

FAILURE MODES EFFECTS ANALYSIS (FMEA) – CIL HARDWARE

NUMBER: 04-2-FBRV01 -X

SUBSYSTEM NAME: AUXILIARY POWER UNIT (APU)

REVISION: 3

01/28/91

PART DATA

	PART NAME	PART NUMBER
	VENDOR NAME	VENDOR NUMBER
LRU	: AUXILIARY POWER UNIT (APU) SUNDSTRAND	MC201-0001-02XX 729867XX/754949
LRU	: AUXILIARY POWER UNIT (APU) SUNDSTRAND	MC201-0001-03XX 729867XX/754949A
LRU	: AUXILIARY POWER UNIT (APU) SUNDSTRAND	MC201-0001-04XX 742211
SRU	: VALVE, FILTER BYPASS RELIEF SUNDSTRAND	726025 SAME

EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:
LUBE OIL FILTER BYPASS RELIEF VALVE.

REFERENCE DESIGNATORS:

QUANTITY OF LIKE ITEMS: 3
ONE PER APU

FUNCTION:
TO PROVIDE A BYPASS AROUND LUBE OIL FILTER IN CASE OF FILTER PLUGGING (REF FMEA 04-2-FL13-11).

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NO EFFECT, FILTER MUST ALSO PLUG, THEN LOSS OF APU BEARING LUBRICATION.

(B) INTERFACING SUBSYSTEM(S):
NO EFFECT UNTIL SECOND FAILURE, THEN LOSS OF SHAFT POWER TO ONE HYDRAULIC PUMP.

(C) MISSION:
NONE

(D) CREW, VEHICLE, AND ELEMENT(S):
NONE

(E) FUNCTIONAL CRITICALITY EFFECTS:
POSSIBLE LOSS OF CREW/VEHICLE IF FILTER PLUGS, RELIEF VALVE FAILS CLOSED, AND SECOND APU IS LOST.

-DISPOSITION RATIONALE-

(A) DESIGN:
DESIGN IS A SIMPLE SPRING LOADED HARD SEAT RELIEF VALVE INSTALLED IN PARALLEL WITH THE LUBE OIL FILTER.

RELIEF VALVE PROTECTS THE WATER BOILER AGAINST OVERPRESSURIZATION FROM THE POSITIVE DISPLACEMENT LUBE OIL PUMP AND PROVIDES A POSITIVE OIL FLOW TO THE BEARINGS, IN CASE OF FILTER PLUGGING. VALVE IS FULL OPEN AT APPROXIMATELY 70 PSI DELTA AT UP TO 4.2 GPM FLOW.

(B) TEST:
ACCEPTANCE TESTED FOR FUNCTIONAL OPERATION, CAPACITY AND LEAKAGE PER SUNDSTRAND TS2676.

OMRSD: NONE. AS THE LUBE OIL FILTER BYPASS RELIEF VALVE IS INTERNAL TO THE APU GEARBOX, DIRECT OMRSD TESTING WOULD REQUIRE DISASSEMBLY OF THE APU GEARBOX WHICH IS ILLOGICAL AND INVASIVE.

(C) INSPECTION:

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RECEIVING INSPECTION
MATERIALS AND PROCESSES CERTIFICATIONS ARE VERIFIED BY INSPECTION.

CONTAMINATION CONTROL
CLEANLINESS TO DRAWING REQUIREMENTS IS VERIFIED BY INSPECTION. CORROSION PROTECTION REQUIREMENTS ARE VERIFIED BY INSPECTION. PASSIVATION OF HOUSING AND PLUG IS VERIFIED BY INSPECTION.

ASSEMBLY/INSTALLATION
DIMENSIONS AND SURFACE FINISHES ARE VERIFIED BY INSPECTION. MANUFACTURING, ASSEMBLY, AND INSTALLATION PROVISIONS ARE VERIFIED BY INSPECTION. SPRING DATA IS VERIFIED BY INSPECTION. THREADS ARE VERIFIED BY INSPECTION. O-RING IS VERIFIED BY INSPECTION.

NONDESTRUCTIVE EVALUATION
MAGNETIC PARTICLE INSPECTION OF HOUSING, PISTON, AND PLUG IS VERIFIED BY INSPECTION.

CRITICAL PROCESSES
HEAT TREATING OF SPRING, HOUSING, PISTON, AND PLUG PER SPECIFICATION REQUIREMENTS IS VERIFIED BY INSPECTION.

TESTING
TEST EQUIPMENT AND TOOL CALIBRATION ARE VERIFIED BY INSPECTION. ATP IS WITNESSED AND VERIFIED BY INSPECTION.

HANDLING/PACKAGING
HANDLING, PACKAGING, STORAGE, AND SHIPPING PROCEDURES ARE VERIFIED BY INSPECTION.

(D) FAILURE HISTORY:
NONE

(E) OPERATIONAL USE:
NONE

- APPROVALS -

EDITORIALLY APPROVED : RI
EDITORIALLY APPROVED : JSC
TECHNICAL APPROVAL : VIA JSC

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