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PRINT DATE: 08/28/89

SHUTTLE CRITICAL ITEMS LIST - ORBITER NUMBER: 60-AA-202000-01-000-X

SUBSYSTEM NAME: GALLILEO RPM TANK MONITOR

REVISION : 1 89/08/25

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	PART NAME VENDOR NAME	PART NUMBER VENDOR NUMBER
■ SRU :	CURRENT LOOP <sup>VOLT</sup> METER NEWPORT ELECTRONICS	558A

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- EXTENDED DESCRIPTION OF PART UNDER ANALYSIS:  
CURRENT LOOP-DRIVEN VOLTMETER. 4 MA.=0.00 VDC, 20 MA.=10.00 VDC  
NEWPORT ELECTRONICS P/N 558A (10.00 VDC).
- QUANTITY OF LIKE ITEMS: 2  
TWO, ONE IN EACH TANK MONITOR CIRCUIT.
- FUNCTION:  
IN EACH TANK MONITOR CIRCUIT, THE VOLTMETER INDICATES THE EXCITATION  
VOLTAGE FOR THE PRESSURE TRANSDUCER. M3 IS USED IN TANK NO. 1 CIRCUIT,  
M4 IS USED IN TANK NO. 2 CIRCUIT.

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SUBSYSTEM: GALLILEO RPM TANK MONITOR

ITEM NAME: CURRENT LOOP<sup>VOLT</sup>METER

CRITICALITY OF THIS  
FAILURE MODE: 1S

- FAILURE MODE:  
NO OUTPUT READING FROM THE VOLTMETER IN RESPONSE TO AN INPUT SIGNAL.

MISSION PHASE:  
LS LANDING SAFING

- VEHICLE/PAYLOAD/KIT EFFECTIVITY: 104 ATLANTIS STS-34
- CAUSE:  
STRUCTURAL FAILURE, CONTAMINATION, VIBRATION, MECHANICAL SHOCK,  
ELECTRICAL STRESS, THERMAL STRESS
- CRITICALITY 1/1 DURING INTACT ABORT ONLY? N

- REDUNDANCY SCREEN A) N/A  
■ B) N/A  
■ C) N/A

PASS/FAIL RATIONALE:

- A)  
■ B)  
■ C)

- FAILURE EFFECTS -

- (A) SUBSYSTEM:  
LOSS OF KNOWLEDGE OF THE ACCURACY OF PRESSURE DATA, POSSIBLE UNDETECTED  
RUNAWAY TANK PRESSURE.
- (B) INTERFACING SUBSYSTEM(S):  
POSSIBLE TANK RUPTURE, FIRE/EXPLOSION.
- (C) MISSION:  
POSSIBLE LOSS OF THE GALILEO/IUS PAYLOAD.

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- (D) CREW, VEHICLE, AND ELEMENT(S):  
POSSIBLE LOSS OF THE ORBITER, POSSIBLE LOSS OF LIFE.
- (E) FUNCTIONAL CRITICALITY EFFECTS:  
POSSIBLE UNDETECTED RUNAWAY TANK PRESSURE, TANK RUPTURE, POSSIBLE FIRE/  
EXPLOSION, POSSIBLE LOSS OF THE ORBITER, POSSIBLE LOSS OF LIFE.

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 - DISPOSITION RATIONALE -  
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(A) DESIGN

METER ELECTRONICALLY CONVERTS AN INPUT OF 4 TO 20 ma INTO 0 TO 1000 COUNTS SCALED BY THE MANUFACTURER. THIS DEVICE IS LOOP POWERED REQUIRING NO OTHER POWER SOURCE.

(B) TEST

CALIBRATION LABORATORY EACH METER TO THE REQUIREMENTS SPECIFIED ON G073-700176.

(C) INSPECTION

THE METER IS INSPECTED FOR WEIGHT, WORKMANSHIP, FINISH, DIMENSIONS, CONSTRUCTION, CLEANNESS, IDENTIFICATION MARKING AND CERTIFIED MATERIALS AND PROCESSES. ACCEPTANCE TEST SPECIFICATION ARE APPROVED BY QUALITY ASSURANCE AND PROVIDES ISOLATION, CONTINUITY AND FUNCTIONAL TESTING OF THE ASSEMBLY.

(D) FAILURE HISTORY

NO GENERIC FAILURES

(E) OPERATIONAL USE

CONTINGENCY ONLY. THE METER LOCATED IN THE G073-700176 CONVERTS AN INPUT OF 4 TO 20 ma INTO 0 TO 1000 COUNTS AT THE REMOTE LOCATION. USAGE IS ONE TIME ONLY IF MISSION IS ABORTED WITH CALIBED ON BOARD. THIS DEVICE FOR SELF VERIFICATION AND IS NOT CRITICAL TO SYSTEM OPERATION. A SPARE ASSEMBLY WILL BE AVAILABLE AT THE ABORT SITE.

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 - APPROVALS -  
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RELIABILITY ENGINEERING: W. R. MARLOWE  
 DESIGN ENGINEERING : L. COLEMAN  
 QUALITY ENGINEERING : C. ROLLINS  
 NASA RELIABILITY :  
 NASA SUBSYSTEM MANAGER :  
 NASA QUALITY ASSURANCE :

: W. R. Marlowe  
 : L. Coleman  
 : C. Rollins  
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