

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM :EW&I/APU

FMEA NO 05-7N -2000 -1 REV:Q6/02/89

LOCATION :SEE TABLE 05-7N-2000-1

P/N RI	QUANTITY	VEHICLE	102	103	104	105
1. NB6GE18-32XXXX	3					
2. NB6GE24-61XXXX	4					
3. NLS6GT20-35XX	4	EFFECTIVITY	X	X	X	X
4. NLS6GT22-35XX	3					
5. NLS6GT24-35XX	12	PHASE(S):	PL	LO	OO X DO	LS X

CRIT.FUNC: 1
CRIT. HDW: 1

REDDUNDANCY SCREEN: A- N/A B- N/A C- N/A

APPROVED BY (NASA):

PREPARED BY: APPROVED BY:
DES A BAIZ T- DES [Signature]
REL T KIMURA TK REL [Signature]
QE J COURSEN DWTQE [Signature]

EW&I SSM [Signature] 7/6/89
EW&I REL [Signature] 7/2/89
SSM [Signature] 7-6-89 for Scott
REL [Signature] 7-6-89
QE [Signature]

ITEM:

CONNECTOR, PLUG, [(1.) 32 #20 CONTACTS, (2.) 61 #20 CONTACTS, (3.) 79 #22 CONTACTS, (4.) 100 #22 CONTACTS, (5.) 128 #22 CONTACTS] - AUXILIARY POWER UNIT (APU) START/RUN CONTROL CIRCUIT

FUNCTION:

PROVIDES MATE/DEMATE CAPABILITY FOR WIRING WHICH CONTAINS START COMMANDS TO APU CONTROLLERS 1, 2 AND 3. FOR PLUG AND SHORTED PIN-TO-PIN PIN/SOCKET REFERENCE DESIGNATORS, SEE TABLE 05-7N-2000-1.

FAILURE MODE:

PIN-TO-PIN SHORT (HOT)

CAUSE(S):

PIECE PART FAILURE, CONTAMINATION, VIBRATION, MECHANICAL SHOCK, PROCESSING ANOMALY, THERMAL STRESS

EFFECT(S) ON:

(A)SUBSYSTEM (B)INTERFACES (C)MISSION (D)CREW/VEHICLE (E)FUNCTIONAL CRITICALITY EFFECT:

(A,B) START/RUN COMMAND INADVERTENTLY GIVEN - UNSAFE TO START APU IF GAS GENERATOR (GG) TEMPERATURE IS IN EXCESS OF 390 DEGREE F.

(C,D) POSSIBLE LOSS OF MISSION, CREW/VEHICLE IF A CRITICAL PIN IN THE CONNECTOR SHORTS TO A HIGH DC SOURCE (+28V) WHICH MAY CAUSE AN APU INADVERTENT HOT RESTART BEFORE SUFFICIENT GG COOLING IS ACHIEVED RESULTING IN DETONATION, WHICH MAY CAUSE HYDRAZINE SPILLAGE.

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THE APU SYSTEM IS VULNERABLE TO THIS CONDITION ON ORBIT AND POST LANDING ONLY AFTER APU SHUTDOWN AND PRIOR TO TURNING OFF CONTROLLER POWER (NOMINALLY LESS THAN ONE MINUTE).

REDESIGNED CONTROLLERS ARE BEING BUILT (-75 CONTROLLER - FIRST USE OV-102, FLIGHT 8). CRIT 1/1 STILL EXISTS BUT ONLY FOR THE DURATION AFTER APU SHUTDOWN AND PRIOR TO CLOSING THE APU FUEL ISOLATION VALVE (NOMINALLY SEVERAL SECONDS).

REFERENCE CIL 05-6N-2037-2

DISPOSITION & RATIONALE:

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

(A, B, C, D) DISPOSITION AND RATIONALE

REFER TO APPENDIX K:

ITEM NO. 1 - TYPE NB CONNECTOR, CIRCULAR, MINIATURE

ITEM NO. 3 - TYPE NLS CONNECTOR, CIRCULAR, MINIATURE

(B) GROUND TURNAROUND TEST

APU 1/2/3 CONTROLLER TEST THROUGH GROUND CONNECTION PERFORMED EVERY FLOW.

(E) OPERATIONAL USE

NONE

TABLE 05-7N-2000-1

PART NUMBER	PLUG REFERENCE DESIGNATOR	CONNECTOR LOCATION	APU NO.	PIN/SOCKET DESIG.
1. NB6GE18-32XXXX	54V77W1P106	APU NO. 1 CONTROLLER	1	R-d
	55V77W1P106	APU NO. 2 CONTROLLER	2	R-d
	56V77W1P106	APU NO. 3 CONTROLLER	3	R-d
2. NB6GE24-61XXXX	50V77W33P157	AVIONICS BAY 4	3	j-K j-L
	50V77W49P135	AVIONICS BAY 4	1	NN-FF NN-GG NN-PP
	50V77W49P262	AVIONICS BAY 5	1	NN-FF NN-GG
			2	g-G g-z

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TABLE 05-7N-2000-1, CONT'D

PART NUMBER	PLUG REFERENCE DESIGNATOR	CONNECTOR LOCATION	APU NO.	PIN/ SOCKET DESIG.
2. NB6GE24-61XXXX (CONT'D)	50V77W49P368	AVIONICS BAY 6	2	g-G
3. NLS6GT20-35XX	30V77W1P345	576 BULKHEAD	2	34-35 34-54
	30V77W1P665	FLIGHT DECK	1	37-38 37-57 37-58
	30V77W2P662	AFT RIGHT PROD BREAK	2	62-42 62-43 62-63 62-74
	40V77W15P345	576 BULKHEAD	2	34-35 34-54
4. NLS6GT22-35XX	30V77W2P9421	PANEL R2	1	62-51 62-52 62-61 62-72 62-73
			3	64-53 64-54 64-74 64-75
	30V77W2P9422	PANEL R2	1	62-51 62-52 62-61 62-72 62-73
			2	64-53 64-54 64-74 64-75

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TABLE 05-7N-2000-1. CONT'D

PART NUMBER	PLUG REFERENCE DESIGNATOR	CONNECTOR LOCATION	APU NO.	PIN/ SOCKET DESIG.
4. NLS6GT22-35XX (CONT'D)	30V77W2P9423	PANEL R2	2	62-51 62-52 62-61 62-72 62-73
			3	64-53 64-54 64-74 64-75
5. NLS6GT24-35XX	30V77W1P343	576 BULKHEAD	1	13-14 13-21 13-22
			3	6-13
	30V77W2P320	576 BULKHEAD	3	13-14 13-21 13-22
			30V77W2P346	576 BULKHEAD
	2	13-21 13-22		
	40V77W85P343	576 BULKHEAD	1	13-14 13-21 13-22
			3	6-13
	40V77W85P419	1307 BULKHEAD	1	13-14 13-21 13-22
			3	6-13
	40V77W86P346	576 BULKHEAD	1	6-13
2			13-21 13-22	

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PART NUMBER	PLUG REFERENCE DESIGNATOR	CONNECTOR LOCATION	APU NO.	PIN/ SOCKET DESIG.
5. NLS6CT24-35XX (CONT'D)	40V77W86P424	1307 BULKHEAD	1	6-13
			2	13-14 13-21 13-22
	40V77W88P320	576 BULKHEAD	3	13-14 13-21 13-22
	40V77W88P432	1307 BULKHEAD	3	13-14 13-21 13-22
	50V77W33P183	AVIONICS BAY 4	1	13-14 13-21 13-22 13-23
			3	6-13
	50V77W34P288	AVIONICS BAY 5	1	6-13
			2	13-6 13-14 13-21 13-22 13-23
	56V77W1P313	AFT LCA-3	2	23-14 23-33 23-34
			3	7-13 7-14