SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : LIFE SUPPORT FMEA NO 06-2E -0418 -1 REV:10/29/

ASSEMBLY : VENT AND DUMP EQUIPMENT CRIT. FUNC: 1
P/N RI : ME363-0043-0003/-0005 CRIT. HDW:
P/N VENDOR: 66-2870-3 VEHICLE 102 103 104
QUANTITY : 1 EFFECTIVITY: X X X
: PHASE(S): PL LO GO X DO X LS
: ONE PER VEHICLE

REDUNDANCY SCREEN: A-PASS B-PASS C-PA

PREPARED BY:		APPROVED BY:		APPROVED BY (NASA):	
DES	S. CASTILLO	DES		SSM	
REL	L. SCHASCHL	REL		REL	
QE	M. SAVALA	QE		QE	

ITEM:
NOZZLE, VACUUM VENT

FUNCTION:
VENTS WASTE GASES FROM THE WASTE COLLECTOR, HYDROGEN FROM THE HYDROGEN SEPARATOR, AIR FROM THE AIRLOCK AND N2 FROM THE NITROGEN RELIEF VALVES

FAILURE MODE:
RESTRICTED FLOW

CAUSE(S):
CONTAMINATION

EFFECT(S) ON:
(A)SUBSYSTEM (B)INTERFACES (C)MISSION (D)CREW/VEHICLE

(A) LOSS OF ONE AIRLOCK DEPRESSURIZATION PATH. POSSIBLE BUILDUP OF HYDROGEN.

(B, C) NO EFFECT.

(D) SECOND ASSOCIATED FAILURE (CABIN LEAK INTO DUCT), CAN PRESSURIZE DUCT WITH CABIN AIR (O2) AND CREATE AN EXPLOSIVE MIXTURE. AN EXPLOSION CAN RUPTURE VACUUM DUCT AND CAUSE LOSS OF CABIN AIR AND CREW/VEHICLE.

DISPOSITION & RATIONALE:
(A)DESIGN (B)TEST (C)INSPECTION (D)FAILURE HISTORY (E)OPERATIONAL USE

(A) DESIGN
THE 2 INCH DIAMETER FLANGED OUTLET IS CONSTRUCTED OF 21-6-9 CRES. THE 2 INCH OUTSIDE DIAMETER TUBING (0.035 INCH WALL THICKNESS) IS CONSTRUCTED OF 321 CRES. THE NOZZLE ASSEMBLY IS CLEANED AND PASSIVATED PER QQ-P-35. A PLUG PROTECTS THE DUCT AND NOZZLE AGAINST CONTAMINATION DURING GROUND OPERATIONS. TWO HEATER ELEMENTS. ALL OF THE MATERIALS USED ARE COMPATIBLE WITH THE WORKING FLUIDS.

(B) TEST
QUALIFICATION TESTS FOR 100 MISSION LIFE INCLUDE: RANDOM VIBRATION INCREASING AT THE RATE OF 6 db/OCTAVE FROM 20 TO 90 HZ; CONSTANT AT 1 G SQ/HZ TO 300 HZ; DECREASING AT 6 DB/OCTAVE TO 2000 HZ, 34 MINUTES/AXIS,

AND SHOCK TESTED AT 20 G PER AXIS.

ACCEPTANCE TESTS - PRESSURE TEST OF 60 PSID INTERNAL PRESSURE FOR 5 MINUTES.

OMRSD: FLOW THROUGH NOZZLE IS VERIFIED BEFORE EACH FLIGHT.

(C) INSPECTION

RECEIVING INSPECTION
MATERIAL IS VERIFIED BY PHYSICAL-CHEMICAL REPORTS AT RECEIVING INSPECTION.

CONTAMINATION CONTROL
CLEANLINESS LEVELS AND CONTAMINATION CONTROL PLAN ARE VERIFIED BY INSPECTION.

CRITICAL PROCESSES
BRAZING AND PASSIVATION PROCESSES ARE VERIFIED BY INSPECTION. TIG WEI SCHEDULES ARE VERIFIED BY INSPECTION.

ASSEMBLY/INSTALLATION
CRITICAL DIMENSIONS ARE VERIFIED BY INSPECTION. MANUFACTURING PROCESSES, INSTALLATION, AND ASSEMBLY ARE VERIFIED BY INSPECTION.

NONDESTRUCTIVE EVALUATION
MATERIAL DEFECTS ARE VERIFIED BY X-RAY INSPECTION.

TESTING
BRAZED JOINTS ARE SUBJECTED TO VISUAL INSPECTION AND LEAK TEST. WATEF NOZZLE IS SUBJECTED TO STATIC PULL TEST FOR WIRE SEPARATION DURING ACCEPTANCE TEST. ACCEPTANCE TEST IS VERIFIED BY INSPECTION.

HANDLING/PACKAGING
PARTS PROTECTION IS VERIFIED BY INSPECTION.

(D) FAILURE HISTORY
NO FAILURES.

(E) OPERATIONAL USE
TO ISOLATE THE 02 FROM THE H2, CLOSE THE VACUUM VENT VALVE ON THE WAST COLLECTOR SYSTEM (WCS) PANEL. FOR AIRLOCK DEPRESSURIZATION, USE OUTEF HATCH EQUALIZATION VALVES.