSS OF CAPABILITY TO ISOLATE THE TANKS A/B FROM TANKS C/D UNDER A SUBSEQUENT LEAKAGE OF THE LINE (SEE ALSO 06-2-1165-2, MDAC-1235) RESULTING IN CONTINUOUS FLOW OF WATER INTO CABIN. LOSS OF FES OPERATION (NO WATER) AND PRESENCE OF WATER IN THE CABIN IS MISSION LOSS.

	: 12/28/8 LS-1154 06-2-11			NASA DATA: BASELINE [] NEW [X]					
SUBSYSTEM: MDAC ID: ITEM:	1154	LIFE SUPPORT 1154 CROSSOVER VALVE (1)							
LEAD ANALYST: M.J. SAIIDI									
ASSESSMENT:									
CRITICA FLIG		REDUND	ANCY SCR	EENS	CIL ITEM				
HDW/F	JNC	Α	В	С					
NASA [3 /1] IOA [2 /2		P_]]	[P] []	[P] []	[] * [X]				
COMPARE [N /N] [NJ	[N]	[И]	[N]				
RECOMMENDATIONS	: (If d	ifferen	t from N	ASA)					
[2 /2] []	[]	[]]	[A] (ADD/DELETE)				
* CIL RETENTION	RATIONAL	E: (If	applicab	le) ADEQUAT INADEQUAT					
REMARKS: SEE MDAC-1235 F(OR REMARK	S. THE	FMEA CO	NSIDERED SE	VERAL ITEMS				

SEE MDAC-1235 FOR REMARKS. THE FMEA CONSIDERED SEVERAL ITEMS IN ONE LINES AND FITTINGS ANALYSIS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1155	S-1155 BASELINE []								
MDAC ID:	LIFE SUPPO 1155 SOLENOID,		VALVE (1)							
LEAD ANALYST:	M.J. SAII	DI								
ASSESSMENT:										
CRITICALI FLIGHT HDW/FUN	?		NCY SCREE B	NS C	CIL ITEM					
NASA [3 /1R IOA [3 /3] [P])] [] [[P] []	[P] []	[]*					
COMPARE [/N] [N	ן נ	נא]	[N]	[]					
RECOMMENDATIONS:	•		from NAS [P]	·	r ı					
] [Ŧ	1 1	[+]		DD/DELETE)					
* CIL RETENTION F	RATIONALE:	(If ar	pplicable) ADEQUATE INADEQUATE	[] []					
THE IOA CONSIDERE HOWEVER, BASED ON										

THE IOA CONSIDERED THIS ITEM SEPARATELY AS PART OF THE EPD&C. HOWEVER, BASED ON THE ASSESSMENT OF ITS HARDWARE ITEM, THE ABOVE RECOMMENDATION IS MADE.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/87 LS-1156 06-2-1139-	-1	NASA DATA BASELINE NEW							
SUBSYSTEM: MDAC ID: ITEM:	1156	IFE SUPPORT 156 OLENOID, XOVR VALVE (1)								
LEAD ANALYST:	M.J. SAIII	DI								
ASSESSMENT:										
CRITICAL FLIGH		EDUNDANCY SCREI	ENS	CIL ITEM						
HDW/FU	NC A	В	С							
NASA [3 /1R IOA [3 /3] [NA]] []	[P] []	[] * []						
COMPARE [/N] [N] [N]	[N]	[]]						
RECOMMENDATIONS:	(If diff	ferent from NAS	SA)							
[3 /3] [] []	[] (A	[] \DD/DELETE)						
* CIL RETENTION	RATIONALE:	(If applicable	2) ADEQUATE INADEQUATE	[]						
REMARKS: THE IOA CONSIDER			AS PART OF T	HE EPD&C.						

HOWEVER, BASED ON THE ASSESSMENT OF ITS HARDWARE ITEM, THE ABOVE RECOMMENDATION IS MADE.

ASSESSMEN ASSESSMEN NASA FMEA	I TV	D:	LS-11	57	27-1					SA DAT ASELIN NE		x]	
SUBSYSTEN MDAC ID: ITEM:	1:		1157	IFE SUPPORT 157 WITCH, XOVR VALVE (1)									
LEAD ANALYST: M.J. SAIIDI													
ASSESSMEN	IT:												
C	F	LIGH						CREENS			C1 11	L EM	
	HD	W/FU	NC	A		j	В		С				
NASA IOA	[3 [3	/1R /3]]	[P []]	[] [I AN	[[Ρ]]	[[]]	*
COMPARE	[/N]	[N]	[]	N]	[N]	[]	
RECOMMEND	DATI	ons:	(If	dif	ferer	nt f:	rom	NASA)				
	[/]	[]	[]	[]] (ADD/] DELI	ETE)
* CIL RET	TENT	ION	RATION	ALE:	(If	app	lica			EQUATE EQUATE]]	
REMARKS: BASED ON	VFD	V T.TI	מדיידים י	ፑለፑኔ.	-דססי	с D	ልጥል	(ONT)	7 7	CDTT	SIM	NDV	WAC
DAGED UN	VCR	ודת ד	чттер .	chen.	-cruo	ເບີມ	ata -		LA	CRIT	SOLE	rur I	WAD

BASED ON VERY LIMITED FMEA-EPD&C DATA (ONLY A CRIT SUMMARY WAS AVAILABLE), NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	: [] [X]										
SUBSYSTEM:	LIFE SU 1157	LIFE SUPPORT									
LEAD ANALYST: M.J. SAIIDI											
ASSESSMENT:											
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM											
HDW/FU	NC	Α	В		С						
NASA [3 /1R IOA [3 /3] [] [P]]	[P [] [] [P]]	[]*					
COMPARE [/N] [[N]	[N] [N]	[]					
RECOMMENDATIONS:	(If d	lifferen	t fro	m NASA))						
[/] []	[] [[] DD/DELETE)					
* CIL RETENTION	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []										
REMARKS: BASED ON VERY LIMITED FMEA-EPD&C DATA (ONLY A CRIT SUMMARY WAS AVAILABLE), NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED.											

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/87 LS-1158 05-6VD-2	12/28/87 NASA DATA: LS-1158 BASELINE [05-6VD-2027-2 NEW [X								
SUBSYSTEM: MDAC ID: ITEM:	1158									
LEAD ANALYST: M.J. SAIIDI										
ASSESSMENT:										
FLIGH					CIL ITEM					
HDW/FU	NC	A	В	С						
NASA [3 /1R IOA [3 /3] [] [P]]	[P] []	[P] []	[]* []					
COMPARE [/N] [N]	[N]	[N]	[]]					
RECOMMENDATIONS:	(If di	fferent	from 1	NASA)						
[/] []	[]	[]]	[] (ADD/DELETE)					
	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []									
REMARKS: BASED ON VERY LI AVAILABLE), NO D	MITED FME ETAIL ASS	A-EPD&C ESSMENI	DATA OF TH	(ONLY A CR IS ITEM WAS	IT SUMMARY WAS S ATTEMPTED.					

REPORT DATE 03/10/88 C-90

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	TC 1150	: [] [X]								
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPP 1159 SWITCH, X		LVE (1)							
LEAD ANALYST:	M.J. SAII	IDI								
ASSESSMENT:										
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM										
HDW/FU	NC A	A	В	С						
NASA [3 /1R IOA [3 /3] [I	P]]]	[NA] []	[P] []	[] * []					
COMPARE [/N] [N	N]	[N]	[N]	[]					
RECOMMENDATIONS:	(If dif	fferent	from NAS	A)						
[/] []	[]	[] (A	[] DD/DELETE)					
* CIL RETENTION	* CIL RETENTION RATIONALE: (If applicable)									
REMARKS:										
BASED ON VERY LIMITED FMEA-EPD&C DATA (ONLY A CRIT SUMMARY WAS AVAILABLE), NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED.										

REPORT DATE 03/10/88

C-91

ASSESSME ASSESSME NASA FME	NT D NT I A #:	DATE: 12/28/87 NASA DATA: ID: LS-1160 BASELINE : 05-6VD-2037-1 NEW LIFE SUPPORT													
SUBSYSTE MDAC ID: ITEM:			1160												
LEAD ANALYST: M.J. SAIIDI															
ASSESSMENT:															
		ICAL LIGH	ITY F	R	EDUNE	DAI	NC	Y	SCRI	EEN	S			CIL ITE	
	HD	W/FU	NC	A				В			С				
NASA IOA	[3 [3	/1R /3]	[P []		[P]	[[P]		[[] *]
COMPARE	[/N]	[N]		[N]	۵	N]		[]
RECOMMEN	DATI	ons:	(If	dif	feren	nt	f	rc	om NZ	ASA)				
	[.	/]	[]		[]	[]	(A)	ן ס/סס] ELETE)
* CIL RE	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []														
REMARKS:										I	IAN	DEQU	ATE	[]
BASED ON VERY LIMITED FMEA-EPD&C DATA (ONLY A CRIT SUMMARY WAS AVAILABLE), NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED.															

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	LS-1160A	037-2		NASA DAT BASELIN NI						
SUBSYSTEM: MDAC ID: ITEM:	1160		VR VALVE (]	_)						
LEAD ANALYST: M.J. SAIIDI										
ASSESSMENT:										
CRITICA FLIG	LITY F	REDUNDAN	CY SCREE	ENS	CIL					
HDW/F		A	С	ITEM						
NASA [3 /3 IOA [3 /3] [] [] [] []]	[] []	[]*					
COMPARE [/] [] []	[]	[]					
RECOMMENDATIONS	: (If dif	fferent i	from NAS	SA)						
[/] [] []	[]]	[] ADD/DELETE)					
* CIL RETENTION REMARKS:		: (If app	plicable	e) ADEQUATE INADEQUATE						
IOA AGREES WITH	THE FMEA.									

ASSESSME ASSESSME NASA FME	NT	I	D:	LS	12/28/87 NASA DATA LS-1161 BASELINE 05-6VD-2048-1 NEW] K]
SUBSYSTE MDAC ID: ITEM:				11	FE SU 61 ODE,								
LEAD ANA	ANALYST: M.J. SAIIDI												
ASSESSME	NT	:											
CRITICALITY REDUNDANCY SCREENS FLIGHT										CII ITI			
	1	-		JNC	A B C							T.1.1	214
NASA IOA	[[3 3	/3 /3]]	[[]]	[[]]	[[]]		[[] *]
COMPARE	[/]	[]	ľ]	[1		۵]
RECOMMEN	DA	FI (ONS :	:	(If d	iffe	rent 1	from	NASA)			
	[1]	[]	[]	۵]	(A] .DD/I] DELETE)
* CIL RE	TEI	NT:	ION	RAT	IONAL	E: (:	If app	plica	Į.	ADEQU NADEQU]]
REMARKS: IOA AGRE	ES	W	ITH	THE	FMEA	•							

	NT DATE: NT ID: NA #:		NASA DATA BASELINI NEV]]							
SUBSYSTE MDAC ID: ITEM:		LIFE SU 1162 RESISTO		R VAI	LVE (1	L)						
LEAD ANA	LYST:	M.J. SA	IIDI									
ASSESSMENT:												
	CRITICAL FLIGH	JTY T	REDUN	DANCY	SCRI	EENS		CII ITE	-			
	HDW/FU	NC	C A B C									
NASA IOA	[3 /3 [3 /3] [] []	[[]]	[[]]	[[] *]			
COMPARE	[/] []	[]	[]	[]			
RECOMMEN	DATIONS:	(If d	iffere	nt fr	om NA	SA)						
	[/] []	[1	[] (A] DD/D] DELETE)			
* CIL RE	TENTION	RATIONALI	E: (If	appl	icab]		ADEQUATE ADEQUATE]			
IOA AGRE	ES WITH	THE FMEA.	•									

ASSESSME ASSESSME NASA FME		TC-11	62		NASA DATA: BASELINE [] NEW [X]								
SUBSYSTE MDAC ID: ITEM:			LIFE S 1163 CB, X0			E (1	L)						
LEAD ANA	LYSI	C :	M.J. 9	SAII	DI								
ASSESSMENT:													
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM													
	HI	W/FU	NC	A B C									
NASA IOA	[3	8 /1R 8 /3]]	[P []	[[Ρ]	[[P]]	[[] *]
COMPARE	[/N]	[N]	Ľ	N]	נ	N]	[]
RECOMMEN	DATI	ons:	(If	dif	fere	nt f	irc	om NAS	SA)			
	[/]	[]	[]	[] (4] ADD/D] DELETE)
* CIL RE	TENI	NOI	RATION	ALE:	(If	app)]j	icable	e)			_	
	ADEQUATE [] INADEQUATE []												
REMARKS: BASED ON VERY LIMITED FMEA-EPD&C DATA (ONLY A CRIT SUMMARY WAS AVAILABLE), NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED.													

12/28/87 LS-1164 05-6VD-200			ASELINE	[]							
1164)										
M.J. SAIII	DI											
ASSESSMENT:												
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM												
NC A												
] [] [] [] []]	[[]]	[[] *]						
] [] []	[]	[]						
(If diff	ferent fi	rom NAS	SA)									
] [] []	[] (A	-] Elete)						
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE [] REMARKS: IOA AGREES WITH THE FMEA.												
	LS-1164 05-6VD-200 LIFE SUPPO 1164 CB, XOVR Y M.J. SAII M.J. SAII TY RI T NC A] [] [] [] [] [] [RATIONALE:	LS-1164 05-6VD-2002-2 LIFE SUPPORT 1164 CB, XOVR VALVE (1) M.J. SAIIDI ITY REDUNDANCS T NC A I] [] [] [] [REDUNDANCS T NC A I] [] [] [] [LS-1164 05-6VD-2002-2 LIFE SUPPORT 1164 CB, XOVR VALVE (1) M.J. SAIIDI ITY REDUNDANCY SCREI T NC A B] [] []] [] []] [] []] [] []	LS-1164 E 05-6VD-2002-2 LIFE SUPPORT 1164 CB, XOVR VALVE (1) M.J. SAIIDI ITY REDUNDANCY SCREENS T NC A B C] [] [] [] [] [] [] [] [(If different from NASA)] [] [] [] [RATIONALE: (If applicable) AD INAD	LS-1164 BASELINE 05-6VD-2002-2 NEW LIFE SUPPORT 1164 CB, XOVR VALVE (1) M.J. SAIIDI ITY REDUNDANCY SCREENS TNC A B C] [] [] [] []] [] [] []]] [] [LS-1164 BASELINE [05-6VD-2002-2 NEW [X LIFE SUPPORT 1164 CB, XOVR VALVE (1) M.J. SAIIDI ITY REDUNDANCY SCREENS CIL T REDUNDANCY SCREENS CIL T NC A B C] [] [] [] [] []] [] [] [] [] [] []] [] [] [] [] [] [] [] [] [] [] [] [] [] [] [] [] []						

REPORT DATE 03/10/88 C-97

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	SSMENT DATE: 12/28/87 NASA DATA: SSMENT ID: LS-1165 FMEA #: 06-2-1140-1 NEW [X]														
SUBSYSTE MDAC ID: ITEM:			LIFE 1165 ISOL			FES	BI	LINE	(1)						
LEAD ANA	LYSI	:	M.J.	SAII	DI										
ASSESSME	ASSESSMENT:														
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C															
NASA IOA	[3 [3	/1R /2R]]	[] []	•]	[P P]	[[P P]		[[]]	*
COMPARE	[/N]	[]	[]	[]		[ן	
RECOMMEN	DATI	ONS:	(1:	f dif	fer	ent	fro	om Nž	ASA)						
	[/]	[]	[]	[]	(AD	[D/DI		TE)
* CIL RE	TENT	NOI :	RATIO	NALE:	(1:	f ap	pli	lcab]	•		EQUAT EQUAT		[[]	
REMARKS: IOA AGRE CAPABILI		ITH '	THE FI	MEA,	IF)	LOSS	OI	F FUI					ING		

ASSESSME ASSESSME NASA FME	A: E (W (X									
SUBSYSTE MDAC ID: ITEM:	M:	LIFE : 1165 ISOL Y			S B	LINE	(1)			
LEAD ANA	LYST:	M.J. 9	SAII	DI						
ASSESSME	NT:									
	CRITICAI FLIGH		R	EDUNE	ANCY	SCRE	ENS		CIL	
	HDW/FU		A	2	ITEM					
NASA IOA	[3 /1F [3 /2F	2] 2]	[P [P]	[P [P))	[] []	•] •]	[[] *]
COMPARE	[/N]	[]	[]	[]	[]
RECOMMEN	DATIONS:	(If	dif	feren	t fr	om NA	SA)			
	[/]	[]	[]	[] (2] ADD/D] ELETE)
* CIL RE	TENTION	RATION	ALE:	(If	appl	icabl	•		_	_
								DEQUATE DEQUATE	-]]
REMARKS: IOA AGRE								N IS DUN		

IOA AGREES WITH THE FMEA, IF LOSS OF FUNCTION IS DUMPING CAPABILITY. THIS FAILURE MODE IS ALREADY COVERED BY THE FMEA 06-2-1140-1 (LS-1165).

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	'A: IE [] W [X]		
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 1166 ISOL VALVE, F	'ES B LINE (1)	
LEAD ANALYST:	M.J. SAIIDI		
ASSESSMENT:			
CRITICAL FLIGH	T	DANCY SCREENS	CIL ITEM
HDW/FU	NC A	B C	
NASA [3 /1R IOA [3 /3] [P]] []	[NA] [P] [] []	[] * []
COMPARE [/N] [N]	[N] [N]	[]
RECOMMENDATIONS:	(If differe	ent from NASA)	
[3 /2R] [P]	[NA] [P]	[] ADD/DELETE)
* CIL RETENTION	RATIONALE: (If	applicable) ADEQUATE INADEQUATE	

VALVE IS NOMINALLY OPEN, AND NO EFFECT. LOSS OF ALL LIKE AND UNLIKE REDUNDANCIES (FESA, DUMP, X-TIE, FCP RELIEF) WITH THIS FAILURE HAS NO EFFECT SINCE WATER DUMP CAN BE STILL MAINTAINED -A/L SUPPORT MAY BE LOST.

ASSESSMENT DATE: 12/28/87 NASA DATA: ASSESSMENT ID: LS-1167 BASELINE [] NASA FMEA #: 06-2-1165-2 NEW [X]										
SUBSYSTEM:LIFE SUPPORTMDAC ID:1167ITEM:ISOL VALVE, FES B LINE (1)										
LEAD ANALYST: M.J. SAIIDI										
ASSESSMENT:										
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C										
NASA [3/1R] [P] [P] [P] []* IOA [2/2] [] [] [] [X]										
COMPARE [N/N] [N] [N] [N]										
RECOMMENDATIONS: (If different from NASA)										
[2/2] [] [] [] [A] (ADD/DELETE)										
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []										
REMARKS: SEE MDAC-1235 FOR REMARKS. THE FMEA COVERED SEVERAL ITEMS INTO ONE ANALYSIS FOR LINES AND FITTINGS.										

ASSESSME ASSESSME NASA FME	NT I	D:	LS-11	S-1168 BASELINE [] S-2-1140-1 NEW [X]										
SUBSYSTE MDAC ID: ITEM:			1168			ISOL	VAI	.VE (1)	•				
LEAD ANA	LYST	:	M.J.	SAII	DI									
ASSESSMENT:														
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM														
	FLIGHT HDW/FUNC A B C										TEM			
NASA IOA	[3 [3	/1R /2R]]	[] []]	*								
COMPARE	[/N]	[]	[]	ľ]	C]			
RECOMMEN	DATI	ons:	(If	dif	fere	nt fr	om N	IASA)						
	[/]	[]	ſ]	[]] /DELI			
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []														

WITH THE FMEA.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	NASA DATA BASELINE NEW											
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 1169 SOLENOID, FES ISOL	VALVE (1)										
LEAD ANALYST:	M.J. SAIIDI											
ASSESSMENT:												
ASSESSMENT: CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C												
NASA [3 /1R IOA [3 /3] [P] [NZ] [] [A] [P]] []	[] * []									
COMPARE [/N] [N] [N] [N]	[]									
RECOMMENDATIONS:	(If different fro	om NASA)										
[3 /2R] [P] [N] [P] (Al	[] DD/DELETE)									
* CIL RETENTION 1	RATIONALE: (If appli	icable) ADEQUATE	۲ I									
REMARKS:		INADEQUATE										
REMARKS: THE IOA CONSIDERED THIS ITEM SEPARATELY AS PART OF THE EPD&C. HOWEVER, BASED ON THE ASSESSMENT OF ITS HARDWARE ITEM, THE ABOVE RECOMMENDATION IS MADE.												

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ASSESSMENT DATE: 12/28/87 ASSESSMENT ID: LS-1170 NASA FMEA #: 05-6VD-2026-1 SUBSYSTEM: LIFE SUPPORT											-			
SUBSYSTE MDAC ID: ITEM:	LT •		LIFE S 1170 SWITCH	JOFF	UNI					(1)			
LEAD ANA	LYST:		M.J. S	SAII	DI									
ASSESSMENT:														
ASSESSMENT: CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C														
NASA	•													
IOA	[3, [3,	/3]	[;			• 4]	ľ	-]	[]
COMPARE	[,	/N]	[N]		[]	1]	נ	N]	[]
RECOMMEN	DATIO	NS:	(If	dif	feren	t	fı	:c	om NA	SA)			
	[/	/]	[]		[]	[] (A	[.DD/D] DELETE)
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []														
REMARKS: BASED ON VERY LIMITED FMEA-EPD&C DATA (ONLY A CRIT SUMMARY WAS AVAILABLE), NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED.														

ASSESSMEN ASSESSMEN NASA FMEA		SA DATA ASELINI NEV		-							
SUBSYSTEM MDAC ID: ITEM:	[:	LIFE SU 1170 SWITCH,	JPPO]	RT			(1)				
LEAD ANAL	YST:	M.J. SZ	AIID	I							
ASSESSMENT:											
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C											
	-					_		-			
NASA IOA	$\begin{bmatrix} 3 / 11 \\ 3 / 3 \end{bmatrix}$		[P [] [] [Р]	[[P]	[[] *]
COMPARE	[/N] [[א	J (N]	[N]	[]
RECOMMEND	ATIONS	(If d	liff	erent	frc	om NAS	A)				
	[/] [[]] _. []	[]] DD/D] ELETE)
* CIL RET	* CIL RETENTION RATIONALE: (If applicable)										
DEMADKC .							IN	AD	EQUATE	[[j
REMARKS: BASED ON VERY LIMITED FMEA-EPD&C DATA (ONLY A CRIT SUMMARY WAS AVAILABLE), NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED.											

ACCECCME											BASELINE]	
SUBSYSTE MDAC ID: ITEM:			LIFE S 1171 SWITC			OL	VA	LVE	(1)				
LEAD ANA	LYSI	:	M.J. 3	SAII	DI									
ASSESSMENT:														
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C														
	nL	W/FU	NC	A										
NASA IOA	[3 [3	/1R /3]]	[P []]	[[NZ	A]]	[[Ρ]]	[[]]	*
COMPARE	[/N]	[N]	[N]	[N]	C]	
RECOMMEN	DATI	ONS:	(If	dif	feren	t	fro	om NA	SA)				
	[/]	[]	[]	[[.DD/D] ELI	ETE)
* CIL RE	TENI	ION	RATION	ALE:	(If	apj	pli	cabl	e)	AI	DEQUATE	r	1	
									I		DEQUATE	ĺ	j	
REMARKS: BASED ON VERY LIMITED FMEA-EPD&C DATA (ONLY A CRIT SUMMARY WAS AVAILABLE), NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED.														

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/8 LS-1172 05-6VD-	7 2026-2		NASA DATA BASELINI NEV	
SUBSYSTEM: MDAC ID: ITEM:	1172		OL VALVE	(1)	
LEAD ANALYST:	M.J. SA	IIDI			
ASSESSMENT:					
FLIG	IT		ANCY SCRE		CIL ITEM
HDW/FU	INC	A	В	С	
NASA [3 /14 IOA [3 /24	2] [2] [P] P]	[P] [P]	[P] [P]	[] * []
COMPARE [/N] []	[]	[]	[]
RECOMMENDATIONS:	(If đ	ifferen	t from NA	SA)	
C /] []	[]]	[]	[] ADD/DELETE)
* CIL RETENTION	RATIONAL	E: (If a	applicable	e)	
				ADEQUATE INADEQUATE	
REMARKS: BASED ON VERY LI AVAILABLE), NO I					

ASSESSMEN' ASSESSMEN' NASA FMEA	T DAI T ID: #:	'E :	12/28/ LS-117 05-6VI	2/28/87NASA DATAS-1173BASELINE95-6VD-2001-1NEW							Ξ []]			
SUBSYSTEM MDAC ID: ITEM:	:		LIFE 5 1173	LFE SUPPORT												
LEAD ANAL	YST:		M.J. 5	SAI		DI										
ASSESSMEN	T:															
CRITICALITY REDUNDANCY SCREENS CI FLIGHT IT							IL TEM	1								
	HDW/	'FUI	٩C	7	ł			В			С					
NASA IOA	[3/ [3/	'1R '3]	[I [P]]	[[P]	[[P]]	[[]]	*
COMPARE	[/	'N]	[]	1]	[N]	[N]	[]	
RECOMMEND	ATION	is:	(If	dif	ff	erent	5	fro	om NAS	SA)					
	[/	,]	[]	Į]	[/DE		TE)
* CIL RETI	ENTIO	N I	RATIONA	LE:	5	(If a	ap	pli	icable	•		DEQUATE]	
INADEQUATE [] REMARKS: BASED ON VERY LIMITED FMEA-EPD&C DATA (ONLY A CRIT SUMMARY WAS AVAILABLE), NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED.																

ASSESSMENT DATE: 12/28/87 NASA DATA: ASSESSMENT ID: LS-1174 BASELINE [] NASA FMEA #: 05-6VD-2001-2 NEW [X] LIFE SUPPORT SUBSYSTEM: MDAC ID: 1174 ITEM: CB, FES ISOL VALVE (1) LEAD ANALYST: M.J. SAIIDI ASSESSMENT: CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A В С

 IASA
 [3 /3]

 IOA
 [3 /3]

] NASA [[[] [[] *] l 1 ٢] COMPARE [/] [Γ ſ ſ 1 ן ٦] **RECOMMENDATIONS:** (If different from NASA)] ſ 1 (ADD/DELETE) * CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] ſ 1 INADEQUATE **REMARKS:** IOA AGREES WITH THE FMEA.

ASSESSME ASSESSME NASA FME	NT D NT I A #:	ATE: D:	12/28, LS-11 05-6V	/87 75 D-20	36-1								ASA DA BASELI 1	INE			
SUBSYSTE MDAC ID: ITEM:	M:		1175	FE SUPPORT							(1)						
LEAD ANA	LYST	:	M.J. 8	SAII	DI												
ASSESSME	NT:																
	F	LIGH	ITY T NC	R A)A		CY B	sc	REF	EN:	s c			CIL ITE		
								_	_		-	-	_		_	_	
NASA IOA	[3 [3	/1R /3]	[P []]		[[P]		[[Р]		[[]	*
COMPARE	[/N]	[N]		[N]		[N]		[]	
RECOMMEN	DATI	ons:	(If	dif	ferer	nt	f	iro	om	NAS	SA)					
	[1]	[]		[]		[]	(A)] DD/D] ELI	STE)
* CIL RE	TENT	ION	RATION	ALE:	(If	aj	pŗ)]i	ica	ble	2)	2 1			r	-	
											I		DEQUA: DEQUA:		[]	
REMARKS: BASED ON AVAILABL																	

ASSESSME	NT DATE: NT ID: A #:	IS-117	5 A			1	NASA DA BASELI I	INE			
SUBSYSTE MDAC ID: ITEM:	:M:	1175	IFE SUPPORT 175 OSITION INDICATION, FES ISOL VALVE								
LEAD ANALYST: M.J. SAIIDI											
ASSESSME	NT:										
	CRITICAL FLIGH		REDUN	DANCY	SCR	EENS			CIL TTE		
	HDW/FU		A	E	3	C	2				
NASA IOA	[3 /3 [3 /3	.) [] []	[[]]	[[]]		[[] *]	t
COMPARE	[/] []	[]	[]		[]	
RECOMMEN	DATIONS:	(If d	liffere	nt fr	om Na	ASA)					
	[/] []	[]	[]	(Al	[DD/D	-	SE)
REMARKS:	TENTION ES WITH		·	appl	icab)	Ì	ADEQUAT ADEQUAT		[]]	
COMPARE RECOMMEN * CIL RE REMARKS:	HDW/FU [3 /3 [3 /3 [/ DATIONS: [/	NC] [] [(If d] [RATIONAL]] liffere] LE: (If	[[nt fr []] :om N <i>i</i>	[[ASA) [Le)]]]	ſE	[] *]	EE

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ASSESSME ASSESSME NASA FME	ד ידיואי	'D•	TC-11								
SUBSYSTE MDAC ID: ITEM:			LIFE SUPPORT 1176 RESISTOR, FES ISOL VALVE (1)								
LEAD ANALYST: M.J. SAIIDI											
ASSESSME	ASSESSMENT:										
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM											
		W/FU		A		В		с		ITE:	M
NASA IOA	[3 [3	/3 /3]]	[[]]	[[]]	[[]]	[[] *]
COMPARE	[/]	[]	[]	[]	נ]
RECOMMEN	DATI	ONS:	(If	dif	feren	t fro	om NA	SA)			
	[/]	[]	[]	[] (A	[DD/D] ELETE)
* CIL RE					(If	appl	icabl	À	DEQUATE DEQUATE]]
IOA AGRE	ES W	ITH	THE FM	EA.							

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1177	48-1		Ň	IASA DATA BASELINE NEW]
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPP 1177 DIODE, FE		. VALVE ((1)			
LEAD ANALYST: M.J. SAIIDI							
ASSESSMENT:							
	ITY R	EDUNDA	NCY SCRE	ENS		CIL	
FLIGH HDW/FU			В	c	:	ITE	М
NASA [3 /3 IOA [3 /3] [] []]	[] []	[[]]	[[] *]
COMPARE [/] []	[]	[]	[]
RECOMMENDATIONS:	(If dif	ferent	from NA	SA)			
[/] []	[]	[] (A] .DD/D] ELETE)
* CIL RETENTION	RATIONALE:	(If a	pplicabl	А	DEQUATE DEQUATE]]
IOA AGREES WITH	THE FMEA.						

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1178		ASA DATA: BASELINE [] NEW [X]
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 1178 SUPPLY VALVE	, GALLEY (1)	
LEAD ANALYST:	M.J. SAIIDI		
ASSESSMENT:			
CRITICAL FLIGH		NDANCY SCREENS	CIL ITEM
HDW/FU	NC A	B C	
NASA [3 /1R IOA [2 /2] [P]] []	[NA] [P [] [) [] *] [X] .
COMPARE [N /N] [N]	[N] [N	ן א ן
RECOMMENDATIONS:	(If differe	ent from NASA)	
[3 /2R] [P]	[N] [P] [] (ADD/DELETE)
* CIL RETENTION	RATIONALE: (I	A	DEQUATE [] DEQUATE []
REMARKS: LOSS OF FUNCTION	(INABILITY TO	D ISOLATE THE L	INE) WILL RESULT IN

LOSS OF FUNCTION (INABILITY TO ISOLATE THE LINE) WILL RESULT IN CONTINUOUS FLOW OF WATER TO THE CABIN - LOSS OF MISSION. THIS FMEA WITH 1R FUNCTIONAL CRIT SEEMS TO BE INCONSISTENT WITH THE 06-2-1117-1 2R CRIT. IN THE FIRST FMEA, THE FUNCTION OF THE GALLEY IS MAINTAINED, WHEREAS THE SECOND FMEA THE GALLEY IS LOST.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1179	NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 1179 SUPPLY VALVE, GA	LLEY (1)	
LEAD ANALYST:	M.J. SAIIDI		
ASSESSMENT:			
CRITICAL FLIGH HDW/FU	Т	CY SCREENS B C	CIL ITEM
NASA [3 /2R IOA [2 /2] [P] [] [] [P] [P]] []	[] * [X]
COMPARE [N /N] [N] [N] [N]	[N]
RECOMMENDATIONS:	(If different	from NASA)	
[/] [] [] [] (A	[] DD/DELETE)
	RATIONALE: (If ap	plicable) ADEQUATE INADEQUATE	[]
		WATER TO THE GALLE GREEMENT WITH THE FI	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1179A	-1		NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPO 1179 SUPPLY VAI		ALLEY (1)		
LEAD ANALYST:	M.J. SAII	DI			
ASSESSMENT:					
CRITICAL FLIGH HDW/FU			NCY SCREE B	NS C	CIL ITEM
NASA [3 /2R IOA [2 /2] [P]] [NA]	[P] []	[] * [X]
COMPARE [N /N] [N) (ן א ן	[N]	[N]
RECOMMENDATIONS:	(If dif	ferent	from NAS.	A)	
[/] [] []	[] (A	[] DD/DELETE)
* CIL RETENTION :	RATIONALE:	(If ap	-		[]
IF NO OTHER MEAN 2/2 STANDS, OTHER	RWISE IOA I	IS AGRE	EMENT WI	TH THE FMEA	Y, THEN THI . THIS FMI

IF NO OTHER MEANS EXIST TO SUPPLY WATER TO THE GALLEY, THEN THE 2/2 STANDS, OTHERWISE IOA IS AGREEMENT WITH THE FMEA. THIS FMEA IS FOR LINES AND FITTINGS WHICH IS COVERED UNDER INDIVIDUAL ITEMS.

ASSESSMENT DATE: 1 ASSESSMENT ID: 1 NASA FMEA #: 0	LS-1179B	NASA DATA: BASELINE [] NEW [X]
	LIFE SUPPORT 1179 SUPPLY VALVE, GALLEY (1)	
LEAD ANALYST:	M.J. SAIIDI	
ASSESSMENT:		
CRITICALIY FLIGHT HDW/FUNC		CIL ITEM C
NASA [3 /1R IOA [2 /2] [P] [P] []] [] [] []	P] []*] [X]
COMPARE [N /N]] [N] [N] []	й] [И]
RECOMMENDATIONS:	(If different from NASA)	
[3 /2R]] [P] [P] []	P] [] (ADD/DELETE)
	ATIONALE: (If applicable)	ADEQUATE [] ADEQUATE []
2/2 STANDS, OTHERW	EXIST TO SUPPLY WATER TO T WISE IOA IS AGREEMENT WITH	THE FMEA. THIS

HE FAILURE MODE IS ALREADY COVERED BY THE FMEA 06-2-1163-1 (LS-1179).

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/87 LS-1180 06-2-1163-	-2	NASA DATA BASELINE NEW	-				
	1180	IFE SUPPORT 180 UPPLY VALVE, GALLEY (1)						
LEAD ANALYST: M.J. SAIIDI								
ASSESSMENT:								
FLIGH	Т	EDUNDANCY SC		CIL ITEM				
HDW/FU	NC A	В	С					
NASA [3 /2R IOA [2 /2] [P]] [] [NA]] []	[P] []	[] * []				
COMPARE [N /N) [N] [N]	[N]	[]				
RECOMMENDATIONS:	(If diff	ferent from	NASA)					
. [/] [] []	[] (A	[] DD/DELETE)				
* CIL RETENTION	RATIONALE:	(If applica	ble) ADEQUATE INADEQUATE	[] []				
REMARKS: FMEA COVERED AS PART OF THE LINES/FITTINGS ANALYSIS. IF NO OTHER MEANS EXIST TO SUPPLY WATER TO THE GALLEY, THEN THE 2/2 STANDS, OTHERWISE IOA IS IN AGREEMENT WITH THE FMEA.								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	NASA DATA BASELINE NEW						
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 1181 SOLENOID, GALLEY VALVE (1)						
LEAD ANALYST:	M.J. SAIIDI						
ASSESSMENT:							
CRITICAL FLIGH HDW/FU	T	rs C	CIL ITEM				
NASA [3 /1R IOA [2 /2	[P] [NA] [] [] [] []	P]]	[] * [X]				
COMPARE [N /N] [N] [N] [[И	[N]				
RECOMMENDATIONS:	(If different from NASA	.)					
[3 /2R] [P] [N] [[] DD/DELETE)				
* CIL RETENTION	RATIONALE: (If applicable) I	ADEQUATE NADEQUATE					
THE IOA CONSIDER	ED THIS ITEM SEPARATELY AS N THE ASSESSMENT OF ITS HA S MADE.						

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1182	-1	NASA DATA BASELINE NEW	-				
SUBSYSTEM:LIFE SUPPORTMDAC ID:1182ITEM:SOLENOID, GALLEY VALVE (1)								
LEAD ANALYST: M.J. SAIIDI								
ASSESSMENT:								
CRITICAL FLIGH HDW/FU	Г	DUNDANCY SCRE B	ENS C	CIL ITEM				
nDw/F0.	A A	Б	L.					
NASA [3 /2R IOA [2 /2] [P]] [] [P]] []	[P] []	[] * [X]				
COMPARE [N /N] [N] [N]	[N]	[N]				
RECOMMENDATIONS:	(If diff	erent from NA	SA)					
ſ /] [] []	[] (A	[] DD/DELETE)				
* CIL RETENTION		(If applicabl	e) ADEQUATE INADEQUATE	[]				

THE IOA CONSIDERED THIS ITEM SEPARATELY AS PART OF THE EPD&C. HOWEVER, BASED ON THE ASSESSMENT OF ITS HARDWARE ITEM, IOA AGREES WITH THE FMEA.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	1.5-1183	NASA DA BASELI N								
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 1183 SWITCH, GALLEY	VALVE (1)								
LEAD ANALYST:	LEAD ANALYST: M.J. SAIIDI									
ASSESSMENT:										
CRITICAL FLIGH	ITY REDUND T	DANCY SCREENS	CIL ITEM							
HDW/FU	NC A	B C								
NASA [3 /2R IOA [2 /2] [P]] []	[P] [P] [] []	[]* [X]							
COMPARE [N /N] [N]	[и] [и]	[N]							
RECOMMENDATIONS:	(If differen	t from NASA)								
[/] []	[][]	[] (ADD/DELETE)							
* CIL RETENTION	RATIONALE: (If	applicable) ADEQUAT INADEQUAT								
REMARKS: IOA AGREES WITH	THE FMEA.									

ASSESSMENT DATH ASSESSMENT ID: NASA FMEA #:	: 12/28/8 LS-1183 05-6VD-	87 3A -2033-2		NASA DATA BASELINE NEW				
SUBSYSTEM:LIFE SUPPORTMDAC ID:1183ITEM:SWITCH, GALLEY VALVE (1)								
LEAD ANALYST: M.J. SAIIDI								
ASSESSMENT:								
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C								
·		וסז	ר אזא ז	וסז	۲ ۱ +			
NASA [3 /1 IOA [2 /2]	[P] []		[P] []	[] * [X]			
COMPARE [N /N]	[N]	[N]	[N]	[N]			
RECOMMENDATIONS	: (If a	differen	t from NAS	SA)				
[/]	[]	[]		[] ADD/DELETE)			
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []								
REMARKS: BASED ON VERY I AVAILABLE), NO				ILY A CRIT S	UMMARY WAS			

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/87 LS-1184 05-6VD-2	033-2		NASA DATA BASELINE NEW				
SUBSYSTEM:	LIFE SUP 1184	PORT	VALVE (1)					
LEAD ANALYST:	M.J. SAI	IDI						
ASSESSMENT:								
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM								
HDW/FU	NC 2	A	В	С				
NASA [3 /1R IOA [2 /2] [:] [P]]	[NA] []	[P] []	[] * [X]			
COMPARE [N /N] []	И]	[N]	[N]	[N]			
RECOMMENDATIONS:	(If di	fferent	from NAS	SA)				
[/] []	[]	[] . (A	[] .DD/DELETE)			
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []								
REMARKS: BASED ON VERY LI AVAILABLE), NO D	MITED FMEA ETAIL ASSI	A-EPD&C ESSMENT	DATA (ON OF THIS	LY A CRIT S	UMMARY WAS			

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1185			NASA DATA BASELINE NEW					
SUBSYSTEM:LIFE SUPPORTMDAC ID:1185ITEM:SWITCH, GALLEY VALVE (1)									
LEAD ANALYST: M.J. SAIIDI									
ASSESSMENT:	ASSESSMENT:								
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM									
HDW/FU		A	В	С	LIEM				
NASA [3 /2R IOA [2 /2] [P]]	[P] []	[P] []	[]*				
COMPARE [N /N] []	N]	[N]	[N]	[]				
RECOMMENDATIONS:	(If di	fferent	from NA	SA)					
[/] []	[]	[]	[] ADD/DELETE)				
* CIL RETENTION REMARKS:		: (If a	pplicabl	e) ADEQUATE INADEQUATE					
IOA AGREES WITH	THE FMEA.								

, , ,							ASA DA BASELI N	NE								
SUBSYSTE MDAC ID: ITEM:	M:		LIFE \$ 1186	SUPP	ORT				GAL	'TI	ΞY	VALVE	(:	1)		
LEAD ANA	LEAD ANALYST: M.J. SAIIDI															
ASSESSME	ASSESSMENT:															
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C																
		-					-				-					
NASA IOA	[3 [3	/1R /3]	[P []	1	[F [)]] [P]		[[]	*
COMPARE	[/N]	[N]	I	[N]		[N]		[]	
RECOMMEN	DATIC	ons:	(If	dif	feren	nt	fr	om	NAS	A))					
	C	/]	[]	ĺ	[]		[(AI	[DD/D] ELF	ETE)
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE []																
REMARKS:	INADEQUATE []															
BASED ON AVAILABL																

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ASSESSMEI ASSESSMEI NASA FMEZ	NT D NT I A #:	ATE: D:	12/28 LS-11 05-6V	12/28/87 NASA DATA: LS-1186A BASELINE 05-6VD-2042-2 NEW								
SUBSYSTEI MDAC ID: ITEM:	M:		LIFE 1186	LIFE SUPPORT								
LEAD ANALYST: M.J. SAIIDI												
ASSESSME	NT:											
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM												
			NC	A		В		(2	TIC	JT 1	
NASA IOA	[3 [3	/3 /3]	[[]]	[[]]	[[]]	[[] *]	
COMPARE	[1]	[]	٢]	[]	נ]	
RECOMMENI	DATI	ons:	(If	dif	feren	t fr	om NA	SA)				
	[/]	[]	[]	۵		[ADD/D] DELETE)	
* CIL RET REMARKS: IOA AGREI					(If	appl	icabl	i	ADEQUATE ADEQUATE]	

ASSESSME	ENT DATE: ENT ID: EA #:	LS-1187									
SUBSYSTE MDAC ID: ITEM:	EM :	1187	JPPORT GALLEY	VALV	7E (1)						
LEAD ANA	LEAD ANALYST: M.J. SAIIDI										
ASSESSME	ENT:										
	CRITICAL FLIGH		REDUNI	DANCY	SCRE	ENS		CII			
	HDW/FU		A	E	3	C	2	ITI	SM		
NASA IOA	[3 /3 [3 /3] [[[]]	[[]]	[[] *]		
COMPARE	[/] (:]	[]	[3	[]		
RECOMMEN	DATIONS:	(If d	lifferen	nt fr	om NA	SA)					
	[/] [:]	[]	[[ADD/I] DELETE)		
* CIL RE	TENTION	RATIONAI	LE: (If	appl	icabl	2	ADEQUATE ADEQUATE]]		
IOA AGRE	ES WITH	THE FMEA	1.								

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ASSESSME	ENT DATE: 12/28/87 NASA DATA: ENT ID: LS-1188 BASELINE EA #: 05-6VD-2044-1 NEW								[(]			
SUBSYSTE MDAC ID: ITEM:			·	LIFE SUPPORT 1188 RESISTOR, GALLEY VALVE (1)									
LEAD ANALYST: M.J. SAIIDI													
ASSESSME	ASSESSMENT:												
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM													
	H		W/FU			A		В		с		TIT	714
NASA IOA	[[3 3	/3 /3]]	[[]]	[[]]	[[]]		[[] *]
COMPARE	[/]	[]	ſ]	[]		נ]
RECOMMEN	DAI	I	ons:		(If d	iffer	ent f	rom N	iasa)				
	[/]	[]	[]	[]	(A] DD/I] DELETE)
* CIL RE REMARKS:						·	f app	licab	·	ADEQU ADEQU		[[]]
IOA AGRE	E9	Ψ.	111	TUÇ	THEA	•							

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/87 LS-1189 05-6VD-2005-1	NASA DATA: BASELINE [] NEW [X]						
SUBSYSTEM:	LIFE SUPPORT 1189 CIRCUIT BREAKER, GALL	EY VALVE (1)						
LEAD ANALYST: M.J. SAIIDI								
ASSESSMENT:								
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C								
HDW/FUN	NC A B	C						
NASA [3 /1R IOA [2 /2] [P] [P]] [] []	[P] []* [] []						
COMPARE [N /N] [N] [N]	[N] []						
RECOMMENDATIONS:	(If different from)	NASA)						
[/	3 [] []	[] [] (ADD/DELETE)						
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []								
REMARKS: BASED ON VERY LIMITED FMEA-EPD&C DATA (ONLY A CRIT SUMMARY WAS AVAILABLE), NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED.								

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1190										
LEAD ANALYST: M.J. SAIIDI										
	EDUND	ANCY	SCRE	ENS		CIL	-			
		В		C	2	TLE	M			
] [] []]	[[]]	[[]]	[[] *]			
] []	נ]	[]	נ]			
(If dif	feren	t fr	om NA	SA)						
] []	[]	[]	[ADD/D] DELETE)			
	(If	appl	icabl	· 1]]			
	LS-1190 05-6VD-20 LIFE SUPP 1190 CIRCUIT B M.J. SAII M.J. SAII M.J. SAII LITY R HT JNC A] [] [] [] [] [] [] [LS-1190 05-6VD-2005-2 LIFE SUPPORT 1190 CIRCUIT BREAKE M.J. SAIIDI LITY REDUND HT JNC A] []] []] []] []] []] [] REDUND HT JNC A] []] []]] []] []] []]] []] []]] []] []] []]] []]] []	LS-1190 05-6VD-2005-2 LIFE SUPPORT 1190 CIRCUIT BREAKER, G M.J. SAIIDI LITY REDUNDANCY HT JNC A B] [] [] [] [LS-1190 05-6VD-2005-2 LIFE SUPPORT 1190 CIRCUIT BREAKER, GALLEY M.J. SAIIDI LITY REDUNDANCY SCREE HT JNC A B] [] []] [] []] [] []] [] []	LS-1190 05-6VD-2005-2 LIFE SUPPORT 1190 CIRCUIT BREAKER, GALLEY VAN M.J. SAIIDI LITY REDUNDANCY SCREENS HT JNC A B (] [] [] [] []] [] [] [] [] []] [] [] [] [] [] [] [] [] [] [] [] [] [] (If different from NASA)] [] [] [] [] [] [] RATIONALE: (If applicable)	LS-1190 BASELINI 05-6VD-2005-2 NEW LIFE SUPPORT 1190 CIRCUIT BREAKER, GALLEY VALVE (1) M.J. SAIIDI LITY REDUNDANCY SCREENS HT JNC A B C] [] [] []] [] [] []] [] [] [LS-1190 BASELINE [05-6VD-2005-2 NEW [X LIFE SUPPORT 1190 CIRCUIT BREAKER, GALLEY VALVE (1) M.J. SAIIDI LITY REDUNDANCY SCREENS CII HT ITE UNC A B C] [CILENT CONDUCTIONALE: (IF applicable) ADEQUATE [INADEQUATE [

ASSESSME	NT I	D:	LS-11	12/28/87 NASA DATA: LS-1191 BASELINE 06-2-1115-1 NEW							[]]	
SUBSYSTE MDAC ID: ITEM:			1191	IFE SUPPORT 191 JMP ISOL VALVE (1)									
LEAD ANALYST: M.J. SAIIDI													
ASSESSME	NT:												
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM													
			NC	A		В			с		T.1.F1	1	
NASA IOA	[3 [3	/1R /2R]]	[P [P]]	[P [P]]	[P] F]		[[] *]	
COMPARE	[/N]	[]	C]	[]	ן א		[]	
RECOMMEN	DATI	ons:	(If	dif	fere	nt fr	om 1	VASA)					
	[/]	[]	[]	[]	(AD	[D/DI] Elete)	
* CIL RE	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []												
	REMARKS: IOA IS IN AGREEMENT WITH THE FMEA. FCP RELIEF VALVE/LINE IS ALSO AVAILABLE TO EXPEL WATER.												

REPORT DATE 03/10/88 C-131

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ASSESSMENT DATI ASSESSMENT ID: NASA FMEA #:	LS-1191A	LS-1191A BASELINE								
SUBSYSTEM: MDAC ID: ITEM:	1191									
LEAD ANALYST: M.J. SAIIDI										
ASSESSMENT:										
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C										
HDW/1	UNC A	В	C							
NASA [3 /2 IOA [3 /2	R] [P R] [P] [NA] [] [P] [P] F]	[] * []						
COMPARE [/1] [ן נאן נ	N]	[]]						
RECOMMENDATIONS	: (If diff	erent from NASA)							
[/] [] [] [] (AI	[] DD/DELETE)						
* CIL RETENTION	RATIONALE:	(If applicable)								
	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []									
AVAILABLE TO EX										

REPORT DATE 03/10/88 C-132

C - 3

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:										
SUBSYSTEM: MDAC ID: ITEM:	1191									
LEAD ANALYST: M.J. SAIIDI										
ASSESSMENT:										
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM										
HDW/FU	NC A	B C								
NASA [3 /1R IOA [3 /2R] [P]] [P]	[P] [P] [P] [F]	[]*							
COMPARE [/N] []	[] [И]	[]							
RECOMMENDATIONS:	(If differer	nt from NASA)								
[/] []	[] [] (AI	[] DD/DELETE)							
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE []										
INADEQUATE [] REMARKS: IOA IS IN AGREEMENT WITH THE FMEA. FCP RELIEF VALVE/LINE IS ALSO AVAILABLE TO EXPEL WATER. THIS FMEA IS SAME AS THE 06-2-1161-1 FOR THIS ITEM AND FAILURE MODE.										

ASSESSME ASSESSME NASA FME	NT ID:	12/28/87 LS-1192 06-2-111			NASA DATA BASELINE NEW	
SUBSYSTE MDAC ID: ITEM:	M:	LIFE SUI 1192 DUMP ISC		/E (1)		
LEAD ANA	LYST:	M.J. SAI	IIDI			
ASSESSME	NT:					
	CRITICAI FLIGH	IT		DANCY SCRE		CIL ITEM
	HDW/FU	INC	Α	В	С	
NASA IOA	[3 /1F [3 /3		P]]	[NA] []	[P] []	[]*
COMPARE	[/N] [И]	[N]	[N]	[]]
RECOMMEN	DATIONS:	(If di	ifferer	nt from NA	SA)	
	[3 /2]	2] [P]	[NA]	[P] (A	[] ADD/DELETE)
* CIL RE	TENTION	RATIONAL	E: (If	applicabl	e) ADEQUATE INADEQUATE	
REMARKS:						

THERE IS NO SIGNIFICANT EFFECT, EXCEPT FOR WANTING TO ISOLATE THE LINE DOWNSTREAM DUE TO LEAKAGE FOR EXAMPLE. LOSS OF FUNCTION (INABILITY TO ISOLATE THE LINE UNDER LEAKAGE) WILL RESULT IN LOSS OF WATER FROM TANK B (TANK A AND X-OVER VALVES ARE OPERATIONALLY CLOSED). PRESENCE OF WATER AND/OR AVAILABILITY OF TWO TANKS ONLY ARE CONSIDERED MISSION LOSS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/8 ⁻ LS-1193 06-2-110	7 65-2			NASA DATA BASELINI NEV	
SUBSYSTEM: MDAC ID:	LIFE SU 1193	PPORT				
ITEM:	DUMP ISC	OL VALV	E (1))	-	
LEAD ANALYST:	M.J. SA	IIDI				
ASSESSMENT:						
CRITICAL FLIGH	ITY T	REDUND	ANCY	SCREE	NS	CIL ITEM
HDW/FU	NC	A	В		С	
NASA [3 /1R IOA [2 /1R] [] [P] P]	[P [P]	[P] [F]	[] * [X]
COMPARE [N /] []	[]	[И]	[N]
RECOMMENDATIONS:	(If di	ifferent	t fro	om NAS	A)	
[2 /2] []	[]		[A] ADD/DELETE)
* CIL RETENTION	RATIONAL	2: (If a	appli) ADEQUATE INADEQUATE	
REMARKS:						
CONTINUOUS FLOW MIDBODY UNLESS T						
AND B OUTLET VAL	VES AND >	-OVER V	VALVE	E. IN	THIS CASE,	, THE USE OF
A/L SUPPORT (EVA						

WATER MANAGEMENT - MISSION AND INC TANKS ARE LOSI FROM THE WATER MANAGEMENT - MISSION IMPACT. NO REDUNDANCY EXISTS TO COMPENSATE FOR THE LOSS. ALSO, LOSS OF LIKE AND UNLIKE REDUNDANCIES (FESB, FCP RELIEF) WITH THIS FAILURE RESULTS IN CONTINUOUS FLOW OF WATER INTO CABIN - FCP OPERATING. THIS FMEA INCLUDES SEVERAL ITEMS INTO ONE ANALYSIS FOR LINES AND FITTINGS.

REPORT DATE 03/10/88

C-135

ASSESSME ASSESSME NASA FME	NT	ID:	LS-1	.194	-2			NASA BASE	LINE		
SUBSYSTE MDAC ID: ITEM:	M:		1194			P ISOL	VALVE	(1)			
LEAD ANA	LYS	T:	M.J.	SAII	DI						
ASSESSME	NT:										
		TICAL FLIGH DW/FU	r	R		DANCY S B	CREEN	s c		CIL ITE	
NASA		·				_	г	-		r	1 *
IOA	[3 /3	j	[j	[N] []	Ľ	- j		ĺ	j
COMPARE	[/N]	[N]	[N]	[N]		[]
RECOMMEN	DAT	IONS:	(1	f dif	ferer	nt from	NASA)			
	[3 /2R]	[_ P]	[NA]	[P]	(AI	[00/01] ELETE)
* CIL RE	TEN'	TION 1	RATIC	NALE:	(If	applic	-	ADEQU. NADEQU.		[[]
REMARKS:											

THE IOA CONSIDERED THIS ITEM SEPARATELY AS PART OF THE EPD&C. HOWEVER, BASED ON THE ASSESSMENT OF ITS HARDWARE ITEM, THE ABOVE RECOMMENDATION IS MADE.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	SSMENT DATE:12/28/87NASA DATA:SSMENT ID:LS-1195BASELINEA FMEA #:06-2-1115-1NEWSYSTEM:LIFE SUPPOPT								
SUBSYSTEM: MDAC ID: ITEM:	1195	ITE SUFFORI							
LEAD ANALYST:	M.J. SAIIDI								
ASSESSMENT:									
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM									
HDW/FU	INC A	B C							
NASA [3 /1F IOA [3 /2F	[P] [[P] [[P] [[P] [P] [P] [P]	[]*						
COMPARE [/N] [] [[]][]][]][]][]][]][]][]][]][]][]][]][]]	[]						
RECOMMENDATIONS:	(If different	from NASA)							
[/] [] [[] [] (A	[] .DD/DELETE)						
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []									
INADEQUATE [] REMARKS: THE IOA CONSIDERED THIS ITEM SEPARATELY AS PART OF THE EPD&C. HOWEVER, BASED ON THE ASSESSMENT OF ITS HARDWARE ITEM, IOA AGREES WITH THE FMEA.									

ASSESSME ASSESSME NASA FME	NT DATE: NT ID: A #:	12/28/8 LS-1196 05-6VD-	7 2030-1		NASA DAT BASELII NI				
SUBSYSTE MDAC ID: ITEM:	M:	LIFE SU 1196	PPORT	ISOL VALVI	E (1)				
LEAD ANA	LYST:	M.J. SA	IIDI						
ASSESSME	NT:								
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM									
	HDW/FU	NC	A	В	С				
NASA IOA	[3 /1R [3 /2R) [] [P] P]	[P] [P]	[P] [P]	[] * []			
COMPARE	[/N] []	[]]	[]	[]]			
RECOMMEN	DATIONS:	(If d	lifferer	nt from NA	ASA)				
	[/] [Ĵ	[]	[]	[] (ADD/DELETE)			
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []									
REMARKS: BASED ON AVAILABL	VERY LI E), NO D	MITED FM ETAIL AS	EA-EPD SESSMEN	C DATA (C T OF THIS	ONLY A CRIT	SUMMARY WAS			

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	: [] [X]									
SUBSYSTEM:	LIFE SUPPORT									
LEAD ANALYST:	M.J. SAIII	DI								
ASSESSMENT:										
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM										
HDW/FU	NC A	В	С							
NASA [3 /1R IOA [3 /2R] [P] [P] [NA]] [P]	[P] [P]	[] * []						
COMPARE [/N] [] [N]	[]	[]						
RECOMMENDATIONS:	(If diff	ferent from NAS	A)							
[/	J [] []	[] (A)	[] DD/DELETE)						
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE []										
INADEQUATE [] REMARKS: BASED ON VERY LIMITED FMEA-EPD&C DATA (ONLY A CRIT SUMMARY WAS AVAILABLE), NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED.										

	12/28/87 LS-1197 05-6VD-2030-2	NASA DATA: BASELINE [] NEW [X]
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 1197 SWITCH, DUMP ISOL VALVE	(1)

LEAD ANALYST: M.J. SAIIDI

ASSESSMENT:

	CR		ICAL	REDUNDANCY SCREENS										CIL ITEM					
	HDW/FUNC						A			В							С		
NASA IOA	[[3 3	/1R /2R]]		[[P P]]		[[N# P]]	[[P P]]		[[]]	*
COMPARE	۵		/N]		[]		[N]	[]		۵]	
RECOMMEN	IDAT	гта	ONS:		(Tf	di	if1	fer	ent		fra	m	NASA	•					

RECOMMENDATIONS: (If different from NASA)

[/] [] [] [] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [] INADEQUATE []

REMARKS: BASED ON VERY LIMITED FMEA-EPD&C DATA (ONLY A CRIT SUMMARY WAS AVAILABLE), NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED.

ASSESSME ASSESSME NASA FME	NT DA NT II A #:	ATE: D:	12/28/ LS-119 05-6VI	/87 98 0-20	30-1			ł	NASA DATA BASELINI NEV		
SUBSYSTE	SUBSYSTEM:LIFE SUPPORTMDAC ID:1198										
LEAD ANA	LYST	:	M.J. 5	SAII	DI						
ASSESSMENT:											
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C											
	HDI	W/FUI	NC	А			3	C			
NASA IOA	[3 [3	/1R /2R]]	[P [P]	[] []	?] ?]	[] []	?] ?]	[[] *]
COMPARE	[/N]	[]	[]	[[]
RECOMMEN	DATIC	ONS:	(If	dif	feren	t fi	com NA	SA)			
	[/]	[]	[]	[]] ADD/D] ELETE)
* CIL RE	* CIL RETENTION RATIONALE: (If applicable)										
ADEQUATE [] INADEQUATE []											
REMARKS: BASED ON VERY LIMITED FMEA-EPD&C DATA (ONLY A CRIT SUMMARY WAS AVAILABLE), NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED.											

REPORT DATE 03/10/88 C-141

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ASSESSME ASSESSME NASA FME	NT D NT I A #:	DATE:	12/28 LS-11 05-6V	/87 99 D-20	41-1						ASA DAT BASELIN NE		-	
SUBSYSTE MDAC ID: ITEM:	M:		1199	SUPP	ORT				UMP	IS	SOL VAL	VE (1	.)	
LEAD ANA	LYSI	::	M.J.	SAII	DI									
ASSESSME	NT:													
	F	LIGH	ITY T NC	R A		DANC	CY B	SCR	EENS	s c		CII ITE	-	
NASA IOA	[3 [3	/1R /3]]	[P []]	[[P]]	[[Ρ]	[[]]	*
COMPARE	[/N]	[N]	Ľ	N]	[N]	[]	
RECOMMEN	DATI	ONS:	(If	dif	fere	nt f	fro	om N.	ASA)				
	[1]	[]	[]	[[ADD/D])ELI	ETE)
* CIL RE	TENT	NOI :	RATION	ALE:	(If	apŗ	ol i	lcab			DEQUATE DEQUATE]]	
REMARKS: BASED ON AVAILABL														

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1199A	DATA: LINE [] NEW [X]					
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPO 1199 POSITION IN		DUMP ISOL V	VALVE (1)			
LEAD ANALYST:	M.J. SAIID	I					
ASSESSMENT:							
CRITICAL FLIGH		DUNDANCY S	CREENS	CIL ITEM			
HDW/FU	_	C A B C					
NASA [3 /3 IOA [3 /3] []	[] []	[]*			
COMPARE [/	3 [3] []	[]	[]			
RECOMMENDATIONS:	(If diffe	erent from	NASA)				
[/] []] []	[]	[] (ADD/DELETE)			
* CIL RETENTION :	RATIONALE: ((If applic	able) ADEQUA INADEQUA				
IOA AGREES WITH	THE FMEA.						

ASSESSME ASSESSME NASA FME	NT	тп.	T.S-12	ກົດ	48-1			1	NASA DATA BASELINE NEW		-
SUBSYSTE MDAC ID: ITEM:			LIFE 1200 DIODE			SOL V	ALVE	(1)			
LEAD ANA	LYS	т:	M.J.	SAII	DI						
ASSESSME	NT:										
		TICAL FLIGH	ITY	R	EDUNE	DANCY	SCRI	EENS		CII ITI	
			IT NC	A		E	(с	1.1.1	5 M	
NASA IOA	[[3 /3 3 /3]	[[]]	[[]]	[[]]	[[] *]
COMPARE	[/]	[]	[]	C]	C]
RECOMMEN	DAT	IONS:	(11	e dif:	ferer	nt fr	om N2	ASA)			
	[/]	[]	[]	[] ADD/I] DELETE)
* CIL RE REMARKS: IOA AGRE					(If	appl	icab]		ADEQUATE ADEQUATE]]

ASSESSMENT ASSESSMENT NASA FMEA	ID:	LS-1201										
SUBSYSTEM: MDAC ID: ITEM:		LIFE SU 1201 RESISTO		P ISC	DL VAL	VE ((1)					
LEAD ANALYS	ST:	M.J. SA	IIDI									
ASSESSMENT	:											
CRI	ITICALI FLIGHT	TY	REDUNE	ANCY	SCRE	ENS		CII	_			
F	IDW/FUN							ITEM				
NASA [IOA [3 /3 3 /3] [] []]	[[]]	[[]]	[[] *]			
COMPARE [1] []	[]	Ľ]	[]			
RECOMMENDAT	CIONS:	(If d	ifferen	t fr	om NA	SA)						
[/] []	[]	[] (A	[.DD/D] DELETE)			
* CIL RETEN REMARKS:			·	appl	icabl	À	DEQUATE DEQUATE]]			
IOA AGREES	WITH T	ne rmea	•									

ASSESSME ASSESSME NASA FME	11m T	D •	TO 10														
SUBSYSTE MDAC ID: ITEM:			1202	FE SUPPORT 02 , DUMP ISOL VALVE (1)													
LEAD ANA	LYST	:	M.J.	SAI	IC	DI											
ASSESSME	NT:																
	F	LIGH				EDUND	Al			SCRE	EN				CIL ITEN	м	
	HD	W/FU	NC	4	A			E	3			С					
NASA IOA	[3 [3	/1R /2R]]	[P P]]		[F [F))]	[[P P]]		[[]]	*
COMPARE	٢	/N]	[]		[]	[]		[]	
RECOMMEN	DATI	ONS:	(If	di	ff	eren	t	fr	•c	om NA	.SA)					
	[/].	[]		[]	[]	ADI	[D/ DI] ELF	ETE)
* CIL RE	TENT	ION	RATION	ALE	:	(If	aj	ppl	.i	.cabl							
											I	A NA	DEQUATE DEQUATE	1	[[]]	
REMARKS: BASED ON AVAILABL																	

ASSESSMENT ASSESSMENT NASA FMEA	T DATE: T ID: #:	12/28/8 LS-1203 05-6VD-2	28/87 NASA DATA: -1203 BASELINE [] -6VD-2008-2 NEW [X]									
SUBSYSTEM: MDAC ID: ITEM:		1203	FE SUPPORT 03 , DUMP ISOL VALVE (1)									
LEAD ANALYST: M.J. SAIIDI												
ASSESSMENT	:											
CR	RITICAL FLIGH	ITY	REDUNI	DANCY	SCRE	ENS		CII ITE				
	HDW/FU								IM.			
NASA [IOA [3 /3 3 /3] []	[[]]	[[]]	[[] *]			
COMPARE [. /] []	[]	[]	[]			
RECOMMENDA	TIONS:	(If di	ifferer	nt fr	om NA	SA)						
[. /] []	[]	[] (] DELETE)			
* CIL RETE REMARKS:				appl	icabl		ADEQUATE ADEQUATE	[]			
IOA AGREES	WITH ?	THE FMEA.										

ASSESSMEN ASSESSMEN NASA FMEA	T ID:	LS-	-1204	-1				NASA DA BASELI N	INE]
SUBSYSTEM MDAC ID: ITEM:	:	120	FE SUPP 04 1P VALV)						
LEAD ANAL	YST:	м.:	J. SAII	DI							
ASSESSMEN	т:										
C		ALITY GHT	R	EDUNI	DANCY	SCREI	ENS			CIL ITE	
		FUNC	A		В		1	с			
NASA IOA	[3/ [3/	1R] 2R]	[P [P]]	[P [P]]	[P] F]		[[] *]
COMPARE	[/	נ א'	C]	[]	[N]		[]
RECOMMEND	ATION	IS:	(If dif	ferei	nt fr	om NAS	SA)				
	[/]	[]	[]	[]	(AI] ם / סכ] DELETE)
* CIL RET REMARKS: IOA AGREE				(If	appl.	icable	•	ADEQUAT ADEQUAT]]

REPORT DATE 03/10/88 C-148

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/87 LS-1204A 06-2-1161-1	S-1204A BASELINE (
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 1204 DUMP VALVE (1)									
LEAD ANALYST:	M.J. SAIIDI									
ASSESSMENT:										
CRITICAI FLIGH		NCY SCREENS	CIL ITEM							
HDW/FU	INC A	B C								
NASA [3 /1F IOA [3 /2F	[P] [P]	[NA] [P] [P] [F]	[] *							
COMPARE [/N] []	[N] [N]	[]							
RECOMMENDATIONS:	(If different	from NASA)								
[/] []	[] [] (Al	[] DD/DELETE)							
* CIL RETENTION	RATIONALE: (If a	oplicable) ADEQUATE INADEQUATE	[]							
	THE FMEA. THIS I LINES AND FITTIN	TMEA INCLUDES SEVERAL								

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1205	LS-1205 BASELINE 06-2-1133-2 NEW							
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 1205 DUMP VALVE (1)								
LEAD ANALYST:	M.J. SAIIDI								
ASSESSMENT:									
CRITICAL FLIGH		ANCY SCREENS	CIL ITEM						
HDW/FU		B C							
NASA [3 /1R IOA [3 /2R] [P]] [P]	[P] [P] [P] [F]	[] * [X]						
COMPARE [/N] []	[] [N]	[N]						
RECOMMENDATIONS:	(If differen	t from NASA)							
[3 /2R] [P]		[] (ADD/DELETE)						
* CIL RETENTION	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []								
LOSS SINCE THE D									

SUBSEQUENT FAILURE OF THE DUMP ISOL VALVE WILL FORCE ISOLATING TANKS A& B, THEREBY LOSS OF A/L SUPPORT, FES A, X-TIE, AND PRIMARY DUMP LINE.

ASSESSME ASSESSME NASA FME	NT II):	12/28 LS-12 06-2-	06		2							DATA: LINE NEW	Γ	x]
SUBSYSTE MDAC ID: ITEM:	M:		LIFE 1206 DUMP													
LEAD ANA	LYST	:	M.J.													
ASSESSME	NT:															
	CRITI				RE	DUND	AN	CY	SCREE	ENS	5			CI		
		LIGH V/FUI			A			в			С			Τ.1	EM	L
NASA IOA		/1R /2R		[P P]]	[[NA P]	[[P F]]		[[x] *]
COMPARE	[/N]	[]	[N]	[N]		[N]
RECOMMEN	DATIC	ons:	(If	di	ff	erent	: :	fro	m NAS	SA)						
	[3	/2R]	[P]	[NA]	[P]	(AI	[)D/	DE] LETE)
* CIL RE	TENTI	ION I	RATION	ALE	:	(If a	apj	pli	cable			DEQU		[[]
REMARKS:									·			~		•		1
LOSS OF	LIKE	AND	UNLIK	ERI	ED	undan	IC:	IES	(FES	;,	FC	CP L	INE)	WI	TH	THIS

LOSS OF LIKE AND UNLIKE REDUNDANCIES (FES, FCP LINE) WITH THIS FAILURE WILL RESULT IN CONTINUOUS FLOW OF WATER INTO THE CABIN. THIS FMEA INCLUDES SEVERAL ITEMS INTO ONE ANALYSIS FOR LINES AND FITTINGS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/87 LS-1207 06-2-1133-1	12/28/87 NASA DATA LS-1207 BASELINE 06-2-1133-1 NEW							
SUBSYSTEM: MDAC ID: ITEM:	1207	TE SUPPORT							
LEAD ANALYST:	M.J. SAIIDI								
ASSESSMENT:									
FLIGH		CY SCREENS B C	CIL ITEM						
HDW/FU	NC A	вс							
NASA [3 /1R IOA [3 /2R] [P] [] [P] [P] [P] P] [P]	[] * []						
COMPARE [/N] [] [] []	[]						
RECOMMENDATIONS:	(If different :	from NASA)							
[/] [] [] [] (2	[] ADD/DELETE)						
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []									
	THE IOA CONSIDERED THIS ITEM SEPARATELY AS PART OF THE EPD&C. HOWEVER, BASED ON THE ASSESSMENT OF ITS HARDWARE ITEM, IOA AGREES								

ASSESSMENT DATE: 12/28/87 NASA DATA: ASSESSMENT ID: LS-1208 BASELINE [NASA FMEA #: 06-2-1133-2 NEW [X] SUBSYSTEM: LIFE SUPPORT MDAC ID: 1208 ITEM: SOLENOID, DUMP VALVE (1) LEAD ANALYST: M.J. SAIIDI ASSESSMENT: CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC Α В С NASA [3 /1R] [P] [P] [P] [P]] * Γ [P] IOA $\begin{bmatrix} 3/2R \end{bmatrix}$ ΓΡΊ ſ 1 COMPARE [/N] ٢] **RECOMMENDATIONS:** (If different from NASA) [3/2R] [P] [P] [P] ٢ 1 (ADD/DELETE) * CIL RETENTION RATIONALE: (If applicable) ADEQUATE ſ] INADEQUATE 1 ſ **REMARKS:** THE IOA CONSIDERED THIS ITEM SEPARATELY AS PART OF THE EPD&C.

HOWEVER, BASED ON THE ASSESSMENT OF ITS HARDWARE ITEM, THE ABOVE RECOMMENDATION IS MADE.

ASSESSME ASSESSME NASA FME	NT DATE NT ID: A #:	12/28/ LS-120 05-6VD	87 9 -2028-1	L	NASA DAT BASELIN NE	
SUBSYSTE MDAC ID: ITEM:	M:	LIFE S	UPPORT	VALVE (1)		
LEAD ANA	LYST:	M.J. S.	AIIDI			
ASSESSME	INT:					
	CRITICA FLIG		REDUN	IDANCY SCRI	EENS	CIL ITEM
	HDW/F	JNC	A	В	С	
NASA IOA	[3 /1] [3 /2]	R] R]	[P] [P]	[NA] [P]	[P] [P]	[] * []
COMPARE	[/N]	[]	[N]	[]	[]]
RECOMMEN	DATIONS	: (If	differe	ent from NA	ASA)	
	[/]	[]	[]		[] ADD/DELETE)
* CIL RE	TENTION	RATIONA	LE: (I1	f applicab	ADEQUATE	
REMARKS:					INADEQUATE	[]
BASED ON					ONLY A CRIT 5 ITEM WAS A	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:										
SUBSYSTEM: MDAC ID: ITEM:	1210									
LEAD ANALYST:	M.J. SAIIDI									
ASSESSMENT:										
CRITICAL FLIGH	ITY REDUND T	ANCY SCREENS	3	CIL ITEM						
HDW/FU	NC A	В	С							
NASA [3 /1R IOA [2 /1R] [P]] [P]	[NA] [[F] [P] P]	[] * [X]						
COMPARE [N/] []	[М] []	[N]						
RECOMMENDATIONS:	(If differen	t from NASA)								
[/] []	[][] (AI	[] DD/DELETE)						
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE []										
INADEQUATE [] REMARKS: BASED ON VERY LIMITED FMEA-EPD&C DATA (ONLY A CRIT SUMMARY WAS AVAILABLE), NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED.										

ASSESSME ASSESSME NASA FME	NT DATE: NT ID: A #:	12/28/8 LS-1211 05-6VD-	7 		NASA DATA BASELINI NEV					
SUBSYSTE MDAC ID: ITEM:	M÷	1211	IFE SUPPORT							
LEAD ANALYST: M.J. SAIIDI										
ASSESSMENT:										
	CRITICAI FLIGH		REDUNI	DANCY SCRE	ENS	CIL ITEM				
	HDW/FU	INC	A	B	С					
NASA IOA	[3 /1F [3 /2F	2] [2] [P] P]	[NA] [P]	[P] [P]	[] * []				
COMPARE	[/N] []	[N]	[]	[]]				
RECOMMEN	DATIONS:	(If d	lifferer	nt from NA	SA)					
	[/] []	[]	[]	[] ADD/DELETE)				
* CIL RE	TENTION	RATIONAL	E: (If	applicabl						
					ADEQUATE INADEQUATE	[]]				
REMARKS: BASED ON VERY LIMITED FMEA-EPD&C DATA (ONLY A CRIT SUMMARY WAS AVAILABLE), NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED.										

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/8 LS-1212 05-6VD-	2/28/87 NASA DATA: LS-1212 BASELINE [] 05-6VD-2029-1 NEW [X]								
SUBSYSTEM:	LIFE SU 1212	LIFE SUPPORT								
LEAD ANALYST:	M.J. SA	IIDI								
ASSESSMENT:										
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C										
HDW/ FU	INC	A	В	С						
NASA [3 /1F IOA [3 /2F	2] [2] [P] P]	[NA] [P]	[P] [P]	[] * []					
COMPARE [/N] []	[N]	[]	[]					
RECOMMENDATIONS:	(If d	ifferen	t from NAS	SA)						
[/] []	[]	[] (A	[] .DD/DELETE)					
* CIL RETENTION RATIONALE: (If applicable)										
ADEQUATE [] INADEQUATE []										
REMARKS: BASED ON VERY LIMITED FMEA-EPD&C DATA (ONLY A CRIT SUMMARY WAS AVAILABLE), NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED.										

REPORT DATE 03/10/88

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ASSESSMENT DA ASSESSMENT II NASA FMEA #:	TE: 12/28/ : LS-121 05-6VD	87 3 -2029-3	: [】] [】]						
SUBSYSTEM: MDAC ID: ITEM:	LIFE S 1213	UPPORT , DUMP NOZ							
LEAD ANALYST: M.J. SAIIDI									
ASSESSMENT:									
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM									
	/FUNC	A	1 1 CM						
NASA [3 IOA [3	/1R] /2R]	[P] [[P] [NA] [P] [P] P]	[] * []				
COMPARE [/N]	[]][N] []	[]]				
RECOMMENDATIC	NS: (If	different	from NASA	7)					
Ĺ	/]	[][] [] (Al	[] DD/DELETE)				
* CIL RETENTI	* CIL RETENTION RATIONALE: (If applicable)								
			I	ADEQUATE NADEQUATE					
REMARKS: BASED ON VERY LIMITED FMEA - EPD&C DATA (ONLY A CRIT SUMMARY WAS AVAILABLE), NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED.									

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1214	S-1214 BASELINE []									
SUBSYSTEM: MDAC ID: ITEM:	1214	LIFE SUPPORT 1214 SWITCH, DUMP NOZZLE HEATER (1)									
LEAD ANALYST:	M.J. SAI	IDI									
ASSESSMENT:											
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM											
HDW/FU	NC	A	E	3	C	2					
NASA [3 /3 IOA [3 /3] [] []]	[[]]	[[]]	[[] *]			
COMPARE [/] []	[]	[]	[]			
RECOMMENDATIONS:	(If di	fferen	it fr	om NZ	ASA)						
[/] []	[]	[] (A] ם / סם.] DELETE)			
* CIL RETENTION	RATIONALE	: (If	appl	icabl	Ă	ADEQUATE ADEQUATE	[[]]			
	IOA AGREES WITH THE FMEA.										

ASSESSME ASSESSME NASA FME	SSMENT DATE: 12/28/87 NASA DATA: SSMENT ID: LS-1215 FMEA #: 05-6VD-2004-1 NEW [X]									
SUBSYSTE MDAC ID: ITEM:	M:	1215	PPORT	KER, DUMP	VALVE (1)					
LEAD ANA	LEAD ANALYST: M.J. SAIIDI									
ASSESSMENT:										
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM										
	HDW/FU	INC	A	В	С					
NASA IOA	[3 /1F [3 /2F		P] P]	[NA] [P]	[P] [P]	[] * []				
COMPARE	[/N] [:]	[א]		נז				
RECOMMEN	DATIONS:	(If d	liffer	ent from NA	ASA)					
	[/] [:]	[]	[] (2	[] ADD/DELETE)				
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []										
REMARKS: BASED ON VERY LIMITED FMEA-EPD&C DATA (ONLY A CRIT SUMMARY WAS AVAILABLE), NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED.										

ASSESSME ASSESSME NASA FME	NT ID:	: LS-1		04-2	2]	NASA DATA BASELINI NEV] x]
SUBSYSTE MDAC ID: ITEM:		1216	SUPP UIT B							
LEAD ANA	LYST:	M.J.	SAII	DI						
ASSESSMENT:										
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM										
		FUNC	A		E	3	(C		
NASA IOA	[3/ [3/	/3] /3]	[[]]	[[]]	[[]]	[[] *]
COMPARE	[/	′]	[]	[]	[]	נ]
RECOMMEN	DATION	IS: (I	f dif	fere	ent fr	om N	ASA)			
	[/	′]	[]	[]	[]] DD/I] DELETE)
* CIL RE	TENTIC	N RATIO	NALE:	(If	appl	icab	2	ADEQUATE ADEQUATE	-]
REMARKS: IOA AGRE	ES WII	H THE F	MEA.							

ASSESSME ASSESSME NASA FME	NT E NT I A #:	DATE:	12/28, LS-12: 05-6V	12/28/87NASA DATALS-1217BASELINE05-6VD-2038-1NEWLLEE SUPPOPE								ן [
SUBSYSTE MDAC ID: ITEM:	111 0		1217	ALLE SUPPORT											
LEAD ANA	LYSI	:	M.J. :	SAII	DI										
ASSESSMENT:															
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM															
	HD	W/FU	NC	A]	В			С					
NASA IOA		/1R /3]	[P []]	[] [NA]] [Ρ]]		[[]]	*
COMPARE	[/N	3	[N]	[]	N]	[N]		[]	
RECOMMEN	DATI	ons:	(If	dif	feren	t f:	ro	m NA	SA)					
	[1]	[]	[]	[]	(AI	[2D/1] ELI	ETE)
* CIL RE	TENT	ION	RATION	ALE:	(If	appi	li	cabl	e)						
DEWADEG	ADEQUATE [] INADEQUATE []														
REMARKS: BASED ON VERY LIMITED FMEA-EPD&C DATA (ONLY A CRIT SUMMARY WAS AVAILABLE), NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED.															

	NT DATE: NT ID: CA #:	12/28/87 LS-1217A 05-6VD-2	038-2	2	1	NASA DAT BASELIN NE] x]	
SUBSYSTE MDAC ID: ITEM:	:M:	LIFE SUF 1217 POSITION	PORT		UMP V	VALVE (1)		
LEAD ANA	LYST:	M.J. SAI	IDI						
ASSESSME	INT:								
	CRITICAL FLIGH	JTY T	REDUN	IDANCY	SCR	EENS		CII ITI	
	HDW/FU		A	E	3	(2	T 1 1	211
NASA IOA	[3 /3 [3 /3] [] []]	[[]]	[[]]	[[] *]
COMPARE	[/] []	[]	[]	[]
RECOMMEN	DATIONS:	(If di	ffere	nt fr	om Ni	ASA)			
	[/] []	[]	[] (2] ADD/I] DELETE)
REMARKS:		RATIONALE	: (If	appl	icab)	7	ADEQUATE ADEQUATE	-]]
IOA AGRE	IOA AGREES WITH THE FMEA.								

ASSESSME ASSESSME NASA FME	NT	II	D:	LS-	12/28/87 NASA DATA: LS-1218 BASELINE D5-6VD-2044-1 NEW]
SUBSYSTE MDAC ID: ITEM:	M:			1218	E SUPP 3 ISTOR,								
LEAD ANA	LYS	ST	:	M.J.	. SAII	DI							
ASSESSMENT:													
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM													
	F			NC	A		E	3	(2		***	
NASA IOA	[[3 3	/3 /3]]	[[]]	[[]]	[[]]		[. [] *]
COMPARE	נ		/]	C]	נ]	[]		[]
RECOMMEN	DAI	n (ONS:	(:	If dif	fere	ent fr	rom N	IASA)				
	[/]	[]	[<u>ן</u>	[]	(A	[DD/I] DELETE)
* CIL RE	TEN	IT:	ION	RATI	ONALE:	(If	f appl	icab	1	ADEQUA ADEQUA		[[]]
IOA AGRE	IOA AGREES WITH THE FMEA.												

REPORT DATE 03/10/88 C-164

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ASSESSMENT ASSESSMENT NASA FMEA	TD:	I.S-12	2/28/87 NASA DATA: S-1219 BASELINE [05-6VD-2048-1 NEW [X								
SUBSYSTEM: MDAC ID: ITEM:		1219	IFE SUPPORT 219 IODE, DUMP VALVE (1)								
LEAD ANALY	(ST:	M.J. 8	SAII	DI							
ASSESSMENT	C:										
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM											
	HDW/FU		A		B	5	Ċ	2	1.1.1	SM	
NASA [IOA [3 /3 3 /3]	[[]]	[[]]	[[]	[[] *]	
COMPARE [[/]	[]	[]	[]	[]	
RECOMMENDA	ATIONS:	(If	dif	feren	t fr	om NA	SA)				
[. /	3	[]	[]	[] (2] ADD/I] DELETE)	
* CIL RETE REMARKS:	ENTION 1	RATION	ALE:	(If	appl	icabl	Ĩ	ADEQUATE ADEQUATE]]	
IOA AGREES	S WITH	THE FMI	EA.								

REPORT DATE 03/10/88 C-165

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1220			NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	1220		TEMPERAT	URE (2)	
LEAD ANALYST:	M.J. SAI	IDI			
ASSESSMENT:					
FLIGH	Г		ANCY SCRED		CIL ITEM
HDW/ FUI	NC	A	В	С	
NASA [3 /3 IOA [3 /2R] [] [] P]	[] [P]	[] [P]	[] * []
COMPARE [/N] [N]	[N]	[N]	[]
RECOMMENDATIONS:	(If di	ifferent	from NAS	5A)	
[/] []	[]	[] (A	[] DD/DELETE)
* CIL RETENTION I	RATIONALE	2: (If a	applicable	≥) ADEQUATE INADEQUATE	[] []
REMARKS: IOA AGREES WITH T SIGNIFICANTLY IM	THE FMEA. PACTED WH	HOWE	ZER, MISSI	ION TIMELINE TEMPTED WITH	COULD BE

SIGNIFICANTLY IMPACTED WHEN A DUMP IS ATTEMPTED WITHOUT SENSORS (OR ERRONEOUS READING) AND FREEZING OCCURS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	/ /	LS-1221 BASELINE									
SUBSYSTEM: MDAC ID: ITEM:	1221	IFE SUPPORT 221 OZZLE HEATER (1)									
LEAD ANALYST: M.J. SAIIDI											
ASSESSMENT:											
CRITICALITY REDUNDANCY SCREENS											
HDW/FU	NC A	В		С							
NASA [3 /1R IOA [2 /2] [P]] [] [P] [] [] [P]]	[] * [X]						
COMPARE [N /N) [N] [N] [N]	[N]						
RECOMMENDATIONS:	(If diff	erent fro	om NASA)								
. [/] [] [] [] (A)	[] DD/DELETE)						
* CIL RETENTION	RATIONALE:	(If appli	•	ADEQUATE IADEQUATE	[]						
REMARKS: IOA AGREES WITH THE FMEA.											

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1222	S-1222 BASELINE								
SUBSYSTEM: MDAC ID: ITEM:	1222	IFE SUPPORT 222 DZZLE HEATER (1)								
LEAD ANALYST:										
ASSESSMENT:										
CRITICAI FLIGH	CIL ITEM									
HDW/FU										
NASA [3 /1F IOA [2 /2	:] [P] [) [] [P] [] [P]]	[] * [X]					
COMPARE [N /N] [N	1	и ј ([N]	[N]					
RECOMMENDATIONS:	(If dif	ferent f	rom NASA	A)						
[/	j [] [] [[] (A	[] DD/DELETE)					
* CIL RETENTION REMARKS:		(If app		ADEQUATE INADEQUATE	[]]					
IOA AGREES WITH	THE FMEA.									

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	A: E [] W [X]									
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 1223 DUMP NOZZLE	1223								
LEAD ANALYST:										
ASSESSMENT:										
CRITICALITY REDUNDANCY SCREENS FLIGHT										
HDW/FU	NC A	В	С							
NASA [3 /1F IOA [2 /2	:] [P]] []	[P] []	[P] []	[] * [X]						
COMPARE [N /N] [N]	[N]	[N]	[N]						
RECOMMENDATIONS:	(If differe	ent from NA	SA)							
[/] []	[]	[] ()	[] ADD/DELETE)						
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []										
INADEQUATE [] REMARKS: IOA AGREES WITH THE FMEA, IF LOSS OF FUNCTION IS CONSIDERED INABILITY TO EXPEL FUEL CELLS WATER.										

ASSESSME	ENT I	D:	LS-12	12/28/87 NASA DATA: LS-1224 BASELINE 06-2-1114-1 NEW								E [
SUBSYSTE MDAC ID: ITEM:			1224	LIFE SUPPORT L224 DUMP LINE HEATER (2)										
LEAD ANALYST: M.J. SAIIDI														
ASSESSMENT:														
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM														
			NC	A			B			С		**		
NASA IOA	[3 [3	/1R /2R]]	[F [F)]	[[P P]]	[[P P]]	[[]]	*
COMPARE	Γ	/N	3	[]	[]	۵]	נ]	
RECOMMEN	DATI	ons:	(If	dif	fere	ent f	ir	om 1	NASA)				
	[/]	[]	[]	[] ADD/] DELI	
* CIL RE	TENT	ION	RATION	ALE:	(If	app)];	ical	ole)			-		
DENI DVC -									II		DEQUATE DEQUATE]	
IOA AGRE	INADEQUATE [] REMARKS: IOA AGREES WITH THE FMEA, IF LOSS OF FUNCTION (INABILITY TO EXPEL WATER) IS CONSIDERED.													

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1225	-1		NASA DATI BASELINI NEW						
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPP 1225 DUMP LINE		(2)							
LEAD ANALYST: M.J. SAIIDI										
ASSESSMENT:										
CRITICAL FLIGH HDW/FU	T	EDUNDANC	CY SCRE B	ENS C	CIL ITEM					
NASA [3 /1R IOA [3 /2R] [P] [P) [] [P] P]	[P] [P]	[]*					
COMPARE [/N] [] []	[]	[]					
RECOMMENDATIONS:	(If dif	ferent f	from NA	SA)						
[/] [] []		[] ADD/DELETE)					
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE [] REMARKS:										

IOA AGREES WITH THE FMEA.

REPORT DATE 03/10/88 C-171

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ASSESSME	ASSESSMENT DATE:12/28/87NASA DATA:ASSESSMENT ID:LS-1226BASELINENASA FMEA #:06-2-1120-1NEW										
SUBSYSTE MDAC ID: ITEM:		1226	LIFE SUPPORT 1226 THERMOSTAT, LINE HEATER (4)								
LEAD ANALYST: M.J. SAIIDI											
ASSESSME	ASSESSMENT:										
	CIL ITEM										
	HDW/FU	NC	A	В	С						
NASA IOA	[3 /1R [3 /2R] [] [P] P]	[P] [P]	[P] [P]	[] * []					
COMPARE	[/N] []	[]	[]	[]					
RECOMMEN	DATIONS:	(If d	lifferer	nt from NA	ASA)						
	[/] []	[]		[] ADD/DELETE)					
* CIL RE	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []										
					ONLY A CRIT	SUMMARY WAS					

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1227	ATA: INE [] NEW [X]								
SUBSYSTEM: MDAC ID: ITEM:	1227									
LEAD ANALYST: M.J. SAIIDI										
ASSESSMENT:										
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM										
HDW/FUN	NC A	B C								
NASA [3 /1R IOA [3 /3] [P]] []	[P] [P] [] []	[] * []							
COMPARE [/N] [N]	[N] [N]	[]							
RECOMMENDATIONS:	(If different	: from NASA)								
[/] []	[][]	[] (ADD/DELETE)							
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE []										
REMARKS:	INADEQUATE []									
BASED ON VERY LIM		C DATA (ONLY A CRI T OF THIS ITEM WAS								

	12/28/87 LS-1228 06-2-1135-2		SA DATA: ASELINE [] NEW [X]							
	LIFE SUPPORT 1228 QD, CONTINGE									
LEAD ANALYST:	M.J. SAIIDI									
ASSESSMENT:										
CRITICAL FLIGH	r	NDANCY SCREENS	CIL ITEM							
HDW/FUI	NC A	B C								
NASA [3 /1R IOA [2 /2] [F]] [J]	[F] [P] [] [] [X]*] [X]							
COMPARE [N /N] [N]	[N] [N]] []							
RECOMMENDATIONS:	(If differ	ent from NASA)								
[3 /2R] [F]	[F] [P]] [] (ADD/DELETE)							
* CIL RETENTION D	RATIONALE: (I	ADI	EQUATE [X] EQUATE []							

IOA DID NOT KNOW OF THE CAP. BASED ON THE SAME RATIONING AS 06-2-1124-2, HYDROPHOBIC FILTER, FOR WHICH THE WATER WILL LEAK INTO THE CABIN, THIS SHOULD BE 3/2R. LOSS OF FUNCTION WITH NO CREW INTERVENTION WILL RESULT IN CONTINUOUS FLOW OF WATER (TANK B ONLY) INTO THE CABIN. ALSO, THE DUMP WITH X-TIE CAN STILL BE ACHIEVED.

ASSESSME ASSESSME NASA FME	NT IC):	LS-12	12/28/87 LS-1228A D6-2-1162-2									ASA DAT BASELIN NE		x]]
SUBSYSTE MDAC ID: ITEM:			1228	LIFE SUPPORT L228 QD, CONTINGENCY CROSS-TIE									L)			
LEAD ANA	LYST:		M.J.	J. SAIIDI												
ASSESSMENT:																
	FL	IGH	ITY F NC		RI A	EDUNI	DAI	NCY B		SCREEN		c			IL TE	
		•						_								
NASA IOA	[2 [2	/1R /2]	[[Ρ]]		[P [· · ·] [] [[[Ρ]	[[X X] *]
COMPARE	[/N]	[N]		[N) ([N]	[]
RECOMMEN	DATIO	NS:	(If	đi	if	ferer	nt	fr	OI	n NASZ	A)					
	[3	/2R]	[F]		(F) ([P		-	/D] ELETE)
* CIL RE	TENTI	ON P	RATION	ALE	: :	(If	aj	ppl	i¢)EQUATE)EQUATE	-	x]]
	REMARKS: IOA DID NOT KNOW OF THE CAP. BASED ON THE SAME RATIONING AS 06															

IOA DID NOT KNOW OF THE CAP. BASED ON THE SAME RATIONING AS 06-2-1124-2, HYDROPHOBIC FILTER, FOR WHICH THE WATER WILL LEAK INTO THE CABIN, THIS SHOULD BE 3/2R. LOSS OF FUNCTION WITH NO CREW INTERVENTION WILL RESULT IN CONTINUOUS FLOW OF WATER (TANK B ONLY) INTO THE CABIN. ALSO, THE DUMP WITH X-TIE CAN STILL BE ACHIEVED. THIS FMEA INCLUDES SEVERAL ITEMS INTO LINES AND FITTINGS ANALYSIS-SEE FMEA 06-2-1135-2 (LS-1228).

REPORT DATE 03/10/88

C-175

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1229	S-1229 BASELINE									
	1229	IFE SUPPORT 229 D, CONTINGENCY CROSS-TIE (1)									
LEAD ANALYST:	ST: M.J. SAIIDI										
ASSESSMENT:											
CRITICAL FLIGH	CIL ITEM										
HDW/FU	NC I	A	В	C							
NASA [3 /1R IOA [2 /2] []	?]]	[NA] []	[P] []	[] * [X]						
COMPARE [N /N] []	4]	[N]	[N]	[N]						
RECOMMENDATIONS:	(If dif	fferent	from NAS	SA)							
[/] []	[]	[] (A	[] .DD/DELETE)						
* CIL RETENTION	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE [] REMARKS:										
IOA AGREES WITH THE FMEA.											

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1229A	S-1229A BASELINE								
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 1229 QD, CONTINGENCY CROSS-TIE									
LEAD ANALYST:										
ASSESSMENT:										
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM										
HDW/FU	NC A B	С								
NASA [3 /1R IOA [2 /2	[P] [NA] [] [] [] [P]]	[] * [X]							
COMPARE [N /N] [И] [И] [N]	[N]							
RECOMMENDATIONS:	(If different from NASA)								
[/] [] [] [[] DD/DELETE)							
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE []										
INADEQUATE [] REMARKS: IOA AGREES WITH THE FMEA. THIS FMEA INCLUDES SEVERAL ITEMS INTO ONE LINES AND FITTINGS ANALYSIS-SEE FMEA 06-2-1135-1 (LS-1229).										

ASSESSME	ENT	ID:	LS-1	12/28/87NASA DATA:LS-1230BASELINE []06-2-1113-1NEW [X]										
SUBSYSTE MDAC ID: ITEM:			1230											
LEAD ANALYST: M.J. SAIIDI														
ASSESSMENT:														
										CII				
	H		JNC	A B C							ITEM			
NASA IOA	[[3 /3 3 /3]	[[]]	[[]]	[[]]		[[] *]		
COMPARE	[1]	ſ] .	ſ]	[J		1	J		
RECOMMEN	DAT	lons:	(1	f dif:	fere	ent fr	om N	ASA)						
	[/]	[]	[]	[]	(A	[DD/D] DELETE)		
REMARKS:	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []													

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:					NASA DATA BASELINI NEV	
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUP 1231 QD, ECLS		(2)			
LEAD ANALYST:	M.J. SAI	IDI				
ASSESSMENT:						
CRITICAL FLIGH		REDUND	ANCY	SCREEN	IS	CIL ITEM
HDW/FU	-	A	В		С	
NASA [3 /2R IOA [3 /2R] [] [P] P]	[P [P] [] [P] F]	[] * [X]
COMPARE [/	J . []	[] [N]	[N]
RECOMMENDATIONS:	(If di	fferen	t fro	om NASA	.)	
[/] []	[] [[] ADD/DELETE)
* CIL RETENTION	RATIONALE	: (If	appl:	·	ADEQUATE NADEQUATE	[]
REMARKS: IOA AGREES WITH	THE FMEA.			_	~ ~ ~ ~ ~ ~ ~ ~ ~ ~	

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1232	: [] [X]							
SUBSYSTEM: MDAC ID: ITEM:	1232	LIFE SUPPORT 1232 QD, GALLEY/DISPENSER (2)							
LEAD ANALYST:	M.J. SAI	.J. SAIIDI							
ASSESSMENT:	ASSESSMENT:								
CRITICAL FLIGH		REDUNDA	ANCY SCRE	ENS	CIL ITEM				
HDW/FU	NC	A	В	С					
NASA [3 /2R IOA [3 /2R] [] [P] P]	[P] [P]	[P] [F]	[] * [X]				
COMPARE [/] []	[]]	[N]	[N]				
RECOMMENDATIONS:	(If di	fferent	from NA	SA)					
[/] []	[]	[] (A	[] DD/DELETE)				
* CIL RETENTION	RATIONALE	: (If a	applicable	e) ADEQUATE INADEQUATE	[] []				
REMARKS: IOA AGREES WITH THE FMEA.									

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/87 LS-1233 06-2-1132	-2		NASA DATA BASELINE NEW			
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPP 1233 LINES AND						
LEAD ANALYST:	M.J. SAII	DI					
ASSESSMENT:							
CRITICAL FLIGH HDW/FU	т	EDUNDANCY B		s C	CIL ITEM		
NASA [2 /1R IOA [2 /2] [P]]] [] [P]]	[X]* [X]		
COMPARE [/N] [N	ן [א] [м ј	[]		
RECOMMENDATIONS:	(If dif:	ferent fr	om NASA))			
[2 /2] [] [] [] (A)	[] DD/DELETE)		
* CIL RETENTION	RATIONALE:		·	ADEQUATE NADEQUATE	[X] []		

IOA DOES NOT AGREE WITH THE FMEA ABOUT THE FAILURES OF THE RADIATOR AND ABS. THESE ITEMS ARE NOT ASSOCIATED WITH THE ITEM BEING STUDIED. CONTINUOUS FLOW OF WATER INTO THE MID-BODY OR CREW MODULE - LEAK CANNOT BE ISOLATED WITHOUT SHUTTING DOWN THE FCP.

REPORT DATE 03/10/88

C-181

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1233A							
MDAC ID:	1233	LIFE SUPPORT 1233 LINES AND FITTINGS						
LEAD ANALYST:	M.J. SAII	DI						
ASSESSMENT:								
CRITICAL FLIGH	CIL ITEM							
HDW/FU	NC A	В		С				
NASA [2 /1R IOA [2 /2] [P]]] [P]] [] [] [P]]	[X]* [X]			
COMPARE [/N] [N] [N] [N]	[]			
RECOMMENDATIONS:	(If dif:	ferent fr	om NASA)				
[2 /2] [] [] [[] DD/DELETE)			
* CIL RETENTION	RATIONALE:	(If appl		ADEQUATE NADEQUATE	[X] []			

IOA DOES NOT AGREE WITH THE FMEA, ABOUT THE FAILURES OF THE RADIATOR AND ABS. THESE ITEMS ARE NOT ASSOCIATED WITH THE ITEM BEING STUDIED. CONTINUOUS FLOW OF WATER INTO THE MID-BODY OR CREW MODULE - LEAK CANNOT BE ISOLATED WITHOUT SHUTTING DOWN THE FCP.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/87 LS-1234 06-2-1156-2	NASA DA BASELI N	NASA DATA: BASELINE [] NEW [X]					
	LIFE SUPPORT 1234 LINES AND FIT							
LEAD ANALYST:	M.J. SAIIDI	.J. SAIIDI						
ASSESSMENT:								
CRITICAL FLIGH		NDANCY SCREENS	CIL ITEM					
	NC A	ВС	1164					
NASA [3 /1R IOA [2 /2] [P]] []	[P] [P] [] []	[] * [X]					
COMPARE [N /N] [И]	[N] [N]	[N]					
RECOMMENDATIONS:	(If differe	ent from NASA)						
[2 /2] []		[A] (ADD/DELETE)					
* CIL RETENTION	RATIONALE: (If	f applicable) ADEQUATI INADEQUATI	E [] E []					
INADEQUATE [] REMARKS: FOR LEAKAGE BETWEEN THE A/B AND B/C RELIEF VALVES: 1) CONTINUOUS FLOW OF FCP (PRIME/ALTER) TO CREW CABIN - NO WAY TO ISOLATE LEAK WITHOUT SHUTTING DOWN THE FUEL CELLS, 2) TANKS C/D AVAILABLE FOR RETURN WITH EXISTING LEAK.								

FOR LEAKAGE DOWNSTREAM OF THE B/C RELIEF VALVE: - TANKS C AND D COULD BE ISOLATED, AND TANK B KEPT LOW IN ORDER TO ISOLATE THE LEAKAGE - LESS SEVERE THAN PREVIOUS CASE.

	12/28/87 LS-1235 06-2-1165-	1235 BASELINE					
MDAC ID:	LIFE SUPPO 1235 LINES AND						
LEAD ANALYST:	M.J. SAIII	DI					
ASSESSMENT:							
CRITICAL FLIGH	r	SCREENS		CIL ITEM			
HDW/FU	NC A	В	C	3			
NASA [3 /1R IOA [2 /2] [P]]] [P] [] [I] [?]]	[] * [X]		
COMPARE [N /N) [N] [N] [N	1]	[N]		
RECOMMENDATIONS:	(If dif	ferent fro	om NASA)				
[2 /2] [] [] [] (Al	[A] DD/DELETE)		
* CIL RETENTION D	RATIONALE:	(If appl	P	ADEQUATE ADEQUATE	[] []		

LEAKAGE UPSTREAM OF THE X-OVER VALVE: - TANKS C/D TO BE SHUT DOWN IN ORDER TO STOP THE LEAK; - LOSS OF FES FEEDLINE B, AND TWO TANKS RESERVE; - TANKS A AND B AND FES FEEDLINE A AVAILABLE. LEAKAGE DOWNSTREAM OF THE X-OVER VALVE: - TANKS A AND B TO BE SHUTDOWN IN ORDER TO STOP THE LEAK; - LOSS OF FES FEEDLINE A, PRIMARY DUMP, X-TIE FUNCTION, AND A/L SUPPORT; - ONLY TWO TANKS AVAILABLE PLUS FES FEEDLINE B.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1235	A		NASA DATA: BASELINE [] NEW [X]				
SUBSYSTEM: MDAC ID: ITEM:	1235							
LEAD ANALYST:	M.J. SA	.J. SAIIDI						
ASSESSMENT:								
FLIGH		DANCY SCR		CIL ITEM				
HDW/FU	NC	A	В	С				
NASA [3 /1R IOA [2 /2] [] [P]]	[P] []	[P] []	[] * [X]			
COMPARE [N /N] [И]	[N]	[N]	[N]			
RECOMMENDATIONS:	(If d	ifferer	nt from N	ASA)				
[2 /2] []	[]		[A] ADD/DELETE)			
* CIL RETENTION	RATIONAL	E: (If	applicab	ADEQUATE				
REMARKS: LEAKAGE UPSTREAM DOWN IN ORDER TO TANKS RESERVE; -	STOP TH	E LEAK;	- LOSS	OF FES FEEDLI	TO BE SHUT INE B, AND T			

TWO TANKS A AND B AND FES F JOEKVE; LINE A AVAIL LEAKAGE DOWNSTREAM OF THE X-OVER VALVE: - TANKS A AND B TO BE SHUTDOWN IN ORDER TO STOP THE LEAK; - LOSS OF FES FEEDLINE A, PRIMARY DUMP, X-TIE FUNCTION, AND A/L SUPPORT; - ONLY TWO TANKS AVAILABLE PLUS FES FEEDLINE B.

ASSESSME ASSESSME NASA FME	NT ID:	LS-1236	j		NASA DATA BASELINE NEW				
SUBSYSTE MDAC ID: ITEM:		LIFE SU 1236 LINES A		INGS					
LEAD ANA	LYST:	M.J. SA	M.J. SAIIDI						
ASSESSME	ASSESSMENT:								
CRITICALITY FLIGHT			REDUND	ANCY SCRE	ITEM				
	HDW/FU	NC	A	В	С				
NASA IOA	[3 /2R [2 /2) [] [P]]	[NA] []	[P] []	[] * [X]			
COMPARE	[N /N] [N]	[N]	[N]	[N]			
RECOMMEN	DATIONS:	(If d	lifferen	t from NA	SA)				
	[/] []	[]	[]	[] ADD/DELETE)			
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []									
REMARKS: IOA AGREI ADEQUATE			•	OTHER WAY	IS AVAILABI				

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:			NASA DATA: BASELINE [] NEW [X]					
	1236							
LEAD ANALYST:	M.J. SAIII	1.J. SAIIDI						
ASSESSMENT:								
CRITICAL FLIGH		EDUNDANCY	SCREENS	CIL ITEM				
HDW/FU	NC A	В	С					
NASA [3 /1R IOA [2 /2] [P]]] [P]] [P]] []	[] * [X]				
COMPARE [N /N] [N] [N] [N]	[N]				
RECOMMENDATIONS:	(If diff	ferent fro	om NASA)					
[3 /2R] [P] [P] [P]	[] (ADD/DELETE)				
* CIL RETENTION	RATIONALE:	(If appli	ADE	QUATE []				
REMARKS:			INADE	QUATE []				
THIS FMEA IS SAM MUST BE ISOLATED IN ORDER TO STOP	(DISCONNEC THE LEAK.	CTING THE IF OTHER	MICROBIAL MEANS TO	WHICH THE TANK A CHECK VALVE QD'S) PROVIDE FOR GALLEY				

REPORT DATE 03/10/88 C-187

REQUIREMENT FAILS, THEN MISSION WILL BE LOST.

ASSESSMENT DATE: 12/28/87 NASA DATA: BASELINE [ASSESSMENT ID: LS-1237 1 NEWIXI NASA FMEA #: SUBSYSTEM: LIFE SUPPORT MDAC ID: 1237 WATER CHILLER (1) ITEM: LEAD ANALYST: M.J. SAIIDI ASSESSMENT: CRITICALITY REDUNDANCY SCREENS CIL ITEM FLIGHT С HDW/FUNC Α В NASA [1 [] [] [] [P] [P] [P] 1 Ε 10A i 2/1R iΓ 1 COMPARE [N/N] [N] [N] [N]Γ] **RECOMMENDATIONS:** (If different from NASA) ſ 1 (ADD/DELETE) * CIL RETENTION RATIONALE: (If applicable) ADEQUATE E ſ ٦ INADEQUATE **REMARKS:** IOA WILL MAKE AN ASSESSMENT BASED ON ARS-FMEA (06-1-0530) WHEN IT IS RELEASED.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		9-1		NASA DATA: BASELINE [] NEW [X]				
SUBSYSTEM: MDAC ID: ITEM:	1238	LIFE SUPPORT 1238 WATER CHILLER (1)						
LEAD ANALYST:	M.J. SAI	I.J. SAIIDI						
ASSESSMENT:								
CRITICAL FLIGH		REDUNDA	ANCY	SCREEN	S	CIL ITEM		
HDW/FU	NC 2	A	В		С			
NASA [3 /2R IOA [3 /2R] []] []	P] P]	[P [P] [P] F]	[] * [X]		
COMPARE [/] []	[] [N]	[N]		
RECOMMENDATIONS:	(If dia	fferent	: fro	om NASA	.)			
[/] []	[] [] (A	[] .DD/DELETE)		
* CIL RETENTION	RATIONALE	: (If a	appli		ADEQUATE NADEQUATE			
REMARKS: IOA AGREES WITH	THE FMEA.							

	12/28/87 LS-1250X 06-2-1124-3	NASA DATA: BASELINE [] NEW [X]
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 1250 FILTER, TANKS N2 INLET ((4)

LEAD ANALYST: M.J. SAIIDI

ASSESSMENT:

	CRITICALITY FLIGHT		RJ	REDUNDANCY SCREENS			CIL ITEM									
	I	HD	/FUI	1C		A			B			С				
NASA IOA	[[3 3	/1R /2R]]	[[P P]]	[[P P]]	[[P P]]	[[]	*
COMPARE	נ		/N]	[]	[]	[]	E]	

[3/2R] [P] [P] [P]

RECOMMENDATIONS: (If different from NASA)

[] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [] INADEQUATE []

REMARKS:

LOSS OF N2 PRESSURIZATION WITH THE BLADDERS EXPOSED TO THE CABIN PRESSURE. NO ADDITIONAL FAILURE IN THE SWS WILL NEGATE THE TANKS PRESSURIZATION BY THE CABIN ATMOSPHERE, UNLESS THE CABIN ATMOSPHERE IS LOST. THIS IS NOT REALISTIC WHEN APPLIED TO THE SWS. LOSS OF BLADDER WILL RESULT IN FLOW OF WATER INTO CABIN -MISSION LOSS.

REPORT DATE 03/10/88

C-190

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ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	LS-1251X	NASA I BASEI	DATA: LINE [] NEW [X]				
SUBSYSTEM: MDAC ID: ITEM:	1251	S AND QD, FCP ALTEI	RNATE LINE				
LEAD ANALYST:	M.J. SAIIDI						
ASSESSMENT:							
FLIG		DANCY SCREENS B C	CIL ITEM				
NASA [3 /1 IOA [3 /1	R] [P] R] [P]	[NA] [P] [NA] [P]	[] * []				
COMPARE [/] []	[]][]	[]				
RECOMMENDATIONS	: (If differen	nt from NASA)					
[/] []	[][]	[] (ADD/DELETE)				
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []							
REMARKS: IOA AGREES WITH TWO FMEAS MAY B	THE FMEA, SEE A E COMBINED.	ALSO LS-1252X (06-2	2-1128-1). THE				

ASSESSME ASSESSME NASA FME	NT	I	D:	LS-1	252X	ζ.					NASA BASE		Γ		
SUBSYSTE MDAC ID: ITEM:	M:			LIFE 1252 LINE				AND	QD,	FC	P ALTE	RNAT	ЕL	INE	
LEAD ANA	LY	ST	:	M.J.	SAI	IDI									
ASSESSME	NT	:													
	CR		ICAL LIGH	ITY F		REI	UNDAI	NCY	SCR	EEN	S		CI IT		
	1	HDI	W/FU	NC		A		В			С				
NASA IOA		3 3	/1R /1R]]	[[P] P]		[N. [N.	A] A]	[[P] P]		[[]]	*
COMPARE	[/]	٢	נ		[3	[3		٤]	
RECOMMEN	DA'	FIC	ONS:	(1	f di	ffe	rent	fr	om N	ASA)				
	[/]	[]	1	[]	נ]	(A)	[DD/1] DELE	TE)
* CIL RE REMARKS:						: (If a <u>r</u>	ppl	icab		ADEQU NADEQU]]	
IOA AGRE	ED	W	LIH .	une F.	MEA.										

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1253	BX		NASA DATA BASELINI NEV	
SUBSYSTEM: MDAC ID: ITEM:	LIFE SU 1253 LINES/F		AND QD,	FCP ALTERNAT	TE LINE
LEAD ANALYST:	M.J. SA	IIDI			
ASSESSMENT:					
CRITICAI FLIGH		REDUND	ANCY SCRE	ENS	CIL ITEM
HDW/FU	_	A	В	С	
NASA [3 /1R IOA [3 /2R) [] [P] P]	[P] [NA]	[P] [P]	[] * []
COMPARE [/N] [3	[א]		[]
RECOMMENDATIONS:	(If d	lifferen	t from NAS	SA)	
[3 /2R] [P]	[N]	[P] (A	[] NDD/DELETE)
* CIL RETENTION	RATIONAL	Æ: (If a	applicable	e) ADEQUATE INADEQUATE	
REMARKS: THE FUNCTIONAL L				DE, DOES NOI	DEAD-HEAD

THE FUNCTIONAL LOSS WITH THIS FAILURE MODE, DOES NOT DEAD-HEAD THE FUEL CELLS, SINCE THE WATER WILL BE CONTINUOUSLY LEAKING OUT. ALSO SEE LS-1254X (06-2-1128-2)-THESE TWO FMEAS MAY BE COMBINED.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/28/87 LS-1254X 06-2-1128-	2		A DATA: SELINE [] NEW [X]
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPO 1254 LINES/FITT		D, FCP ALT	TERNATE LINE
LEAD ANALYST:	M.J. SAIID	I		
ASSESSMENT:				
CRITICAL		DUNDANCY S	SCREENS	CIL
FLIGH HDW/FU	-	В	с	ITEM
NASA [3 /1R IOA [3 /2R] [NA]] [NA]	[P] [P]	[]*
COMPARE [/N] [] []	[[]	[]

RECOMMENDATIONS: (If different from NASA)

[3 /2R]	[P]	[N]	[P]	[]
			•	(ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []

REMARKS: THE FUNCTIONAL LOSS WITH THIS FAILURE MODE, DOES NOT DEAD-HEAD THE FUEL CELLS, SINCE THE WATER WILL BE CONTINUOUSLY LEAKING OUT.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-1255X			NASA DAT BASELIN NE			
SUBSYSTEM: MDAC ID: ITEM:	1255	LIFE SUPPORT 255 LINES AND FITTINGS, H2 VENT					
LEAD ANALYST:	M.J. SAI	IDI					
ASSESSMENT:							
CRITICAI FLIGH	[T		NCY SCRI		CIL ITEM		
HDW/FU	NC A	A	В	С			
NASA [3 /1F IOA [2 /2	[] []	P]]	[P] []	[P] []	[] * [X]		
COMPARE [N /N] [1	ן א	[N]	[א]	[N]		
RECOMMENDATIONS:	(If dia	fferent	from NA	SA)			
[2 /2] []	(_.)	[]]	[A] ADD/DELETE)		
* CIL RETENTION	RATIONALE:	: (If a	pplicabl	.e) ADEQUATE INADEQUATE			
REMARKS: THE LOSS OF FUNC				VILL ONLY RE			

INABILITY TO REMOVE H2 FROM WATER - WATER FROM FCP STILL FLOWS TO THE TANKS.

•

ASSESSME ASSESSME NASA FME	NT I	D:	LS-1	256X	5-1			ASA DATA BASELINE NEW]]
SUBSYSTE MDAC ID: ITEM:			1256	LIFE SUPPORT .256 LINES AND FITTINGS, A/L TO EMU						
LEAD ANA	LYST	:	M.J.	SAI	IDI					
ASSESSME	NT:									
				I	REDUI	NDANCY SCRE	ENS		CIL	
	-	LIGH W/FU	NC NC	1	ł	В	с		ITE	M
NASA IOA	[3 [3	/1R /2R]]	[] []	?] ?]	[NA] [NA]	[P [P]	[[] *]
COMPARE	[/N]	ſ]	[]	[]	[]
RECOMMEN	DATI	ons:	(I	f di	ffere	ent from NA	SA)			
	[3	/2R]	[]	?]	[И]	[P] DD/D] ELETE)
* CIL RE	TENT	ION	RATIO	NALE	: (I	f applicabl	Â	DEQUATE	-]
REMARKS: LOSS OF - MISSIO	A/L		ORT F	UNCT	ION V	VILL ONLY N		DEQUATE E THE EM	•] TIVITIES

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	12/28/ LS-125 06-2-1	7X		NASA DAT. BASELIN NE	
SUBSYSTEM: MDAC ID: ITEM:	LIFE S 1257 LINES 2		INGS, A/I	L TO EMU	
LEAD ANALYST:	M.J. S	AIIDI			
ASSESSMENT:					
CRITICAL	+ +	REDUNE	ANCY SCRE	CENS	CIL
FLIGI HDW/FU		A	В	с	ITEM
NASA [3 /11 IOA [3 /21	R] R]	[P] [P]	[NA] [NA]	[P] [P]	[]*
COMPARE [/N]	[]	[]	[]	[]
RECOMMENDATIONS	(If o	differen	t from NA	SA)	·
[3 /2]	R]	[P]	[א]		[] ADD/DELETE)
* CIL RETENTION	RATIONA	LE: (If	applicabl	-	
				ADEQUATE INADEQUATE	
REMARKS: CONTINUOUS FLOW	OF WATER	R UNLESS	TANKS A/	B ARE ISOLAT	TED. TWO

CONTINUOUS FLOW OF WATER UNLESS TANKS A/B ARE ISOLATED. TWO TANKS (C AND D) ARE REMAINING TO SUPPORT NOMINAL MISSION. LOSS OF A/L SUPPORT FOR EMU ACTIVITY AND FES A, AND DUMP CAPABILITY. LOSS OF ALL REDUNDANCIES AND THIS FAILURE WILL RESULT IN MISSION TERMINATION AND RETURN ON TANKS C AND D WITH CONTINUOUS FLOW OF WATER FROM TANK B INTO THE CABIN.

ASSESSME ASSESSME NASA FME	NT D NT I A #:	ATE: D:	12/2 LS-1 05-6	8/87 2583 VD-2	7 K 2032	-1				NASA BASI	ELINE		
SUBSYSTE MDAC ID: ITEM:	M:		LIFE 1258	SUI	POR	T LET I			LVE	(4)			
LEAD ANA	LYST	:	M.J.	SAI	IDI								
ASSESSME	NT:												
					RED	UNDAN	СХ	SCRI	EENS	5		CII	-
		UIGH W/FU	NC		A		в			с		ITE	M
NASA IOA	[3 [3	/1R /2R]]	[[P] P]	[[P P]]	[[P] P]		[[] *]
COMPARE	[/N]	٢]	[]	[]		٢]
RECOMMEN	DATI	ons:	(1	f di	ffe	rent	fro	om N2	ASA))			
	[/]	[]	[]	[]	(A	[DD/D] DELETE)
* CIL RE	TENT	ION	RATIC	NALE	B: ()	If ap	pli	[Cab]		ADEQU VADEQU]]
REMARKS: BASED ON													

AVAILABLE), NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED.

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	TO 10 00	7		NASA DATA BASELINE NEW			
SUBSYSTEM: MDAC ID: ITEM:	1259		ISOL VAL	VE (4)			
LEAD ANALYST:	M.J. SAI	IDI					
ASSESSMENT:							
CRITICA FLIG	LITY HT	REDUND	NCY SCREI	Ens	CIL ITEM		
HDW/F	UNC	A	В	С			
NASA [3 /1 IOA [3 /2	R] [R] [P] P]	[P] [P]	[P] [P]	[]*		
COMPARE [/N] []	[]	[]	[]		
RECOMMENDATIONS	: (If di	ifferent	: from NAS	5A)			
[/] []	[]	[] (A	[] DD/DELETE)		
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []							
REMARKS:				INADEQUATE	ī ī		
REMARKS: BASED ON VERY LIMITED FMEA-EPD&C DATA (ONLY A CRIT SUMMARY WAS AVAILABLE), NO DETAIL ASSESSMENT OF THIS ITEM WAS ATTEMPTED.							

ASSESSME ASSESSME NASA FME	NT C NT I A #:	ATE: D:	12/2 LS-1 05-6	8/87 260X VD-20)32-	•2					ASA DA BASELI 1	INE			
SUBSYSTE MDAC ID: ITEM:	m:		LIFE 1260 SWIT	SUPI	ORI	•			ALVE	(4	1)				
LEAD ANA	LYST	:	M.J.	SAII	DI										
ASSESSME	NT:														
	F	LIGH							REEN				CIL ITE		
	HC	W/FU	NC	F	L]	В		С					
NASA IOA	[3 [3	/1R /3]]	[])]		[]	[AN]	[[Ρ]		[[]]	*
COMPARE	[/N]	[]	[]		[]	1	ſ	N]		۵]	
RECOMMEN	DATI	ONS:	(I	f dif	fer	ent	f	rom	NASA)					
	[1]	[]		[]	[]	(A)] DD/D		ETE)
* CIL RE	TENI	ION	RATIO	NALE:	(1	fa	.pp	lica	•	AI NAI	DEQUA' DEQUA'	FE FE	[]	
REMARKS: BASED ON AVAILABL									(ONL)	Y J	A CRI	r si	UMMA	RY	

C.2

WASTE MANAGEMENT SUBSYSTEM

ASSESSMENT WORKSHEETS

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2001 06-2-0109-4	NASA DATA: BASELINE NEW	
SODSISIEM.	2001	T E AND FEMALE (1 TYPE PER	CREW MEMBER)
LEAD ANALYST:	K. BARICKMAN	ł	
ASSESSMENT:			
CRITICAL FLIGH HDW/FU	г		CIL ITEM
NASA [3 /2R IOA [3 /2R] [P]] [P]	[NA] [P] [P] [P]	[]*
COMPARE [/] []	[N] []	[]]
RECOMMENDATIONS:	(If differ	rent from NASA)	
[3 /2R] [P]	[NA] [P] (AD	[] DD/DELETE)
* CIL RETENTION : REMARKS: IOA/NASA FM: EX		ADEQUATE INADEQUATE	[]

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2002 06-2-0116-1	NASA DATA: BASELINE [] NEW [X]				
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 2002 URINAL, MALE AND FEMALE	(1 TYPE PER CREW MEMBER)				
LEAD ANALYST:	LEAD ANALYST: K. BARICKMAN					
ASSESSMENT:						
	CRITICALITY REDUNDANCY SCREENS FLIGHT					
		С				
NASA [3 /3 IOA [3 /2R] [] []] [P] [P]	[] []* [P] []				
COMPARE [/N] [N] [N]	[И] []				
RECOMMENDATIONS:	(If different from NAS)	A)				
[3 /2R] [P] [NA]	[P] [] (ADD/DELETE)				
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE [] REMARKS: IOA FM: FAILS TO LATCH						
NASA FM: INABIL		TO LATCH THIS REQUIRES				
THE USE OF THE U	CD SUPPLIES. THERE ARE ON	NLY 3 DAYS SUPPLY OF				
UCDS PER CREW MEMBER AND USE OF THEM MAY PRODUCE AN EARLY TERMINATION OF THE MISSION. CHANGE IOA CRITICALITY TO 3/2R PNP.						
A POTENTIAL LOSS OF THE WCS WAS VIEWED AS A 3/2R CRITICALITY BY THE IOA FOR ANY "OFF NOMINAL" CONDITION. "OFF NOMINAL" WAS						
DEFINED AS ANY FAILURE WHICH COULD REQUIRE USE OF CONTINGENCY WASTE COLLECTION METHODS IF ANOTHER FAILURE OCCURRED. HOWEVER,						
THE NASA FMEA LIS	STED THESE AS A NON-MISSIO					
CRITICALITY.						

ASSESSM ASSESSM NASA FM	ENT D ENT I EA #:	DATE:	12/22 LS-20 06-2-	/87 02A 0116	i-2						ASA DAT BASELIN NE			
SUBSYST MDAC ID ITEM:	EM:		LIFE 2 2002	LIFE SUPPORT					EMBER)					
LEAD AN	ALYSI	C:	K. BA	RICK	MAN									
ASSESSM	ASSESSMENT:													
		TICAL FLIGH	ITY	F	EDUI	NDAN	CY	SCRE	EEN	S		CII ITH		
		W/FU		A			В			С		***	31.1	
NASA IOA	[3 [3	3 /3 3 /2R]	[[I)]	[[P]]	[[P]]	[[]]	*
COMPARE	[/N]	[]	[]	נ	N]	נ	N]	[1	
RECOMME	NDATI	IONS:	(If	dif	fere	ent	fr	om NA	SA)				
	[3	3 /2R]	[]	']	[N	A]	[P] (] ADD/I] DELE	TE)
* CIL R	ETENI	TION	RATION	ALE:	(11	fap	pl	icabl	-		DEQUATE DEQUATE]	
REMARKS: IOA FM: FAILS TO LATCH NASA FM: INABILITY TO DEMATE IOA COMMENT: IF THE URINAL ADAPTER FAILS TO LATCH THIS REQUIRES THE USE OF THE UCD SUPPLIES. THERE ARE ONLY 3 DAYS SUPPLY OF UCDS PER CREW MEMBER AND USE OF THEM MAY PRODUCE AN EARLY TERMINATION OF THE MISSION. CHANGE IOA CRITICALITY TO 3/2R PNP. A POTENTIAL LOSS OF THE WCS WAS VIEWED AS A 3/2R CRITICALITY BY THE IOA FOR ANY "OFF NOMINAL" CONDITION. "OFF NOMINAL" WAS DEFINED AS ANY FAILURE WHICH COULD REQUIRE USE OF CONTINGENCY WASTE COLLECTION METHODS IF ANOTHER FAILURE OCCURRED. HOWEVER, THE NASA FMEA LISTED THESE AS A NON-MISSION ESSENTIAL FAILURE CRITICALITY.														

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2003			NASA DATA BASELINI NEV		
SUBSYSTEM: MDAC ID: ITEM:			(1)			
LEAD ANALYST:	K. BARI	CKMAN				
ASSESSMENT:						
FLIGH			ANCY SCRE B	ENS C	CIL ITEM	
NASA [3 /2R IOA [3 /2R] [P] P]	[NA] [P]	[P] [P]	[]*	
COMPARE [/] []	[N]	[]	[]	
RECOMMENDATIONS: (If different from NASA)						
[3 /2R] [P]	[NA]	[P] (A	[] ADD/DELETE)	
* CIL RETENTION	RATIONAL	E: (If a	applicabl	e) ADEQUATE INADEQUATE	[] []	
REMARKS: IOA FM: EXTERNA NASA FM: EXTERNA	L LEAKAG AL LEAKA		ICAL BIND	ING/JAMMING		

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2004 06-2-0105-1	NASA DA BASELI M			
MDAC ID:	2004	AL SCREEN PREFILTER ((1)		
LEAD ANALYST:	K. BARICKMAN				
ASSESSMENT:					
CRITICAL	CIL				
FLIGH HDW/FU		B C	ITEM		
NASA [3 /2R IOA [3 /3] [P]] []	[NA] [P] [][]	[] * []		
COMPARE [/N] [N]	[N] [N]	[]		
RECOMMENDATIONS:	(If differe	ent from NASA)			
[3 /2R] [P]	[NA] [P]	[] (ADD/DELETE)		
* CIL RETENTION	* CIL RETENTION RATIONALE: (If applicable)				
		ADEQUAT INADEQUAT			
REMARKS: IOA/NASA FM: RESTRICTED FLOW IOA COMMENT: IF THE REPLACEMENT SCREEN/FILTER ALSO BECOMES PLUGGED OR OTHERWISE DAMAGED, THEN THE UCD SUPPLIES MUST BE USED. THERE ARE ONLY 3 DAYS SUPPLY PER CREW MEMBER OF THE UCDs.					

DEPENDING ON MISSION LIFE, A LOSS OF MISSION COULD BE PRODUCED.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		NASA DATA: BASELINE [] NEW [X]				
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 2005 URINAL CONICAL SCREEN PREF	ILTER (1)				
LEAD ANALYST:	K. BARICKMAN					
ASSESSMENT:						
CRITICAL FLIGH	Г	ITEM				
HDW/FUI		с				
NASA [3 /2R IOA [3 /3] [P] [NA] [] [] [] [] [P] []*] []				
COMPARE [/N] [N] [N] [и] []				
RECOMMENDATIONS:	(If different from NASA)					
[3 /2R] [P] [NA] [P] [] (ADD/DELETE)				
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []						
REMARKS: IOA FM: INTERNA	L LEAKAGE					
NASA FM: DAMAGED ELEMENT						
IOA COMMENT: IF THE SCREEN IS DAMAGED OR DEVELOPS AN INTERNAL LEAK THERE IS NO EFFECT ON THE SYSTEM. HOWEVER AS A RESULT OF						
THE SCREEN FAILURE THE DOWNSTREAM SCREEN COULD BE DAMAGED BY RESTRICTED FLOW OR THE FAN/SEPARATORS PITOT TUBE COULD BECOME						
BLOCKED, REQUIRIN	NG USE OF REDUNDANT URINAL	OR FAN/SEPARATOR				
	EDUNDANT PATH FAILS THEN TH ONLY 3 DAYS SUPPLIES OF TH					

USED. THERE ARE ONLY 3 DAYS SUPPLIES OF THE UCDS AND A MISSION LOSS COULD BE PRODUCED WITH A CRITICALITY OF 3/2R PNP.

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2006			NASA DATA BASELINE NEW		
SUBSYSTEM: MDAC ID: ITEM:	2006					
LEAD ANALYST:	K. BARIC	KMAN				
ASSESSMENT:						
CRITICAL		REDUNDA	NCY SCREE	NS	CIL	
FLIGH HDW/FU		A	В	с	ITEM	
NASA [3 /2R IOA [3 /2R] []	P] P]	[NA] [P]	[P] [P]	[]*	
COMPARE [/] []	[N]	[]	[]	
RECOMMENDATIONS: (If different from NASA)						
[3 /2R] []	P]	[NA]	[P] (A	[] DD/DELETE)	
* CIL RETENTION	RATIONALE	: (If a) ADEQUATE INADEQUATE	[] []	
REMARKS: IOA/NASA FM: EX	TERNAL LE	AKAGE				

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		DATA: CLINE [] NEW [X]					
	LIFE SUPPORT 2007 URINAL HOSE ((1)					
LEAD ANALYST:	K. BARICKMAN						
ASSESSMENT:							
CRITICAL FLIGH		IDANCY SCREENS	CIL ITEM				
HDW/FU		B C	~ * * * * *				
NASA [3 /2R IOA [3 /2R] [P]] [P]	[NA] [P] [P] [P]	[] * []				
COMPARE [/] []	[N] []	[]]				
RECOMMENDATIONS:	RECOMMENDATIONS: (If different from NASA)						
[3 /2R] [P]	[NA] [P]	[] (ADD/DELETE)				
* CIL RETENTION	RATIONALE: (If	applicable) ADEQU INADEQU					
REMARKS: IOA/NASA FM: RE	STRICTED FLOW						

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		1		NASA DATA BASELINE NEW	
	2008	LIFE SUPPORT 2008 URINAL ADAPTER QUICK RELEASE (1)			
LEAD ANALYST:	K. BARI	K. BARICKMAN			
ASSESSMENT:					
CRITICAL FLIGH		REDUND	ANCY SCREEN	S	CIL ITEM
HDW/FU		A	B	С	
NASA [3 /2R IOA [2 /2] [] [P]]	[NA] [[] [P]]	[] * [X]
COMPARE [N /N] [N]	[И] [N]	[N]
RECOMMENDATIONS:	(If d	lifferen	t from NASA)	
[3 /2R] [P]	[NA] [[] DD/DELETE)
* CIL RETENTION	RATIONAL	E: (If a	applicable)		, ,
			I	ADEQUATE NADEQUATE	
REMARKS: IOA FM: MISALIG	NMENT				
NASA FM: INABIL	ITY TO M				
IOA COMMENT: IF DEVELOP EXTERNAL LEAKAGE DUE TO MISALIGNMENT, COULD POTENTIALLY ALLOW RELEASE OF BACTERIAL GROWTH INTO CABIN					

ATMOSPHERE. THE SPILL WOULD BE CONTAINABLE AND CLEANABLE, BUT MAY REQUIRE THE USE OF THE UCDS WITH THE RISK OF LOSS OF MISSION DUE TO SUPPLY LIMITATIONS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2008A		NASA DATA BASELINE NEW			
	LIFE SUPPORT 2008 URINAL ADAPTE					
LEAD ANALYST: K. BARICKMAN						
ASSESSMENT:						
CRITICAL FLIGH	CRITICALITY REDUNDANCY SCREENS					
HDW/FU		В	с	ITEM		
NASA [3 /2R IOA [2 /2] [P]] []	[NA] [[]] [P]]	[] * [X]		
COMPARE [N /N] [N]	[N] [N]	[N]		
RECOMMENDATIONS:	(If differe	nt from NASA	.)			
[3 /2R] [P]	[NA] [[] .DD/DELETE)		
* CIL RETENTION 1	RATIONALE: (If		ADEOUATE	[]		
INADEQUATE [] REMARKS: IOA FM: MISALIGNMENT NASA FM: INABILITY TO DEMATE IOA COMMENT: IF DEVELOP EXTERNAL LEAKAGE DUE TO MISALIGNMENT, COULD POTENTIALLY ALLOW RELEASE OF BACTERIAL GROWTH INTO CABIN ATMOSPHERE. THE SPILL WOULD BE CONTAINABLE AND CLEANABLE, BUT						

ATMOSPHERE. THE SPILL WOULD BE CONTAINABLE AND CLEANABLE, BUT REQUIRE THE USE OF THE UCDS WITH THE RISK OF LOSS OF MISSION DUE TO SUPPLY LIMITATIONS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2009	-4	NASA DATA BASELINE NEW		
SUBSYSTEM: MDAC ID: ITEM:	2009	ORT APTER QUICK RE	LEASE (1)		
LEAD ANALYST:	K. BARICK	MAN			
ASSESSMENT:					
CRITICAL FLIGH		EDUNDANCY SCRE	ENS	CIL ITEM	
HDW/FU	NC A	В	С		
NASA [3 /2R IOA [3 /2R] [P]] [P]] [NA]] [P]	[P] [P]	[]*	
COMPARE [/	J [] [N]	[]]	[]]	
RECOMMENDATIONS:	(If dif	ferent from NA	SA)		
[3 /2R] [P] [NA]		[] DD/DELETE)	
* CIL RETENTION	RATIONALE:	(If applicable	e) ADEQUATE INADEQUATE	• •	
REMARKS:		W1 00	-		
IOA/NASA FM: EX	LEKNAT TEVI	KAGE			

ASSESSMENT:					
)					
INADEQUATE [] REMARKS: IOA FM: IMPROPER CLAMPING FORCE					
NASA FM: INABILITY TO ATTACH IOA COMMENT: IF DEVELOP EXTERNAL LEAKAGE DUE TO MISALIGNMENT,					
Ň					
\mathbf{UT}					
1					

MAY REQUIRE THE USE OF THE UCDS WITH THE RISK OF LOSS OF MISSION DUE TO SUPPLY LIMITATIONS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2010A BASELINE					
SUBSYSTEM: MDAC ID: ITEM:	2010					
LEAD ANALYST:	K. BARIC	C. BARICKMAN				
ASSESSMENT:						
CRITICAL FLIGH HDW/FU	т	REDUNDA A	NCY SCREE B	C C	CIL ITEM	
NASA [3 /2R IOA [3 /3] [] [P]]	[NA] []	[P] []	[] * []	
COMPARE [/N) [N]	[N]	[א]	[]]	
RECOMMENDATIONS:	(If di	fferent	: from NAS	SA)		
[3 /2R] [P]	[NA]		[] DD/DELETE)	
* CIL RETENTION	RATIONALE	: (If a	pplicable	e) ADEQUATE INADEQUATE	• •	
REMARKS: IOA FM: IMPROPER CLAMPING FORCE NASA FM: INABILITY TO REMOVE IOA COMMENT: IF DEVELOP EXTERNAL LEAKAGE DUE TO MISALIGNMENT,						

IOA COMMENT: IF DEVELOP EXTERNAL LEAKAGE DUE TO MISALIGNMENT, COULD POTENTIALLY ALLOW RELEASE OF BACTERIAL GROWTH INTO CABIN ATMOSPHERE. THE SPILL WOULD BE CONTAINABLE AND CLEANABLE, BUT MAY REQUIRE THE USE OF THE UCDS WITH THE RISK OF LOSS OF MISSION DUE TO SUPPLY LIMITATIONS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2011		NASA DATA: BASELINE [] NEW [X]					
	2011	LIFE SUPPORT 2011 JRINAL DYNATUBE (2)						
LEAD ANALYST:	K. BARIC	CKMAN						
ASSESSMENT:								
CRITICA FLIG	LITY IT	REDUNDA	NCY SCREI	Ens	CIL ITEM			
HDW/FU	JNC	A	В	С				
NASA [3 /21 IOA [3 /21	2] [2] [P] P]	[NA] [P]	[P] [P]	[] * []			
COMPARE [/] []	[И]	[]	[]			
RECOMMENDATIONS	(If di	ifferent	from NAS	SA)				
[3 /29	2] [P]	[NA]		[] .DD/DELETE)			
* CIL RETENTION	RATIONALE	E: (If a	pplicable	2) ADEQUATE INADEQUATE				
REMARKS: IOA/NASA FM: EX	TERNAL LE	EAKAGE						

REPORT DATE 03/10/88 C-215

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ASSESSME ASSESSME NASA FME	NT ID):	LS-201	12/22/87 NASA DATA LS-2012 BASELINE 06-2-0101-1 NEW]
SUBSYSTE MDAC ID: ITEM:			2012	LIFE SUPPORT 2012 JRINAL DYNATUBE (2)						
LEAD ANA	LYST:		K. BAI	RICI	KMAN					
ASSESSMENT:										
CRITICALITY REDUNDANCY SCREENS FLIGHT							CIL ITEM			
	HDW	/FUI	1C	2	ł	В		С		
NASA IOA	[3 [3	/2R /2R]]	[]	?] ?]	[NA] [P]	[[P] P]	[[] *]
COMPARE	C .	/	1	[]	[N]	ľ]	٢]
RECOMMEN	DATIO	NS:	(If	dif	ffere	ent from	NASA)			
	[3	/2R]	[]	?]	[NA]	[P]] ELETE)
* CIL RE	TENTI	on f	RATIONA	LE :	(If	applic applic	•	ADEQUAT IADEQUAT]]
REMARKS: IOA/NASA	FM:	RES	STRICTE	D I	LOW					

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2013	: [] [X]						
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPO 2013 TUBE, EMU 1	RT EXTENSION (1)						
LEAD ANALYST:	LEAD ANALYST: K. BARICKMAN							
ASSESSMENT:								
CRITICAL FLIGH	Т	DUNDANCY SCREE		CIL ITEM				
HDW/FU	NC A	В	С					
NASA [3 /2R IOA [2 /2] [NA]] []	[P] []	[] * [X]				
COMPARE [N /N] [N]] [N]	[N]	[N]				
RECOMMENDATIONS:	(If diffe	erent from NAS	A)					
[3 /2R] [P]] [NA]	[P] (A	[] DD/DELETE)				
* CIL RETENTION	RATIONALE:) ADEQUATE INADEQUATE					
IOA/NASA FM: RE		OW Allows a work-2	AROUND FOR	THE CASE OF				

IOA COMMENT: THE IFM #026 ALLOWS A WORK-AROUND FOR THE CASE OF A CLOGGED EMU DRAIN LINE AND CHANGES THE CRITICALITY TO 3/2R PNP.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2013A 06-2-0444-1	NASA DATA: BASELINE [] NEW [X]					
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 2013 TUBE, EMU EXTENSION (1)						
LEAD ANALYST:	K. BARICKMAN						
ASSESSMENT:							
FLIGH		CIL ITEM C					
HDW/FU	NC A B	C					
NASA [3 /2R IOA [2 /2] [P] [NA] [] [] [] []	P] []*] [X]					
COMPARE [N /N] [N] [N] [и] [и]					
RECOMMENDATIONS:	(If different from NASA)						
[3 /2R] [P] [NA] [P] [A] (ADD/DELETE)					
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []							
REMARKS: IOA/NASA FM: RESTRICTED FLOW IOA COMMENT: THE IFM #026 ALLOWS A WORK-AROUND FOR THE CASE OF A CLOGGED EMU DRAIN LINE AND CHANGES THE CRITICALITY TO 3/2R PNP.							

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2014 06-2-0444-2	NASA DATA BASELINE NEW					
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 2014						
LEAD ANALYST: K. BARICKMAN							
ASSESSMENT:							
CRITICAL FLIGH	ITY REDUND	ANCY SCREENS	CIL ITEM				
	NC A	B C	LIEM				
NASA [3 /2R IOA [2 /2] [P]] []	[F] [P] [] []	[] * [X]				
COMPARE [N /N] [N]	[N] [N]	[N]				
RECOMMENDATIONS:	(If different	t from NASA)					
[3 /2R] [P]		[A] DD/DELETE)				
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []							
REMARKS: IOA/NASA FM: EXTERNAL LEAKAGE IOA COMMENT: THE IFM #026 ALLOWS A WORK-AROUND FOR THE CASE OF A CLOGGED EMU DRAIN LINE AND CHANGES THE CRITICALITY TO 3/2R PFP.							

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2015			NASA DATA BASELINE NEW			
	2015	LIFE SUPPORT 2015 EMU QD (1)					
LEAD ANALYST:	K. BARIC	KMAN					
ASSESSMENT:							
CRITICAL FLIGH HDW/FU	Т	REDUNDA A	ANCY SCREE B	C	CIL ITEM		
			_		r) +		
NASA [3 /2R IOA [2 /2]		[P] []	[] * [X]		
COMPARE [N /N] [И]	[N]	[N]	[И]		
RECOMMENDATIONS:	(If di	fferent	t from NAS	SA)			
[3 /2R] [P]	[F]	[P] (A	[A] .DD/DELETE)		
* CIL RETENTION	RATIONALE	: (If a	applicable	e) ADEQUATE INADEQUATE			
REMARKS: IOA/NASA FM: EX IOA COMMENT: TH CRITICALITY SHOU	E IFM #26	BYPASS	SES THE EM	U QD ENTIRE	LY SO THE		

ASSESSMENT I ASSESSMENT] NASA FMEA #:	[D: LS-20	16	NASA DATA BASELINI NEV					
SUBSYSTEM: MDAC ID: ITEM:	2016	LIFE SUPPORT 2016 COMMODE STORAGE CONTAINER (1)						
LEAD ANALYSI	с. к. ва	RICKMAN						
ASSESSMENT:								
	ICALITY LIGHT	REDUNI	ANCY SCRE	ENS	CIL ITEM			
	W/FUNC	A	В	С				
NASA [3] IOA [3]	/1R] /2R]	[P] [P]	[NA] [P]	[P] [P]	[] * []			
COMPARE [/N]	[]	[N]	[]	[]			
RECOMMENDATI	ONS: (If	differen	t from NA	SA)				
[3	/1R]	[P]	[NA]		[] ADD/DELETE)			
* CIL RETENI	ION RATION	ALE: (If	applicabl	e) ADEQUATE INADEQUATE	[]			
REMARKS: IOA FM: EXI NASA FM: LE IOA COMMENT:	AKAGE							
LEAKS DEVELO				ELOPS IN THE				

IOA COMMENT: IF AN EXTERNAL LEAKAGE DEVELOPS IN THE TANK AND IF LEAKS DEVELOP IN THE COMMODE CONTROL VALVE AND THE MANUAL VACUUM VENT VALVE THEN AN UNCONTROLLED ATMOSPHERE LOSS WOULD BE POSSIBLE, THUS THE 3/1R PNP CRITICALITY.

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ASSESSMEN ASSESSMEN NASA FMEA	1T	I	D:	LS-20	12/22/87 LS-2017 06-2-0206-2				NASA DATA: BASELINE [] NEW [X]										
SUBSYSTEM MDAC ID: ITEM:	1:			2017	LIFE SUPPORT 2017 COMMODE/LINER (1)														
LEAD ANAI	LY:	ST	:	K. BA	K. BARICKMAN														
ASSESSMEN	ASSESSMENT:																		
CRITICALITY FLIGHT				R	EDUN	DAI	NC	Y	SCRE	EEN	S			CI	IL TEM	ĸ			
]	_		NC		A]	В			С			T.1	. ב.וי	L	
NASA IOA	[[2 3	/2 /2R]	[[P]		[[]	P]	[[P]]		[[X]	*
COMPARE	[N	/N]	נ	N]		[]	N]	[N]		[N]	
RECOMMEND)A(FI (ons:	(If	đ	if	fere	nt	f	rc	m NA	SA)					_	
	[2	/2]	[]		[]	[]	(AD		A /DE		ETE)
* CIL RET	E	TN	ION	RATION	AL	E:	(If	aj	op:	li	.cabl	.e)	7		7	r		٩	
												I		DEQUATH DEQUATH	S	[[]	
				L LEAK	AG	E,	OPE	N											
IOA COMME	NASA FM: DAMAGED BAG IOA COMMENT: THE POTENTIAL FOR BACTERIAL GROWTH IS A MISSION																		
CRITICAL	C	DN	DITI	ON AND	S	HOI	JTD 1	RES	SUI	LT	IN	A	MI	SSION I	os	S	DU	JE	то

POTENTIAL CREW DANGER.

ASSESSMENT DATE: 12/2 ASSESSMENT ID: LS-2 NASA FMEA #: 06-2	2018	NASA DATA: BASELINE [] NEW [X]					
MDAC ID: 2018	E SUPPORT 3 10DE UPPER RING (1))					
LEAD ANALYST: K. BARICKMAN							
ASSESSMENT:							
CRITICALITY FLIGHT	REDUNDANCY SCI	REENS CIL ITEM					
HDW/FUNC	A B	C					
NASA [2 /2] IOA [3 /2R]	[] [] [P] [P]	[] [X]* [P] []					
COMPARE [N /N]	[N] [N]	[N] [N]					
RECOMMENDATIONS: (1	f different from N	IASA)					
[2/2]	[]][]	[] [A] (ADD/DELETE)					
* CIL RETENTION RATIO	NALE: (If applicat	ADEQUATE []					
INADEQUATE [] REMARKS: IOA FM: INTERNAL LEAKAGE NASA FM: DAMAGED BAG							
		OWTH IS A MISSION CRITICAL ON LOSS DUE TO POTENTIAL					

CREW DANGER.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2019	LS-2019 BASELINE							
MDAC ID:	2019	LIFE SUPPORT 2019 COMMODE SLIDE VALVE (1)							
LEAD ANALYST:	K. BARIO	CKMAN							
ASSESSMENT:									
CRITICAL FLIGH	ITY T	REDUND	ANCY SCREED	15	CIL ITEM				
		A	В	С					
NASA [3 /1R IOA [3 /2R] [] [P] P]	[NA] [P]	[P] [P]	[] * []				
COMPARE [/N] [1	[N]	[]]	[]]				
RECOMMENDATIONS:	(If d	ifferent	t from NAS	A)					
[3 /1R] [P]	[NA]		[] DD/DELETE)				
* CIL RETENTION	RATIONALI	E: (If a) ADEQUATE INADEQUATE	[]				
REMARKS: IOA FM: INTERNAL LEAKAGE, FAILS TO CLOSE NASA FM: FAILS TO CLOSE									
IOA COMMENT: IF VALVES DEVELOP I RESULT IN CONJUN	NTERNAL	LEAKS, 1	THEN A CAB	IN PRESSURE	LOSS WOULD				

VALVES DEVELOP INTERNAL LEAKS, THEN A CABIN PRESSURE LOSS WOULD RESULT IN CONJUNCTION WITH THE COMMODE SLIDE VALVE EXTERNAL LEAKAGE. THIS WOULD BE A LIFE THREATENING CONDITION, FOR A 3/1R PNP CRITICALITY.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-20197 06-2-020	7 A D2-3		NASA DATA BASELINE NEW			
MDAC ID:	2019	LIFE SUPPORT 2019 COMMODE SLIDE VALVE (1)					
LEAD ANALYST: K. BARICKMAN							
ASSESSMENT:							
CRITICAL FLIGH	ITY T	REDUNDAN	ICY SCREEN	S	CIL ITEN		
		A	В	С	1111	1	
NASA [3 /1R IOA [3 /2R] [] [P] [P] [NA] [P] [P] P]	[[] *]	
COMPARE [/N] [`] ([М] []	[]	
RECOMMENDATIONS:	(If di	.fferent	from NASA)			
[3 /1R] [P] [NA] [[DD/DE] LETE)	
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []							
REMARKS: IOA FM: INTERNAI		י דאדד פ		~~~~			
NASA FM: LEAKAG		, FALLS	TO CLOSE				
IOA COMMENT: IF							
VALVES DEVELOP IN	VALVES DEVELOP INTERNAL LEAKS, THEN A CABIN PRESSURE LOSS WOULD RESULT IN CONJUNCTION WITH THE COMMODE SLIDE VALVE EXTERNAL						
	OULD BE A			CONDITION,			

PNP CRITICALITY.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2020							
MDAC ID:	2020	LIFE SUPPORT 2020 COMMODE SLIDE VALVE (1)						
LEAD ANALYST:	K. BARI	CKMAN						
ASSESSMENT:								
CRITICAL	CIL							
FLIGH HDW/FU		A	В	с	ITEM			
NASA [3 /29 IOA [3 /29	2] [2] [P] P]	[NA] [P]	[P] [P]	[]*			
COMPARE [/] []	[N]	[]	[]			
RECOMMENDATIONS:	(If d	lifferer	nt from NA	SA)				
[3 /2]	2] [P]	[NA]	[P] (A	[] .DD/DELETE)			
* CIL RETENTION REMARKS:		·	applicabl	e) ADEQUATE INADEQUATE	[] []			
IOA/NASA FM: FA	ALS TO O	PEN						

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2021 06-2-0219-3	NASA DATA: BASELINE [] NEW [X]									
SUBSYSTEM: MDAC ID:	LIFE SUPPO 2021										
LEAD ANALYST: K. BARICKMAN											
ASSESSMENT:											
CRITICAL FLIGH		DUNDANCY SCF	REENS	CIL ITEM							
	NC A	В	С	1158							
NASA [3 /2R IOA [3 /3] [P]] [] [NA]] []	[P] []	[] * []							
COMPARE [/N] [N]	ן א]	[N]	[]]							
RECOMMENDATIONS:	(If diffe	erent from N	IASA)								
[3 /2R] [₱]] [NA]		[] DD/DELETE)							
* CIL RETENTION 1	RATIONALE:	(If applicat	ole)	7)							
REMARKS:			ADEQUATE INADEQUATE								
	MID-STROKE THE TANK BE		IL DUE TO LOS								

TO FCB, WHICH MAY PRODUCE AN SOKI ALTERATION IN THE MISSION TIME-LINE DUE TO CREW INCONVENIENCE, AND NECESSITATING A 3/2R PNP CRITICALITY.

ASSESSMENT DATE: 12/22/87 NASA DATA: BASELINE [ASSESSMENT ID: LS-2022 NEW [X] NASA FMEA #: 06-2-0203-1 SUBSYSTEM: LIFE SUPPORT MDAC ID: 2022 ITEM: COMPACTOR DRIVE UNIT (1) LEAD ANALYST: K. BARICKMAN ASSESSMENT: CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC в с A NASA [3/1R] [P] [NA] [P] [IOA [3/2R] [P] [P] [P] [[COMPARE [/N] [] [N] [] r ۲ **RECOMMENDATIONS:** (If different from NASA) [3/1R] [P] [NA] [P] [] (ADD/DELETE) * CIL RETENTION RATIONALE: (If applicable) ADEQUATE [INADEQUATE [ī **REMARKS:** IOA FM: EXTERNAL LEAKAGE NASA FM: LEAKAGE IOA COMMENT: IF BOTH THE COMMODE OUTLET AND MANUAL VACUUM VENT VALVES DEVELOP INTERNAL LEAKS, THEN A CABIN PRESSURE LOSS WOULD

RESULT IN CONJUNCTION WITH THE COMPACTOR DRIVE UNIT EXTERNAL LEAKAGE. THIS WOULD BE A LIFE THREATENING CONDITION, FOR A 3/1R PNP CRITICALITY.

ASSESSMENT DATE: 12/22/87 NASA DATA: ASSESSMENT ID: LS-2023 BASELINE [1 NASA FMEA #: NEW [1 SUBSYSTEM: LIFE SUPPORT MDAC ID: 2023 ITEM: COMPACTOR DRIVE UNIT (1) LEAD ANALYST: K. BARICKMAN ASSESSMENT: CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC в С Α NASA [IASA [/] IOA [3 /3]] * l Γ 1 COMPARE [N/N] [] [] [1 ſ 1 **RECOMMENDATIONS:** (If different from NASA) [/NA] [] [] [] ſ (ADD/DELETE) * CIL RETENTION RATIONALE: (If applicable) ADEQUATE E] INADEQUATE ٢ 1 **REMARKS:** IOA COMMENT: THIS FAILURE COVERED WAS UNDER MDAC ID 2021. DELETE ANALYSIS SHEET 2023.

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REPORT DATE 03/10/88

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87NASA DATA:LS-2024BASELINE []06-2-0203-1NEW [X]											
SUBSYSTEM: MDAC ID:	LIFE SU 2024	PPORT	LANGE (1)									
LEAD ANALYST:	K. BARI	CKMAN										
ASSESSMENT:												
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM												
	NC	A	В	с	ITEM							
NASA [3 /1F IOA [3 /2F	[] [] [P][P][NA] [P] [P] P]	[] * []							
COMPARE [/N] [] [м] []	[]							
RECOMMENDATIONS:	(If d	ifferent	from NASA)								
[3 /1F	(P] [NA] [[] DD/DELETE)							
* CIL RETENTION	RATIONAL	E: (If ap	-	ADEQUATE NADEQUATE	[]							
REMARKS: IOA FM: EXTERNA	L LEAKAG	E										
NASA FM: LEAKAG	E											
IOA COMMENT: IF												
VALVES DEVELOP I THE COMMODE BOTT												
THE COMMODE BOTTOM FLANGE, THEN A CABIN PRESSURE LOSS WOULD RESULT. THIS WOULD BE A LIFE THREATENING CONDITION, FOR A 3/1R												

REPORT DATE 03/10/88 C-230

PNP CRITICALITY.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2025	,			N	IASA D BASEI		[]			
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUE 2025 COMMODE		FLA	NGE (1	.)							
LEAD ANALYST:	K. BARIC	KMAN										
ASSESSMENT:												
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM												
HDW/FU	NC	A	В		С	!			-			
NASA [/ IOA [3 /3] [] []]	[[]]	[[]]		[[] *]			
COMPARE [N /N] []	[]	[]		[]			
RECOMMENDATIONS:	(If di	fferen	t fro	om NAS	A)							
[/NA] []	[]	[]	(AD	[DD/DE] LETE)			
* CIL RETENTION	RATIONALE	: (If a	appl:		΄ Α	DEQUA DEQUA		[[]]			
	IS FAILUR	E MODE	WAS	COVER	ED	UNDER	MDA	CID	2024.			

DELETE ANALYSIS SHEET 2025.

ASSESSME ASSESSME NASA FME	NT ID:	LS-20	26		NASA DAT BASELIN NE	
SUBSYSTE MDAC ID: ITEM:		2026		MESH SCRI	SEN (1)	
LEAD ANA	LYST:	K. BA	RICKMAN			
ASSESSME	INT:					
	CRITIC FLI	ALITY GHT	REDUNI	DANCY SCRI	EENS	CIL ITEM
	HDW/	FUNC	A	В	С	
NASA IOA	[3/ [3/	2R] 2R]	[P] [P]	[NA] [P]	[P] [P]	[] * []
COMPARE	[/]	[]	[N]	[]	[]
RECOMMEN	DATION	S: (If	differer	nt from NA	ASA)	
	[3/	2R]	[P]	[NA]		[] ADD/DELETE)
* CIL RE REMARKS: IOA/NASA			·	applicabl	Le) ADEQUATE INADEQUATE	[] []
TON NUON	rr.	UTOTET	ED LTOM			

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2027									
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUP 2027 COMMODE		MESH	SCREE	EN ((1)				
LEAD ANALYST:	K. BARIC	KMAN								
ASSESSMENT:										
CRITICAL FLIGH		REDUND	ANCY	SCREE	INS		CIL ITE			
HDW/FU	NC	A	В		C	2				
NASA [/ IOA [3 /3] [] []]	[[]	[[]]	[[] *]		
COMPARE [N /N] []	[]	נ]	[]		
RECOMMENDATIONS:	(If di	fferen	t fro	om NAS	A)					
[/NA] []	ľ]	[] (A	[DD/D] ELETE)		
* CIL RETENTION	RATIONALE	: (If a	appl	icable	:)					
		·				DEQUATE DEQUATE	-]]		
REMARKS: DELETE FAILURE M							INED	TO BE		

"NON-CREDIBLE" AT CCB FOR NASA FMEA 06-2C-0218-1.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2028	LS-2028 BASELINE []								
MDAC ID:	LIFE SU 2028 COMMODE		AND STAT	IONARY VAN	ES (2)					
LEAD ANALYST:	K. BARI	CKMAN								
ASSESSMENT:										
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C										
HDW/FU	NC	A	В	С						
NASA [3 /2R IOA [3 /3] [] [P] [] [NA] [] [P]]	[] * []					
COMPARE [/N] [N] [м] [N]	[]					
RECOMMENDATIONS:	(If d	ifferent	from NASA)						
[3 /2R] [P] [NA] [[] DD/DELETE)					
* CIL RETENTION	RATIONAL	E: (If ap		ADEQUATE NADEQUATE	[]					
REMARKS: IOA FM: RUPTURE										
NASA FM: FAILS										
IOA COMMENT: THIS FAILURE IS SIMILAR TO THE JAMMED COMPACTOR DRIVER MECHANISM (MDAC ID 2021) IN THAT THE SOLID WASTE CANNOT PACKED WITH POTENTIAL LOSS OF THE COMMODE IS A RESULT AND FCB SUPPLIES MUST BE USED. POTENTIAL MISSION TIME LINE EFFECT										

DUE TO CREW INCONVENIENCE AND A CRITICALITY 3/2R PNP.

BE

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:			NASA DATA: BASELINE [] NEW [X]						
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUP 2029 AUX. WET		h ven	IT LI	NE (1	L)			
LEAD ANALYST:	K. BARIC	KMAN							
ASSESSMENT:									
CRITICA FLIG	LITY :	REDUN	DANCY	SCR	EENS		CII ITE	-	
HDW/F		A	2						
NASA [3 /3 IOA [3 /3] [] []]	[[]]	[[]]	[[] *]	
COMPARE [/] []	[]	[]	[]	
RECOMMENDATIONS	: (If di	fferei	nt fr	om Ni	ASA)				
[3 /3] []	[]	[] (A	[.DD/D] DELETE)	
* CIL RETENTION	RATIONALE	: (If	appl	icab)	A	DEQUATE DEQUATE	[[]]	
IOA/NASA FM: EX	KTERNAL LE	AK							

REPORT DATE 03/10/88 C-235

ASSESSME ASSESSME NASA FME	NT]	[D:	LS-20											
SUBSYSTE MDAC ID: ITEM:	M:		LIFE 2030 AUX.			VEN	IT LIN	IE Q	D (1)					
LEAD ANA	LYSI	C:	K. BA	RICK	MAN									
ASSESSME	NT:													
			ITY	R	EDUND	ANCY	SCRE	ENS			IL PEM			
		FLIGH DW/FU	NC	C A B C							LEW			
NASA IOA	[]	3 /3 3 /3]]	[[]]	[[]]	[[]]	[[] *]			
COMPARE	[1]	ĺ]	[]	[]	۵]			
RECOMMEN	DATI	LONS:	(II	dif	feren	t fi	om NA	SA)						
	[:	3 /3]	[]	[]	[]] (ADD,] /DELETE)			
* CIL RE REMARKS: IOA/NASA					·	appl	licabl	-	ADEQUAT ADEQUAT]]			
TON NUSU	T FI	, ца		הייי										

ASSESSME	NT ID:	12/22/87 LS-2031 06-2-040											
SUBSYSTE MDAC ID: ITEM:		LIFE SUI 2031 VACUUM I		INE (1)								
LEAD ANA	LYST:	K. BARIC	CKMAN										
ASSESSME	NT:												
	CRITICAL FLIGH		REDUN	DANCY	SCR	EENS		CII ITE					
	HDW/FU		A	E	3	C	2	TTE	M				
NASA IOA	[3 /3 [3 /3] []]	[[]]	[[]]	[[] *]				
COMPARE	[/] []	[]	[]	[]				
RECOMMEN	DATIONS:	(If di	ffere	nt fr	om Ni	ASA)							
	[3 /3] []	[]	נ] DELETE)				
* CIL RE	TENTION	RATIONALE	E: (If	appl	icab:	A	ADEQUATE ADEQUATE]				
IOA/NASA	FM: EX	TERNAL LE	EAKAGE										

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2032	LS-2032 BASELINE []										
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 2032 VACUUM PORT		JG (1)									
LEAD ANALYST:	K. BARICKMAN	4										
ASSESSMENT:												
CRITICAL FLIGH		JNDANCY SCH	REENS	CIL ITEM								
HDW/FU		В	С	11EM								
NASA [3 /3 IOA [3 /3] []	[] []	[] []	[] * []								
COMPARE [/] []	[]	[]	[]								
RECOMMENDATIONS:	(If diffe	rent from N	IASA)									
[3 /3] []	[]		[] ADD/DELETE)								
* CIL RETENTION : REMARKS: IOA/NASA FM: EX			ole) ADEQUATE INADEQUATE									

i.

ASSESSMENT DATE: 12/22/87 NASA DATA: BASELINE [ASSESSMENT ID: LS-2033 1 NASA FMEA #: NEW [] SUBSYSTEM: LIFE SUPPORT MDAC ID: 2033 ITEM: VACUUM PORT QD AND PLUG (1) LEAD ANALYST: K. BARICKMAN ASSESSMENT: CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC Α ВС NASA [IASA [/] [] [] IOA [3 /2R] [P] [P] [P]] * [1 COMPARE [N/N] [N] [N] ſ 1 **RECOMMENDATIONS:** (If different from NASA) [3/2R] [P] [P] [P] [1 (ADD/DELETE) * CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE [1 **REMARKS:** IOA FM: FAILS TO OPEN, RESTRICTED FLOW

THERE WAS NO NASA WMS FMEA WHICH MATCHED THE IOA DESCRIPTION. THE NASA ANALYSIS MAY BE COMBINED WITH SOME OTHER HARDWARE OR REALLOCATED TO ANOTHER SUBSYSTEM.

ASSESSME ASSESSME NASA FME		12/22/ LS-203								ASA DA BASELI N		[]]
SUBSYSTE MDAC ID: ITEM:		2034	LIFE SUPPORT 2034 /ACUUM PORT QD AND PLUG (1)										
LEAD ANALYST: K. BARICKMAN													
ASSESSME	NT:												
	CRITICAL FLIGH		R	EDUND	AN	СХ	SCRE	EN	S			CIL ITE	м
	HDW/FU	NC	A			В			С				
NASA IOA	[/ [3 /2R]]	[[P]]	[[P]]	[[Р]]		[[] *]
COMPARE	[N /N]	[N]	[N]	[N]		[]
RECOMMEN	DATIONS:	(If	dif	feren	t	fro	om NA	SA)				
	[3 /2R]	[₽]	[P]	[P	J .	(AI	ן מ/סכ] ELETE)
* CIL RE	TENTION	RATIONA	LE:	(If	ap	pl:	icable			DEQUAT DEQUAT		-]
REMARKS: IOA FM:	FAILS T	O MATE/	DEM	ATE								-	-

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THERE WAS NO NASA WMS FMEA WHICH MATCHED THE IOA DESCRIPTION. THE NASA ANALYSIS MAY BE COMBINED WITH SOME OTHER HARDWARE OR REALLOCATED TO ANOTHER SUBSYSTEM.

REPORT DATE 03/10/88 C-240

					12/22/87 NASA DATA LS-2035 BASELINE 06-2-0404-1 NEW									INE					
SUBSYSTE MDAC ID: ITEM:				20	FE 35 T T					Ľ	INI	E (1))			·			
LEAD ANA	LY	ST	:	ĸ.	BA	RI	скі	MAN											
ASSESSMENT:																			
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM																			
]	HD	W/FUI	NC			A				В			С					
NASA IOA	[[3 3	/1R /3]]		[[P]]		[[NZ	1]]] [Р]]		[[]]	*
COMPARE	[/N]		[N]		[N]	[N]		[]	
RECOMMEN	DA!	FI (ons:		(If	d:	if	fere	ent	: 1	fro	om NZ	ASA)					
	[3	/1R]		[P]		[NA	.]	. [P]	(Al	ן כו / סכ		TE)
* CIL RE	TEI	NT:	ION I	TAS	ION	ALI	Ξ:	(I:	fa	p	pli	.cab]	le)				_	_	
													I		DEQUA DEQUA]	
REMARKS: IOA/NASA FM: EXTERNAL LEAKAGE IOA COMMENT: IF AN INTERNAL LEAK DEVELOPS IN THE MANUAL VACUUM VENT VALVE AS WELL AS THE EXTERNAL LEAKAGE IN THE WET TRASH VENT LINE WOULD PRODUCE AN UNRESTRICTED CABIN PRESSURE LOSS WHICH																			

LINE WOULD PRODUCE AN UNRESTRICTED CABIN PRESSURE LOSS WHICH COULD RESULT IN LOSS OF LIFE AND A CRITICALITY 3/1R PNP.

REPORT DATE 03/10/88

C-241

ASSESSME ASSESSME NASA FME	NT II		LS-20	L2/22/87 NASA DATA LS-2036 BASELINE D6-2-0403-1 NEW							
SUBSYSTE MDAC ID: ITEM:	M:		LIFE S 2036 WET T			LIN	Ē (1)			
LEAD ANA	LYST	:	K. BAI	RICK	MAN						
ASSESSME	NT:										
	CRIT:	ICAL LIGH		R	EDUND	ANCY	SCRE	ENS	5	CI IT	
		W/FU		A		В	\$		с	11.	CM
NASA IOA	[3 [3	/3 /3]]	[[]]	[[]]] []]	[[] *]
COMPARE	[/]	۵]	ſ]	נ]	٢]
RECOMMEN	DATIO	ONS:	(If	dif	feren	t fr	om NA	SA)			
	[3	/3]	[]	[]	[] (] ADD/] DELETE)
* CIL RE	TENT	ION	RATION	ALE:	(If	appl	icabl	·	ADEQUATE IADEQUATE	-]
REMARKS:	FM:	ΕX	TERNAL	LEA	KAGE					L	J

IOA/NASA FM: EXTERNAL LEAKAGE

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	XA: IE [] XW [X]								
	LIFE SUPPOR 2037 WET TRASH V								
LEAD ANALYST: K. BARICKMAN									
ASSESSMENT:									
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM									
HDW/FU		В	С	TIEW					
NASA [3 /3 IOA [3 /3	.] []] []	[] []	[]	[]*					
COMPARE [/] []	[]	[]	[]					
RECOMMENDATIONS:	(If diffe	rent from 1	NASA)						
[3 /3] []	[]	[]]	[] ADD/DELETE)					
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE [] REMARKS: IOA/NASA FM: EXTERNAL LEAKAGE									

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ASSESSMEI ASSESSMEI NASA FMEI	NT I	D:	LS-20	38	-1			ASA DATA BASELINE NEW		
SUBSYSTE MDAC ID: ITEM:			LIFE 2038 URINE			ION HOSI	ES (2)			
LEAD ANA	LYST	:	K. BA	RICK	MAN					
ASSESSME	NT:									
(ICAL LIGH	ITY T	R	EDUNI	DANCY SO			CIL ITEN	ſ
	HD	W/FU	NC	A		В	С			
NASA IOA	[3 [3	/2R /2R]]	[P [P]	[NA] [P]	[P [P]]	[[] *]
COMPARE	[/]	Γ]	[N]	ſ]	[]
RECOMMENI	DATI	ons:	(If	dif	fere	nt from	NASA)			
	[3	/2R]	[P]	[NA]	[P] נס/סכ] ELETE)
* CIL RET	FENT	ION	RATION	ALE:	(If	applica	AI	DEQUATE DEQUATE]]
REMARKS: IOA/NASA	FM:	RE	STRICT	ED F	LOW					

ASSESSMENT DATE: 12/22/87 NASA DATA: ASSESSMENT ID: LS-2039 BASELINE [] NASA FMEA #: NEW [] SUBSYSTEM: LIFE SUPPORT MDAC ID: 2039 ITEM: URINE COLLECTION HOSES LEAD ANALYST: K. BARICKMAN ASSESSMENT: CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM С HDW/FUNC A В NASA [/ IASA [/] [] [] [] IOA [3 /2R] [P] [P] [P]] * l 1 COMPARE [N/N] [N] [N] ſ 1 **RECOMMENDATIONS:** (If different from NASA) [3/2R] [P] [NA] [P] [٦ (ADD/DELETE) * CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE [1 **REMARKS:** IOA FM: EXTERNAL LEAKAGE

THERE WAS NO NASA WMS FMEA WHICH MATCHED THE IOA DESCRIPTION. THE NASA ANALYSIS MAY BE COMBINED WITH SOME OTHER HARDWARE OR REALLOCATED TO ANOTHER SUBSYSTEM.

ASSESSMENT DATE: 12/22/87 ASSESSMENT ID: LS-2040 NASA DATA: BASELINE [] NEW [X] 06-2-0435-1 NASA FMEA #: SUBSYSTEM: LIFE SUPPORT MDAC ID: 2040 WCS TO WWS QD (1) ITEM: LEAD ANALYST: K. BARICKMAN ASSESSMENT: CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC Α ВС NASA [2 /2 IASA [2/2] [] [] [] [X]* IOA [3/2R] [P] [P] [P] [] COMPARE [N/N] [N] [N] [N] **RECOMMENDATIONS:** (If different from NASA) [3/2R] [P] [NA] [P] **ر ا** (ADD/DELETE) * CIL RETENTION RATIONALE: (If applicable) ADEQUATE INADEQUATE [1 ٦ **REMARKS:** IOA FM: RESTRICTED FLOW NASA FM: RESTRICTED FLOW BUT ALSO INCLUDES ARS LINES. IOA COMMENT: THE LOSS OF THE QD BY RESTRICTED FLOW ONLY RESTRICTS THE USE OF THE WCS, IN WHICH CASE THE FCB AND UCD SUPPLIES MUST BE USED. THE FCB AND UCD SUPPLIES MAY BE INSUFFICIENT FOR MISSION DURATION, THUS CREATING A MISSION LOSS CRITICALITY 3/2R PNP. THOSE NASA FMEA WHICH INCLUDE A COLLECTION OF HARDWARE ITEMS MAY NOT MATCH THE IOA ANALYSIS. THE IOA ANALYSES PROVIDED SEPARATE ANALYSES FOR EACH PIECE OF EQUIPMENT. THE BASIC PREMISE OF THE NASA FMEA DID AGREE WITH THE IOA ANALYSIS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-20402 06-2-044	7 A 43-1		NASA DATA BASELINE NEW					
SUBSYSTEM: MDAC ID:	LIFE SUI 2040								
LEAD ANALYST:	K. BARIC	CKMAN							
ASSESSMENT:									
CRITICAL FLIGH HDW/FU			NCY SCREE B	ns C	CIL ITEM				
NASA [2 /2 IOA [3 /2R] [] [] [P] [] P]	[] [P]	[X]* []				
COMPARE [N /N	J [И] [И	ן א ן	[N]	[N]				
RECOMMENDATIONS:	(If di	ifferent	from NAS	A)					
[3 /2R] [P] [NA]		[] DD/DELETE)				
* CIL RETENTION 1	RATIONALE	E: (If ap			[]				
REMARKS:				ADEQUATE INADEQUATE	Ĩ Ĩ				
REMARKS: IOA/NASA FM: RESTRICTED FLOW IOA COMMENT: THE LOSS OF THE QD BY RESTRICTED FLOW ONLY RESTRICTS THE USE OF THE WCS, IN WHICH CASE THE FCB AND UCD SUPPLIES MUST BE USED. THE FCB AND UCD SUPPLIES MAY BE INSUFFICIENT FOR MISSION DURATION, THUS CREATING A MISSION LOSS CRITICALITY 3/2R PNP.									
THOSE NASA EMEA N	JHTCH TNC	ה שתוו זי			DE THEME MAY				

THOSE NASA FMEA WHICH INCLUDE A COLLECTION OF HARDWARE ITEMS MAY NOT MATCH THE IOA ANALYSIS. THE IOA ANALYSES PROVIDED SEPARATE ANALYSES FOR EACH PIECE OF EQUIPMENT. THE BASIC PREMISE OF THE NASA FMEA DID AGREE WITH THE IOA ANALYSIS.

REPORT DATE 03/10/88

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ASSESSMENT DATH ASSESSMENT ID: NASA FMEA #:	LS-2041	S-2041 BASELINE]]
SUBSYSTEM: MDAC ID: ITEM:	2041	IFE SUPPORT 041 CS TO WWS QD (1)						
LEAD ANALYST: K. BARICKMAN								
ASSESSMENT:								
CRITICA FLIC		REDUND	ANCY	SCRE	ENS		CIL ITE	
		A	В		C	2	TIC	11
NASA [2 /2 IOA [2 /2] [] []]	[[]]	[[]]	[X [X] *]
COMPARE [/] []	[]	[1	[]
RECOMMENDATIONS	: (If di	fferen	t fr	om NA	SA)			
[2 /2	:] []	[]	٤		[A DD/D] ELETE)
* CIL RETENTION REMARKS:	RATIONALE	: (If	appl	icabl	1	ADEQUATE ADEQUATE]]
IOA/NASA FM: H	XTERNAL LEA	AKAGE						

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2041A	-2	NASA DATA BASELINE NEW					
SUBSYSTEM: MDAC ID: ITEM:	2041	IFE SUPPORT 041 CS TO WWS QD (1)						
LEAD ANALYST:	K. BARICKM	IAN						
ASSESSMENT:								
CRITICAL FLIGH	ITY RE T	EDUNDANCY	SCREEN	IS	CIL ITEM			
HDW/FU	NC A	В		С				
NASA [2/2 IOA [2/2] [] [] [] [] [] []	[X]* [X]			
COMPARE [/] [] [] []	[]			
RECOMMENDATIONS:	(If diff	erent fr	om NASA	<i>v</i>)				
[2 /2] [] [] [] (A	[A] DD/DELETE)			
* CIL RETENTION	RATIONALE:	(If appl	•	ADEQUATE NADEQUATE	[]			
IOA/NASA FM: EX	TERNAL LEAK	AGE						

ASSESSMENT DATE: 12/22/87 NASA DATA: BASELINE [ASSESSMENT ID: LS-2042 1 NASA FMEA #: 06-2-0435-2 NEW [X] LIFE SUPPORT SUBSYSTEM: MDAC ID: 2042 ITEM: WCS TO WWS LINE (1) LEAD ANALYST: K. BARICKMAN ASSESSMENT: CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A В С NASA [2 /2] IOA [2 /2]]. [X]* [X] [[]] [[]] [[1 [] COMPARE [/] [] **RECOMMENDATIONS:** (If different from NASA) [2/2]] [A] (ADD/DELETE) * CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE ſ 1 **REMARKS:** IOA/NASA FM: EXTERNAL LEAKAGE

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2042A	i-2			DATA: ELINE [] NEW [X]		
MDAC ID:	2042	IFE SUPPORT 042 CS TO WWS LINE (1)					
LEAD ANALYST: K. BARICKMAN							
ASSESSMENT:							
CRITICAL FLIGH	ITY R	EDUNDAN	ICY SCRE	ENS	CIL ITEM		
HDW/FU		L	В	С	l i em		
NASA [2/2 IOA [2/2] [] [] [] []	[] []	[X]* [X]		
COMPARE [/] [] []	[]	[]		
RECOMMENDATIONS:	(If dif	ferent	from NA	SA)			
[2 /2] [] []	[]	[A] (ADD/DELETE)		
* CIL RETENTION REMARKS:			plicabl	e) ADEQU INADEQU	E 2		
IOA/NASA FM: EX	TERNAL LEA	KAGE					

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2043	S-2043 BASELINE]]
MDAC ID:	2043	IFE SUPPORT 043 CS TO WWS DYNATUBE (1)							
LEAD ANALYST:	K. BARICK	MAN							
ASSESSMENT:									
CRITICAL		EDUNDA	ANCY	SCREE	ENS			IL PEN	
FLIGH HDW/FU			В		(c	1.	I.FL	1
NASA [2/2 IOA [2/2] [] []]	[[]]	[[]]	[[X X] *]
COMPARE [/] []	[]	נ]	۵]
RECOMMENDATIONS:	(If dif:	ferent	: fro	om NAS	SA)				
[2 /2] []	[]	[] (A		A /DI] ELETE)
* CIL RETENTION	RATIONALE:	(If a	appl:	icable	i	ADEQUATE ADEQUATE	-]]
IOA/NASA FM: EX	TERNAL LEAD	KAGE						•	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2043A	-2			DATA: ELINE NEW	[] [X]			
	2043								
LEAD ANALYST:	K. BARICK	MAN							
ASSESSMENT:									
CRITICAL FLIGH		EDUNDAN	NCY SCREI	ENS		CIL ITEM			
HDW/FU			В	с					
NASA [2 /2 IOA [2 /2] [] [] [[] []	[] []		[X] * [X]			
COMPARE [/] [] [[]]	[]		[]]			
RECOMMENDATIONS:	(If dif	ferent	from NAS	SA)					
[2 /2] [] [[]	[]	(AD	[A] D/DELET	E)		
* CIL RETENTION	RATIONALE:	(If ar	oplicable		UATE UATE	[]			
REMARKS: IOA/NASA FM: EX	TERNAL LEA	KAGE							

ASSESSME ASSESSME NASA FME	NT NT A	D I #:	ATE D:	:	12/22, LS-204 06-2-0	L2/22/87 NASA DATA: LS-2044 BASELINE D6-2-0435-1 NEW							Ε]]			
SUBSYSTE MDAC ID: ITEM:					2044	IFE SUPPORT 044 CS TO WWS DYNATUBE (1)												
LEAD ANALYST: K. BARICKMAN																		
ASSESSMENT:																		
CRITICALITY REDUNDANCY SCREENS FLIGHT								C]	IL FEI									
		_			iC	1	A			В			С			. 191	1	
NASA IOA	[[2 3	/2 /3]	[[]]	[[]]		[[]]	[[X]]	*
COMPARE	[N	/N]	[]	[]		[]	[N]	
RECOMMEN	DA	TI	ons	:	(If	di	ff	feren	t 1	fro	om NI	AS.	A)					
	Ĺ	3	/2	R]	[]	P]	[NZ	A]		[P] (A] ELE	ETE)
* CIL RE	TE	NT	ION	F	RATION	ALE	:	(If a	app)]:	icabl		-	DEQUATE DEQUATE	[[]	
REMARKS:		м.	Ð	ភទ	יייסדפייי	ו היא	гT	ึญพ						~				
IOA/NASA FM: RESTRICTED FLOW IOA COMMENT: THE LOSS OF THE DYNATUBE BY RESTRICTED FLOW ONLY																		
RESTRICTS THE USE OF THE WCS, IN WHICH CASE THE FCB AND UCD SUPPLIES MUST BE USED. THE FCB AND UCD SUPPLIES MAY BE																		
INSUFFICIENT FOR MISSION DURATION, THUS CREATING A MISSION LOSS CRITICALITY 3/2R PNP.																		

THOSE NASA FMEA WHICH INCLUDE A COLLECTION OF HARDWARE ITEMS MAY NOT MATCH THE IOA ANALYSIS. THE IOA ANALYSES PROVIDED SEPARATE ANALYSES FOR EACH PIECE OF EQUIPMENT. THE BASIC PREMISE OF THE NASA FMEA DID AGREE WITH THE IOA ANALYSIS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	: [] [X]							
SUBSYSTEM:LIFE SUPPORTMDAC ID:2044ITEM:WCS TO WWS DYNATUBE (1)								
LEAD ANALYST:	K. BARICKMA	AN						
ASSESSMENT:								
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM								
HDW/FU		В	C	2				
NASA [2 /2 IOA [3 /3) []] []	[[] [] []]	[X] * []			
COMPARE [N /N] []	[] []	[N]			
RECOMMENDATIONS:	(If diffe	erent fro	om NASA)					
[3 /2R] [P]	[N#	A] [I	-	[] DD/DELETE)			
* CIL RETENTION 1	RATIONALE: ((If appli	• _	DEQUATE	[]			
ADEQUATE [] INADEQUATE [] REMARKS: IOA/NASA FM: RESTRICTED FLOW IOA COMMENT: THE LOSS OF THE DYNATUBE BY RESTRICTED FLOW ONLY RESTRICTS THE USE OF THE WCS, IN WHICH CASE THE FCB AND UCD SUPPLIES MUST BE USED. THE FCB AND UCD SUPPLIES MAY BE INSUFFICIENT FOR MISSION DURATION, THUS CREATING A MISSION LOSS CRITICALITY 3/2R PNP.								

THOSE NASA FMEA WHICH INCLUDE A COLLECTION OF HARDWARE ITEMS MAY NOT MATCH THE IOA ANALYSIS. THE IOA ANALYSES PROVIDED SEPARATE ANALYSES FOR EACH PIECE OF EQUIPMENT. THE BASIC PREMISE OF THE NASA FMEA DID AGREE WITH THE IOA ANALYSIS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	NASA DATA BASELINE NEW						
SUBSYSTEM: MDAC ID: ITEM:	2045						
LEAD ANALYST:	K. BARICKMAN						
ASSESSMENT:	ASSESSMENT:						
CRITICAL FLIGH	ITY REDUND.	ANCY SCREENS	CIL ITEM				
	NC A	ВС	LIEM				
NASA [3 /2R IOA [3 /2R] [P]] [P]	[NA] [P] [P] [P]	[] * []				
COMPARE [/] []	[И] []	[]]				
RECOMMENDATIONS:	(If differen	t from NASA)					
[3 /2R] [₱]	[NA] [P] (Al	[] DD/DELETE)				
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []							
REMARKS: IOA FM: FAILS TO SWITCH, LOSS OF OUTPUT, BINDING NASA FM: JAMMED LINKAGE, VACUUM VENT POSITION IOA COMMENT: CHANGE SCREEN B IN THE MDAC ANALYSIS TO N/A BECAUSE FCBs ARE AN OFF-LINE REDUNDANT SYSTEM.							

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/8 LS-2045 06-2-02	37 5A 216-2	NASA DATA: BASELINE [] NEW [X]						
SUBSYSTEM: MDAC ID: ITEM:	2045		OL HANDLE						
LEAD ANALYST:	K. BARI	CKMAN							
ASSESSMENT:									
CRITICA FLIG	CRITICALITY REDUNDANCY SCREENS								
HDW/FU	JNC	A	В	С					
NASA [3 /1] IOA [3 /2]	R] [R] [[P] [P]	[NA] [P]	[P] [P]	[]*				
COMPARE [/N] [[]	[N]	[]	[]				
RECOMMENDATIONS	: (If d	lifferen	t from NA	SA)					
[3 /1]	R]	[₽]	[NA]		[] .DD/DELETE)				
* CIL RETENTION	RATIONAI	LE: (If	applicable	e) ADEQUATE INADEQUATE	[]				
REMARKS: IOA FM: FAILS ' NASA FM: JAMME		E, MID-S	TROKE POS		000 07 0357				

IOA COMMENT: THE JAMMED LINKAGE IS A POTENTIAL FOR LOSS OF CABIN ATMOSPHERE IF A SECOND FAILURE OCCURS, THUS THE 3/1R CRITICALITY.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2045B 06-2-0216-	: [] [X]							
SUBSYSTEM: MDAC ID: ITEM:	2045	LIFE SUPPORT							
LEAD ANALYST:	K. BARICK	K. BARICKMAN							
ASSESSMENT:									
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C									
NASA [3/3 IOA [3/2R] [] [P] [] [] [P] [] P]	[] * []				
COMPARE [/N] [N] [N] [N]	[]				
RECOMMENDATIONS:	(If diff	ferent f	from NASA)						
[3 /2R] [P] [NA] [P] (AI	[] DD/DELETE)				
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []									
REMARKS:	ר אדיירא ז	LOSS OF		RINDING					
IOA FM: FAILS TO SWITCH, LOSS OF OUTPUT, BINDING NASA FM: JAMMED LINKAGE, FECAL COLLECTION POSITION									
IOA COMMENT: IF									
POSSIBLE TO CLOSI CRITICALITY?	L THE GATE	VALVE,	WHICH WOU	ILU BE A 3/	ZK PNP				
A POTENTIAL LOSS									
THE IOA FOR ANY DEFINED AS ANY FA									

DEFINED AS ANY FAILURE WHICH COULD REQUIRE USE OF CONTINGENCY WASTE COLLECTION METHODS IF ANOTHER FAILURE OCCURRED. HOWEVER, THE NASA FMEA LISTED THESE AS A NON-MISSION ESSENTIAL FAILURE CRITICALITY.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2045C 06-2-0216-4	12/22/87 NASA DATA: LS-2045C BASELINE [06-2-0216-4 NEW [X						
	2045							
LEAD ANALYST:	K. BARICKMAN	. BARICKMAN						
ASSESSMENT:								
FLIGH			CIL ITEM					
HDW/FU	NC A	B C						
NASA [3 /3 IOA [3 /2R] []] [P]	[] [] [P] [P]	[] * []					
COMPARE [/N] [И]	[N] [N]	[]					
RECOMMENDATIONS:		t from NASA) [NA] [P]	[]					
())	, j , j		DD/DELETE)					
* CIL RETENTION	RATIONALE: (If a	applicable) ADEQUATE INADEQUATE	[]					
IOA FM: FAILS T NASA FM: BROKEN POSITION) IOA COMMENT: IF	LINKAGE TO REPI THE LINKAGE IS	OF OUTPUT, BINDING RESS, SLIDE, BALLAST JAMMED IN THIS POSIT E. WHICH WOULD BE A 3	ION HOW IS IT					
POSSIBLE TO CLOSE THE GATE VALVE, WHICH WOULD BE A 3/1R PNP CRITICALITY? A POTENTIAL LOSS OF THE WCS WAS VIEWED AS A 3/2R CRITICALITY BY THE IOA FOR ANY "OFF NOMINAL" CONDITION. "OFF NOMINAL" WAS DEFINED AS ANY FAILURE WHICH COULD REQUIRE USE OF CONTINGENCY WASTE COLLECTION METHODS IF ANOTHER FAILURE OCCURRED. HOWEVER, THE NASA FMEA LISTED THESE AS A NON-MISSION ESSENTIAL FAILURE								
CRITICALITY.								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2045	D		NASA DATA: BASELINE [] NEW [X]						
	LIFE SU 2045 COMMOD		OL HANDLE	LINKAGE (1)						
LEAD ANALYST:	K. BARI	CKMAN								
ASSESSMENT:										
CRITICALITY REDUNDANCY FLIGHT HDW/FUNC A B				ENS C	CIL ITEM					
NASA [3 /2R IOA [3 /2R] [P] P]	[NA] [P]	[P] [P]	[]*					
COMPARE [/] []	[N]	[]	[]]					
RECOMMENDATIONS: (If different from NASA)										
[3 /2R] [P]	[NA]		[] .DD/DELETE)					
* CIL RETENTION	RATIONAL	E: (If a	applicable	e) ADEQUATE INADEQUATE	[]					
REMARKS: IOA FM: FAILS TO SWITCH, LOSS OF OUTPUT, BINDING NASA FM: BROKEN LINKAGE TO REPRESS AND BALLAST VALVE (VACUUM VENT POSITION)										

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2045E 06-2-0216-6	12/22/87 NASA DATA: LS-2045E BASELINE 06-2-0216-6 NEW						
SUBSYSTEM: MDAC ID: ITEM:	2045							
LEAD ANALYST: K. BARICKMAN								
ASSESSMENT:								
CRITICAL FLIGH	ITY REDUNDAN	CY SCREENS	CIL ITEM					
	NC A	B C						
NASA [3/3 IOA [3/2R] [] [] [P] [] [] P] [P]	[] * []					
COMPARE [/N] [N] [N] [N]	[]					
	(If different :] [P] [NA] [P]	[] DD/DELETE)					
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE [] REMARKS: IOA FM: FAILS TO SWITCH, LOSS OF OUTPUT, BINDING NASA FM: BROKEN LINKAGE TO REPRESS AND BALLAST VALVE (VACUUM VENT POSITION) IOA COMMENT: IF THE LINKAGE IS JAMMED IN THIS POSITION HOW IS IT POSSIBLE TO CLOSE THE GATE VALVE, WHICH WOULD BE A 3/1R PNP CRITICALITY? A POTENTIAL LOSS OF THE WCS WAS VIEWED AS A 3/2R CRITICALITY BY THE IOA FOR ANY "OFF NOMINAL" CONDITION. "OFF NOMINAL" WAS DEFINED AS ANY FAILURE WHICH COULD REQUIRE USE OF CONTINGENCY WASTE COLLECTION METHODS IF ANOTHER FAILURE OCCURRED. HOWEVER,								
		DN-MISSION ESSENTIAL						

ASSESSME ASSESSME NASA FME	NT I NT I A #:	DATE:	12/22/87 LS-2045F 06-2-0216-7					NASA DATA: BASELINE [] NEW [X]											
SUBSYSTE MDAC ID: ITEM:			2045	LIFE SUPPORT 2045 COMMODE CONTROL HAN						ANDLE	L	ENI	KAGE	E (1))				
LEAD ANA	LYSI	::	K. BAI	RIC	K	IAN													
ASSESSME	NT:																		
		ICAL	ITY		RI	EDUND	A	N	CY	SCRE	ENS	5			-	CIL			
			NC		Α				В			С			ITEM				
NASA IOA	[3 [3	/2R /2R]]	[[P P]]		[[NA P	1]]	[[P P]]		[[]]	*	
COMPARE	[1]	[]		[N]	[]		[]		
RECOMMENDATIONS: (If different from NASA)																			
	[3	/2R]	[P]		[NA	\]	[P]	(2		/ DI		ETE)	
* CIL RE	TENI	NON 1	RATION	ALE	:	(If	aj	pı	oli	cable	-	AI JAI	DEQU	JATE JATE	[r]		
ADEQUATE [] INADEQUATE [] REMARKS: IOA FM: FAILS TO SWITCH, LOSS OF OUTPUT, BINDING NASA FM: BROKEN LINKAGE TO REPRESS AND BALLAST VALVE (VACUUM																			

VENT POSITION)

ASSESSME ASSESSME NASA FME	NT I	:D:	LS-20	46	TA: NE [EW []] K]								
SUBSYSTE MDAC ID: ITEM:			LIFE 2046 MANUA			ALVE	(1)							
LEAD ANA	LYSI	?:	K. BA	RICK	MAN									
ASSESSME	ASSESSMENT:													
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM														
			NC	А		B	\$	(с	1.1.1	EM			
NASA IOA	[3 [3	/3]]	[[]]	[[]]	[[]]	[[] *]	r		
COMPARE	[/]	[]	[]	[]	[]			
RECOMMEN	DATI	ons:	(If	dif	fere	nt fr	om N2	ASA)						
	[3	/3]	[]	[]	[]	[(ADD/D])ELEI	PE)		
* CIL RE	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []													
IOA FM:	IOA FM: FAILS TO OPEN, RESTRICTED FLOW NASA FM: INABILITY TO OPEN, RESTRICTED FLOW													

ASSESSMENT DATE:12/22/87NASA DATAASSESSMENT ID:LS-2047BASELINENASA FMEA #:06-2-0401-2NEW]		
SUBSYSTE MDAC ID: ITEM:			LIFE 2047 MANUA			LV:	E	(1)					
LEAD ANA	LYST	:	K. BA	RICK	MAN								
ASSESSME	ASSESSMENT:												
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM													
	_		NC	A			В			С			
NASA IOA	[3 [3	/1R /2R]	[P [P]]	[[N/ P	A]]	[[P P]]	[[] *]
COMPARE	[/N]	[]	[N]	[]	C]
RECOMMEN	DATI	ONS:	(If	dif	feren	it :	fro	om NA	ASA)				
	[3	/1R]	[P]	[NZ	A]	[Ρ] .DD/D] DELETE)
* CIL RE	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []												
IOA/NASA	IOA/NASA FM: FAILS TO CLOSE, INTERNAL LEAK IOA COMMENT: WITH AN INTERNAL LEAK OF THE MANUAL VACUUM VENT												

IOA/NASA FM: FAILS TO CLOSE, INTERNAL LEAK IOA COMMENT: WITH AN INTERNAL LEAK OF THE MANUAL VACUUM VENT VALVE THERE IS POTENTIAL FOR LOSS OF LIFE DUE TO CABIN DEPRESSURIZATION IF A SEAL ON THE COMMODE CONTROL VALVE GOES "BAD" AND LEAKS. THE CRITICALITY BECOMES 3/1R PNP.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2048 06-2-0401-4	NASA DATA BASELINE NEW						
SUBSYSTEM: MDAC ID:	LIFE SUPPORT 2048 MANUAL VENT VALVI							
LEAD ANALYST:	K. BARICKMAN							
ASSESSMENT:								
CRITICAL FLIGH	CIL ITEM							
HDW/FU	NC A	B C						
NASA [2 /1R IOA [3 /2R] [P] [] [P] [P] [P] P] [P]	[X]* []					
COMPARE [N /N] [] [] []	[N]					
	(If different f	•						
[3 /1R] [P] [[] DD/DELETE)					
* CIL RETENTION	RATIONALE: (If app	plicable) ADEQUATE INADEQUATE						
REMARKS: IOA/NASA FM: EXTERNAL LEAKAGE IOA COMMENT: IF THE VALVE EXTERNAL LEAKAGE DEVELOPS SUCH THAT THE AIR FLOW IS DOWNSTREAM OF THE VALVE CONTROLLER (PAST 2 SEALS) THEN A POTENTIAL LOSS OF LIFE WOULD BE POSSIBLE DUE TO UNCONTROLLED CABIN PRESSURE LOSS IF THE VACUUM VENT ISOLATION VALVE DID NOT FUNCTION TO RESTRICT THE AIR FLOW. THE RECOMMENDED CRITICALITY WOULD BE 3/1R PNP. THE IOA ANALYSIS VIEWED THE FIRST FAILURE TO BE A NON-MISSION ESSENTIAL CRITICALITY, HOWEVER SECONDARY FAILURES COULD CREATE MAJOR PROBLEMS. THE NASA FMEA CRITICALITY VIEWED THE FIRST FAILURE TO BE AT LEAST A MISSION LOSS, IF NOT A LIFE THREATENING CONDITION.								

ASSESSMENT DATE: 12/22/87 ASSESSMENT ID: LS-2049 NASA FMEA #: 06-2-0208-1							NASA DATA: BASELINE [] NEW [X]								
SUBSYSTE MDAC ID: ITEM:			LIFE S 2049 COMMOI				C	נאכ	TROL	VA:	LVI	E (1)			
LEAD ANA	LYST	:	K. BAI	RICK	MAN										
ASSESSME	NT:														
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C															
		·						_			-				
NASA IOA	[3 [3	/2R /2R]	[P [P	·]] [N2 P	¥]]	[[P P]	[[] *]	
COMPARE	נ	/	1	[3		[N]	נ]	٢	1	
RECOMMEN	DATI	ons:	(If	dif	feren	it		fro	om NA	SA)				
	[3	/2R]	[F	']		[NZ	\]	[P] ADD/D		Z)
* CIL RE	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []														
	REMARKS: IOA FM: RESTRICTED FLOW, FAILS TO OPEN NASA FM: INABILITY TO TRANSFER, STUCK IN FECAL POSITION														

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-20492	A		NASA DATA BASELINE NEW						
SUBSYSTEM: MDAC ID: ITEM:	DAC ID: 2049									
LEAD ANALYST: K. BARICKMAN										
ASSESSMENT:										
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM										
HDW/FU		A	В	С						
NASA [3 /2R IOA [3 /2R] [] [P] P]	[NA] [P]	[P] [P]	[] * []					
COMPARE [/] []	[N]	[]	[]					
RECOMMENDATIONS:	(If di	ifferen	t from NAS	SA)						
[3 /2R] [P]	[NA]		[] DD/DELETE)					
* CIL RETENTION	RATIONALE	E: (If a	applicable	≥) ADEQUATE INADEQUATE						
REMARKS: IOA FM: RESTRIC	TED FLOW				-					

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2050	BASELINE []								
	LIFE SU 2050 COMMODE		T CONTROL	VALVE (1)						
LEAD ANALYST:	K. BARI	CKMAN								
ASSESSMENT:										
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C										
HDW/FU	NC	A	В	C						
NASA [3 /1R IOA [3 /2R] [] [[P] [P]	[NA] [P]	[P] [P]	[] * []					
COMPARE [/N] [[]	[И]	נז	נ ז					
RECOMMENDATIONS:	(If d	liffere	ent from NA	SA)						
[3 /1R] [[P]	[NA]		[] ADD/DELETE)					
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []										
NASA FM: INABIL	IOA FM: FAILS TO CLOSE, INTERNAL LEAKAGE NASA FM: INABILITY TO TRANSFER, STUCK IN VENT POSITION									

NASA FM: INABILITY TO TRANSFER, STUCK IN VENT POSITION IOA COMMENT: IF THE COMMODE OUTLET CONTROL VALVE AND THE MANUAL VACUUM VENT VALVE BOTH DEVELOP INTERNAL LEAKAGES THEN A POTENTIAL LOSS OF LIFE DUE TO CABIN DE-PRESSURIZATION IS POSSIBLE. THE RECOMMENDED CRITICALITY CHANGE TO THE IOA ANALYSIS IS 3/1R PNP.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:):	LS-2050A														
SUBSYSTE MDAC ID: ITEM:				20	50				тс	:0	NTROL	VA	.L/	/E	E (1)			
LEAD ANA	LYS	ST :		ĸ.	BAF	RIC	KN	IAN										
ASSESSME	NT	:																
		FI	ICALI LIGHI V/FUN	Г					DAN		Y SCRE	EN		2		CIL ITE		
NASA IOA	[[3 3	/1R /2R]]		[[P P]]	(•	NA] P]	[I	<u>.</u>]]	[[]]	*
COMPARE	[/N]		[]	[1 ј	[]	[]	
RECOMMEN	DAI	CIC	ons:		(If	đi	ff	iere	nt	f	rom NA	SA	.)					
	[3	/1R]		[P]	[NA]	[ł	?		[]]]] ELI	ETE)
* CIL RE		1T)	ION I	RAT	IONA	\L F	::	(If	aŗ	p	licabl	•	7		DEQUATE DEQUATE]]	
REMARKS: IOA FM: FAILS TO CLOSE, INTERNAL LEAKAGE NASA FM: LEAKAGE IOA COMMENT: IF THE COMMODE OUTLET CONTROL VALVE AND THE MANUAL VACUUM VENT VALVE BOTH DEVELOP INTERNAL LEAKAGES THEN A POTENTIAL LOSS OF LIFE DUE TO CABIN DE-PRESSURIZATION IS POSSIBLE. THE RECOMMENDED CRITICALITY CHANGE IN THE IOA ANALYSIS IS 3/1R PNP.																		

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2051 06-2-0208·	N	IASA DATA: BASELINE NEW	-]]				
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPO 2051	ORT	ONTROL VAI	JVE					
LEAD ANALYST:	K. BARICK	MAN							
ASSESSMENT:									
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM									
HDW/FU	-	E	в с	2					
NASA [3 /1F IOA [3 /3] [P]] [N] [NA] [F] [)]	[[] *]			
COMPARE [/N] [N) [N	א] [א	[]	C]			
RECOMMENDATIONS:	(If dif	ferent fr	com NASA)						
[3 /1R] [P] [N	NA] [F] LETE)			
* CIL RETENTION	RATIONALE:	(If appl	Ā	DEQUATE	C]			
INADEQUATE []									
IOA/NASA FM: EXTERNAL LEAKAGE IOA COMMENT: IF THE COMMODE OUTLET CONTROL VALVE DEVELOPS AN									
EXTERNAL LEAKAGE AND A INTERNAL LEAKAGE ON THE MANUAL VACUUM VENT VALVE THEN A POTENTIAL LOSS OF LIFE COULD OCCUR AND THE IOA									

CRITICALITY SHOULD BE CHANGED TO 3/1R PNP.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2052	9-2		NASA DATA BASELINE NEW						
SUBSYSTEM: MDAC ID: ITEM:			RIZATION V	VALVE (1)						
LEAD ANALYST:	K. BARICH	KMAN								
ASSESSMENT:										
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM										
HDW/FU		A	В	С	* * *					
NASA [3 /2R IOA [3 /2R] [F	?] ?]	[NA] [P]	[P] [P]	[[] *]				
COMPARE [/	J []	[N]	[]	נ]				
RECOMMENDATIONS:	(If dif	fferent	t from NAS	A)						
[3 /2R] [F	?]	[NA]] וס/סס] ELETE)				
* CIL RETENTION 1	RATIONALE:	: (If a				_				
ADEQUATE [] INADEQUATE []										
REMARKS: IOA FM: RESTRICTED FLOW, FAILS TO OPEN NASA FM: INABILITY TO OPEN, STUCK IN FECAL POSITION IOA COMMENT: CHANGE B SCREEN ON THE IOA ANALYSIS TO N/A										

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2052A	LS-2052A BASELINE								
MDAC ID:	LIFE SUPPORT 2052 COMMODE PRESSUR	RIZATION VALVE (1)								
LEAD ANALYST:	K. BARICKMAN									
ASSESSMENT:	ASSESSMENT:									
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM										
HDW/FU		B C	I I EM							
NASA [3 /2R IOA [3 /2R] [P]] [P]	[P] [P] [P] [P]	[] * []							
COMPARE [/] []	[]][]]	[]							
RECOMMENDATIONS:	(If different	from NASA)								
[3 /2R] [P]	[NA] [P]	[] (ADD/DELETE)							
* CIL RETENTION	RATIONALE: (If a									
		ADEQUAT INADEQUAT								
REMARKS: IOA/NASA FM: RESTRICTED FLOW IOA COMMENT: CHANGE B SCREEN ON THE IOA ANALYSIS TO N/A										
THE DISAGREEMENT IN THE REDUNDANCY SCREENS WAS DUE TO NO DETAILED DISCUSSION WITH THE NASA SUBSYSTEM MANAGERS REGARDING THE										

REDUNDANT PATHS.

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2053 06-2-0209-1	NASA DATA: BASELINE [] NEW [X]								
MDAC ID:	LIFE SUPPORT 2053 COMMODE PRESSURIZATION VAI	LVE (1)								
LEAD ANALYST:	K. BARICKMAN									
ASSESSMENT:										
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C										
HDW/FU	NC A B	C								
NASA [3 /3 IOA [3 /2R] [] [] [] [P] [P] [] []* P] []								
COMPARE [/N] [N] [N] [и] []								
RECOMMENDATIONS:	(If different from NASA)									
[3 /2R] [P] [NA] [P] [] (ADD/DELETE)								
* CIL RETENTION	RATIONALE: (If applicable)									
		ADEQUATE [] IADEQUATE []								
REMARKS: IOA FM: FAILS TO CLOSED, INTERNAL LEAKAGE NASA FM: INABILITY TO CLOSED, STUCK IN REPRESS POSITION IOA COMMENT: IF THE VALVE DOES NOT ALLOW COMPLETE FLOW TO THE FAN/SEPARATOR, HAVE SUSTAINED A POTENTIAL LOSS OF EFFICEINCY AND THE FCB AND UCD SUPPLIES MUST BE USED. THERE IS A POTENTIAL FOR INSUFFICEINT SUPPLIES FOR MISSION DURATION, THUS LOSS OF MISSION POTENTIAL. THE CRITICALITY SHOULD BE 3/2R PNP. A POTENTIAL LOSS OF THE WCS WAS VIEWED AS A 3/2R CRITICALITY BY THE IOA FOR ANY "OFF NOMINAL" CONDITION. "OFF NOMINAL" WAS DEFINED AS ANY FAILURE WHICH COULD REQUIRE USE OF CONTINGENCY WASTE COLLECTION METHODS IF ANOTHER FAILURE OCCURRED. HOWEVER, THE NASA FMEA LISTED THESE AS A NON-MISSION ESSENTIAL FAILURE CRITICALITY.										

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							A DATA: SELINE (NEW (
SUBSYSTE MDAC ID: ITEM:			LIFE 2053 COMMO			URIZA	TION	VALVE	(1)		
LEAD ANALYST: K. BARICKMAN											
ASSESSME	ASSESSMENT:										
CRITICALITY REDUNDANCY SCREENS FLIGHT HDW/FUNC A B C									IL TEM		
NASA IOA	[3 [3	/3 /2R]]	[[₽]	[[P]]	[] [P]	[[]]	*
COMPARE	[/N]	[N]	[N]	[N]	ſ]	
RECOMMEN	DATI	ONS:	(If	dif	fere	nt fr	om N2	ASA)			
	[3	/2R]	[F]	[N.	A]	[P]] /DELE	TE)
* CIL RE					·			ADE	QUATE [QUATE []	
IOA FM: FAILS TO CLOSED, INTERNAL LEAKAGE NASA FM: LEAKAGE IOA COMMENT: IF THE VALVE DOES NOT ALLOW COMPLETE FLOW TO THE FAN/SEPARATOR, HAVE SUSTAINED A POTENTIAL LOSS OF EFFICEINCY AND THE FCB AND UCD SUPPLIES MUST BE USED. THERE IS A POTENTIAL FOR INSUFFICEINT SUPPLIES FOR MISSION DURATION, THUS LOSS OF MISSION POTENTIAL. THE CRITICALITY SHOULD BE 3/2R PNP. A POTENTIAL LOSS OF THE WCS WAS VIEWED AS A 3/2R CRITICALITY BY THE IOA FOR ANY "OFF NOMINAL" CONDITION. "OFF NOMINAL" WAS DEFINED AS ANY FAILURE WHICH COULD REQUIRE USE OF CONTINGENCY WASTE COLLECTION METHODS IF ANOTHER FAILURE OCCURRED. HOWEVER, THE NASA FMEA LISTED THESE AS A NON-MISSION ESSENTIAL FAILURE CRITICALITY.											

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2054 06-2-0209-3	NASA DATA: BASELINE [] NEW [X]					
SUBSYSTEM:LIFE SUPPORTMDAC ID:2054ITEM:COMMODE PRESSURIZATION VALVE (1)							
LEAD ANALYST:	K. BARICKMAN						
ASSESSMENT:							
CRITICAL FLIGH	G CIL ITEM						
HDW/FU		C					
NASA [3 /3 IOA [3 /2R] [] [] [] [P] [P] [] []* P] []					
COMPARE [/N] [N] [N] [м] []					
RECOMMENDATIONS:	(If different from NASA)						
[3 /2R] [P] [NA] [P] [] (ADD/DELETE)					
* CIL RETENTION	RATIONALE: (If applicable)						
	IN	ADEQUATE [] IADEQUATE []					
REMARKS: IOA FM: EXTERNA NASA FM: LEAKAG	L LEAKAGE						
IOA COMMENT: IF	THE VALVE DOES NOT ALLOW CO AVE SUSTAINED A POTENTIAL I						
THE FCB AND UCD		CRE IS A POTENTIAL FOR					
MISSION POTENTIA	L. THE CRITICALITY SHOULD F THE WCS WAS VIEWED AS A 3	BE 3/2R PNP. A					
IOA FOR ANY "OFF	NOMINAL" CONDITION. "OFF HICH COULD REQUIRE USE OF C	NOMINAL" WAS DEFINED					
COLLECTION METHO	DS IF ANOTHER FAILURE OCCUR THESE AS A NON-MISSION ESS	RED. HOWEVER, THE					
CRITICALITY.							

REPORT DATE 03/10/88 C-275

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2055	-2		NASA DATA BASELINE NEW					
MDAC ID:	2055	LIFE SUPPORT 2055 BALLAST AIR CONTROL VALVE (1)							
LEAD ANALYST: K. BARICKMAN									
ASSESSMENT:									
CRITICAL FLIGH	ITY R	EDUND	ANCY SCREE	INS	CIL ITEM				
	NC A		В	С	11 <i>E</i> M				
NASA [3 /2R IOA [3 /2R] [P] [P		[NA] [P]	[P] [P]	[]*				
COMPARE [/] []	[N]	[]	[]				
RECOMMENDATIONS:	(If dif	ferent	t from NAS	SA)					
[3 /2R] [P]	[NA]	[P] (A	[] .DD/DELETE)				
* CIL RETENTION	RATIONALE:	(If a	applicable	e) ADEQUATE INADEQUATE	[]				
REMARKS: IOA/NASA FM: REA NASA FM: INABILI'			STUCK IN						

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2055	LS-2055A BASELIN						
	2055	IFE SUPPORT 055 ALLAST AIR CONTROL VALVE (1)						
LEAD ANALYST: K. BARICKMAN								
ASSESSMENT:								
CRITICAI FLIGH		REDUND	ANCY SCRE	ENS	CIL ITEM			
HDW/FU	INC	A	В	C				
NASA [3 /21 IOA [3 /21	2] [2] [[P] [P]	[NA] [P]	[P] [P]	[] * []			
COMPARE [/] [[]	[N]	[]	[]			
RECOMMENDATIONS:	(If d	differen	t from NA	SA)				
[3 /2]	2) [[₽]	[NA]		[] .DD/DELETE)			
* CIL RETENTION	RATIONAI	LE: (If a	applicabl	e) ADEQUATE INADEQUATE	[]			
REMARKS: IOA/NASA FM: RE	STRICTED	D FLOW						

ASSESSME ASSESSME NASA FME	NT I	D:	LS-20										
SUBSYSTE MDAC ID: ITEM:			2056	IFE SUPPORT 056 ALLAST AIR CONTROL VALVE (1)									
LEAD ANA	LYSI	:	K. BA	. BARICKMAN									
ASSESSME	ASSESSMENT:												
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM													
				C A B					2	1 I CI	M1		
NASA IOA	[3 [3	3 /3 3 /3]]	[[]]	[[]]	[[]		[[]]	*
COMPARE	[/]	[]	ſ]	E]		C]	
RECOMMEN	DATI	ONS:	(If	dif	fere	nt fr	om N.	ASA)					
	[3	3 /3]	[]	ſ]	[]	(AI] כע/סכ		ETE)
* CIL RE	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []												
	INADEQUATE [] REMARKS: IOA FM: FAILS TO CLOSE, INTERNAL LEAKAGE NASA FM: INABILITY TO TRANSFER, STUCK IN FECAL POSITION												

ASSESSME ASSESSME NASA FME	INT I	D:	LS-20	56A	-3			NASA DAT BASELIN NE				
SUBSYSTE MDAC ID: ITEM:			2056	LIFE SUPPORT 2056 BALLAST AIR CONTROL VALVE (1)								
LEAD ANA	LYST	:	K. BA	. BARICKMAN								
ASSESSME	NT:											
		'ICAL 'LIGH	ITY T	R	EDUNI	DANCY	SCRI	EENS		CII ITH		
			NC	A		E	3		с	± ± ±][]	
NASA IOA	[3 [3	/3 /3]]	[[]]	[[]]] []]	[[] *]	
COMPARE	[/]	[]	[]	[]	[]	
RECOMMEN	DATI	ons:	(If	dif	ferer	nt fr	om NZ	ASA)				
	[3	/3]	[]	[]	[] (] ADD/I] DELETE)	
* CIL RE		ION	RATION	ALE:	(If	appl	icab]		ADEQUATE ADEQUATE]]	
IOA FM:	INADEQUATE [] REMARKS: IOA FM: FAILS TO CLOSE, INTERNAL LEAKAGE NASA FM: INTERNAL OR EXTERNAL LEAKAGE											

.

ASSESSME ASSESSME NASA FME	NT I	D:	LS-20									
SUBSYSTE MDAC ID: ITEM:	M:		2057	IFE SUPPORT 057 ALLAST AIR CONTROL VALVE (1)								
LEAD ANA	LYSI	:	K. BA	K. BARICKMAN								
ASSESSME	ASSESSMENT:											
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM												
			NC	A		E	3		с	***		
NASA IOA	[3 [3	/3 /3]]	[[]]	[[]]	[[]	[[] *]	
COMPARE	ſ	/]	[]	[]	נ	3	נ]	
RECOMMEN	DATI	ONS:	(If	dif	ferei	nt fr	om NA	ASA)				
	[3	/3]	[]	[]	[] (2	[ADD/D] DELETE)	
	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []											
REMARKS: IOA FM: NASA FM:	REMARKS: IOA FM: EXTERNAL LEAKAGE											

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2058	LS-2058 BASELINE []							
SUBSYSTEM: MDAC ID: ITEM:	2058								
LEAD ANALYST: K. BARICKMAN									
ASSESSMENT:									
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C									
HDW/ FU	NC A	B C							
NASA [3 /2R IOA [3 /2R] [P]] [P]	[NA] [P] [P] [P]	[] * []						
COMPARE [/] []	[N] []	[]]						
RECOMMENDATIONS:	(If differe	nt from NASA)							
[3 /2R] [P]	[NA] [P]	[] (ADD/DELETE)						
* CIL RETENTION	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []								
	INADEQUATE [] REMARKS: IOA FM: FAILS TO OPEN, RESTRICTED FLOW								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2058	S-2058A BASELINE							
	2058	IFE SUPPORT 058 AN/SEPARATOR VALVE (1)							
LEAD ANALYST: K. BARICKMAN									
ASSESSMENT:									
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM									
HDW/FU		A	В	С	1164				
NASA [3 /2R IOA [3 /2R] [] [P] P]	[NA] [P]	[P] [P]	[] * []				
COMPARE [/] []	[N]	[]	[]]				
RECOMMENDATIONS:	(If d	ifferen	t from NAS	SA)					
[3 /2R] [P]	[NA]		[] DD/DELETE)				
* CIL RETENTION	RATIONAL	E: (If a	applicable	e) ADEQUATE INADEQUATE	[]				
REMARKS: IOA/NASA FM: RE	STRICTED	FLOW							

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2059 06-2-0214-1		NASA DATA BASELINI NEV						
SUBSYSTEM: MDAC ID: ITEM:	2059								
LEAD ANALYST: K. BARICKMAN									
ASSESSMENT:									
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM									
HDW/FUI		В	С	1124					
NASA [3 /2R IOA [3 /3] [P]] []	[NA] []	[P] []	[] * []					
COMPARE [/N] [N]	[N]	[N]	[]					
RECOMMENDATIONS:	(If diffe	rent from NAS	A)						
[3 /2R] [P]	[NA]	[P] (A	[] .DD/DELETE)					
* CIL RETENTION I	RATIONALE: ()	If applicable	•						
			ADEQUATE INADEQUATE						
REMARKS: IOA FM: FAILS TO CLOSE, INTERNAL LEAKAGE NASA FM: STUCK IN EITHER SEPARATOR POSITION IOA COMMENT: IF UNABLE TO SWITCH TO ALTERNATE FAN/SEPARATOR POSITION, MUST RESORT TO FCB AND UCD SUPPLIES. THE FCB AND UCD SUPPLIES MAY NOT BE SUFFICIENT FOR LIFE OF MISSION, THUS CRITICALITY CHANGE OF THE IOA ANALYSIS TO 3/2R PNP.									

	LS-2060 06-2-0214									
	LIFE SUPPO 2060 SEPARATOR									
LEAD ANALYST: K. BARICKMAN										
ASSESSMENT:										
CRITICALITY REDUNDANCY SCREENS FLIGHT								vr		
HDW/FU			В		С		ITEI			
NASA [3 /3 IOA [3 /3] [] []]	[[]	[[]]	[[] *]		
COMPARE [/] []	[]	۵]	[]		
RECOMMENDATIONS:	(If dif:	ferent	fro	m NAS	SA)					
[3 /3] []	[]	[] (A] [D/D0] ELETE)		
* CIL RETENTION : REMARKS: IOA/NASA FM: EX		•	ppli	cable	. Al	DEQUATE DEQUATE]]		

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2061	-2061 BASELINE []								
SUBSYSTEM: MDAC ID: ITEM:	2061									
LEAD ANALYST:	ANALYST: K. BARICKMAN									
ASSESSMENT:										
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM										
HDW/FU	NC A	В	С							
NASA [3 /2R IOA [3 /2R] [P]] [P] [NA]] [P]	[P] [P]		k					
COMPARE [/] [] [И]	[]	[]						
RECOMMENDATIONS:	(If diffe	erent from N	ASA)							
[3 /2R] [P]] [NA]	[P] (A	[] ADD/DELET	ΓE)					
* CIL RETENTION	RATIONALE:	(If applicab	le) ADEQUATE INADEQUATE							
REMARKS: IOA FM: INTERNA NASA FM: INABIL	L LEAKAGE ITY TO SEPAI	RATE OR PROC		ιJ						

	NT DATE: NT ID: A #:	LS-206									
SUBSYSTE MDAC ID: ITEM:		2062	LFE SUPPORT D62 AN/SEPARATORS (2)								
LEAD ANA	LEAD ANALYST: K. BARICKMAN										
ASSESSMENT:											
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM											
	HDW/FU	NC	Α			В		С			
NASA IOA	[3 /2R [3 /2R]]	[P [P]]	[[NA] P]	[[P P]]	[[] *]
COMPARE	[/]	[]	ן	N]	נ]	C]
RECOMMEN	DATIONS:	(If	dif	ferei	nt :	from N	ASA)			
	[3 /2R]	[P]	[NA]	נ	P] ADD/D] DELETE)
* CIL RE	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []										
REMARKS: IOA FM: NASA FM:					LI	QUIDS				-	-

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2062A	NASA DATA: BASELINE [] NEW [X]			
	LIFE SUPPORT 2062 FAN/SEPARATOR	S (2)			
LEAD ANALYST:	K. BARICKMAN				
ASSESSMENT:					
CRITICAI FLIGH		DANCY SCREENS	CIL ITEM		
HDW/FU	INC A	B C			
NASA [3 /21 IOA [3 /21	R] [P] R] [P]	[NA] [P] [P] [P]	[] * []		
COMPARE [/] []	[И] [И]	[]		
RECOMMENDATIONS:	(If differen	nt from NASA)			
[3 /29	8] [P]	[NA] [P]	[] (ADD/DELETE)		
* CIL RETENTION	RATIONALE: (If	applicable) ADEQUATI INADEQUATI			
	TED WATER FLOW	INADEQUAL	- L]		

ASSESSMENT DATE: 12/22/87 NASA DATA: ASSESSMENT ID: LS-2062B BASELINE [] NEW [X] NASA FMEA #: 06-2-0110-4 LIFE SUPPORT SUBSYSTEM: MDAC ID: 2062 ITEM: FAN/SEPARATORS (2) LEAD ANALYST: K. BARICKMAN ASSESSMENT: CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C NASA [3/2R] [P] [NA] [P] IOA [3/2R] [P] [P] [P] L COMPARE [/] [] [N] [] [] **RECOMMENDATIONS:** (If different from NASA) 1 [3/2R] [P] [NA] [P] ſ (ADD/DELETE) * CIL RETENTION RATIONALE: (If applicable) ADEQUATE INADEQUATE [[1 1 **REMARKS:** IOA FM: RESTRICTED WATER FLOW NASA FM: INABILITY TO REACH SPEED

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	LS-2063	LS-2063 BASELINE [
SUBSYSTEM: MDAC ID: ITEM:	2063	DIFE SUPPORT 063 CAN/SEPARATORS (2)						
LEAD ANALYST:	K. BARI	ICKMAN						
ASSESSMENT:								
FLIG	HT		DANCY SCRE		CIL ITEM			
nDw/ r	UNC	A	В	C				
NASA [3 /2 IOA [3 /2	R] [R] [[P] [P]	[NA] [P]	[P] [P]	[] * []			
COMPARE [/] [[]	[N]	[]]	[]			
RECOMMENDATIONS	: (If d	lifferer	t from NA	SA)				
[3 /2	R] [[₽]	[NA]		[] ADD/DELETE)			
* CIL RETENTION	RATIONAI	LE: (If	applicabl	e) ADEQUATE INADEQUATE				
REMARKS: IOA FM: PHYSIC NASA FM: INABI			NG					

ASSESSME ASSESSME NASA FME	NT ID:	LS-2	063A	A: E [] W [X]					
SUBSYSTE MDAC ID: ITEM:		2063	IFE SUPPORT 063 AN/SEPARATORS (2)						
LEAD ANA	LYST:	к. в	ARICKMAN						
ASSESSME	NT:								
	FLI	ALITY GHT FUNC	REDUNI	DANCY SCRI B	EENS C	CIL ITEM			
	•			_	-				
NASA IOA	[3/ [3/	2R] 2R]	[P] [P]	[NA] [P]	[P] [P]	[] * []			
COMPARE	[/]	[]]	[N]	[]]	[]]			
RECOMMEN	DATION	's: (I	f differe	nt from NA	ASA)				
	[3/	2R]	[P]	[NA]	.[P]	[] ADD/DELETE)			
* CIL RE	TENTIO	N RATIO	NALE: (If	applicabl	Le) ADEQUATE INADEQUATE	E 2			
REMARKS: IOA FM: NASA FM:			DING/JAMM O SEPARATI		ESS LIQUIDS	-			

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	LS-2063	3B	NASA DATA: BASELINE [] NEW [X]			
SUBSYSTEM: MDAC ID: ITEM:	2063	JPPORT PARATORS	(2)			
LEAD ANALYST:	K. BARI	CKMAN				
ASSESSMENT:						
CRITICAI FLIG		REDUND	ANCY SCRE	ENS	CIL ITEM	
HDW/FU		A	В	С	1154	
NASA [3 /21 IOA [3 /21	R] [R] [P] P]	[NA] [P]	[P] [P]	[] * []	
COMPARE [/) (]	[N]	[]	[]	
RECOMMENDATIONS:	(If d	lifferen	t from NAS	SA)		
[3 /29	2] [P]	[NA]		[] .DD/DELETE)	
* CIL RETENTION	RATIONAL	E: (If a	applicable	e) ADEQUATE INADEQUATE		
REMARKS: IOA FM: PHYSICA NASA FM: FAN IN			NG			

ASSESSME ASSESSME NASA FME	NT ID:		63C	ł			ASA DATA BASELINE NEW]
SUBSYSTE MDAC ID: ITEM:		2063	LIFE SUPPORT 2063 FAN/SEPARATORS (2)						
LEAD ANA	LYST:	K. BAI	RICKMA	N					
ASSESSME	NT:								
	CRITICA FLIG		RED	OUNDAN	ICY SCRE	ens		CIL ITE	
	HDW/F	JNC	A		В	С			
NASA IOA	[3 /2] [3 /2]	R] R]	[P] [P]		[NA] [P]	[P [P]	[[] *]
COMPARE	[/]	[]	C	[N]	נ]	[]
RECOMMEN	DATIONS	: (If	diffe	erent	from NA	SA)			
	[3 /2]	R]	[P]	[[NA]	[₽] D/DD.] ELETE)
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []]			
REMARKS: IOA FM: NASA FM:								-	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2064		A DATA: SELINE [] NEW [X]				
SUBSYSTEM: MDAC ID: ITEM:	2064						
LEAD ANALYST:	K. BARICKMAN						
ASSESSMENT:							
CRITICAL FLIGH	ITY REDUNI T	DANCY SCREENS	CIL ITEM				
HDW/FU	NC A	B C					
NASA [3 /2R IOA [3 /2R] [P]] [P]	[F] [P] [P] [P]	[] * []				
COMPARE [/] []	[N] []	[]]				
RECOMMENDATIONS:	(If differer	t from NASA)					
[3 /2R] [P]	[F] [P]	[] (ADD/DELETE)				
* CIL RETENTION T	RATIONALE: (If	ADE	QUATE [] QUATE []				
IOA/NASA FM: EX	TERNAL LEAKAGE						

ASSESSME ASSESSME NASA FME	NT	I		12/22/ LS-200						NASA DA BASELI N		[]]
SUBSYSTE MDAC ID: ITEM:	м:			2065	LIFE SUPPORT 2065 FAN/SEPARATOR TEST PORTS (4)								
LEAD ANA	LY	ST	:	K. BAI	RICK	MAN							
ASSESSME	NT	:											
	CR		ICAL LIGH	ITY	R	EDUND	ANCY	SCRE	ens			CIL ITE	
	j			NC	A		В			с		TIE	М
NASA IOA	[[3	/ /3]]	[[]]	[[]]] []]		[[] *]
COMPARE	נ	N	/N]	[]	[]	[]		[]
RECOMMEN	DA	TI(ons:	(If	dif	feren	t fro	om NA:	SA)				
	[3	/3]	[]	[]	[נ	(AI	[DD/D] ELETE)
* CIL RE						·			IN	ADEQUA: ADEQUA:	FE FE	[[]]
IOA FM:	F	AI:	LS T	O OPEN	, PH	YSICA	L BII	NDING,	/JA	MMING			

THERE WAS NO NASA WMS FMEA WHICH MATCHED THE IOA DESCRIPTION. THE NASA ANALYSIS MAY BE COMBINED WITH SOME OTHER HARDWARE OR REALLOCATED TO ANOTHER SUBSYSTEM.

ASSESSME ASSESSME NASA FME		12/22/8 LS-2066				1	NASA DAT BASELIN NE]
SUBSYSTE MDAC ID: ITEM:		LIFE SU 2066 FAN/SEP		TEST	PORTS	5 (*	4)		
LEAD ANA	LYST:	K. BARI	CKMAN						
ASSESSME	INT:								
	CRITICAL FLIGH		REDUND	ANCY	SCREE	ens		CII ITE	
	HDW/FU		A	В		(с		11
NASA IOA	[/ [3 /3] [] []	[[]	[[]]	[[] *]
COMPARE	[N /N	J (]	[]	נ]	[]
RECOMMEN	DATIONS:	(If d	ifferen	t fr	om NAS	SA)			
	[3/3] []	E]	[] (2	[ADD/D] DELETE)
* CIL RE REMARKS: IOA FM:		RATIONAL TED FLOW	·	appl	icable	1	ADEQUATE ADEQUATE]]
TOU 1110									

THERE WAS NO NASA WMS FMEA WHICH MATCHED THE IOA DESCRIPTION. THE NASA ANALYSIS MAY BE COMBINED WITH SOME OTHER HARDWARE OR REALLOCATED TO ANOTHER SUBSYSTEM.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2067	DATA: LINE [] NEW [X]					
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 2067	LIFE SUPPORT					
LEAD ANALYST:	LEAD ANALYST: K. BARICKMAN						
ASSESSMENT:							
		NDANCY SCREENS	CIL				
FLIGH HDW/FU	—	B C	ITEM				
NASA [3 /2R IOA [3 /3] [P]] []	[NA] [P] [] []	[] * []				
COMPARE [/N] [N]	[N] [N]	[]				
RECOMMENDATIONS:	(If differ	ent from NASA)					
[3 /2R] [P]	[NA] [P]	[] (ADD/DELETE)				
* CIL RETENTION	RATIONALE: (I	ADEQU	ATE [] ATE []				
REMARKS:							
	THE EXTERNAL	LEAK DEVELOPS THER					
FOR BACTERIAL GROWTH WHICH COULD BE HAZARDOUS TO THE CREW AND REQUIRING AN EARLY MISSION TERMINATION. CHANGE IOA ANAYLSIS							

CRITICALITY TO 3/2R PNP.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2068			NASA DATA BASELINI NEV	E []
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUP 2068 FAN/SEPAI		INLET HOS	E FROM URINA	AL (1)
LEAD ANALYST:	K. BARICI	KMAN			
ASSESSMENT:					
CRITICAL FLIGH	ITY I T	REDUNDA	ANCY SCRE	ENS	CIL ITEM
HDW/FU	NC 2	A	В	С	
NASA [/ IOA [3 /2R] [1] P]	[] [P]	[] [P]	[] * []
COMPARE [N /N] [1	ן א	[И]	[N]	[]
RECOMMENDATIONS:	(If dia	fferent	from NA	SA)	
[3 /2R] [1	P]	[NA]		[] .DD/DELETE)
* CIL RETENTION	RATIONALE:	: (If a	applicable	e) ADEQUATE INADEQUATE	[]
REMARKS: IOA FM: EXTERNA	L LEAKAGE				

THERE WAS NO NASA WMS FMEA WHICH MATCHED THE IOA DESCRIPTION. THE NASA ANALYSIS MAY BE COMBINED WITH SOME OTHER HARDWARE OR REALLOCATED TO ANOTHER SUBSYSTEM.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2069	LS-2069 BASELINE []					
SUBSYSTEM: MDAC ID: ITEM:	2069	LIFE SUPPORT 2069 FAN/SEPARATOR INLET HOSE FROM URINAL (1)					
LEAD ANALYST:	K. BARICH	KMAN					
ASSESSMENT:							
CRITICAI FLIGH		REDUNDANC	Y SCREENS	5	CIL ITEM		
HDW/FU	-	A	В	С			
NASA [3 /2F IOA [3 /2F	[] [] [] []	P] [P] [NA] [P] [P] P]	[]*		
COMPARE [/] [] [N] [1	נז		
RECOMMENDATIONS:	(If dif	fferent f	rom NASA)				
[3 /2F	.] [I	P] [NA] [P] (A	[] DD/DELETE)		
* CIL RETENTION	RATIONALE	: (If app		ADEQUATE IADEQUATE	• •		
REMARKS: IOA/NASA FM: RE							

ASSESSMENT DATE: 12/22/87 NASA DATA: ASSESSMENT ID: LS-2070 BASELINE [NASA FMEA #: 06-2-0302-2 NEW [X] SUBSYSTEM: LIFE SUPPORT MDAC ID: 2070 ITEM: DUAL CHECK VALVES (2) LEAD ANALYST: K. BARICKMAN **ASSESSMENT:** CRITICALITY REDUNDANCY SCREENS CIL ITEM FLIGHT HDW/FUNC В С Α [3 /2R] [P] NASA [X] * [F] [P] [3/3] [] Γ 1 ſ IOA 1 ſ 1 COMPARE [/N] [N] [N] [N] **RECOMMENDATIONS:** (If different from NASA) [3/2R] [P] [F] [P] [A] (ADD/DELETE) * CIL RETENTION RATIONALE: (If applicable) ADEQUATE Γ 1 1 INADEQUATE [**REMARKS**:

IOA/NASA FM: INTERNAL LEAKAGE, FAILS TO REMAIN CLOSED IOA COMMENT: THE LOSS OF THE FIRST SINGLE CHECK VALVE (CV) IS NOT A MISSION INPACT, HOWEVER IF THE SECOND CV FAILS TO CLOSE, THEN THERE IS POTENTIAL CONTAMINATION OF THE WCS OUTLET DUCT AND MUFFLER THROUGH THE OFF-LINE FAN/SEPARATOR BECAUSE OF THE WASTE TANK PRESSURIZATON SYSTEM. MUST RESORT TO FCB AND UCD SUPPLIES WHICH MAY NOT LAST MISSION DURATION - CRITICALITY 3/2R PNP.

REPORT DATE 03/10/88

C-299

ASSESSMENT DATE: 12/22/87 NASA DATA: BASELINE [ASSESSMENT ID: LS-2071] NEW [X] 06-2-0443-2 NASA FMEA #: LIFE SUPPORT SUBSYSTEM: 2071 MDAC ID: DUAL CHECK VALVES (2) ITEM: LEAD ANALYST: K. BARICKMAN ASSESSMENT: CRITICALITY REDUNDANCY SCREENS CIL ITEM FLIGHT HDW/FUNC В C Α NASA

 IASA
 [2 /2]
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 IOA
 [3 /2R]
 [P]
 [P]
 [P]

 [2/2] [X] COMPARE [N/N] [N] [N] [N][N] **RECOMMENDATIONS:** (If different from NASA)] [A] (ADD/DELETE) * CIL RETENTION RATIONALE: (If applicable) ADEQUATE [1 INADEQUATE ٢ 1 **REMARKS:** IOA/NASA FM: EXTERNAL LEAKAGE IOA COMMENT: IF THE EXTERNAL LEAK DEVELOPS THERE IS A POTENTIAL

FOR BACTERIAL GROWTH WHICH COULD BE HAZARDOUS TO THE CREW AND REQUIRING AN EARLY MISSION TERMINATION. CHANGE IOA ANALYSIS CRITICALITY TO 2/2.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2072	LS-2072 BASELINE										
SUBSYSTEM: MDAC ID: ITEM:	2072	VAL CHECK VALVES (2)										
LEAD ANALYST: K. BARICKMAN												
ASSESSMENT:												
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM												
HDW/FU	INC											
NASA [3 /2F IOA [3 /2F	t] [t] [P] P]	[NA] [P]	[P] [P]	[] * []							
COMPARE [/] []	[א]	[]	[]							
RECOMMENDATIONS:	(If di	ifferent	from NAS	iA)								
[3 /2F	[]	P]	[NA]		[] DD/DELETE)							
* CIL RETENTION	RATIONALE	E: (If ap	oplicable	:) ADEQUATE INADEQUATE	[] []							
IOA/NASA FM: FA	ILS TO OF	PEN, REST	TRICTED F	LOW								

REPORT DATE 03/10/88 C-301

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2073	LS-2073 BASELINE []											
SUBSYSTEM: MDAC ID: ITEM:	2073		SEPARATO	R TO CHECK V	VALVE (2)								
LEAD ANALYST: K. BARICKMAN													
ASSESSMENT:													
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM													
HDW/FU	NC	A	В	C									
NASA [3 /2R IOA [3 /2R] [] [P] P]	[F] [P]	[P] [P]	[X]* [X]								
COMPARE [/] [1	[N]	[]]	נ` ז								
RECOMMENDATIONS:	(If di	ifferent	t from NA	SA)									
[3 /2R] [P]	[F]		[A] ADD/DELETE)								
* CIL RETENTION	RATIONALE	2: (If a	applicabl	e) ADEQUATE INADEQUATE	• •								
REMARKS: IOA/NASA FM: EX	TERNAL LE	EAKAGE											

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2074	NASA DATA: BASELINE [] NEW [X]											
MDAC ID:	LIFE SUPPORT 2074 MUFFLER HOUSING INLET DU	VCT (1)											
LEAD ANALYST:	K. BARICKMAN												
ASSESSMENT:													
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM													
HDW/FU		С	TIEM										
NASA [3 /2R IOA [3 /3] [P] [F]] [] []	[P] []	[X]* []										
COMPARE [/N] [N] [N]	[N]	[N]										
RECOMMENDATIONS:	(If different from NAS	A)											
[3 /2R] [P] [F]	[P] (A	[A] DD/DELETE)										
* CIL RETENTION	RATIONALE: (If applicable	•											
		ADEQUATE INADEQUATE											
IOA/NASA FM: EX	REMARKS: IOA/NASA FM: EXTERNAL LEAKAGE, POTENTIAL FOR BACTERIAL												
	THE EXTERNAL LEAK DEVELO OWTH WHICH COULD BE HAZAR												

FOR BACTERIAL GROWTH WHICH COULD BE HAZARDOUS TO THE CREW AND REQUIRING AN EARLY MISSION TERMINATION. CHANGE IOA ANALYSIS CRITICALITY TO 3/2R PNP.

REPORT DATE 03/10/88

C-303

ASSESSMENT DATE: 12/22/87 NASA DATA: ASSESSMENT ID: LS-2075 BASELINE [] NASA FMEA #: 06-2-0115-2 NEW [X]														
SUBSYSTEM: MDAC ID: ITEM:		LIFE S 2075 BACTER			R (2))								
LEAD ANALYST:		K. BAI	RICK	MAN										
ASSESSMENT:														
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM														
	I/FU		A		В		С		LIEf	1				
NASA [IOA [3	/NA /3]]	[[]]	[[]]	[[]]	[[] *]				
COMPARE [N	/N]	[]	[]	[]	[1				
RECOMMENDATIO	ons:	(If	dif	feren	t fro	om NAS	SA)							
[/NA]	[]	[]	[] (A	[DD/DD] ELETE)				
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []														
REMARKS: IOA/NASA FM: OPEN; INTERNAL LEAKAGE IOA COMMENT: DETEMINED TO BE "NON-CREDIBLE" BY THE CCB														

ASSESSMENT DATE: 12/22/87 NASA DATA: ASSESSMENT ID: LS-2076 NASA FMEA #: 06-2-0211-2 NEW [X]
SUBSYSTEM: LIFE SUPPORT MDAC ID: 2076 ITEM: BALLAST VALVE SCREEN (1)
LEAD ANALYST: K. BARICKMAN
ASSESSMENT:
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C
NASA [3/2R] [P] [P] [P] []* IOA [3/3] [] [] [] [] []
COMPARE [/N] [N] [N] [N] []
RECOMMENDATIONS: (If different from NASA)
[3/2R] [P] [NA] [P] [] (ADD/DELETE)
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []
REMARKS: IOA/NASA FM: RESTRICTED FLOW, BLOCKED IOA COMMENT: UNABLE TO REPRESSURIZE COMMODE AND NO BALLAST FLOW FOR URINAL REQUIRES USE OF FCB AND UCD SUPPLIES. THERE MAY NOT BE SUFFICIENT SUPPLIES FOR MISSION DURATION THUS CRITICALITY 3/2R PNP.
THE DISAGREEMENT IN THE REDUNDANCY SCREENS WAS DUE TO NO DETAILED

ED DISCUSSION WITH THE NASA SUBSYSTEM MANAGERS REGARDING THE REDUNDANT PATHS.

REPORT DATE 03/10/88 C-305

											ASA DATA BASELINE NEW]
SUBSYSTE MDAC ID: ITEM:			LIFE 2077 BALLA				ssi	EMBLY	(1	.)			
LEAD ANA	LYST	:	K. BAI	RIC	KMAN	T							
ASSESSMENT:													
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM													
			NC		A]	В		С		115	1 4 1
NASA IOA	[3 [3	/2R /2R]	[P] P]	[]	NA] P]	[נ	P P]]	[[] *]
COMPARE	[/]	[]	[1	ן א	[]	۵]
RECOMMEN	DATI	ons:	(If	di	ffer	ent	f	rom N2	ASA	.)			
	[3	/2R]	[P]	(1	NA]	[P		[DD/D] Elete)
* CIL RE	TENT	ION I	RATION	ALE	: (]	f ap	p	licabl	le)			-	
DEWADECA									I		DEQUATE DEQUATE	[[]
REMARKS: IOA FM: FLOW NASA FM:					, PH	YSIC	'Al	L BINI	DIN	G/C	JAMMING,	RES	TRICTED
		~ ` ` `											

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ASSESSMENT DATE: 12/22/87 ASSESSMENT ID: LS-2077A NASA DATA: BASELINE [06-2-0119-2 NEW [X] NASA FMEA #: SUBSYSTEM: LIFE SUPPORT MDAC ID: 2077 ITEM: BALLAST VALVE ASSEMBLY (1) LEAD ANALYST: K. BARICKMAN ASSESSMENT: CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A В С NASA [3/3] [] [] [] IOA [3/2R] [P] [P] [P]] * [COMPARE [/N] [N] [N] Г 1 **RECOMMENDATIONS:** (If different from NASA) [3/2R] [P] [NA] [P] ſ (ADD/DELETE) * CIL RETENTION RATIONALE: (If applicable) ADEQUATE E INADEQUATE [1 **REMARKS:** IOA FM: FAILS MID-TRAVEL, PHYSICAL BINDING/JAMMING, RESTRICTED NASA FM: FAILED IN TRASH CAN POSITION NOTE: IF GET A RESTRICTED FLOW THEN MAY GET A MISSION CRITICAL CONDITION DUE TO NOXIOUS FUMES OR BACTERIAL GROWTH. IOA COMMENT: A POTENTIAL LOSS OF THE WCS WAS VIEWED AS A 3/2R CRITICALITY BY THE IOA FOR ANY "OFF NOMINAL" CONDITION. "OFF NOMINAL" WAS DEFINED AS ANY FAILURE WHICH COULD REQUIRE USE OF CONTINGENCY WASTE COLLECTION METHODS IF ANOTHER FAILURE OCCURRED. HOWEVER, THE NASA FMEA LISTED THESE AS A NON-MISSION ESSENTIAL FAILURE CRITICALITY.

ASSESSMENT DATE: 12/22/87 ASSESSMENT ID: LS-2077B NASA DATA: BASELINE [NASA FMEA #: 06-2-0119-3 NEW [X] SUBSYSTEM: LIFE SUPPORT MDAC ID: 2077 BALLAST VALVE ASSEMBLY (1) ITEM: LEAD ANALYST: K. BARICKMAN ASSESSMENT: CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM В С HDW/FUNC A NASA [3/3] [] [] [] [IOA [3/2R] [P] [P] [P] [1 COMPARE [/N] [N] [N] [N]Г ٦ RECOMMENDATIONS: (If different from NASA) [3/2R] [P] [NA] [P] ſ 1 (ADD/DELETE) * CIL RETENTION RATIONALE: (If applicable) ADEQUATE INADEQUATE ſ REMARKS: IOA FM: FAILS MID-TRAVEL, PHYSICAL BINDING/JAMMING, RESTRICTED FLOW NASA FM: FAILED IN TRASH CAN POSITION NOTE ON IOA FMEA: IF GET A RESTRICTED FLOW THEN MAY GET A MISSION CRITICAL CONDITION DUE TO NOXIOUS FUMES OR BACTERIAL GROWTH. IOA COMMENT: A POTENTIAL LOSS OF THE WCS WAS VIEWED AS A 3/2R CRITICALITY BY THE IOA FOR ANY "OFF NOMINAL" CONDITION. "OFF NOMINAL" WAS DEFINED AS ANY FAILURE WHICH COULD REQUIRE USE OF CONTINGENCY WASTE COLLECTION METHODS IF ANOTHER FAILURE OCCURRED. HOWEVER, THE NASA FMEA LISTED THESE AS A NON-MISSION ESSENTIAL FAILURE CRITICALITY.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		LS-2078 BASELINE []												
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 2078 BALLAST VALVE	ASSEMBLY (1)												
LEAD ANALYST:	K. BARICKMAN													
ASSESSMENT:														
CRITICAL FLIGH		DANCY SCREENS	CIL ITEM											
HDW/FU	NC A	B C												
NASA [3 /2R IOA [3 /3] [P]] []	[NA] [P] [][]]	[]*											
COMPARE [/N] [N]	[И] [И]	[]											
RECOMMENDATIONS:	(If differen	nt from NASA)												
[3 /2R] [P]		[] ADD/DELETE)											
* CIL RETENTION	RATIONALE: (If	applicable) ADEQUATE INADEQUATE	[] []											
	ABLE TO REPRESS	ED FLOW SURIZE COMMODE AND NO												

FOR URINAL REQUIRES USE OF FCB AND UCD SUPPLIES. THERE MAY NOT BE SUFFICIENT SUPPLIES FOR MISSION DURATION THUS CRITICALITY 3/2R PNP.

REPORT DATE 03/10/88

C-309

ASSESSME ASSESSME NASA FME	NT	ID:	LS-2	.2/22/87 NASA DATA: .S-2079 BASELINE [] .6-2-0201-2 NEW [X]										
SUBSYSTE MDAC ID: ITEM:	М:		2079	IFE SUPPORT 079 OMMODE SEAT (1)										
LEAD ANA	LYS	т:	K. B	ARICK	MAN									
ASSESSMENT:														
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM														
		DW/FU		A		Е	6		с	LIF	.M			
NASA IOA	[3 /3 3 /3]]	[[]]	[[]]	[[]]	[[] *]			
COMPARE	[1]	[]	[]	[]	C]			
RECOMMEN	DAT	IONS:	(1:	f dif	fere	nt fr	om N	ASA)						
	[3 /3]	[]	[]	[] (] ADD/D] DELETE)			
* CIL RE	TEN	TION	RATIO	NALE:	(If	appl	icab	•	ADEQUATE ADEQUATE	-]			
REMARKS: IOA FM: NASA FM:			RAL FA											

ASSESSMENT DATE: 12/22/87 NASA DATA: ASSESSMENT ID: LS-2080 BASELINE [NEW [X] NASA FMEA #: 06-2-0201-2 SUBSYSTEM: LIFE SUPPORT MDAC ID: 2080 ITEM: COMMODE SEAT (1) LEAD ANALYST: K. BARICKMAN **ASSESSMENT:** CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC Α ВС NASA [3/3] [] [] [] IOA [3/2R] [P] [P] [P]] * COMPARE [/N] [N] [N] ٢] RECOMMENDATIONS: (If different from NASA) [3/2R] [P] [NA] [P] ſ (ADD/DELETE) * CIL RETENTION RATIONALE: (If applicable) ADEQUATE Γ INADEQUATE [1 **REMARKS:** IOA FM: PHYSICAL BINDING/JAMMING NASA FM: INABILITY TO LATCH IOA COMMENT: IF COMMODE SEAT CAN NOT BE MOVED INTO POSITION THEN POTENTIAL LOSS OF WCS COMMODE USAGE AND A CRITICALITY OF 3/2R PNP. A POTENTIAL LOSS OF THE WCS WAS VIEWED AS A 3/2R CRITICALITY BY THE IOA FOR ANY "OFF NOMINAL" CONDITION. "OFF NOMINAL" WAS DEFINED AS ANY FAILURE WHICH COULD REQUIRE USE OF CONTINGENCY WASTE COLLECTION METHODS IF ANOTHER FAILURE OCCURRED. HOWEVER, THE NASA FMEA LISTED THESE AS A NON-MISSION ESSENTIAL FAILURE CRITICALITY.

ASSESSME ASSESSME NASA FME	NT I	ID:	LS-20												
SUBSYSTE MDAC ID: ITEM:	M:		2081	EAT BASE (1)											
LEAD ANALYST: K. BARICKMAN															
ASSESSMENT:															
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM															
			NC	А		B	5	(с	LIF	-M				
NASA IOA	[3	3 /3 3 /3]	[[]]	[[]]	[[]]	[[] *]				
COMPARE	נ	1]	[]	[]	۵]	۵	1				
RECOMMEN	DATI	IONS:	(If	dif	feren	t fr	om NZ	ASA)							
	[3	3 /3]	[]	[]	[]	_] DELETE)				
* CIL RE	TENI	rion	RATION	ALE:	(If	appl	icab]		ADEQUATE ADEQUATE	-]]				
IOA/NASA	FM	: RE	STRICI	ED/B	LOCKE	D FI	WO								

ASSESSME ASSESSME NASA FME	NT ID:	LS-	L2/22/87 NASA DATA: LS-2082 BASELINE [] D6-2-0502-2 NEW [X]										
SUBSYSTE MDAC ID: ITEM:		208	E SUPP 2 GH BAR		STRAIN	IT (2)						
LEAD ANA	LYST:	к.	BARICK	MAN									
ASSESSMENT:													
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM													
	HDW/		A		E	3		с		1.1.1	M		
NASA IOA	[3 / [3 /	3] 3]	[[]]	[[]]	[[]]		[[]]	*	
COMPARE	[/]	ſ]	[]	[]		[]		
RECOMMEN	DATION	5 : (1	If dif	fere	ent fr	om N	ASA)						
	[3/]	3]	ſ]	[]	[]	(A	[DD/I		TE)	
* CIL RE	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []												
REMARKS: IOA FM: NASA FM:	FAILS	TO CLA ED IN '		SE"	POSII	ION				-	-		

ASSESSME	ASSESSMENT DATE: 12/22/87 NASA DATA: ASSESSMENT ID: LS-2083 BASELINE [] NASA FMEA #: NEW [X]												
SUBSYSTE MDAC ID: ITEM:	M:			LIFE S 2083 VELCRO			NТ Н	ARNES	S (T	HIGH)(4)			
LEAD ANALYST: K. BARICKMAN													
ASSESSMENT:													
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM													
				NC	A		!	1154					
NASA IOA	[[3	/ /3]]	[[]]	[[]]	[[]]	[[] *]	
COMPARE	۵	N	/N]	[]	נ]	C]	ſ	3	
RECOMMEN	DA'	TI(ons:	(If	dif	feren	t fr	om NA	SA)				
	[3	/3]	[]	[]	[] (#] ADD/D] ELETE)	
* CIL RE	TE	NT	ION	RATION	ALE:	(If a	appl	icabl	À	DEQUATE DEQUATE]]	
REMARKS: IOA FM:	C	LI	P FA	ILURE									

THERE WAS NO NASA WMS FMEA WHICH MATCHED THE IOA DESCRIPTION. THE NASA ANALYSIS MAY BE COMBINED WITH SOME OTHER HARDWARE OR REALLOCATED TO ANOTHER SUBSYSTEM.

ASSESSM	ENT	I	D:	LS	12/22/87 LS-2084 06-2-0503-1					NASA DATA: BASELINE [] NEW [X]							
SUBSYST MDAC ID ITEM:				20	LIFE SUPPORT 2084 FOOT RESTRAINT (1)												
LEAD AND	ALY	ST	:	ĸ.	BAI	RI	скі	IAN									
ASSESSM	ENT	:															
	CR		ICAL LIGH				RI	EDUN	DAN	CY	SCR	EENS	5		CI IT		
]	HD	W/FU	NC			A			В			С				
NASA IOA	[[3 3	/3 /2R]		[[P]]] [P]]	[[P]	[[]]	*
COMPARE	[/N]		[N]	[N]	[N]	[]	
RECOMME	NDA	TI	ONS:		(If	d:	if	fere	nt :	fr	om N	ASA))				
	[3	/3]		[]	[]	[] (4	[ADD/1] DELI	ETE)
* CIL R	ETE	NT:	ION	RAI	IONZ	ΑLI	E:	(If	apj	91 :	icab		IA IAV	DEQUATE DEQUATE	[[]]	
REMARKS IOA FM: NASA FM: IOA COM USE COM	F : : Men'	FA: T:	PR	IN OBA	UI BLY	e" CI	PO REV	SIT: V INC	ION CONV	VEI	NIEN	CE,	BU	JT NOT I	IMPO:		BLE TO

ASSESSME ASSESSME NASA FME	NT I	D:	LS-20					NASA DAT BASELIN NH		;]	
SUBSYSTE MDAC ID: ITEM:			2085	LIFE SUPPORT 2085 FOOT RESTRAINT (1)							
LEAD ANA	LYSI	:	K. BA	. BARICKMAN							
ASSESSME	NT:										
CRITICALITY REDUNDANCY SCREENS FLIGHT						CII					
	-		NC	A		B	5		с	ITE	M
NASA IOA	[3 [3	/3]]	[[]]	[[]]	[[]]	[[] *]
COMPARE	[/]	[]	[]	٢]	C]
RECOMMEN	DATI	ONS:	(If	dif	ferer	nt fr	om Ni	ASA)			
	[3	/3]	[].	[]	[]] (ADD/D] DELETE)
* CIL RE	TENI	NOI	RATION	ALE:	(If	appl	icab		ADEQUATI ADEQUATI]

ASSESSMENT DATE: 12/22/87 NASA DATA: ASSESSMENT ID: LS-2086 BASELINE [NEW [X] NASA FMEA #: 06-2-0504-1 SUBSYSTEM: LIFE SUPPORT MDAC ID: 2086 ITEM: TOE BAR RESTRAINT (1) LEAD ANALYST: K. BARICKMAN ASSESSMENT: REDUNDANCY SCREENS CRITICALITY CIL FLIGHT ITEM HDW/FUNC A В С NASA [3/3] IASA [3/3] [] [IOA [3/3] [] []] [[] *] I 1 ſ 1 COMPARE [/] ſ] **RECOMMENDATIONS:** (If different from NASA) [] (ADD/DELETE) * CIL RETENTION RATIONALE: (If applicable) ADEQUATE] [INADEQUATE ſ 1 **REMARKS:** IOA FM: FAILS TO REMAIN IN OPERABLE POSITION, FAILS CLOSED NASA FM: JAMMED

ASSESSME ASSESSME NASA FME	NT 1	[D:	LS-20	12/22/87 LS-2087 06-2-0504-1					NASA DA BASELI N	INE	[[X]]	
SUBSYSTE MDAC ID: ITEM:			2087	LIFE SUPPORT 2087 FOE BAR RESTRAINT (1)									
LEAD ANA	LYSI	C:	K. BA	. BARICKMAN									
ASSESSME	NT:												
CRITICALITY REDUNDANCY SCREENS CIL													
		FLIGH DW/FU		А	•	E	3	(C		ITE	м	
NASA IOA	[3	3 /3 3 /3]]	[[]]	[[]]	[[]]		[[]]	*
COMPARE	[/]	[]	[]	[]		[]	
RECOMMEN	DATI	ons:	(If	dif	ferei	nt fr	om NA	ASA)			•		
	[3	8 /3]	[]	ſ]	[]	(AI	[DD/D] ELE	TE)
* CIL RE	TENI	TION	RATION	ALE:	(If	appl	icabl		ADEQUAT ADEQUAT		[]]	
INADEQUATE [] REMARKS: IOA FM: FAILED IN DEPLOYED POSITION NASA FM: JAMMED													

ASSESSMEN' ASSESSMEN' NASA FMEA	T ID:	12/22/ LS-208							DATA: ELINE NEW	[]]
SUBSYSTEM MDAC ID: ITEM:	:	LIFE S 2088 APOLLO			AG (]	MISSIC	ON	LIFE	SUPPI	LY)	
LEAD ANAL	YST:	K. BAF	. BARICKMAN								
ASSESSMEN	г:										
C	RITICAL FLIGH		R	EDUND	ANCY	SCREE	ENS	}		CIL ITEI	٨
	HDW/FU		A		В			с			1
NASA IOA	[/ [3 /2R]]	[[P]]	[[P]]	[[] P]		[[] *]
COMPARE	[N /N]	[N]	[N]	[N]		[]
RECOMMEND	ATIONS:	(If	dif	feren	t fro	om NAS	SA)				
i	[3 /2R]	[P]	[P]	[P]	(AI	[DD/DI] ELETE)
* CIL RET				(If a	appl:	icable	•	ADEQU ADEQU		[[]
	EXTERNA	L LEAKA	GE							[[]

THERE WAS NO NASA WMS FMEA WHICH MATCHED THE IOA DESCRIPTION. THE NASA ANALYSIS MAY BE COMBINED WITH SOME OTHER HARDWARE OR REALLOCATED TO ANOTHER SUBSYSTEM.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2089	NASA DATA: BASELINE [] NEW []				
	LIFE SUPPORT 2089 URINE COLLECTION DEVICE	(3 DAYS SUPPLY PER				
LEAD ANALYST:	K. BARICKMAN					
ASSESSMENT:						
CRITICAL FLIGH HDW/FU	T	ENS CIL ITEM C				
NASA [/ IOA [3 /2R] [] []] [P] [P]	[] [] * [P] []				
COMPARE [N /N] [N] [N]	[N] []				
RECOMMENDATIONS:	(If different from NA	SA)				
[3 /2R	[P] [P]	[P] [] (ADD/DELETE)				
* CIL RETENTION REMARKS: IOA FM: EXTERNA	RATIONALE: (If applicabl L LEAKAGE	e) ADEQUATE [] INADEQUATE []				

THERE WAS NO NASA WMS FMEA WHICH MATCHED THE IOA DESCRIPTION. THE NASA ANALYSIS MAY BE COMBINED WITH SOME OTHER HARDWARE OR REALLOCATED TO ANOTHER SUBSYSTEM.

ASSESSME ASSESSME NASA FME	NT ID:	LS-20	· ·					ATA: INE [IEW [)		
SUBSYSTE MDAC ID: ITEM:		2090	TFE SUPPORT 990 MMODE PRESSURE TRANSDUCER (1)							
LEAD ANA	LYST:	K. BA	. BARICKMAN							
ASSESSME	NT:									
	CRITICAL FLIGH		R	EDUN	DANCY	SCR	EENS		CII	
	HDW/FU		A	•	E	3	C	2	ITH	SM
NASA IOA	[3 /3 [3 /3]]	[[]]	[[]]	[[]]	[[] *]
COMPARE	ι Ż]	[]	[]	I]	ſ]
RECOMMEN	DATIONS:	(If	dif	fere	nt fr	om N	ASA)			
	[3/3]	[]	[]	[]	[(ADD/D] DELETE)
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []										
IOA FM:	REMARKS: IOA FM: FAILS OUT OF TOLERANCE NASA FM: OPEN (ELECTRICAL), SHORTED, OUT OF TOLERANCE									

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2091		NASA DATA BASELINE NEW			
	2091	IFE SUPPORT 091 CS FAN/SEPARATOR SWITCH (1)				
LEAD ANALYST:	K. BARIC	BARICKMAN				
ASSESSMENT:						
CRITICALITY REDUNDANCY SCREENS FLIGHT				NS	CIL ITEM	
HDW/FU	NC	A	В	С		
NASA [3 /2R IOA [3 /2R] [] [P] P]	[NA] [P]	[P] [P]	[X]* []	
COMPARE [/] []	[N]	[]	[N]	
RECOMMENDATIONS:	(If di	ifferent	t from NAS	A)		
[3 /2R] [P]	[NA]		[A] DD/DELETE)	
* CIL RETENTION	RATIONALI	E: (If a) ADEQUATE INADEQUATE	[]	
REMARKS: IOA FM: FAILS MID-TRAVEL, PHYSICAL BINDING/JAMMING NASA FM: FAILS OPEN						

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:				NASA DATA BASELINE NEW		
	LIFE SU 2092 WCS FAN		TOR SWITC	H (1)		
LEAD ANALYST:	K. BARI	. BARICKMAN				
ASSESSMENT:						
CRITICALITY REDUNDANCY SCREED				ENS	CIL ITEM	
HDW/FU	NC	A	В	С		
NASA [3 /3 IOA [3 /2R] [] [] P]	[] [NA]	[] [P]	[] * [X]	
COMPARE [/N] [N]	[א]	[N]	[N]	
RECOMMENDATIONS:	(If d	ifferen	t from NA	SA)		
[3 /2R] [P]	[NA]	[P] (A	[A] .DD/DELETE)	
* CIL RETENTION	RATIONAL	E: (If	applicable	e) ADEQUATE INADEQUATE	• •	
REMARKS: IOA FM: SHORTED NASA FM: FAILS	CONTACT CLOSED			INADEQUALE	LJ	

IOA COMMENT: A POTENTIAL LOSS OF THE WCS WAS VIEWED AS A 3/2R CRITICALITY BY THE IOA FOR ANY "OFF NOMINAL" CONDITION. "OFF NOMINAL" WAS DEFINED AS ANY FAILURE WHICH COULD REQUIRE USE OF CONTINGENCY WASTE COLLECTION METHODS IF ANOTHER FAILURE OCCURRED. HOWEVER, THE NASA FMEA LISTED THESE AS A NON-MISSION ESSENTIAL FAILURE CRITICALITY.

REPORT DATE 03/10/88

C-323

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/8 LS-2093 06-2-01	7 17-1		NASA DATA BASELINE NEW	
MDAC ID:	LIFE SU 2093 WCS FAN		TOR SWITCH	(1)	
LEAD ANALYST:	K. BARI	CKMAN			
ASSESSMENT:					
CRITICAL FLIGH		REDUND	ANCY SCREE	NS	CIL ITEM
HDW/FU		Α	В	С	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~
NASA [3 /2R IOA [3 /3] [] [P]]	[NA] []	[P] []	[X]* []
COMPARE [/N] [N]	[N]	ן א]	[И]
RECOMMENDATIONS:	(If d	ifferent	t from NAS	A)	
[3 /2R] [P]	[NA]		[A] .DD/DELETE)
* CIL RETENTION	RATIONAL	E: (If a) ADEQUATE INADEQUATE	[]
REMARKS:	TIC ODEN			INADEQUATE	[]
IOA/NASA FM: FA IOA COMMENT: IN	THE EVE	NT OF A			
FAN/SEPARATOR MO COULD BE LOST TH					

NOT BE SUFFICIENT SUPPLIES FOR MISSION DURATION AND CRITICALITY CHANGE OF THE IOA ANAYLSIS TO 3/2R PNP.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2094 06-2-0117-1	NASA DATA: BASELINE [] NEW [X]				
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 2094 WCS MODE SWITCH (1)					
LEAD ANALYST:	K. BARICKMAN					
ASSESSMENT:	ASSESSMENT:					
CRITICAL FLIGH	EENS CIL ITEM					
	NC A B	C				
NASA [3 /2R IOA [3 /3] [P] [NA]] [] []	[P] [X]* [] []				
COMPARE [/N] [N] [N]	[N] [N]				
RECOMMENDATIONS:	(If different from NA	ASA)				
[3 /2R] [P] [NA]	[P] [A] (ADD/DELETE)				
* CIL RETENTION H	RATIONALE: (If applicabl	•				
		ADEQUATE [] INADEQUATE []				
REMARKS: IOA FM: FAILS MID-TRAVEL, PHYSICAL BINDING/JAMMING NASA FM: FAILS OPEN IOA COMMENT: IN THE EVENT OF A SUBSEQUENT FAILURE IN THE						
FAN/SEPARATOR MOTOR OR THERMOSTATIC SWITCH, THE WCS FUNCTION COULD BE LOST THUS FCB AND UCD SUPPLIES MUST BE USED. THERE MAY NOT BE SUFFICIENT SUPPLIES FOR MISSION DURATION AND CRITICALITY CHANGE TO THE IOA ANALYSIS TO 3/2R PNP.						
	TIME TO TO JUST ENE +					

NASA DATA: ASSESSMENT DATE: 12/22/87 BASELINE [ASSESSMENT ID: LS-2095 NASA FMEA #: 06-2-0117-2 NEW [X] LIFE SUPPORT SUBSYSTEM: MDAC ID: 2095 ITEM: WCS MODE SWITCH (1) LEAD ANALYST: K. BARICKMAN ASSESSMENT: CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM В С HDW/FUNC Α NASA [3 /3]
 IASA
 [3/3]
 []
 []
 []

 IOA
 [3/2R]
 [P]
 [P]
 [P]
 [COMPARE [/N] [N] [N] 1] **RECOMMENDATIONS:** (If different from NASA) [3/2R] [P] [NA] [P] [A] (ADD/DELETE) * CIL RETENTION RATIONALE: (If applicable) ADEQUATE [INADEQUATE (1 **REMARKS:** IOA FM: SHORTED NASA FM: FAILS CLOSED

IOA COMMENT: A POTENTIAL LOSS OF THE WCS WAS VIEWED AS A 3/2R CRITICALITY BY THE IOA FOR ANY "OFF NOMINAL" CONDITION. "OFF NOMINAL" WAS DEFINED AS ANY FAILURE WHICH COULD REQUIRE USE OF CONTINGENCY WASTE COLLECTION METHODS IF ANOTHER FAILURE OCCURRED. HOWEVER, THE NASA FMEA LISTED THESE AS A NON-MISSION ESSENTIAL FAILURE CRITICALITY.

REPORT DATE 03/10/88 C-326

C - 5

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2096 06-2-0117-1		NASA DATA: BASELINE [] NEW [X]			
SUBSYSTEM: MDAC ID:		T				
LEAD ANALYST:	K. BARICKMA	. BARICKMAN				
ASSESSMENT:						
CRITICAL FLIGH		UNDANCY SCREED	NS	CIL ITEM		
HDW/FU		В	С	1154		
NASA [3 /2R IOA [3 /3] [P]] []	[NA] []	[P] []	[X]* []		
COMPARE [/N] [И]	[N]	[и]	[N]		
RECOMMENDATIONS:	(If diffe	erent from NASA	A)			
[3 /2R] [P]	[NA]	[P] (A	[A] .DD/DELETE)		
* CIL RETENTION 1	RATIONALE: (ADEQUATE			
REMARKS: IOA FM: OPEN NASA FM: FAILS O IOA COMMENT: IN FAN/SEPARATOR MO COULD BE LOST THU	THE EVENT O FOR OR THERM	F A SUBSEQUENT OSTATIC SWITC	CH, THE WCS	N THE FUNCTION		

COULD BE LOST THUS FCB AND UCD SUPPLIES MUST BE USED. THERE MAY NOT BE SUFFICIENT SUPPLIES FOR MISSION DURATION AND CRITICALITY CHANGE TO THE IOA ANALYSIS TO 3/2R PNP.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:				NASA DATA BASELINE NEW	-
MDAC ID:	LIFE SU 2097 WCS FAN		FOR RELAY	(2)	
LEAD ANALYST:	K. BARI	CKMAN			
ASSESSMENT:					
CRITICALITY REDUNDANCY SCREE FLIGHT				INS	CIL ITEM
HDW/FU	NC	A	В	С	
NASA [3 /2F IOA [3 /2F	[] [[] [P] P]	[NA] [P]	[P] [P]	[X]* []
COMPARE [/] []	[N]	[]	[N]
RECOMMENDATIONS:	(If d	ifferen	t from NAS	SA)	
[3 /2F	.] [P]	[NA]		[A] .DD/DELETE)
* CIL RETENTION	RATIONAL	E: (If a	applicable	e) ADEQUATE INADEQUATE	[]
REMARKS: IOA FM: OPEN (E NASA FM: FAILS		L)			

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		NASA DATA: BASELINE [] NEW [X]					
	LIFE SUPPORT 2098 WCS FAN/SEPARATOR RELAY	(2)					
LEAD ANALYST: K. BARICKMAN							
ASSESSMENT:							
CRITICAL FLIGH	ENS CIL ITEM						
HDW/FU		C					
NASA [3 /3 IOA [3 /2R] [] []] [P] [P]	[] [] * [P] []					
COMPARE [/N] [N] [N]	[N] []					
	RECOMMENDATIONS: (If different from NASA)						
[3 /2R] [P] [NA]	[P] [A] (ADD/DELETE)					
* CIL RETENTION	RATIONALE: (If applicabl	e) ADEQUATE [] INADEQUATE []					
INDEQUATE [] INADEQUATE [] REMARKS: IOA FM: SHORTED NASA FM: FAILS CLOSED IOA COMMENT: IF THE RELAY FAILS, THEN MUST RESORT TO THE ALTERNATE FAN/SEPARATORS. IF THE ALTERNATE FAN/SEPERATOR FAILS THEN MUST RESORT TO FCB AND UCD SUPPLIES. THE FCB AND UCD SUPPLIES MAY NOT BE SUFFICEINT FOR MISSION DURATION. A POTENTIAL LOSS OF THE WCS WAS VIEWED AS A 3/2R CRITICALITY BY THE IOA FOR ANY "OFF NOMINAL" CONDITION. "OFF NOMINAL" WAS DEFINED AS ANY FAILURE WHICH COULD REQUIRE USE OF CONTINGENCY WASTE COLLECTION METHODS IF ANOTHER FAILURE OCCURRED. HOWEVER, THE NASA FMEA LISTED THESE AS A NON-MISSION ESSENTIAL FAILURE CRITICALITY.							

ASSESSMENT DATE: 12/22/87 ASSESSMENT ID: LS-2099 NASA FMEA #:]	NASA D BASEI		[]]		
SUBSYSTE MDAC ID: ITEM:		LIFE 2099 FAN/S	CIRC	UIT	(4	;)									
LEAD ANALYST: K. BARICKM						MAN									
ASSESSMENT:															
CRITICALITY REDUNDANCY SCREENS								CIL	u r						
	H		LIGH V/FU		A		В			с			ITEM		
NASA IOA	[[3	/ /3]]	[[]]	[[]]	[[]]		[]]	*	
COMPARE	[N	/N]	[]	[]	[]		۵]		
RECOMMENDATIONS: (If different from NASA)															
	[3	/3]	[]	[]	[]	(AI	[וס/סכ] ELE	TE)	
* CIL RE REMARKS: IOA FM:	TEN OF			RATION LECTRI		(If	appl	icabl	Ċ.	ADEQUA ADEQUA		[]]		

THERE WAS NO NASA WMS FMEA WHICH MATCHED THE IOA DESCRIPTION. THE NASA ANALYSIS MAY BE COMBINED WITH SOME OTHER HARDWARE OR REALLOCATED TO ANOTHER SUBSYSTEM.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2100	NASA DA BASELI N									
	LIFE SUPPORT 2100 FAN/SEPARATOF	R NOISE SUPPRESSION C	IRCUIT(4)								
LEAD ANALYST:	K. BARICKMAN	K. BARICKMAN									
ASSESSMENT:											
CRITICAL FLIGH		IDANCY SCREENS	CIL ITEM								
HDW/FU	NC A	B C									
NASA [/ IOA [3 /2R] []] [P]	[] [] [P] [P]	[] *								
COMPARE [N /N] [N]	[N] [N]	[]								
RECOMMENDATIONS: (If different from NASA)											
[3 /2R] [P]	[NA] [P]	[A] (ADD/DELETE)								
* CIL RETENTION	RATIONALE: (If	applicable) ADEQUAT INADEQUAT									
REMARKS: IOA FM: SHORTED		INADEQUAL	- []								

THERE WAS NO NASA WMS FMEA WHICH MATCHED THE IOA DESCRIPTION. THE NASA ANALYSIS MAY BE COMBINED WITH SOME OTHER HARDWARE OR REALLOCATED TO ANOTHER SUBSYSTEM.

ASSESSMENT DATE: 12/22/87 ASSESSMENT ID: LS-2101 NASA FMEA #:						7								ASA I BASEI	LINE]]	
				LIFE SUPPORT 2101 FAN/SEPARATOR MOTOR THERMOSTATIC :										c sw	ITCH	£	(2)	
LEAD ANALYST:				K. BARICKMAN															
ASSESSMENT:																			
CRITICALITY FLIGHT						REDUNDANCY SCREENS										CII ITE	-		
	HDW/FUNC					A		В				С				_ 3			
NASA IOA	[[3	/ /2R]]	[[P]]		[[P]]	[[P]]		[[:]]	*
COMPARE	נ	N	/N]	[N]		[N]	[N]		۵		נ	
RECOMMEN	DA	TI	ONS:	(If	đ	if	ferer	nt	t	fro	om NA	ASA)						
	[3	/2R]	[Ρ]		[NA	A]	[P]	(A	۲] DD/I			TE)
* CIL RE	TE	NT	ION	RATION	ALI	E:	(If	a	p	oli	[Cab]	-		DEQU DEQU		-]	
REMARKS: IOA FM:	F.	AI	LS TO	O OPEN										~~~		L			

THERE WAS NO NASA WMS FMEA WHICH MATCHED THE IOA DESCRIPTION. THE NASA ANALYSIS MAY BE COMBINED WITH SOME OTHER HARDWARE OR REALLOCATED TO ANOTHER SUBSYSTEM.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2102	0-1	NASA DATA: BASELINE [] NEW [X]									
SUBSYSTEM: MDAC ID: ITEM:	2102		R MOTOR THERMOSTATIC SW									
LEAD ANALYST:	K. BARICK	K. BARICKMAN										
ASSESSMENT:												
CRITICAL FLIGH		REDUNDANCY SCR	REENS	CIL ITEM								
HDW/FU	NC A	A B	С									
NASA [3 /2R IOA [3 /2R] [P]] [P	P] [NA] P] [P]	[P] [P]	[X]* []								
COMPARE [/	J [] [N]	[]	[N]								
RECOMMENDATIONS:	RECOMMENDATIONS: (If different from NASA)											
[3 /2R] [P	?] [NA]		[A] DD/DELETE)								
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []												
INADEQUATE [] REMARKS: IOA FM: FAILS TO REMAIN CLOSED NASA FM: INABILITY TO OPERATE												

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ASSESSMEN ASSESSMEN NASA FMEA	IT ID:	LS-210)2A	-3	NASA DATA: BASELINE [] NEW [X]							
SUBSYSTEM MDAC ID: ITEM:		LIFE S 2102 FAN/SE			MO	TOR '	ітсн	(2)				
LEAD ANAI	LYST:	K. BAR	ICK									
ASSESSMENT:												
CRITICALITY REDUNDANCY SCREENS									CIL	-		
	FLIGH HDW/FU	_		В			с		ITEM			
NASA IOA	[3 /2R [3 /2R]]	[P [P]]	[[NA] P]	[[P] P]		[X [] *]	
COMPARE	[/]	[]	[И]	[]		[N]	
RECOMMEND	RECOMMENDATIONS: (If different from NASA)											
	[3 /2R]	[P]	[NA]	[P]	(A	[A .DD/D]] ELETE)	
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []												
REMARKS: IOA FM: FAILS TO REMAIN CLOSED NASA FM: FAN INOPERABLE												

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:				NASA DATA BASELINE NEW					
SUBSYSTEM: MDAC ID: ITEM:	2102		MOSTATIC SW	ITCH (2)					
LEAD ANALYST:	K. BARICI	KMAN							
ASSESSMENT:									
FLIGH					CIL ITEM				
HDW/FU	INC 2	A	В	C					
NASA [3 /2F IOA [3 /2F	t] [1	P] P]	[NA] [P]	[P] [P]	[X]* []				
COMPARE [/] []	[N]	[]	[N]				
RECOMMENDATIONS:	(If dia	fferent	: from NAS	SA)					
[3 /2F	2] []	P]	[NA]		[A] DD/DELETE)				
* CIL RETENTION	RATIONALE	: (If a	applicable	ADEQUATE	• •				
	O REMAIN (ITY TO REA		ED	INADEQUATE	[]				

ASSESSME	ASSESSMENT DATE: 12/22/87 NASA DATA: ASSESSMENT ID: LS-2103 BASELINE [] NASA FMEA #: 06-2-0505-2 NEW [X]											
SUBSYSTE MDAC ID: ITEM:	M:		2103	E SUPP 3 /SEPAR		BYP	Ass s	WITCI	H (2)			
LEAD ANA	LYS	т:	K. 1	BARICK	MAN							
ASSESSME	ASSESSMENT:											
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM												
			HT UNC	A		E	3	(2	11	'EM	
NASA IOA	[[3 /3 3 /3]]	[[]]	[[]]	[[]]	[] *]	
COMPARE	[/]	[]	[]	[]	[]	
RECOMMEN	DAT	IONS	: (:	[f dif	fere	ent fr	rom N	ASA)				
	[3 /3]	[]	[]	C]] (ADD/] 'DELETE)	
* CIL RE	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []											
REMARKS: IOA FM: NASA FM:					ORT	OR OF	PEN		~	L	-	

ASSESSME ASSESSME NASA FME	NT I	D:	LS-21	04	5-1				NASA DAT. BASELIN NE		2] (]
SUBSYSTE MDAC ID: ITEM:			LIFE 2104 FAN/S			BYPA	ASS S	WITC	H (2)		
LEAD ANA	LYST	:	K. BA	RICK	MAN						
ASSESSME	NT:										
		ICAL LIGH	ITY	F	EDUN	DANCY	SCR	EENS		CII ITE	
			NC	A	L	E	3	4	с		111
NASA IOA	[3 [3	/3 /3]]	[[]]	[[]]	[]]	[[] *]
COMPARE	[/]	٢]	[]	[]	[]
RECOMMEN	DATI	ons:	(If	dif	fere	nt fr	om N	ASA)			
	[3	/3]	[]	[]	[] (2] ADD/D] DELETE)
* CIL RE	TENT	ION	RATION	IALE:	(If	appl	.icab		ADEQUATE ADEQUATE]
REMARKS: IOA FM: NASA FM:	FAI		O OPEN IN "C	•	POSIT:	ION,	INAD		ENT OPER	-	r I

ASSESSME ASSESSME NASA FME	NT II	D:	LS-210	-2105 BASELII									ASA DATA BASELINE NEW	: [
SUBSYSTE MDAC ID: ITEM:			LIFE S 2105 CIRCUI				R	,	WC	S CNI	LI	R ((2)				
LEAD ANA	LYST	:	K. BAI	RIC	ĸ	IAN											
ASSESSME	NT:																
	FI	LIGH				EDUND	AJ	NC		SCREE	ENS			-	IL TEI	1	
	HDV	V/FUI	NC		A				В			С					
NASA IOA	[3 [3	/2R /2R]]	[[P P]]		[[NA P]]	[[P P]]	[[x]]	*
COMPARE	[/]	[]		[N]	۵]	[N	נ	
RECOMMEN	DATIC	ons:	(If	di	fi	feren	t	1	fro	m NAS	SA))					
	[3	/2R]	[P]		[NA]	[P		_] ELE	TE)
* CIL RE	TENTI	ION 1	RATION	ALE	:	(If a	aj	pı	pli	cable	-		DEQUATE DEQUATE]]	
REMARKS: IOA FM: NASA FM:								rc	D C(ONDUC	:Т	, c	OPENS				

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2106 05-6VC-2008-2	22/87 NASA DATA: 2106 BASELINE [] 6VC-2008-2 NEW [X]									
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 2106 CIRCUIT BREAKER,										
LEAD ANALYST:	K. BARICKMAN										
ASSESSMENT:											
	CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM										
	NC A	B C	I I EM								
NASA [3 /3 IOA [3 /1R] [] [2] [P] [] [] P] [P]	[] * []								
COMPARE [/N	ן [א] [и] [и]	[]]								
RECOMMENDATIONS:	(If different	from NASA)									
[3 /1R	[P] [[] DD/DELETE)								
	RATIONALE: (If ap	plicable) ADEQUATE INADEQUATE	[] []								
REMARKS: IOA FM: FAILS T											
	NASA FM: FAILS TO OPEN MANUALLY IOA COMMENT: IF A CIRCUIT BREAKER FAILS TO OPEN, EITHER MANUALLY										
OR AUTOMATICALLY	OR AUTOMATICALLY, THE CURRENT LIMITING EFFECT WOULD BE LOST.										
	HEREFORE A POTENTIALLY LIFE THREATENING CONDITION WOULD EXIST IF N ELECTRICAL SHORT OCCURRED. THERE WOULD BE A POTENTIAL FOR										

REPORT DATE 03/10/88 C-339

FOR THE IOA ANALYSIS.

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FIRE, WHICH IS A LIFE THREATENING CONDITION. THUS THE 1R STATUS

ASSESSME ASSESSME NASA FME	NT II):	LS-210	S-2107 BASELINI								INE					
SUBSYSTE MDAC ID: ITEM:	M:		2107	E SUPPORT 7 /SEPARATOR MOTOR (2)													
LEAD ANA	LYST:	:	K. BAI	RICH	MAN												
ASSESSME	NT:																
4		CAL	ITY F	F	EDUI	NDA	NC	Y	SCRE	EENS	5			C] I]	LL PEN	ſ	
	HDW	V/FUI	NC	7	L			В			С						
NASA IOA		/2R /2R		[] []	•] •]		[[NA P]	[[P P]]		[[х]]	*
COMPARE	[/]	[]		נ	N]	[1		۵	N]	
RECOMMEN	DATIC	ONS:	(If	dif	fer	ent	: f	iro	m NZ	SA)						
	[3	/2R]	[])		[NA]	[Ρ]	(A)	-	A / DH	-	TE)
* CIL RE	TENTI	ION 1	RATION	ALE :	(1:	fa	pŗ	oli	cabl	·		DEQUAT		[]	
REMARKS: IOA FM: NASA FM:						E								-		-	

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ASSESSME ASSESSME NASA FME	NT I	D:	LS-21	07A	-2						ASA DA BASELJ N	INE	Ι					
SUBSYSTE MDAC ID: ITEM:			2107	FE SUPPORT 07 N/SEPARATOR MOTOR (2)														
LEAD ANA	LYST	:	K. BA	RICK	MAN													
ASSESSME	NT:																	
	F	LIGH	ITY F NC			DAI		Y SCRI B	EENS	s c			CI IT	L EM	ſ			
NASA					. 1		r 1	רגע	r	ם	1		r	v	٦	+		
IOA	[3	/2R]	[P	j			P]	[[P	j		[[Λ]	~		
COMPARE	[/]	[]		[]	N]	[`] []		[N]			
RECOMMEN	DATI	ons:	(If	dif	ferer	nt	fı	rom NA	sa))								
	[3	/2R]	[P]	1	[]	NA]	[P]	(Al		A DE		TE)		
* CIL RE	TENT	ION I	RATION	ALE:	(If	aj	ppl	licabl	•		DEQUAT		[]]			
REMARKS: IOA FM: NASA FM:	OPE IN	N (E] ABIL]	LECTRIO ITY TO	CAL) SEP	ARATE	E C	OR	PROCE			DEQUAT		[]			

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2107									
SUBSYSTEM: MDAC ID: ITEM:	LIFE SU 2107 FAN/SEE	JPPORT PARATOR								
LEAD ANALYST:	K. BARI	ICKMAN								
ASSESSMENT:										
CRITICAI FLIGH	IT	REDUND	ANCY SCRE		CIL ITEM					
HDW/FU	INC	A	B	С						
NASA [3 /2F IOA [3 /2F	2] [2] [[P] [P]	[NA] [P]	[P] [P]	[X]* []					
COMPARE [/] [[]	[N]	[]	[N]					
RECOMMENDATIONS:	(If d	lifferen	t from NA	5A)						
[3 /2F	2] [[P]	[NA]	[P] (1	[A] ADD/DELETE)					
* CIL RETENTION	RATIONAI	LE: (If	applicable	e) ADEQUATE INADEQUATE						
•	LECTRICA	•								

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ASSESSME	NT I	D:]	x]]		
SUBSYSTE MDAC ID: ITEM:	M:		LIFE 3 2107 FAN/SI				М	O	roi	R (2)								
LEAD ANA	LYST	:	K. BAI	RIC	KN	IAN												
ASSESSME	NT:																	
		ICAL LIGH	ITY r		RI	EDUNE	A	N	CY	SCRE	ENS	S			C] T1	IL TEM	r	
	_		NC		A				B			С			-		L	
NASA IOA	[3 [3	/2R /2R]	[P P]]		[[N# P]	[[P P]		[[х] *]	t.
COMPARE	נ	/]	[]		[N]	[]		[N]	
RECOMMEN	DATI	ons:	(If	di	ff	feren	it	1	fro	om NAS	SA))						
	[3	/2R]	[Ρ]		[NA	\]	[Ρ]	(Al		A 'DE] LEI	'E)
* CIL RE	TENT	ION 1	RATION	ALE	:	(If	aj	pŗ	oli	.cable	•	AI	DEQUA DEQUA	TE	[]	
REMARKS: IOA FM: NASA FM:						CH SP	E	EI	5		ΤĽ	A WI	LE Â O H	15	L		ſ	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2108	• •							
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUP 2108 FAN/SEPA		MOTOR (2)						
LEAD ANALYST:	K. BARICI	KMAN							
ASSESSMENT:									
CRITICAL FLIGH		REDUND	ANCY SCREI	ens	CIL ITEM				
HDW/FU	NC A	A	В	с					
NASA [3 /2R IOA [3 /2R] []	P] P]	[NA] [P]	[P] [P]	[X]* []				
COMPARE [/] []	[N]	[]	[N]				
RECOMMENDATIONS:	(If di	fferen	t from NAS	SA)					
[3 /2R] []	P]	[NA]		[A] .DD/DELETE)				
* CIL RETENTION	RATIONALE	: (If	applicable	≥) ADEQUATE INADEQUATE					
REMARKS: IOA FM: SHORT NASA FM: INABIL	іту то орі	ERATE		-					

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2108	A		NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID: ITEM:	2108		MOTOR (2)		
LEAD ANALYST:	K. BARI	CKMAN			
ASSESSMENT:					
CRITICAL FLIGH	т		ANCY SCREE		CIL ITEM
HDW/FU	NC	Α	В	C	
NASA [3 /2R IOA [3 /2R] [P] P]	[NA] [P]	[P] [P]	[X]* []
COMPARE [/] []	[и]	[]	[N]
RECOMMENDATIONS:	(If d	ifferen	t from NAS	SA)	
[3 /2R] [P]	[NA]		[A] .DD/DELETE)
* CIL RETENTION	RATIONAL	E: (If a	applicable) ADEQUATE INADEQUATE	
REMARKS: IOA FM: SHORT NASA FM: INABIL	ITY TO S	EPARATE	OR PROCES	S LIQUIDS	

ASSESSMENT D. ASSESSMENT II NASA FMEA #:		108B	A: 5 [] 7 [X]		
SUBSYSTEM: MDAC ID: ITEM:	LIFE 2108 FAN/				
LEAD ANALYST	: к. в	ARICKMAN			
ASSESSMENT:					
F	ICALITY LIGHT		ANCY SCRE	-	CIL ITEM
HD	W/FUNC	A	В	C	
NASA [3 IOA [3	/2R] /2R]	[P] [P]	[NA] [P]	[P] [P]	[X]* []
COMPARE [/]	[]	[N]	[]	[N]
RECOMMENDATIO	I) ERNC	f differen	t from NA	ASA)	
[3	/2R]	[P]	[NA]		[A] ADD/DELETE)
* CIL RETENT	ION RATIO	NALE: (If	applicabl	.e) ADEQUATE INADEQUATE	
REMARKS: IOA FM: SHOI NASA FM: FAI	RTED N INOPERA	BLE		INDEQUATE	LJ

I

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2108C	S-2108C BASELINE [
SUBSYSTEM: MDAC ID: ITEM:	2108								
LEAD ANALYST: K. BARICKMAN									
ASSESSMENT:									
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM									
HDW/FU	NC A	В	С						
NASA [3 /2R IOA [3 /2R] [P]] [P]	[NA] [[P] [P] P]	[X]* []					
COMPARE [/] []	[N][]	[N]					
RECOMMENDATIONS:	(If differen	t from NASA))						
[3 /2R] [P]	[NA] [[A] DD/DELETE)					
* CIL RETENTION	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []								
REMARKS: IOA FM: SHORTED NASA FM: INABIL	ITY TO REACH SP		NADEQUATE	[]]					

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2109	LS-2109 BASI							ASA DA BASELI M		Ē			
SUBSYSTEM: MDAC ID: ITEM: SINGLE PHASE (6)	2109 CIRCUIT	IFE SUPPORT 109 IRCUIT BREAKER, WCS FAN/SEPARATOR,								A	C I	3US	5,	
LEAD ANALYST: K. BARICKMAN														
ASSESSMENT:														
CRITICALITY REDUNDANCY SCREENS FLIGHT								CIL ITEM						
HDW/FU	NC	Α			В			С						
NASA [3 /2F IOA [3 /2F] [] [P P]]	[[NA P]	[[P P]]		[[Х]]	*
COMPARE [/] []	[N]	[]		[N]	
RECOMMENDATIONS:	(If d	liff	feren	t	fro	m NA	SA)						
[3 /2F	:) [P]	[NA]	[Р]	(Al		A /DI		ETE)
* CIL RETENTION	RATIONAL	E:	(If a	apj	pli	cabl	•		DEQUA		[[]	
REMARKS: IOA FM: FAILS T NASA FM: OPEN	O REMAIN		LOSED								L		L	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #: SUBSYSTEM:	12/22/87 LS-2110 05-6VC-2007	7-2	NASA DATA: BASELINE NEW						
	2110 CIRCUIT BRE	RT EAKER, WCS FAN/S	SEPARATOR,	AC BUS,					
LEAD ANALYST:	LEAD ANALYST: K. BARICKMAN								
ASSESSMENT:									
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM									
HDW/FU	NC A	В	с						
NASA [3 /3 IOA [3 /2R] []] [P]	[] [[P] [] P]	[]*					
COMPARE [/N] [N]	[N] [N]	[]					
RECOMMENDATIONS:	(If diffe	erent from NASA))						
[3 /1R] [P]	[₽] [[] D/DELETE)					
* CIL RETENTION 1	RATIONALE: (ADEQUATE VADEQUATE						
REMARKS: IOA FM: FAILS TO NASA FM: FAILS T									
IOA COMMENT: IF OR AUTOMATICALLY	A CIRCUIT B	BREAKER FAILS TO T LIMITING EFFE	ECT WOULD B	E LOST.					
THEREFORE A POTEN									

AN ELECTRICAL SHORT OCCURRED. THERE WOULD BE A POTENTIAL FOR FIRE, WHICH IS A LIFE THREATENING CONDITION. THUS THE 1R STATUS FOR THE IOA ANALYSIS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2111	LS-2111 BASELINE								
SUBSYSTEM: MDAC ID: ITEM:	2111									
LEAD ANALYST: K. BARICKMAN										
ASSESSMENT:										
CRITICAL		EDUNDA	NCY S	CREENS	;	CIL				
FLIGH HDW/FU			В		с	ITE	M			
NASA [2 /2 IOA [2 /2] [] []	[] []	[[]]	[X [X	:] * :]			
COMPARE [/] []	[]	[]	[]			
RECOMMENDATIONS:	(If dif	ferent	: from	NASA)						
[2 /2] []	[]	[[A ADD/D) ELETE)			
* CIL RETENTION	RATIONALE:	(If a	pplic		ADEQUATE IADEQUATE]]			
REMARKS: IOA/NASA FM: EX	TERNAL LEA	KAGE								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2112	LS-2112 BASE							
SUBSYSTEM: MDAC ID: ITEM:	2112								
LEAD ANALYST: K. BARICKMAN									
ASSESSMENT:									
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM									
HDW/FU	-	A B C					ITEM		
NASA [2 /2 IOA [2 /2] [] []]	[[]]	[[]]	[X]* [X]		
COMPARE [/] []	[]	[]	[]		
RECOMMENDATIONS:	(If dif	feren	t fr	om NA	SA)				
[2 /2] []	[]	[] (A	[A] ADD/DELETE)		
* CIL RETENTION			appl	icabl	2	ADEQUATE ADEQUATE			
IOA/NASA FM: RE	STRICTED F	LOW							

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2113								
	2113	IFE SUPPORT 113 RS CONDENSATE SUPPLY TUBE (1)							
LEAD ANALYST: K. BARICKMAN									
ASSESSMENT:									
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM									
HDW/FU		A B C							
NASA [2 /2 IOA [2 /2]]	[[]]	[[]]	[X]* [X]		
COMPARE [/] []	[]	[]	[]]		
RECOMMENDATIONS:	(If dif	ferent	t fr	om NA	SA)				
[2 /2] []	[]	[]	[A] ADD/DELETE)		
* CIL RETENTION REMARKS:	RATIONALE:	(If a	appl	icabl	7	ADEQUATE ADEQUATE			
IOA/NASA FM: EX	TERNAL LEA	KAGE							

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		BASELINE []							
	2114	IFE SUPPORT 114 RS CONDENSATE SUPPLY TUBE (1)							
LEAD ANALYST: K. BARICKMAN									
ASSESSMENT:									
CRITICAL FLIGH	CIL ITEM								
HDW/FU			С						
NASA [2 /2 IOA [2 /2] [] []]]	[X]* [X]			
COMPARE [/] []	[]) []	[]			
RECOMMENDATIONS:	(If dif	ferent	fron	n NASA	7)				
[2 /2] []	[] [.] (2	[A] ADD/DELETE)			
* CIL RETENTION	RATIONALE:	(If a	applic		ADEQUATE NADEQUATE				
IOA/NASA FM: RE	STRICTED F	LOW							

REPORT DATE 03/10/88 C-353

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2115	7		NASA DATA BASELINE NEW	[]]				
MDAC ID:	2115	IFE SUPPORT 115 ONTINGENCY WATER CONTAINER (1)							
LEAD ANALYST: K. BARICKMAN									
ASSESSMENT:									
CRITICAL FLIGH HDW/FU	r	REDUNI A	DANCY SCREI B	ens C	CIL ITEM				
NASA [/ IOA [3 /2R] [] [] P]	[] [P]	[] [P]	[]*				
COMPARE [N /N] [И]	[N]	[N]	[]				
RECOMMENDATIONS:	(If di	ifferer	nt from NAS	5A)					
[3 /2R] [P]	[P]	[P] (A	[] DD/DELETE)				
* CIL RETENTION 1	RATIONALI	E: (If	applicable	≥) ADEQUATE INADEQUATE					
REMARKS: IOA FM: EXTERNA	L LEAKAGI	E, STRU	JCTURAL FAT						

THERE WAS NO NASA WMS FMEA WHICH MATCHED THE IOA DESCRIPTION. THE NASA ANALYSIS MAY BE COMBINED WITH SOME OTHER HARDWARE OR REALLOCATED TO ANOTHER SUBSYSTEM.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2116	LS-2116 BASELINE []								
	2116	JIFE SUPPORT 116 ASTE TANK 1 INLET VALVE (1)								
LEAD ANALYST: K. BARICKMAN										
ASSESSMENT:										
CRITICAI FLIGH	JITY R	REDUNDAN	CY SCRI	EENS		CIL ITE				
HDW/FU	-	7	В	С						
NASA [2 /2 IOA [2 /2] [] [.] [] []]	[[]]	[X [X] *]			
COMPARE [/] [] []	C]	[]			
RECOMMENDATIONS:	(If dif	ferent	from NA	SA)						
[2 /2] [] []	[[A DD/D] ELETE)			
* CIL RETENTION	RATIONALE:	(If ap	plicabl	AD	EQUATE EQUATE	[[]]			
IOA/NASA FM: EX	TERNAL LEA	KAGE								

ASSESSMENT TD:	SMENT DATE: 12/22/87 NASA DATA: SMENT ID: LS-2117 FMEA #: 06-2-0311-2								
SUBSYSTEM: MDAC ID: ITEM:	LIFE SU 2117 WASTE I		NLET VALVE	(1)					
LEAD ANALYST:	K. BARI	CKMAN							
ASSESSMENT:									
CRITICAI FLIG	CIL ITEM								
HDW/FU		A	В	С					
NASA [3 /2F IOA [3 /3	2] [] [P]]	[NA] []	P]]	[] * []				
COMPARE [/N] [ן א ן	[N]	[N]	[]				
RECOMMENDATIONS:	(If d	lifferen	t from NASA	A)					
[3 /2]	2] [[P]	[NA]		[] ADD/DELETE)				
* CIL RETENTION	RATIONAL	LE: (If a		ADEQUATE					

CRITICALITY OF 3/2R PNP.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2118	LS-2118 BASELINE						
SUBSYSTEM: MDAC ID: ITEM:	2118							
LEAD ANALYST: K. BARICKMAN								
ASSESSMENT:								
CRITICAL FLIGH	CIL ITEM							
HDW/FU		В	С					
NASA [3 /2R IOA [3 /2R] [P] [P] [NA]] [P]	[P] [P]	[] * []				
COMPARE [/] [] [N]	[]	[]				
RECOMMENDATIONS:	(If diff	erent from NAS	A)					
[3 /2R] [P] [NA]	[P] (A	[] DD/DELETE)				
* CIL RETENTION REMARKS:	RATIONALE:) ADEQUATE INADEQUATE	[] []				
IOA/NASA FM: RE	STRICTED FL	WO						

ASSESSME ASSESSME NASA FME	NT ID:	LS-211					NASA DATA: BASELINE [] NEW [X]						
SUBSYSTE MDAC ID: ITEM:		2119	ASTE TANK 1 (1)										
LEAD ANA	LYST:	K. BAI	RICKM	IAN									
ASSESSME	ASSESSMENT:												
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM													
	HDW/FU		A			В			С		- - -		
NASA IOA	• •]	[P [P]]	[[NA P]	[[P P]]	[[] *]	
COMPARE	[/]	[]	[N]	נ]	[]	
RECOMMEN	DATIONS:	(If	diff	ferent	t :	fro	om NAS	SA)				
	[3 /2F	:]	[P]	[NA	\]	[P] DD/D] ELETE)	
	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []												
REMARKS: IOA/NASA	FM: IN	TERNAL	LEAK	KAGE	(W)	ATI	ER TO	N	ITI	ROGEN)			

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2120	S-2120 BASELINE						
SUBSYSTEM: MDAC ID: ITEM:	2120							
LEAD ANALYST: K. BARICKMAN								
ASSESSMENT:								
CRITICALITY REDUNDANCY SCREENS C FLIGHT II								
HDW/FU		В	(C		-		
NASA [3 /1F IOA [3 /1F] [P] [P	P] [P] [P] []	P] P]	[[] *]		
COMPARE [/	J [] [] []	[]		
RECOMMENDATIONS:	(If dif	ferent fro	om NASA)					
[3 /1R] [P) [P] []	P] (Al	[DD/DI] ELETE)		
* CIL RETENTION REMARKS:	RATIONALE:	(If appl:	1	ADEQUATE ADEQUATE	[[]]		
IOA/NASA FM: EX	TERNAL LEA	KAGE						

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ASSESSMENT ASSESSMENT NASA FMEA ‡	ID:	LS-212	-2121 BASELINE []									
SUBSYSTEM: MDAC ID: ITEM:		2121										
LEAD ANALYST: K. BARICKMAN												
ASSESSMENT:												
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM												
F	IDW/FU	NC	A			В			С			
NASA [IOA [3 /2R 3 /2R]]	[P [P]]	[[NZ P	A]]	[[P P]	[[] *]
COMPARE [1]	[]	[N]	Į		1	[]
RECOMMENDAT	lons:	(If	dif	feren	t	fro	om NAS	SA)				
[3 /2R]	[P]	[NZ	A]	[Ρ] DD/D] ELETE)
* CIL RETEN	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []											
INADEQUATE [] REMARKS: IOA FM: PHYSICAL BINDING/JAMMING NASA FM: INABILITY TO OPEN, RESTRICTED FLOW												

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2122	NASA DATA: BASELINE [] NEW [X]						
SUBSYSTEM: MDAC ID: ITEM:	2122							
LEAD ANALYST:	K. BARICKMA	N						
ASSESSMENT:								
CRITICAL FLIGH	Г	UNDANCY SCREEN		CIL ITEM				
HDW/FUI	NC A	В	С					
NASA [3 /2R IOA [3 /2R] [P]] [P]	[NA] [[P] [P] P]	[] * []				
COMPARE [/] []	[И] []	[]				
RECOMMENDATIONS:	(If diffe	rent from NASA)					
[3 /2R] [P]	[NA] [[] DD/DELETE)				
* CIL RETENTION H	RATIONALE: (ADEQUATE	[]				
REMARKS:			VADEQUATE	[]				

IOA/NASA FM: EXTERNAL LEAKAGE

ASSESSME ASSESSME NASA FME	NT I	D:		23	5-2						ASA I BASEI	LINE			
SUBSYSTE MDAC ID: ITEM:	M:		LIFE S 2123 WASTE				LEJ	r lin	ES	A	1D CC	OUPL	INGS		
LEAD ANALYST: K. BARICKMAN															
ASSESSMENT:															
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM															
	HD	W/FU	NC	i	A		В			С					
NASA IOA		/2R /3]]	[] [P]]	[NZ	A]]	[[P]]		[[]]	*
COMPARE	[/N]	[]	N]	(N]	נ	N]		C]	
RECOMMEN	DATI	ons:	(If	di	ffe	rent	fro	om NA	SA)					
	[3	/2R]	[]	Ρ]	[NZ	A]	[P	j	(A	[A DD/D		TE)
* CIL RE	TENT	ION	RATION	ALE	: (If ar	pli	lcabl	·		DEQUI DEQUI]]	
REMARKS: IOA/NASA FM: EXTERNAL LEAKAGE IOA COMMENT: THE EXTERNAL LEAKAGE OF THE OUTLET LINES AND															

FITTINGS IS NOT A HAZARD UNLESS AN INTERNAL LEAK DEVELOPS IN EITHER THE OUTLET VALVE OR IN THE DRAIN QD, IN WHICH CASE THE CRITICALITY WOULD BE LOSS OF MISSON POSSIBILITY DUE TO WASTE FLUIDS IN THE CREW CABIN. CRITICALITY OF 3/2R PNP.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2123A 06-2-0437-2		NASA DATA BASELINE NEW						
	2123								
LEAD ANALYST: K. BARICKMAN									
ASSESSMENT:									
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C									
		_	-	.					
IOA [3 /3] [P]] []		P]]	[X]* []					
COMPARE [/N] [N]	[N] [N]	[N]					
RECOMMENDATIONS:	(If differen	t from NASA)						
[3 /2R] [P]	[F] [[A] DD/DELETE)					
* CIL RETENTION	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []								
REMARKS:		11	ADEQUATE	LJ					
IOA/NASA FM: EX IOA COMMENT: TH	E REDUNDANT HAR	DWARE, THE	DUTLET DRAT	IN VALVE, IS					

OFF LINE UNTIL POWERED UP, THUS A B SCREEN N/A.

ASSESSME ASSESSME NASA FME	NT 1 NT 3 A #3	DATE: ID: :	12/22 LS-21 06-2-	2/22/87 NASA DATA: S-2124 BASELINE [] 6-2-0313-1 NEW [X]									
SUBSYSTE MDAC ID: ITEM:			2124	FE SUPPORT 24 STE TANK FLUID LEVEL TRANSDUCER (1)									
LEAD ANALYST: K. BARICKMAN													
ASSESSMENT:													
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM													
			NC	A		E	\$	(2		T.I.EL	1	
NASA IOA	[:	3 /3 3 /3]	[[]]	[[]]	[[]]		[[]]	*
COMPARE	[1]	[]	[]	[]		[]	
RECOMMEN	DAT	IONS:	(If	dif	fere	nt fr	om N	ASA)					
	[:	3 /3]	[]	[]	[]		[D/DI		TE)
* CIL RE	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []												
REMARKS: IOA FM: PHYSICAL BINDING/JAMMING, LOSS OF OUTPUT NASA FM: OPEN (ELECTRICAL), SHORTED, OUT OF TOLERANCE													

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2125		DATA: LINE [] NEW [X]						
	2125								
LEAD ANALYST:	K. BARICKMAN								
ASSESSMENT:									
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM									
HDW/FUI	NC A	B C							
NASA [3 /1R IOA [3 /1R] [P]] [P]	[P] [P] [P] [P]	[] * []						
COMPARE [/] []	[]][]]	[]						
RECOMMENDATIONS:	(If differe	nt from NASA)							
[3 /1R] [P]	[P] [P]	[] (ADD/DELETE)						
* CIL RETENTION 1	RATIONALE: (If	applicable) ADEQU INADEQU							
REMARKS: IOA/NASA FM: EX:	TERNAL LEAKAGE								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2125	A		NASA DATA BASELINE NEW					
SUBSYSTEM:LIFE SUPPORTMDAC ID:2125ITEM:WASTE TANK N2 LINE AND COUPLINGS									
LEAD ANALYST: K. BARICKMAN									
ASSESSMENT:									
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM									
HDW/FU		A	В	С					
NASA [3 /1R IOA [3 /1R] [] [P] P]	[P] [P]	[P] [P]	[] * []				
COMPARE [/] []	[]	[]	[]				
RECOMMENDATIONS:	(If d	lifferen	t from NA	SA)					
[3 /1R] [P]	[P]		[] ADD/DELETE)				
* CIL RETENTION	RATIONAL	Æ: (If	applicabl	.e) ADEQUATE INADEQUATE					
IOA/NASA FM: EX	TERNAL L	EAKAGE							

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2126 06-2-0314-2	NASA DATA: BASELINE [] NEW [X]						
MDAC ID:	UBSYSTEM: LIFE SUPPORT DAC ID: 2126 TEM: WASTE TANK N2 HYDROPHOBIC FILTER (1							
LEAD ANALYST:	K. BARICKMAN							
ASSESSMENT:								
CRITICAL FLIGH								
HDW/FU		ITEM C						
NASA [3 /2R IOA [3 /3] [F] [F]] [] []	[P] [X]* [] []						
COMPARE [/N] [N] [N]	[N] [N]						
	(If different from N] [F] [N]							
] [] []]	(ADD/DELETE)						
REMARKS: IOA/NASA FM: IN'	RATIONALE: (If applicab TERNAL LEAKAGE	ADEQUATE [] INADEQUATE []						
IOA COMMENT: THE FAILURE OF THE FILTER IS NO CRITICALITY CHANGE, HOWEVER IF THE LOSS OF THE BELLOWS OCCURS THEN THE FCB AND UCD MUST BE USED AS REDUNDANT SUPPLIES WHICH MAY REQUIRE TERMINATION OF THE MISSION BECAUSE OF INSUFFICIENT UCD SUPPLIES PAST								
THE DISAGREEMENT	HE NEW CRITICALITY SHOU IN THE REDUNDANCY SCRE THE NASA SUBSYSTEM MANA	ENS WAS DUE TO NO DETAILED						

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2127	,		NASA DATA BASELINE NEW					
	2127								
LEAD ANALYST: K. BARICKMAN									
ASSESSMENT:									
CRITICALITY REDUNDANCY SCREENS CI FLIGHT IT									
HDW/FU		A	В	с	ITEM				
NASA [3 /2R IOA [3 /2R] [] [P] P]	[NA] [P]	[P] [P]	[]*				
COMPARE [/] []	[N]	[]	[]				
RECOMMENDATIONS:	(If d	lifferen	t from NAS	SA)					
[3 /2R] [P]	[NA]		[] DD/DELETE)				
* CIL RETENTION	RATIONAL	Æ: (If a	applicable	e) ADEQUATE INADEQUATE					
IOA/NASA FM: EX	TERNAL L	EAKAGE							

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2128 06-2-0315-2	NASA DAT BASELIN NE	
	LIFE SUPPORT 2128 WASTE TANK 1 DR	AIN VALVE (1)	
LEAD ANALYST:	K. BARICKMAN		
ASSESSMENT:			
CRITICAL FLIGH HDW/FU	 Т	NCY SCREENS B C	CIL ITEM
NASA [3 /2R IOA [3 /3] [P]] []	[F] [P] [] []	[X]* []
COMPARE [/N] [N]	[א] [א]	[N]
RECOMMENDATIONS:	(If different	from NASA)	
[3 /2R] [P]		[A] ADD/DELETE)
* CIL RETENTION I	RATIONALE: (If a)	pplicable) ADEQUATE INADEQUATE	

IOA/NASA FM: INABILITY TO CLOSE, INTERNAL LEAKAGE IOA COMMENT: THE INTERNAL LEAKAGE IS NOTHING MORE THAN A 3/3 CRITICALITY UNLESS AN EXTERNAL LEAKAGE DEVELOPS IN THE OUTLET LINES AND FITTING, IN WHICH CASE THERE WOULD BE WASTE FLUIDS IN THE CABIN ATMOSPHERE REQUIRING USE OF FCB AND UCD SUPPLIES FOR A CRITICALITY OF 3/2R PFP.

REPORT DATE 03/10/88

C-369

ASSESSME ASSESSME NASA FME	NT :	ID:	LS-212									
SUBSYSTE MDAC ID: ITEM:			2129	STE TANK 1 DRAIN VALVE (1)								
LEAD ANA	LYS	T:	K. BAI	RICK	MAN							
ASSESSMENT:												
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM												
	-	DW/FU		A	A B C					TIL	4 <i>44</i> 7	
NASA IOA	[:	3 /3 3 /3]]	[[]]	[[]]	[[]]	[[] *]	
COMPARE	[1]	C	1	[]	۵]	[]	
RECOMMEN	DAT:	IONS:	(If	dif	feren	t fr	om NA	SA)				
	[:	3 /3]	[]	[]	[[ADD/D] ELETE)	
* CIL RE	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []											
REMARKS: IOA/NASA FM: FAILS TO OPEN, RESTRICTED FLOW												

ASSESSMEI ASSESSMEI NASA FMEI	NT ID:	LS-213						NASA DATA BASELINA NEN] (]
SUBSYSTE MDAC ID: ITEM:	M:	2130	LIFE SUPPORT 2130 SSE FILL QD AND PLUG (1)							
LEAD ANALYST: K. BARICKMAN										
ASSESSMEI	NT:									
(CRITICAL FLIGH		RI	EDUND	ANCY	SCRE	ENS		CII ITF	
	HDW/FU		Α		В		C	2		
NASA IOA	[3 /3 [3 /3]]	[[]]	[[]]	[[]]	[[] *]
COMPARE	[/]	[]	[]	[]	[]
RECOMMENI	DATIONS:	(If	diff	feren	t fr	om NA	SA)			
	[3 /3]	[]	[]	[] (2	[ADD/D] DELETE)
* CIL RET				·			A INA	DEQUATE	[[]]
IOA/NASA FM: FAILS TO OPEN, RESTRICTED FLOW										

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2131 06-2-0420-2	12/22/87NASA DATALS-2131BASELINE06-2-0420-2NEW					
SUBSISTEM:	2131	LIFE SUPPORT					
LEAD ANALYST:	K. BARICKMAN	K. BARICKMAN					
ASSESSMENT:							
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM							
	INC A	ВС	I I EM				
NASA [3 /2R IOA [3 /3	[F] [][]	[F] [P] [] []	[X]* []				
COMPARE [/N] [N]	[N] [N]	[N]				
RECOMMENDATIONS:	(If differe	ent from NASA)					
[3 /1R	[F]	[F] [P]	[A] (ADD/DELETE)				
* CIL RETENTION	RATIONALE: (11						
		ADEQU INADEQU	ATE [] ATE []				
REMARKS: IOA/NASA FM: FAILS TO CLOSE IOA COMMENT: IF THE LEAKAGE DEVELOPS AFTER GROUND SERVICING AND THE CAP, AS SECONDARY SEAL, ALSO FAILS, THEN A POTENTIAL FOR LOSS OF LIFE OCCURS DUE TO CABIN PRESSURE LOSS FOR A CRITICALITY OF 3/1R FFP.							

THE IOA ANALYSIS VIEWED THE CONDITION OF A POTENTIAL CABIN ATMOSPHERE LEAK, IF A SECOND FAILURE OCCURED IN THE REDUNDANCY STREAM, TO BE A LIFE CRITICAL CONDITION.

ASSESSMENT DAT ASSESSMENT ID: NASA FMEA #:	LS-2132						[]]	
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUI 2132 GSE FILI		D PL	JG (1))				
LEAD ANALYST:	K. BARIC	. BARICKMAN							
ASSESSMENT:									
	LITY	REDUND	ANCY	SCREE	ens		CIL		
FLIC HDW/1	TUNC	A	В		С		ITE	M	
NASA [2 /2 IOA [3 /2	2] [3] []]	[[]	[[]	[X []]	*
COMPARE [N /]	T] []	[]	[]	[N]	
RECOMMENDATION	S: (If di	fferen	t fro	om NAS	SA)				
[2 /:	;] []	[]	[] (A)	[A DD/DI		TE)
* CIL RETENTIO	I RATIONALE	2: (If a	appli	icable	AI	EQUATE	[]	
REMARKS: IOA/NASA FM: 1 IOA COMMENT: 1	XTERNAL LE	EAKAGE	OTENT	TIAL F		~	•		

BECAUSE OF INABILITY TO ISOLATE THE QD TO PREVENT LEAKAGE INTO CREW CABIN AND POTENTIAL CREW HAZARD.

ASSESSME ASSESSME NASA FME	NT	I		12/22, LS-21:						NASA DA' BASELII NI		[]	
SUBSYSTE MDAC ID: ITEM:				2133	SE DRAIN QD AND PLUG (1)									
LEAD ANA	LY	ST	ST: K. BARICKMAN											
ASSESSME	NT	:												
	CR			ITY	R	EDUNE	ANCY	SCRE	ens			CIL		
]		LIGH W/FU	T NC	A		E	3		с		T.T.EI	м	
NASA IOA	[[3	/ /3]]	[[]]	[[]]	[[]]		[[]	*
COMPARE	נ	N	/N]	[]	נ]	נ]		C]	
RECOMMEN	DA	TI(ons:	(If	dif	ferer	nt fr	com NA	SA)					
	[3	/3]	[]	[]	[]	(Al] []]] ELI	ETE)
* CIL RE	TE	NT	ION	RATION	ALE:	(If	app]	licabl	-	ADEQUAT ADEQUAT		[]]	
REMARKS: GROUND S IOA FM:	REMARKS: GROUND SERVICING CASE ONLY.													

THERE WAS NO NASA WMS FMEA WHICH MATCHED THE IOA DESCRIPTION. THE NASA ANALYSIS MAY BE COMBINED WITH SOME OTHER HARDWARE OR REALLOCATED TO ANOTHER SUBSYSTEM.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2134	NASA DATA: BASELINE [] NEW [X]
	LIFE SUPPORT 2134 GSE DRAIN QD AND PLUG (1)
LEAD ANALYST:	K. BARICKMAN	
ASSESSMENT:		
CRITICAL FLIGH		ENS CIL ITEM
HDW/FU	NC A B	С
NASA [3 /2R IOA [3 /3] [F] [NA]] [] []	[P] [X] * [] []
COMPARE [/N] [N] [N]	[N] [N]
RECOMMENDATIONS:	(If different from NA	SA)
[3 /2R] [F] [NA]	[P] [A] (ADD/DELETE)
* CIL RETENTION	RATIONALE: (If applicabl	ADEQUATE []
REMARKS: IOA/NASA FM: IN	TERNAL LEAKAGE, FAILS TO	INADEQUATE [] CLOSE

IOA/NASA FM: INTERNAL LEAKAGE, FAILS TO CLOSE IOA COMMENT: IF THE DRAIN QD DEVELOPS AN INTERNAL LEAKAGE AFTER GROUND SERVICING AS WELL AS THE CAP THEN A POTENTIAL LOSS OF MISSION WOULD DEVELOP IF AN EXTERNAL LEAKAGE IN THE LINES AND FITTINGS, OR AN INTERNAL LEAK IN THE DRAIN VALVE WHEREBY THE WCS SYSTEM MUST BE SHUT-DOWN. THE FCB AND UCD SUPPLIES MAY CAUSE LOSS OF MISSION DUE TO INSUFFICIENT SUPPLIES.

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ASSESSME ASSESSME NASA FME	NT ID:	LS-213						[x]					
SUBSYSTE MDAC ID: ITEM:		2135	IFE SUPPORT 135 SE DRAIN QD AND PLUG (1)												
LEAD ANA	LYST:	K. BAR	BARICKMAN												
ASSESSMENT:															
	CRITICAL FLIGH HDW/FU	T	RI A	EDUND.		Y B	SCI	REENS	s c			IL Fem	1		
N7 C 7	•						٦	r		1	r	v	٦	÷	
NASA IOA	[3 /2R [3 /3]	[]]	Ĺ	r]	Ĺ	F	j	ĺ	л]		
COMPARE	[/N]	[N]	[N]	[N]	נ	N]		
RECOMMEN	DATIONS:	(If	dif	feren	t f	rc	om 1	NASA))						
	[3 /2R]	[P]	[F]	[P			A / DE		TE)	
* CIL RE	TENTION	RATIONA	LE:	(If	app	li	.cał	•		DEQUATE DEQUATE	[[]		
IOA COMM	INADEQUATE []														

ON

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2136 06-2-0438-2	2/22/87 NASA DATA: S-2136 BASELINE [] 6-2-0438-2 NEW [X]						
SUBSYSTEM:	LIFE SUPPORT 2136	LIFE SUPPORT						
LEAD ANALYST:	K. BARICKMAN							
ASSESSMENT:								
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM								
HDW/FUI		B C						
NASA [2 /1R IOA [2 /2] [P]] []	[P] [P [] [] [X]*] [X]					
COMPARE [/N	ן א ן	[N] [N] []					
RECOMMENDATIONS:	(If differe	nt from NASA)						
[2 /2] []	[][] [A] (ADD/DELETE)					
* CIL RETENTION N	RATIONALE: (If							
ADEQUATE [] INADEQUATE []								
REMARKS: IOA/NASA FM: EXTERNAL LEAKAGE IOA COMMENT: THE EXTERNAL LEAKAGE OF THE DUMP LINE PRODUCES A LOSS OF MISSION WITH NO CHANGE IN CRITICAL EVENTS.								

THE IOA ANALYSIS TEAM COULD NOT DETERMINE ANY APPARENT REDUNDANT PATHS FOR THIS HARDWARE OR FUNCTION

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2137 06-2-0438-1	/22/87 NASA DATA: -2137 BASELINE [] -2-0438-1 NEW [X]						
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 2137	IFE SUPPORT						
LEAD ANALYST:	K. BARICKMAN	. BARICKMAN						
ASSESSMENT:								
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM								
HDW/FU		B C						
NASA [2 /1R IOA [2 /2] [P]] []	[NA] [P] [][]	[X] * [X]					
COMPARE [/N] [N]	[N] [N]	[]					
RECOMMENDATIONS:	(If differ	ent from NASA)						
[2 /2] []	[][]	[A] (ADD/DELETE)					
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []								
REMARKS: IOA/NASA FM: RESTRICTED/BLOCKED FLOW. IOA COMMENT: THE RESTRICTED FLOW OF THE DUMP LINE PRODUCES A LOSS OF MISSION WITH NO CHANGE IN CRITICAL EVENTS.								

THE IOA ANALYSIS TEAM COULD NOT DETERMINE ANY APPARENT REDUNDANT PATHS FOR THIS HARDWARE OR FUNCTION

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2138	LS-2138 BASELIN						
	2138							
LEAD ANALYST:	K. BARICK	MAN						
ASSESSMENT:								
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM								
HDW/FU			В	С				
NASA [2 /2 IOA [2 /2] [] [] [] []]	[.] []	[X]* [X]			
COMPARE [/] [] []	[]	[]			
RECOMMENDATIONS:	(If dif:	ferent f	rom NA	SA)				
[2 /2] [] []	[]	[A] (ADD/DELETE)			
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []								
REMARKS: IOA/NASA FM: EXTERNAL LEAKAGE								

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	IT ID:	12/22/87 LS-2139 06-2-041		NASA DATA: BASELINE [] NEW [X]					
SUBSYSTEM MDAC ID: ITEM:		2139	LIFE SUPPORT 139 WASTE TANK 1 DUMP ISOLATION VALVE (1)						
LEAD ANALYST: K. BARICKMAN									
ASSESSMENT:									
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM									
	HDW/FU		A	В		C	2	LIEM	
NASA IOA	[2 /2 [2 /2] [] []]	[[]]	[[]]	[X]* [X]	
COMPARE	[/] []	ſ]	נ]	[]	
RECOMMEND	DATIONS:	(If di	ffere	nt fr	om NZ	ASA)			
	[2 /2] []	[]	[[A] ADD/DELETE)	
* CIL RET	TENTION	RATIONALE	: (If	appl	icabl	7	ADEQUATE ADEQUATE		
	IOA/NASA FM: RESTRICTED FLOW								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2140	2	NASA DATA: BASELINE [] NEW [X]						
SUBSYSTEM: MDAC ID: ITEM:	2140								
LEAD ANALYST:	K. BARICKM	AN							
ASSESSMENT:									
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM									
FLIGH HDW/FU		В	с	ITEM					
NASA [3 /2R IOA [3 /2R] [P]]] [NA] [] [P] [P] P]	[]*					
COMPARE [/] [] [N] []	[]					
RECOMMENDATIONS:	(If diffe	erent from NASA)						
[3 /2R] [P] [NA] [[] DD/DELETE)					
* CIL RETENTION	RATIONALE:	,	ADEQUATE NADEQUATE	[]					
IOA/NASA FM: FAILS TO CLOSE, INTERNAL LEAKAGE									

	12/22/87 LS-2141 06-2-0438	-2		NASA DATA BASELINE NEW	
MDAC ID:	LIFE SUPPO 2141 QD AND TP		AP. FIL	TER (2)	
LEAD ANALYST:	K. BARICK	MAN			
ASSESSMENT:					
CRITICAL FLIGH	T	EDUNDANCY			CIL ITEM
HDW/FU	NC A	В		С	
NASA [2 /1R IOA [2 /2] [P]] [] [P] [] [] [P]]	[X]* [X]
COMPARE [/N] [N] [N] [И]	[]
RECOMMENDATIONS:	(If dif:	ferent fr	om NASA	.)	
[2 /2] [] [] [] (A	[A] DD/DELETE)
* CIL RETENTION	RATIONALE:	(If appl		ADEQUATE NADEQUATE	[]
REMARKS :					

IOA/NASA FM: EXTERNAL LEAKAGE IOA COMMENT: LOSS OF DUMP LINE AND WCS FUNCTION REQUIRES USE OF CONTINGENCY WASTE COLLECTION METHODS AND A LOSS OF MISSION DUE TO LOSS OF ARS CONDENSATE STORAGE CAPABILITY.

THE IOA ANALYSIS TEAM COULD NOT DETERMINE ANY APPARENT REDUNDANT PATHS FOR THIS HARDWARE OR FUNCTION

REPORT DATE 03/10/88

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2142 06-2-0423	-1			ATA: INE [] NEW [X]
SUBSYSTEM: MDAC ID:		PORT)	
LEAD ANALYST:	K. BARICK	MAN			
ASSESSMENT:					
CRITICAI FLIGH		EDUNDAN	CY SCRE	ENS	CIL ITEM
HDW/FU		•	В	С	
NASA [2/2 IOA [2/2] [] [] [] []]	[] []	[X]* [X]
COMPARE [/] [] []	[]	[]
RECOMMENDATIONS:	(If dif	ferent	from NA	SA)	
[2 /2] [] []	[]	[A] (ADD/DELETE)
* CIL RETENTION	RATIONALE:	(If ap	plicabl	•	TE [] TE []
IOA/NASA FM: RE NASA: WHY ARE O	STRICTED/B 6-2-0423-1	LOCKED	FLOW -2-0438	-1 NOT CO	NSISTENT FOR

NASA: WHY ARE 06-2-0423-1 AND 06-2-0438-1 NOT CONSISTENT FOR CRITICALITY?

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2142A		ATA: INE [] NEW [X]
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 2142 HIGH CAPACITY	FILTER (1)	
LEAD ANALYST:	K. BARICKMAN		
ASSESSMENT:			
	LITY REDUN	DANCY SCREENS	CIL ITEM
FLIGI HDW/FU		B C	LIEM
NASA [2 /1] IOA [2 /2		[NA] [P] [][]	[X]* [X]
COMPARE [/N] [N]	[N] [N]	[]]
RECOMMENDATIONS	(If differe	ent from NASA)	
[2 /2] []	[][]	[A] (ADD/DELETE)
* CIL RETENTION	RATIONALE: (If		
		ADEQUA INADEQUA	
REMARKS: IOA/NASA FM: RI NOTE TO NASA: N FOR CRITICALITY	THY ARE 06-2-04	XED FLOW 23-1 AND 06-2-0438-	1 NOT CONSISTENT

THE IOA ANALYSIS TEAM COULD NOT DETERMINE ANY APPARENT REDUNDANT PATHS FOR THIS HARDWARE OR FUNCTION

ASSESSMI ASSESSMI NASA FMI		12/22, LS-214]	NASA DA' BASELII NI]]
SUBSYSTI MDAC ID: ITEM:		LIFE S 2143 HIGH (FILT	ER (1)			
LEAD ANA	ALYST:	K. BAI	RICK	MAN						
ASSESSMI	en t:									
	CRITICAL FLIGH		RI	EDUND	ANCY	SCRE	ENS		CI IT	
	HDW/FU	-	A		В		(C		
NASA IOA	[/ [3 /3]]	[[]]	[[]	[[]]	[[] *]
COMPARE	[N /N]	[]	[]	[]	[]
RECOMMEN	DATIONS:	(If	dif	feren	t fr	om NA	SA)			
	[3 /3]	[]	[]	[]] (ADD/1] DELETE)
	ETENTION	RATION	ALE:	(If a	appl	icable	•	ADEQUATI ADEQUATI	5 [5 []]
REMARKS: IOA FM:		PEN, RU	JPTUI	RE OF	FIL	FER				
	-									

THERE WAS NO NASA WMS FMEA WHICH MATCHED THE IOA DESCRIPTION. THE NASA ANALYSIS MAY BE COMBINED WITH SOME OTHER HARDWARE OR REALLOCATED TO ANOTHER SUBSYSTEM.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2144 06-2-0431	1-3	NASA DATA: BASELINE [] NEW [X]	
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPP 2144 CONTINGEN	PORT NCY H2O CROSS-TIE	QD AND PLUG (1)	
LEAD ANALYST:	K. BARICK	KMAN		
ASSESSMENT:				
		REDUNDANCY SCREENS	S CIL ITEM	
FLIGH HDW/FU	nc a	A B	C	
NASA [3 /1R IOA [2 /2] [P] [P] [NA] [] [] [P] []*] [X]	
COMPARE [N /N] [N	N] [N] [N] [N]	
RECOMMENDATIONS:	(If dif	fferent from NASA))	
[2 /2] [] [] [] [A] (ADD/DELETE)	
* CIL RETENTION	RATIONALE:	: (If applicable) II	ADEQUATE [] NADEQUATE []	
REMARKS:				
IOA FM: INABILI FLOW	TY TO MATE	E/DE-MATE, FAILS .	IO OPEN, RESTRICTED	
NASA FM: FAILS				
			NCTION REQUIRES USE OF LOSS OF MISSION DUE TO	
		ORAGE CAPABILITY.		

THE IOA ANALYSIS TEAM COULD NOT DETERMINE ANY APPARENT REDUNDANT PATHS FOR THIS HARDWARE OR FUNCTION

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2145 06-2-0417-2	NASA DAT BASELIN NE	
SUBSYSTEM: MDAC ID:	LIFE SUPPORT 2145 WASTE TANK 1		
LEAD ANALYST:	K. BARICKMAN		
ASSESSMENT:			
FLIGH	—		CIL ITEM
HDW/FU	NC A	B C	
NASA [2 /1R IOA [2 /1R] [P]] [P]	[NA] [P] [P] [P]	[X]* [X]
COMPARE [/] []	[N] []	[]
RECOMMENDATIONS:	(If differe	nt from NASA)	
[2 /1R] [P]	[NA] [P] (4	[A] ADD/DELETE)
* CIL RETENTION	RATIONALE: (If	ADEOUATE	[]
REMARKS: IOA FM: EXTERNA	I. LEAKACE	INADEQUATE	LJ
NASA FM: INABIL	ITY TO CLOSE,	INTERNAL LEAKAGE, EXT EXTERNAL LEAK AND INT	

COMBINED TO ONE ANALYSIS SHEET?

NASA DATA: ASSESSMENT DATE: 12/22/87 ASSESSMENT ID: LS-2146 BASELINE [06-2-0417-1 NEW [X] NASA FMEA #: SUBSYSTEM: LIFE SUPPORT MDAC ID: 2146 WASTE TANK 1 DUMP VALVE (1) ITEM: LEAD ANALYST: K. BARICKMAN ASSESSMENT: CRITICALITY REDUNDANCY SCREENS CIL ITEM FLIGHT HDW/FUNC Α В С NASA [3/1R] [P] [NA] [P] [IOA [3/2R] [P] [P] [P] [1 COMPARE [/N] [] [N] [] [] **RECOMMENDATIONS:** (If different from NASA) [3/2R] [P] [NA] [P] [(ADD/DELETE) * CIL RETENTION RATIONALE: (If applicable) ADEQUATE [1 INADEQUATE ٢ **REMARKS:** IOA FM: FAILS TO OPEN NASA FM: FAILS TO OPEN, RESTRICTED/PLUGGED FLOW IOA COMMENT: THE LOSS OF THE DUMP VALVE AND DUMP CAPABILITY CREATES A LOSS OF MISSION IF THE CONTINGENCY CROSS-TIE ALSO FAILS, IN WHICH CASE THE FCB AND UCD SUPPLIES MUST BE USED UNTIL DE-ORBIT AND LANDING FOR A CRITICALITY OF 3/2R PNP. THE NASA VIEWED ANY LOSS OF WATER DUMP CAPABILITY, EITHER SUPPLY OR WASTE WATER, AS A LOSS OF LIFE OR VEHICLE CONDITION. HOWEVER THE IOA ANALYSIS DID NOT RECOGNIZE THIS LIMITATION AND VIEWED THE LOSS OF WASTE WATER DUMP CAPABILITY TO

BE ONLY A LOSS OF MISSION CONDITION.

REPORT DATE 03/10/88

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2147 BASELIN]]
SUBSYSTEM:	LIFE SUPPOR 2147)		
LEAD ANALYST:	K. BARICKMA	И			
ASSESSMENT:					
CRITICAL FLIGH		JNDANCY SCREENS		CIL ITEM	
HDW/FU	NC A	В	C		
NASA [2 /1R IOA [2 /1R] [P]] [P]	[NA] [] [P] []	P] P]	[X] [X]] *]
COMPARE [/] []	[N] []	[]
RECOMMENDATIONS:	(If differ	rent from NASA)			
[2 /1R] [P]	[NA] [1		[A] DD/DEI	
* CIL RETENTION	RATIONALE: (I		ADEQUATE ADEQUATE	[]
REMARKS: IÓA FM: FAILS T NASA FM: FAILS ' IOA COMMENT TO N	TO CLOSE, INT	FERNAL AND EXTE	RNAL LEAKA	AGE	

NTERNAL AND EXTERNAL LEAKAGE BE CONSIDERED ON ONE ANALYSIS SHEET?

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2148 06-2-0419-1	NASA DATA BASELINE NEW					
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 2148 DUMP NOZZLE (1)	LIFE SUPPORT 2148					
LEAD ANALYST:	K. BARICKMAN						
ASSESSMENT:							
CRITICAL FLIGH	ITY REDUNDANC	CY SCREENS	CIL ITEM				
	INC A	B C					
NASA [3 /1R IOA [3 /2R	[P] [[P] [[P] [NA] [P] P] [P]	[] *				
COMPARE [/N] [] [и] []	[]				
RECOMMENDATIONS:	(If different f	from NASA)					
[3 /2R	C] [P] [NA] [P] (A	[] DD/DELETE)				
	RATIONALE: (If app	olicable) ADEQUATE INADEQUATE	[]				
REMARKS: IOA/NASA FM: RESTRICTED/BLOCKED FLOW IOA COMMENT: THE LOSS OF THE DUMP VALVE AND DUMP CAPABILITY CREATES A LOSS OF MISSION IF THE CONTINGENCY CROSS-TIE ALSO FAILS, IN WHICH CASE THE FCB AND UCD SUPPLIES MUST BE USED UNTIL DE-ORBIT AND LANDING FOR A CRITICALITY OF 3/2R PNP.							

THE NASA VIEWED ANY LOSS OF WATER DUMP CAPABILITY, EITHER SUPPLY OR WASTE WATER, AS A LOSS OF LIFE OR VEHICLE CONDITION. HOWEVER THE IOA ANALYSIS DID NOT RECOGNIZE THIS LIMITATION AND VIEWED THE LOSS OF WASTE WATER DUMP CAPABILITY TO BE ONLY A LOSS OF MISSION CONDITION.

ASSESSME	NT DATE: NT ID: A #:	LS-214	9			N	IASA DATA BASELINI NEV) K]
SUBSYSTE MDAC ID: ITEM:	CM:	2149		ANTIT	Y LEV	EL S	SENSOR (1	L)	
LEAD ANA	LYST:	K. BAR	ICKMAN						
ASSESSME	NT:								
	CRITICAL FLIGH		REDUNI	DANCY	SCRE	ENS		CII ITH	-
	HDW/FU		A	В		C	:		
NASA IOA	[3 /3 [3 /3]]	[] []	[[]	[[]]	[[] *]
COMPARE	[/]	[]	[]	[]	[]
RECOMMEN	DATIONS:	(If d	differer	nt fr	om NA	SA)			
	[3/3]	[]	[]	[]] DELETE)
* CIL RE	TENTION	RATIONAI	LE: (If	appl	icablo	Â	DEQUATE DEQUATE	[[]]
IOA/NASA	FM: OU	T OF TOI	LERANCE	OUTP	TU				

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	LS-2150	-1			SA DATA ASELINE NEW]]
	2150	LIFE SUPPORT 2150 TANK FLUID LEVEL SIGNAL CONDITIONER)
LEAD ANALYST:	K. BARICK	MAN					
ASSESSMENT:							
CRITICA FLIG		EDUNDAN	CY SCRI	EENS		CIL ITE	
HDW/F			В	С			••
NASA [3 /3 IOA [3 /3] [] [] [] []]	[[]	[[] *]
COMPARE [/] [] []	ſ]	נ]
RECOMMENDATIONS	: (If dif	ferent	from N2	ASA)			
[3/3] [] []	[] (A] .DD/D] ELETE)
* CIL RETENTION REMARKS: IOA/NASA FM: O			_	AD	EQUATE EQUATE]]

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2151 05-6VC-2003-1	NASA DATA BASELINE NEW		
MDAC ID:	2151	CIRCUIT BREAKER (1)	
LEAD ANALYST:	K. BARICKMAN			
ASSESSMENT:				
CRITICAL FLIGH	ITY REDUNDAN	CY SCREENS	CIL ITEM	
	NC A	B C	T 1 DM	
NASA [3 /2R IOA [3 /3] [P] [] [] [P] [P]] []	[] * []	
COMPARE [/N] [N][N] [N]	נ ז	
RECOMMENDATIONS:	(If different :	from NASA)		
[3 /2R] [P] [[A] DD/DELETE)	
* CIL RETENTION 1	RATIONALE: (If ap)	plicable) ADEQUATE INADEQUATE		
REMARKS: IOA/NASA FM: OPEN (ELECTRICAL) IOA COMMENT: THE IOA CRITICALITY CHANGED BECAUSE LOSS OF THE VALVE COULD BE A MISSION IMPACT IF ANOTHER FAILURE OCCURRED.				
		Y SCREENS WAS DUE TO M MANAGERS REGARDINO		

ASSESSMENT DAT ASSESSMENT ID: NASA FMEA #:	LS-2	LS-2152 BASELIN				NASA DATA BASELINI NEV]	
SUBSYSTEM: MDAC ID: ITEM:	2152	LIFE SUPPORT 2152 TANK INLET VALVE CIRCUIT BREAKER (1)					1)		
LEAD ANALYST:	к. в	ARICK	MAN						
ASSESSMENT:									
	ALITY GHT	R	EDUND	ANCY	SCRE	ENS	5	CII ITE	
	FUNC	A		В	1		с	TIC	171
NASA [3 / IOA [3 /	3] 3]	[[]]	[[]]	[[]]	[[] *]
COMPARE [/]	[]	[]	נ]	[]
RECOMMENDATION	s: (I	f dif	feren	t fr	om NA	SA)			
[3,	3]	[]	[]	[] (2] ADD/I] DELETE)
* CIL RETENTIO	N RATIO	NALE:	(If	appl	icabl	-	ADEQUATE IADEQUATE	-]]
IOA/NASA FM:	FAILS TO	O OPE	N						

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		NASA DATA: BASELINE [] NEW [X]		
SUBSYSTEM: MDAC ID: ITEM:		L)		
LEAD ANALYST:	K. BARICKMAN			
ASSESSMENT:				
CRITICAL FLIGH	ITY REDUNDANCY SCREENS T	G CIL ITEM		
HDW/FU	NC A B	С		
NASA [3 /2R IOA [3 /3	[P] [P] [] [] [] [P] []*] []		
COMPARE [/N] [N] [N] [м] []		
RECOMMENDATIONS:	(If different from NASA)			
[3 /2R] [P] [NA] [P] [] (ADD/DELETE)		
* CIL RETENTION	RATIONALE: (If applicable) IN	ADEQUATE [] IADEQUATE []		
REMARKS: IOA/NASA FM: OPEN (ELECTRICAL) IOA COMMENT: IN THE EVENT OF A TANK RUPTURE OR OTHER FAILURE IN THE NITROGEN PRESSURIZATION SYSTEM AND THE FAILURE OF THE INLET VALVE SWITCH AS AN ELECTRICAL OPEN, THEN A POTENTIAL LOSS OF MISSION OCCURS DUE TO POSSIBILITY OF WASTE FLUIDS INTO CABIN ATMOSPHERE. THE FCB AND UCD SUPPLIES WOULD BE USED AS REDUNDANT SYSTEM.				
	IN THE REDUNDANCY SCREENS THE NASA SUBSYSTEM MANAGERS			

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	TS-2154	• •									
	2154	IFE SUPPORT 154 ANK INLET VALVE SWITCH (1)									
LEAD ANALYST: K. BARICKMAN											
ASSESSMENT:											
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM											
FLIGH HDW/FU		A	В	с	TIEW						
NASA [3 /2R IOA [3 /2R		P] P]	[NA] [P]	[P] [P]	[X]* []						
COMPARE [/	J []	[N]	[]	[N]						
RECOMMENDATIONS:	(If di	lfferen	t from NAS	SA)							
[3 /2R] [P]	[NA]		[A] DD/DELETE)						
* CIL RETENTION	RATIONALE	E: (If	applicable	e) ADEQUATE INADEQUATE	[]						
	CONTACTS - CLOSIN		OF CONTACT	2S							

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2154A	3	NASA DATA BASELINE NEW							
SUBSYSTEM: MDAC ID: ITEM:	2154									
LEAD ANALYST: K. BARICKMAN										
ASSESSMENT:										
CRITICAL FLIGH	ITY REDUI T	IDANCY SCREEN	5	CIL ITEM						
HDW/FU	NC A	В	С							
NASA [3 /2R IOA [3 /2R] [P]] [P]	[NA] [[P] [P] P]	[X]* []						
COMPARE [/] []	[N] []	[N]						
RECOMMENDATIONS:	(If differe	ent from NASA))							
[3 /2R] [P]	[NA] [[A] DD/DELETE)						
* CIL RETENTION	RATIONALE: (II	/	ADEQUATE NADEQUATE							
REMARKS: IOA FM: SHORTED NASA FM: CLOSED	CONTACTS - OPENING SET	OF CONTACTS								

.

ASSESSME ASSESSME NASA FME	NT I	D:	LS-21] x]	
SUBSYSTE MDAC ID: ITEM:			2155	LIFE SUPPORT 2155 CANK INLET VALVE,SOLENOID (2)									
LEAD ANALYST: K. BARICKMAN													
ASSESSME	NT:												
	F	LIGH	Г			DANG	CY SCRE	ENS			CII ITI		
	HD	W/FUI	NC	A			В		С				
NASA IOA	[3 [3	/2R /3]	[P []	[[NA]]	[[Ρ]]	[[]]	*
COMPARE	[/N	1	[N]	[N]	[N]	ſ]	
RECOMMEN	DATI	ONS:	(If	dif	fere	nt 1	from NA	SA)				
	[3	/2R]	[P]	[NA]	[P		[ADD/	_	ETE)
* CIL RE	TENT	ION	RATION	ALE:	(If	app	plicabl			DEQUATE DEQUATE	-]]	
REMARKS: IOA FM: NASA FM:		RTED OSED		NING	SET	OF	CONTAC	TS			_		

IOA COMMENT: IN THE EVENT OF A TANK RUPTURE OR OTHER FAILURE IN THE NITROGEN PRESSURIZATION SYSTEM AND THE FAILURE OF THE INLET VALVE SOLENOID AS AN ELECTRICAL SHORT, THEN A POTENTIAL LOSS OF MISSION OCCURS DUE TO POSSIBILITY OF WASTE FLUIDS INTO CABIN ATMOSPHERE. THE FCB AND UCD SUPPLIES WOULD BE USED AS REDUNDANT SYSTEM.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	TC-DIEEN	· ·								
SUBSYSTEM: MDAC ID: ITEM:	2155	IFE SUPPORT								
LEAD ANALYST: K. BARICKMAN										
ASSESSMENT:										
CRITICAL FLIGH		REDUNDANCY	SCREENS	CIL ITEM						
HDW/FU	NC A	В	С							
NASA [3 /2R IOA [3 /3) [NA] [] [P]] []	[X]* []						
COMPARE [/N] [N	и] [и	ן א ן	[N]						
RECOMMENDATIONS:	(If dif	ferent from	m NASA)							
[3 /2R] [P) [NA] [P]	[A] (ADD/DELETE)						
* CIL RETENTION 1	RATIONALE:	(If appli	cable) ADEQUAT INADEQUAT							
REMARKS: IOA FM: SHORTED NASA FM: CLOSED	- OPENING	SET OF CO								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2156 05-6VC-2021-2	L	NASA DATA: BASELINE NEW	•							
SUBSYSTEM: MDAC ID: ITEM:	2156										
LEAD ANALYST: K. BARICKMAN											
ASSESSMENT:											
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM											
HDW/FU	NC A	В	С								
NASA [3 /2R IOA [3 /3] [P]] []	[P] [[] [P]]	[] * []							
COMPARE [/N] [N]	[N] [N]	[]							
RECOMMENDATIONS:	(If differe	ent from NASA	.)								
[3 /2R] [P]	[NA] [[] DD/DELETE)							
* CIL RETENTION REMARKS: IOA FM: OPEN (E	·		ADEQUATE NADEQUATE	[] []							
NASA FM: OPEN											
IOA COMMENT: IN THE NITROGEN PRE											
VALVE SOLENOID A	S AN ELECTRIC	AL OPEN, THEN	A POTENTI	AL LOSS OF							
MISSION OCCURS E ATMOSPHERE. THE	UE TO POSSIBI FCB AND UCD	LITY OF WASTE SUPPLIES WOUI	; FLUIDS IN' D BE USED A	TO CABIN AS REDUNDANT							
SYSTEM. THE DISAGREEMENT											
DISCUSSION WITH											

REDUNDANT PATHS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2157 05-6VC-20	35-1		NASA DAT BASELIN NE	Έ [
MDAC ID:	2157	LIFE SUPPORT 157 WASTE WATER TANK INLET VALVE OPEN IN										
LEAD ANALYST:	K. BARICK	MAN										
ASSESSMENT:												
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM												
HDW/FU	HDW/FUNC A B C											
NASA [3 /3 IOA [3 /3] [] [] [] [] [] []]	[[] *]						
COMPARE [/] [] [] []	[]						
RECOMMENDATIONS:	(If dif	ferent fr	om NASA)									
[3 /3] [] [] [] ([ADD/D] ELETE)						
* CIL RETENTION	RATIONALE:	(If appl	-	ADEQUATE ADEQUATE]]						
REMARKS: IOA FM: ERRONEO NASA FM: OPEN												
IOA COMMENT: IF INADVERTENTLY CL LIMITING MISSION FOR THE CONDITIO	OSE, THUS	ELIMINATI PRODUCIN	NG ARS E G A CRIT	FFLUENT ICALITY	STORA OF 3/	GE AND 2R PPP.						

3/3.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2157A	NASA DATA: BASELINE [] NEW [X]								
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 2157 WASTE WATER TANK INLET	VALVE OPEN INDICATOR (2)								
LEAD ANALYST:	K. BARICKMAN									
ASSESSMENT:										
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM										
HDW/FU		c								
NASA [3 /2R IOA [3 /3] [P] [P]] [] []	[P] []* [] []								
COMPARE [/N] [И] [И]	[и] []								
RECOMMENDATIONS:	(If different from N	IASA)								
[3 /2R] [P] [P]	[P] [] (ADD/DELETE)								
* CIL RETENTION	RATIONALE: (If applicat	•								
		ADEQUATE [] INADEQUATE []								
REMARKS: IOA FM: ERRONEOUS INDICATION NASA FM: SHORTED TO GROUND IOA COMMENT: IF INDICATOR SHORTS TO GROUND THE VALVE COULD INADVERTENTLY CLOSE, THUS ELIMINATING ARS EFFLUENT STORAGE AND										

INADVERTENTLY CLOSE, THUS ELIMINATING ARS EFFLUENT STORAGE AND LIMITING MISSION LIFE, AND PRODUCING A CRITICALITY OF 3/2R PPP.

REPORT DATE 03/10/88

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2158 05-6VC-20		1	NASA DA BASELI N							
SUBSYSTEM: MDAC ID:	LIFE SUPF 2158	IFE SUPPORT									
LEAD ANALYST: K. BARICKMAN											
ASSESSMENT:											
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM											
	NC A	C	2	11.	614						
NASA [3 /3 IOA [3 /3] [] []	[[]]	[[]]	[[] *]			
COMPARE [/] []	[]	[]	[]			
RECOMMENDATIONS:	(If dif	feren	t fr	om NA	SA)						
[3 /3] []	C]	[]] DELETE)			
* CIL RETENTION	RATIONALE:	(If a	appl	icabl	Z	ADEQUAT ADEQUAT	E [E ſ]			
REMARKS: IOA FM: OPEN (E NASA FM: OPEN	LECTRICAL)	, SHO	RTED	, EXC							
IOA COMMENT: IF VALVE IS ELIMINA THUS LIMITING MI	TED, AND A	RS EF	FLUE	NT ST	ORAC	GE COUI	D BE I	HALTED,			

THUS LIMITING MISSION LIFE AND PRODUCING A CRITICALITY OF 3/2R PPP. IF THE FAILURE MODE OF ELECTRICAL OPEN IS CONSIDERED, THE CRITICALITY WOULD BE 3/3.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/ LS-215 05-6VC	L2/22/87 NASA DATA: LS-2158A BASELINE D5-6VC-2035-2 NEW] [
MDAC ID:	2158	SILE SUPPORT									
LEAD ANALYST: K. BARICKMAN											
ASSESSMENT:											
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC A B C											
NASA [3 /2F IOA [3 /3]	[P []]	[[Ρ]]	[[P]	[[] *]
COMPARE [/N]	[N]	[N]	[N]	[]
RECOMMENDATIONS:	(If	dif	feren	t	fro	om NA:	SA)			
[3 /2F]	[P]	[P]	[P] ELETE)
* CIL RETENTION	RATIONA	LE:	(If	apj	pl i	icabl	•	IA IAV	DEQUATE DEQUATE	[]]
REMARKS: IOA FM: OPEN (E NASA FM: SHORTE	D TO GR	OUNI	Ď						E RESIS		

IOA COMMENT: IF THE DIODE SHORTS TO GROUND, THEN CONTROL OF VALVE IS ELIMINATED, AND ARS EFFLUENT STORAGE COULD BE HALTED, THUS LIMITING MISSION LIFE AND PRODUCING A CRITICALITY OF 3/2R PPP.

ASSESSMENT DATE: 12/22/87 ASSESSMENT ID: LS-2159 NASA FMEA #: 05-6VC-2035-1								NASA DATA: BASELINE [] NEW [X]					
SUBSYSTE MDAC ID: ITEM: (1)			2159	LIFE SUPPORT 2159 FANK INLET VALVE INICATOR RESISTOR TO									OF1
LEAD ANALYST: K. BARICKMAN													
ASSESSMENT:													
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM													
		W/FU		A		H	3	c	2		TIF	M	
NASA IOA		/3 /3]]	[[]]	[[]	[[]]		[[]]	*
COMPARE	[1]	[]	[]	[]		[]	
RECOMMEN	DATI	ons:	(If	dif	ferer	nt fr	com N.	ASA)					
	[3	/3]	[]	[]	[]	(A	[DD/D		ETE)
* CIL RE	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []												
REMARKS:	077	NI (T			0110						•	J	
IOA FM: NASA FM:			LECTRI	CAL)	, SHC	KTEL), EX	CESSI	VE RI	ESTS.	TANC	Ľ	
IOA COMM	NASA FM: OPEN IOA COMMENT: IF THE RESISTOR SHORTS TO GROUND, THEN CONTROL OF												

THE VALVE IS ELIMINATED AND ARS EFFLUENT STORAGE COULD BE LOST -THUS LIMITING MISSION LIFE AND CRITICALITY OF 3/2R PPP. IF THE RESISTOR IS ONLY OPEN THE CRITICALITY OF 3/3.

ASSESSME ASSESSME NASA FME	NT I	ATE: D:	12/22 LS-21 05-6V	/87 .59A /C-20	35-2						ASA DATA BASELINE NEW]	
SUBSYSTE MDAC ID: ITEM: (1)			2159	12/22/87NASA DATA:LS-2159ABASELINE05-6VC-2035-2NEWLIFE SUPPORTNEW2159TANK INLET VALVE INICATOR RESISTOR T									IDM	OF1
LEAD ANALYST: K. BARICKMAN														
ASSESSME	NT:													
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM														
	-	'LIGH' W/FU	r NC	C A B C						TLE	M			
NASA IOA	[3 [3	/2R /3]	[I [)]	[[P]]	[[P]]	[[]]	*
COMPARE	[/N]	[]	[]	C	N]	[N]	٢	ן	
RECOMMEN	DATI	ONS:	(Ií	dif	fere	ent i	fro	om N.	ASA))				
	[3	/2R]	[])	[P]	[Ρ] .DD/D] DELE	ETE)
* CIL RE	TENT	NOI	RATION	IALE :	(If	i app	pl:	icab	le)			r	-	
									I		DEQUATE DEQUATE	[[]]	
REMARKS: IOA FM: NASA FM:		N (E Pen	LECTRI	CAL)	, sh	IORTI	ED,	, EX	CESS	SIV	VE RESIS	TANC	Έ	
IOA COMM		IF	THE F	RESIS		SHO					ND, THEN			

IOA COMMENT: IF THE RESISTOR SHORTS TO GROUND, THEN CONTROL OF THE VALVE IS ELIMINATED AND ARS EFFLUENT STORAGE COULD BE LOST -THUS LIMITING MISSION LIFE AND CRITICALITY OF 3/2R PPP.

ASSESSME ASSESSME NASA FME	NT DATE: NT ID: A #:	12/22 LS-21 05-6V	/22/87 NASA DATA: -2160 BASELINE [] -6VC-2004-1 NEW [X]								
SUBSYSTE MDAC ID: ITEM:	:M:	LIFE 2160	SUPP	ORT			UIT N	BREAKEF	R (1)		
LEAD ANA	LYST:	K. BA	RICK	MAN							
ASSESSME	NT:										
	CRITICAL FLIGH		R	EDUN	DANCY	SCR	EENS		CII ITE	_	
	HDW/FU		А	L	E	3	C	2	T.I.E	M	
NASA IOA	[3 /3 [3 /3]]	[[]]	[[]]	[[]]	[[] *]	
COMPARE	[/]	[]	[]	[]	[]	
RECOMMEN	DATIONS:	(If	dif	fere	nt fr	om N	ASA)				
	[3 /3]	[]	[]	[]	[(ADD/D])ELETE)
* CIL RE	TENTION	RATION	ALE:	(If	appl	icab					
								DEQUAT DEQUAT]]	
REMARKS: IOA FM: (ELECTRI NASA FM:	CAL)				D, PR	EMAT	URE C	PERATI	ON, OF	EN	

ASSESSME ASSESSME NASA FME	NT ID:	LS-2	12/22/87 NASA DATA LS-2161 BASELINE 05-6VC-2004-1 NEW							
SUBSYSTE MDAC ID: ITEM:	M:	LIFE 2161 TANK			ALVE	CIRC	UIT E	REAKE	R (1)	
LEAD ANA	LYST:	K. BZ	ARICH	MAN						
ASSESSME	NT:									
	CRITICA		F	REDUN	DANCY	C SCR	EENS		CIL	
	FLIG HDW/F		7	1	I	3	C	:	ITE	M
NASA IOA]]	[[]]	[[]]	[[]]	[[]
COMPARE	[/]	[]	[]	[]	[]
RECOMMEN	DATIONS	: (I:	f dif	fere	nt fi	com N	ASA)			

[3/3] [] [] [] [] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [INADEQUATE []

REMARKS: IOA FM: FAILS TO OPEN, DELAYED OPERATION NASA FM: ALL CREDIBLE MODES

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2162	-2162 BASELINE []									
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPP 2162 TANK OUTL		LVE S	SWITC	н (2	2)					
LEAD ANALYST:	K. BARICK	MAN									
ASSESSMENT:											
CRITICAL FLIGH		EDUND	ANCY	SCRE	ENS		CII ITE				
HDW/FU	_	L	В		C	2		11			
NASA [3 /3 IOA [3 /3] [] []]	[[]]	[[]]	[[] *]			
COMPARE [/] []	[]	[]	[]			
RECOMMENDATIONS:	(If dif	feren	t fro	om NA	SA)						
[3 /3] []	[]	[] (A] d \dd.] DELETE)			
* CIL RETENTION T		(If	appli	icabl		ADEQUATE ADEQUATE	•]]			
	LECTRICAL) EDIBLE MOD	ES									

ASSESSME ASSESSME NASA FME	NT	II):	LS-	2163 BASELINE [] 6VC-2020-1 NEW [X]									
SUBSYSTE MDAC ID: ITEM:				216				SWIT	гсн	(2)				
LEAD ANA	LYS	ST	:	K.	BARICK	MAN								
ASSESSME	NT:	:												
	CRI			ITY	R	EDU	NDANC	Y SCI	REEN	S		CII		
	H		LIGH V/FU	NC	A B C								EM	
NASA IOA	[[3 3	/3 /3]]	[[]]	[[]]	[[]		[[]	*
COMPARE	[/]	[]	[]	ſ]		[]	
RECOMMEN	DAI	'IC	ons:	(If dif	fer	ent f	rom 1	NASA)				
	[3	/3]	[]	[]	[]	(A] DD/I		ETE)
* CIL RE	TEN	IT]	ION	RATI	ONALE:	(1:	f app	lical		ADEQU NADEQU		[[]]	
REMARKS: IOA FM: NASA FM:			RTED L CR		LE MOD	ES						-		

REPORT DATE 03/10/88 C-410

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ACCECCME	IENT DATE: 12/22/87 NASA DATA: IENT ID: LS-2164 BASELINE [] IEA #: 05-6VC-2020-1 NEW [X]									
SUBSYSTE MDAC ID: ITEM:	:M:	LIFE 2164 TANK			ALVE,	SOLI	ENOI	D (1)		
LEAD ANA	LYST:	K. BA	RICK	MAN						
ASSESSME	INT:									
	CRITICAL FLIGH		R	EDUNI	DANCY	SCRE	ENS		CII	
	HDW/FU		А		В	5	(с	ITE	5M
NASA IOA	[3 /3 [3 /3]	[[]]	[[]]	[[]]	[[] *]
COMPARE	[/]	[ן	[]	[]	[]
RECOMMEN	DATIONS:	(If	dif	ferer	nt fr	om NA	SA)			
	[3 /3]	[]	[]	[] (1] ADD/I] DELETE)
* CIL RE	TENTION	RATION	ALE:	(If	appl	icabl		ADEQUATE ADEQUATE]
REMARKS: IOA FM: NASA FM:	OPEN (E All CR			ES						

ASSESSMENT DATE: 12/22/87 NASA DATA: ASSESSMENT ID: LS-2165 BASELINE [] NASA FMEA #: 05-6VC-2020-1 NEW [X] SUBSYSTEM: LIFE SUPPORT MDAC ID: 2165 ITEM: TANK OUTLET VALVE, SOLENOID (1) LEAD ANALYST: K. BARICKMAN

ASSESSMENT:

	CRITICALITY FLIGHT					REDUNDANCY SCREENS					CIL ITEM			
]		W/FU		A		В		С			TIT	1.1	
NASA IOA	[[3 3	/3 /3]]	[[]]	[[]	[[]]		[[; []	*
COMPARE	[/]	I]	[]	[]		C]	
RECOMMEN	1DA'	TI	ons:	(If dif:	fere	ent fro	om 1	NASA)					
	[3	/3]	[]	ſ]	[]	(A	[DD/I] DELET	ΓE)
* CIL RI		NT	ION	RATI	CONALE:	(I1	f appl:	icał		DEQU DEQU	ATE ATE	[[]]	
TOA FM.		HO	RTEL)										

IOA FM: SHORTED NASA FM: ALL CREDIBLE MODES

REPORT DATE 03/10/88

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2166	-2166 BASELINE [] -6VC-2034-1 NEW [X]								
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPO 2166 TANK OUTLE	6 K OUTLET VALVE SWITCH INDICATOR								
LEAD ANALYST:	K. BARICKM	AN								
ASSESSMENT:						,				
CRITICALITY REDUNDANCY SCREENS CIL										
	FLIGHT ITEM HDW/FUNC A B C									
NASA [3 /3 IOA [3 /3] [] [] [] [] (] (]	[[] *]				
COMPARE [/] [] [] []	[]				
RECOMMENDATIONS:	(If diffe	erent fr	om NASP	A)						
[3 /3] [] [] [[] A)] []] ELETE)				
* CIL RETENTION	RATIONALE:	(If appl	·	ADEQUATE INADEQUATE	((]]				
	US OUTPUT ND SHORT TO	GROUND								

ASSESSMENT D. ASSESSMENT I NASA FMEA #:		1 2167	34-1			NASA BASE	LINE]]
SUBSYSTEM: MDAC ID: ITEM:	21	FE SUPPO 67 NK OUTLE		VE DI	ODE (1)			
LEAD ANALYST	: К.	BARICK	IAN						
ASSESSMENT:									
		R RE	EDUNDA	NCY S	CREEN	5		CIL ITE	
	LIGHT W/FUNC	A		В		С		110	P1
NASA [3 IOA [3	/3] /3]	[[]	[] []	[[]]		[[] *]
COMPARE [/]	[]	[]	[]		[]
RECOMMENDATI	ons:	(If diff	ferent	from	NASA)			
[3	/3]	[]	[]	[]	(A)	[DD/D] ELETE)
* CIL RETENT	ION RAI	CIONALE:	(If a	pplic	-	ADEQU. NADEQU		[[]]
REMARKS: IOA/NASA FM:	OPEN,	SHORTEI	о то с	ROUND					

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:			NASA DAT. BASELIN NE	
	LIFE SUPPORT 2168 TANK OUTLET V	ALVE RESIS	STOR TO MDM	OF2 (1)
LEAD ANALYST:	K. BARICKMAN			
ASSESSMENT:				
CRITICAL		DANCY SCRI	EENS	CIL
FLIGH HDW/FU		В	с	ITEM
NASA [3 /3 IOA [3 /3] []	[] []	[] []	[]*
COMPARE [/] []	[]	[]	[]
RECOMMENDATIONS:	(If differe	nt from NA	ASA)	
[3 /3] []	[]	[] (4	[] ADD/DELETE)
* CIL RETENTION	RATIONALE: (If	applicabl	.e) ADEQUATE INADEQUATE	[] []
REMARKS: IOA/NASA FM: OP	EN (ELECTRICAL), SHORTEI) TO GROUND	

ASSESSME ASSESSME NASA FME	NT ID	:	LS-21	-2169 BASELINE [] -2-0426-1 NEW [X]								
SUBSYSTE MDAC ID: ITEM:			LIFE 2169 PRESS			R (V.	ARIAB	LE R	ESISTANC	E BR	IDGE)	(1)
LEAD ANA	LYST:		K. BA	RICK	MAN							
ASSESSME	NT:											
		CALI IGHT	ITY	R	EDUND	ANCY	SCRE	ens		CIL ITE		
			NC NC	A		в		С		TID	м	
NASA IOA	[3, [3,	/3 /3]]	[[]]	[[]]	[[]]	[[] *]	
COMPARE	[,	/]	[]	[]	[]	[]	
RECOMMEN	DATIO	NS:	(If	dif	feren	t fr	om NA	SA)				
	[3,	/3]	[]	[]	[[.DD/D] ELETE)	i
* CIL RE REMARKS: IOA/NASA								A INA	DEQUATE DEQUATE CE	-]]	
,					- , -	. –						

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		-1			ASA DATA BASELINE NEW]
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPP 2170 PRESSURE		SIGNAL	COND	ITIONER	(1)	
LEAD ANALYST:	K. BARICK	MAN					
ASSESSMENT:							
CRITICAL FLIGH	ITY R	EDUNDAN	NCY SCRE	ENS		CIL ITE	
HDW/FU			В	С		111.	
NASA [3 /3 IOA [3 /3] [] [) [] [[]	[[]]	[[] *]
COMPARE [/] [) [[]]	[]	[]
RECOMMENDATIONS:	(If dif	ferent	from NA	SA)			
[3 /3] [] [[]]	[] (A	[.DD/D] ELETE)
* CIL RETENTION	RATIONALE:	(If ar	oplicable	Al	DEQUATE DEQUATE	-]]
REMARKS: IOA/NASA FM: LO	SS OF OUTP	UT, OUI	OF TOL	ERAN	CE		

ASSESSMENT ASSESSMENT NASA FMEA	DATE: ID: #:	ATE: 12/22/87 NASA DATA: D: LS-2171 BASELINE [] 05-6VC-2002-1 NEW [X] LIFE SUPPORT								
SUBSYSTEM: MDAC ID: ITEM:		2171	SUPPO	JRT			LVE (CIRCUIT	BREA	KER (1)
LEAD ANALY	ST:	K. BAF	RICK	MAN						
ASSESSMENT	:									
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM										
1		NC	A		В		С			
NASA [IOA [2 /2 2 /2]	[[]	[[]]	[[]	[X [X] *
COMPARE [1]	[]	۵]	[]	[]
RECOMMENDA	TIONS:	(If	dif	ferent	t fr	om NA	SA)			
ſ	2 /2]	[]	[]	[]	[A ADD/D) DELETE)
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE [] REMARKS: IOA/NASA FM: FAILS TO REMAIN CLOSED										
IUA/NASA FI	m: rA	UT STD	KUN	ALN C	NOF	D				

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2172 05-6VC-2002-	-2	NASA DATA: BASELINE [] NEW [X]							
MDAC ID:	2172	•	VALVE CIRCUI	F BREAKER (1)						
LEAD ANALYST: K. BARICKMAN										
ASSESSMENT:										
CRITICAL FLIGH		INDANCY SC	REENS	CIL ITEM						
HDW/FU	NC A	В	С							
NASA [3 /3 IOA [3 /3] []	[] []		[]*						
COMPARE [/] []	[]	[]	[]]						
RECOMMENDATIONS:	(If differ	ent from 1	NASA)							
[3 /3] []	[]	[]	[] (ADD/DELETE)						
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE [] REMARKS: IOA/NASA FM: FAILS TO OPEN										

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		-1	NASA DATA: BASELINE [] NEW [X]						
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPOF 2173 WASTE H2O D	BREAKER (1)							
LEAD ANALYST:	K. BARICKMA	K. BARICKMAN							
ASSESSMENT:									
CRITICAL FLIGH	CIL ITEM								
	NC A	В	С						
NASA [2 /2 IOA [2 /2] []] []]]	[X]* [X]					
COMPARE [/	J []]	[]					
RECOMMENDATIONS:	(If diffe	erent from NASA)						
[2 /2] []	[][][] (A)	[A] DD/DELETE)					
* CIL RETENTION	RATIONALE: (ADEQUATE NADEQUATE	[]					
REMARKS: IOA FM: SINGLE CONTACT OPEN (ELECTRICAL) NASA FM: SWITCH FAILS OPEN (VALVE CLOSED), SWITCH FAILS CLOSED IN CLOSED POSITION IOA COMMENT: THE ANALYZED PART IS THE DUMP ISOLATION VALVE									

SWITCH, NOT THE CIRCUIT BREAKER AS TITLED.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2173A 05-6VC-2022-2	NASA DA BASELI N							
MDAC ID:	T BREAKER (1)								
LEAD ANALYST:	K. BARICKMAN								
ASSESSMENT:									
CRITICAL FLIGH HDW/FU	CIL ITEM								
NASA [3 /2R IOA [2 /2] [P]] []	[NA] [P] [][]	[X]* [X]						
COMPARE [N /N] [И]	[N] [N]	[]						
RECOMMENDATIONS:	(If differen	t from NASA)							
[3 /2R] [P]	[NA] [P]	[] (ADD/DELETE)						
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE [] REMARKS:									
IOA FM: SINGLE CONTACT OPEN (ELECTRICAL) NASA FM: SWITCH FAILS OPEN (VALVE OPENS), SWITCH FAILS CLOSED (VALVE OPEN)									
SWITCH, NOT THE	CIRCUIT BREAKER	IS THE DUMP ISOLATI AS TITLED. UNLESS I MISSION CRITICAL	S THE DUMP						

ASSESSME ASSESSME NASA FME	NT D NT I A #:	ATE: D:	12/22 LS-21 05-6V	/87 .74 /C-20)22-1	NASA DATA: BASELINE [] 2-1 NEW [X]							
SUBSYSTE MDAC ID: ITEM:	m :		2174	LIFE SUPPORT						BREA	KER	(1)	
LEAD ANA	LYST	:	K. BA	K. BARICKMAN									
ASSESSMENT:													
CRITICALITY REDUNDANCY SCREENS									CII				
		'LIGH W/FU	NC	7	A	I	ВС			ITEM			
NASA IOA	[2 [2	/2 /2]	[[]]	[[]]	[[]]		K] K]]	*
COMPARE	[/]	[]	[]	ſ]		[]	
RECOMMEN	DATI	ONS:	(If	dif	ffere	nt fi	rom N	ASA)					
	[2	/2]	[]	[]	[]	(A	[A .DD/I		TE)
* CIL RE	TENT	ION	RATION	IALE	: (If	app]	licab						
									DEQUA DEQUA		-]]	
REMARKS: IOA FM:		GLE	CONTAC	T SF	IORTEI	D							
IOA FM: SINGLE CONTACT SHORTED NASA FM: SWITCH FAILS OPEN (VALVE CLOSED), SWITCH FAILS CLOSED (CLOSED POSITION)													
IOA COMM				ZED	PART	IS :	THE D	UMP 1	SOLAT	ION	VAI	JVE	

IOA COMMENT: THE ANALYZED PART IS THE DUMP ISOLATION VALVE SWITCH, NOT THE CIRCUIT BREAKER AS TITLED.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2174A 05-6VC-2022-2	NASA DATA: BASELINE [] NEW [X]							
SUBSYSTEM: MDAC ID:	LIFE SUPPORT	VE CIRCUIT BREAKER (1)							
LEAD ANALYST: K. BARICKMAN									
ASSESSMENT:									
CRITICAL FLIGH HDW/FU	NS CIL ITEM C								
NASA [3 /2R IOA [2 /2] [P] [NA]] [] []	[P] [X] * [] [X]							
COMPARE [N /N] [N] [N]	[N] []							
RECOMMENDATIONS:	(If different from NAS	A)							
[3 /2R] [P] [NA]	[P] [] (ADD/DELETE)							
* CIL RETENTION 1	RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []							
INADEQUATE [] REMARKS: IOA FM: SINGLE CONTACT SHORTED NASA FM: SWITCH FAILS OPEN (VALVE OPEN), SWITCH FAILS CLOSED (OPEN POSITION) IOA COMMENT: THE ANALYZED PART IS THE DUMP ISOLATION VALVE SWITCH, NOT THE CIRCUIT BREAKER AS TITLED. THE FAILURE OF THE VALVE BY ITSELF IS NOT A MISSION LOSS, THE SUBSEQUENT FAILURE OF THE DUMP VALVE WOULD BE A MISSION LOSS.									

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2175 05-6VC-20	22 - 1	NASA DATA: BASELINE [] NEW [X]						
SUBSYSTEM:	2175	PORT D DUMP ISOL. VALVE CIRCUIT BREAKER							
LEAD ANALYST:	K. BARICK	MAN							
ASSESSMENT:									
CRITICAL	CIL								
FLIGH HDW/FUI		E	3	ITEM					
NASA [2 /2 IOA [2 /2] [] [] [] [] []	[X] * [X]				
COMPARE [/	J [J (3 []	[]]				
RECOMMENDATIONS:	(If dif:	ferent fr	om NASA)					
[2 /2] [] [] [] (A	[A] DD/DELETE)				
* CIL RETENTION H	RATIONALE:	(If appl	icable)	1 5 5 6 4 4 5 7 7 7					
			I	ADEQUATE NADEQUATE	[] []				
REMARKS: IOA FM: PHYSICAL BINDING/JAMMING NASA FM: SWITCH FAILS OPEN (VALVE CLOSED), SWITCH FAILS CLOSED (CLOSED POSITION) IOA COMMENT: THE ANALYZED PART IS THE DUMP ISOLATION VALVE									

IOA COMMENT: THE ANALYZED PART IS THE DUMP ISOLATION VALVE SWITCH, NOT THE CIRCUIT BREAKER AS TITLED.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #: SUBSYSTEM:	12/22/87 LS-2175A 05-6VC-2022-2	NASA DATA BASELINE NEW							
MDAC ID:	2175	UPPORT H20 DUMP ISOL. VALVE CIRCUIT							
LEAD ANALYST: K. BARICKMAN									
ASSESSMENT:									
CRITICAL FLIGH	CIL ITEM								
HDW/FU	NC A	B C							
NASA [3 /2R IOA [2 /2] [P]] []	[NA] [P] [] []	[X]* [X]						
COMPARE [N /N] [N]	[И] [И]	[]						
RECOMMENDATIONS:	(If different	from NASA)							
[3 /2R] [P]		[A] DD/DELETE)						
* CIL RETENTION	RATIONALE: (If a	oplicable) ADEQUATE INADEQUATE	[]						
REMARKS: IOA FM: PHYSICAL BINDING/JAMMING NASA FM: SWITCH FAILS OPEN (VALVE OPEN), SWITCH FAILS CLOSED (VALVE OPEN) IOA COMMENT: THE ANALYZED PART IS THE DUMP ISOLATION VALVE SWITCH, NOT THE CIRCUIT BREAKER AS TITLED.									

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ASSESSMENT DAT ASSESSMENT ID: NASA FMEA #:		2/22/87 NASA DATA: 5-2176 BASELINE [] NEW []							
SUBSYSTEM: MDAC ID: ITEM:	2176	IFE SUPPORT 176 ASTE H20 DUMP ISOL. VALVE CIRCUIT BREAKER (KER (1)
LEAD ANALYST:	LEAD ANALYST: K. BARICKMAN								
ASSESSMENT:									
CRITICALITY REDUNDANCY SCREENS FLIGHT							CIL ITEM		
HDW/1		A		ВС				T T 1914	
NASA [/ IOA [2 /:]	[[]]	[[]]	[[]]	[[] *]
COMPARE [N /]]	[]	[]	[]	[]
RECOMMENDATION	: (If	dif	feren	t fr	om Ni	ASA)			
[/]	A]	۵]	[]	[] (A	[.DD/D] DELETE)
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []									
REMARKS: THIS IS A DUPL	CATE AN	ALYS	IS -	PLEA	SE D	ISREC	GARD.		

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2177			NASA DA BASELI N]]				
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPP 2177 WASTE H2O		OL. VA	LVE CIRCUI	IT BRE	AKER (1)				
LEAD ANALYST: K. BARICKMAN										
ASSESSMENT:										
CRITICALITY REDUNDANCY SCREENS FLIGHT						CIL ITEM				
HDW/FU		:	В	С						
NASA [/ IOA [2 /2] [] [] [] []]	[] []	[[] *]				
COMPARE [N /N] [] []	[]	ſ]				
RECOMMENDATIONS:	(If dif	ferent f	rom NAS	SA)						
[/NA] [] []	[]	[(ADD/I] DELETE)				
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []										
REMARKS: THIS IS A DUPLIC	ATE ANALYS	IS - PLE	ASE DIS	SREGARD.						

REPORT DATE 03/10/88 C-427

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	ESSMENT DATE: 12/22/87 ESSMENT ID: LS-2178 SA FMEA #: 05-6VC-2036			NASA DATA: BASELINE [] NEW [X]						
	LIFE SUPPO 2178 DUMP ISOL		VALVE I	NDICA	TOR DI	ODI	E (1)		
LEAD ANALYST:	K. BARICK	IAN								
ASSESSMENT:										
CRITICAL FLIGH	EDUNDAN	ICY SCR	EENS		CIL ITEM					
HDW/FU	NC A		В	C	1					
NASA [3 /3 IOA [3 /3] [] [) [] []	[[]]		[[]]	*	
COMPARE [/	J [] [3	[]		[ן		
RECOMMENDATIONS:	(If dif	ferent	from N	IASA)						
[3 /3] [] []	C]	(A)	[DD/D] ELF	ETE)	
* CIL RETENTION	RATIONALE:	(If ag	plicab	À	DEQUAT		[]		
REMARKS: IOA FM: OPEN (E NASA FM: OPEN	REMARKS: IOA FM: OPEN (ELECTRICAL), SHORT, EXCESSIVE RESISTANCE									
	INDICATOR BECAUSE TH								/E	

"TRIPPED". CAUSES LOSS OF MISSION, BUT THERE MAY BE POTENTIAL WORK-AROUNDS. THE CRITICALITY WOULD BE 2/2. FOR THE CASE OF AN ELECTRICAL OPEN ON THE DIODE, THEN A CRITICALITY OF 3/3 EXISTS.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2178A 05-6VC-20	L2/22/87 NASA DATA: LS-2178A BASELINE [] D5-6VC-2036-2 NEW [X]							
SUBSYSTEM:	LIFE SUPP	PORT							
ITEM:	2178 DUMP ISOI	LATION V	ALVE I	INDICA	TOR DIO	DE (1)			
LEAD ANALYST: K. BARICKMAN									
ASSESSMENT:									
CRITICAL FLIGH		CIL ITEM							
	-	A	В	с		LTEM			
NASA [2 /2 IOA [3 /3] [] [] [] []	[[]]	[X]* []			
COMPARE [N /N] [] [1	[]	[N]			
RECOMMENDATIONS:	(If dif	fferent	from N	IASA)					
[2 /2] [] []	[[] ADD/DELETE)			
* CIL RETENTION	RATIONALE:	(If app	plicab	•					
				AI INAI	DEQUATE DEQUATE				
REMARKS: IOA FM: OPEN (E	LECTRICAL)	, SHORT	, EXCE	SSIVE	RESIST	ANCE			
	NASA FM: SHORTED TO GROUND IOA COMMENT: IF INDICATOR DIODE SHORTS TO GROUND, THE VALVE								
POWER IS CUT OFF BECAUSE THE ASSOCIATED CIRCUIT BREAKER IS "TRIPPED". CAUSES LOSS OF MISSION, BUT THERE MAY BE POTENTIAL									
WORK-AROUNDS. T						· · · · · · · · · · · · · · · · · ·			

ASSESSME ASSESSME NASA FME	NT NT A	Di II #:	ATE: D:	12/2: LS-2: 05-6	12/22/87 NASA DATA: LS-2179 BASELINE [05-6VC-2036-1 NEW [X LIFE SUPPOPT X									
SUBSYSTE MDAC ID: ITEM:	- 1°L			2179	SOF.		N VALVE RESISTOR TO MD				idm oi	M OF2 (1)		
LEAD ANA	LY	ST	:	к. в	K. BARICKMAN									
ASSESSMENT:														
CRITICALITY REDUNDANCY SCREENS FLIGHT							CII ITI							
]			NC	i	A	E	B C						
NASA IOA	[[3 3	/3 /3]]	[[]	[[]]	[[]]	[[] *]		
COMPARE	נ		/]	C]	[]	[]	[]		
RECOMMEN	'DA'	FI (ONS:	(I	f di:	fferen	t fr	om 1	NASA)					
	[3	/3]	[]	۵]	[[ADD/I] DELETE)		
* CIL RE	TE	NT	ION	RATIO	NALE	: (If	appl	icak.	A	DEQUATE]		
REMARKS: IOA FM: OPEN (ELECTRICAL), SHORT, EXCESSIVE RESISTANCE NASA FM: OPEN														
IOA COMM POWER IS "TRIPPED	EN'	T: UT	IF OFF	BECA	USE !	THE AS	SOCI	ATE) CIRC	UIT BRE	AKER	IS		

POWER IS CUT OFF BECAUSE THE ASSOCIATED CIRCUIT BREAKER IS "TRIPPED". CAUSES LOSS OF MISSION, BUT THERE MAY BE POTENTIAL WORK-AROUNDS. THE CRITICALITY WOULD BE 2/2. FOR THE CASE OF AN ELECTRICAL OPEN ON THE RESISTOR THE CRITICALITY WOULD BE 3/3.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2179A 05-6VC-20	36-2		: [] [X]						
	2179		LVE RESI	ISTOR TO MI	DM OF2 (1)					
LEAD ANALYST: K. BARICKMAN										
ASSESSMENT:										
CRITICAI FLIGH	CIL ITEM									
HDW/FU	NC A	. I	3	С						
NASA [2 /2 IOA [3 /3] [] [] [] [) [] []	[X]* []					
COMPARE [N /N] [] [] []	[N]					
RECOMMENDATIONS:	(If dif	ferent fr	om NASA	7)						
[2 /2] [] [ן נ] (A	[A] ADD/DELETE)					
* CIL RETENTION	RATIONALE:	(If appl	•	ADEQUATE NADEQUATE	[]					
REMARKS: IOA FM: OPEN (E	LECTRICALL	SHORT								
NASA FM: SHORTE	D TO GROUN	Ď								
IOA COMMENT: IF POWER IS CUT OFF										
"TRIPPED". CAUS										

"TRIPPED". CAUSES LOSS OF MISSION, BUT THERE MAY BE POTENTIAL WORK-AROUNDS. THE CRITICALITY WOULD BE 2/2.

ASSESSME ASSESSME NASA FME	NT NT A	D. I #:	ATE: D:	12, LS 05	/22, -218 -6V6	/87 80 C-20	36-1			N	DATA LINE NEW					
SUBSYSTE MDAC ID: ITEM:	M:			LI) 213	FE : 80	SUPP	ORT			SWITCH	IND	ICAT	OR (1)		
LEAD ANA	ΓY	ST	:	ĸ.	BA	RICK	MAN									
ASSESSMENT:																
CRITICALITY REDUNDANG FLIGHT								ANCY	SC	REENS				CIL		
			W/FU			А		ВС					ITEM			
NASA IOA	[[3 3	/3 /3]]		[[]]	[[]]	[[]]		[[]]	*	
COMPARE	[/]		[]	[]	ſ	נ		[]		
RECOMMEN	'DA'	TI	ons:		(If	dif	feren	t fro	om 1	NASA)						
	נ	3	/3]		[]	[]	[]	(A] DD/I		ETE)	
* CIL RE	TE	NT	ION	RAT	ION	ALE:	(If	appl	ica	A	.DEQU. .DEQU.]		
REMARKS:										~ 112	DEQU		L	1		
IOA FM: NASA FM:				05 0	OUT.	PUT										
IOA COMM	EN'	T:	IF													
CUT OFF CAUSES L																
AROUNDS.										. FOR						

AROUNDS. THE CRITICALITY WOULD BE 2/2. FOR THE CASE OF AN ELECTRICALLY OPEN SWITCH "TELL-TALE" THE CRITICALITY WOULD BE 3/3.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2180A 05-6VC-20	036-2	1	: [] / [X]						
MDAC ID:	TILE POLI	PORI		H INDICAT	OR (1)					
LEAD ANALYST:	K. BARICE	KMAN								
ASSESSMENT:										
FLIGH	Т	REDUNDANCY			CIL ITEM					
HDW/FU	NC I	A B	, c	2						
NASA [2 /2 IOA [3 /3] [] [] [] [] [] []]	[X]* []					
COMPARE [N /N] [] [] []	[א]					
RECOMMENDATIONS:	(If dif	fferent fr	om NASA)							
[2 /2	.] [] [] [] (A	[A] DD/DELETE)					
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []										
REMARKS: IOA FM: ERRONEOUS OUTPUT NASA FM: SHORTED TO GROUND IOA COMMENT: IF INDICATOR SHORTS TO GROUND, THE VALVE POWER IS LOST BECAUSE THE CIRCUIT BREAKER IS "TRIPPED". CAUSES LOSS OF MISSION, BUT THERE MAY BE POTENTIAL WORK-AROUNDS. THE CRITICALITY WOULD BE 2/2.										

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2181 05-6VD-2003-1	87 NASA DATA 1 BASELINE -2003-1 NEW								
SUBSYSTEM: MDAC ID: ITEM:	2181									
LEAD ANALYST:	K. BARICKMAN									
ASSESSMENT:										
CRITICAL FLIGH	CIL ITEM									
	NC A	A B C								
NASA [3 /1R IOA [2 /1R	[P][][P][NA] [P] P] [P]	[] * []							
COMPARE [N /] [] [и] []	[]							
RECOMMENDATIONS:	(If different	from NASA)								
[3 /2R	[P] [[] .DD/DELETE)							
* CIL RETENTION	RATIONALE: (If ap	plicable) ADEQUATE INADEQUATE	[]							
REMARKS: IOA/NASA FM: FAILS TO REMAIN CLOSED IOA COMMENT: LOSS OF THE CIRCUIT BREAKER REQUIRES ALTERNATE LINE HEATER, WHICH IF IT FAILS CREATES A LOSS OF MISSION CONDITION DUE TO LOSS OF DUMP CAPABILITY (CRITICALITY 3/2R PNP).										

THE NASA VIEWED ANY LOSS OF WATER DUMP CAPABILITY, EITHER SUPPLY OR WASTE WATER, AS A LOSS OF LIFE OR VEHICLE CONDITION. HOWEVER THE IOA ANALYSIS DID NOT RECOGNIZE THIS LIMITATION AND VIEWED THE LOSS OF WASTE WATER DUMP CAPABILITY TO BE ONLY A LOSS OF MISSION CONDITION.

ASSESSMENT DATH ASSESSMENT ID: NASA FMEA #:	: 12/22/87 LS-2182 05-6VD-2	12/22/87 NASA DATA: LS-2182 BASELINE [05-6VD-2003-2 NEW []									
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUP 2182 DUMP LIN	PORT			BR	EAKER (2)				
LEAD ANALYST:	K. BARIC	KMAN									
ASSESSMENT:											
	LITY	SCREE	INS		CII ITE						
FLIG HDW/H	UNC	A	В	В		с		M			
NASA [3/3 IOA [3/3] [] []]	[[]]	[[]	[[] *]			
COMPARE [/] []	[]	[]	[]			
RECOMMENDATIONS	: (If di	fferen	t fro	om NAS	A)						
[3/3] []	[]	[] (2] ADD/D] ELETE)			
* CIL RETENTION	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []										
•	AILS TO OP SUPPLY H20		LINE	E CIRC	UIT	BREAKE	R ANA	LYSIS.			

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REPORT DATE 03/10/88 C-435

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NASA DATA: ASSESSMENT DATE: 12/22/87 BASELINE [] NEW [X] ASSESSMENT ID: LS-2183 NASA FMEA #: 06-2-0422-1 LIFE SUPPORT SUBSYSTEM: MDAC ID: 2183 DUMP LINE HEATER (2) ITEM: LEAD ANALYST: K. BARICKMAN ASSESSMENT: CRITICALITY REDUNDANCY SCREENS CIL ITEM FLIGHT HDW/FUNC В С Α
 IASA
 [3/2R]
 [P]
 [NA]
 [P]

 IOA
 [3/2R]
 [P]
 [P]
 [P]
 NASA [X] * ſ COMPARE [/] [] [N] [] [N] **RECOMMENDATIONS:** (If different from NASA) [3 /2R] [P] [NA] [P] [A] (ADD/DELETE) * CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE [1 **REMARKS:** IOA/NASA FM: OPEN (ELECTRICAL)

ASSESSMENT DATE: 12/22/87 NASA DATA: ASSESSMENT ID: LS-2184 BASELINE [1 NASA FMEA #: NEW [] SUBSYSTEM: LIFE SUPPORT MDAC ID: 2184 ITEM: DUMP LINE HEATER (2) LEAD ANALYST: K. BARICKMAN ASSESSMENT: CRITICALITY **REDUNDANCY SCREENS** CIL FLIGHT ITEM HDW/FUNC в с А NASA [/ NASA [/] [] [] [] IOA [3 /2R] [P] [P] [P]] * ſ 1 COMPARE [N/N] [N] [N] ſ 1 **RECOMMENDATIONS:** (If different from NASA) [3/2R] [P] [P] [P] ſ (ADD/DELETE) * CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE [1 **REMARKS:** IOA FM: SHORTED

THERE WAS NO NASA WMS FMEA WHICH MATCHED THE IOA DESCRIPTION. THE NASA ANALYSIS MAY BE COMBINED WITH SOME OTHER HARDWARE OR REALLOCATED TO ANOTHER SUBSYSTEM.

REPORT DATE 03/10/88

C-437

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		: [] []								
	LIFE SUPPORT 2185 WASTE H2O DUM	P HEATER L	INE THERMOST.	AT (4)						
LEAD ANALYST:	K. BARICKMAN									
ASSESSMENT:										
CRITICAL FLIGH	CIL									
	NC A	В	С	ITEM						
NASA [/ IOA [3 /3		[] []	[]]	[] * []						
COMPARE [N /N] ¹ []	[]	[]	[]						
RECOMMENDATIONS:	(If differe	ent from NA	SA)							
[3 /2R] [P]	[P]	[P] (A	[] DD/DELETE)						
* CIL RETENTION	RATIONALE: (If	applicabl								
			ADEQUATE INADEQUATE	[] []						
REMARKS: IOA FM: FAILS TO OPEN, SHORTED IOA COMMENT: FOR THE CASE OF SHORTED TO GROUND IF THE REDUNDANT HEATER FAIL TO FUNCTION THEN A MISSION LOSS COULD BE PRODUCED (CRITICALITY 3/2R PPP).										

THERE WAS NO NASA WMS FMEA WHICH MATCHED THE IOA DESCRIPTION. THE NASA ANALYSIS MAY BE COMBINED WITH SOME OTHER HARDWARE OR REALLOCATED TO ANOTHER SUBSYSTEM.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:		BASELIN	NASA DATA: BASELINE [] NEW [X]								
	LIFE SUPPORT 2186 WASTE H2O DUMP										
LEAD ANALYST: K. BARICKMAN											
ASSESSMENT:											
CRITICAL FLIGH HDW/FU	Т	ANCY SCREENS B C	CIL ITEM								
		2 0									
NASA [3 /2R IOA [3 /2R] [P]] [P]	[NA] [P] [P] [P]	[X]* []								
COMPARE [/] []	[N] []	[N]								
RECOMMENDATIONS:	(If differen	t from NASA)									
[3 /2R] [P]	[NA] [P] (2	[A] ADD/DELETE)								
* CIL RETENTION T REMARKS: IOA/NASA FM: FA	·	ADEQUATE INADEQUATE	[]								

ASSESSME ASSESSME NASA FME	NT DATE: NT ID: A #:	12/22/ LS-218 06-2-0	/87 87 9430	: [[X	-							
SUBSYSTE MDAC ID:	M:	LIFE S 2187 WASTE	SUPP	ORT	TURE TRA	NSDU	CER (1)					
LEAD ANA	LYST:	K. BAF	K. BARICKMAN									
ASSESSMENT:												
CRITICALITY REDUNDANCY SCREENS FLIGHT										CIL ITEM		
		NC	A									
NASA IOA	[3 /3 [3 /2R]	[[F]	[[P]	[[]	,]]	[[] *]		
COMPARE	[/N]	[]]	[N]	[]	[]	Γ	3		
RECOMMEN	DATIONS:	(If	dif	feren	t fr	om NA	SA)					
	[3 /2F	2]	[F)	[]	A]	[]	?) (A] ELETE)		
* CIL RE	TENTION	RATION	LE:	(If	appl	icabl		ADEQUATE	[ſ]		
ADEQUATE [] INADEQUATE [] REMARKS: IOA/NASA FM: OUT OF TOLERANCE/LOSS OF OUTPUT IOA COMMENT: LOSS OF THE TEMPERATURE TRANSDUCER ELIMINATES SAFE WASTE WATER DUMP AND REQUIRES USE OF FCB AND UCD SUPPLIES WHICH MAY BE INSUFFICIENT TO COMPLETE MISSION, CRITICALITY OF 3/2R PNP.												

THE POTENTIAL FOR WASTE WATER DUMP LINE FREEZING WITHOUT THE TEMPERATURE SENSOR INDICATOR CREATED AN IOA CRITICALITY OF 3/2R, INSTEAD OF THE NASA CRITICALITY OF 3/3.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2188 06-2-0430-1	L2/22/87 NASA DAT LS-2188 BASELIN 06-2-0430-1 NE									
SUBSYSTEM: MDAC ID: ITEM: CONDITIONER	LIFE SUPPORT 2188 WASTE H2O DUMP	LINE TEMPE	RATURE SIG	NAL							
LEAD ANALYST:	K. BARICKMAN										
ASSESSMENT:											
FLIGH	ITY REDUNDA T NC A		s C	CIL ITEM							
NASA [3 /3 IOA [3 /2R] []] [P]	[] [[P] [] P]	[]*							
COMPARE [/N] [N]	[N][и ј	[]]							
RECOMMENDATIONS:	(If different	from NASA)								
[3 /2R] [P]	[NA] [[A] DD/DELETE)							
* CIL RETENTION			ADEQUATE NADEQUATE	[] []							
IOA/NASA FM: LOSS OF OUTPUT IOA COMMENT: LOSS OF THE TEMPERATURE TRANSDUCER ELIMINATES SAFE WASTE WATER DUMP AND REQUIRES USE OF FCB AND UCD SUPPLIES WHICH MAY BE INSUFFICIENT TO COMPLETE MISSION, CRITICALITY OF 3/2R PNP.											
TEMPERATURE SENS	THE POTENTIAL FOR WASTE WATER DUMP LINE FREEZING WITHOUT THE TEMPERATURE SENSOR INDICATOR CREATED AN IOA CRITICALITY OF 3/2R, INSTEAD OF THE NASA CRITICALITY OF 3/3.										

ASSESSME ASSESSME NASA FME	חתנ	T	D •		TC_21								NASA DATA: BASELINE [] NEW [X]						
SUBSYSTE MDAC ID: ITEM:					2189	IFE SUPPORT 189 DUMP VALVE/NOZZLE HEATER CIRCUIT BR									REA	KEI	२ ((1)	
LEAD ANA	LYST: K. BARICKMAN																		
ASSESSMENT:																			
CRITICALITY FLIGHT							RI	EDU	ND	AN	CY	SCRE	EN	S		-	IL Fen	1	
	1	HD	W/F	UN	IC		A				В			С					
NASA IOA] [2 3	/1 /2	R R]	[[P P]		[[NZ P	A]]	[[P P]]	[[х]]	*
COMPARE	[N	/N]	[]		[N]	[]	נ	N]	
RECOMMEN	DA'	FI (ONS	:	(If	d	iff	fer	en	t	fro	om NA	SA)					
	[3	/2	R]	[Ρ]		[Nž	A]	נ	Ρ			A /DI		ETE)
* CIL RE	TEI	NT:	ION	R	RATION	AL	Е:	(I	f	ap	pl:	icabl	-		DEQUATE			j	
INADEQUATE [] REMARKS: IOA/NASA FM: FAILS TO REMAIN CLOSED IOA COMMENT: THE LOSS OF THE WASTE WATER DUMP REQUIRES USE OF THE CWC FOR FLUID STORAGE THUS 3/2R CRITICALITY, NOT LOSS OF LIFE.																			

THE NASA VIEWED ANY LOSS OF WATER DUMP CAPABILITY, EITHER SUPPLY OR WASTE WATER, AS A LOSS OF LIFE OR VEHICLE CONDITION. HOWEVER THE IOA ANALYSIS DID NOT RECOGNIZE THIS LIMITATION AND VIEWED THE LOSS OF WASTE WATER DUMP CAPABILITY TO BE ONLY A LOSS OF MISSION CONDITION.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2190 05-6VC-20	001-2			ASA DATA BASELINI NEV		
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPF 2190 DUMP VALV	PORT		R CI	RCUIT BE	REAKE	CR (1)
LEAD ANALYST:	K. BARICK	MAN					
ASSESSMENT:							
CRITICAI FLIGH	JITY R	REDUNDAN	CY SCRE	ENS		CII ITE	_
HDW/FU		X	В	с		LIE	1.1
NASA [3 /3 IOA [3 /3] [] [] [] []	[[]]	[[] *]
COMPARE [/] [] []	[]	[]
RECOMMENDATIONS: (If different from NASA)							
[3 /3] [] []	[] (2	[ADD/D] DELETE)
* CIL RETENTION REMARKS: IOA/NASA FM: FA			plicabl	A	DEQUATE DEQUATE]]
TON MADA THE FR	THO TO OPE	114					

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2191 05-6VC-2024-1	NASA DATA: BASELINE [] NEW [X]		
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 2191 DUMP VALVE ENABLE/NOZZLE	HEATER SWITCH (1)		
LEAD ANALYST:	K. BARICKMAN			
ASSESSMENT:				
CRITICAL FLIGH	ITY REDUNDANCY SCREEN	NS CIL ITEM		
	NC A B	С		
NASA [2 /1R IOA [3 /2R] [P] [P]] [P] [P]	[P] [X]* [P] []		
COMPARE [N /N] [] [] [[א]		
RECOMMENDATIONS:	(If different from NASA	A)		
[3 /1R] [P] [NA] ([P] [] (ADD/DELETE)		
REMARKS:		ADEQUATE [] INADEQUATE []		
REMARKS: IOA FM: SHORTED TO GROUND NASA FM: OPEN, SHORTED TO GROUND IOA COMMENT: LOSS OF SWITCH ELIMINATES WASTE WATER DUMP CAPABILITY THRU THE NORMAL CHANNELS, BUT DUMP CAN STILL BE DONE THRU THE SUPPLY WATER SYSTEM. IF THE FAILURE OCCURS DURING A VALVE OPEN PHASE, THEN A POTENTIAL LOSS OF LIFE CAN OCCUR IF THE DUMP ISOLATION VALVE ALSO FAILS - THUS A CRITICALITY OF 3/1R PNP. THE IOA ANALYSIS VIEWED THE FIRST FAILURE TO BE A NON-MISSION ESSENTIAL CRITICALITY, HOWEVER SECONDARY FAILURES COULD CREATE MAJOR PROBLEMS. THE NASA FMEA CRITICALITY VIEWED THE FIRST FAILURE TO BE AT LEAST A MISSION LOSS, IF NOT A LIFE THREATENING CONDITION.				

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2191A 05-6VC-2024-2	NASA DATA: BASELINE NEW	
	LIFE SUPPORT 2191 DUMP VALVE ENABLE/	NOZZLE HEATER SWIT	PCH (1)
LEAD ANALYST:	K. BARICKMAN		
ASSESSMENT:			
CRITICAL FLIGH	ITY REDUNDANCY	SCREENS	CIL ITEM
	NC A B	C	1124
NASA [3 /3 IOA [3 /2R] [] [] [P] [P] []] [P]	[] * []
COMPARE [/N] [И] [И] [И]	[]
RECOMMENDATIONS:	(If different fr	om NASA)	
[3 /2R] [P] [N	A] [P] (AD	[A] DD/DELETE)
	RATIONALE: (If appl	icable) ADEQUATE INADEQUATE	[]
REMARKS: IOA FM: SHORTED TO GROUND NASA FM: FAILS CLOSED, SHORTS POLE TO POLE IOA COMMENT: LOSS OF SWITCH ELIMINATES WASTE WATER DUMP CAPABILITY THRU THE NORMAL CHANNELS, BUT DUMP CAN STILL BE DONE THRU THE SUPPLY WATER SYSTEM. IF THE FAILURE OCCURS DURING A VALVE CLOSED PHASE, THEN A POTENTIAL LOSS OF LIFE CAN OCCUR IF THE DUMP ISOLATION VALVE ALSO FAILS - THUS A CRITICALITY OF 3/2R PNP. THE INSTRUMENTATION READINESS FOR THE WASTE WATER DUMP SUBSYSTEM WAS CONSIDERED A FUNCTIONAL MISSION CRITICAL IF ADDITIONAL FAILURES OCCURRED UNDER THE IOA ANALYSYS; WHEREAS, THE NASA FMEA CONSIDERED THEM TO BE A NON-MISSION ESSENTIAL CONDITION.			

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2192 05-6VC-2024-1	NASA DATA: BASELINE NEW		
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 2192 DUMP VALVE ENABL	E/NOZZLE HEATER SWII	CH (1)	
LEAD ANALYST:	K. BARICKMAN			
ASSESSMENT:				
CRITICAL FLIGH	ITY REDUNDAN T	CY SCREENS	CIL ITEM	
	NC A	B C		
NASA [2 /1R IOA [3 /2R] [P] [] [P] [P] [P] P] [P]	[] * []	
COMPARE [N /N] [] [] []	[]	
RECOMMENDATIONS:	(If different	from NASA)		
[3 /1R] [P] [NA] [P] (AI	[] DD/DELETE)	
* CIL RETENTION	RATIONALE: (If ap	plicable) ADEQUATE INADEQUATE	[]	
REMARKS: IOA FM: PHYSICAL BINDING/JAMMING NASA FM: OPEN, SHORTED TO GROUND IOA COMMENT: LOSS OF SWITCH ELIMINATES WASTE WATER DUMP CAPABILITY THRU THE NORMAL CHANNELS, BUT DUMP CAN STILL BE DONE THRU THE SUPPLY WATER SYSTEM. IF THE FAILURE OCCURS DURING A VALVE OPEN PHASE, THEN A POTENTIAL LOSS OF LIFE CAN OCCUR IF THE DUMP ISOLATION VALVE ALSO FAILS - THUS A CRITICALITY OF 3/1R PNP. THE IOA ANALYSIS VIEWED THE FIRST FAILURE TO BE A NON-MISSION ESSENTIAL CRITICALITY, HOWEVER SECONDARY FAILURES COULD CREATE MAJOR PROBLEMS. THE NASA FMEA CRITICALITY VIEWED THE FIRST FAILURE TO BE AT LEAST A MISSION LOSS, IF NOT A LIFE THREATENING CONDITION.				

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2193 05-6VC-2024-1	NASA DATA: BASELINE [] NEW [X]	
SUBSYSTEM: MDAC ID: ITEM:	2193	ZZLE HEATER SWITCH (1)	
LEAD ANALYST:	K. BARICKMAN		
ASSESSMENT:			
CRITICAL FLIGH	ITY REDUNDANCY S	CREENS CIL ITEM	
	NC A B	C	
NASA [2 /1R IOA [3 /2R] [P] [P]] [P] [P]	[P] [P]* [P] []	
COMPARE [N /N] [] []	[] [N]	
	(If different from	·	
[3 /1R] [P] [NA]	[P] [] (ADD/DELETE)	
* CIL RETENTION	RATIONALE: (If applic	able) ADEQUATE [] INADEQUATE []	
REMARKS:		INADEQUATE []	

REPORT DATE 03/10/88 C-447

ASSESSMENT DATE: 12/2 ASSESSMENT ID: LS-2 NASA FMEA #: 05-0	22/87 2194 6VC-2042-1	NASA DATA BASELINE NEW	
SUBSYSTEM:LIFMDAC ID:219ITEM:DUM		HEATER IND	ICATOR (1)
LEAD ANALYST: K.	BARICKMAN		
ASSESSMENT:			
CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREE	ns C	CIL ITEM
NASA [3 /3] IOA [3 /2R]	[] [] [P] [P]	[] [P]	[]* []
COMPARE [/N]	[N] [N]	[N]	[]
RECOMMENDATIONS: (2	If different from NAS	A)	
[3 /2R]	[P] [P]	[P] (A)	[] DD/DELETE)
* CIL RETENTION RATION REMARKS: IOA FM: ERRONEOUS ON) ADEQUATE INADEQUATE	[] []
NASA FM: OPEN IOA COMMENT: WITH THE LOSS OF THE HEATER INDICATOR, THERE IS NO MISSION LOSS. HOWEVER IF ALL HEATER INDICATORS FAILS THEN THERE IS A LOSS OF DUMP CAPABILITY AND THUS LOSS OF MISSION-CRITICALITY 3/2R PPP.			
THE INSTRUMENTATION	READINESS FOR THE WAS	TE WATER DU	MP SUBSYSTEM

Μ WAS CONSIDERED A FUNCTIONAL MISSION CRITICAL IF ADDITIONAL FAILURES OCCURRED UNDER THE IOA ANALYSYS; WHEREAS, THE NASA FMEA CONSIDERED THEM TO BE A NON-MISSION ESSENTIAL CONDITION.

ASSESSME	NT DATE: NT ID: A #:	LS-2195			NASA DATA: BASELINE NEW	
SUBSYSTE MDAC ID: ITEM:		LIFE SUF 2195 WASTE H2		VALVE SW	ITCH (1)	
LEAD ANA	LYST:	K. BARIC	CKMAN			
ASSESSME	INT:					
	CRITICAL		REDUND	ANCY SCREI	Ens	CIL ITEM
	HDW/FUI	NC	A	В	с	
NASA IOA	[2 /1R [2 /1R] [] [P] P]	[NA] [P]	[P] [P]	[X]* [X]
COMPARE	[/] []	[N]	[]	[]
RECOMMEN	DATIONS:	(If di	fferent	: from NAS	SA)	
	[2 /1R] [P]	[NA]		[A] DD/DELETE)
* CIL RE	TENTION 1	RATIONALE	2: (If a	applicable	ADEQUATE	
	OPEN (E) SWITCH			LVE OPEN)	INADEQUATE , SWITCH FAII	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2195A 05-6VC-202	23-2	NASA DATA: BASELINE NEW	: [] [X]
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPO 2195 WASTE H2O	ORT DUMP VALVE	SWITCH (1)	
LEAD ANALYST:	K. BARICK	MAN		
ASSESSMENT:				
CRITICAL FLIGH		EDUNDANCY S	CREENS	CIL ITEM
	NC A	В	с	
NASA [3 /1R IOA [2 /1R] [P] [P] [NA]] [P]	[P] [P]	[X] * [X]
COMPARE [N /] [ן א ן	[]]	[]
RECOMMENDATIONS:	(If dif:	ferent from	NASA)	
[3 /1R] [P] [NA]	[P] (Al	[A] DD/DELETE)
* CIL RETENTION	RATIONALE:	(If applic	able) ADEQUATE INADEQUATE	[]
INADEQUATE [] REMARKS: IOA FM: OPEN (ELECTRICAL) NASA FM: SWITCH FAILS OPEN (VALVE CLOSED), SWITCH FAILS CLOSED (VALVE CLOSED) IOA COMMENT; FOR GENERAL OPEN ELECTRICAL FAILURE THE CRITICALY WOULD BE 3/1R PNP, HOWEVER FOR THE SPECIFIC CASE OF SWITCH FAILS OPEN DURING THE DUMP PROCESS THE CRITICALITY WOULD BE 2/1R PNP BECAUSE OF LOST DUMP CAPABILITY AND WITH SUBSEQUENT DUMP ISOLATION VALVE FAILURE OF INTERNAL LEAKAGE OR EXTERNAL LEAK IN THE CROSS-TIE QD A LOSS OF LIFE DUE TO CABIN ATMOSPHERE LOSS IS A POTENTIAL HAZARD.				

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	15-2196	NASA DAT BASELIN NE	
SUBSYSTEM: MDAC ID: ITEM:	2196	VALVE SWITCH (1)	
LEAD ANALYST:	K. BARICKMAN		
ASSESSMENT:			
CRITICAL FLIGH	ITY REDUND T	ANCY SCREENS	CIL ITEM
HDW/FU	NC A	B C	
NASA [2 /1R IOA [2 /1R] [P]] [P]	[NA] [P] [P] [P]	[X]* [X]
COMPARE [/] []	[И] [И]	[]
RECOMMENDATIONS:	(If differen	t from NASA)	
[2 /1R] [P]	[NA] [P] (.	[A] ADD/DELETE)
* CIL RETENTION	RATIONALE: (If	applicable) ADEQUATE INADEQUATE	[]
REMARKS: IOA FM: SHORTED NASA FM: SWITCH (VALVE OPEN)		INADEQUATE LVE OPEN), SWITCH FA	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/8 LS-2196 05-6VC-2	7 A 2023-2	N2 F	ASA DATA: BASELINE NEW	
	2196		LVE SWITCH	(1)	
LEAD ANALYST:	K. BARIO	CKMAN			
ASSESSMENT:					
CRITICAL FLIGH		REDUNDANC	CY SCREENS		CIL ITEM
	NC	A	B C		1.1.154
NASA [3 /1R IOA [2 /1R] [] [P][P][NA] [P P] [P]]	[X] * [X]
COMPARE [N /] [] [N] []	[]
RECOMMENDATIONS:	(If d	ifferent f	from NASA)		
[3 /1R] [P] [NA] [P		[A] DD/DELETE)
* CIL RETENTION	RATIONAL	E: (If app		DEQUATE DEQUATE	[]
REMARKS:				~	
IOA FM: SHORTED NASA FM: SWITCH		PEN (VALVE	E CLOSED), S	SWITCH FA	AILS CLOSED
(VALVE CLOSED)					
IOA COMMENT: FOR IS CLOSED, THE R					
FOR THE GENERAL					

FOR THE GENERAL CASE FOR SHORTED TO GROUND THE VALVE OPEN WOULD BE A CRITICALITY OF 2/1R PNP BECAUSE OF LOST DUMP CAPABILITY AND POTENTIAL LOSS OF ATMOSPHERE IF A SUBSEQUENT REDUNDANT VALVE OR CROSS-TIE QD FAILS TO SEAL.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/8 LS-2197 05-6VC-	37 7 -2023-1		NASA DATA BASELINE NEW	
SUBSYSTEM: MDAC ID:	LIFE SU 2197	JPPORT	VALVE SWIT	CH (1)	
LEAD ANALYST:	K. BARI	CKMAN			
ASSESSMENT:					
CRITICAI FLIGH		REDUND	ANCY SCREEN	S	CIL ITEM
HDW/FU		A	В	С	
NASA [2 /1F IOA [2 /1F	2] [2] [P] P]	[NA] [[P] [P] P]	[X]* [X]
COMPARE [/] []	[и]]	[]
RECOMMENDATIONS:	(If d	lifferent	t from NASA)	
[2 /1F	2] [[P]	[NA] [[A] DD/DELETE)
* CIL RETENTION	RATIONAL	LE: (If a	/	ADEQUATE NADEQUATE	[]
REMARKS:					LJ
IOA FM: PHYSICA NASA FM: SWITCH				SWITCH FAI	LS CLOSED

(VALVE OPEN)

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2197A 05-6VC-2023-2	NASA DATA: BASELINE [] NEW [X]	
SUBSYSTEM: MDAC ID:	LIFE SUPPORT		
LEAD ANALYST:	K. BARICKMAN		
ASSESSMENT:			
FLIGH	ITY REDUNDANCY SC T NC A B	REENS CIL ITEM C	
NASA [3 /1R IOA [2 /1R	[P] [NA]] [P] [P]	[P] [X]* [P] [X]	
COMPARE [N /] [] [М]	[]][]	
RECOMMENDATIONS:	(If different from	NASA)	
[3 /1R	[P] [NA]	[P] [A] (ADD/DELETE)	
* CIL RETENTION	RATIONALE: (If applica	ble) ADEQUATE [] INADEQUATE []	
REMARKS: IOA FM: PHYSICAL BINDING/JAMMING NASA FM: SWITCH FAILS OPEN (VALVE CLOSED), SWITCH FAILS CLOSED			
MISSION LOSS IS FAILURE, FOR A C	DEVELOPED IF THE VALVE	TCH IS JAMMED OPEN, THEN A IS OPEN AT THE TIME OF HOWEVER, FOR THE CONDITION ULD ONLY BE 3/1R PNP.	

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	TC-2108	NASA DAT BASELIN NE					
SUBSYSTEM: MDAC ID: ITEM:	2198	VALVE SOLENOID (1)					
LEAD ANALYST:	K. BARICKMAN						
ASSESSMENT:							
FLIGH			CIL ITEM				
HDW/FU	NC A	B C					
NASA [2 /1R IOA [2 /1R] [P]] [P]	[NA] [P] [P] [P]	[X]* [X]				
COMPARE [/] []	[N] []	[]]				
RECOMMENDATIONS:	(If differen	t from NASA)					
[2 /1R] [P]	[NA] [P] ([A] ADD/DELETE)				
* CIL RETENTION 1	RATIONALE: (If		[]				
	INADEQUATE [] REMARKS: IOA FM: OPEN (ELECTRICAL) NASA FM: SWITCH FAILS OPEN (VALVE OPEN), SWITCH FAILS CLOSED						

REPORT DATE 03/10/88 C-455

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2198A 05-6VC-2023-2	NASA DATA: BASELINE NEW	[] [X]		
SUBSYSTEM: MDAC ID:	LIFE SUPPORT 2198	VALVE SOLENOID (1)			
LEAD ANALYST:	K. BARICKMAN				
ASSESSMENT:					
CRITICAL FLIGH			CIL ITEM		
	NC A		* * ***		
NASA [3 /1R IOA [2 /1R] [P]] [P]	[NA] [P] [P] [P]	[X] * [X]		
COMPARE [N /] []	[И] [И]	[]		
RECOMMENDATIONS:	(If differen	t from NASA)			
[3 /1R] [P]	[NA] [P] (AD	[A] DD/DELETE)		
* CIL RETENTION	RATIONALE: (If	applicable) ADEQUATE INADEQUATE	[]		
REMARKS: IOA FM: OPEN (ELECTRICAL) NASA FM: SWITCH FAILS OPEN (VALVE CLOSED), SWITCH FAILS CLOSED (VALVE CLOSED)					
IOA COMMENT: THE WORST CASE WOULD BE AN ELECTRICAL OPEN ON THE SOLENOID DURING A VALVE OPEN CONDITION BECAUSE OF LOSS OF MISSION DUE TO LOST DUMP CAPABILITY AND A LOSS OF LIFE IF ONE OF THE REDUNDANT VALVES FAILS OPEN (CRITICALITY 2/1R PNP). THE CASE OF VALVE CLOSED DOES PRODUCE A 3/1R PNP CRITICALITY BECAUSE THERE ARE OTHER METHODS OF DOING WASTE WATER DUMPS.					
AGE OTHER HEIHOD	C CI DOING MADI				

NASA DATA: ASSESSMENT DATE: 12/22/87 ASSESSMENT ID: LS-2199 BASELINE [NASA FMEA #: 05-6VC-2023-1 NEW [X] SUBSYSTEM: LIFE SUPPORT MDAC ID: 2199 ITEM: WASTE H20 DUMP VALVE SOLENOID (1) LEAD ANALYST: K. BARICKMAN ASSESSMENT: CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM HDW/FUNC в с A NASA [2/1R][P] [P] [NA] [X] * ι Γ] [P] [P] IOA $\begin{bmatrix} 2 \\ 1R \end{bmatrix}$ [P] [X] COMPARE [/] [] [N] [] [] **RECOMMENDATIONS:** (If different from NASA) $\begin{bmatrix} 2/1R \end{bmatrix}$ $\begin{bmatrix} P \end{bmatrix}$ $\begin{bmatrix} NA \end{bmatrix}$ $\begin{bmatrix} P \end{bmatrix}$ [A] (ADD/DELETE) * CIL RETENTION RATIONALE: (If applicable) ADEQUATE] [INADEQUATE 1 ſ **REMARKS:** IOA FM: SHORTED NASA FM: SWITCH FAILS OPEN (VALVE OPEN), SWITCH FAILS CLOSED (VALVE OPEN)

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2199A 05-6VC-2023-2	2	NASA DATA BASELINE NEW		
SUBSYSTEM: MDAC ID:	LIFE SUPPORT 2199 WASTE H2O DUM				
LEAD ANALYST:	K. BARICKMAN				
ASSESSMENT:					
FLIGH			S	CIL ITEM	
HDW/FU	NC A	В	С		
NASA [3 /1R IOA [2 /1R] [P]] [P]	[NA] [[P] [P] P]	[X] * [X]	
COMPARE [N /] []	[N][3	[]	
RECOMMENDATIONS:	(If differe	ent from NASA)		
[3 /1R	[P]	[NA] [P] (A	[A] DD/DELETE)	
* CIL RETENTION	RATIONALE: (I		ADEQUATE NADEQUATE	[] []	
REMARKS: IOA FM: SHORTED NASA FM: SWITCH (VALVE CLOSED)		VALVE CLOSED)	, SWITCH F	AILS CLOSED	
IOA COMMENT: THE WORST CASE EVENT WOULD BE A SHORTED SOLENOID DURING THE VALVE OPEN PHASE, WHICH PRODUCES A LOSS OF DUMP CAPABILITY. THE POTENTIAL FOR LOSS OF LIFE IF ONE OF THE UPSTREAM VALVES OR LINES FAIL AND ALLOWS LOSS OF CABIN ATMOSPHERE PRODUCES A CRITICALITY 2/1R PNP. THE CASE OF A CLOSED VALVE THAT SHORTS CREATES A 3/1R PNP CONDITION BECAUSE THERE ARE ALTERNATE					
SHORTS CREATES A			E THERE AR	E ALTEKNATE	

REPORT DATE 03/10/88 C-458

DUMP METHODS AVAILABLE.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2200					DATA: LINE NEW	[]
MDAC ID:	LIFE SUPF 2200 WASTE H2C		VALV	VE SOLE	ENOID (1)		
LEAD ANALYST:	K. BARICK	MAN						
ASSESSMENT:								
CRITICAL FLIGH		EDUNDA	NCY	SCREEN	IS		CIL ITEM	r
HDW/FU			В		С			L
NASA [/ IOA [3 /3] [] []]	[[] [] []		[[] *]
COMPARE [N /N] []	[] []		[]
RECOMMENDATIONS:	(If dif	ferent	fro	om NASA	7)			
[/NA] []	[] []	(AD	[D/DE] LETE)
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []								
REMARKS: IOA COMMENT: DEL EXIST.	ETE THIS A	NALYSI	s, I					3

.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2201 05-6VC-2023-1	NASA DATA: BASELINE [] NEW [X]				
	2201	RESISTOR TO MDM OF3 (1)				
LEAD ANALYST:	K. BARICKMAN					
ASSESSMENT:						
CRITICAI FLIGH HDW/FU		CREENS CIL ITEM C				
NASA [2 /1F IOA [3 /3	[P] [NA]] []] []	[P] [X]* [] []				
COMPARE [N /N] [N] [N]	[N] [N]				
RECOMMENDATIONS: (If different from NASA) [2/1R] [P] [NA] [P] [A]						
<pre>* CIL RETENTION RATIONALE: (If applicable) * CIL RETENTION RATIONALE: (If applicable)</pre>						

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2201A 05-6VC-2023-2	NASA DATA BASELINI NEV					
SUBSYSTEM:	LIFE SUPPORT 2201	ATOR RESISTOR TO MI	DM OF3 (1)				
LEAD ANALYST:	K. BARICKMAN						
ASSESSMENT:							
CRITICAL FLIGH		CY SCREENS	CIL ITEM				
HDW/FU		B C					
NASA [3 /1R IOA [3 /3		NA] [P]] []	[X]* []				
COMPARE [/N] [N] [N] [N]	[N]				
	RECOMMENDATIONS: (If different from NASA) [3/1R] [P] [NA] [P] [] (ADD/DELETE)						
* CIL RETENTION T	RATIONALE: (If ap)	plicable) ADEQUATE INADEQUATE	• •				
IOA FM: LOSS OF RESISTANCE) NASA FM: SWITCH		AL OPEN, SHORTED, E E CLOSED), SWITCH F					
VALVE ACTUATION D CONDITION IF SEC VALVE CLOSED DUR	BECAUSE OF NO POWI OND FAILURE OCCURS ING FAILURE THE CH E ARE ALTERNATE DU	TO GROUND COULD PRO ER AND POTENTIAL LC S. FOR THE NASA CC RITICALITY WOULD BE UMP METHODS AVAILAE	OSS OF LIFE ONDITION OF 3/1R				

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2202 05-6VC-20	31-1		NASA DATA BASELINE NEW]]
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPP 2202 DUMP VALV		OR DIOD	DE (1)		
LEAD ANALYST:	K. BARICK	MAN				
ASSESSMENT:						
CRITICAL FLIGH					CIL ITEN	
HDW/FU	NC A	В		С		
NASA [3 /3 IOA [3 /3] [] [] [] [] [] []]	[[] *]
COMPARE [/] [] [] []	[]
RECOMMENDATIONS:	(If dif	ferent fr	om NASA	.)		
[3 /3] [] [] [] נס/סס] ELETE)
* CIL RETENTION	RATIONALE:	(If appl	icable)			
			I	ADEQUATE NADEQUATE	[[]
REMARKS: IOA FM: LOSS OF OUTPUT (OPEN (ELECTRICAL), SHORTED, EXCESSIVE RESISTANCE) NASA FM: FAILS OPEN						

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2202A 05-6VC-2031-2		NASA DAT BASELIN NI			
MDAC ID:	LIFE SUPPORT 2202 DUMP VALVE IN		IODE (1)			
LEAD ANALYST:	K. BARICKMAN					
ASSESSMENT:						
CRITICAL FLIGH HDW/FU		DANCY SCRI B	EENS C	CIL ITEM		
		-	-	r) +		
NASA [3 /3 IOA [3 /3] []			[] * []		
COMPARE [/] []	[]	[]	[]]		
RECOMMENDATIONS:	(If differe	nt from NA	ASA)			
[3 /2R] [P]	[NA]		[A] (ADD/DELETE)		
* CIL RETENTION	RATIONALE: (If	applicab	le) ADEQUATE INADEQUATE			
REMARKS: IOA FM: LOSS OF OUTPUT (ELECTRICAL OPEN, SHORTED, EXCESSIVE RESISTANCE)						
RESISTANCE) NASA FM: SHORTED IOA COMMENT: IF DIODE SHORTS TO GROUND COULD PRODUCE LOSS OF VALVE ACTUATION BECAUSE OF NO POWER AND POTENTIAL LOSS OF MISSION CONDITION IF SECOND FAILURE OCCURS FOR A CRITICALITY OF 3/2R PNP BECAUSE OF THE LOST DUMP CAPABILITY. THE POTENTIAL FOR WASTE WATER DUMP LINE FREEZING WITHOUT THE TEMPERATURE SENSOR INDICATOR CREATED AN IOA CRITICALITY OF 3/2R, INSTEAD OF THE NASA CRITICALITY OF 3/3.						

REPORT DATE 03/10/88 C-463

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:				NASA DATA BASELINE NEW		
	LIFE SU 2203 DUMP NO		ATER (1)			
LEAD ANALYST:	K. BARI	CKMAN				
ASSESSMENT:						
CRITICAL FLIGH HDW/FU	т	REDUND. A	ANCY SCREI B	ENS C	CIL ITEM	
NASA [3 /2R IOA [3 /2R] [] [P] P]	[NA] [P]	[P] [P]	[X]* []	
COMPARE [/] []	[N]	[]	[N]	
RECOMMENDATIONS:	(If d	ifferen	t from NAS	SA)		
[3 /2R] [P]	[NA]		[A] .DD/DELETE)	
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE INADEQUATE						
REMARKS: IOA FM: OPEN (ELECTRICAL), SHORTED NASA FM: OPEN						

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2204	9-1		NASA DATA BASELINI NEV		
SUBSYSTEM: MDAC ID: ITEM:	2204		NOZZLE T	EMP. TRANSDU	JCER (2)	
LEAD ANALYST:	K. BARICK	MAN				
ASSESSMENT:						
CRITICAL FLIGH	ITY R T	REDUNDA	ANCY SCRE	ENS	CIL ITEM	
HDW/FU	NC A	A	В	С		
NASA [3 /2R IOA [3 /2R] [P]] [P	?] ?]	[NA] [P]	[P] [P]	[X]* []	
COMPARE [/	J []	[N]	[]	[N]	
RECOMMENDATIONS:	(If dif	ferent	t from NA	SA)		
[3 /2R] [P	?]	[NA]		[A] ADD/DELETE)	
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE []						
ADEQUATE [] INADEQUATE [] IOA FM: ERRONEOUS OUTPUT, OPEN (ELECTRICAL), SHORTED NASA FM: LOSS OF OUTPUT						

	ASSESSM	ENT DATE ENT ID: EA #:	LS-2	205			NASA DA' BASELII NI	
UBSYSTE		:				NOZZLE :	SIGNAL COND	ITIONER (2)
	LEAD AN	ALYST:	K. B	ARICK	MAN			
	ASSESSM	ENT:						
		CRITICA FLIG		R	EDUND	ANCY SCR	EENS	CIL ITEM
		HDW/F	UNC	A		В	С	
	NASA IOA	[3 /2 [3 /2	R] R]	[P [P]	[NA] [P]	[P] [P]	[X]* []
	COMPARE	[/]	[3	[N]	[]	[N]
	RECOMME	NDATIONS	: (I	f dif	feren	t from NA	ASA)	
		[3 /2	R]	[P]	[NA]		[A] (ADD/DELETE)
	* CIL R	ETENTION	RATION	NALE:	(If a	applicab	ADEQUATI	· · ·
					OPEN	(ELECTR	INADEQUATI	

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2206	NASA DATA: BASELINE [] NEW [X]					
SUBSYSTEM:							
	2206 DUMP NOZZLE RESISTOR TO	MDM OF4 (HEATER					
LEAD ANALYST:	K. BARICKMAN						
ASSESSMENT:							
CRITICAL FLIGH	ITY REDUNDANCY SCREE	NS CIL ITEM					
HDW/FUI	—	C					
NASA [3 /2R IOA [3 /3] [P] [NA]] [] []	[P] [X] * [] []					
COMPARE [/N] [N] [N]	[N] [N]					
RECOMMENDATIONS:	(If different from NAS	SA)					
[3 /2R] [P] [NA]	[P] [A] (ADD/DELETE)				
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []							
	REMARKS: IOA FM: OPEN (ELECTRICAL), SHORTED TO GROUND						
NASA FM: OPEN IOA COMMENT: IF HEATERS IS PRODUC	RESISTOR SHORTS TO GROUN CED. REDUNDANT HEATER MU	D, LOSS OF POWER TO ST BE USED.					

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2207	BASELINE [
MDAC ID:	LIFE SUPPORT 2207 CREW MODULE INT								
LEAD ANALYST: K. BARICKMAN									
ASSESSMENT:									
CRITICAL FLIGH	CIL ITEM								
	NC A	B C	<i></i>						
NASA [3 /1R IOA [1 /1] [P]] []	[NA] [P] [][]	[X] * [X]						
COMPARE [N /N] [N]	[N] [N]	[]]						
RECOMMENDATIONS:	(If different	from NASA)							
[3 /1R] [P]	[NA] [P] (A	[] ADD/DELETE)						
* CIL RETENTION	RATIONALE: (If a	/							
		ADEQUATE INADEQUATE							
REMARKS:	TEDNAL IEAVACE								
IOA/NASA FM: EXTERNAL LEAKAGE IOA COMMENT: IF THE VACUUM VENT ISOLATION VALVE DOES NOT CLOSE									
THEN HAVE CATAST	ROPHIC LOSS OF C	ABIN ATMOSPHERE AND	LOSS OF						

CREW/VEHICLE IS POSSIBLE WITH A CRITICALITY OF 3/1R PNP.

ASSESSME ASSESSME NASA FME	NT ID:	12/22/ LS-220						DATA ELINE NEW	[]]
SUBSYSTE MDAC ID: ITEM:		LIFE S 2208 INTERN		_	AND 1	FITTING	S			
LEAD ANA	LYST:	K. BAF	RICK	MAN						
ASSESSMENT:										
	CRITICAL		RI	EDUNDA	ANCY	SCREEN	IS		CIL	
	FLIGH HDW/FU		A		В		С		ITEN	1
NASA IOA	[/ [1 /1]]	[[]]	[[) [] []		[[] *]
COMPARE	[N /N]	[]	[] []		۵]
RECOMMEN	DATIONS:	(If	dif	ferent	c fro	om NASA	v)			
	[/N#	.]	[]	[) (]	(AI	[DD/DE] ELETE)
* CIL RE	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []									
DELETE T	HIS ANAI	YSIS-TH	E HZ	RDWAF	RE DO	DES NOT	EXIST	ANYM	IORE.	J

ASSESSMENT DAT ASSESSMENT ID NASA FMEA #:	NASA DATA BASELINE NEW									
SUBSYSTEM: MDAC ID: ITEM:	2209	SUPPORT NAL LINE AN	D FITTING	S						
LEAD ANALYST:										
ASSESSMENT:										
	ALITY GHT	REDUNDAN	CY SCREEN	S	CIL ITEM					
	FUNC	В	С							
NASA [2] IOA [1]	1R] 1]	[P] [[] [P] [] [P]]	[X]* [X]					
COMPARE [N ,	ן א	[N] [N] [N]	[]					
RECOMMENDATIO	5: (If	different	from NASA)						
[2]	1R]	[₽] [P] [P] (A	[A] DD/DELETE)					
* CIL RETENTION	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []									
INADEQUATE [] REMARKS: IOA/NASA FM: EXTERNAL LEAKAGE IOA COMMENT: POTENTIAL LOSS OF MISSION DUE TO GASEOUS HYDROGEN IN THE CARGO BAY AND POTENTIAL FOR LOSS OF VEHICLE IF A SPARK SOURCE IS PREVENT, CRITICALITY 2/1R PPP.										

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	: [] [X]									
SUBSYSTEM: MDAC ID: ITEM:	2210	AT CREW CABIN WALL	(1)							
LEAD ANALYST:	K. BARICKMAN									
ASSESSMENT:										
	CRITICALITY REDUNDANCY SCREENS FLIGHT									
HDW/FU		B C	ITEM							
NASA [3 /1R IOA [1 /1] [P] [] [] [NA] [P]] []	[X] * [X]							
COMPARE [N /N] [N][N] [N]	[]							
RECOMMENDATIONS:	(If different f	from NASA)								
[3 /1R] [P] [[A] DD/DELETE)							
* CIL RETENTION	RATIONALE: (If app	•	r ı							
ADEQUATE [] INADEQUATE [] REMARKS:										
IOA/NASA FM: EXTERNAL LEAKAGE IOA COMMENT: IF AN INTERNAL LEAK DEVELOPS IN THE MANUAL VACUUM VENT VALVE AS WELL AS THE EXTERNAL LEAKAGE IN THE DYNATUBE FITTING LINE WOULD PRODUCE AN UNRESTRICTED CABIN PRESSURE LOSS										

FITTING LINE WOULD PRODUCE AN UNRESTRICTED CABIN PRESSURE LOSS WHICH COULD RESULT IN LOSS OF LIFE AND A CRITICALITY 3/1R PNP.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2211 06-2-0418-1	NASA D BASEL	ATA: INE [] NEW [X]					
SUBSYSTEM: MDAC ID:								
LEAD ANALYST:	K. BARICKMAN							
ASSESSMENT:								
CRITICAL FLIGH	ITY REDUNDA	ANCY SCREENS	CIL ITEM					
	INC A	B C						
NASA [2 /1R IOA [1 /1	E] [P]] []	[P] [P] [] []	[X] * [X]					
COMPARE [N /N] [N]	[N] [N]	[]]					
RECOMMENDATIONS:	(If different	t from NASA)						
[1 /1] []	[]][]	[A] (ADD/DELETE)					
* CIL RETENTION	RATIONALE: (If a	,						
		ADEQUA INADEQUA	TE [] TE []					
REMARKS: IOA/NASA FM: RESTRICTED/BLOCKED FLOW IOA COMMENT: THIS MAY BE DETERMINED TO BE A "NON-CREDIBLE" CONDITION OF BLOCKED FLOW IN THE VACUUM VENT LINE, HOWEVER IF PLAUSIBLE A POTENTIALLY EXPLOSIVE ENVIRONMENT DUE TO HYDROGEN GAS CONCENTRATIONS WOULD BE POSSIBLE, HENCE THE 1/1 CRITICALITY.								
THE IOA ANALYSIS VIEWED THE LOSS OF THE VACUUM VENT DUMP LINE BY BLOCKAGE OR LOSS OF THE HEATERS AS A POTENTIAL LOSS OF LIFE/VEHICLE CONDITION. A POTENTIALLY HAZARDOUS ATMOSPHERE OF HYDROGEN AND OXYGEN COULD OCCUR IF THE LINE WERE BLOCKED.								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2212				A DATA SELINE NEW	[]]				
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPF 2212 VACUUM VE		HEATER	THERM	OSTAT	(2)					
LEAD ANALYST:	K. BARICK	CMAN									
ASSESSMENT:											
CRITICAL		REDUNDAN	CY SCRE	REENS CIL ITEM							
FLIGH HDW/FU		L	В	с	с		M				
NASA [/ IOA [3 /3] [] [] [] []]	[] []		[[] *]				
COMPARE [N /N] [] []	[]		[]				
RECOMMENDATIONS:	(If dif	ferent	from NAS	SA)							
[3 /3] [] []	[]	(A	[DD/D] ELETE)				
* CIL RETENTION REMARKS:	RATIONALE:	(If ap	plicable	ADE	QUATE QUATE	[]]				
IOA FM: FAILS T	O OPEN										

THERE WAS NO NASA WMS FMEA WHICH MATCHED THE IOA DESCRIPTION. THE NASA ANALYSIS MAY BE COMBINED WITH SOME OTHER HARDWARE OR REALLOCATED TO ANOTHER SUBSYSTEM.

REPORT DATE 03/10/88

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ASSESSME ASSESSME NASA FME	NT	I		12/22/ LS-221	-2213 BASELI								BASELINE]]		
SUBSYSTEM:LIFE SUPPORTMDAC ID:2213ITEM:VACUUM VENT LINE HEATER THERMOSTAT										(2)							
LEAD ANA	LY	ST	:	K. BAI	RI	СКІ	MAN										
ASSESSMENT:																	
CRITICALITY REDUNDA FLIGHT						Al	NC		SCREI	EN:			CII ITE	-			
]	HD	W/FUI	NC		Α				в			С				
NASA IOA	[[2	/ /1R]] [P]]		[[P]]] [P]]	[[] *]	:
COMPARE	[N	/N]	נ	N]		[N]	[N]	[]	
RECOMMEN	DA'	TI	ons:	(If	ď	if	feren	t	1	fro	om NAS	5A))				
	[2	/1R]	[P]		[P]	[P		[A ADD/I		SE)
* CIL RE	TE	NT	ION	RATION	/L	E:	(If	aj	pr	51	icable	•		DEQUATE DEQUATE]]	
REMARKS: IOA FM:	F	AI	LS T	D REMAI	EN	C	LOSED)									

THERE WAS NO NASA WMS FMEA WHICH MATCHED THE IOA DESCRIPTION. THE NASA ANALYSIS MAY BE COMBINED WITH SOME OTHER HARDWARE OR REALLOCATED TO ANOTHER SUBSYSTEM.

ASSESSMENT DATE: 12/ ASSESSMENT ID: LS- NASA FMEA #: 06-	'22/87 -2214 -2-0424-1	NASA DATA: BASELINE [] NEW [X]							
SUBSYSTEM: LIF MDAC ID: 221	E SUPPORT	(2)							
LEAD ANALYST: K.	BARICKMAN								
ASSESSMENT:									
CRITICALITY FLIGHT	INS CIL ITEM								
HDW/FUNC	A B	с							
NASA [3 /3] IOA [2 /1R]	[] [] [P] [P]	[] [] * [P] [X]							
COMPARE [N /N]	[N] [N]	[N] [N]							
RECOMMENDATIONS: ((If different from NAS	5A)							
[3 /1R]	[P] [NA]	[P] [A] (ADD/DELETE)							
* CIL RETENTION RATI	IONALE: (If applicable	e) ADEQUATE [] INADEQUATE []							
IOA FM: OPEN (ELECT NASA FM: OPEN	RICAL), SHORTED								
NOTE: THE NASA CRITICALITY WAS 3/1R IN EARLIER ANALYSES IOA COMMENT: WHY HAVE HEATERS IF IT DOES NOT POSSIBLE TO FREEZE LINE UP? IF LINE FREEZE UP IS POSSIBLE THEN 3/1R PNP CRITICALITY									
IS A POTENTIAL WORST CASE. THE IOA ANALYSIS VIEWED THE LOSS OF THE VACUUM VENT DUMP LINE BY BLOCKAGE OR LOSS OF THE HEATERS AS A POTENTIAL LOSS OF LIFE/VEHICLE CONDITION. A POTENTIALLY HAZARDOUS ATMOSPHERE OF									
HYDROGEN AND OXYGEN	COULD OCCUR IF THE LI	NE WERE BLOCKED.							

ASSESSME ASSESSME NASA FME	NT I	[D:	LS-22	• •										
SUBSYSTE MDAC ID: ITEM:			2215			JRE S	IGNA	L COM	IDITION	IER	(1)			
LEAD ANA	LYSI	:	K. BA	RICK	MAN									
ASSESSME	ASSESSMENT:													
CRITICALITY REDUNDANCY SCREENS FLIGHT										CIL				
	-		I' NC	A	В			c	С			ITEM		
NASA IOA	[3 [3	/3 /3]]	[[]]	[[]]	[[]]		[[]]	*	
COMPARE	[/]	[]	[]	[]		[ן		
RECOMMEN	DATI	ons:	(If	dif	ferei	nt fr	om N	ASA)						
	[3	/3]	[]	[]	[]	(A)	[DD/D] ELI	ETE)	
	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []													
IOA FM:	REMARKS: IOA FM: ERRONEOUS OUTPUT, ELECTRICAL OPEN, SHORTED NASA FM: LOSS OF OUTPUT													

ASSESSME	NT DATE: NT ID: CA #:	LS-22	16	-1			1	NASA DATA BASELINI NEW			
SUBSYSTE MDAC ID: ITEM:		LIFE 2216 LINE			URE S	SENSO	R (1)				
LEAD ANA	LYST:	K. BA	RICK	MAN							
ASSESSMENT:											
	EDUN	DANCY	Y SCREENS CIL ITEM								
		FLIGHT HDW/FUNC			A B			2	TIC		
NASA IOA	[3 /3 [3 /3]]	[[]]	[[]]	[[]]	[[] *]	
COMPARE	[/]	[]	[]	[]	[]	
RECOMMEN	DATIONS:	(If	dif	fere	nt fr	om N	ASA)				
	[3 /3]	[]	[]	[]] ADD/D] DELETE)	
	TENTION	RATION	ALE:	(If	appl	icab	Ā	DEQUATE]]	
	REMARKS: IOA FM: ERRONEOUS OUTPUT, ELECTRICAL OPEN, SHORTED										

2217		UIT BRE	AKER (1)								
K. BARICKM	IAN										
ASSESSMENT:											
	DUNDANCY	SCREEN	S	CIL							
	В		С	TICI	м						
] [] [] [] [] [] []]	[[] *]						
] [] [] []	[]						
(If diff	erent fr	om NASA	.)								
] [] [] [] וס / סס] ELETE)						
		-	ADEQUATE NADEQUATE	[[]]						
	05-6VC-200 LIFE SUPPO 2217 NOZZLE HEA K. BARICKM ITY RE T RE NC A] [] [] [] [(If diff] [RATIONALE:	LS-2217 05-6VC-2006-2 LIFE SUPPORT 2217 NOZZLE HEATER CIRC K. BARICKMAN ITY REDUNDANCY T NC A B] [] [] [] [] [] [] [] [] [] [] [] [] [] [] [] [] [LS-2217 O5-6VC-2006-2 LIFE SUPPORT 2217 NOZZLE HEATER CIRCUIT BRE K. BARICKMAN ITY REDUNDANCY SCREEN T NC A B] [] [] [] [] [] [] [] [(If different from NASA] [] [] [] [RATIONALE: (If applicable) I	LS-2217 BASELINE 05-6VC-2006-2 NEW LIFE SUPPORT 2217 NOZZLE HEATER CIRCUIT BREAKER (1) K. BARICKMAN ITY REDUNDANCY SCREENS T NC A B C] [] [] [] []] [] [] [] [] (If different from NASA)] [] [] [] [] (A RATIONALE: (If applicable) ADEQUATE INADEQUATE	LS-2217 O5-6VC-2006-2 LIFE SUPPORT 2217 NOZZLE HEATER CIRCUIT BREAKER (1) K. BARICKMAN ITY REDUNDANCY SCREENS T ITE NC A B C] [] [] [] [] []] [] [] [] [] []] [] [] [] [] [] []] [] [] [] [] [] [] [] [] [] [] [] [] [] (If different from NASA)] [] [] [] [] [] [] [] RATIONALE: (If applicable) ADEQUATE [

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2218 05-6VC-2006-3	NASA DATA: BASELINE [] -1 NEW [X]							
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 2218 NOZZLE HEATEN	R CIRCUIT	BREAKER (1))					
LEAD ANALYST:	K. BARICKMAN								
ASSESSMENT:									
CRITICAL FLIGH	CIL ITEM								
HDW/FU		В	С						
NASA [3 /3 IOA [1 /1] []	[] []	[] []	[] * [X]					
COMPARE [N /N] []	[]	[]]	[א]					
RECOMMENDATIONS:	(If differe	ent from N	ASA)						
[1 /1] []	[]	[]	[A] (ADD/DELETE)					
* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []									
REMARKS: IOA/NASA FM: FAILS TO REMAIN CLOSED IOA COMMENT: IF THE POSSIBILITY FOR LINE FREEZING IS ACCEPTED, DUE TO THE PRESENCE OF THE VACUUM VENT HEATERS, THEN LOSS OF THE HEATERS COULD CAUSE LINE FREEZING AND A POTENTIALLY DANGEROUS GAS ENVIRONMENT.									

THE IOA ANALYSIS VIEWED THE LOSS OF THE VACUUM VENT DUMP LINE BY BLOCKAGE OR LOSS OF THE HEATERS AS A POTENTIAL LOSS OF LIFE/VEHICLE CONDITION. A POTENTIALLY HAZARDOUS ATMOSPHERE OF HYDROGEN AND OXYGEN COULD OCCUR IF THE LINE WERE BLOCKED.

REPORT DATE 03/10/88

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ASSESSMENT DA ASSESSMENT ID NASA FMEA #:	•		: [[]]						
SUBSYSTEM: MDAC ID: ITEM:	2219	SUPPO LE HE								
LEAD ANALYST:	K. B.	ARICK	MAN							
ASSESSMENT:										
	CALITY IGHT	RI	EDUND	ANCY	SCRE	ENS		CIL ITE		
	FUNC	A		B C						
NASA [IOA [1]	/] /1]	[[]]	[[]]	[[]]	[[X] *]	
COMPARE [N	/N]	נ]	[]	[]	[N]	
RECOMMENDATIO	NS: (I	f difi	feren	t fr	om NA	SA)				
[1	/1]	[]	[]	[A] DD/D] ELETE)	
* CIL RETENTI	ON RATIO	NALE:	(If	appl	icabl		ADEQUATE ADEQUATE	[]	
REMARKS: IOA FM: ELEC	TRICAL O	PEN					- ~	L	2	

THERE WAS NO NASA WMS FMEA WHICH MATCHED THE IOA DESCRIPTION. THE NASA ANALYSIS MAY BE COMBINED WITH SOME OTHER HARDWARE OR REALLOCATED TO ANOTHER SUBSYSTEM.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2220 05-6VC-2025-1	NASA DATA BASELINI NEV						
MDAC ID:	LIFE SUPPORT 2220 NOZZLE HEATER	SWITCH (1	-)					
LEAD ANALYST:	K. BARICKMAN							
ASSESSMENT:								
FLIGH	ITY REDUNI T NC A	DANCY SCRE B	C C	CIL ITEM				
			_	r) +				
IOA [1/1] []			[] * [X]				
COMPARE [N /N] []	[]	[]	[N]				
RECOMMENDATIONS:	(If differen	nt from NA	SA)					
[1 /1] []	[]		[A] ADD/DELETE)				
* CIL RETENTION	RATIONALE: (If	applicabl	e) ADEQUATE INADEQUATE	[] []				
REMARKS: IOA FM: SHORTED NASA FM: OPEN, SHORTED TO GROUND IOA COMMENT: IF THE POSSIBILITY FOR LINE FREEZING IS ACCEPTED, DUE TO THE PRESENCE OF THE VACUUM VENT HEATERS, THEN LOSS OF THE HEATERS COULD CAUSE LINE FREEZING AND A POTENTIALLY DANGEROUS GAS ENVIRONMENT.								
THE IOA ANALYSIS VIEWED THE LOSS OF THE VACUUM VENT DUMP LINE BY BLOCKAGE OR LOSS OF THE HEATERS AS A POTENTIAL LOSS OF LIFE/VEHICLE CONDITION. A POTENTIALLY HAZARDOUS ATMOSPHERE OF HYDROGEN AND OXYGEN COULD OCCUR IF THE LINE WERE BLOCKED.								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	12/22/87 LS-2220A 05-6VC-2025	12/22/87 NASA DAT LS-2220A BASELIN 05-6VC-2025-2 NE						
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT	r						
LEAD ANALYST:								
ASSESSMENT:								
CRITICAL FLIGH HDW/FU	CIL ITEM							
NASA [3 /3 IOA [1 /1] []	[]	[] []	[] * [X]				
COMPARE [N /N] []	[]	[]	[N]				
RECOMMENDATIONS:	(If diffe	rent from N	ASA)					
[1 /1] []	[]	[]]	[A] ADD/DELETE)				
* CIL RETENTION	RATIONALE: (?	If applicab	•	[]				
ADEQUATE [] INADEQUATE [] REMARKS: IOA FM: SHORTED NASA FM: CLOSED, SHORTED TO GROUND IOA COMMENT: IF THE POSSIBILITY FOR LINE FREEZING IS ACCEPTED, DUE TO THE PRESENCE OF THE VACUUM VENT HEATERS, THEN LOSS OF THE HEATERS COULD CAUSE LINE FREEZING AND A POTENTIALLY DANGEROUS GAS ENVIROMENT.								
THE IOA ANALYSIS VIEWED THE LOSS OF THE VACUUM VENT DUMP LINE BY BLOCKAGE OR LOSS OF THE HEATERS AS A POTENTIAL LOSS OF LIFE/VEHICLE CONDITION. A POTENTIALLY HAZARDOUS ATMOSPHERE OF								

LIFE/VEHICLE CONDITION. A POTENTIALLY HAZARDOUS ATMOSPHEN HYDROGEN AND OXYGEN COULD OCCUR IF THE LINE WERE BLOCKED.

ASSESSME ASSESSME NASA FME]]
SUBSYSTE MDAC ID: ITEM:		LIFE S 2221 RESIST			1 OF	4 (HE2	ATER	INDICAT	'OR) (1)
LEAD ANA	LYST:	K. BAR	ICKM	IAN						
ASSESSME	ASSESSMENT:									
								CIL ITE		
	HDW/FU	-	A B C						TIC	M
NASA IOA	[/ [3 /3]]	[[]	[[]	[[]]	[[] *]
COMPARE	[N /N]	[]	[]	[]	[]
RECOMMEN	DATIONS:	(If	diff	erent	: fro	om NAS	SA)			
	[3 /3]	[]	[]	[] d \ da.] ELETE)
	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []									
REMARKS: IOA FM: LOSS OF OUTPUT (ELECTRICAL OPEN, SHORT)										

THERE WAS NO NASA WMS FMEA WHICH MATCHED THE IOA DESCRIPTION. THE NASA ANALYSIS MAY BE COMBINED WITH SOME OTHER HARDWARE OR REALLOCATED TO ANOTHER SUBSYSTEM.

ASSESSME ASSESSME NASA FME	ENT ENT EA	D. I #:	ATE: D:								DATA: LINE [] NEW [X]
SUBSYSTE MDAC ID: ITEM:				LIFE 2222 VACU					TER (1)	
LEAD ANA	T A	ST	:	к. в	ARICH	MAN					
ASSESSME	ENT	:									
CRITICALITY REDUNDANCY SCREENS FLIGHT HDW/FUNC A B C							CIL ITEM				
		HD	W/FU	NC	F	1	E	5	C		
NASA IOA	[[3 1	/3 /1]]	[[]]	[[]]	[[]]	[] * [X]
COMPARE	[N	/N]	נ]	[]	[]	[N]
RECOMMEN	IDA	TI	ons:	(I:	f dif	fere	nt fr	om N	ASA)		
	[1	/1]	[]	٢]	ľ]	[A] (ADD/DELETE)
* CIL RE	TE	NT	ION	RATIO	NALE:	(If	appl	icab		DEQUA	TE [] TE []
REMARKS: IOA FM: NASA FM: NOTE:	Ε	OP	EN		-			2/3 0			EVIOUS ANALYSIS.
IOA COMM DUE TO I	IEN 'HE	T: P	IF RESE	THE NCE O	POSSI F THE	BILI VAC	TY FO UUM V	R LI VENT	NE FR HEATE	REEZIN	IG IS ACCEPTED, THEN LOSS OF THE LY DANGEROUS GAS
THE IOA BLOCKAGE	ENVIRONMENT. THE IOA ANALYSIS VIEWED THE LOSS OF THE VACUUM VENT DUMP LINE BY BLOCKAGE OR LOSS OF THE HEATERS AS A POTENTIAL LOSS OF										
LIFE/VEHICLE CONDITION. A POTENTIALLY HAZARDOUS ATMOSPHERE OF HYDROGEN AND OXYGEN COULD OCCUR IF THE LINE WERE BLOCKED.											

ASSESSME ASSESSME NASA FME	NT ID:	12/22/87 LS-2223 06-2-042]	NASA DATA BASELINE NEW] ;]	
SUBSYSTE MDAC ID: ITEM:		LIFE SUP 2223 NOZZLE T		TURE	(1)				
LEAD ANA	LYST:	K. BARIC	KMAN						
ASSESSMENT:									
CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM									
	FLIGH HDW/FU		A	В			с	ITE	111
NASA IOA	[3 /3 [3 /3] [] []]	[[]]	[[]]	[[] *]
COMPARE	[/] []	[]	[]	[3
RECOMMEN	DATIONS:	(If di	fferen	t fr	om NAS	SA)			
	[3/3] [].	٢]	[] (A] DELETE)
	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []								
REMARKS: IOA/NASA FM: LOSS OF OUTPUT, ERRONEOUS OUTPUT									

ASSESSMEI ASSESSMEI NASA FMEI	I TN	D:	LS-22	12/22/87NASA DATA:LS-2224BASELINE []06-2-0427-1NEW [X]									
SUBSYSTEN MDAC ID: ITEM:	M:		LIFE 2224 NOZZL			ATURE	SEI	NSOR CC	NDIT:	IONI	ER (1)	
LEAD ANA	LYST	:	K. BA	RICK	MAN								
ASSESSMENT:													
(CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM												
		W/FU								T I CM			
NASA IOA	[3 [3	/3 /3]]	[[]]	[[]]	[[]]		[[] *]	
COMPARE	[/]	[]	ſ]	[]		Γ]	
RECOMMENI	DATI	ons:	(If	dif	fere	nt fr	om 1	NASA)					
	[3	/3]	[]	[]	[]	(A)] DD/D] ELETE)	•
* CIL RET	FENT	ION	RATION	ALE:	(If	appl	ical						
)EQUA')EQUA'		[[]]	
REMARKS: IOA/NASA	REMARKS: IOA/NASA FM: LOSS OF OUTPUT, ERRONEOUS OUTPUT												

REPORT DATE 03/10/88 C-486

L.

ASSESSME ASSESSME NASA FME	NT I	D:	: 12/22/87 NASA DATA: LS-2225X BASELINE [06-2-0102-1 NEW []]
SUBSYSTE MDAC ID: ITEM:	SM:		LIFE S 2225 FIXED			URINAL	SCREEN	1 (2)			
LEAD ANA	LYST	:	K. BAI	RICK	MAN						
ASSESSME	ASSESSMENT:										
									CIL		
		W/FUI		А		В		с		ITE	M
NASA IOA	[3 [3	/2R /2R]	[P [P]	[NA] [NA]	[[P] P]		[[] *]
COMPARE	[/]	[]	[]	[]		[]
RECOMMEN	DATI	ons:	(If	dif	fere	nt from	NASA)				
	[3	/2R]	[P]	[NA]	[P]	(AD	[00/01] ELETE)
* CIL RE							IN	ADEQUA ADEQUA		[[]]
IOA/NASA	IOA/NASA FM: RESTRICTED/BLOCKED FLOW										

REPORT DATE 03/10/88 C-487

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ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2226X	-1	NASA DATA BASELINE NEW						
	LIFE SUPPO 2226 EMU QD (1)								
LEAD ANALYST:									
ASSESSMENT:									
CRITICAL FLIGH	CIL ITEM								
HDW/FU	NC A	В	С						
NASA [3 /2R IOA [3 /2R] [P] [P] [NA]] [NA]	[P] [P]	[] * []					
COMPARE [/] [] []	[]	[]					
RECOMMENDATIONS:	(If diff	ferent from	NASA)						
[3 /2R] [P] [NA]		[] .DD/DELETE)					
* CIL RETENTION T	RATIONALE:	(If applic	able) ADEQUATE INADEQUATE						
IOA/NASA FM: RE	STRICTED/BI	LOCKED FLOW							

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2227X	LS-2227X BASELINE []								
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 2227 COMMODE LINE									
LEAD ANALYST:	K. BARICKMAN									
ASSESSMENT:	ASSESSMENT:									
	CRITICALITY REDUNDANCY SCREENS CIL FLIGHT ITEM									
HDW/FU	=	В	с							
NASA [3 /2R IOA [3 /2R] [P]] [P]	[NA] [[NA] [P] P]	[] * []						
COMPARE [/] []	[]][]	[]						
RECOMMENDATIONS:	(If differ	ent from NASA)								
[3 /2R] [P]	[NA] [[] DD/DELETE)						
* CIL RETENTION	RATIONALE: (I	/	ADEQUATE ADEQUATE	[]						
REMARKS: IOA FM: RESTRICTED/BLOCKED FLOW NASA FM: PLUGGED, OVERFILLED										

ASSESSME ASSESSME NASA FME	NT I	D:	LS-22	28X	5 - 1				ASA DATA BASELINE NEW]]
SUBSYSTE MDAC ID: ITEM:			LIFE 2228 COMMO			र					
LEAD ANA	LYST	:	K. BA	RICI	KMAN						
ASSESSME	ASSESSMENT:										
									CIL ITE		
		W/FUI		2	ł	В		С			
NASA IOA	[3 [3	/2R /2R]]	[]	?] ?]	[NA [NA		P P]]	[[] *]
COMPARE	[/]	[נ	ſ] [•]	[]
RECOMMEN	DATI	ONS:	(If	di	fere	ent fro	om NASA	7)			
	[3	/2R]	[]	?]	[NA	·] [P] .DD/D] ELETE)
* CIL RE	TENT	ION	RATION	ALE	: (I1	f appli	•	AI	DEQUATE DEQUATE	[[]]
REMARKS: IOA/NASA	REMARKS: IOA/NASA FM: RESTRICTED/BLOCKED FLOW										

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2229X	NASA DATA: BASELINE [] -1 NEW [X]								
SUBSYSTEM: MDAC ID: ITEM:	PORT	SH VE	ENT OF	RIF	ICE (1)					
LEAD ANALYST:	K. BARICK	MAN								
ASSESSMENT:										
CRITICAL FLIGH	ITY R	EDUNI	DANCY	SCRE	EN	S	CIL ITEM			
HDW/FU		L	В			с	1.1.1	SM		
NASA [3 /3 IOA [3 /3] [] []]	[[]	[[]]	[[] *]		
COMPARE [/] []	[]	נ]	[]		
RECOMMENDATIONS:	(If dif	ferer	nt fr	om NA	SA)				
[3/3] []	[]	E]] ADD/I] DELETE)		
* CIL RETENTION RATIONALE:			appl	icabl	•	ADEQUATE VADEQUATE	-]		
REMARKS: IOA FM: RESTRIC NASA FM: RESTRIC	LEAP	KAGE			-	-	-			

ASSESSMENT DATE: 12/22/87 ASSESSMENT ID: LS-2230X NASA FMEA #: 06-2-0217-1							NASA DATA: BASELINE [] NEW [X]						
SUBSYSTE MDAC ID: ITEM:			LIFE 2230 WET T			LIN	E ORII	FICE	(1)				
LEAD ANALYST: K. BARICKMAN													
ASSESSMENT:													
CRITICALITY REDUNI FLIGHT						DANCY SCREENS				CIL ITEM			
			NC	A	A		В		с				
NASA IOA	[3 /3 3 /3]]	[[]]	[[]]	[[]]		[[] *]	
COMPARE	[/]	[]	[]	[]		[]	
RECOMMEN	DAT	IONS:	(If	dif	feren	t fr	om NA:	SA)					
	[3 /3]	[]	נ]	[]	(A)] ELETE)	
	* CIL RETENTION RATIONALE: (If applicable) ADEQUATE [] INADEQUATE []												
REMARKS: IOA FM: RESTRICTED FLOW NASA FM: RESTRICTED FLOW, EXTERNAL LEAKAGE													

	ASSESSME ASSESSME NASA FME	ASSESSMENT DATE: 12/22/87 ASSESSMENT ID: LS-2231X HASA FMEA #: 06-2-0217-1						NASA DATA: BASELINE [] NEW [X]						
	SUBSYSTE MDAC ID: ITEM:	:M:			2231	IFE SUPPORT 231 ET TRASH VENT LINE ORIFICE (1)								
LEAD ANALYST: K. BARICKMAN														
	ASSESSME	NT	:											
		CR		ICAL	ITY r	R	EDUNI	DANCY	SCRE	ENS		CII ITI		
]			NC	А		B C						
	NASA IOA	[[3	/3 /NA]]							[[]]	*
	COMPARE	[N	/N]	[]	[]	[]	[]	
	RECOMMEN	DA!	FI C	ons:	(If	dif	feren	nt fro	om NA	SA)				
		[/NA]	[]	٢]	[] (A	[DD/I] DELE	ETE)
	* CIL RE	TEI	NT	ION I	RATION	ALE:	(If	appl	icabl			_	_	
										A INA	DEQUATE DEQUATE	[[]]	
	REMARKS: IOA FM:		XTI	ERNAI	L LEAK	AGE								
	NASA FM: IOA COMM										A ANALYS	ES 2	2048	AND
	IOA COMMENT: VIEWED AS NON-CREDIBLE, SEE IOA ANALYSES 2048 AND 2051 FOR EXTERNAL LEAKAGE OF VALVE HOUSING. THE EXTERNAL LEAKAGE OF THE VACUUM VENT ORIFICE WAS VIEWED TO BE													
	THE EVIE	L/1/1	ערב	TUCUI	VHGE OI	с тп	E VAC	UUM V	A 1711. T A	UKIF.	ICE WAD	A T UN	LLU	IU DE

THE EXTERNAL LEAKAGE OF THE VACUUM VENT ORIFICE WAS VIEWED TO BE "NON-CREDIBLE" IN THE IOA ANALYSIS BECAUSE OF THE CONSTRUCTION OF THE ORIFICE AND THE SUPPORT HOUSING.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2232X	-1			M	IASA DATI BASELINI NEI		
SUBSYSTEM: MDAC ID: ITEM:	ORT	E LI	NES I	'O WI	is qd			
LEAD ANALYST: K. BARICKMAN								
ASSESSMENT:								
CRITICAL	EDUND	ANCY	SCRE	ENS		CIL		
FLIGH HDW/FU					C	2	ITEM	
NASA [2 /2 IOA [2 /2] [] []]	[[]]	[[]]	[X]* [X]	
COMPARE [/] [1	[]	[]	[]	
RECOMMENDATIONS:	(If dif	feren	t fr	om NA	SA)			
[2 /2] []	[]	[[A] ADD/DELETE)	
* CIL RETENTION REMARKS:	RATIONALE:	(If	appl	icabl	7	ADEQUATE ADEQUATE		
IOA/NASA FM: RESTRICTED FLOW								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2233X	K	NASA DAT BASELIN NE					
SUBSYSTEM: MDAC ID: ITEM:	S TO WWS QD							
LEAD ANALYST:	K. BARIC	CKMAN						
ASSESSMENT:								
CRITICAL FLIGH		REDUNDANCY SO	CREENS	CIL ITEM				
HDW/FU	NC	A B	С					
NASA [2 /2 IOA [3 /2R] [] [] [] P] [NA]	[] [P]	[X]* []				
COMPARE [N /N] [и] [и]	[N]	[N]				
RECOMMENDATIONS:	(If di	fferent from	NASA)					
[3 /2R] [P] [NA]		[D] ADD/DELETE)				
* CIL RETENTION	RATIONALE	: (If applica	able) ADEQUATE INADEQUATE					
REMARKS: IOA/NASA FM: RESTRICTED FLOW								

THOSE NASA FMEA WHICH INCLUDE A COLLECTION OF HARDWARE ITEMS MAY NOT MATCH THE IOA ANALYSIS. THE IOA ANALYSES PROVIDED SEPARATE ANALYSES FOR EACH PIECE OF EQUIPMENT. THE BASIC PREMISE OF THE NASA FMEA DID AGREE WITH THE IOA ANALYSIS.

ASSESSME ASSESSME NASA FME	NT I	D:	LS-22	LS-2234X BASELIN						BASELINE				
SUBSYSTE MDAC ID: ITEM:	M:		2234	LIFE SUPPORT 2234 COMMODE RE-PRESSURIZATION VALVE OR					ALVE ORI	FICE	(1)			
LEAD ANA	LYST	:	K. BA	RICK	MAN									
ASSESSME	ASSESSMENT:													
CRITICALITY				F	EDUN	DANC	CY	SCRE	EENS	S		CIL		
	-	'LIGH' W/FU		A	•		в			С		ITE	M	
NASA IOA	[3 [3	/2R /2R]]	[] []]	ן נ	P NZ] A]	[[P P]	[[] *]	
COMPARE	[1]	[]	[N]	נ]	C]	
RECOMMEN	DATI	ONS:	(If	dif	fere	nt 1	fro	om NA	ASA)				
	[3	/2R]	[F]	[P]	[P		[ADD/D] ELETE)	
* CIL RE					·	app	pl i	icab]	-		DEQUATE DEQUATE	-]]	
IOA/NASA	IOA/NASA FM: RESTRICTED FLOW													

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	LS-2235X	BASEL	NASA DATA: BASELINE [] NEW [X]					
SUBSYSTEM: MDAC ID: ITEM:	LIFE SUPPORT 2235 HOSE ASSEMBI	Y, FAN/SEPARATOR TO	CV (2)					
LEAD ANALYST: K. BARICKMAN								
ASSESSMENT:								
CRITICALITY REDUNDANCY SCREENS								
FLIGH HDW/FU	-	B C	ITEM					
NASA [3 /2R IOA [3 /2R	[P] [P]	[NA] [P] [NA] [P]	[]*					
COMPARE [/] []	[][]	[]					
RECOMMENDATIONS:	(If differ	ent from NASA)						
[3 /2R	[P]	[NA] [P]	[] (ADD/DELETE)					
* CIL RETENTION REMARKS: IOA/NASA FM: RE		ADEQUA INADEQUA						
INADEQUATE []								

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	SSESSMENT DATE:12/22/87NASA DATA:SSESSMENT ID:LS-2236XBASELINEASA FMEA #:06-2-0445-1NEW								
SUBSYSTEM: MDAC ID: ITEM:		LIFE SUPPORT 2236 FAN/SEPARATOR MUFFLER HOUSING INLET I							
LEAD ANALYST: K. BARICKMAN									
ASSESSMENT:	ASSESSMENT:								
CRITICAL FLIGH	ITY REDUNDA		CIL ITEM						
	NC A								
NASA [2 /2 IOA [3 /2R] []] [P]	[] [] [NA] [P]	[X]* []						
COMPARE [N /N] [N]	[N] [N]	[N]						
RECOMMENDATIONS:	(If different	t from NASA)							
[3 /2R] [P]		[] D/DELETE)						
* CIL RETENTION	RATIONALE: (If a	applicable)							
		ADEQUATE INADEQUATE	[]						
REMARKS: IOA/NASA FM: RESTRICTED FLOW IOA COMMENT: NOT VIEWED AS IMMEDIATE MISSION CRITICAL BECAUSE OF FCB AND UCD SUPPLIES. THE FCB AND UCD SUPPLY USAGE MAY CREATE A LOSS OF MISSION DEPENDING ON MISSION DURATION DUE TO LACK OF SUPPLIES.									
THE IOA ANALYSIS VIEWED THE FIRST FAILURE TO BE A NON-MISSION ESSENTIAL CRITICALITY, HOWEVER SECONDARY FAILURES COULD CREATE MAJOR PROBLEMS. THE NASA FMEA CRITICALITY VIEWED THE FIRST									

FAILURE TO BE AT LEAST A MISSION LOSS, IF NOT A LIFE THREATENING CONDITION.

ASSESSMENT DATE: ASSESSMENT ID: NASA FMEA #:	ASSESSMENT DATE: 12/22/87 1 ASSESSMENT ID: LS-2237X NASA FMEA #: 06-2-0445-1						
SUBSYSTEM: MDAC ID: ITEM:	(1)						
LEAD ANALYST:	LEAD ANALYST: K. BARICKMAN						
ASSESSMENT:							
CRITICAL FLIGH	ITY REDUND T	ANCY SCREEN	S	CIL ITEM			
HDW/FU	NC A	В	С				
NASA [2/2 IOA [3/2R] []] [P]	[] [[NA] [] P]	[X]* []			
COMPARE [N /N] [N]	[N] [N]	[N]			
RECOMMENDATIONS:	(If differen	t from NASA)				
[3 /2R] [P]	[NA] ([] DD/DELETE)			
* CIL RETENTION	RATIONALE: (If	applicable)					
REMARKS:		I	ADEQUATE NADEQUATE	[]			
REMARKS: IOA/NASA FM: RESTRICTED/BLOCKED FLOW IOA COMMENT: NOT VIEWED AS IMMEDIATE MISSION CRITICAL BECAUSE OF FCB AND UCD SUPPLIES. THE FCB AND UCD SUPPLY USAGE MAY CREATE A LOSS OF MISSION DEPENDING ON MISSION DURATION DUE TO LACK OF SUPPLIES.							
THE IOA ANALYSIS VIEWED THE FIRST FAILURE TO BE A NON-MISSION ESSENTIAL CRITICALITY, HOWEVER SECONDARY FAILURES COULD CREATE MAJOR PROBLEMS. THE NASA FMEA CRITICALITY VIEWED THE FIRST FAILURE TO BE AT LEAST A MISSION LOSS, IF NOT A LIFE THREATENING							

REPORT DATE 03/10/88 C-499

CONDITION.

ASSESSMENT DATE ASSESSMENT ID: NASA FMEA #:	LS-2238X	ASA DATA BASELINE NEW		(]				
	ID: 2238							
LEAD ANALYST:	K. BARICK	MAN						
ASSESSMENT:								
CRITICA		EDUNDA	DUNDANCY SCREENS			CIL		
FLIG HDW/F		A B			!	ITEM		
NASA [2 /2 IOA [2 /2] [] []]	[] []	[[]	[}	(] * (]	
COMPARE [/] [3	[]	[]	۵]	
RECOMMENDATIONS	: (If dif	ferent	from N	ASA)				
[2 /2] []	[]	[] (A	<i>۲</i>] DD/I	A] DELETE)	
* CIL RETENTION	RATIONALE:	(If a	pplicab	À	DEQUATE DEQUATE	-]	
REMARKS: IOA/NASA FM: EXTERNAL LEAKAGE								