

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : EPD&C - AFT-RCS FMEA NO 05-6KA-2302 -1 REV:11/03/87

ASSEMBLY :				CRIT. FUNC:	1R
P/N RI :	V070-753262			CRIT. HDW:	2
P/N VENDOR:		VEHICLE	102	103	104
QUANTITY :2		EFFECTIVITY:	X	X	X
:TWO		PHASE(S):	PL	LO X	OO X DO X LS
:					

PREPARED BY:		REDUNDANCY SCREEN:	A-PASS	B-PASS	C-PASS
DES	D SOVEREIGN	APPROVED BY:	APPROVED BY (NASA):		
REL	J BEEKMAN	DES	SSM		
QE		REL	REL <i>[Signature]</i>		
		QE	QE <i>[Signature]</i>		

7-11-87

ITEM:

DEDICATED SIGNAL CONDITIONER - LEFT AND RIGHT AFT RCS THRUSTER CHAMBER PRESSURE AND PROPELLANT INJECTOR TEMPERATURE MEASUREMENTS.

FUNCTION:

PROVIDES SIGNAL CONDITIONING FOR RCS PROPELLANT INJECTOR TEMPERATURES AND THRUSTER CHAMBER PRESSURE MEASUREMENTS FOR MULTIPLEXER-DEMUTIPLEXER (MDM) AND REACTION JET DRIVER AFT INPUTS.
51V75A77, 52V75A78.

FAILURE MODE:

ALL CREDIBLE MODES, LOSS OF OUTPUT, IMPROPER OUTPUT.

CAUSE(S):

PIECE PART FAILURE, CONTAMINATION THERMAL AND MECHANICAL SHOCK, VIBRATION.

EFFECT(S) ON:

(A)SUBSYSTEM (B)INTERFACES (C)MISSION (D)CREW/VEHICLE

(A) LOSS OF NON-REDUNDANT PRESSURE AND TEMPERATURE MEASUREMENTS.

(B) LOSS OF CRITICAL DATA FROM THRUSTERS (TEMPERATURES AND PRESSURES) GOVERNING USE OR DESELECTION BY GENERAL PURPOSE COMPUTER (GPC) SOFTWARE (REDUNDANCY MANAGEMENT). NO EFFECT - REDUNDANT THRUSTERS AVAILABLE TO COMPLETE FUNCTION.

(C,D) NO EFFECT.

(E) FUNCTIONAL CRITICALITY EFFECT - POSSIBLE LOSS OF CREW/VEHICLE DUE TO INABILITY TO PERFORM EXTERNAL TANK SEPARATION AND ENTRY MANEUVERS. REQUIRES ONE OTHER FAILURE (THRUSTER) BEFORE THE EFFECT IS MANIFESTED.

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DISPOSITION & RATIONALE:

(A) DESIGN (B) TEST (C) INSPECTION (D) FAILURE HISTORY (E) OPERATIONAL USE

(A) DESIGN

CONSTRUCTION IS MODULAR. ALL CIRCUITS EMPLOY TYPICAL OP-AMPS AND DISCRETE EEE PARTS SELECTED FROM MF0004-400 (OPPL) AND DERATED ACCORDINGLY. MODULES CONFORMALLY COATED FOR ENVIRONMENTAL PROTECTION.

(B) TEST

ALL MODULES AND CHASSIS RECEIVE ATP, AVT, AND ATT. QUAL UNIT RECEIVED ENVIRONMENTAL TESTING, INCLUDING - SHOCK, THERMAL AND VIBRATION.

GROUND TURNAROUND TEST - COMPONENT CHECKED OUT EVERY FLIGHT DURING GROUND TURNAROUND BY MONITORING MEASUREMENTS DURING POWERUP.

(C) INSPECTION

RECEIVING INSPECTION

RECEIVING INSPECTION PERFORMS VISUAL AND DIMENSIONAL EXAMINATION OF ALL INCOMING PARTS. CERTIFICATION RECORDS/TEST REPORTS ARE MAINTAINED CERTIFYING MATERIALS AND PHYSICAL PROPERTIES.

CONTAMINATION CONTROL

QC VERIFIES REQUIRED PROCEDURES. SHOP PRACTICES ARE UTILIZED FOR CONTAMINATION CONTROL.

ASSEMBLY/INSTALLATION

A DETAILED INSPECTION IS PERFORMED ON ALL PARTS PRIOR TO NEXT ASSEMBLY. A CRIMP LOG IS MAINTAINED, AND CRIMP TOOL CALIBRATION VERIFICATION COMPLIES WITH MSC-SPEC-Q-1A.

CRITICAL PROCESSES

ALL CRITICAL PROCESSES AND CERTIFICATIONS ARE MONITORED AND VERIFIED BY INSPECTION.

TESTING

ATP OBSERVED AND VERIFIED BY QC.

HANDLING/ PACKAGING

PARTS PACKAGED AND PROTECTED ARE VERIFIED BY INSPECTION TO APPLICABLE REQUIREMENTS. SPECIAL HANDLING PER DOCUMENTED INSTRUCTIONS IS VERIFIED, TO PRECLUDE DAMAGE, SHOCK, AND CONTAMINATION DURING COMPONENT HANDLING/TRANSPORTING/PACKAGING BETWEEN WORK STATIONS.

(D) FAILURE HISTORY

THERE ARE NO DEDICATED SIGNAL CONDITIONER (DSC) GENERIC FAILURE TRENDS ESTABLISHED FOR THE FAILURE MODES RELATED TO THIS TEMPERATURE MONITORING FUNCTION. PROBABILITY OF FAILING STATIC IN THE TOLERABLE RANGE AND PRECLUDING AN ALARM IS EXTREMELY REMOTE.

(E) OPERATIONAL USE

NO ACTION POSSIBLE DURING ASCENT. DURING ENTRY IF MORE THAN ONE JET PER DIRECTION HAS BEEN DESELECTED BY REDUNDANCY MANAGEMENT, RESELECT ALL JETS IN THAT DIRECTION TO ENSURE ADEQUATE VEHICLE CONTROL.