SHUTTLE CRITICAL ITEMS LIST - ORBITER

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

ASSEMBLY :
P/N RI :V070-753262
P/N VENDOR:
QUANTITY :1
:ONE
:

CRIT. FUNC: 2
CRIT. HDW: 2

VEHICLE EFFECTIVITY:	102	103	104
	X	X	X

PHASE(S): PL LO X OO X DO LS

REDUNDANCY SCREEN: A- B- C-

PREPARED BY:
DES D SOVEREIGN
REL J BEERMAN
QE

APPROVED BY:
DES
REL
QE

APPROVED BY (NASA):
SSM
REL
QE

ITEM:
DEDICATED SIGNAL CONDITIONER - FORWARD RCS, THRUSTER CHAMBER PRESSURE AN PROPELLANT INJECTOR TEMPERATURE MEASUREMENTS.

FUNCTION:
PROVIDES SIGNAL CONDITIONING FOR RCS PROPELLANT INJECTOR TEMPERATURES AN MEASUREMENTS FOR THRUSTER CHAMBER PRESSURE MULTIPLEXER-DEMULTIPLEXER (MDM) AND REACTION JET DRIVER FORWARD INPUTS. 82V75A17.

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 ANALOG TRANSDUCER DATA TO MULTIPLEXER-DEMULTIPLEXER (MDM).

(B) LOSS OF CRITICAL THRUSTER THERMAL DATA RESULTS IN DESELECTION OF PRIMARY AND/OR VERNIER JETS.

(C) POSSIBLE MISSION MODIFICATION OR EARLY MISSION TERMINATION DUE TO INABILITY TO USE VERNIER THRUSTERS. PRIMARY THRUSTERS WOULD BE REQUIRED RESULTING IN HIGHER PROPELLANT CONSUMPTION RATES.

(D) NO EFFECT.

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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

IF VERNIER THRUSTER CAPABILITY IS LOST, THE PRIMARY THRUSTERS CAN BE USED FOR THE VERNIER FUNCTION. SOME MISSION OBJECTIVES MAY NOT BE MET DUE TO HIGHER PROPELLANT CONSUMPTION RATE ON PRIMARY THRUSTERS. MICROGRAVITY EXPERIMENTS WILL BE DISRUPTED DUE TO HIGHER ACCELERATION RATE OF PRIMARY THRUSTERS.