INDEPENDENT ORBITER ASSESSMENT

ASSESSMENT OF THE EXTRAVEHICULAR MOBILITY UNIT VOLUME 2 OF 2

10 MARCH 1988

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-379
NASA FMEA #: 330-FM16

NASA DATA:
BASELINE [ ]
NEW [ ]

SUBSYSTEM: EMU
MDAC ID: 379
ITEM: COMMON MULTIPLE CONNECTOR (ITEM 330)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[N /N]	[N]	[N]	[N]	[N]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
DUE TO NON-REDUNDANCY OF SCU, THE IOA AGREES WITH THE NASA CRITICALITY AND IS IN AGREEMENT WITH THE REMAINING ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-731X
NASA FMEA #: 330-FM17

NASA DATA:
BASELINE [ ]
NEW [ ]

SUBSYSTEM: EMU
MDAC ID: 731
ITEM: COMMON MULTIPLE CONNECTOR (ITEM 330)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[ ]	[ ]	[ ]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-732X
NASA FMEA #: 330-FM18

NASA DATA:
BASELINE [ ]
NEW [ ]

SUBSYSTEM: EMU
MDAC ID: 732
ITEM: COMMON MULTIPLE CONNECTOR (ITEM 330)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[ ]	[ ]	[ ]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-372
NASA FMEA #: 330-FM19

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 372
ITEM: COMMON MULTIPLE CONNECTOR (ITEM 330)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[P]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-369
NASA FMEA #: 330-FM2

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 369
ITEM: COMMON MULTIPLE CONNECTOR (ITEM 330)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /1R]	[P]	[NA]	[P]	[X] *
IOA	[3 /1R]	[P]	[F]	[P]	[X]
COMPARE	[/]	[ ]	[N]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT BUT THE IOA RECOMMENDS COMBINING 330-FM1 AND FM2 TO REFLEXT THE ENTIRE MISSION SCENARIO. THE IOA AGREES WITH THE NASA SCREEN B.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-373
NASA FMEA #: 330-FM20

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 373
ITEM: COMMON MULTIPLE CONNECTOR (ITEM 330)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[P]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-371
NASA FMEA #: 330-FM3

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 371
ITEM: COMMON MULTIPLE CONNECTOR (ITEM 330)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[P]	[P]	[X] *
IOA	[2 /1R]	[P]	[F]	[P]	[X]
COMPARE	[/]	[ ]	[N]	[ ]	[ ]
RECOMMENDATIONS: (If different from NASA)	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA SCREEN B AND IS IN AGREEMENT WITH THE REMAINDER OF THE ANALYSIS. HOWEVER, THE IOA DOES RECOMMEND COMBINING NASA FAILURE MODES 330-FM3 AND -FM4 TO REFLECT THE MISSION SCENARIO.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-371A
NASA FMEA #: 330-FM4

NASA DATA:
BASELINE [ ]
NEW [ ]

SUBSYSTEM: EMU
MDAC ID: 371
ITEM: COMMON MULTIPLE CONNECTOR (ITEM 330)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /1R]	[P]	[F]	[P]	[ ]
COMPARE	[/N]	[N]	[N]	[N]	[N]
RECOMMENDATIONS: (If different from NASA)					
	[2 /1R]	[P]	[P]	[P]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA RECOMMENDS COMBINING NASA FAILURE MODES 330-FM3 AND -FM4 TO REFLECT THE COMPLETE MISSION SCENARIO. THEREFORE, A 2/1RB CRITICALITY SHOULD BE ASSIGNED.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-370
NASA FMEA #: 330-FM5

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 370
ITEM: COMMON MULTIPLE CONNECTOR (ITEM 330)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[F]	[P]	[P]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/]	[N]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[P]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT EXCEPT FOR SCREEN A WHICH THE IOA RECOMMENDS PASSING DUE TO "CAPABILITY" FOR TEST. ADDITIONALLY THE IOA RECOMMENDS COMBINING 330-FM5 AND -FM6 TO REFLECT THE ENTIRE MISSION SCENARIO.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-370A
NASA FMEA #: 330-FM6

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 370
ITEM: COMMON MULTIPLE CONNECTOR (ITEM 330)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[ ]
COMPARE	[/N]	[N]	[N]	[N]	[N]

RECOMMENDATIONS: (If different from NASA)

[2 /1R]	[P]	[P]	[P]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA RECOMMENDS A 2/1R CRITICALITY TO REFLECT THE ENTIRE MISSION SCENARIO WHICH WOULD ALSO SUGGEST COMBINING FAILURE MODES 330-FM5 AND -FM6.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-381
NASA FMEA #: 330-FM7

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 381
ITEM: COMMON MULTIPLE CONNECTOR (ITEM 330)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[P]	[P]	[ ] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-380
NASA FMEA #: 330-FM8

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 380
ITEM: COMMON MULTIPLE CONNECTOR (ITEM 330)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[P]	[P]	[ ] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-374
NASA FMEA #: 330-FM9

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 374
ITEM: COMMON MULTIPLE CONNECTOR (ITEM 330)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[P]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT. CAUSES SHOULD BE EXPANDED TO INCLUDE VIBRATION.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-484
NASA FMEA #: 350-FM1

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 484
ITEM: DCM ELECTRONICS (ITEM 350)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[F]	[P]	[X] *
IOA	[3 /2R]	[P]	[F]	[P]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-766X
NASA FMEA #: 350-FM10

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 766
ITEM: DCM ELECTRONICS (ITEM 350)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[P]	[P]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-767X
NASA FMEA #: 350-FM11

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 767
ITEM: DCM ELECTRONICS (ITEM 350)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /3]	[ ]	[ ]	[ ]	[ ] *
IOA	[3 /3]	[ ]	[ ]	[ ]	[ ]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]
RECOMMENDATIONS: (If different from NASA)	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-768X
NASA FMEA #: 350-FM12

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 768
ITEM: DCM ELECTRONICS (ITEM 350)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /3]	[ ]	[ ]	[ ]	[ ] *
IOA	[3 /3]	[ ]	[ ]	[ ]	[ ]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]
RECOMMENDATIONS: (If different from NASA)	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-769X
NASA FMEA #: 350-FM13

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 769
ITEM: DCM ELECTRONICS (ITEM 350)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /3]	[ ]	[ ]	[ ]	[ ] *
IOA	[3 /1R]	[P]	[P]	[P]	[ ]
COMPARE	[/N]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[3 /1R]	[P]	[P]	[P]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA RECOMMENDS A NEW CRITICALITY TO REFLECT THE FOLLOWING SCENARIO. WHEN THE DISCRETE FAILS ON THE CWS DOES NOT MONITOR FOR "HIGH OXYGEN USE RATE" AND "H20 OFF STATUS". THIS CAN POSSIBLY COMBINE WITH AN OXYGEN LEAK AND REQUIRE EMERGENCY USE OF THE
SOP. SOP FAILURE CAN RESULT IN LOSS OF LIFE.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-472
NASA FMEA #: 350-FM14

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 472
ITEM: DCM ELECTRONICS

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /3]	[ ]	[ ]	[ ]	[ ] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[/N]	[N]	[N]	[N]	[ ]
RECOMMENDATIONS: (If different from NASA)	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-471
NASA FMEA #: 350-FM15

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 471
ITEM: DCM ELECTRONICS

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /3]	[ ]	[ ]	[ ]	[ ]
COMPARE	[N /N]	[ ]	[ ]	[ ]	[N]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-469
NASA FMEA #: 350-FM16

NASA DATA:
BASELINE [ ]
NEW [ ]

SUBSYSTEM: EMU
MDAC ID: 469
ITEM: DCM ELECTRONICS

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /1R]	[P]	[F]	[P]	[X] *
IOA	[3 /3]	[ ]	[ ]	[ ]	[ ]
COMPARE	[/N]	[N]	[N]	[N]	[N]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-470
NASA FMEA #: 350-FM17

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 470
ITEM: DCM ELECTRONICS

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[N /N]	[N]	[N]	[N]	[N]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-498
NASA FMEA #: 350-FM18

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 498
ITEM: DCM ELECTRONICS

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[F]	[P]	[X] *
IOA	[2 /2]	[ ]	[ ]	[ ]	[X]
COMPARE	[/N]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-499
NASA FMEA #: 350-FM19

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 499
ITEM: DCM ELECTRONICS

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[ ]	[ ]	[ ]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-492
NASA FMEA #: 350-FM20

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 492
ITEM: DCM ELECTRONICS

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[P]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]
RECOMMENDATIONS: (If different from NASA)	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT; HOWEVER, THE IOA RECOMMENDS CHANGING THE FAILURE MODE FROM DRIFTS LOW TO FAILS OFF DUE TO AN ELECTRICAL OPEN.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-493
NASA FMEA #: 350-FM21

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 493
ITEM: DCM ELECTRONICS

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /3]	[ ]	[ ]	[ ]	[ ] *
IOA	[2 /2]	[P]	[P]	[P]	[X]
COMPARE	[N /N]	[N]	[N]	[N]	[N]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-490
NASA FMEA #: 350-FM22

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 490
ITEM: DCM ELECTRONICS

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[F]	[P]	[X] *
IOA	[2 /2]	[P]	[P]	[P]	[X]
COMPARE	[/N]	[ ]	[N]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-494
NASA FMEA #: 350-FM22

NASA DATA:
BASELINE [ ]
NEW [ ]

SUBSYSTEM: EMU
MDAC ID: 494
ITEM: DCM ELECTRONICS

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[F]	[P]	[X] *
IOA	[2 /2]	[P]	[P]	[P]	[X]
COMPARE	[/N]	[ ]	[N]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-495
NASA FMEA #: 350-FM22

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 495
ITEM: DCM ELECTRONICS

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[F]	[P]	[X] *
IOA	[2 /2]	[P]	[P]	[P]	[X]
COMPARE	[/N]	[ ]	[N]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-497
NASA FMEA #: 350-FM22

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 497
ITEM: DCM ELECTRONICS

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[F]	[P]	[X] *
IOA	[2 /2]	[ ]	[ ]	[ ]	[X]
COMPARE	[/N]	[N]	[N]	[N]	[ ]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-481
NASA FMEA #: 350-FM23

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 481
ITEM: DCM ELECTRONICS (ITEM 350)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/N]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-770X
NASA FMEA #: 350-FM24

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 770
ITEM: DCM ELECTRONICS (ITEM 350)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /1R]	[P]	[NA]	[P]	[ ] *
IOA	[3 /1R]	[P]	[F]	[P]	[X]
COMPARE	[/]	[ ]	[N]	[ ]	[N]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[F]	[ ]	[A] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT EXCEPT ON SCREEN B. THE IOA RECOMMENDS FAILURE OF SCREEN B BECAUSE THE FAILED FUNCTION IS NOT DETECTABLE NOR IS IT AUTOMATICALLY BACKED UP.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-771X
NASA FMEA #: 350-FM25

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 771
ITEM: DCM ELECTRONICS (ITEM 350)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[F]	[P]	[X] *
IOA	[2 /1R]	[P]	[F]	[P]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-772X
NASA FMEA #: 350-FM26

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 772
ITEM: DCM ELECTRONICS (ITEM 350)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /1R]	[P]	[NA]	[P]	[ ] *
IOA	[3 /1R]	[P]	[F]	[P]	[X]
COMPARE	[/]	[ ]	[N]	[ ]	[N]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[F]	[ ]	[A] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT EXCEPT ON SCREEN B. THE IOA RECOMMENDS FAILURE OF SCREEN B BECAUSE THE FAILURE IS NOT DETECTABLE NOR IS THE FAILED FUNCTION AUTOMATICALLY BACKED UP.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-773X
NASA FMEA #: 350-FM27

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 773
ITEM: DCM ELECTRONICS (ITEM 350)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[F]	[P]	[X] *
IOA	[2 /1R]	[P]	[F]	[P]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-774X
NASA FMEA #: 350-FM28

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 774
ITEM: DCM ELECTRONICS (ITEM 350)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /3]	[ ]	[ ]	[ ]	[ ] *
IOA	[3 /3]	[ ]	[ ]	[ ]	[ ]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]
RECOMMENDATIONS: (If different from NASA)	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-775X
NASA FMEA #: 350-FM29

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 775
ITEM: DCM ELECTRONICS (ITEM 350)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /3]	[ ]	[ ]	[ ]	[ ] *
IOA	[/]	[ ]	[ ]	[ ]	[ ]
COMPARE	[N /N]	[ ]	[ ]	[ ]	[ ]
RECOMMENDATIONS: (If different from NASA)	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA DOES NOT CONSIDER THIS A FAILURE MODE OF THE SYSTEM BUT RATHER AN ANOMALY. AS SUCH, THE IOA RECOMMENDS ITS DELETION FROM THE NASA FMEA.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-475
NASA FMEA #: 350-FM3

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 475
ITEM: DCM ELECTRONICS (ITEM 350)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[P]	[P]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-477
NASA FMEA #: 350-FM3

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 477
ITEM: DCM ELECTRONICS (ITEM 350)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[P]	[P]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-489
NASA FMEA #: 350-FM3

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 489
ITEM: DCM ELECTRONICS

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[P]	[P]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ]
(ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-776X
NASA FMEA #: 350-FM30

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 776
ITEM: DCM ELECTRONICS (ITEM 350)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /3]	[ ]	[ ]	[ ]	[ ] *
IOA	[/]	[ ]	[ ]	[ ]	[ ]
COMPARE	[N /N]	[ ]	[ ]	[ ]	[ ]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA DOES NOT CONSIDER THE IDENTIFIED NASA "FAILURE MODE" AS CREDIBLE. THE IOA CONSIDERS IT APPLICABLE TO A HAZARD ANALYSIS BUT NOT AN FMEA. THE IOA RECOMMENDS ITS DELETION FROM THE NASA FMEA.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-482
NASA FMEA #: 350-FM31

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 482
ITEM: DCM ELECTRONICS (ITEM 350)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[F]	[P]	[X] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[/]	[ ]	[N]	[ ]	[N]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ]
(ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT EXCEPT ON SCEEN B WHICH THE IOA NOW AGREES WITH.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-777X
NASA FMEA #: 350-FM32

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 777
ITEM: DCM ELECTRONICS (ITEM 350)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /1R]	[P]	[NA]	[P]	[ ] *
IOA	[3 /1R]	[P]	[F]	[P]	[X]
COMPARE	[/]	[ ]	[N]	[ ]	[N]
RECOMMENDATIONS: (If different from NASA)	[/]	[ ]	[F]	[ ]	[A] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT EXCEPT ON SCREEN B, THE IOA RECOMMENDS FAILURE OF THE B SCREEN BECAUSE IT IS NOT DETECTABLE NOR IS THE FAILED FUNCTION AUTOMATICALLY BACKED UP.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-491
NASA FMEA #: 350-FM33

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 491
ITEM: DCM ELECTRONICS

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[F]	[P]	[X] *
IOA	[2 /2]	[P]	[P]	[P]	[X]
COMPARE	[/N]	[ ]	[N]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-778X
NASA FMEA #: 350-FM34

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 778
ITEM: DCM ELECTRONICS (ITEM 350)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /1R]	[P]	[F]	[P]	[X] *
IOA	[2 /1R]	[P]	[F]	[P]	[X]
COMPARE	[N /]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[2 /1R]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA RECOMMENDS A 2/1R TO REFLECT A TWO FAILURE SCENARIO WHERE THE IDENTIFIED FAILURE OCCURS THEREBY CAUSING LOSS OF THE "LOW VOLTAGE ELECTRONICS" WHICH INCLUDES C02 SENSING. IF A SECOND FAILURE (HIGH C02_ WERE TO THEN OCCUR, THE CREWPERSON COULD BE LOST.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-779X
NASA FMEA #: 350-FM35

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 779
ITEM: DCM ELECTRONICS (ITEM 350)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[F]	[P]	[X] *
IOA	[2 /1R]	[P]	[F]	[P]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ]
(ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-483
NASA FMEA #: 350-FM4

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 483
ITEM: DCM ELECTRONICS (ITEM 350)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/N]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS BUT WOULD INCLUDE ELECTRICAL OPENS ANYWHERE ALONG THE FEEDWATER VALVE CURRENT PATH.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-761X
NASA FMEA #: 350-FM5

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 761
ITEM: DCM ELECTRONICS (ITEM 350)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /1R]	[P]	[NA]	[P]	[ ] *
IOA	[3 /1R]	[P]	[F]	[P]	[X]
COMPARE	[/]	[ ]	[N]	[ ]	[N]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[F]	[ ]	[A] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT EXCEPT ON SCREEN B. THE IOA RECOMMENDS FIALURE OF SCREEN B BECAUSE THE FAILURE MODE IS NOT DETECTABLE AND DOESN'T HAVE AUTOMATIC BACKUP FOR THE REQUIRED FUNCTION. THE IOA THEREFORE RECOMMENDS INCLUSION IN THE CIL.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-762X
NASA FMEA #: 350-FM6

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 762
ITEM: DCM ELECTRONICS (ITEM 350)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /1R]	[P]	[F]	[P]	[X] *
IOA	[3 /1R]	[P]	[F]	[P]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [A] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-763X
NASA FMEA #: 350-FM7

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 763
ITEM: DCM ELECTRONICS (ITEM 350)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /3]	[ ]	[ ]	[ ]	[ ] *
IOA	[3 /3]	[ ]	[ ]	[ ]	[ ]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]
RECOMMENDATIONS: (If different from NASA)	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-764X
NASA FMEA #: 350-FM8

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 764
ITEM: DCM ELECTRONICS (ITEM 350)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /3]	[ ]	[ ]	[ ]	[ ] *
IOA	[3 /3]	[ ]	[ ]	[ ]	[ ]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]
RECOMMENDATIONS: (If different from NASA)	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-765X
NASA FMEA #: 350-FM9

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 765
ITEM: DCM ELECTRONICS (ITEM 350)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /3]	[ ]	[ ]	[ ]	[ ] *
IOA	[3 /3]	[ ]	[ ]	[ ]	[ ]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-458
NASA FMEA #: 351-FM1

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 458
ITEM: BITE INDICATOR (ITEM 363)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[F]	[P]	[X] *
IOA	[2 /2]	[ ]	[ ]	[ ]	[X]
COMPARE	[N /N]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[2 /2]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
BECAUSE A FAILED ON BITE INDICATOR CAN CREATE A QUESTION OF SYSTEM VERACITY, THE IOA RECOMMENDS A 2/2 CRITICALITY. THIS IS ALSO BASED ON THE FACT MISSION TERMINATION WILL OCCUR ONCE DETECTED DURING A PERIODIC SEQUENCE CHECK.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-457
NASA FMEA #: 351-FM2

NASA DATA:
BASELINE [ ]
NEW [ ]

SUBSYSTEM: EMU
MDAC ID: 457
ITEM: BITE INDICATOR (ITEM 363)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /1R]	[P]	[F]	[P]	[X] *
IOA	[2 /2]	[ ]	[ ]	[ ]	[X]
COMPARE	[N /N]	[N]	[N]	[N]	[ ]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-459
NASA FMEA #: 351-FM3

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 459
ITEM: ALPHANUMERIC DISPLAY (ITEM 369)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[F]	[P]	[X] *
IOA	[2 /2]	[ ]	[ ]	[ ]	[X]
COMPARE	[/N]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA INCLUDING PARTIAL DISPLAY LOSS IN THIS FAILURE MODE AND WITH THE NASA ANALYSIS RESULTS. HOWEVER, THE IOA RECOMMENDS THAT UPON DETECTION DURING PERIODIC STATUS CHECK (OR TONE GENERATION) THE MISSION BE TERMINATED THEREFORE A HARDWARE CRITICALITY OF "2". THE IOA DOES NOT SEE A SECOND FAILURE AS CAUSING LOSS OF LIFE DUE TO TONE AVAILABILITY AND THE REQUIREMENT OF A SIGNIFICANT HARDWARE FAILURE.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-780X
NASA FMEA #: 351-FM4

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 780
ITEM: DISPLAY (ITEM 351)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[F]	[P]	[ ] *
IOA	[2 /1R]	[P]	[F]	[P]	[ ]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-781X
NASA FMEA #: 351-FM5

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 781
ITEM: DISPLAY (ITEM 351)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /3]	[ ]	[ ]	[ ]	[ ] *
IOA	[3 /3]	[ ]	[ ]	[ ]	[ ]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]
RECOMMENDATIONS: (If different from NASA)	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)
ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

:: 8/06/87
EMU-782X
351-FM6

NASA DATA:
BASELINE [ ]
NEW [X]

EMU
782
DISPLAY (ITEM 351)

G. RAFFAELLI

ALITY GHT FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
3]	[ ]	[ ]	[ ]	[ ] *
3]	[ ]	[ ]	[ ]	[ ]
]	[ ]	[ ]	[ ]	[ ]

IS: (If different from NASA)

]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

)N RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

HE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-392
NASA FMEA #: 360-FM1, FM6

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 392
ITEM: VOLUME CONTROL (ITEM 360)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[P]	[P]	[ ] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-393
NASA FMEA #: 360-FM2

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 393
ITEM: VOLUME CONTROL (ITEM 360)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[P]	[P]	[ ] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-733X
NASA FMEA #: 360-FM3, FM8

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 733
ITEM: VOLUME CONTROL (ITEM 360)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[P]	[P]	[ ] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-734X
NASA FMEA #: 360-FM4, FM9

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 734
ITEM: COLUME CONTROL (ITEM 360)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[P]	[P]	[ ] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-391
NASA FMEA #: 360-FM5, FM10

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 391
ITEM: VOLUME CONTROL (ITEM 360)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[P]	[P]	[ ] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-393A
NASA FMEA #: 360-FM7

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 393
ITEM: VOLUME CONTROL (ITEM 360)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[N /N]	[N]	[N]	[N]	[N]

RECOMMENDATIONS: (If different from NASA)

[3 /2R]	[P]	[P]	[P]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA RECOMMENDS A 3/2R CRITICALITY DUE TO AVAILABILITY OF SECOND VOLUME CONTROL CHANNEL AND TO MAINTAIN CONSISTENCY WITH NASA FMEA 360-FM2.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-396
NASA FMEA #: 361-FM1

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 396
ITEM: DISPLAY INTENSITY CONTROL (ITEM 361)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /3]	[ ]	[ ]	[ ]	[ ] *
IOA	[2 /2]	[P]	[P]	[NA]	[X]
COMPARE	[N /N]	[N]	[N]	[N]	[N]

RECOMMENDATIONS: (If different from NASA)

[2 /2]	[ ]	[ ]	[ ]	[A] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE NOT IN AGREEMENT. THE IOA BELIEVES THE WORST CASE SCENARIO CAN INCLUDE EVA OPERATIONS ON THE DEEP SPACE SIDE OF THE EARTH WITHOUT SIGNIFICANT LUNAR REFLECTION. PAYLOAD BAY LIGHTING, ALTHOUGH AVAILABLE, CANNOT ENSURE READABILITY. THEREFORE, THE IOA RECOMMENDS A 2/2 CRITICALITY AND INCLUSION IN THE CIL. THIS WILL ACCOUNT FOR MISSION TIMELINE IMPACTS RESULTING FROM FINDING AN ACCEPTABLE LIGHT SOURCE.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-398
NASA FMEA #: 361-FM1

NASA DATA:
BASELINE [ ]
NEW [ ]

SUBSYSTEM: EMU
MDAC ID: 398
ITEM: DISPLAY INTENSITY CONTROL (ITEM 361)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /3]	[ ]	[ ]	[ ]	[ ] *
IOA	[2 /2]	[P]	[P]	[NA]	[X]
COMPARE	[N /N]	[N]	[N]	[N]	[N]

RECOMMENDATIONS: (If different from NASA)

[2 /2]	[ ]	[ ]	[ ]	[A] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA RECOGNIZES THE INCORPORATION OF THIS FAILURE MODE IN THE NASA FMEA 361-FM1; HOWEVER, FOR THE SAME REASONS STATED IN IOA ASSESSMENT ID EMU-396 THE IOA RECOMMENDS A 2/2 CRITICALITY.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-735X
NASA FMEA #: 361-FM2

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 735
ITEM: DISPLAY INTENSITY CONTROL (ITEM 361)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /3]	[ ]	[ ]	[ ]	[ ] *
IOA	[2 /2]	[P]	[P]	[P]	[X]
COMPARE	[N /N]	[N]	[N]	[N]	[N]

RECOMMENDATIONS: (If different from NASA)

[2 /2]	[ ]	[ ]	[ ]	[A] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE NOT IN AGREEMENT. THE IOA BELIEVES THE WORST CASE SCENARIO CAN INCLUDE EVA OPERATIONS ON THE DEEP SPACE SIDE OF THE EARTH WITHOUT SIGNIFICANT LUNAR REFLECTION. PAYLOAD BAY LIGHTING, ALTHOUGH AVAILABLE, CANNOT ENSURE
THEREFORE, THE IOA RECOMMENDS A 2/2 CRITICALITY AND INCLUSION IN THE CIL. THIS WILL ACCOUNT FOR MISSION TIMELINE IMPACTS RESULTING FROM FINDING AN ACCEPTABLE LIGHT SOURCE.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-397
NASA FMEA #: 361-FM3

NASA DATA:
BASELINE [ ]
NEW [ ]

SUBSYSTEM: EMU
MDAC ID: 397
ITEM: DISPLAY INTENSITY CONTROL (ITEM 361)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /3]	[ ]	[ ]	[ ]	[ ] *
IOA	[2 /2]	[P]	[P]	[NA]	[X]
COMPARE	[N /N]	[N]	[N]	[N]	[N]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-399
NASA FMEA #: 361-FM4

NASA DATA:
BASELINE [ ]
NEW [ ]

SUBSYSTEM: EMU
MDAC ID: 399
ITEM: DISPLAY INTENSITY CONTROL (ITEM 361)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /3]	[ ]	[ ]	[ ]	[ ] *
IOA	[2 /2]	[P]	[P]	[NA]	[X]
COMPARE	[N /N]	[N]	[N]	[N]	[N]

RECOMMENDATIONS: (If different from NASA)

[2 /2]	[ ]	[ ]	[ ]	[A] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
FOR THE WORST CASE WHERE THE DISPLAY INTENSITY IS AT ITS LOWEST VALUE, THE DISPLAY COULD BE UNREADABLE FOR THE EVA MISSION. IF THIS WERE TO OCCUR, THE MISSION TIMELINE COULD BE IMPACTED BY THE CREWPERSON ATTEMPTING TO FIND AN ACCEPTABLE LIGHT SOURCE. THEREFORE, THE IOA RECOMMENDS A CRITICALITY OF 2/2.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-736X
NASA FMEA #: 361-FM5

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 736
ITEM: DISPLAY INTENSITY CONTROL (ITEM 361)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /3]	[ ]	[ ]	[ ]	[ ] *
IOA	[3 /3]	[ ]	[ ]	[ ]	[ ]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[2 /2]	[ ]	[ ]	[ ]	[A] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
UPON FURTHER REVIEW, THE IOA BELIEVES THE WORST CASE SCENARIO CAN INCLUDE EVA OPERATIONS ON THE DEEP SPACE SIDE OF THE EARTH WITHOUT SIGNIFICANT LUNAR REFLECT. PAYLOAD BAY LIGHTING CANNOT ENSURE READABILITY. THEREFORE THE IOA RECOMMENDS A 2/2 CRITICALITY AND INCLUSION IN THE CIL. THIS WILL ACCOUNT FOR MISSION TIMELINE IMPACTS RESULTING FROM EFFORTS TO FIND AN ACCEPTABLE LIGHT SOURCE.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-410
NASA FMEA #: 362-FM1

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 410
ITEM: EVC SELECTOR SWITCH (ITEM 362)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[P]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-400
NASA FMEA #: 362-FM2

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 400
ITEM: EVC SELECTOR SWITCH (ITEM 362)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[F]	[P]	[X] *
IOA	[3 /2R]	[P]	[F]	[P]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT. HOWEVER, THE CAUSES SHOULD BE REVISED TO BE MORE COMPREHENSIVE.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-401
NASA FMEA #: 362-FM2

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 401
ITEM: EVC SELECTOR SWITCH (ITEM 362)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[F]	[P]	[X] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[/]	[ ]	[N]	[ ]	[N]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA SCREEN B ASSIGNMENT AND IS IN AGREEMENT WITH THE REMAINING ANALYSIS. HOWEVER, THE CAUSES SHOULD BE REVISED TO BE MORE COMPREHENSIVE.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-411
NASA FMEA #: 362-FM3

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 411
ITEM: EVC SELECTOR SWITCH (ITEM 362)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[P]	[NA]	[ ] *
IOA	[3 /3]	[P]	[P]	[NA]	[ ]
COMPARE	[/N]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[3 /3]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
BECAUSE THE FAILURE IS A "FAIL OPERATIONAL" FAILURE FOR MODE A AND BECAUSE LOSS OF REDUNDANCY DOES NOT FURTHER IMPACT IT, THE IOA RECOMMENDS A 3/3 CRITICALITY. THE IOA AND THE NASA SCREEN ASSIGNMENTS ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-402
NASA FMEA #: 362-FM4

NASA DATA:
BASELINE [ ]
NEW [ ]

SUBSYSTEM: EMU
MDAC ID: 402
ITEM: EVC SELECTOR SWITCH (ITEM 362)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[F]	[P]	[X] *
IOA	[3 /2R]	[P]	[F]	[P]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]
RECOMMENDATIONS: (If different from NASA)	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT. ADDITIONALLY, THE IOA RECOMMENDS A MORE COMPREHENSIVE TREATMENT OF CAUSES.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-403
NASA FMEA #: 362-FM4

NASA DATA:
BASELINE [ ]
NEW [ ]

SUBSYSTEM: EMU
MDAC ID: 403
ITEM: EVC SELECTOR SWITCH (ITEM 362)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[F]	[P]	[X] *
IOA	[3 /2R]	[P]	[P]	[P]	[X]
COMPARE	[/]	[ ]	[N]	[ ]	[ ]
RECOMMENDATIONS: (If different from NASA)	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT EXCEPT ON SCREEN B REGARDING WHICH THE IOA NOW AGREES WITH THE NASA. THE IOA ALSO RECOMMENDS A MORE COMPREHENSIVE TREATMENT OF CAUSES.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-412
NASA FMEA #: 362-FM5

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 412
ITEM: EVC SELECTOR SWITCH (ITEM 362)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[P]	[NA]	[ ] *
IOA	[3 /3]	[P]	[P]	[NA]	[ ]
COMPARE	[/N]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[3 /3]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
BECAUSE THE FAILURE IS "FAIL OPERATIONAL" FOR MODE B AND BECAUSE FURTHER LOSS OF REDUNDANCY IS NO IMPACT TO MODE B, THE IOA RECOMMENDS A 3/3 CRITICALITY. THE IOA AND THE NASA SCREENS ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-404
NASA FMEA #: 362-FM6

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 404
ITEM: EVC SELECTOR SWITCH (ITEM 362)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[F]	[P]	[X] *
IOA	[3 /2R]	[P]	[F]	[P]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT. HOWEVER, THE IOA RECOMMENDS A MORE COMPREHENSIVE TREATMENT OF CAUSES.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-405
NASA FMEA #: 362-FM6

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 405
ITEM: EVC SELECTOR SWITCH (ITEM 362)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[F]	[P]	[X] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[/]	[ ]	[N]	[ ]	[N]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT EXCEPT ON SCREEN B REGARDING WHICH THE IOA NOW AGREES WITH THE NASA ASSIGNMENT. ADDITIONALLY, THE IOA RECOMMENDS A MORE COMPREHENSIVE TREATMENT OF CAUSES.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-406
NASA FMEA #: 362-FM7

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 406
ITEM: EVC SELECTOR SWITCH (ITEM 362)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[NA]	[P]	[X] *
IOA	[3 /2R]	[P]	[F]	[P]	[X]
COMPARE	[/]	[ ]	[N]	[ ]	[ ]
RECOMMENDATIONS: (If different from NASA)	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT EXCEPT FOR SCREEN B WHICH THE IOA NOW CONCURS WITH.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-407
NASA FMEA #: 362-FM7

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 407
ITEM: EVC SELECTOR SWITCH (ITEM 362)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[NA]	[P]	[X] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[/]	[ ]	[N]	[ ]	[N]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT EXCEPT FOR SCREEN B; REGARDING WHICH THE IOA NOW CONCURS WITH THE NASA FINDING.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-413
NASA FMEA #: 362-FM8

NASA DATA:
BASELINE [ ]
NEW [ ]

SUBSYSTEM: EMU
MDAC ID: 413
ITEM: EVC SELECTOR SWITCH (ITEM 362)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[F]	[NA]	[X] *
IOA	[3 /3]	[P]	[P]	[NA]	[ ]
COMPARE	[/N]	[ ]	[N]	[ ]	[N]

RECOMMENDATIONS: (If different from NASA)

[3 /3]	[ ]	[ ]	[ ]	[D] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
BECAUSE THE FAILURE IS "FAIL OPERATIONAL" AND BECAUSE FURTHER LOSS OF REDUNDANCY IS NO IMPACT TO BACKUP MODE, THE IOA RECOMMENDS A 3/3 CRITICALITY.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-408
NASA FMEA #: 362-FM9

NASA DATA:
BASELINE [ ]
NEW [ ]

SUBSYSTEM: EMU
MDAC ID: 408
ITEM: EVC SELECTOR SWITCH (ITEM 362)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[F]	[P]	[X] *
IOA	[3 /2R]	[P]	[F]	[P]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-409
NASA FMEA #: 362-FM9

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 409
ITEM: EVC SELECTOR SWITCH (ITEM 362)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[F]	[P]	[X] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[/]	[ ]	[N]	[ ]	[N]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[D] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN GENERAL AGREEMENT. THE IOA NOW CONCURS WITH THE NASA SCREEN B.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-423
NASA FMEA #: 364-FM1

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 423
ITEM: POWER MODE SELECTOR SWITCH (ITEM 364)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[P]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-419
NASA FMEA #: 364-FM10

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 419
ITEM: POWER MODE SELECTOR SWITCH (ITEM 364)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[P]	[P]	[X] *
IOA	[2 /1R]	[P]	[F]	[P]	[X]
COMPARE	[/]	[ ]	[N]	[ ]	[ ]
RECOMMENDATIONS: (If different from NASA)	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT AND THE IOA AGREES WITH THE NASA SCREEN B ASSIGNMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-417A
NASA FMEA #: 364-FM11

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 417
ITEM: POWER MODE SELECTOR SWITCH (ITEM 364)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[P]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-418A
NASA FMEA #: 364-FM12

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 418
ITEM: POWER MODE SELECTOR SWITCH (ITEM 364)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[P]	[P]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]
RECOMMENDATIONS: (If different from NASA)	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-415
NASA FMEA #: 364-FM13

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 415
ITEM: POWER MODE SELECTOR SWITCH (ITEM 364)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[P]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-414
NASA FMEA #: 364-FM14

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 414
ITEM: POWER MODE SELECTOR SWITCH (ITEM 364)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[N /N]	[N]	[N]	[N]	[N]
RECOMMENDATIONS: (If different from NASA)	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-416
NASA FMEA #: 364-FM15

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 416
ITEM: POWER MODE SELECTOR SWITCH (ITEM 364)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[P]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-414A
NASA FMEA #: 364-FM16

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 414
ITEM: POWER MODE SELECTOR SWITCH (ITEM 364)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[N /N]	[N]	[N]	[N]	[N]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-415A
NASA FMEA #: 364-FM17

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 415
ITEM: POWER MODE SELECTOR SWITCH (ITEM 364)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[F]	[P]	[X] *
IOA	[2 /2]	[P]	[P]	[P]	[X]
COMPARE	[/N]	[ ]	[N]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[2 /2]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA RECOMMENDS A 2/2 CRITICALITY DUE TO MISSION TERMINATION IMPACT AND BECAUSE THE OTHER FAILURES WHICH CAN CAUSE LOSS OF LIFE ARE NOT REDUNDANT IN NATURE OR FUNCTION AND THEREFORE, PER 22206, CANNOT BE EMPLOYED TO UPGRADE FUNCTIONAL CRITICALITY.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-426
NASA FMEA #: 364-FM18

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 426
ITEM: POWER MODE SELECTOR SWITCH (ITEM 364)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[P]	[P]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-425
NASA FMEA #: 364-FM19

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 425
ITEM: POWER MODE SELECTOR SWITCH (ITEM 364)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[P]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-424
NASA FMEA #: 364-FM2

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 424
ITEM: POWER MODE SELECTOR SWITCH (ITEM 364)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[P]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

C-2

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-421
NASA FMEA #: 364-FM3

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 421
ITEM: POWER MODE SELECTOR SWITCH (ITEM 364)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/N]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-420
NASA FMEA #: 364-FM4

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 420
ITEM: POWER MODE SELECTOR SWITCH (ITEM 364)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[F]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-422
NASA FMEA #: 364-FM5

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 422
ITEM: POWER MODE SELECTOR SWITCH (ITEM 364)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/N]	[N]	[N]	[N]	[ ]
RECOMMENDATIONS: (If different from NASA)	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-420A
NASA FMEA #: 364-FM6

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 420
ITEM: POWER MODE SELECTOR SWITCH (ITEM 364)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[F]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-421A
NASA FMEA #: 364-FM7

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 421
ITEM: POWER MODE SELECTOR SWITCH (ITEM 364)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/N]	[N]	[N]	[N]	[ ]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-418
NASA FMEA #: 364-FM8

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 418
ITEM: POWER MODE SELECTOR SWITCH (ITEM 364)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/N]	[N]	[N]	[N]	[ ]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-417
NASA FMEA #: 364-FM9

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 417
ITEM: POWER MODE SELECTOR SWITCH (ITEM 364)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[P]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-427
NASA FMEA #: 365-FM1

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 427
ITEM: PUSH-TO-TALK SWITCH (ITEM 365)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[P]	[P]	[ ] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [P] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-435
NASA FMEA #: 365-FM2

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 435
ITEM: PUSH-TO-TALK SWITCH (ITEM 365)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[P]	[P]	[ ] *
IOA	[2 /2]	[P]	[P]	[F]	[X]
COMPARE	[N /N]	[ ]	[ ]	[N]	[N]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [F] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-436
NASA FMEA #: 365-FM3

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 436
ITEM: PUSH-TO-TALK SWITCH (ITEM 365)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[P]	[P]	[ ] *
IOA	[2 /2]	[P]	[P]	[F]	[X]
COMPARE	[N /N]	[ ]	[ ]	[N]	[N]
RECOMMENDATIONS: (If different from NASA)	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-432
NASA FMEA #: 365-FM4

NASA DATA:
BASELINE [ ]
NEW [ ]

SUBSYSTEM: EMU
MDAC ID: 432
ITEM: PUSH-TO-TALK SWITCH (ITEM 365)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[P]	[P]	[ ] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA RECOGNIZES THE INCORPORATION OF THIS FAILURE MODE IN NASA FMEA 365-FM4; HOWEVER, THE IOA EFFECTS DIFFER. THE IOA BELIEVES THE VOX POSITION COULD BE LOST (IT IS NORMALLY IN OPEN POSITION) AND WOULD REQUIRE LOSS OF A REDUNDANT FUNCTION (E.G., PTT) TO CAUSE MISSION TERMINATION.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-433
NASA FMEA #: 365-FM4

NASA DATA:
BASELINE [ ]
NEW [ ]

SUBSYSTEM: EMU
MDAC ID: 433
ITEM: PUSH-TO-TALK SWITCH (ITEM 365)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[P]	[P]	[ ] *
IOA	[3 /3]	[P]	[P]	[F]	[ ]
COMPARE	[/N]	[ ]	[ ]	[N]	[ ]
RECOMMENDATIONS: (If different from NASA)	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-434
NASA FMEA #: 365-FM5

NASA DATA:
BASELINE [ ]
NEW [ ]

SUBSYSTEM: EMU
MDAC ID: 434
ITEM: PUSH-TO-TALK SWITCH (ITEM 365)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[P]	[F]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-429
NASA FMEA #: 365-FM6

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 429
ITEM: PUSH-TO-TALK SWITCH (ITEM 365)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[P]	[P]	[ ] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-430A
NASA FMEA #: 365-FM7

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 430
ITEM: PUSH-TO-TALK SWITCH (ITEM 365)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /3]	[ ]	[ ]	[ ]	[ ] *
IOA	[3 /2R]	[P]	[F]	[P]	[X]
COMPARE	[/N]	[N]	[N]	[N]	[N]

RECOMMENDATIONS: (If different from NASA)

[3 /2R]	[P]	[P]	[P]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA RECOMMENDS A 3/2R CRITICALITY TO REFLECT MISSION IMPACT WITH LOSS OF REDUNDANCY. FURTHER REVIEW ALSO INDICATES THE SCREEN B SHOULD BE PASSED. ADDITIONALLY, A FAILURE SUCH AS THIS ON THE IMPACTED LINE SHOULD REFLECT THE WORST CASE FOR THE FAILURE ON ALL OF THE OUTPUTS (PTT MOMENTARY, VOX, OR VOX DISABLE). ALSO, THE IOA NOW RECOMMENDS PASSAGE OF SCREEN B.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-430
NASA FMEA #: 365-FM8

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 430
ITEM: PUSH-TO-TALK SWITCH (ITEM 365)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[P]	[P]	[ ] *
IOA	[3 /2R]	[P]	[F]	[P]	[X]
COMPARE	[/]	[ ]	[N]	[ ]	[N]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA SCREEN B ASSIGNMENT AND IS IN AGREEMENT ON THE REMAINDER OF THE ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-431
NASA FMEA #: 365-FM9

NASA DATA:
BASELINE [ ]
NEW [ ]

SUBSYSTEM: EMU
MDAC ID: 431
ITEM: PUSH-TO-TALK SWITCH (ITEM 365)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[N /N]	[N]	[N]	[N]	[N]

RECOMMENDATIONS: (If different from NASA)

[3 /2R]	[P]	[P]	[P]	[D] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE NOT IN AGREEMENT. A 3/2R CRITICALITY IS RECOMMENDED DUE TO CAPABILITY OF CREWPERSON TO SWITCH TO A REDUNDANT COMMUNICATIONS POSITION (E.G. VOX).

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-444
NASA FMEA #: 366-FM1

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 444
ITEM: FAN SWITCH (ITEM 366)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /3]	[ ]	[ ]	[ ]	[ ] *
IOA	[3 /3]	[P]	[P]	[P]	[ ]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-437
NASA FMEA #: 366-FM2

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 437
ITEM: FAN SWITCH (ITEM 366)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[P]	[P]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-443
NASA FMEA #: 366-FM2

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 443
ITEM: FAN SWITCH (ITEM 366)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[P]	[P]	[X] *
IOA	[2 /1R]	[P]	[F]	[P]	[X]
COMPARE	[/]	[ ]	[N]	[ ]	[ ]
RECOMMENDATIONS: (If different from NASA)	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA ACCEPTS THE NASA SCREEN B ASSIGNMENT DUE TO CAPABILITY TO RESPOND AND IS IN AGREEMENT WITH THE REMAINDER OF THE ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-441
NASA FMEA #: 366-FM3

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 441
ITEM: FAN SWITCH (ITEM 366)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[P]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[2 /1R]	[P]	[F]	[P]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT. HOWEVER, FURTHER REVIEW INDICATES THAT SUCH A FAILURE WHEN COMBINED WITH A HARD CHARGE, AN ITEM 172 FAILURE, AND AN SOP FAILURE COULD RESULT IN POSSIBLE LOSS OF LIFE (REFERENCE NASA FMEA 366-FM6). THE IOA THEREFORE NOW RECOMMENDS A 2/1R CRITICALITY. (NOTE: THIS ASSIGNMENT ALSO ENSURES CONSISTENCY BETWEEN FAILURE MODES WITHIN THE EMU.)

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-438
NASA FMEA #: 366-FM4

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 438
ITEM: FAN SWITCH (ITEM 366)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[P]	[P]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-701X
NASA FMEA #: 366-FM5

NASA DATA:
BASELINE [ ]
NEW [ ]

SUBSYSTEM: EMU
MDAC ID: 701
ITEM: FAN SWITCH (ITEM 366)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /1R]	[P]	[F]	[P]	[X] *
IOA	[3 /2R]	[P]	[F]	[P]	[X]
COMPARE	[/N]	[ ]	[ ]	[ ]	[ ]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS AND SCENARIO.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-702X
NASA FMEA #: 366-FM6

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 702
ITEM: FAN SWITCH (ITEM 366)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /1R]	[P]	[F]	[P]	[X] *
IOA	[2 /2]	[P]	[ ]	[ ]	[X]
COMPARE	[N /N]	[ ]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-445
NASA FMEA #: 367-FM1

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 445
ITEM: FEEDWATER VALVE SWITCH (ITEM 367)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/N]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-450
NASA FMEA #: 367-FM2

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 450
ITEM: FEEDWATER VALVE SWITCH (ITEM 367)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[F]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-449
NASA FMEA #: 367-FM3

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 449
ITEM: FEEDWATER VALVE SWITCH (ITEM 367)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/N]	[N]	[N]	[N]	[ ]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
UPON FURTHER REVIEW, THE IOA SCENARIO WOULD REQUIRE CREW ERROR DURING EVA TO SUPPORT THE IOA CRITICALITY. THE IOA THEREFORE AGREES WITH THE NASA FINDINGS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-446
NASA FMEA #: 367-FM4

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 446
ITEM: FEEDWATER VALVE SWITCH (ITEM 367)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[F]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]
RECOMMENDATIONS: (If different from NASA)	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)
ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-447
NASA FMEA #: 367-FM5

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 447
ITEM: FEEDWATER VALVE SWITCH (ITEM 367)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /1R]	[P]	[F]	[P]	[X]
COMPARE	[/N]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[2 /1R]	[P]	[P]	[P]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA RECOMMENDS A 2/1R CRITICALITY TO ADDRESS POSSIBLE SHORT CIRCUIT FROM OPEN TO CLOSE LINES. THIS CAN RESULT IN LOSS OF COOLING AND CONDENSATE REMOVAL; THEREBY, REQUIRING SOP USAGE. THE CONCURRENT LOSS OF THE SOP CAN RESULT IN LOSS OF LIFE. THE IOA ALSO RECOMMENDS MODIFYING THE FAILURE MODE DESCRIPTION. THE SCREEN B HAS BEEN FURTHER REVIEWED AND IS NOW RECOMMENDED TO BE PASSED.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-448
NASA FMEA #: 367-FM6

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 448
ITEM: FEEDWATER VALVE SWITCH (ITEM 367)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[P]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ANALYSIS ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-451
NASA FMEA #: 368-FM1

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 451
ITEM: CAUTION AND WARNING SWITCH (ITEM 368)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[P]	[NA]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-453
NASA FMEA #: 368-FM2

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 453
ITEM: CAUTION AND WARNING SWITCH (ITEM 368)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/N]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[2 /1R]	[P]	[F]	[P]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA RECOMMENDS A 2/1R CRITICALITY TO REFLECT OCCURANCE OF CONVERTER SHUTDOWN RESULTING IN MISSION TERMINATION AND, IF COMBINED WITH A CO2 CONTROL FUNCTION FAILURE, POSSIBLE LOSS OF LIFE. ALSO, UPON FURTHER REVIEW THE IOA WOULD RECOMMEND FAILURE OF
SCREEN B DUE TO THE FAILURE BEING NOT READILY DETECTABLE.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-452
NASA FMEA #: 368-FM3

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 452
ITEM: CAUTION AND WARNING SWITCH (ITEM 368)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[P]	[NA]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-454
NASA FMEA #: 368-FM4

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 454
ITEM: CAUTION AND WARNING SWITCH (ITEM 368)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[F]	[P]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/]	[ ]	[N]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ]
(ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA SCREEN B. THE REMAINING ANALYSIS ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-737X
NASA FMEA #: 368-FM5

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 737
ITEM: CAUTION AND WARNING SWITCH (ITEM 368)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[P]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]
RECOMMENDATIONS: (If different from NASA)	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-455
NASA FMEA #: 368-FM6

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 455
ITEM: CAUTION AND WARNING SWITCH (ITEM 368)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[ ]	[ ]	[ ]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-456
NASA FMEA #: 368-FM7

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 456
ITEM: CAUTION AND WARNING SWITCH (ITEM 368)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[ ]	[ ]	[ ]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]
RECOMMENDATIONS: (If different from NASA)	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-703X
NASA FMEA #: 368-FM8

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 703
ITEM: CAUTION AND WARNING SWITCH (ITEM 368)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[P]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-739X
NASA FMEA #: 384-FM1

NASA DATA:
BASELINE [ ]
NEW [ ]

SUBSYSTEM: EMU
MDAC ID: 739
ITEM: DCM TMG (ITEM 384)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /3]	[ ]	[ ]	[ ]	[ ] *
IOA	[3 /3]	[P]	[F]	[P]	[ ]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-388
NASA FMEA #: 385-FM1

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 388
ITEM: HARD UPPER TORSO (HUT) INTERFACE (ITEM 385)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[P]	[P]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-389
NASA FMEA #: 385-FM2

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 389
ITEM: HARD UPPER TORSO (HUT) INTERFACE (ITEM 385)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[P]	[P]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-390
NASA FMEA #: 385-FM2

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 390
ITEM: HARD UPPER TORSO (HUT) INTERFACE (ITEM 385)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[P]	[P]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT (ALSO REFERENCE MDAC ID 389).

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-738X
NASA FMEA #: 385-FM3

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 738
ITEM: SUIT PRESSURE GAGE (ITEM 311)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /3]	[ ]	[ ]	[ ]	[ ] *
IOA	[3 /3]	[P]	[P]	[P]	[ ]
COMPARE	[/]	[N]	[N]	[N]	[ ]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-474
NASA FMEA #: 385-FM4

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 474
ITEM: DCM ELECTRONICS (ITEM 350)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[N /N]	[N]	[N]	[N]	[N]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-473
NASA FMEA #: 385-FM5

NASA DATA:
BASELINE [ ]
NEW [ ]

SUBSYSTEM: EMU
MDAC ID: 473
ITEM: DCM ELECTRONICS (ITEM 350)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /3]	[ ]	[ ]	[ ]	[ ] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[/N]	[N]	[N]	[N]	[ ]
RECOMMENDATIONS: (If different from NASA)	[2 /2]	[ ]	[ ]	[ ]	[A] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
A SHORT TO GROUND WILL RESULT IN EXCESSIVE CURRENT DRAW FROM VEHICLE POWER UNTIL FINALLY LOST. THEREFORE, THE IOA RECOMMENDS A 2/2 CRITICALITY TO REFLECT MISSION IMPACTS, AND INCLUSION IN THE CIL FOR THIS FAILURE MODE. ADDITIONALLY, THE IOA RECOMMENDS MODIFICATION OF THIS FAILURE MODE TO SHORTS TO GROUND.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-323
NASA FMEA #: 410-FM1

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 323
ITEM: COMMON MULTIPLE CONNECTOR (ITEM 410)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[N /N]	[N]	[N]	[N]	[N]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA CRITICALITY ASSIGNMENT AND IS IN AGREEMENT WITH THE REMAINING ANALYSIS. THE IOA ALSO RECOMMENDS COMBINING THE TWO FAILURE MODES, 410-FM1 AND FM2, TO REFLECT THE ENTIRE MISSION SCENARIO.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-323A
NASA FMEA #: 410-FM2

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 323
ITEM: COMMON MULTIPLE CONNECTOR (ITEM 410)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /3]	[ ]	[ ]	[ ]	[ ] *
IOA	[3 /2R]	[P]	[P]	[P]	[X]
COMPARE	[/N]	[N]	[N]	[N]	[N]

RECOMMENDATIONS: (If different from NASA)

[2 /2]	[ ]	[ ]	[ ]	[A] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA RECOMMENDS A 2/2 CRITICALITY BECAUSE THIS FAILURE MODE WAS LIMITED TO THE EVA PHASE AND DID NOT ENCOMPASS THE ENTIRE MISSION WHICH WOULD HAVE INDICATED A 2/2. IF DONE (REFERENCE NASA FMEA 410-FM1). THE IOA ALSO RECOMMENDS COMBINING 410-FM1 AND
FM2 INTO ONE FAILURE MODE.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-325
NASA FMEA #: 410-FM3

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 325
ITEM: COMMON MULTIPLE CONNECTOR (ITEM 410)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /3]	[ ]	[ ]	[ ]	[ ] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[/N]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[2 /2]	[ ]	[ ]	[ ]	[A] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
BECAUSE THE NASA LIMITED THIS FAILURE TO SELECTED MISSION PHASES THE IOA RECOMMENDS COMBINING IT WITH NASA FMEA 410-FM4 WITH A 2/2 CRITICALITY.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-325A
NASA FMEA #: 410-FM4

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 325
ITEM: COMMON MULTIPLE CONNECTOR (ITEM 410)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[N /N]	[N]	[N]	[N]	[N]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA SCENARIO IS NOT AS REPRESENTATIVE THE WORST CASE AS IS NASA; THE IOA, THEREFORE, AGREES WITH THE NASA CRITICALITY. THE IOA ALSO RECOMMENDS COMBINING NASA FMEAs 410-FM3 AND FM4 TO REPRESENT THE ENTIRE MISSION SCENARIO UNDER ONE ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-324
NASA FMEA #: 410-FM5

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 324
ITEM: COMMON MULTIPLE CONNECTOR (ITEM 410)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /3]	[ ]	[ ]	[ ]	[ ] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[N /N]	[N]	[N]	[N]	[N]

RECOMMENDATIONS: (If different from NASA)

[2 /2]	[ ]	[ ]	[ ]	[A] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE NASA SPLIT THE MISSION PHASES FOR THIS FAILURE MODE BETWEEN NASA FMEAs 410-FM5, FM6, AND FM7. THE IOA RECOMMENDS THEY BE COMBINED AS ONE FMEA AND WITH A 2/2 CRITICALITY. (NOTE: THE IOA AGREED WITH THE NASA ANALYSIS IN 41-FM6).

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-324A
NASA FMEA #: 410-FM6, FM7

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 324
ITEM: COMMON MULTIPLE CONNECTOR (ITEM 410)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/N]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS. THE IOA ALSO RECOMMENDS COMBINING NASA FMEAs 410-FM5, FM6, AND FM7 TO REFLECT THE ENTIRE MISSION SCENARIO FOR THIS FAILURE MODE UNDER ONE ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-326
NASA FMEA #: 410-FM8

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 326
ITEM: COMMON MULTIPLE CONNECTOR (ITEM 410)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[F]	[P]	[X]
COMPARE	[N /N]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA CRITICALITY WHEN THE SECOND SCU IS NOT CONSIDERED REDUNDANT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-327
NASA FMEA #: 410-FM9

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 327
ITEM: COMMON MULTIPLE CONNECTOR (ITEM 410)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[F]	[NA]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-336
NASA FMEA #: 411-FM1

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 336
ITEM: HIGH PRESSURE OXYGEN LINE (ITEM 411)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[F]	[P]	[X]
COMPARE	[N /N]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA CRITICALITY SINCE THE SECOND SCU IS NOT EMPLOYED AS A REDUNDANT ITEM.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-337
NASA FMEA #: 412A-FM1

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 337
ITEM: PORTABLE H2O LINE (ITEM 412A)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[F]	[P]	[X]
COMPARE	[N /N]	[N]	[N]	[N]	[ ]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA CRITICALITY ASSIGNMENT WHEN THE SECOND SCU IS CONSIDERED TO BE NON-REDUNDANT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-338
NASA FMEA #: 412B&C-FM1

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 338
ITEM: COOLING H2O IN-LINE (ITEM 412B)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[F]	[P]	[X]
COMPARE	[N /N]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA CRITICALITY ASSIGNMENT SINCE THE SECOND SCU IS NON-REDUNDANT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-339
NASA FMEA #: 412B&C-FM1

NASA DATA:
BASELINE [ ]
NEW [ ]

SUBSYSTEM: EMU
MDAC ID: 339
ITEM: COOLING H2O OUT-LINE (ITEM 412C)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[F]	[P]	[X]
COMPARE	[N /N]	[N]	[N]	[N]	[ ]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA CRITICALITY ASSIGNMENT SINCE THE SECOND SCU IS NON-REDUNDANT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-340
NASA FMEA #: 416-FM1

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 340
ITEM: BACTERIAL FILTER HOUSING (ITEM 416)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[F]	[P]	[X]
COMPARE	[N /N]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA CRITICALITY DUE TO THE SECOND SCU NOT BEING CONSIDERED REDUNDANT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-343
NASA FMEA #: 418-FM1

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 343
ITEM: CONDENSATE H2O REGULATOR (ITEM 418)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[N /N]	[N]	[N]	[N]	[N]
RECOMMENDATIONS: (If different from NASA)	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-345
NASA FMEA #: 418-FM1

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 345
ITEM: CONDENSATE H2O REGULATOR (ITEM 418)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[P]	[P]	[X]
COMPARE	[N /N]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-344
NASA FMEA #: 418-FM2

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 344
ITEM: CONDENSATE H2O REGULATOR (ITEM 418)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[F]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]
RECOMMENDATIONS: (If different from NASA)	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-346
NASA FMEA #: 418-FM2

NASA DATA:
BASELINE [ ]
NEW [ ]

SUBSYSTEM: EMU
MDAC ID: 346
ITEM: CONDENSATE H2O REGULATOR (ITEM 418)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[F]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-347
NASA FMEA #: 418-FM3

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 347
ITEM: CONDENSATE H2O REGULATOR (ITEM 418)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[N /N]	[N]	[N]	[N]	[N]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS RESULTS AND EFFECTS. ALSO, THE IOA WOULD RECOMMEND INCLUDING "CAM BINDING" AS A VIABLE CAUSE.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-341
NASA FMEA #: 418-FM4

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 341
ITEM: CONDENSATE H2O REGULATOR (ITEM 418)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[F]	[P]	[X]
COMPARE	[N /N]	[N]	[N]	[N]	[ ]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA CRITICALITY DUE TO NON-REDUNDANCY OF SCUs.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-349
NASA FMEA #: 419-FM1

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 349
ITEM: WATER SUPPLY PRESSURE REGULATOR (ITEM 419)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[F]	[P]	[P]	[X] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[/]	[N]	[ ]	[ ]	[N]
RECOMMENDATIONS: (If different from NASA)	[2 /2]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
BECAUSE THE SECOND SCU IS NOT REDUNDANT (BY GROUND RULE) AND BECAUSE RECHARGE IS TERMINATED UPON DETECTION OF THIS FAILURE MODE, THE IOA RECOMMENDS A 2/2 CRITICALITY. ADDITIONALLY, THE IOA DOES CONSIDER THE ITEM 419 CAPABLE OF GROUND TEST FOR THIS FAILURE MODE AND THEREFORE RECOMMENDS PASSAGE OF SCREEN A.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-350
NASA FMEA #: 419-FM2

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 350
ITEM: WATER SUPPLY PRESSURE REGULATOR (ITEM 419)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[N /N]	[N]	[N]	[N]	[N]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
BECAUSE THE SECOND SCU IS CONSIDERED NON-REDUNDANT, THE IOA AGREES WITH THE NASA CRITICALITY OF 2/2 FOR THIS FAILURE MODE.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-348
NASA FMEA #: 419-FM3

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 348
ITEM: WATER SUPPLY PRESSURE REGULATOR (ITEM 419)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[F]	[P]	[X]
COMPARE	[N /N]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA CRITICALITY AND ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-357
NASA FMEA #: 420-FM1

NASA DATA:
BASELINE [ ]
NEW [ ]

SUBSYSTEM: EMU
MDAC ID: 357
ITEM: O2 FILTER AND ORIFICE (ITEM 420)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[N /N]	[N]	[N]	[N]	[N]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA CRITICALITY DUE TO NON-REDUNDANCY OF THE SECOND SCU.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-356
NASA FMEA #: 420-FM2

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 356
ITEM: O2 FILTER AND ORIFICE (ITEM 420)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[N /N]	[N]	[N]	[N]	[N]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ]
(ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA CRITICALITY DUE TO NON-REDUNDANCY OF SECOND SCU.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-353
NASA FMEA #: 423-FM1, FM2

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 353
ITEM: BACTERIA CARTRIDGE (ITEM 423)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[F]	[P]	[P]	[X] *
IOA	[2 /1R]	[P]	[F]	[P]	[X]
COMPARE	[/]	[N]	[N]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN GENERAL AGREEMENT EXCEPT ON SCREENS A AND B; REGARDING WHICH THE IOA NOW CONCURS WITH THE NASA.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-352
NASA FMEA #: 423-FM3

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 352
ITEM: BACTERIA CARTRIDGE (ITEM 423)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[F]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-351
NASA FMEA #: 423-FM4

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 351
ITEM: BACTERIA CARTRIDGE (ITEM 423)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[N /N]	[N]	[N]	[N]	[N]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
BECAUSE THE SECOND SCU IS NOT EMPLOYED AS REDUNDANT, THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-354
NASA FMEA #: 424-FM1

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 354
ITEM: POTABLE H2O FILTER (ITEM 424)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[N /N]	[N]	[N]	[N]	[N]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
BECAUSE THE SECOND SCU IS NOT CONSIDERED REDUNDANT, THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-355
NASA FMEA #: 424-FM2

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 355
ITEM: POTABLE H2O FILTER (ITEM 424)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[F]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-332
NASA FMEA #: 425-FM1

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 332
ITEM: COMMON MULTIPLE CONNECTOR (ITEM 410)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[P]	[P]	[ ] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-333
NASA FMEA #: 425-FM1

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 333
ITEM: COMMON MULTIPLE CONNECTOR (ITEM 410)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /2R]	[P]	[P]	[P]	[ ] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-328
NASA FMEA #: 425-FM2

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 328
ITEM: COMMON MULTIPLE CONNECTOR (ITEM 410)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[N /N]	[N]	[N]	[N]	[N]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-329
NASA FMEA #: 425-FM3

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 329
ITEM: COMMON MULTIPLE CONNECTOR (ITEM 410)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[P]	[ ]	[ ]
COMPARE	[N /N]	[N]	[N]	[ ]	[N]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-334
NASA FMEA #: 425-FM4

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 334
ITEM: COMMON MULTIPLE CONNECTOR

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[N /N]	[N]	[N]	[N]	[N]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[A] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
DUE TO DEFINED NON-REDUNDANCY OF SCUs, THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-335
NASA FMEA #: 425-FM5

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 335
ITEM: COMMON MULTIPLE CONNECTOR

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[N /N]	[N]	[N]	[N]	[N]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS DUE TO NON-REDUNDANCY OF SCU.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-330
NASA FMEA #: 425-FM6

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 330
ITEM: COMMON MULTIPLE CONNECTOR (ITEM 410)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[N /N]	[N]	[N]	[N]	[N]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA ANALYSIS (DUE TO NON-REDUNDANT SCUs).

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-331
NASA FMEA #: 425-FM7

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 331
ITEM: COMMON MULTIPLE CONNECTOR (ITEM 410)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[ ] *
IOA	[3 /2R]	[P]	[P]	[P]	[ ]
COMPARE	[N /N]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
DUE TO THE SECOND SCU BEING NON-REDUNDANT, THE IOA AGREES WITH THE NASA ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-749X
NASA FMEA #: 425-FM8

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 749
ITEM: COMMON MULTIPLE CONNECTOR

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[P]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-750X
NASA FMEA #: 425-FM9

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 750
ITEM: COMMON MULTIPLE CONNECTOR

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[P]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-783X
NASA FMEA #: 440-=FM5

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 783
ITEM: EEH

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[P]	[P]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]
RECOMMENDATIONS: (If different from NASA)	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-743X
NASA FMEA #: 470-FM1

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 743
ITEM: AIRLOCK ADAPTER PLATE (ITEM 470)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[F]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-744X
NASA FMEA #: 470-FM2

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 744
ITEM: AIRLOCK ADAPTER PLATE (ITEM 470)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[F]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-745X
NASA FMEA #: 470-FM3

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 745
ITEM: AIRLOCK ADAPTER PLATE (ITEM 470)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /2]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /2]	[P]	[F]	[P]	[X]
COMPARE	[/]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-746X
NASA FMEA #: 480-FM1

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 746
ITEM: CONTAMINATE CONTROL CARTRIDGE (ITEM 480)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[F]	[P]	[P]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/]	[N]	[ ]	[ ]	[ ]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT EXCEPT ON SCREEN A; HOWEVER, UPON FURTHER REVIEW, THE IOA AGREES WITH THE NASA SCREEN A ASSIGNMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-193
NASA FMEA #: 480-FM2

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 193
ITEM: CONTAMINANT CONTROL CARTRIDGE (ITEM 480)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[P]	[P]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT. (ALSO REFERENCE MDAC ID-194).

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-194
NASA FMEA #: 480-FM2

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 194
ITEM: CONTAMINANT CONTROL CARTRIDGE (ITEM 480)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[P]	[P]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT. (ALSO REFERENCE MDAC ID-193).

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-196
NASA FMEA #: 480-FM3

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 196
ITEM: CONTAMINANT CONTROL CARTRIDGE (ITEM 480)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[P]	[P]	[X] *
IOA	[2 /1R]	[P]	[F]	[P]	[X]
COMPARE	[/]	[ ]	[N]	[ ]	[ ]
RECOMMENDATIONS: (If different from NASA)	[/]	[ ]	[F]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN GENERAL AGREEMENT; HOWEVER, THE IOA RECOMMENDS FAILURE OF SCREEN B. THIS RECOMMENDATION IS MADE BECAUSE THE DETECTION METHOD IDENTIFIED BY THE NASA IS AN EFFECT OF THE FAILURE HAVING OCCURED SOME PREVIOUS TIME AND IS THEREFORE NOT READILY DETECTABLE.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-747
NASA FMEA #: 480-FM4

NASA DATA:
BASELINE [ ]
NEW [ ]

SUBSYSTEM: EMU
MDAC ID: 747
ITEM: CONTAMINANT CONTROL CARTRIDGE (ITEM 480)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[ ]	[ ]	[ ]	[X] *
IOA	[/NA]	[ ]	[ ]	[ ]	[ ]
COMPARE	[N /N]	[ ]	[ ]	[ ]	[N]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA CONSIDERS THIS FAILURE MODE NON CREDIBLE FOR AN FMEA. THE FAILURE SHOULD BE ADDRESSED IN A HAZARD ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 8/06/87
ASSESSMENT ID: EMU-748X
NASA FMEA #: 480-FM5, FM6

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 748
ITEM: CONTAMINANT CONTROL CARTRIDGE (ITEM 480)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[P]	[P]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-192
NASA FMEA #: 480-FM7

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 192
ITEM: CONTAMINANT CONTROL CARTRIDGE (ITEM 480)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[P]	[P]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]
RECOMMENDATIONS: (If different from NASA)					
	[/]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-192A
NASA FMEA #: 480-FM8

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 192
ITEM: CONTAMINANT CONTROL CARTRIDGE (ITEM 480)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[1 /1]	[ ]	[ ]	[ ]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[N /N]	[N]	[N]	[N]	[ ]

RECOMMENDATIONS: (If different from NASA)

[2 /1R]	[P]	[F]	[F]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE NASA FAILURE MODE IMPLIES THE FAILURE OF THE SOP TO MAKE UP OXYGEN FLOW DUE TO THE SEVERITY OF THE FAILURE MODE. THE IOA RECOMMENDS A 2/1Rb, c CRITICALITY TO MORE ACCURATELY REFLECT THIS SCENARIO AND A COMBINATION OF NASA FMEAs 480-FM7 AND FM8 UNDER A SINGLE ANALYSIS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-290
NASA FMEA #: 490-FM1

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 290
ITEM: BATTERY (ITEM 490)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[P]	[P]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-292
NASA FMEA #: 490-FM1

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 292
ITEM: BATTERY (ITEM 490)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[P]	[P]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-289
NASA FMEA #: 490-FM2

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 289
ITEM: BATTERY (ITEM 490)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /1R]	[F]	[NA]	[P]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[N /]	[N]	[N]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[2 /1R]	[ ]	[ ]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA RECOMMENDS A 2/1R CRITICALITY TO REFLECT POSSIBLE LOSS OF LIFE RESULTING FROM A VIOLENT RUPTURE OF THE BATTERY DUE TO A CONCURRENT SHORT WHICH GENERATES HYDROGEN GAS. THE IOA DOES AGREE WITH THE NASA SCREEN ASSIGNMENTS.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-288
NASA FMEA #: 490-FM3

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 288
ITEM: BATTERY (ITEM 490)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[3 /1R]	[F]	[F]	[P]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[N /]	[N]	[N]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/]	[ ]	[P]	[ ]	[ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AGREES WITH THE NASA CRITICALITY ASSIGNMENT, HOWEVER, THE IOA RECOMMENDS PASSAGE OF SCREEN B BECAUSE A DEGRADATION/FAILURE OF BATTERY WOULD BE DETECTED AND SOP USAGE WOULD BE THE CORRECTIVE ACTION.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-287
NASA FMEA #: 490-FM4

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 287
ITEM: BATTERY (ITEM 490)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[F]	[P]	[P]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/]	[N]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT. THE IOA AGREES WITH THE NASA SCREEN A ASSIGNMENT.

APPENDIX C
ASSESSMENT WORKSHEET

ASSESSMENT DATE: 12/10/86
ASSESSMENT ID: EMU-291
NASA FMEA #: 490-FM5

NASA DATA:
BASELINE [ ]
NEW [X]

SUBSYSTEM: EMU
MDAC ID: 291
ITEM: BATTERY (ITEM 490)

LEAD ANALYST: G. RAFFAELLI

ASSESSMENT:

	CRITICALITY FLIGHT HDW/FUNC	REDUNDANCY SCREENS A	B	C	CIL ITEM
NASA	[2 /1R]	[P]	[P]	[P]	[X] *
IOA	[2 /1R]	[P]	[P]	[P]	[X]
COMPARE	[/]	[ ]	[ ]	[ ]	[ ]

RECOMMENDATIONS: (If different from NASA)

[/] [ ] [ ] [ ] [ ] (ADD/DELETE)

* CIL RETENTION RATIONALE: (If applicable)

ADEQUATE [ ]
INADEQUATE [ ]

REMARKS:
THE IOA AND THE NASA ARE IN AGREEMENT.

APPENDIX D

CRITICAL ITEMS

APPENDIX D
POTENTIAL CRITICAL ITEMS

NASA FMEA	MDAC-ID	ITEM	FAILURE MODE
131/162-FM1	100	PRIMARY H2O TANK 1	BLADDER FAILURE
131/162-FM3	101	PRIMARY H2O TANK 1	LEAK-O2 SIDE EXT
131/162-FM2	102	PRIMARY H2O TANK 1	LEAK-H2O SIDE
131/162-FM1	103	PRIMARY H2O TANK 1	BLADDER FAILURE
131/162-FM3	104	PRIMARY H2O TANK 1	LEAK-O2 SIDE
131/162-FM2	105	PRIMARY H2O TANK 1	LEAK-H2O SIDE
148-FM1	106	RESERVE H2O TANK	BLADDER FAILURE
148-FM3	107	RESERVE H2O TANK	LEAK-O2 SIDE
148-FM2	108	RESERVE H2O TANK	LEAK-H2O SIDE
132B-FM1	109	FDW SUPPLY PRESSURE	BIASED HIGH
132B-FM2, FM3	110	FDW SUPPLY PRESSURE	BIASED LOW
132B-FM5	111	FDW SUPPLY PRESSURE	EXTERNAL H2O LEAK
132B-FM4	112	FDW SUPPLY PRESSURE	INTERNAL SHORT
142-FM1	113	WATER RELIEF VALVE	INTERNAL LKG
142-FM3	115	WATER RELIEF VALVE	EXTERNAL LKG
143-FM1	116	WATER CHECK VALVE	INTERNAL LKG
143-FM2	117	WATER CHECK VALVE	FAILS CLOSED
143-FM3	118	WATER CHECK VALVE	EXTERNAL LEAKAGE
136-FM2	119	FEEDWATER PRESSURE	REGULATES HIGH
136-FM3	120	FEEDWATER PRESSURE	REGULATES LOW
136-FM1	121	FEEDWATER PRESSURE	INTERNAL LKG
136-FM4	122	FEEDWATER PRESSURE	EXTERNAL LKG
135-FM1	123	FEEDWATER RELIEF VLV	INTERNAL LKG
135-FM3	124	FEEDWATER RELIEF VLV	EXTERNAL LKG
135-FM2	125	FEEDWATER RELIEF VLV	FAILS TO OPEN
137-FM4	126	FEEDWATER SHUTOFF VLV	INTERNAL LEAKAGE
137-FM5	127	FEEDWATER SHUTOFF VLV	EXTERNAL LEAKAGE
137-FM1	128	FEEDWATER SHUTOFF VLV	FAILS CLOSED
137-FM2	129	FEEDWATER SHUTOFF VLV	FAILS OPEN
137-FM6	130	FEEDWATER SHUTOFF VLV	ELECTRONICS SHORT
137-FM3	131	FEEDWATER SHUTOFF VLV	EXCESSIVE/CONTINU
138-FM1	132	FEEDWATER PRESSURE	BIASED HIGH
138-FM2	133	FEEDWATER PRESSURE	BIASED LOW
138-FM3	135	FEEDWATER PRESSURE	INTERNAL SHORT
140-FM8	136	SUBLIMATOR (ITEM 140)	EXTERNAL H2O FDW
140-FM2	137	SUBLIMATOR (ITEM 140)	SUBLIMATOR BLOCKE
140-FM7	138	SUBLIMATOR (ITEM 140)	EXTERNAL LCG H2O
140-FM6	139	SUBLIMATOR (ITEM 140)	INTERNAL LCG-TO-F
140-FM5	140	SUBLIMATOR (ITEM 140)	INTERNAL LCG-VENT
140-FM9	141	SUBLIMATOR (ITEM 140)	EXTERNAL VENT LOO
140-FM4	142	SUBLIMATOR (ITEM 140)	SLURPER BLOCKED
139-FM5	143	TEMPERATURE SENSOR	EXTERNAL LEAKAGE
	145	TEMPERATURE SENSOR	ELECTRICAL SHORT
125-FM1	147	PITOT ACTUATED VALVE	INTERNAL LEAKAGE
125-FM2	148	PITOT ACTUATED VALVE	INTERNAL LEAKAGE

NASA FMEA	MDAC-ID	ITEM	FAILURE MODE
125-FM3	149	PITOT ACTUATED VALVE	EXTERNAL LEAKAGE
125-FM4	150	PITOT ACTUATED VALVE	INLET FILTER BLOC
125-FM4	151	PITOT ACTUATED VALVE	FAILS CLOSED
128-FM3	152	CHECK VALVE AND HOUSI	EXTERNAL LEAKAGE
128-FM1	153	CHECK VALVE AND HOUSI	INTERNAL H2O LEAK
128-FM2	154	CHECK VALVE AND HOUSI	FAILED CLOSED
127-FM3	155	PUMP INLET FILTER	EXTERNAL LEAKAGE
127-FM2	156	PUMP INLET FILTER	BLOCKED
127-FM1	157	PUMP INLET FILTER	PASSAGE OF CONTAM
141-FM4	158	GAS TRAP (ITEM 141)	EXTERNAL LEAKAGE
141-FM1, FM3	159	GAS TRAP (ITEM 141)	GAS BREAKTHROUGH
141-FM2	160	GAS TRAP (ITEM 141)	SCREEN BLOCKED
141-FM5	161	GAS TRAP (ITEM 141)	INTERNAL LEAKAGE
134-FM3	162	CONDENSATE H2O RELIEF	EXTERNAL LEAKAGE
134-FM1	163	CONDENSATE H2O RELIEF	FAILS OPEN
134-FM2	164	CONDENSATE H2O RELIEF	BLOCKED INLET FIL
134-FM2	165	CONDENSATE H2O RELIEF	VALVE FAILS CLOSE
171-FM5	167	H2O SHUTOFF VALVE	EXTERNAL LEAKAGE
171-FM2, FM4	168	H2O SHUTOFF VALVE	INTERNAL LEAKAGE
171-FM1	169	H2O SHUTOFF VALVE	FAILS CLOSED (NO
171-FM3	170	H2O SHUTOFF VALVE	CONTINUOUS MOTOR
171-FM1	171	H2O SHUTOFF VALVE	FILTER ELEMENT BL
171-FM6	172	H2O SHUTOFF VALVE	ELECTRICAL SHORT
172-FM3	173	COOLANT RELIEF VALVE	EXTERNAL LEAKAGE
172-FM1	174	COOLANT RELIEF VALVE	FAILS OPEN
	175	COOLANT RELIEF VALVE	BLOCKED INLET FIL
172-FM2	176	COOLANT RELIEF VALVE	VALVE FAILS CLOSE
123-FM4	178	ROTARY H2O SEPARATOR	PITOT TUBE
123-FM6	179	ROTARY H2O SEPARATOR	EXTERNAL LEAKAGE
123-FM9	180	ROTARY H2O SEPARATOR	BEARINGS BIND
123-FM6	181	WATER PUMP (ITEM 123C)	EXTERNAL LEAKAGE
123-FM5	182	WATER PUMP (ITEM 123C)	REDUCED FLOW
123-FM7	183	WATER PUMP (ITEM 123C)	INTERNAL LEAKAGE
123-FM3	184	FAN (ITEM 123A)	EXTERNAL LEAKAGE
123-FM1	185	FAN (ITEM 123A)	LOW FLOW
123-FM9	186	BRUSHLESS MOTOR	BEARINGS BIND
123-FM10	187	BRUSHLESS MOTOR	FAILS OFF
123-FM10	188	BRUSHLESS MOTOR	LOW SPEED
123-FM8	189	BRUSHLESS MOTOR	HIGH SPEED
123-FM11	190	BRUSHLESS MOTOR	SHORT
170-FM1	191	MUFFLER (ITEM 170)	EXTERNAL LEAKAGE
480-FM7	192	CONTAMINANT CONTROL	EXTERNAL LEAKAGE
480-FM8	192	CONTAMINANT CONTROL	EXTERNAL LEAKAGE
480-FM2	193	CONTAMINANT CONTROL	PARTICULATE FILTER
480-FM2	194	CONTAMINANT CONTROL	TEFLON SCREEN PAR
480-FM3	196	CONTAMINANT CONTROL	LiOH RELEASED TO
121-FM5	197	CHECK VALVE AND VENT	EXTERNAL LEAKAGE
121-FM3	198	CHECK VALVE AND VENT	VALVE FAILS CLOSE
121-FM2	199	CHECK VALVE AND VENT	SENSOR FAILS LOW
121-FM4	200	CHECK VALVE AND VENT	VALVE FAILS OPEN

NASA FMEA	MDAC-ID	ITEM	FAILURE MODE
121-FM1	201	CHECK VALVE AND VENT	SENSOR FAILS HIGH
	202	CHECK VALVE AND VENT	SHORT
122-FM5	203	CO2 TRANSDUCER	EXTERNAL LEAKAGE
122-FM1	204	CO2 TRANSDUCER	SENSOR FAILS HIGH
122-FM2	205	CO2 TRANSDUCER	SENSOR FAILS LOW
122-FM4	206	CO2 TRANSDUCER	ELECTRICAL SHORT
126-FM2	207	FILTER AND ORIFICE	EXTERNAL LEAKAGE
126-FM1	208	FILTER AND ORIFICE	ORIFICE BLOCKED
114-FM3, FM4	210	PRESSURE SUIT SENSOR	BIASED LOW
114-FM6	211	PRESSURE SUIT SENSOR	EXTERNAL LEAKAGE
114-FM5	212	PRESSURE SUIT SENSOR	INTERNAL SHORT
145-FM1	213	RELIEF VALVE AND ORIF	EXTERNAL LEAKAGE
145-FM2	214	RELIEF VALVE AND ORIF	INTERNAL LEAKAGE
146-FM2	216	POSITIVE PRESSURE REL	EXTERNAL LEAKAGE
146-FM1	217	POSITIVE PRESSURE REL	FAILS OPEN
146-FM3	218	POSITIVE PRESSURE REL	FAILS CLOSED
147-FM1	219	NEGATIVE PRESSURE REL	EXTERNAL LEAKAGE
147-FM2	220	NEGATIVE PRESSURE REL	FAIL OPEN
113A-FM3	222	CHECK VALVE AND FILTER	EXTERNAL LEAKAGE
113A-FM4	223	CHECK VALVE AND FILTER	EXTERNAL LEAKAGE
	224	CHECK VALVE AND FILTER	INLET OR OUTLET
	225	CHECK VALVE AND FILTER	INLET FILTER FAIL
	226	CHECK VALVE AND FILTER	OUTLET FILTER FAIL
113A-FM1	227	CHECK VALVE AND FILTER	VALVE FAILS CLOSE
113A-FM2	228	CHECK VALVE AND FILTER	VALVE FAILS OPEN
113B-FM3	229	ADJUSTABLE ORIFICE	EXTERNAL LEAKAGE
113B-FM1	230	ADJUSTABLE ORIFICE	NO FLOW-BLOCKED
113B-FM2	231	ADJUSTABLE ORIFICE	HIGH FLOW
113C-FM3	232	ON/OFF VALVE	EXTERNAL LEAKAGE
113C-FM2	233	ON/OFF VALVE	FAILED CLOSED
113C-FM1	234	ON/OFF VALVE	FAILED OPEN
113D-FM4	235	PRIMARY REGULATOR	EXTERNAL LEAKAGE
113D-FM1	236	PRIMARY REGULATOR	INTERNAL LEAKAGE
113D-FM2	237	PRIMARY REGULATOR	FAILS CLOSED
113D-FM3	238	PRIMARY REGULATOR	REGULATES LOW
113D-FM3	239	PRIMARY REGULATOR	REGULATES HIGH
113D-FM5, FM6	240	PRIMARY REGULATOR	IV-EV LINKAGE
113E-FM5	241	H2O REGULATOR	EXTERNAL LEAKAGE
113E-FM1	242	H2O REGULATOR	FAILS OPEN-INTERN
113E-FM2	243	H2O REGULATOR	REGULATES HIGH
113E-FM4	244	H2O REGULATOR	REGULATES LOW
113E-FM3	245	H2O REGULATOR	FAILS CLOSED
111-FM2	246	PRIMARY OXYGEN BOTTLE	EXTERNAL LEAKAGE
111-FM1	247	PRIMARY OXYGEN BOTTLE	RUPTURE-VIOLENT
112-FM7	248	PRIMARY O2 PRESSURE	EXTERNAL LEAKAGE
112-FM1	249	PRIMARY O2 PRESSURE	DRIFTS LOW
112-FM3	250	PRIMARY O2 PRESSURE	FAILS FULL LOW
112-FM4	251	PRIMARY O2 PRESSURE	DRIFTS HIGH
112-FM2	252	PRIMARY O2 PRESSURE	FAILS HIGH
112-FM5	253	PRIMARY O2 PRESSURE	BOURDON TUBE RUPT

NASA FMEA	MDAC-ID	ITEM	FAILURE MODE
112-FM6	254	PRIMARY O2 PRESSURE	ELECTRICAL SHORT
115-FM16	255	SHEAR PLATE ASSEMBLY	O2 MANIFOLD FILTER
115-FM18	256	SHEAR PLATE ASSEMBLY	O2 MANIFOLD FILTE
115-FM13	257	SHEAR PLATE ASSEMBLY	EXTERNAL LEAKAGE
115-FM14	258	SHEAR PLATE ASSEMBLY	EXTERNAL LEAKAGE
115-FM15	258	SHEAR PLATE ASSEMBLY	EXTERNAL LEAKAGE
115-FM1	259	SHEAR PLATE ASSEMBLY	FAILS IN THE "OFF
115-FM2	260	SHEAR PLATE ASSEMBLY	FAILS IN THE "IV"
115-FM3	261	SHEAR PLATE ASSEMBLY	FAILS IN THE PRE
115-FM4	262	SHEAR PLATE ASSEMBLY	FAILS IN THE EVA
115-FM7	263	SHEAR PLATE ASSEMBLY	FAILURE TO OPEN
115-FM8	264	SHEAR PLATE ASSEMBLY	FAILURE TO CLOSE
115-FM5	265	SHEAR PLATE ASSEMBLY	FAILURE TO OPEN
115-FM6	266	SHEAR PLATE ASSEMBLY	FAILURE TO CLOSE
115-FM9	267	SHEAR PLATE ASSEMBLY	FAILURE TO PLACE
115-FM10	268	SHEAR PLATE ASSEMBLY	FAILURE TO PLACE
115-FM12	269	SHEAR PLATE ASSEMBLY	SLIDE ACTUATOR
116-FM1	271	EVA POSITION SWITCH	FAILS OPEN-NO SIG
116-FM2	272	EVA POSITION SWITCH	FAILS CLOSED-CONT
120A-FM3	273	BLEED ORIFICE	EXTERNAL LEAKAGE
120A-FM2	274	BLEED ORIFICE	INTERNAL LEAKAGE
120B-FM1	276	DUAL MODE RELIEF VLV	EXTERNAL LEAKAGE
120B-FM2, FM3	277	DUAL MODE RELIEF VLV	INTERNAL LEAKAGE
120B-FM5	278	DUAL MODE RELIEF VLV	FAIL CLOSED
120B-FM4	279	DUAL MODE RELIEF VLV	FAILS CLOSED
120C-FM3	280	FEEDWATER CHECK VALVE	EXTERNAL LEAKAGE
120C-FM1	282	FEEDWATER CHECK VALVE	FAILED CLOSED
132A-FM5	283	FDW SUPPLY PRESSURE	EXTERNAL LEAKAGE
132A-FM2, FM3	285	FDW SUPPLY PRESSURE	FAILED LOW
132A-FM4	286	FDW SUPPLY PRESSURE	INTERNAL SHORT
490-FM4	287	BATTERY (ITEM 490)	EXTERNAL LEAKAGE
490-FM3	288	BATTERY (ITEM 490)	RELIEF VALVE FAIL
490-FM2	289	BATTERY (ITEM 490)	RELIEF VALVE FAIL
490-FM1	290	BATTERY (ITEM 490)	GENERATION OF HYD
490-FM5	291	BATTERY (ITEM 490)	HIGH RESISTANCE
490-FM1	292	BATTERY (ITEM 490)	SHORT
200-FM2	295	SECONARY O2 BOTTLE	EXTERNAL LEAKAGE
210-FM1	295	SECONARY O2 BOTTLE	EXTERNAL LEAKAGE
210-FM2	296	SECONARY O2 BOTTLE	BOTTLE RUPTURE
215-FM3	297	PRESSURE TRANSDUCER	EXTERNAL LEAKAGE
215-FM4	298	PRESSURE TRANSDUCER	INTERNAL LEAKAGE
215-FM5	298	PRESSURE TRANSDUCER	INTERNAL LEAKAGE
215-FM6	299	PRESSURE TRANSDUCER	ELECTRONICS SHORT
215-FM2	300	PRESSURE TRANSDUCER	READS HIGH
215-FM1, FM7	301	PRESSURE TRANSDUCER	READS LOW
213B-FM4	302	1ST STAGE REGULATOR	EXTERNAL LEAKAGE
213B-FM3	303	1ST STAGE REGULATOR	INTERNAL LEAKAGE
	304	1ST STAGE REGULATOR	REGULATES HIGH
213B-FM2	305	1ST STAGE REGULATOR	REGULATES LOW
213B-FM2	306	1ST STAGE REGULATOR	FAILS CLOSED

NASA FMEA	MDAC-ID	ITEM	FAILURE MODE
213B-FM1	307	1ST STAGE REGULATOR	DIAPHRAM RUPTURE
213D-FM7	308	2ND STAGE REGULATOR	EXTERNAL LEAKAGE
213D-FM1	309	2ND STAGE REGULATOR	INTERNAL LEAKAGE
213D-FM5	311	2ND STAGE REGULATOR	REGULATES LOW
213D-FM6	312	2ND STAGE REGULATOR	FAILS CLOSED
213D-FM9	312	2ND STAGE REGULATOR	FAILS CLOSED
213D-FM10	313	2ND STAGE REGULATOR	MECH LINKAGE
213E-FM3	314	SOP PRESSURE GAGE	EXTERNAL LEAKAGE
213E-FM4	315	SOP PRESSURE GAGE	BOURDN TUBE RUPT
213F-FM1	318	SOP FILL PORT QD	EXTERNAL LEAKAGE
	320	SOP FILL PORT QD	FILTER PASSES CON
	321	SOP ASSEMBLY	BOTTLE INLET FILT
200-FM1	322	SOP ASSEMBLY	EXTERNAL LEAKAGE
410-FM1	323	COMMON MULTIPLE CONN	EXTERNAL LEAKAGE
410-FM2	323	COMMON MULTIPLE CONN	EXTERNAL LEAKAGE
410-FM5	324	COMMON MULTIPLE CONN	EXTERNAL LEAKAGE
410-FM6, FM7	324	COMMON MULTIPLE CONN	EXTERNAL LEAKAGE
410-FM3	325	COMMON MULTIPLE CONN	EXTERNAL LEAKAGE
410-FM4	325	COMMON MULTIPLE CONN	EXTERNAL LEAKAGE
410-FM8	326	COMMON MULTIPLE CONN	CONNECTOR DOES NO
410-FM9	327	COMMON MULTIPLE CONN	CONNECTOR DOES NO
425-FM2	328	COMMON MULTIPLE CONN	ELECTRICAL POWER
425-FM3	329	COMMON MULTIPLE CONN	ELECTRICAL POWER
425-FM6	330	COMMON MULTIPLE CONN	OPEN IN VOLTAGE
425-FM4	334	COMMON MULTIPLE CONN	BATTERY RECHARGE
425-FM5	335	COMMON MULTIPLE CONN	BATTERY RECHARGE
411-FM1	336	HIGH PRESSURE OXYGEN	EXTERNAL LEAKAGE
412A-FM1	337	PORTABLE H2O LINE	EXTERNAL LEAKAGE
412B&C-FM1	338	COOLING H2O IN-LINE	EXTERNAL LEAKAGE
412B&C-FM1	339	COOLING H2O OUT-LINE	EXTERNAL LEAKAGE
416-FM1	340	BACTERIAL FILTER HOUS	EXTERNAL LEAKAGE
418-FM4	341	CONDENSATE H2O REGULA	EXTERNAL LEAKAGE
418-FM1	343	CONDENSATE H2O REGULA	INTERNAL LEAKAGE
418-FM2	344	CONDENSATE H2O REGULA	FAILS CLOSED
418-FM1	345	CONDENSATE H2O REGULA	REGULATES LOW
418-FM2	346	CONDENSATE H2O REGULA	REGUALTES HIGH
418-FM3	347	CONDENSATE H2O REGULA	MANUAL OVERRIDE
419-FM3	348	WATER SUPPLY PRESSURE	EXTERNAL LEAKAGE
419-FM1	349	WATER SUPPLY PRESSURE	INTERNAL LEAKAGE
419-FM2	350	WATER SUPPLY PRESSURE	FAILED CLOSED
423-FM4	351	BACTERIA CARTRIDGE	INLET SCREEN BLOC
423-FM3	352	BACTERIA CARTRIDGE	INLET SECREEN BLO
423-FM1, FM2	353	BACTERIA CARTRIDGE	FAILURE OF CARTRI
424-FM1	354	POTABLE H2O FILTER	BLOCKED/CLOGGED
424-FM2	355	POTABLE H2O FILTER	BLOCKED/CLOGGED
420-FM2	356	O2 FILTER AND ORIFICE	EXTERNAL LEAKAGE
420-FM1	357	O2 FILTER AND ORIFICE	FILTER BLOCKED
311-FM4	359	SUIT PRESSURE GAGE	EXTERNAL LEAKAGE
	360	SUIT PRESSURE GAGE	BOURDON TUBE RUPT
314-FM3	364	DCM PURGE VALVE	EXTERNAL LEAKAGE

NASA FMEA	MDAC-ID	ITEM	FAILURE MODE
314-FM1	365	DCM PURGE VALVE	INLET FILTER BLOC
314-FM1	366	DCM PURGE VALVE	FAILED CLOSED
314-FM2	367	DCM PURGE VALVE	FAIL OPEN
314-FM1	368	DCM PURGE VALVE	REDUCED FLOW
330-FM2	369	COMMON MULTIPLE CONN	EXTERNAL LEAKAGE
330-FM5	370	COMMON MULTIPLE CONN	EXTERNAL LEAKAGE
330-FM6	370	COMMON MULTIPLE CONN	EXTERNAL LEAKAGE
330-FM3	371	COMMON MULTIPLE CONN	EXTERNAL LEAKAGE
330-FM4	371	COMMON MULTIPLE CONN	EXTERNAL LEAKAGE
330-FM19	372	COMMON MULTIPLE CONN	FAILS TO MATE
330-FM20	373	COMMON MULTIPLE CONN	FAILS TO DEMATE
330-FM9	374	COMMON MULTIPLE CONN	OPEN IN POWER LIN
330-FM10	375	COMMON MULTIPLE CONN	SHORT IN POWER
330-FM12	377	COMMON MULTIPLE CONN	SHORT IN BATTERY
330-FM15	378	COMMON MULTIPLE CONN	OPEN IN VOLTAGE
330-FM16	379	COMMON MULTIPLE CONN	SHORT IN VOLTAGE
330-FM13	383	COMMON MULTIPLE CONN	BATTERY RECHARGE
	384	COMMON MULTIPLE CONN	OXYGEN FLOW BLOCK
	387	COMMON MULTIPLE CONN	LCG IN/OUT VALVE
385-FM1	388	HARD UPPER TORSO	VENT LOOP INTERFA
385-FM2	389	HARD UPPER TORSO	COOLING LOOP INTE
385-FM2	390	HARD UPPER TORSO	POTABLE H2O LEAKA
360-FM7	393	VOLUME CONTROL	SHORT IN ONE COMM
	394	VOLUME CONTROL	SHORT ACROSS TWO
	395	VOLUME CONTROL	INCREASED RESISTA
361-FM1	396	DISPLAY INTENSITY CON	OPEN IN LINE
361-FM1	398	DISPLAY INTENSITY CON	INCREASED RESISTA
361-FM4	399	DISPLAY INTENSITY CON	SHAFT BINDS
362-FM2	400	EVC SELECTOR SWITCH	OPEN IN PRIMARY
362-FM2	401	EVC SELECTOR SWITCH	OPEN IN SECONDARY
362-FM4	402	EVC SELECTOR SWITCH	OPEN IN PRIMARY
362-FM4	403	EVC SELECTOR SWITCH	OPEN IN SECONDARY
362-FM6	404	EVC SELECTOR SWITCH	OPEN IN PRIMARY
362-FM6	405	EVC SELECTOR SWITCH	OPEN IN SECONDARY
362-FM7	406	EVC SELECTOR SWITCH	OPEN IN PRIMARY
362-FM7	407	EVC SELECTOR SWITCH	OPEN IN SECONDARY
362-FM9	408	EVC SELECTOR SWITCH	SHORT TO GROUND
362-FM1	410	EVC SELECTOR SWITCH	SWITCH FAILS
364-FM14	414	POWER MODE SELECTOR	SWITCH FAILS OPEN
364-FM16	414	POWER MODE SELECTOR	SWITCH FAILS OPEN
364-FM13	415	POWER MODE SELECTOR	SWITCH FAILS OPEN
364-FM17	415	POWER MODE SELECTOR	SWITCH FAILS OPEN
364-FM15	416	POWER MODE SELECTOR	SWITCH FAILS OPEN
364-FM11	417	POWER MODE SELECTOR	SWITCH FAILS OPEN
364-FM9	417	POWER MODE SELECTOR	SWITCH FAILS OPEN
364-FM12	418	POWER MODE SELECTOR	SWITCH FAILS OPEN
364-FM8	418	POWER MODE SELECTOR	SWITCH FAILS OPEN
364-FM10	419	POWER MODE SELECTOR	SWITCH FAILS OPEN
364-FM4	420	POWER MODE SELECTOR	SWITCH FAILS OPEN

NASA FMEA	MDAC-ID	ITEM	FAILURE MODE
364-FM6	420	POWER MODE SELECTOR	SWITCH FAILS OPEN
364-FM3	421	POWER MODE SELECTOR	SWITCH FAILS OPEN
364-FM7	421	POWER MODE SELECTOR	SWITCH FAILS OPEN
364-FM5	422	POWER MODE SELECTOR	SWITCH FAILS OPEN
364-FM1	423	POWER MODE SELECTOR	SWITCH STAYS
364-FM2	424	POWER MODE SELECTOR	SWITCH STAYS
364-FM19	425	POWER MODE SELECTOR	SHORT-VEHICLE PWR
364-FM18	426	POWER MODE SELECTOR	SHORT-BATTERY PWR
365-FM5	434	PUSH-TO-TALK SWITCH	FAIL CLOSED
366-FM2	437	FAN SWITCH (ITEM 366)	FAN POWER ON CONT
366-FM4	438	FAN SWITCH (ITEM 366)	FAN POWER ON CONT
	439	FAN SWITCH (ITEM 366)	CLIV POWER "OPEN"
	440	FAN SWITCH (ITEM 366)	CLIV POWER "CLOSE
366-FM3	441	FAN SWITCH (ITEM 366)	CLIV POWER SHORT
366-FM2	443	FAN SWITCH (ITEM 366)	SWITCH FAILS OFF
367-FM1	445	FEEDWATER VALVE SW	ELECTRICAL OPEN
367-FM4	446	FEEDWATER VALVE SW	ELECTRICAL OPEN
367-FM5	447	FEEDWATER VALVE SW	ELECTRICAL SHORT
367-FM6	448	FEEDWATER VALVE SW	ELECTRICAL SHORT
367-FM3	449	FEEDWATER VALVE SW	SWITCH FAILS
367-FM2	450	FEEDWATER VALVE SW	SWITCH FAILS
368-FM1	451	CAUTION AND WARNING	OPEN IN STATUS
368-FM3	452	CAUTION AND WARNING	OPEN IN PROGRAM
368-FM2	453	CAUTION AND WARNING	SHORT TO GROUND
368-FM4	454	CAUTION AND WARNING	SHORT TO GROUND
368-FM6	455	CAUTION AND WARNING	BEARING FAILS
368-FM7	456	CAUTION AND WARNING	SWITCH FAILS
351-FM2	457	BITE INDICATOR	OPEN IN ELECTRICA
351-FM1	458	BITE INDICATOR	SHORT TO BITE IND
351-FM3	459	ALPHANUMERIC DISPLAY	SUPPLY VOLTAGE
	461	CAUTION AND WARNING	DISPLAY I/O PORT
150-FM8	462	CAUTION AND WARNING	MEMORY 5.V POWER
	463	CAUTION AND WARNING	SYSTEM CLOCK OUTP
	464	CAUTION AND WARNING	MULTIPLEXER INPUT
150-FM3	465	CAUTION AND WARNING	ANALOG TO DIGITAL
150-FM10	466	CAUTION AND WARNING	BITE CIRCUIT FAIL
150-FM11	467	CAUTION AND WARNING	BITE CIRCUIT FAIL
350-FM16	469	DCM ELECTRONICS	OPEN IN CURRENT
350-FM17	470	DCM ELECTRONICS	SHORT IN CURRENT
350-FM15	471	DCM ELECTRONICS	OPEN IN VOLTAGE
385-FM5	473	DCM ELECTRONICS	EMI FILTER SHORTS
385-FM4	474	DCM ELECTRONICS	EMI FILTER OPEN
350-FM3	475	DCM ELECTRONICS	EVC PRIMARY/CLIV
350-FM3	477	DCM ELECTRONICS	EVC SEC/FEEDWATER
	479	DCM ELECTRONICS	EVC PRIMARY/CLIV
	480	DCM ELECTRONICS	EVC SEC/FEEDWATER
350-FM23	481	DCM ELECTRONICS	EVC PRI/CLIV CURR
350-FM31	482	DCM ELECTRONICS	EVC SEC/FEEDWATER
350-FM4	483	DCM ELECTRONICS	EVC SEC/FEEDWATER

NASA FMEA	MDAC-ID	ITEM	FAILURE MODE
350-FM1	484	DCM ELECTRONICS	EVC PRIMARY/CLIV
	485	DCM ELECTRONICS	OPEN IN POWER
	486	DCM ELECTRONICS	OPEN IN POWER
	487	DCM ELECTRONICS	OPEN IN POWER
	488	DCM ELECTRONICS	SHORT TO GROUND
350-FM3	489	DCM ELECTRONICS	SHORT TO GROUND
350-FM22	490	DCM ELECTRONICS	SHORT TO GROUND
350-FM33	491	DCM ELECTRONICS	OPEN IN DC/DC CON
350-FM20	492	DCM ELECTRONICS	OPEN IN +14.2V
350-FM22	494	DCM ELECTRONICS	SHORT IN 3.8V OUT
350-FM22	495	DCM ELECTRONICS	SHORT IN +14.2V
350-FM22	497	DCM ELECTRONICS	SHORT IN 18V OUTP
350-FM18	498	DCM ELECTRONICS	OPEN IN LINE
350-FM19	499	DCM ELECTRONICS	FAILED ON TONE
321-FM4	500	COOLING CONTROL VALVE	EXTERNAL LEAKAGE
321-FM1, FM2	501	COOLING CONTROL VALVE	INTERNAL LEAKAGE
321-FM3	502	COOLING CONTROL VALVE	JAMS FULL COLD
102-FM2	600	NECK RING	JAM OF LOCK MECH
102-FM1	601	NECK RING	JAM OF LOCK MECH
102-FM3	602	NECK RING	LEAKAGE OF NECK
102-FM6	603	NECK RING	NECK RING FAILURE
	604	WATER LINE	WATER FLOWN BLOCK
102-FM16	605	WATER LINE	WATER LINE LEAKAG
102-FM25	608	MULTIPLE WATER CONNEC	JAM. FAIL TO MAT
102-FM26	609	MULTIPLE WATER CONNEC	JAM. FAIL TO DEM
102-FM22	610	MULTIPLE WATER CONNEC	LEAKAGE-MATED
102-FM10	611	HARD UPPER TORSO SHEL	LEAKAGE
	612	HARD UPPER TORSO SHEL	UNABLE TO MATE
102-FM20	613	GIMBAL ASSY.	DISATTACHMENT
102-FM21	614	BELLOWS ASSEMBLY	LEAKAGE
102-FM18	615	BODY SEAL CLOSURE	LEAKAGE
105-FM6	620	COMBINATION PURGE VLV	FAIL CLOSED
105-FM7	621	COMBINATION PURGE VLV	FAIL OPEN
105-FM1	622	HELMET ASSEMBLY	LEAKAGE
108-FM8	623	EXTRAVEHICULAR VISOR	JAM OF SUN VISOR
108-FM3	625	EXTRAVEHICULAR VISOR	CRACK IN SUN VISO
108-FM7	626	EXTRAVEHICULAR VISOR	CRAZING
103-FM15	627	UPPER/LOWER ARM RESTR	LEAKAGE
103-FM5	627	UPPER/LOWER ARM RESTR	LEAKAGE
103-FM13, FM14	628	UPPER/LOWER ARM RESTR	LOSS OF PRIMARY A
103-FM6, FM8	628	UPPER/LOWER ARM RESTR	LOSS OF PRIMARY A
103-FM1	629	SCYE BEARING ASSEMBLY	LEAKAGE
103-FM4	630	SCYE BEARING ASSEMBLY	BEARING TORQUES
103-FM9	631	ARM BEARING ASSEMBLY	LEAKAGE
103-FM10	632	ARM BEARING ASSEMBLY	BEARING TORQUES
103-FM21	633	WRIST DISCONNECT	LOCK/JAM OPEN
103-FM20	634	WRIST DISCONNECT	LOCK JAM CLOSED
103-FM19	635	WRIST DISCONNECT	LEAKAGE
103-FM22	636	WRIST DISCONNECT	LOCK FAILURE

NASA FMEA	MDAC-ID	ITEM	FAILURE MODE
106-FM1	637	RESTRAINT MODIFIED	RESTRAINT LAYER
106-FM7	638	RESTRAINT MODIFIED	SIZING LINES
106-FM5	639	RESTRAINT MODIFIED	PALM BAR SEPARATE
106-FM2	640	RESTRAINT MODIFIED	PRIMARY AXIAL RES
106-FM3	640	RESTRAINT MODIFIED	PRIMARY AXIAL RES
106-FM8	641	BLADDER ASSEMBLY	LEAKAGE
106-FM10	642	WRIST DISCONNECT	LEAKAGE
106-FM13	643	WRIST DISCONNECT	BEARING TORQUE
106-FM15	644	PALM RESTRAINT	PALM BAR RESTRAIN
106-FM14	645	PALM RESTRAINT	PALM BAR BENT
104-FM9	646	WAIST RESTRAINT	LEAKAGE
104-FM11	647	WAIST RESTRAINT	LOSS OF PRIMARY A
104-FM13	648	WAIST BEARING	LEAKAGE
104-FM21	649	WAIST BEARING	BEARING TORQUES
104-FM22	650	LOWER TORSO RESTRAINT	LEAKAGE
104-FM24	651	LOWER TORSO RESTRAINT	LOSS OF PRIMARY A
104-FM25	651	LOWER TORSO RESTRAINT	LOSS OF PRIMARY A
104-FM29	652	BOOT DISCONNECT	LEAKAGE
104-FM34	653	PRESSURE BOOT ASSY	LEAKAGE
104-FM32	654	PRESSURE BOOT ASSY	LOSS OF PRIMARY A
104-FM33	654	PRESSURE BOOT ASSY	LOSS OF PRIMARY A
104-FM4	656	BODY SEAL CLOSURE	JAMMED OPEN
104-FM3	657	BODY SEAL CLOSURE	JAMMED CLOSED
104-FM1	658	BODY SEAL CLOSURE	LEAKAGE
107-FM2	660	RESTRAINT ASSEMBLY	ZIPPER JAMMED
107-FM3	660	RESTRAINT ASSEMBLY	ZIPPER JAMMED
107-FM6	662	RESTRAINT ASSEMBLY	PUNCTURED OR LEAK
107-FM13	665	VENT MANIFOLD	COMPLETE BLOCKAGE
107-FM17	666	MULTIUPLE CONNECTOR	WILL NOT MATE
107-FM15	667	MULTIUPLE CONNECTOR	LEAKAGE WHEN DEMA
107-FM16	668	MULTIUPLE CONNECTOR	LEAKAGE WHEN MATE
110-FM1	669	BITE VALVE ASSEMBLY	LEAKAGE
110-FM4	671	BLADDER ASSEMBLY	LEAKAGE
110-FM5	672	BLADDER ASSEMBLY	BAG DISLODGED
	675	ROLLON CUFF	LEAKAGE
	676	VALVE	FAILS CLOSED
	677	BLADDER	LEAKAGE
	678	BLADDER	MISPOSITIONED
	679	HARNESS	HARNESS LOOSE
	680	CCA	LOSS OF POWER
366-FM5	701	FAN SWITCH (ITEM 366)	CLIV SWITCH FAILS
366-FM6	702	FAN SWITCH (ITEM 366)	CLIV SWITCH FAILS
368-FM8	703	CAUTION AND WARNING	LOSS OF INPUT PWR
150-FM1	704	CAUTION AND WARNING	5V POWER SUPPLY
150-FM2	705	CAUTION AND WARNING	5V REFERENCE SUPP
150-FM4	706	CAUTION AND WARNING	EMU TIMELINE MEMO
150-FM5	707	CAUTION AND WARNING	C&W TONE DISCRETE
150-FM6	708	CAUTION AND WARNING	C&W TONE DISCRETE
150-FM7	709	CAUTION AND WARNING	FAILURE OF PERMAN

NASA FMEA	MDAC-ID	ITEM	FAILURE MODE
150-FM9	710	CAUTION AND WARNING	CPU FAILURE
150-FM12	711	CAUTION AND WARNING	ELECTRICAL SHORT
115-FM17	714	SHEAR PLATE ASSEMBLY	FILTER CLOGS
115-FM19	715	SHEAR PLATE ASSEMBLY	CONTAMINATION BRE
122-FM3	716	CO2 TRANSDUCER	SLOW RESPONSE
123-FM2	717	FAN (ITEM 123A)	BLADE FRACTURES
131/162-FM5	718	PRIMARY H2O TANK ASSY	LEVER LATCH ASSEM
131/162-FM4	719	PRIMARY WATER TANK AS	LEVER LATCH ASSEM
131/162-FM6	720	PRIMARY WATER TANK AS	GAS LINES CLOG
140-FM1	721	SUBLIMATOR (ITEM 140)	BREAKTHROUGH
161-FM1	726	PLSS/SOP TMG	LOOSE TMG PARTIAL
174-FM2	728	REAL TIME DATA SYSTEM	ELECTRICAL SHORT
330-FM17	731	COMMON MULTIPLE CONN	ELECTRICAL OPEN
330-FM18	732	COMMON MULTIPLE CONN	ELECTRICAL SHORT
361-FM2	735	DISPLAY INTENSITY CON	INTERMITTENT OPER
361-FM5	736	DISPLAY INTENSITY CON	BROKEN SHAFT
368-FM5	737	CAUTION AND WARNING	SWITCH FAILS
470-FM1	743	AIRLOCK ADAPTER PLATE	ADAPTER DETACHES
470-FM2	744	AIRLOCK ADAPTER PLATE	EMU DETACHES
470-FM3	745	AIRLOCK ADAPTER PLATE	SCU DETACHES
480-FM1	746	CONTAMINATE CONTROL	FAILS TO REMOVE
480-FM4	747	CONTAMINANT CONTROL	PRESENCE OF DICHL
480-FM5, FM6	748	CONTAMINANT CONTROL	OVERHEATING/HYROG
425-FM8	749	COMMON MULTIPLE CONN	OPEN IN BATT SENS
425-FM9	750	COMMON MULTIPLE CONN	SHORT IN BATT SEN
123-FM12	751	FAN/SEPARATOR/PUMP/MO	O2 LEAKAGE
114-FM7	752	PRESSURE SUIT SENSOR	FAILS STUCK
115-FM20	753	SHEAR PLATE ASSEMBLY	CAM DETACHES
115-FM21	754	SHEAR PLATE ASSEMBLY	MOUNTING SCREW
140-FM3	755	SUBLIMATOR (ITEM 140)	REDUCED AIR STREA
140-FM10	756	SUBLIMATOR (ITEM 140)	POROUS PLATE SPAT
150-FM13	757	CAUTION AND WARNING	5.6V POWER SUPPLY
150-FM14	758	CAUTION AND WARNING	TIMELINE MEMORY
300-FM7	759	DCM	SCREW BRACKET DIS
300-FM2	760	DCM ELECTRONICS	SHORT INPUT
350-FM5	761	DCM ELECTRONICS	INPUT TO OUTPUT
350-FM6	762	DCM ELECTRONICS	BATTERY POWER
350-FM10	766	DCM ELECTRONICS	FAN/PUMP SWITCH
350-FM24	770	DCM ELECTRONICS	SHORT INPUT
350-FM25	771	DCM ELECTRONICS	DC/DC CURRENT LIM
350-FM26	772	DCM ELECTRONICS	SHORT INPUT
350-FM27	773	DCM ELECTRONICS	NEGATIVE CURRENT
350-FM32	777	DCM ELECTRONICS	SHORT INPUT
350-FM34	778	DCM ELECTRONICS	ALL SECONDARY VOL
350-FM35	779	DCM ELECTRONICS	LCD MICROPROCESSOR
440-=FM5	783	EEH	LEAKAGE AT HUT
100-FM1	784	PLSS	LOWER BRACKET FRA
100-FM2	785	PLSS	H2O MAKEUP TUBE
100-FM3	786	PLSS	O2 PRESSURE RELIEF

NASA FMEA	MDAC-ID	ITEM	FAILURE MODE
100-FM4	787	PLSS	EMU/MMU LATCH DIS
	803	NECK RING AND VENT	EXTERNAL LOOP TAP
102-FM15	804	WATER LINE AND VENT	REDUCED VENT FLOW
	805	BODY SEAL CLOSURE	TMG LOOP TAPE LOO
102-FM19	806	BODY SEAL CLOSURE	MINI WORK STATION
105-FM3	807	HELMET ASSEMBLY	VALSALVA DEVICE D
105-FM5	808	HELMET ASSEMBLY	HELMET FOGGING
105-FM2	809	HELMET ASSEMBLY	VENT PAD DE-BONDS
108-FM1	810	EVVA	SHELL CRACKED
	813	UPPER/LOWER ARM RESTR	TMG LOOSE
103-FM7	814	UPPER ARM RESTRAINT	AXIAL RESTRAINT
103-FM3	815	SCYE BEARING ASSEMBLY	RESTRAINT BRACKET
103-FM11	816	ARM BEARING ASSEMBLY	LOWER PRIMARY RES
103-FM17	817	WRIST DISCONNECT	PRIMARY RESTRAINT
103-FM18	818	WRIST DISCONNECT	PRIMARY RESTRAINT
	820	RESTRAINT MODIFIED	TMG ATTACHMENT
106-FM9	821	BLADDER ASSEMBLY	FLOCK DELAMINATES
106-FM11	822	WRIST DISCONNECT	RESTRAINT BRACKET
106-FM12	823	WRIST DISCONNECT	TETHER SEVERS
104-FM10	824	WAIST RESTRAINT	HOLE OR SEPARATION
	825	WAIST RESTRAINT	AXIAL RESTRAINT
	826	WAIST RESTRAINT	TMG LOOSE
104-FM20	827	WAIST BEARING	TETHER BRACKET LO
104-FM23	828	LOWER TORSO RESTRAINT	HOLE OR SEPARATION
	829	LOWER TORSO RESTRAINT	TMG SEPARATION
104-FM30	830	BOOT DISCONNECT	LOSS OF AXIAL RES
104-FM36	831	PRESSURE BOOT ASSEMBL	HEEL-TOP RETAININ
104-FM37	832	PRESSURE BOOT ASSEMBL	RUBBER SOLE ABRAD
104-FM35	833	PRESSURE BOOT ASSEMBL	HOLE OR TEAR
	834	PRESSURE BOOT ASSEMBL	TMG DISATTACHES
102-FM8	844	HARD TORSO SHELL	H2O LEAKAGE
102-FM9	845	HARD TORSO SHELL	VENT RETURN FLOW
102-FM11	846	HARD TORSO SHELL	GIMBAL PIVOT SOCK
102-FM13	848	HUT ASSEMBLY	IDB DETACHES
102-FM14	849	HUT ASSEMBLY	BROKEN GIMBAL TRA
102-FM28	851	HUT TMG	LOOSE OR HAS HOLE
103-FM23	852	ARM TMG	LOOSE OR HAS HOLE
104-FM40	856	WAIST/BRIEF/LTA/BOOT	LOOSE OR HAS HOLE
106-FM17	858	GLOVE TMG	HOLE OR SEPARATION
107-FM8	862	RESTRAINT ASSEMBLY	H2O FLOW RESTRICT
106-FM19	864	MITTEN ASSEMBLY	INSULATION TORN
103-FM12	865	ARM BEARING ASSEMBLY	LOWER PRIMARY RES
103-FM16	866	LOWER ARM RESTRAINT A	AXIAL RESTRAINT
104-FM31	867	BOOT DISCONNECT	LOSS OF AXIAL RES
101-FM5	870	CCA	CHIN STRAP FAILS
103-FM2A	872	SCYE BEARING ASSEMBLY	LOSS OF PRIMARY A
104-FM2	873	BODY SEAL CLOSURE	LOSS OF PRIMARY A
104-FM12	874	WAIST BEARING	UPPER PRIMARY EXI
104-FM14	875	WAIST BEARING	LOSS OF BALL BEAR

NASA FMEA	MDAC-ID	ITEM	FAILURE MODE
104-FM15	876	WAIST BEARING	LOSS OF LOWER PRI
104-FM16	877	WAIST BEARING	LOSS OF PRIMARY A
104-FM17	878	WAIST BEARING	LOSS OF PRIMARY A
104-FM18	879	WAIST BEARING	LOSS OF REAR REST
104-FM19	880	WAIST BEARING	TETHER BRACKET FR
104-FM26	881	LOWER TORSO RESTRAINT	LOSS OF HIP JOINT
104-FM27	882	LOWER TORSO RESTRAINT	CROTCH BUCKLE YIE
105-FM4	886	HELMET ASSEMBLY	FRESNEL LENS DETA
106-FM4	887	RESTRAINT MODIFIED	GIMBAL RING FRACT
107-FM1	888	RESTRAINT ASSEMBLY	ZIPPER DETACHES
108-FM2	889	EXTRAVEHICULAR VISOR	CRACKED/SCRATCHED
108-FM4	890	EXTRAVEHICULAR VISOR	EYE SHADES JAMMED
108-FM9	891	EXTRAVEHICULAR VISOR	TENSION BAND BREA

APPENDIX E
DETAILED ANALYSIS

This appendix contains the IOA analysis worksheets supplementing previous results reported in STSEOS Working Paper 1.0-WP-VA86001-15, Analysis of the Extravehicular Mobility Unit, (28 November 1986). Prior results were obtained independently and documented before starting the FMEA/CIL assessment activity. Supplemental analysis was performed to address failure modes not previously considered by the IOA. Each sheet identifies the hardware item being analyzed, parent assembly and function performed. For each failure mode possible causes are identified, and hardware and functional criticality for each mission phase are determined as described in NSTS 22206, Instructions for Preparation of FMEA and CIL, 10 October 1986. Failure mode effects are described at the bottom of each sheet and worst case criticality is identified at the top.

LEGEND FOR IOA ANALYSIS WORKSHEETS

Hardware Criticalities:

- 1 = Loss of life or vehicle
- 2 = Loss of mission or next failure of any redundant item (like or unlike) could cause loss of life/vehicle
- 3 = All others

Functional Criticalities:

- 1R = Redundant hardware items (like or unlike) all of which, if failed, could cause loss of life or vehicle.
- 2R = Redundant hardware items (like or unlike) all of which, if failed, could cause loss of mission.

Redundancy Screen A:

- 1 = Is Checked Out PreFlight
- 2 = Is Capable of Check Out PreFlight
- 3 = Not Capable of Check Out PreFlight
- NA = Not Applicable

Redundancy Screens B and C:

- P = Passed Screen
- F = Failed Screen
- NA = Not Applicable

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 701 FLIGHT: 3/2R

ITEM: FAN SWITCH (ITEM 366)
FAILURE MODE: CLIV SWITCH FAILS IN "VALVE OPEN"

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/2R
EVA:	3/3
POST-EVA:	3/2R

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV771887-2

CAUSES: ELECTRICAL ARCING, MATERIAL FAILURE

EFFECTS/RATIONALE:
CONCURRENT FAILURE OF ITEM 134 CHECK VALVE WHEN MOTOR NOT OPERATING CAN RESULT IN FLOODING OF FAN SEPARATOR AND MISSION TERMINATION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 702 FLIGHT: 2/2

ITEM: FAN SWITCH (ITEM 366)
FAILURE MODE: CLIV SWITCH FAILS IN "VALVE CLOSE"

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	3/2R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [ ] C [ ]

LOCATION:
PART NUMBER: SV771887-2

CAUSES: ELECTRICAL ARCING, MATERIAL FAILURE

EFFECTS/RATIONALE:
DURING PRE- AND POST-EVA A FAILED CLOSED VALVE CAN RESULT IN INABILITY TO PERFORM LCVG CHANING. DURING EVA, A CONCURRENT FAILURE OF THE 172 CHECK VALVE (WITH A "HARD" CHARGE) CAN RESULT IN SEPARATOR FLOODING DUE TO INABILITY TO REMOVE CONDESATE.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 703 FLIGHT: 2/2

ITEM: CAUTION AND WARNING SWITCH (ITEM 368)
FAILURE MODE: LOSS OF INPUT POWER

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/2
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: SV767792-2

CAUSES: WIRE CHAFFING/SEVERS, CONTACT FRACTURES

EFFECTS/RATIONALE:
LOSS OF C&W DISPLAY RESULTS IN MISSION TERMINATION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 704 FLIGHT: 2/2

ITEM: CAUTION AND WARNING ELECTRONICS (ITEM 150)
FAILURE MODE: 5V POWER SUPPLY FAILS HIGH

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) C&W
3)
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/2
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: SV785970-5

CAUSES: SHORT CIRCUIT, ELECTRONIC VOLTAGE CONTROL CIRCUIT FAILS

EFFECTS/RATIONALE:
LOSS OF REFERENCE VOLTAGE TO A/D CONVERTER RESULTS IN ANALOG-TO-DIGITAL CONVERSION FUNCTION OF C&W SYSTEM. POSSIBLE FALSE MESSAGES CAN RESULT. MISSION TERMINATION DUE TO LOSS OF C&W FUNCTION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 705 FLIGHT: 2/2

ITEM: CAUTION AND WARNING ELECTRONICS (ITEM 150)
FAILURE MODE: 5V REFERENCE SUPPLY FAILS LOW

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) C&W
3)
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/2
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: SV785970-5

CAUSES: OPEN OR SHORT CIRCUIT, ELECTRONIC VOLTAGE CONTROL CIRCUIT FAILS

EFFECTS/RATIONALE:
LOSS OF ANALOG-TO-DIGITAL CONVERSION FUNCTION FOR C&W PARAMETERS. MISSION TERMINATION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 706 FLIGHT: 2/2

ITEM: CAUTION AND WARNING ELECTRONICS (ITEM 150)
FAILURE MODE: EMU TIMELINE MEMORY FAILS

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) C&W
3)
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/2
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: SV785970-5

CAUSES: THERMAL STRESS ON MEMORY, BUS FAILURE

EFFECTS/RATIONALE:
INABILITY TO SEQUENCE PROGRAMS BETWEEN EMU "STATES". TERMINATE MISSION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE:
SUBSYSTEM: EMU
MDAC ID: 707

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 2/2

ITEM: CAUTION AND WARNING ELECTRONICS (ITEM 150)
FAILURE MODE: C&W TONE DISCRETE FAILS ON

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) C&W
3)
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/2
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: SV785970-5

CAUSES: SHORT CIRCUIT, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:
C&W TONE GENERATED CONTINUOUSLY CAUSING CREW DISCOMFORT AND DEPENDENCE UPON DISPLAY FOR C&W. TERMINATE MISSION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 708 FLIGHT: 2/1R

ITEM: CAUTION AND WARNING ELECTRONICS (ITEM 150)
FAILURE MODE: C&W TONE DISCRETE FAILS OFF

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) C&W
3)
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV785970-5

CAUSES: ELECTRICAL OPEN, THERMAL STRESS, BUFFER FAILURE

EFFECTS/RATIONALE:
LOSS OF TONE CAN RESULT IN CREWPERSON NOT BEING MADE AWARE OF A PARTICULAR FAILURE (UPON ITS DETECTION BY THE C&W SYSTEM). IF A SECOND FAILURE (I.E., A SUIT LEAK, HIGH CO2, OR FAILED SUBLIMATOR) SHOULD OCCUR IN CONCERT WITH TONE FAILURE, CREWPERSON REACTION TIME COULD BE SIGNIFICANTLY REDUCED AND MAY RESULT IN LOSS OF LIFE. MISSION TERMINATION WOULD OCCUR FOR THE FIRST FAILURE IF DETECTED.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 709 FLIGHT: 2/2

ITEM: CAUTION AND WARNING ELECTRONICS (ITEM 150)
FAILURE MODE: FAILURE OF PERMANENT MEMORY

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) C&W
3)
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/2
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: SV785970-5

CAUSES: INPUT/OUTPUT FAILURE, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:
INABILITY OF CWS TO PERFORM ITS FUNCTIONS WITH INTEGRITY.
MISSION TERMINATION WILL RESULT.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE:
SUBSYSTEM: EMU
MDAC ID: 710

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 2/1R

ITEM: CAUTION AND WARNING ELECTRONICS
FAILURE MODE: CPU FAILURE

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) C&W
3)
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV785970-5

CAUSES: I/O PORT FAILURE, GATE FAILURE, THERMAL STRESS, OPEN, SHORT

EFFECTS/RATIONALE:
INABILITY TO PERFORM C&W PROCESSING AND CHECKS. MISSION TERMINATION. IF CPU FAILURE INHIBITS TONE USAGE AND IS COMBINED WITH A SECOND CRITICAL EMU FAILURE LOSS OF LIFE CAN RESULT.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE:
SUBSYSTEM: EMU
MDAC ID: 711

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 2/1R

ITEM: CAUTION AND WARNING ELECTRONICS (ITEM 150)
FAILURE MODE: ELECTRICAL SHORT

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) C&W
3)
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV785970-5

CAUSES: CONTAMINATION, VIBRATION, WIRE CHAFFING

EFFECTS/RATIONALE:
LOSS OF ANY POWER SUPPLY OR MAJOR ELECTRONIC FUNCTION CAN SEVERLY INHIBIT CWS OPERATION. MISSION TERMINATION. POSSIBLE CREWPERSON LOSS IF COMBINED WITH A SECOND "CRITICAL" EMU FAILURE DURING EVA.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 712 FLIGHT: 3/3

ITEM: PRIMARY REGULATOR (ITEM 113D)
FAILURE MODE: OSCILLATING OUTPUT

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) PLSS
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: SV77873-12

CAUSES: CONTAMINATION, BALANCE STEM MISALIGNED

EFFECTS/RATIONALE:
OSCILLATING OUTPUT WITHIN ACCEPTABLE PRESSURE LIMITS WILL HAVE NO IMPACT TO MISSION OR CREWMEMBER.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 713 FLIGHT: 3/3

ITEM: H2O REGULATOR (ITEM 113E)
FAILURE MODE: OSCILLATING OUTPUT

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) PLSS
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: SV77873-12

CAUSES: CONTAMINATION, BALANCE STEM MISALIGNED

EFFECTS/RATIONALE:
OSCILLATING OUTPUT WITHIN ACCEPTABLE PRESSURE LIMITS WILL HAVE NO IMPACT TO MISSION OR IMPACT CREWPERSON SAFETY.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 714 FLIGHT: 2/2

ITEM: SHEAR PLATE ASSEMBLY (ITEM 115)
FAILURE MODE: FILTER CLOGS AT DCM FILL OR END FITTING

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) PLSS
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	3/3
POST-EVA:	2/2

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: SV778540-26

CAUSES: CONTAMINATION

EFFECTS/RATIONALE:
POSSIBLE INABILITY TO CHARGE THE PLSS WITH O2. MISSION TERMINATION WILL RESULT DURING PRE-EVA AND/OR POST-EVA.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE:
SUBSYSTEM: EMU
MDAC ID: 715

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 3/2R

ITEM: SHEAR PLATE ASSEMBLY (ITEM 115)
FAILURE MODE: CONTAMINATION BREAKTHROUGH AT DCM END FITTING

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) PLSS
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/2R
EVA:	3/2R
POST-EVA:	3/2R

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV778540-26

CAUSES: FILTER EROSION

EFFECTS/RATIONALE:
CONTAMINATON WOULD NORMALLY BE PICKED UP BY O2 MANIFOLD FILTERS; HOWEVER, IF THESE FILTERS WERE ALSO FAILED CONTAMINATION CAN RESULT IN FAILURE OF THE 113 REGULATOR AND REQUIRE SOP USAGE TO RETURN TO VEHICLE.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 716 FLIGHT: 2/1R

ITEM: CO2 TRANSDUCER (ITEM 122)
FAILURE MODE: SLOW RESPONSE

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) PLSS
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV767798-1

CAUSES: CONTAMINATION, MEMBRANE DOES NOT PASS SAMPLE

EFFECTS/RATIONALE:
NO IMMEDIATE EFFECT RESULTS FROM THE SENSOR FAILURE; HOWEVER, IF THE CCC ALSO FALIED, HIGH CO2 LEVEL CAN RESULT IN CREWPERSON LOSS THROUGH DISORIENTATION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 717 FLIGHT: 1/1

ITEM: FAN (ITEM 123A)
FAILURE MODE: BLADE FRACTURES

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) PLSS
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	1/1
EVA:	1/1
POST-EVA:	1/1

REDUNDANCY SCREENS: A [3] B [F] C [P]

LOCATION:
PART NUMBER: SV787994-8

CAUSES: MATERIAL DEFECT, VIBRATION

EFFECTS/RATIONALE:
FRACTURE OF FAN BLADE RESULTS IN LOSS OF VENT LOOP; IF SOP ALSO FAILS, CREWPERSON CAN BE LOST. ADDITIONALLY, SEINCE THE FAN BLADES ARE METALLIC, A FAN BLADE STRIKING THE HOUSING CAN RESULT IN AN OXYGEN FIRE.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 718 FLIGHT: 3/1R

ITEM: PRIMARY H2O TANK ASSEMBLY (ITEM 131/162)
FAILURE MODE: LEVER LATCH ASSEMBLY FAILS - BATTERY

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1)
2)
3)
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	/NA
EVA:	/NA
POST-EVA:	/NA

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV769592-24

CAUSES: SPRING FRACTURE, LATCH FRACTURE, MATERIAL DEFECT

EFFECTS/RATIONALE:
THE LATCH FEATURES TWO LOCKING MECHANISMS FOR THE BATTERY. THE BATTERY ELECTRICAL CONNECTION AND THE TMG PROVIDE ADDITIONAL RETENTION CAPABILITY. FAILURE OF ONE LOCK MECHANISM WILL HAVE NO IMPACT, HOWEVER, FAILURE OF ALL REDUNDANT MECHANISMS AND THE SOP CAN RESULT IN CREWPERSON LOSS.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 719 FLIGHT: 3/1R

ITEM: PRIMARY WATER TANK ASSEMBLY (ITEM 131/162)
FAILURE MODE: LEVER LATCH ASSEMBLY FAILS - CCC

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) PLSS
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/2R
EVA:	3/1R
POST-EVA:	3/2R

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV769592-24

CAUSES: SPRING FRACTURE, LATCH FRACTURE, MATERIAL DEFECT

EFFECTS/RATIONALE:
THE LATCH FEATURES TWO LOCKING MECHANISMS FOR THE CCC. THE CCC CONNECTIONS AND THE TMG PROVIDE ADDITIONAL RETENTION CAPABILITY. FAILURE OF ONE LOCK MECHANISM WILL HAVE NO IMPACT, HOWEVER, FAILURE OF ALL REDUNDANT MECHANISMS FOR CCC RETENTION CAN RESULT IN CREWPERSON LOSS FROM DEPRESSURIZATION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 720 FLIGHT: 2/1R

ITEM: PRIMARY WATER TANK ASSEMBLY (ITEM 131/162)
FAILURE MODE: GAS LINES CLOG

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) PLSS
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [P] C [F]

LOCATION:
PART NUMBER: SV769592-24

CAUSES: EXCESSIVE KRYTOX OR BLADDERS MOVES AND BLOCKS LINES

EFFECTS/RATIONALE:
LOSS OF BLADDER PRESSUREANT WILL RESULT IN LOSS OF CAPABILITY TO SUPPLY SUBLIMATOR PRESSURIZED FEEDWATER AND TO SUPPLY MAKEUP LCVG H2O/COOLING H2O. THIS WILL RESULT IN LOSS OF COOLING FUNCTION AND MISSION TERMINATION. IF SOP ALSO LOST, CREWPERSON CAN BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 721 FLIGHT: 2/1R

ITEM: SUBLIMATOR (ITEM 140)
FAILURE MODE: BREAKTHROUGH

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) PLSS
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: SV783850-14

CAUSES: CONTAMINATION

EFFECTS/RATIONALE:
LOSS OF SUBLIMATOR RESULTS IN LOSS OF PRIMARY TEMPERATURE CONTROL TECHNIQUE. MISSION TERMINATION RESULTS; HOWEVER, IF COMBINED WITH LOSS OF SOP COOLING, CREWPERSON CAN BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 723 FLIGHT: 3/3

ITEM: POSITIVE PRESSURE RELIEF VALVE (ITEM 146)
FAILURE MODE: VALVE CHATTER

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) PLSS
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: SV787036-3

CAUSES: SPRING UNSEAT/RESEAT FORCE HIGH

EFFECTS/RATIONALE:
SUIT PRESSURE WILL BE "JUMPY" DURING DEPRESS DUE TO VALVE CHATTER BUT WILL NOT RESULT IN MISSION TERMINATION OR CREWPERSON INJURY.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 724 FLIGHT: 2/1R

ITEM: RESERVE WATER TANK (ITEM 148)
FAILURE MODE: GAS LINES CLOG

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) PLSS
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [F]

LOCATION:
PART NUMBER: SV769592-24

CAUSES: EXCESSIVE KRYTOX ON BLADDERS MOVES AND BLOCKS LINES

EFFECTS/RATIONALE:
LOSS OF BLADDER PRESSURANT WILL RESULT IN LOSS OF CAPABILITY TO EMPLOY SUBLIMATOR AND TO SUPPLY MAKEUP H2O FOR LCVG AND COOLING LOOPS. MISSION TERMINATION. IF SOP ALSO LOST, CREWPERSON CAN BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 726 FLIGHT: 1/1

ITEM: PLSS/SOP TMG (ITEM 161)
FAILURE MODE: LOOSE TMG PARTIALLY EXPOSES PLSS/SOP

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3)
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	1/1
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV772168-15

CAUSES: SEAM SEPARATION, THREAD/CORD BREAKS, FASTENER OPENS

EFFECTS/RATIONALE:
LOCAL "HOT/COLD" SPOT WILL RESULT. IF HEATING RESULTS ON PLSS O2 BOTTLES OR SOP O2 BOTTLES, GAS PRESSURE CAN SIGNIFICANTLY INCREASE DUE TO NO PRESSURE RELIEF AT THE BOTTLES. POSSIBLE RUPTURE/EXPLOSION OF OXYGEN TANK(S) CAN CAUSE LOSS OF CREWPERSON.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 727 FLIGHT: 3/3

ITEM: REAL TIME DATA SYSTEM (ITEM 174)
FAILURE MODE: LOSS OF SIGNAL

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2)
3)
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: SV791230-2

CAUSES: ELECTRICAL OPEN, POWER LOSS, COMPONENT/SENSOR FAILURE

EFFECTS/RATIONALE:
EKG SIGNAL NOT REQUIRED FOR EVA.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 728 FLIGHT: 2/1R

ITEM: REAL TIME DATA SYSTEM
FAILURE MODE: ELECTRICAL SHORT

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2)
3)
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV791230-2

CAUSES: CONTAMINATION, VIBRATION

EFFECTS/RATIONALE:
ELECTRICAL SHORT CAN CAUSE PARTIAL TO TOTAL LOSS OF DC/DC CONVERTER OR EXCESSIVE CURRENT DRAW. MISSION TERMINATION RESULTS. IF SOP IS ALSO LOST, CREWPERSON CAN BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 729 FLIGHT: 3/3

ITEM: FIRST STAGE REGULATOR (ITEM 213B)
FAILURE MODE: OSCILLATING OUTPUT

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) SOP
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: SV778475-13

CAUSES: CONTAMINATION, BALANCE STEM AND SPRING NOT MATCHED UP

EFFECTS/RATIONALE:
AN OSCILLATING OUTPUT WITHIN PRESSURE LIMITS WILL HAVE NO EFFECT.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 730 FLIGHT: 3/3

ITEM: SECOND STAGE REGULATOR (ITEM 213D)
FAILURE MODE: OSCILLATING OUTPUT

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) SOP
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: SV778475-13

CAUSES: CONTAMINATION, MISMATCHED PARTS

EFFECTS/RATIONALE:
OSCILLATING OUTPUT WITHIN PRESSURE LIMITS WILL HAVE NO IMPACTS.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 731 FLIGHT: 2/2

ITEM: COMMON MULTIPLE CONNECTOR (ITEM 330)
FAILURE MODE: ELECTRICAL OPEN - BATTERY RECHARGE SENSE LINE

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	3/3
POST-EVA:	2/2

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: SV778872-11

CAUSES: VIBRATION, CONTACT SEVERS

EFFECTS/RATIONALE:
LOSS OF SENSE SIGNAL WILL RESULT IN INABILITY TO RECHARGE BATTERY. MISSION TERMINATION CAN RESULT.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 732 FLIGHT: 2/2

ITEM: COMMON MULTIPLE CONNECTOR (ITEM 330)
FAILURE MODE: ELECTRICAL SHORT - BATTERY RECHARGE SENSE LINE

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	3/3
POST-EVA:	2/2

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: SV778872-11

CAUSES: CONTAMINATION, VIBRATION, CHAFFING

EFFECTS/RATIONALE:
SHORT WILL CAUSE BATTERY DISCHARGE AND WILL RESULT IN MISSION TERMINATON AT PRE-EVA.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 733 FLIGHT: 3/2R

ITEM: VOLUME CONTROL (ITEM 360)
FAILURE MODE: INTERMITTENT OPERATION

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/2R
EVA:	3/2R
POST-EVA:	3/2R

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: SV767784-1

CAUSES: CORROSION/CONTAMINATION ON WIPER

EFFECTS/RATIONALE:
EGRADED COMUNICATIONS OPERATION. IF BOTH COMMUNICATIONS SETS ARE FAILED, TERMINATE MISSION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 734 FLIGHT: 3/2R

ITEM: COLUME CONTROL (ITEM 360)
FAILURE MODE: SHAFT BREAKS

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/2R
EVA:	3/2R
POST-EVA:	3/2R

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: SV767784-1

CAUSES: IMPACT, EXCESSIVE FORCE APPLIED TO SHAFT

EFFECTS/RATIONALE:
INABILITY TO CHANGE VOLUME. POSSIBLE LOSS OF ONE COMMUNICATIONS SET. TERMINATE MISSION IF BOTH SETS ARE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 735 FLIGHT: 2/2

ITEM: DISPLAY INTENSITY CONTROL (ITEM 361)
FAILURE MODE: INTERMITTENT OPERATION

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/2
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: SV767785-1

CAUSES: CONTAMINATION ON CONTACTS

EFFECTS/RATIONALE:
PROBABLE DISPLAY LOSS. TERMINATE MISSION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 736 FLIGHT: 3/3

ITEM: DISPLAY INTENSITY CONTROL (ITEM 361)
FAILURE MODE: BROKEN SHAFT

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: SV767785-1

CAUSES: IMPACT, EXCESSIVE FORCE

EFFECTS/RATIONALE:
INABILITY TO VERY DISPLAY INTENSITY. IF ENVIRONMENT IS BRIGHT, DISPLAY MAY REQUIRE SHADING.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 737 FLIGHT: 2/2

ITEM: CAUTION AND WARNING SWITCH (ITEM 368)
FAILURE MODE: SWITCH FAILS IN CENTER (OFF) POSITION

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/2
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: SV767792-2

CAUSES: BEARING BINDS, CAM BINDS, CORROSION

EFFECTS/RATIONALE:
INABILITY TO EMPLOY PROGRAM OR STATUS FUNCTION. THIS WILL RESULT IN MISSION TERMINATION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 738 FLIGHT: 3/3

ITEM: SUIT PRESSURE GAGE (ITEM 311)
FAILURE MODE: LIGHT FAILS OFF

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: SV767706-3

CAUSES: OPEN CIRCUIT, VIBRATION

EFFECTS/RATIONALE:
NO MISSION IMPACT. CREWPERSON CAN EMPLOY AVAILABLE LIGHTING OR C&W DISPLAY.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 739 FLIGHT: 3/3

ITEM: DCM TMG (ITEM 384)
FAILURE MODE: PARTIALLY EXPOSES DCM

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV771987-11

CAUSES: SEAM SEPARATION, THREAD/CORD SEVERS OR COMES UNDONE

EFFECTS/RATIONALE:
LOCAL "COLD/HOT" SPOTS ON DCM ARE REMOTE FROM CREWPERSON AND HIGH PRESSURE OXYGEN. ELECTRONICS SHOULD NOT BE AFFECTED DUE TO HEAT DISTRIBUTION. NO IMPACT.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 742 FLIGHT: 3/3

ITEM: SHEATH ASSEMBLY (ITEM 428)
FAILURE MODE: CLOTH TORN

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SCU
3)
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: SV771749-3

CAUSES: DEFECTIVE MATERIAL, ABRASION, SEAM SEPARATES

EFFECTS/RATIONALE:
NO IMPACTS SINCE SCU IS NOT IN A SEVERE THERMAL ENVIRONMENT.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 743 FLIGHT: 2/2

ITEM: AIRLOCK ADAPTER PLATE (ITEM 470)
FAILURE MODE: ADAPTER DETACHES FROM WALL

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2)
3)
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	/NA
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV767680-03

CAUSES: MOUNTING BRACKET FRACTURES

EFFECTS/RATIONALE:
LOSS OF ANY ONE BRACKET WOULD RESULT IN AAP DETACHING. MISSION TERMINATION. FAILURE MODE WILL MOST LIKELY OCCUR DURING ASCENT.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 744 FLIGHT: 2/2

ITEM: AIRLOCK ADAPTER PLATE (ITEM 470)
FAILURE MODE: EMU DETACHES FROM AAP

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2)
3)
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	/NA
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV767680-03

CAUSES: LATCH MECHANISM FAILS OPEN/FRACTURES, PIN FRACTURES

EFFECTS/RATIONALE:
LOSS OF ONE OF TWO PIN-LATCH MECHANISMS OR ONE OF TWO PIN INSERT MECHANISMS CAN RESULT IN DETACHMENT DURING ASCENT LOADS. MISSION TERMINATION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 745 FLIGHT: 2/2

ITEM: AIRLOCK ADAPTER PLATE (ITEM 470)
FAILURE MODE: SCU DETACHES

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2)
3)
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	/
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV767680-03

CAUSES: SCU LATCH FAILS OPEN/FRACTURES

EFFECTS/RATIONALE:
SCU DETACHMENT CAN RESULT IN DAMAGE TO SCU, AIRLOCK, AND EMU DURING ASCENT. MISSION TERMINATION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 746 FLIGHT: 2/1R

ITEM: CONTAMINATE CONTROL CARTRIDGE (ITEM 480)
FAILURE MODE: FAILS TO REMOVE CO2

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) PLSS
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: SV792600-00

CAUSES: CHANNELING, EARLY LIFE LIMIT REACHED, MOISTURE PENETRATION

EFFECTS/RATIONALE:
LOSS OF CO2 REMOVAL CAPABILITY WILL RESULT IN MISSION TERMINATION. IF CONCURRENT CO2 SENSOR FAILURE ALSO OCCURS, CREWPERSON CAN BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE:
SUBSYSTEM: EMU
MDAC ID: 748

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 2/1R

ITEM: CONTAMINANT CONTROL CARTRIDGE (ITEM 480)
FAILURE MODE: OVERHEATING/HYROGEN GENERATION

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) PLSS
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: SV792600-00

CAUSES: WATER IN LiOH

EFFECTS/RATIONALE:
DEGRADED CO2 REMOVAL CAPABILITY WILL RESULT IN MISSION TERMINATION. IF COUPLED WITH A CO2 SENSOR FAILURE CREWPERSON CAN BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 749 FLIGHT: 2/2

ITEM: COMMON MULTIPLE CONNECTOR
FAILURE MODE: OPEN IN BATT SENSE LINE

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SCU
3)
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	/NA
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: SV771763-3

CAUSES: VIBRATION, WIRE SEVERS

EFFECTS/RATIONALE:
LOSS OF SENSE SIGNAL WILL RESULT IN INABILITY TO RECHARGE BATTERY. MISSION TERMINATION CAN RESULT.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 750 FLIGHT: 2/2

ITEM: COMMON MULTIPLE CONNECTOR
FAILURE MODE: SHORT IN BATT SENSE LINE

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SCU
3)
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	/NA
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: SV771763-3

CAUSES: VIBRATION, CONTAMINATION

EFFECTS/RATIONALE:
SHORT WILL CAUSE BATTERY DISCHARGE DURING IV OPERATION. NOT APPLICABLE TO EVA.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 751 FLIGHT: 1/1

ITEM: FAN/SEPARATOR/PUMP/MOTOR ASSEMBLY
FAILURE MODE: O2 LEAKAGE TO ELECTRONICS/ROTOR

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) PLSS
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	1/1
EVA:	1/1
POST-EVA:	1/1

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV787994-8

CAUSES: SEAL FAILURE-GALLED, AGE, WEAR

EFFECTS/RATIONALE:
O2 LEAKAGE INTO ELECTRONICS CAN RESULT IN AN OXYGEN FIRE AND CREWPERSON LOSS.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 752 FLIGHT: 3/2R

ITEM: PRESSURE SUIT SENSOR
FAILURE MODE: FAILS STUCK AT NOMINAL PRESSURE VALUE

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) PLSS
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/2R
EVA:	3/2R
POST-EVA:	3/2R

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV767788-2

CAUSES: INTERNAL LINKAGE FAILURE, WIPER STICKS

EFFECTS/RATIONALE:
IF ONLY ONE FAILURE, NO IMPACTS WOULD RESULT. HOWEVER, IF COMBINED WITH A PLSS REGULATOR FAILURE OR A LEAK THE SOP WOULD NECESSARILY BE USED AND MISSION TERMINATION WOULD RESULT.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 753 FLIGHT: 2/1R

ITEM: SHEAR PLATE ASSEMBLY
FAILURE MODE: CAM DETACHES

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) PLSS
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: SV778540-26

CAUSES: IMPACT, MATERIAL DEFECT/FATIGUE, JOINT FRACTURES

EFFECTS/RATIONALE:
FREE MOVEMENT OF THE REGULATOR ASSEMBLY ACTUATION MECHANISM CAN RESULT IN MOVEMENT OUT OF THE EVA POSITION. WERE THIS TO OCCUR WITH FAILURES OF REDUNDANT PRESSURE MAINTENENACE FUNCTIONS (E.G., A LEAK) THE PLSS AND SOP MAY NOT BE AVAILABLE AND CREWPERSON COULD BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 754 FLIGHT: 3/1R

ITEM: SHEAR PLATE ASSEMBLY
FAILURE MODE: MOUNTING SCREW FRACTURES

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) PLSS
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/2R
EVA:	3/1R
POST-EVA:	3/2R

REDUNDANCY SCREENS: A [2] B [F] C [F]

LOCATION:
PART NUMBER: SV778540-26

CAUSES: IMPACT, MATERIAL DEFECT/FATIGUE

EFFECTS/RATIONALE:
THE IOA RECOGNIZES THAT 10 MOUNTING SCREWS EXIST AND SEVEN ARE REQUIRED TO MAINTAIN INTEGRITY. THEREFORE 3 SCREW MUST BE LOST BEFORE THE SYSTEM AND CREWPERSON COULD BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 755 FLIGHT: 2/1R

ITEM: SUBLIMATOR (ITEM 140)
FAILURE MODE: REDUCED AIR STREAM HEAT REMOVAL

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) PLSS
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV783850-14

CAUSES: CONTAMINANT DEPOSITION ON HEAT EXCHANGER WALLS

EFFECTS/RATIONALE:
LOSS OF HEAT EXCHANGER EFFICIENCY CAN RESULT IN WARMER VENT FLOW THAN DESIRED. THIS IN TURN DEGRADES THE HUMIDITY CONTROL FUNCTION AND CAN LEAD TO FOGGING OF THE HELMET AREA AND SOP OPERATION. MISSION TERMINATION CAN RESULT. IF THE SOP WERE ALSO FAILED, CREWPERSON CAN BE LOST FROM DISORIENTATION DUE TO HELMET FOGGING.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 756 FLIGHT: 2/1R

ITEM: SUBLIMATOR (ITEM 140)
FAILURE MODE: POROUS PLATE SPATIAL RELATION TO SUBLIMATOR CHANGES

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1)
2)
3)
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV783850-14

CAUSES: IMPACT ON POROUS PLATE MOUNTING EDGE

EFFECTS/RATIONALE:
DECREASED EFFICIENCY CAN LEAD TO LOSS/DEGRADATION OF HUMIDITY CONTROL AND COOLING FUNCTIONS. MISSION TERMINATION WILL RESULT AS WILL SOP OPERATIONS. WERE THE SOP ALSO FAILED, THE CREWPERSON WOULD BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 757 FLIGHT: 2/1R

ITEM: CAUTION AND WARNING ELECTRONICS (ITEM 150)
FAILURE MODE: 5.6V POWER SUPPLY FAILS OFF

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) C&W
3)
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV785970-5

CAUSES: OPEN AT 5.6V INPUT

EFFECTS/RATIONALE:
LOSS OF 5V NON-VOLATILE RAM POWER AND 5V DIGITAL POWER SUED BY NUMEROUS C&W COMPONENTS THEREBY CAUSING OVERALL C&W LOSS. MISSION TERMINATION SHOULD RESULT. ADDITIONALLY, WERE A SIMULTANEOUS CCC FAILURE TO OCCUR, THE CREWPERSON COULD BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 758 FLIGHT: 2/1R

ITEM: CAUTION AND WARNING ELECTRONICS (ITEM 150)
FAILURE MODE: TIMELINE MEMORY FAILS AT X=1

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) C&W
3)
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV785970-5

CAUSES: INTERNAL MEMORY ADDRESS LATCH FAILS CLOSED

EFFECTS/RATIONALE:
LOSS OF NUMEROUS EVA CAUTION AND WARNING MONITORING FUNCTIONS (INCLUDING CO2 LEVELS). MISSION TERMINATION. WERE THE CCC TO ALSO FAIL, THE CREWPERSON COULD BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 759 FLIGHT: 3/1R

ITEM: DCM
FAILURE MODE: SCREW BRACKET DISATTACHES

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/2R
EVA:	3/1R
POST-EVA:	3/2R

REDUNDANCY SCREENS: A [2] B [F] C [F]

LOCATION:
PART NUMBER:

CAUSES: IMPACT, STRIPPED SCREW, MATERIAL DEFECT/FATIGUE

EFFECTS/RATIONALE:
NO IMPACT FOR FAILURE OF SINGLE SCREW/BRACKET; HOWEVER, IF ALL WERE TO FAIL THE DCM COULD DETACH FROM THE HUT AND CAUSE LOSS OF CREWPERSON DUE TO GROSS EXTERNAL OXYGEN LEAKAGE.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 760 FLIGHT: 3/1R

ITEM: DCM ELECTRONICS (ITEM 350)
FAILURE MODE: SHORT INPUT TO OUTPUT IN PRIMARY EVC CURRENT LIMITER

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/2R
EVA:	3/1R
POST-EVA:	3/2R

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV792291

CAUSES: CONTAMINATION, VIBRATION

EFFECTS/RATIONALE:
LOSS OF CURRENT LIMITER FUNCTION. NO INPACT UNLESS SUBSEQUENT FAILURE IN DOWNSTREAM ELECTRONICS (I.E., A SHORT) RESULTS IN EXCESSIVE CURRENT DRAW UPON THE BATTERY. THIS CAN RESULT IN A SHORTENED MISSION OR LOSS OF BATTERY POWER. IF BATTERY POWER IS LOST THE SOP WOULD BE EMPLOYED TO RETURN TO VEHICLE. THEREFORE, LOSS OF LIFE CAN RESULT IF THE SOP WERE ALSO FAILED.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 761 FLIGHT: 3/1R

ITEM: DCM ELECTRONICS (ITEM 350)
FAILURE MODE: INPUT TO OUTPUT SHORT IN FEEDWATER VALVE CURRENT LIMITER

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/2R
EVA:	3/1R
POST-EVA:	3/2R

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV792291

CAUSES: CONTAMINATION, VIBRATION

EFFECTS/RATIONALE:
LOSS OF CURRENT LIMITER FUNCTION. NO IMPACT UNLESS SUBSEQUENT FAILURE IN DOWNSTREAM ELECTRONICS (I.E., A SHORT) CAUSES EXCESSIVE CURRENT DRAW UPON THE BATTERY. THIS CAN RESULT IN A SHORTENED MISSION OR LOSS OF BATTERY POWER. IF BATTERY POWER IS LOST,
THE SOP IS REQUIRED FOR RETURN TO VEHICLE; HOWEVER, IF THE SOP WERE ALSO FAILED, THE CREWPERSON COULD BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 762 FLIGHT: 3/1R

ITEM: DCM ELECTRONICS (ITEM 350)
FAILURE MODE: BATTERY POWER "ON" DISCRETE FAILS OFF

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/2R
EVA:	3/1R
POST-EVA:	3/2R

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV792291

CAUSES: ELECTRICAL OPEN, VIBRATION

EFFECTS/RATIONALE:
LOSS OF CONSUMMABLES MANAGEMENT AND MONITORING FUNCTION BY CWS. WERE A SECOND FAILURE TO RESULT (I.E., AN OXYGEN LEAK), THE CREWPERSON MAY BE REQUIRED TO EMPLOY THE SOP TO RETURN TO VEHICLE. IF THE SOP WERE ALSO FAILED THE CREWPERSON COULD BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE:
SUBSYSTEM: EMU
MDAC ID: 763

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3

ITEM: DCM ELECTRONICS (ITEM 350)
FAILURE MODE: BATTERY POWER "ON" DISCRETE FAILS ON

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: SV792291

CAUSES: LIMITED SHORT, CONTAMINATION

EFFECTS/RATIONALE:
ERRONEOUS MESSAGE DURING IV OPERATIONS; OTHERWISE, NO IVA OR EVA IMPACTS.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE:
SUBSYSTEM: EMU
MDAC ID: 764

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 3/3

ITEM: DCM ELECTRONICS (ITEM 350)
FAILURE MODE: FEEDWATER VALVE SWITCH DISCRETE FAILS OFF

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: SV792291

CAUSES: ELECTRICAL OPEN, CONTAMINATION

EFFECTS/RATIONALE:
ERRONEOUS MESSAGE DISPLAYED AND LOSS OF CWS SUBLIMATOR PRESSURE MONITORING FOR LIMIT VIOLATIONS. SUBLIMATOR PRESSURE READOUT REMAINS AVAILABLE. NO MISSION OR CREWPERSON IMPACTS.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 765 FLIGHT: 3/3

ITEM: DCM ELECTRONICS (ITEM 350)
FAILURE MODE: FEEDWATER VALVE SWTICH DISCRETE FAILS ON

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: SV792291

CAUSES: LIMITED SHORT, CONTAMINATION

EFFECTS/RATIONALE:
ERRONEOUS MESSAGE DURING IVA OPERATONS; OTHERWISE, NO IMPACTS.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE:
SUBSYSTEM: EMU
MDAC ID: 766

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 2/1R

ITEM: DCM ELECTRONICS (ITEM 350)
FAILURE MODE: FAN/PUMP SWITCH DISCRETE FAILS OFF

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: SV792291

CAUSES: ELECTRICAL OPEN, VIBRATION

EFFECTS/RATIONALE:
LOSS OF THIS DISCRETE CAUSES ERRONEOUS FAN STATUS MESSAGE AND LOSS OF CWS VENT FLOW MONITORING. WERE VENT FLOW ALSO FAILED SUCH THAT AN INEFFICIENT ORAL/NASAL FLUSH TO OCCUR, THE CREWPERSON COULD BE SUBJECTED TO HIGH CO2 LEVELS THAT CAN RESULT IN
DISORIENTATION AND LOSS OF LIFE.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE:
SUBSYSTEM: EMU
MDAC ID: 767

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 3/3

ITEM: DCM ELECTRONICS (ITEM 350)
FAILURE MODE: FAN/PUMP SWITCH DISCRETE FAILS ON

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: SV792291

CAUSES: SHORT, CONTAMINATION

EFFECTS/RATIONALE:
ERRONEOUS MESSAGE GENERATION WHEN FAN IS ACTUALLY OFF. NO IMPACTS ON MISSION OR CREWPERSON.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 768 FLIGHT: 3/3

ITEM: DCM ELECTRONICS (ITEM 350)
FAILURE MODE: VEHICLE VOLTAGE DISCRETE FAILS OFF

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: SV792291

CAUSES: ELECTRICAL OPEN, CONTAMINATION

EFFECTS/RATIONALE:
ERRONEOUS MESSAGE GENERATION DURING IVA; OTHERWISE, NO OTHER IMPACTS.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 769 FLIGHT: 3/1R

ITEM: DCM ELECTRONICS (ITEM 350)
FAILURE MODE: VEHICLE VOLTAGE DISCRETE FAILS ON

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/2R
EVA:	3/1R
POST-EVA:	3/2R

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: SV792291

CAUSES: SHORT, CONTAMINATION

EFFECTS/RATIONALE:
LOSS OF CWS MONITORING FOR HIGH AXYGEN USE RATE AND H2O OFF STATUS DURING EVA. SHOULD AN OXYGEN ALSO OCCUR DURING EVA THE CREWPERSON WOULD NOT BE ALERTED (EXCEPT BY THE CONSUMMABLES MANAGEMENT FUNCTION WHICH WOULD INDICATE ONLY 30 MINUTES OXYGEN LEFT;
HOWEVER, THIS TIME COULD BE ERRONEOUS DUE TO THE MANNER OF THE CWS CALCULATION). THIS CAN RESULT IN SOP USAGE WHICH IF ALSO FAILED CAN RESULT IN LOSS OF LIFE.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 770 FLIGHT: 3/1R

ITEM: DCM ELECTRONICS (ITEM 350)
FAILURE MODE: SHORT INPUT TO OUTPUT IN CLIV CURRENT LIMITER

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/2R
EVA:	3/1R
POST-EVA:	3/2R

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV792291

CAUSES: CONTAMINATION, VIBRATION

EFFECTS/RATIONALE:
LOSS OF CURRENT LIMITER FUNCTION RESULTS IN POSSIBLE LOSS OF ALL POWER SHOULD A SUBSEQUENT DOWNSTREAM SHORT OCCUR. IF THE SOP IS ALSO FAILED WITH LOSS OF POWER, THE CREWPERSON COULD BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 771 FLIGHT: 2/1R

ITEM: DCM ELECTRONICS (ITEM 350)
FAILURE MODE: DC/DC CURRENT LIMITER FAILS OPEN

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV792291

CAUSES: VIBRATION, THERMAL CYCLING

EFFECTS/RATIONALE:
LOSS OF DC/DC CONVERTER SUPPORTED ELECTRONICS - CWS, SENSORS, AND RTDS. MISSION TERMINATION. WERE A CO2 CONTROL FUNCTION FAILURE TO ALSO OCCUR, THE CREWPERSON COULD BECOME DISORIENTED AND UNABLE TO REACT PROPERLY, THEREBY CAUSING LOSS OF LIFE.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 772 FLIGHT: 3/1R

ITEM: DCM ELECTRONICS (ITEM 350)
FAILURE MODE: SHORT INPUT TO OUTPUT FOR DC/DC CONVERTER CURRENT LIMITER

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/2R
EVA:	3/1R
POST-EVA:	3/2R

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV792291

CAUSES: CONTAMINATION, VIBRATION

EFFECTS/RATIONALE:
LOSS OF CURRENT LIMITER FUNCTION. IF ACCOMPANIED BY A DOWNSTREAM SHORT THE BATTERY COULD BE SIGNIFICANTLY DRAWN DOWN SUCH THAT PLSS FUNCTIONS COULD NOT BE SATISFIED AND THE SOP REQUIRED. AN ADDITIONAL SOP FAILURE COULD THEN RESULT IN LOSS OF LIFE.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 773 FLIGHT: 2/1R

ITEM: DCM ELECTRONICS (ITEM 350)
FAILURE MODE: NEGATIVE CURRENT RETURN LINE FAILS OPEN

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV792291

CAUSES: VIBRATION, IMPACT

EFFECTS/RATIONALE:
LOSS OF CIRCUIT AND, THEREFORE, ALL EMU POWER. MISSION TERMINATION. IF THE SOP WERE ALSO FAILED, THE CREWPERSON WOULD BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 774 FLIGHT: 3/3

ITEM: DCM ELECTRONICS (ITEM 350)
FAILURE MODE: MOTOR TACH SIGNAL OPEN/SHORT

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: SV792291

CAUSES: VIBRATION, CONTAMINATION

EFFECTS/RATIONALE:
LOSS OF MOTOR TACHAMETER SENSING. NO IMPACTS TO MISSION OR CREWPERSON.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 775 FLIGHT: /

ITEM: DCM ELECTRONICS (ITEM 350)
FAILURE MODE: TEMPORARY DROP IN DC/DC CONVERTER VOLTAGES

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	/
EVA:	/
POST-EVA:	/

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: SV792291

CAUSES:

EFFECTS/RATIONALE:
NOT A FAILURE - THIS IS AN ANOMALY.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 776 FLIGHT: /

ITEM: DCM ELECTRONICS (ITEM 350)
FAILURE MODE: RADIATED EMISSIONS HIGH

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	/
EVA:	/
POST-EVA:	/

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: SV792291

CAUSES:

EFFECTS/RATIONALE:
SHOULD BE COVERED AS A HAZARD ANALYSIS.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 777 FLIGHT: 3/1R

ITEM: DCM ELECTRONICS (ITEM 350)
FAILURE MODE: SHORT INPUT TO OUTPUT OF SECONDARY EVC CURRENT LIMITER

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/2R
EVA:	3/1R
POST-EVA:	3/2R

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV792291

CAUSES: CONTAMINATION, VIBRATION

EFFECTS/RATIONALE:
LOSS OF CURRENT LIMITER FUNCTION CAN RESULT IN COMPLETE EMU POWER LOSS IF ACCOMPANIED BY DOWNSTREAM SHORT. POSSIBLE CREWPERSON LOSS IF SOP ALSO FAILS IN THIS SCENARIO.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 778 FLIGHT: 2/1R

ITEM: DCM ELECTRONICS (ITEM 350)
FAILURE MODE: ALL SECONDARY VOLTAGES DRIFT HIGH

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV792291

CAUSES: ELECTRONIC FAILURE IN FEEDBACK GENERATOR OR MODULATOR

EFFECTS/RATIONALE:
HIGH VOLTAGE SUPPLIED TO "LOW VOLTAGE" ELECTRONICS CAN RESULT IN FAILURE OF THESE ITEMS. IF A SUBSEQUENT FAILURE OF CO2 CONTROL FUNCTION OCCURS, THE CREWPERSON COULD BECOME DISORIENTED AND POSSIBLY LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 779 FLIGHT: 2/1R

ITEM: DCM ELECTRONICS (ITEM 350)
FAILURE MODE: LCD MICROPROCESSOR FAILURE

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV792291

CAUSES: ELECTRICAL OPEN/SHORT, VIBRATION, CONTAMINATION

EFFECTS/RATIONALE:
LOSS OF LCD DISPLAY WILL RESULT IN MISSION TERMINATION. THIS WILL HAVE NO EFFECT ON THE TONES AND ACTUAL MONITORING OF VALUES BY THE CWS; HOWEVER, IF A CONCURRENT CO2 CONTROL FAILURE OR LOW VENT FLOW FAILURE WERE TO OCCUR, THE CREWPERSON WOULD BE ALERTED BUT NOT INFORMED OF THE PROPER CORRECTIVE ACTION. THEREFORE, THE CREWMEMBER CAN BE SUBJECTED TO HIGH CO2 AND DISORIENTATION PRIOR TO RETURN TO VEHICLE. DISORIENTATION CAN RESULT IN LOSS OF CREWPERSON.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 780 FLIGHT: 2/1R

ITEM: DISPLAY (ITEM 351)
FAILURE MODE: DISPLAY FAILS ON

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV 792526-1

CAUSES: ELECTRICAL OPEN, CLOCK FAILURE

EFFECTS/RATIONALE:
DISPLAY OUTPUT WILL NOT CHANGE OR BLANK. THIS IS THE SAME "EFFECT" AS LOSS OF DISPLAY. IF A CONCURRENT CO2 CONTROL FAILURE WERE TO ALSO OCCUR, THE CREWPERSON WOULD NOT BE ALERTED TO THE PROPER CORRECTIVE ACTION ALTHOUGH THE TONE WILL OCCUR. THIS CAN RESULT IN CREWPERSON DISORIENTATION AND LOSS.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 781 FLIGHT: 3/3

ITEM: DISPLAY (ITEM 351)
FAILURE MODE: BACKLIGHTING FAILS ON

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
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CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: SV 792526-1

CAUSES: SHORT, VIBRATION

EFFECTS/RATIONALE:
NO IMPACT. (POWER USAGE IS INSIGNIFICANT).

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 782 FLIGHT: 3/3

ITEM: DISPLAY (ITEM 351)
FAILURE MODE: BACKLIGHTING FAILS OFF

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) DCM
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: SV 792526-1

CAUSES: ELECTRICAL OPEN, VIBRATION

EFFECTS/RATIONALE:
THIS WILL NOT INHIBIT USE OF THE DISPLAY; THEREFORE, NO IMPACT.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE:
SUBSYSTEM: EMU
MDAC ID: 783

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 2/1R

ITEM: EEH
FAILURE MODE: LEAKAGE AT HUT FEEDTHROUGH

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3)
4)
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7)
8)
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CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER:

CAUSES: SEAL FAILURE

EFFECTS/RATIONALE:
LOSS OF OXYGEN SUPPLY REQUIRES SOP USAGE TO RETURN TO VEHICLE.
POSSIBLE CREWPERSON LOSS IF SOP ALSO FAILS.

REFERENCES:

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INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE:
SUBSYSTEM: EMU
MDAC ID: 784

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 2/1R

ITEM: PLSS
FAILURE MODE: LOWER BRACKET FRACTURED

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) PLSS
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [F]

LOCATION:
PART NUMBER: SV 789200

CAUSES: IMPACT, MATERIAL FATIGUE/DEFECT

EFFECTS/RATIONALE:
LOSS OF LOWER BRACKET (ONE OF TWO) CAN RESULT IN SEPARATION OF HUT AND PLSS IF SECOND BRACKET ALSO LOST. IF SECOND BRACKET IS ALSO LOST AND SEPARATION WERE TO OCCUR EVA, CREWPERSON WOULD BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 785 FLIGHT: 2/1R

ITEM: PLSS
FAILURE MODE: H2O MAKEUP TUBE-EXTERNAL LEAKAGE

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) PLSS
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: SV 789200

CAUSES: IMPACT, SEAL FAILURE

EFFECTS/RATIONALE:
LOSS OF FEEDWATER SUPPLY CAN RESULT IN LOSS OF HUMIDITY CONTROL. IF SOP ALSO LOST, CREWPERSON WILL BE LOST DUE TO NO DEFOG CAPABILITY FOR HELMET.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 786 FLIGHT: 2/1R

ITEM: PLSS
FAILURE MODE: O2 PRESSURE RELIEF TUBE - EXTERNAL LEAKAGE

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) PLSS
4)
5)
6)
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CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: SV 789200

CAUSES: IMPACT, SEAL FAILURE

EFFECTS/RATIONALE:
LOSS OF PRIMARY OXYGEN SUPPLY RESULTS IN SOP USAGE. IF SOP IS FAILED, THE CREWPERSON WOULD BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 787 FLIGHT: 2/1R

ITEM: PLSS
FAILURE MODE: EMU/MMU LATCH DISCONNECTS

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) LSS
3) PLSS
4)
5)
6)
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CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV789200

CAUSES: IMPACT, MATERIAL DEFECT/FATIGUE, SCREW(S) SHEAR, CONTAMINATION

EFFECTS/RATIONALE:
FAILURE OF THE LATCH OF SECURE THE EMU TO THE MMU WILL RESULT IN DEPENDENCY UPON THE RETENTION BELT (OTHER LATCH ALONE IS INSUFFICIENT). IF THE RETENTION BELT WERE TO FAIL DURING EMU-MMU OPERATIONS, THE CREWPERSON COULD BE LOST DUE TO SEPARATION FROM THE MMU.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 801 FLIGHT: 3/3

ITEM: NECK RING AND VENT SEAL ASSEMBLY
FAILURE MODE: INTERNAL LEAKAGE OF HELMET INLET DUCT

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) HUT
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: A/L 9357-10/9713-03

CAUSES: SEAL WEAR OR DETERIORATION, CONTAMINATION ON SEAL

EFFECTS/RATIONALE:
MINIMAL LOSS OF VENT FLOW TO HELMET SHOULD NOT HAVE MISSION OR CREW IMPACT. CAN RESULT IN MINOR LOSS OF SOP OXYGEN DURING SOP CHECK BUT SHOULD ALSO NOT BE A SIGNIFICANT QUANTITY TO HAVE NEGATIVE IMPACTS.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 802 FLIGHT: 2/2

ITEM: NECK RING AND VENT SEAL ASSEMBLY
FAILURE MODE: INTERNAL LOOP TAPE CLIP ATTACHMENT SCREW LOOSE OR MISSING

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) HUT
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/2
POST-EVA:	2/2

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: A/L 9357-10/9713-03

CAUSES: SCREW DEFECTIVE, INEFFECTIVE THREADLOCK, CORROSION, VIBRATION

EFFECTS/RATIONALE:
NO EFFECT ON THE BRACKET; HOWEVER, A LOOSE SCREW WITH THE SSA (DURING AN EVA) CAN RESULT IN CREWPERSON DISCOMFORT, ABRATION OF WATER LINES ON THE LCVG (SUCH THAT A LEAK CAN OCCUR), OR SUIT BLADDER ABRASION. SUCH AN EFFECT CAN RESULT IN MISSION TERMINATION. ALSO IF ALL THE SCREWS FAILED, BRACKET LOSS OF FUNCTION SHOULD HAVE NO MORE SEVERE AN EFFECT THAN THE LOOSE SCREW.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 803 FLIGHT: 3/2R

ITEM: NECK RING AND VENT SEAL ASSEMBLY
FAILURE MODE: EXTERNAL LOOP TAPE BRACKET ATTACHING SCREW LOOSE OR MISSING

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) HUT
4)
5)
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9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/2R
EVA:	3/2R
POST-EVA:	3/2R

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: A/L 9357-10/9713-03

CAUSES: DEFECTIVE SCREW, INEFFECTIVE THREADLOCK, CORROSION, VIBRATION

EFFECTS/RATIONALE:
LOSS OF ONE SCREW SHOULD HAVE NO EFFECT ON BRACKET; HOWEVER, LOSS OF ALL SCREWS AND THEREFORE BRACKET FUNCTION CAN RESULT IN UNRESTRAINED TMG GARMENT WHICH IN TURN CAN CAUSE POSSIBLE "HOT" OR "COLD" SPOTS. MISSION TERMINATION WOULD THEN RESULT.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 804 FLIGHT: 2/1R

ITEM: WATER LINE AND VENT TUBE ASSEMBLY
FAILURE MODE: REDUCED VENT FLOW

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) HUT
4)
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9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: 0102-82437-18

CAUSES: CONTAMINATION

EFFECTS/RATIONALE:
PARTIAL BLOCKAGE OF VENT TUBE REDUCES FLOW. MISSION TERMINATION RESULTS. IF SIGNIFICANT FLOW REDUCTION OCCURS AND THE SOP IS ALSO FAILED, CREWMEMBER LOSS CAN ALSO OCCUR.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 805 FLIGHT: 2/2

ITEM: BODY SEAL CLOSURE (HUT HALF)
FAILURE MODE: TMG LOOP TAPE LOOSE OR BROKEN

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) HUT
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9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	2/2
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: A/L 9786-05

CAUSES: MATERIALS DEFECT

EFFECTS/RATIONALE:
LOCAL HOT OR COLD SOPTS CAN RESULT. DEPENDENT UPON THE ENVIRONMENT, THIS CAN PRESENT THE CREWPERSON WITH SIGNIFICANT DISCOMFORT OVER TIME; THEREFORE, MISSION TERMINATION CAN RESULT.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 806 FLIGHT: 2/2

ITEM: BODY SEAL CLOSURE
FAILURE MODE: MINI WORK STATION WILL NOT ENGAGE

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) HUT
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CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	/
EVA:	2/2
POST-EVA:	/

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: A/L 9786-05

CAUSES: CONTAMINATION IN MORENTS

EFFECTS/RATIONALE:
INABILITY TO EMPLOY MINI WORK STATION MAY RESULT IN MISSION TERMINATION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 807 FLIGHT: 3/3

ITEM: HELMET ASSEMBLY
FAILURE MODE: VALSALVA DEVICE DISCONNECTS

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) HELMET
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CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: A/L 9672-01

CAUSES: DEFECTIVE ADHESIVE, IMPACT BY CREWPERSON

EFFECTS/RATIONALE:
NO EFFECTS EXCEPT FOR POSSIBLE CREW DISCOMFORT.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 808 FLIGHT: 2/2

ITEM: HELMET ASSEMBLY
FAILURE MODE: HELMET FOGGING (NOT DUE TO SYSTEM FAILURE)

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) HELMET
4)
5)
6)
7)
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9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	2/2
POST-EVA:	2/2

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: A/L 9672-01

CAUSES: IMPROPER APPLICATION OF ANTI FOG FILM

EFFECTS/RATIONALE:
FOGGING CAN IMPAIR VISION AND PERFORMANCE OF EVA TASKS. TERMINATE MISSION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 809 FLIGHT: 2/1R

ITEM: HELMET ASSEMBLY
FAILURE MODE: VENT PAD DE-BONDS FROM HELMET

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) HELMET
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: A/L 9672-01

CAUSES: OLD OR DEFECTIVE BONDING AGENT

EFFECTS/RATIONALE:
DEGRADATION OF ORAL-NASAL FLUSH CAN RESULT IN HELMET FOGGING AND CO2 BUILDUP. USE OF HELMET CPV AND/OR DCM PURGE VALVE AND SOP MAY BE REQUIRED, BUT IF THESE TOO ARE FAILED, CREWPERSON CAN BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 810 FLIGHT: 2/2

ITEM: EVVA
FAILURE MODE: SHELL CRACKED

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) HELMET
4)
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9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	2/2
POST-EVA:	2/2

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: A/L 9813-12

CAUSES: DEFECTIVE MATERIAL, IMPACT

EFFECTS/RATIONALE:
EVVA VISOR MOVEMENT CAN BE IMPAIRED AS COULD THE CAPABILITY TO MOUNT THE LIGHTS. THIS CAN RESULT IN MISSION TERMINATION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 811 FLIGHT: 3/2R

ITEM: EVVA
FAILURE MODE: CRACKED/FRACTURED EYE SHADES

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) HELMET
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/2R
POST-EVA:	3/2R

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: A/L 9813-12

CAUSES: IMPACT, MATERIAL DEFECT

EFFECTS/RATIONALE:
NONE UNLESS VISORS ARE ALSO FAILED THEN MISSION WOULD BE TERMINATED.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 812 FLIGHT: 3/2R

ITEM: EVVA
FAILURE MODE: BRACKET LOOSE FOR LIGHTS OR BATTERY

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1)
2)
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CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/2R
POST-EVA:	3/2R

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: A/L 9813-12

CAUSES: IMPACT, DEFECTIVE THREADLOCK, SCREW FRACTURES, VIBRATION

EFFECTS/RATIONALE:
LOSS OF ONE OF THREE BRACKETS SHOULD NOT RESULT IN IMPACT; HOWEVER, LOSS OF ONE MORE CAN RESULT IN MISSION TERMINATION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 813 FLIGHT: 2/2

ITEM: UPPER/LOWER ARM RESTRAINT AND BLADDER ASSEMBLY
FAILURE MODE: TMG LOOSE

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) ARM ASSEMBLY
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	2/2
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: 0103-82318-22/0103-82351-16

CAUSES: LOOP TAPE DEFECTIVE/TORN, VELCRO DEFECTIVE, THREAD/CORD BREAKS

EFFECTS/RATIONALE:
PROBABLE LOCALIZED HOT OR COLD SPOTS CAN RESULT ARM ASSEMBLY. IF ENVIRONMENT IS SEVERE, THESE SPOTS CAN RESULT IN CREWPERSON DISCOMFORT SUFFICIENT ENOUGH FOR MISSION IMPACT OR TERMINATION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 814 FLIGHT: 2/1R

ITEM: UPPER ARM RESTRAINT AND BLADDER ASSEMBLY
FAILURE MODE: AXIAL RESTRAINT SEAM SEPARATION OR SIZING INSERT MOVES

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) ARM ASSEMBLY
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: 0103-82318-22

CAUSES: FABRIC DEFECT, DEFECTIVE THREAD OR CORD

EFFECTS/RATIONALE:
BLADDER IS STILL UNDER TMG AND CAN ACCEPT OPERATING SUIT PRESSURES BUT IS SUBJECT TO ABRASION AND WEAR. IF BLADDER WERE TO ALSO FAIL, CREWPERSON LOSS CAN RESULT.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 815 FLIGHT: 2/1R

ITEM: SCYE BEARING ASSEMBLY
FAILURE MODE: RESTRAINT BRACKET SCREW LOOSE

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) ARM ASSEMBLY
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: A/L 9782-04

CAUSES: IMPACT, VIBRATION, DEFECTIVE THREADLOCK OR SCREW

EFFECTS/RATIONALE:
NO IMPACT FOR LOSS OF 1 OF 4 SCREWS. BUT IF ONE MORE IS LOST ASSEMBLY COULD SEPARATE AND CREWMEMBER COULD BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 816 FLIGHT: 2/1R

ITEM: ARM BEARING ASSEMBLY
FAILURE MODE: LOWER PRIMARY RESTRAINT BRACKET BROKEN/FAILED

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) ARM ASSEMBLY
4)
5)
6)
7)
8)
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CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: A/L 9657-06

CAUSES: MATERIAL DEFECT, IMPACT, KEEPER SCREW BACKED OUT, DEFECTIVE THREADLOCK

EFFECTS/RATIONALE:
LOSS OF PRIMARY AXIAL LOAD RESTRAINT INTEGRITY. IF COMBINED WITH LOSS OF SECONDARY RESTRAINT OR COMPLETE LOSS OF ATTACHMENT SCREWS, CREWMEMBER COULD BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 817 FLIGHT: 2/1R

ITEM: WRIST DISCONNECT
FAILURE MODE: PRIMARY RESTRAINT BRACKET BROKEN

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) ARM ASSEMBLY
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: A/L 9813-02, A/L 9814-02

CAUSES: MATERIAL DEFECT, IMPACT

EFFECTS/RATIONALE:
NO IMMEDIATE IMPACT DUE TO BLADDER FABRIC BEING SECONDARY RESTRAINT; HOWEVER, FAILURE OF SECONDARY RESTRAINT CAN RESULT IN GROSS OXYGEN LOSS AND LOSS OF CREWPERSON.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 818 FLIGHT: 2/1R

ITEM: WRIST DISCONNECT
FAILURE MODE: PRIMARY RESTRAINT BRACKET LOOSE

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) ARM ASSEMBLY
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: A/L 9813-02, A/L 9814-02

CAUSES: SCREW FRACTURES OR BACKS OUT, VIBRATION, DEFECTIVE THREADLOCK

EFFECTS/RATIONALE:
LOOSE BRACKET HAS NO IMPACT UNLESS REMAINING SCREWS AND SECONDARY RESTRAINT ALSO LOST THEREBY CAUSING GROSS LOSS OF PRESSURE AND CREWPERSON LOSS.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 819 FLIGHT: /NA

ITEM: RESTRAINT MODIFIED
FAILURE MODE: CREWPERSON NERVE COMPRESSION

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1)
2)
3)
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	/
EVA:	/
POST-EVA:	/

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: 0106-85894-11/12

CAUSES: POOR SIZING

EFFECTS/RATIONALE:
CREW DISCOMFORT CAN RESULT BUT THIS FAILURE CAN ONLY RESULT FROM PROCEDURAL OR GROUND OPERATION/PROCESSING ERRORS. THEREFORE, THIS IS MORE SUITED TO A HAZARD ANALYSIS OR AN ANALYSIS OF GSE OPERATIONS.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 820 FLIGHT: 2/2

ITEM: RESTRAINT MODIFIED
FAILURE MODE: TMG ATTACHMENT FAILURE

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) GLOVE ASSEMBLY
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	2/2
POST-EVA:	2/2

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: 0106-85894-11/12

CAUSES: DEFECTIVE LOOP TAPE, DEFECTIVE CORD, WEAR ON LOOP TAPE OR CORD

EFFECTS/RATIONALE:
POSSIBLE LOCALIZED HOT/COLD SPOTS WHICH, DEPENDENT UPON THE ENVIRONMENT, CAN RESULT IN VARYING LEVELS OF CREWPERSON DISCOMFORT. IF ENVIRONMENT IS SEVERE AND CREWPERSON DISCOMFORT SIGNIFICANT, MISSION CAN BE TERMINATED.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 821 FLIGHT: 3/2R

ITEM: BLADDER ASSEMBLY
FAILURE MODE: FLOCK DELAMINATES FROM BLADDER

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) GLOVE ASSEMBLY
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/2R
EVA:	3/2R
POST-EVA:	3/2R

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: 0106-87543-01/02

CAUSES: DEFECTIVE ADHESIVE, WEAR

EFFECTS/RATIONALE:
FLOCK CAN ENTER THE VENT SYSTEM. IF SIGNIFICANT FLOCK AMOUNT CAN TRANSLATE TO AND CONSTRICT FLOW TO THE CCC, THE CREWPERSON WOULD HAVE TO EMPLOY THE SOP AND TERMINATE THE MISSION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 822 FLIGHT: 2/1R

ITEM: WRIST DISCONNECT (GLOVE SIDE)
FAILURE MODE: RESTRAINT BRACKET BROKEN OR LOOSE

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) GLOVE ASSEMBLY
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: A/L 9924-01

CAUSES: IMPACT, VIBRATION, SCREW FRACTURE, DEFECTIVE THREADLOCK

EFFECTS/RATIONALE:
NONE FOR FIRST FAILURE; HOWEVER, IF REMAINING BRACKET SCREWS FAIL OR LOSS OF SECONDARY RESTRAINT ALSO OCCURS CREWPERSON CAN BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 823 FLIGHT: 2/2

ITEM: WRIST DISCONNECT (GLOVE SIDE)
FAILURE MODE: TETHER SEVERS OR DISATTACHES

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) GLOVE ASSEMBLY
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	2/2
POST-EVA:	3/3

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: A/L 9924-01

CAUSES: MATERIAL DEFECT, ABRASION, BRACKET FRACTURES

EFFECTS/RATIONALE:
THE TETHER FALURE HAS NO CREWPERSON IMPACT BUT CAN RESULT IN MISSION TERMINATION IF ITEM(S) TETHERED ARE ESSENTIAL TO THE MISSION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 824 FLIGHT: 2/1R

ITEM: WAIST RESTRAINT AND BLADDER
FAILURE MODE: HOLE OR SEPARATION IN RESTRAINT FABRIC

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LTA
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: 0104-82347-107/0104-84811-05

CAUSES: DEFECTIVE MATERIAL OR THREAD, SEAM SEPARATION

EFFECTS/RATIONALE:
BLADDER FABRIC ASSUMES LOAD; HOWEVER, IF BLADDER FAILS CREWPERSON CAN BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 825 FLIGHT: 2/2

ITEM: WAIST RESTRAINT AND BLADDER
FAILURE MODE: AXIAL RESTRAINT DISATTACHES FROM CLOTH

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LTA
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/2
POST-EVA:	2/2

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: 0104-82347-107/0104-84811-05

CAUSES: THREAD BREAKS OR DEFECTIVE, FABRIC DEFECTIVE

EFFECTS/RATIONALE:
LOSS OF AXIAL RESTRAINT CAUSES THE WAIST SECTION TO DISFORM AND RESULTS IN THE CREWPERSON HAVING TO PROVIDE SIGNIFICANT EXERTION TO OVERCOME THE DISFORMATION OF THE WAIST AREA. MISSION IMPACT AND TERMINATION CAN RESULT.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 826 FLIGHT: 2/2

ITEM: WAIST RESTRAINT AND BLADDER
FAILURE MODE: TMG LOOSE

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LTA
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	2/2
POST-EVA:	2/2

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: 0104-82347-107/0104-84811-05

CAUSES: DEFECTIVE/WORN THREAD, DEFECTIVE FABRIC

EFFECTS/RATIONALE:
PROBABLE LOCAL "HOT/COLD" SPOTS WHICH CAN CAUSE CREWPERSON DISCOMFORT. IF ENVIRONMENT IS SEVERE AND CREWPERSON DISCOMFORT SIGNIFICANT, MISSION WOULD BE TERMINATED.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 827 FLIGHT: 2/1R

ITEM: WAIST BEARING
FAILURE MODE: TETHER BRACKET LOOSE

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LTA
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: A/L 9698-08

CAUSES: FRACTURED OR LOOSE SCREW, DEFECTIVE THREADLOCK

EFFECTS/RATIONALE:
LOSS OF 1 OF 4 SCREWS RESULTS IN LOOSE TETHER BRACKET WITH NO IMMEDIATE IMPACT. HOWEVER, LOSS OF ONE MORE SCREW CAN RESULT IN LOSS OF BRACKET AND CREWPERSON BEING UNRESTRAINED TO ORBITER. POSSIBLE LOSS OF CREWPERSON.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 828 FLIGHT: 2/1R

ITEM: LOWER TORSO RESTRAINT/BLADDER ASSEMBLY
FAILURE MODE: HOLE OR SEPARATION IN RESTRAINT

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LTA
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: 0104-82335-22

CAUSES: FABRIC/THREAD DEFECTIVE, WEAR OR TEAR, SEAM SEPARATION

EFFECTS/RATIONALE:
BLADDER UNPROTECTED BY RESTRAINT MATERIAL WILL ASSUME SUIT LOADS; HOWEVER, IF BLADDER ALSO FAILS, CREWPERSON CAN BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 829 FLIGHT: 2/2

ITEM: LOWER TORSO RESTRAINT/BLADDER ASSEMBLY
FAILURE MODE: TMG SEPARATION FROM ASSEMBLY

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LTA
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	2/2
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: 0104-82335-22

CAUSES: DEFECTIVE/TORN LOOP TAPE, MATERIAL DEFECT

EFFECTS/RATIONALE:
LOCAL "HOT/COLD" SPOTS CAN CAUSE CREWPERSON DISCOMFORT. IF THE ENVIRONMENT IS SEVERE ENOUGH, CREWPERSON DISCOMFORT CAN BE SIGNIFICANT AND RESULT IN MISSION TERMINATION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 830 FLIGHT: 2/1R

ITEM: BOOT DISCONNECT
FAILURE MODE: LOSS OF AXIAL RESTRAINT (PRIMARY OR SECONDARY)

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LTA
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9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: A/L 9752-01

CAUSES: DEFECTIVE MATERIAL, SCREW BACKS OUT, INEFFECTIVE THREADLOCK

EFFECTS/RATIONALE:
SUIT LOADS WILL BE ASSUMED BY REMAINING RESTRAINT WHICH, IF ALSO FAILED, CAN RESULT IN CREWPERSON LOSS DUE TO INABILITY OF SUIT TO WITHSTAND LOADS AT BOOT.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE:
SUBSYSTEM: EMU
MDAC ID: 831

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 2/2

ITEM: PRESSURE BOOT ASSEMBLY
FAILURE MODE: HEEL-TOP RETAINING SCREW LOOSE

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LTA
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/2
POST-EVA:	2/2

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: 0104-82403-29/30

CAUSES: DEFECTIVE THREADLOCK, VIBRATION, SCREW FRACTURED/STRIPPED

EFFECTS/RATIONALE:
MAY CAUSE DIFFICULTY IN USING FOOT RESTRAINT NECESSARY FOR MISSION SUCCESS. TERMINATE MISSION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 832 FLIGHT: 2/2

ITEM: PRESSURE BOOT ASSEMBLY
FAILURE MODE: RUBBER SOLE ABRADED

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LTA
4)
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6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/2
POST-EVA:	2/2

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: 0104-82403-29/30

CAUSES: WEAR, DEFECTIVE MATERIAL

EFFECTS/RATIONALE:
POSSIBLE LOCAL "HOT/COLD" SPOTS ON SOLE OF BOOT ASSEMBLY. MAY ALSO CREATE DIFFICULTY IN USING FOOT RESTRAINT(S). IF CREW DISCOMFORT IS SIGNIFICANT OR UNABLE TO EMPLOY FOOT RESTRAINT, TERMINATE MISSION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 833 FLIGHT: 2/1R

ITEM: PRESSURE BOOT ASSEMBLY
FAILURE MODE: HOLE OR TEAR IN RESTRAINT FABRIC

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LTA
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: 0104-82403-29/30

CAUSES: DEFECTIVE MATERIAL, DEFECTIVE/TORN THREAD/CORD

EFFECTS/RATIONALE:
BLADDER WOULD BE SUBJECTED TO LOADS AND WEAR DUE TO LOSS OF COVERING RESTRAINT FABRIC. IF BLADDER ALSO FAILS, CREWPERSON CAN BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 834 FLIGHT: 2/2

ITEM: PRESSURE BOOT ASSEMBLY
FAILURE MODE: TMG DISATTACHES

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LTA
4)
5)
6)
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8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/2
POST-EVA:	2/2

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: 0104-82403-29/30

CAUSES: LOOP TAPE DEFECTIVE/TORN

EFFECTS/RATIONALE:
PROBABLE LOCAL "HOT/COLD" SPOTS CAN CAUSE CREWPERSON DISCOMFORT. ALSO, LOOSE TMG CAN CAUSE DIFFICULTY IN USING FOOT RESTRAINTS. IF DISCOMFORT IS SIGNIFICANT OR FOOT RESTRAINTS CANNOT BE USED, TERMINATE MISSION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE:
SUBSYSTEM: EMU
MDAC ID: 835

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 3/3

ITEM: BOOT SIZING INSERT
FAILURE MODE: FOAM SEPARATES FROM INSERT

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LTA
4)
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6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: 0104-82664-17/18

CAUSES: DEFECTIVE VELCRO

EFFECTS/RATIONALE:
NO MISSION OR CREWPERSON IMPACTS. CAN MAKE DONNING MORE DIFFICULT.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 836 FLIGHT: 3/3

ITEM: RESTRAINT ASSEMBLY
FAILURE MODE: VENT TUNNEL DETACHES

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LCVG
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: 0107-82968-07

CAUSES: THREAD TEARS OR DEFECTIVE

EFFECTS/RATIONALE:
CAN PROVIDE MINIMAL CREW DISCOMFORT BUT WHEN CONNECTED AND SUIT IS DONNED NO IMPACTS ARE ENVISIONED.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE:
SUBSYSTEM: EMU
MDAC ID: 837

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 3/3

ITEM: VENT MANIFOLD AND DUCTS
FAILURE MODE: THRUMB LOOP BROKEN

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LCVG
4)
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7)
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9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: 0107-811060-08/82568-09/81057-19/20

CAUSES: MATERIAL DEFECT OR TEAR

EFFECTS/RATIONALE:
INCREASES DONNING DIFFICULTY, OTHERWISE NO IMPACT.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 838 FLIGHT: 3/3

ITEM: VENT MANIFOLD AND DUCTS
FAILURE MODE: BOOT ATTACHMENT LOOSE

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LCVG
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CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: 0107-811060-08/82568-09/81057-19/20

CAUSES: MATERIAL DEFECT OR TORN

EFFECTS/RATIONALE:
BOOT BECOMES LOOSE AND MAY BE DIFFICULT DONNING OR DOFFING, OTHERWISE NO IMPACTS.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 839 FLIGHT: 3/3

ITEM: MULTIPLE CONNECTOR (LCVG HALF)
FAILURE MODE: OXYGEN LEAKAGE IN VENT LOOP

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LCVG
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CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: A/L 9693-03/9697-04

CAUSES: SEAL CUT OR DEFECTIVE, LOOSE HOSE CLAMP

EFFECTS/RATIONALE:
LEAKAGE OF SUIT ATMOSPHERE INTO VENT LOOP AT CONNECTOR MAY RESULT IN MINIMAL DEGRADATION OF VENT LOOP FLOW THROUGHOUT THE LCVG BUT WITHOUT A SIGNIFICANT FAILURE (I.E., DISCONNECTION) THE LEAK SHOULD NOT RESULT IN A MISSION OR CREWMEMBER IMPACT.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 840 FLIGHT: 3/2R

ITEM: CCA
FAILURE MODE: EARPHONES LOOSE

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
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CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/2R
EVA:	3/2R
POST-EVA:	3/2R

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: 0101-80001-02

CAUSES: DEFECTIVE/BROKEN THREAD, FASTENER FAILS OPEN

EFFECTS/RATIONALE:
ONE LOOSE EARPHONE WILL NOT RESULT IN AN IMPACT; HOWEVER, IF BOTH ARE LOOSE, MISSION TERMINATION RESULTS.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 841 FLIGHT: 3/3

ITEM: CCA
FAILURE MODE: SNAP FAILS CLOSED

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) SSA
2) CCA
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CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: 0101-80001-02

CAUSES: SNAP WORN OR BENT

EFFECTS/RATIONALE:
DIFFICULTY IN DOFFING CAN RESULT BUT, OTHERWISE, NO IMPACTS TO MISSION OR CREWPERSON SAFETY.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 842 FLIGHT: 3/2R

ITEM: CCA
FAILURE MODE: MICROPHONE BOOM SHIFTS OUT OF RANGE

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
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CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/2R
EVA:	3/2R
POST-EVA:	3/2R

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: 0101-80001-02

CAUSES: DEFECTIVE OR WORN FASTENER, IMPACT

EFFECTS/RATIONALE:
LOSS OF ONE MICROPHONE PRESENTS NO IMPACTS DUE TO AVAILABILITY OF SECOND MICROPHONE. IF BOTH ARE LOST, TERMINATE MISSION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 843 FLIGHT: 3/3

ITEM: HARD TORSO SHELL
FAILURE MODE: O2 LINE LEAKAGE TO SSA

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) HUT
4)
5)
6)
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CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: SV772375-21

CAUSES: TUBE PUNCTURED

EFFECTS/RATIONALE:
O2 LEAKAGE TO SSA WILL NOT SUBSTANTIALLY REDUCE FLOW TO HELMET; THEREFORE, NO MISSION OR CREWPERSON IMPACTS.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 844 FLIGHT: 2/1R

ITEM: HARD TORSO SHELL
FAILURE MODE: H2O LEAKAGE INTO SSA

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) HUT
4)
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CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: SV772375-21

CAUSES: SEAL FAILURE, TUBE PUNCTURE

EFFECTS/RATIONALE:
GRADUAL LOSS OF H2O SUPPLY AND THEREFORE COOLING CAPABILITY. FREE WATER IN SUIT CAN GET INTO VENT LOOP AND CAUSE FAILURE OF CCC. MISSION TERMINATION. IF SOP ALSO LOST OR PURGE VALVES BLOCKED BY ICE, CREWPERSON CAN BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 845 FLIGHT: 2/1R

ITEM: HARD TORSO SHELL
FAILURE MODE: VENT RETURN FLOW PARTIALLY OR TOTALLY BLOCKED

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) HUT
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CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: SV772375-21

CAUSES: CONTAMINATION, HAIR, FLOCK, LINT

EFFECTS/RATIONALE:
LOW VENT FLOW WILL REQUIRE MISSION TERMINATION AND POSSIBLE SOP USAGE. IF SOP ALSO FAILS, CREWPERSON CAN BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 846 FLIGHT: 1/1

ITEM: HARD TORSO SHELL
FAILURE MODE: GIMBAL PIVOT SOCKET FAILURE

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) HUT
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CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	1/1
POST-EVA:	2/2

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: SV772375-21

CAUSES: MATERIAL DEFECT, DEFECTIVE BOND, IMPACT

EFFECTS/RATIONALE:
BELLOWS CAN SEPARATE FROM HUT WITH GIMBAL PIVOT SOCKET FAILURE AND CAUSE UNCONTROLLABLE DEPRESSURIZATION. LOSS OF CREWPERSON.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 847 FLIGHT: 3/3

ITEM: HARD TORSO SHELL
FAILURE MODE: EEH BRACKET LOOSE

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) HUT
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CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: SV772375-21

CAUSES: DEFECTIVE BOND, IMPACT

EFFECTS/RATIONALE:
POSSIBLE DISCOMFORT DURING DONNING/DOFFING. NO MISSION OR CREWPERSON IMPACTS.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 848 FLIGHT: 2/2

ITEM: HUT ASSEMBLY
FAILURE MODE: IDB DETACHES OR FOOD BAR DETACHES

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) HUT
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CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	2/2
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: 0102-80002-105

CAUSES: VELCRO ADHESIVE DEFECTIVE

EFFECTS/RATIONALE:
A DISLODGED IDB OR FOOD BAR CAN POSITION ITSELF IN MANNER WHICH CAUSES THE CREWPERSON DISCOMFORT OR WHICH INHIBITS OPTIMUM CREWPERSON PERFORMANCE. MISSION TERMINATION CAN RESULT.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE:
SUBSYSTEM: EMU
MDAC ID: 849

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 1/1

ITEM: HUT ASSEMBLY
FAILURE MODE: BROKEN GIMBAL TRAVEL STOP STRAP

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) HUT
4)
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9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	1/1
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: 0102-80002-105

CAUSES: DEFECTIVE MATERIAL, ABRASION, CLAMP SCREWS MISSING

EFFECTS/RATIONALE:
STRAP FALURE WILL CAUSE UNNECESSARY LOADING OF BELLOWS AT TRAVEL EXTREMES. AXIAL PEELING OF BELLOWS CAN RESULT IN GROSS DEPRESSURZATION. CREWPERSON LOSS.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 851 FLIGHT: 2/2

ITEM: HUT TMG
FAILURE MODE: LOOSE OR HAS HOLE

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1)
2)
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CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/2
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: 0102-82782-32

CAUSES: DEFECTIVE MATERIAL OR LOOP TAPE, SEAM SEPARATION, TEAR

EFFECTS/RATIONALE:
LOCAL "HOT/COLD" SPOTS CAN POSSIBLY CAUSE SIGNIFICANT CREWPERSON DISCOMFORT. POSSIBLE MISSION TERMINATION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE:
SUBSYSTEM: EMU
MDAC ID: 852

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 2/2

ITEM: ARM TMG
FAILURE MODE: LOOSE OR HAS HOLE IN IT

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1)
2)
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CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/2
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: 0103-82405-10/0103-82406-07

CAUSES: MATERIAL/LOOP TAPE DEFECT, SEAM SEPARATION

EFFECTS/RATIONALE:
LOCAL "HOT/COLD" SPOTS CAN CAUSE CREWPERSON DISCOMFORT. IF SIGNIFICANT DISCOMFORT RESULTS, CREWPERSON MAY TERMINATE MISSION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 853 FLIGHT: 3/2R

ITEM: DOFFING LEVER SUBASSEMBLY
FAILURE MODE: TORSION SPRING BREAKS

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1)
2)
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CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	/NA
POST-EVA:	3/3

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: A/L 23869

CAUSES: MATERIAL DEFECT, CORROSION

EFFECTS/RATIONALE:
LOSS OF LEVERAGE IN UNLATCHING BODY SEAL CLOSURE. THIS IS AN OPTIONAL ITEM AND ITS FAILURE WOULD BE AN IMPACT ONLY IF THE BODY SEAL CLOSURE WERE DIFFICULT IN OPERATION. IF BOTH WERE FAILED MISSION TERMINATION WOULD RESULT.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 854 FLIGHT: 3/3

ITEM: DONNING AID HANDLES
FAILURE MODE: LATCH FAILS OPEN

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LTA
4)
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CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	/NA
EVA:	/NA
POST-EVA:	3/3

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: A/L 9857/9858

CAUSES: MATERIAL DEFECT/DEFORMATION

EFFECTS/RATIONALE:
INADVERTENT RELEASE OF HANDLES FROM BRACKET INCREASES DONNING DIFFICULTY ONLY.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 855 FLIGHT: 3/3

ITEM: DONNING AID HANDLES
FAILURE MODE: HANDLES WILL NOT INSTALL

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1)
2)
3)
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5)
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8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	/NA
EVA:	/NA
POST-EVA:	3/3

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: A/L 9857/9858

CAUSES: MATERIAL DEFORMATION, IMPACT, CONTAMINATION

EFFECTS/RATIONALE:
DONNING DIFFICULTY IS INCREASED. NO OTHER IMPACTS.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 856 FLIGHT: 2/2

ITEM: WAIST/BRIEF/LTA/BOOT TMG
FAILURE MODE: LOOSE OR HAS HOLE

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LTA
4)
5)
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9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/2
POST-EVA:	2/2

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER:

CAUSES: DEFECTIVE MATERIAL/THREAD, SEAM SEPARATION, TEAR

EFFECTS/RATIONALE:
LOCAL "HOT/COLD" SPOTS CAN CAUSE CREWPERSON DISCOMFORT. IF DISCOMFORT IS SIGNIFICANT, MISSION WOULD BE TERMINATED.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 857 FLIGHT: 3/3

ITEM: COMFORT GLOVE
FAILURE MODE: DAMAGED

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) GLOVE ASSEMBLY
4)
5)
6)
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8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: 0106-84906-03/04

CAUSES: TEAR, SEAM SEPARATION

EFFECTS/RATIONALE:
THIS IS A CREW OPTION ITEM AND ITS FAILURE WILL HAVE NO IMPACTS.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 858 FLIGHT: 2/2

ITEM: GLOVE TMG
FAILURE MODE: HOLE OR SEPARATION IN TMG

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) GLOVE ASSEMBLY
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/2
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: 0106-88074-01/02

CAUSES: WEAR, MATERIAL/THREAD DEFECT, TEAR, DEFECTIVE VELCRO

EFFECTS/RATIONALE:
LOCAL "HOT/COLD" SPOTS WHICH CAN CAUSE CREWPERSON DISCOMFORT. IF DISCOMFORT IS SIGNIFICANT, MISSION TERMINATION CAN RESULT.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 859 FLIGHT: 3/3

ITEM: GLOVE TMG
FAILURE MODE: TMG DETACHES FROM RESTRAINT

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) GLOVE ASSEMBLY
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: 0106-88074-01/02

CAUSES: DEFECTIVE MATERIAL/LOOPTAPE/THREAD

EFFECTS/RATIONALE:
THIS WILL ONLY RESULT IN SOME EXCESS TMG MOVEMENT WHICH SHOULD NOT REDUCE GLOVE FUNCTION OR IMPACT SAFETY.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 860 FLIGHT: 3/3

ITEM: GLOVE TMG
FAILURE MODE: FINGER TIPS LOOSE OR ABRADED

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) GLOVE ASSEMBLY
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: 0106-88074-01/02

CAUSES: CONTACT WITH SHARP OBJECT, DEFECTIVE MATERIAL/BOND

EFFECTS/RATIONALE:
THIS FALURE MAY SLIGHTLY INCREASE DIFFICULTY OF EVA ACTIVITIES WHICH EMPLOY "FINGER-TIP" ACTIVITIES (I.E., SWITCH MOVEMENTS) BUT SHOULD NOT IMPACT MISSION OR SAFETY.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 861 FLIGHT: 3/3

ITEM: RESTRAINT ASSEMBLY
FAILURE MODE: BIO-POCKET/POSIMETER DETACHES

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LCVG
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: 0107-82968-07

CAUSES: MATERIAL/THREAD DEFECT/TEAR

EFFECTS/RATIONALE:
THE LOCATION OF THESE ITEMS SHOULD INHIBIT THEIR TRANSLATION TO OTHER AREAS IN SSA. NO IMPACT IS DETECTED.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE:
SUBSYSTEM: EMU
MDAC ID: 862

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 2/2

ITEM: RESTRAINT ASSEMBLY
FAILURE MODE: H2O FLOW RESTRICTED

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LCVG
4)
5)
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7)
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9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/2
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER: 0107-82968

CAUSES: IMPACT CAUSES KINK IN LINE; MATERIAL DEFECT

EFFECTS/RATIONALE:
PROBABLE DEGRADATION IN COOLING CAPABILITY. TERMINATE MISSION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 863 FLIGHT: 3/3

ITEM: EVVA TMG
FAILURE MODE: HOLE OR SEPARATION IN MATERIAL

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) HELMET
4)
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8)
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CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: 0108-84032-01

CAUSES: MATERIAL/THREAD DEFECT, SEAM SEPARATION

EFFECTS/RATIONALE:
LOCAL "HOT/COLD" SPOTS SHOULD NOT CAUSE SIGNIFICANT CREW DISCOMFORT; THEREFORE, NO IMPACTS.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 864 FLIGHT: 2/2

ITEM: MITTEN ASSEMBLY
FAILURE MODE: INSULATION TORN OR SEPARATED

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) GLOVE ASSEMBLY
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	2/2
POST-EVA:	3/3

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:
PART NUMBER:

CAUSES: THREAD/MATERIAL DEFECT/TEAR

EFFECTS/RATIONALE:
LOCAL HOT SPOT CAN CAUSE DISCOMFORT. ASSUMING REQUIRED FOR MISSION SUCCESS IF UNABLE TO EMPLOY MISSION, MISSION TERMINATION RESULTS.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 865 FLIGHT: 2/1R

ITEM: ARM BEARING ASSEMBLY
FAILURE MODE: LOWER PRIMARY RESTRAINT BRACKET BROKEN/FAILED

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) ARM ASSEMBLY
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: A/L 9657-06

CAUSES: MATERIAL DEFECT, IMPACT, KEEPER SCREW BACKED OUT, DEFECTIVE THREADLOCK

EFFECTS/RATIONALE:
LOSS OF PRIMARY AXIAL LOAD RESTRAINT INTEGRITY. IF COMBINED WITH LOSS OF SECONDARY RESTRAINT OR COMPLETE LOSS OF ATTACHMENT SCREWS, CREWMEMBER COULD BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 866 FLIGHT: 2/1R

ITEM: LOWER ARM RESTRAINT AND BLADDER ASSEMBLY
FAILURE MODE: AXIAL RESTRAINT SEAM SEPARATION OR SIZING INSERT MOVES

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) ARM ASSEMBLY
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: 0103-82351-16

CAUSES: FABRIC DEFECT, DEFECTIVE THREAD OR CORD

EFFECTS/RATIONALE:
BLADDER IS STILL UNDER TMG AND CAN ACCEPT OPERATING SUIT PRESSURES BUT IS SUBJECT TO ABRASION AND WEAR. IF BLADDER WERE TO ALSO FAIL, CREWPERSON LOSS CAN RESULT.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 867 FLIGHT: 2/1R

ITEM: BOOT DISCONNECT
FAILURE MODE: LOSS OF AXIAL RESTRAINT (PRIMARY OR SECONDARY)

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LTA
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: A/L 9752-01

CAUSES: DEFECTIVE MATERIAL, SCREW BACKS OUT, INEFFECTIVE THREADLOCK

EFFECTS/RATIONALE:
SUIT LOADS WILL BE ASSUMED BY REMAINING RESTRAINT WHICH, IF ALSO FAILED, CAN RESULT IN CREWPERSON LOSS DUE TO INABILITY TO SUIT TO WITHSTAND LOADS AT BOOT.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 868 FLIGHT: 3/3

ITEM: CCA
FAILURE MODE: LOSS OF ATTACHMENT EAR SEAL

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSSA
3)
4)
5)
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7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER:

CAUSES: MATERIAL DEFECT, WEAR

EFFECTS/RATIONALE:
CREWPERSON DOES NOT LOSE EAR COMMUNICATIONS BUT DOES GET INCREASED NOISE. NO IMPACTS.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 869 FLIGHT: 3/3

ITEM: CCA
FAILURE MODE: LOSS OF ABSORPTION ATTACHMENT

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3)
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER:

CAUSES: MATERIAL DEFECT, WEAR

EFFECTS/RATIONALE:
NO IMPACTS TO COMMUNICATION CAPABILITY, MISSION OR CREWPERSON.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 870 FLIGHT: 2/2

ITEM: CCA
FAILURE MODE: CHIN STRAP FAILS OPEN

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1)
2)
3)
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/2
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER:

CAUSES: MATERIAL DEFECT/WEAR, MECHANICAL FAILURE OF SNAP

EFFECTS/RATIONALE:
THIS CAN RESULT IN THE ENTIRE CCA SHIFTING SUCH THAT COMMUNICATOINS IN EITHER DIRECTION IS IMPACTED.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 871 FLIGHT: 1/1

ITEM: SCYE BEARING ASSEMBLY
FAILURE MODE: SEPARATION OF BEARING RACES

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) ARM ASSEMBLY
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	1/1
POST-EVA:	2/2

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: A/L 9782-04

CAUSES: MATERIAL FATIGUE, IMPACT, MATERIAL DEFECT/FRACTURE

EFFECTS/RATIONALE:
SEPARATION OF ARM FROM SSA CAN RESULT WITH UNCONTROLLABLE EMU DEPRESSURIZATION. LOSS OF LIFE.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 872 FLIGHT: 2/1R

ITEM: SCYE BEARING ASSEMBLY
FAILURE MODE: LOSS OF PRIMARY AXIAL RESTRAINT BRACKET SWIVEL

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) ARM ASSEMBLY
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER:

CAUSES: MATERIAL FATIGUE/WEAR

EFFECTS/RATIONALE:
PRIMARY LOAD BEARING CAPABILITY WOULD BE LOST. MISSION TERMINATION RESULTS. IF SECONDARY FUNCTION ALSO LOST, ARM SEPARATION WOULD RESULT IN LOSS OF CREWPERSON.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 873 FLIGHT: 2/1R

ITEM: BODY SEAL CLOSURE (LTA SIDE)
FAILURE MODE: LOSS OF PRIMARY AXIAL RESTRAINT BRACKET

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LTA
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CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: A/L 9787-05

CAUSES: LOOSE OR MISSING SCREWS, MATERIAL DEFECT/FATIGUE, IMPACT

EFFECTS/RATIONALE:
LOSS OF PRIMARY RESTRAINT LOAD BEARING CAPABILITY WILL RESULT IN MISSION TERMINATION. IF THE REDUNDANT RESTRAINT ALSO FAILS, THE CREWPERSON WILL BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 874 FLIGHT: 2/1R

ITEM: WAIST BEARING
FAILURE MODE: UPPER PRIMARY EXIAL RESTRAINT BRACKET FAILS

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LTA
4)
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6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: A/L 9698-08

CAUSES: LOOSE OR MISSING SCREWS, MATERIAL DEFECT/FATIGUE, IMPACT, INEFFECTIVE THREADLOCK

EFFECTS/RATIONALE:
LOSS OF PRIMARY LOAD BEARING CAPABILITY SHOULD RESULT IN MISSION TERMINATION. IF SECONDARY RESTRAINT ALSO FAILS, GROSS LOSS OF STRUCTURAL INTEGRITY WILL RESULT IN CREWPERSON LOSS.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 875 FLIGHT: 2/1R

ITEM: WAIST BEARING
FAILURE MODE: LOSS OF BALL BEARING RETAINER SCREW

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LTA
4)
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7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [F]

LOCATION:
PART NUMBER: A/L 9698-08

CAUSES: STRIPPED/FRACTURED SCREW, MATERIAL DEFECT/FATIGUE

EFFECTS/RATIONALE:
LOSS OF ONE SCREW WILL NOT IMPACT CREWPERSON BUT LOSS OF SECOND SCREW CAN RESULT IN LOSS OF BALL BEARING RETAINER AND THE SSA PERSSURE INTEGRITY, THEREBY CAUSING LOSS OF LIFE.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 876 FLIGHT: 2/1R

ITEM: WAIST BEARING
FAILURE MODE: LOSS OF LOWER PRIMARY AXIAL RESTRAINT BRACKET

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LTA
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9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: A/L 9698-08

CAUSES: MATERIAL DEFECT/FATIGUE, IMPACT

EFFECTS/RATIONALE:
LOSS OF PRIMARY LOAD BEARING CAPABILITY WILL CAUSE SECONDARY RESTRAINT TO SUSTAIN LOADS; HOWEVER, IF THE SECONDARY WERE ALSO LOST, THE CREWPERSON COULD BE LOST WHEN SSA PRESSURE INTEGRITY FAILS.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 877 FLIGHT: 2/1R

ITEM: WAIST BEARING
FAILURE MODE: LOSS OF PRIMARY AXIAL RESTRAINT BRACKET, FRONT

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LTA
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8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: A/L 9698-08

CAUSES: MATERIAL DEFECT/FATIGUE, SCRE FRACTURE, DEFECTIVE THREADLOCK

EFFECTS/RATIONALE:
LOSS OF PRIMARY AXIAL LOAD BEARING CAPABILITY WILL CAUSE SECONDARY RESTRAINT TO SUSTAIN LOADS. LOSS OF SECONDARY RESTRAINT CONCURRENT WITH THE PRIMARY RESULTS IN GROSS LOSS OF PRESSURE INTEGRITY AND CREWPERSON LOSS OF LIFE.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 878 FLIGHT: 2/1R

ITEM: WAIST BEARING
FAILURE MODE: LOSS OF PRIMARY AXIAL RESTRAINT BRACKET REAR PIN

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LTA
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [F]

LOCATION:
PART NUMBER: A/L 9698-08

CAUSES: MATERIAL DEFECT/FATIGUE, IMPACT/FRACTURE

EFFECTS/RATIONALE:
FAILURE OF THE PIN WILL CAUSE EFFECTIVE LOSS OF THE PRIMARY AXIAL RESTRAINT AND RESULT IN THE SECONDARY RESTRAINT BEING REQUIRED TO SUSTAIN SUIT LOADS. IF THE SECONDARY RESTRAINT BRACKET TO ALSO FAIL, THE CREWPERSON WOULD BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 879 FLIGHT: 2/1R

ITEM: WAIST BEARING
FAILURE MODE: LOSS OF REAR RESTRAINT BRACKET SCREW

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LTA
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [F]

LOCATION:
PART NUMBER: A/L 9698-08

CAUSES: MATERIAL DEFECT/FATIGUE, IMPACT/FRACTURE, SCREW STRIPPED/BACKS OUT

EFFECTS/RATIONALE:
LOSS OF PIN SET SCREW WILL RESULT IN LOSS OF PRIMARY RESTRAINT BUT SECONDARY RESTRAINT STILL HELD BY BRACKET. HOWEVER, IF THE BRACKET ITSELF LOST TWO SIDE SCREWS, BOTH RESTRAINT COULD BE LOST AS COULD THE CREWPERSON.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 880 FLIGHT: 1/1

ITEM: WAIST BEARING
FAILURE MODE: TETHER BRACKET FRACTURES/YIELDS

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LTA
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6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	1/1
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [ ]

LOCATION:
PART NUMBER: A/L 9698-08

CAUSES: MATERIAL DEFECT/FATIGUE, IMPACT

EFFECTS/RATIONALE:
A FAILURE OF THE TETHER BRACKET TO MAINTAIN THE CONNECTION OF THE EVA CREWPERSON TO THE SHUTTLE CAN RESULT IN UNCONTROLLED CREWPERSON SEPARATION AND LOSS OF LIFE.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 881 FLIGHT: 2/1R

ITEM: LOWER TORSO RESTRAINT BLADDER ASSEMBLY
FAILURE MODE: LOSS OF HIP JOINT RING

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LTA
4)
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8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: 0104-82335-22

CAUSES: IMPACT, DEFECTIVE MATERIAL, FATIGUE

EFFECTS/RATIONALE:
A FAILURE OF THE HIP JOINT RING WILL RESULT IN PARTIAL TO TOTAL LOSS OF THE PRIMARY AXIAL RESTRAINT FOR THE HIP AREA WITH LOAD DEPENDENCE TRANSFERRED TO THE SECONDARY RESTRAINT. IF THE SECONDARY RESTRAINT WERE ALSO LOST, SUIT LOADS COULD RESULT IN GROSS
FAILURE OF SUIT PRESSURE INTEGRITY AND CREWPERSON LOSS.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 882 FLIGHT: 2/1R

ITEM: LOWER TORSO RESTRAINT BLADDER ASSEMBLY
FAILURE MODE: CROTCH BUCKLE YIELDS/FRACTURES

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1)
2)
3)
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6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/1R
POST-EVA:	2/2

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:
PART NUMBER: 0104-82335-22

CAUSES: MATERIAL DEFECT/FATIGUE, IMPACT

EFFECTS/RATIONALE:
LOSS OF PRIMARY LOAD RESTRAINT FOR CROTCH AREA TRANSFERS LOADS TO SECONDARY RESTRAINT. IF SECONDARY RESTRAINT ALSO FAILS, CREWPERSON CAN BE LOST.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 883 FLIGHT: 3/3

ITEM: LOWER TORSO RESTRAINT BLADDER ASSEMBLY
FAILURE MODE: WEBBING DETACHES FROM KEEPER RING

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LTA
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: 0104-82335-22

CAUSES: FABRIC TORN/WORN, THREAD BREAKS

EFFECTS/RATIONALE:
IF THE WEBBING DETACHES FROM THE KEEPER RING, MINOR DEFORMATION OF THE LTA CAN RESULT. BECAUSE THE DEFORMATION WOULD BE MINOR, MOBILITY SHOULD NOT BE SEVERELY RESTRICTED NOR SHOULD CREWPERSON DISCOMFORT BE A FACTOR. NO IMPACTS.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 884 FLIGHT: 3/3

ITEM: WAIST/BRIEF/LTA/BOOT TMG
FAILURE MODE: SCISSOR POCKET LOOSE/TORN

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LTA
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER:

CAUSES: THREAD DEFECTIVE/TORN, MATERIAL DEFECT/WEAR/TEAR

EFFECTS/RATIONALE:
INABILITY TO USE POCKET FOR RETENTION OF EVA SCISSORS SHOULD NOT IMPACT MISSION OR CREWPERSON.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 885 FLIGHT: 3/3

ITEM: DONNING AID HANDLES
FAILURE MODE: FAIL ENGAGED TO LTA

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LTA
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	3/3
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: A/L 9857/9858

CAUSES: IMPACT, MATERIAL DEFECT/FATIGUE, CONTAMINATION

EFFECTS/RATIONALE:
THE MISSION AND THE CREWPERSON WILL NOT BE IMPACTED DUE TO THE PRESENCE OF DONNING AID HANDLES.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 886 FLIGHT: 2/2

ITEM: HELMET ASSEMBLY
FAILURE MODE: FRESNEL LENS DETACHES

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) HELMET
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/2
POST-EVA:	2/2

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: A/L 9672-01

CAUSES: MATERIAL DEFECTIVE, IMPACT

EFFECTS/RATIONALE:
DIFFICULTY IN READING DCM DISPLAY AND CONTROLS. POSSIBLE IRRITATION TO CREWPERSON DUE TO "FREE" LENS IN HELMET. MISSION TERMINATION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 887 FLIGHT: 1/1

ITEM: RESTRAINT MODIFIED
FAILURE MODE: GIMBAL RING FRACTURES/YIELDS

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) GLOVE ASSEMBLY
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	1/1
POST-EVA:	2/2

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: 0106-85894-11/12

CAUSES: IMPACT, MATERIAL DEFECT/FATIGUE

EFFECTS/RATIONALE:
THE GIMBAL RING IS CRITICAL TO SUSTAINING GLOVE LOADS. IF LOST, THE PRESSURE INTEGRITY OF THE GLOVE ASSEMBLY WILL ALSO BE LOST IN AN UNCONTROLLABLE MANNER RESULTING IN LOSS OF LIFE.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 888 FLIGHT: 2/2

ITEM: RESTRAINT ASSEMBLY
FAILURE MODE: ZIPPER DETACHES

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) LCVG
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/2
POST-EVA:	2/2

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: 0107-82968-07

CAUSES: FABRIC DEFECT/WEAR, MECHANICAL SEPARATION

EFFECTS/RATIONALE:
A DETACHED ZIPPER CAN RESULT IN POOR LCVG FIT AND THEREFORE DEGRADED COOLING. MISSION TERMINATION WILL RESULT.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 889 FLIGHT: 2/2

ITEM: EXTRAVEHICULAR VISOR ASSEMBLY
FAILURE MODE: CRACKED/SCRATCHED PROTECTIVE VISOR

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) HELMET
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/2
POST-EVA:	2/2

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: A/L 9813-12

CAUSES: IMPACT

EFFECTS/RATIONALE:
REDUCED OR IMPAIRED VISION WILL RESULT IN MISSION TERMINATION.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 890 FLIGHT: 2/2

ITEM: EXTRAVEHICULAR VISOR ASSEMBLY
FAILURE MODE: EYE SHADES JAMMED/STUCK IN ONE POSITION

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1) EMU
2) SSA
3) HELMET
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	2/2
EVA:	2/2
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: A/L 9813-12

CAUSES: IMPACT, THERMAL STRESS

EFFECTS/RATIONALE:
INABILITY TO EMPLOY EYESHADES DURING A MISSION WHICH REQUIRES THEM CAN RESULT IN SIGNIFICANTLY IMPAIRED VISION AND MISSION IMPACTS.

REFERENCES:

INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: EMU
MDAC ID: 891 FLIGHT: 2/2

ITEM: EXTRAVEHICULAR VISOR ASSEMBLY
FAILURE MODE: TENSION BAND BREAKS/YIELDS

LEAD ANALYST: G. RAFFAELLI SUBSYS LEAD: G. RAFFAELLI

BREAKDOWN HIERARCHY:
1)
2)
3)
4)
5)
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC
PRE-EVA:	3/3
EVA:	2/2
POST-EVA:	3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION:
PART NUMBER: A/L 9813-12

CAUSES: MATERIAL DEFECT/FATIGUE, IMPACT

EFFECTS/RATIONALE:
A FAILURE CAN HAVE ONE OF TWO CONSEQUENCES: 1) A LOOSE EVVA NOT HELD IN POSITION, OR 2) STICKS THE EVVA IN ONE POSITION. THE LATTER CONSEQUENCE IS THE MOST CRITICAL IN THAT MISSION TERMINATION CAN RESULT IF THE EVVA CANNOT BE EMPLOYED.

REFERENCES:

APPENDIX F

NASA FMEA TO IOA WORKSHEET CROSS REFERENCE/RECOMMENDATIONS

This section provides a cross reference between the NASA FMEA and corresponding IOA analysis worksheet(s) included in Appendix E. The Appendix F identifies: NASA FMEA Number, IOA Assessment Number, NASA criticality and redundancy screen data, and IOA recommendations.

Appendix F Legend

Code	Definition
Blank	The IOA and the NASA are in agreement.
1	The IOA recommends inclusion of this failure mode into the NASA FMEA.
2	The IOA recommends inclusion of this fialure mode into the NASA CIL.
3	The IOA recommends deletion of the failure mode from the IOA analysis.
4	The IOA recommends incorporation of the identified failure mode as a "cause" into a specific NASA FMEA.
5	The IOA recommends downgrading the NASA FMEA criticality.
6	The IOA recommends upgrading the NASA FMEA criticality.
7	The IOA recommends upgrading the NASA FMEA criticality and adding the failure mode to the CIL.
8	The IOA recommends removal of the NASA failure mode from the CIL.
9	The IOA agrees with the NASA analysis.
10	The IOA recommends a change to a screen.
11	The IOA recommends the failure mode be removed from the NASA FMEA. Analysis of this event is more applicable to a hazard analysis.
12	The IOA recommends the NASA failure mode effects to be modified.
13	The EVC should be covered by the communications and tracking reports by the IOA.

APPENDIX F

NASA FMEA TO IOA WORKSHEET CROSS REFERENCE / RECOMMENDATIONS

IDENTIFIERS		NASA			IOA RECOMMENDATIONS *				
NASA FMEA NUMBER	IOA ASSESSMENT NUMBER	CRIT HW/F	SCREENS A	B C	CRIT HW/F	SCREENS A	B C	OTHER (SEE LEGEND CODE)	ISSUE
	EMU-145	/			2/1R	P	F P	1,2	X
	EMU-166	/			3/3				
	EMU-175	/			3/1R	P	F P	4	
	EMU-177	/			3/3			1	
	EMU-195	/			/			3	
	EMU-202	/			2/1R	P	F P	1,2	X
	EMU-224	/			2/2			1,2	X
	EMU-225	/			3/1R	P	F P	1,2	X
	EMU-226	/			3/1R	P	F P	1,2	X
	EMU-304	/			2/1R	P	F P	4	
	EMU-319	/			3/3			1	
	EMU-320	/			2/1R	P	F P	1,2	X
	EMU-321	/			1/1			1,2	X
	EMU-342	/			3/3			1	
	EMU-360	/			/			3	
	EMU-361	/			3/2R	P	P P	1	X
	EMU-384	/			2/2			1,2	X
	EMU-385	/			3/2R	P	F P	1,2	X
	EMU-386	/			3/3			1	
	EMU-387	/			2/2			1,2	X
	EMU-394	/			2/2			1,2	X
	EMU-395	/			/			4	
	EMU-428	/			/			3	
	EMU-439	/			3/1R	P	F P	1,2	X
	EMU-440	/			3/1R	P	F P	1,2	X
	EMU-442	/			/			3	
	EMU-460	/			/			3	
	EMU-461	/			2/1R	P	F P	1,2	X
	EMU-463	/			2/1R	P	F P	1,2	X
	EMU-464	/			2/1R	P	F P	1,2	X
	EMU-468	/			3/3			1	
	EMU-476	/			3/2R	P	NA P	1	X
	EMU-478	/			3/2R	P	NA P	1	X
	EMU-479	/			2/1R	P	F P	1,2	X
	EMU-480	/			2/1R	P	P P	1,2	X
	EMU-485	/			2/2			1,2	X
	EMU-486	/			2/1R	P	F P	1,2	X
	EMU-487	/			2/1R	P	F P	1,2	X
	EMU-488	/			2/1R	P	F P	1,2	X
	EMU-496	/			3/3			1	
	EMU-509	/			/			13	
	EMU-510	/			/			13	
	EMU-511	/			/			13	
	EMU-512	/			/			13	
	EMU-513	/			/			13	

IDENTIFIERS		NASA				IOA RECOMMENDATIONS *				
NASA FMEA NUMBER	IOA ASSESSMENT NUMBER	CRIT HW/F	SCREENS A	B	C	CRIT HW/F	SCREENS A	B	C	OTHER (SEE LEGEND CODE)	ISSUE
	EMU-514	/				/				13	
	EMU-515	/				/				13	
	EMU-516	/				/				13	
	EMU-517	/				/				13	
	EMU-604	/				2/2				1,2	X
	EMU-612	/				2/2				1,2	X
	EMU-616	/				/				3	
	EMU-617	/				/				3	
	EMU-618	/				/				3	
	EMU-675	/				2/2				7	X
	EMU-676	/				2/2				7	X
	EMU-677	/				2/2				7	X
	EMU-678	/				2/2				7	X
	EMU-679	/				2/2				7	X
	EMU-680	/				2/2				1,2	X
	EMU-681	/				3/2R	P	P	P	1	X
	EMU-742X	/				3/3				1	
	EMU-803X	/				3/2R	P	F	P	1,2	X
	EMU-805X	/				2/2				1,2	X
	EMU-813X	/				2/2				1,2	X
	EMU-820X	/				2/2				1,2	X
	EMU-825X	/				2/2				1,2	X
	EMU-826X	/				2/2				1,2	X
	EMU-829X	/				2/2				1,2	X
	EMU-834X	/				2/2				1,2	X
100-FM1	EMU-784X	2/2				2/1R	P	F	F	6	X
100-FM2	EMU-785X	2/1R	P	P	P	/					
100-FM3	EMU-786X	1/1				/				9	
100-FM4	EMU-787X	2/1R	P	F	P	/					
101-FM1	EMU-840X	3/2R	P	P	P	/					
	EMU-842X	3/2R	P	P	P	/					
101-FM2	EMU-841X	3/2R	P	P	P	3/3				5	
101-FM3	EMU-868X	3/3				/					
101-FM4	EMU-869X	3/3				/					
101-FM5	EMU-870X	2/2				/					
102-FM1	EMU-601	2/2				/					
102-FM10	EMU-611	1/1				2/1R	P	P	F	5	X
102-FM11	EMU-846X	1/1				/					
102-FM12	EMU-847X	3/3				/					
102-FM13	EMU-848X	3/3				2/2				7	X
102-FM14	EMU-849X	1/1				/					
102-FM15	EMU-804X	2/1R	P	P	P	/					
102-FM16	EMU-605	2/1R	P	P	P	/					
102-FM17	EMU-606	3/3				/				9	
102-FM18	EMU-615	1/1				2/1R	P	P	F	5	X
102-FM19	EMU-806X	2/2				/					
102-FM2	EMU-600	2/2				/					
102-FM20	EMU-613	1/1				/					
102-FM21	EMU-614	1/1				2/1R	P	P	F	5	X
102-FM22	EMU-610	2/1R	P	P	P	/					

IDENTIFIERS		NASA				IOA RECOMMENDATIONS *				
NASA FMEA NUMBER	IOA ASSESSMENT NUMBER	CRIT HW/F	SCREENS A	B	C	CRIT HW/F	SCREENS A	B	C	OTHER (SEE LEGEND CODE)	ISSUE
102-FM23	EMU-607	3/3				/					
102-FM24	EMU-610A	3/3				/				9	
102-FM25	EMU-608	3/2R	P	F	P	2/2				6	X
102-FM26	EMU-609	3/3				2/2				7	X
102-FM27	EMU-619	3/3				/					
102-FM28	EMU-851X	3/3				2/2				7	X
102-FM3	EMU-602	1/1				2/1R	P	P	F	5	X
102-FM4	EMU-801X	3/3				/					
102-FM5	EMU-802X	3/3				/				9	
102-FM6	EMU-603	3/1R	P	F	P	/			F	10	
102-FM7	EMU-843X	3/3				/					
102-FM8	EMU-844X	2/1R	P	P	P	/					
102-FM9	EMU-845X	2/1R	P	P	P	/					
103-FM1	EMU-629	1/1				2/1R	P	P	F	5	X
103-FM10	EMU-632	2/2				/					
103-FM11	EMU-816X	2/1R	P	NA	P	/		F		10	
103-FM12	EMU-865X	2/1R	P	F	P	/					
103-FM13, FM14	EMU-628A	2/1R	P	NA	P	/				9	
103-FM15	EMU-627A	1/1				2/1R	P	P	F	5	X
103-FM16	EMU-866X	2/1R	P	F	P	/					
103-FM17	EMU-817X	2/1R	P	NA	P	/		F		10	
103-FM18	EMU-818X	2/1R	P	F	P	/					
103-FM19	EMU-635	1/1				2/1R	P	P	F	5	X
103-FM2	EMU-871X	1/1				/					
103-FM20	EMU-634	2/2				/					
103-FM21	EMU-633	2/2				/					
103-FM22	EMU-636	3/1R	P	F	P	/				9	
103-FM23	EMU-852X	3/3				2/2				7	X
103-FM2A	EMU-872X	2/1R	P	NA	P	/				9	
103-FM3	EMU-815X	2/1R	P	F	P	/	P				
103-FM4	EMU-630	2/2				/					
103-FM5	EMU-627	1/1				2/1R	P	P	F	5	X
103-FM6, FM8	EMU-629	2/1R	P	NA	P	/				9	
103-FM7	EMU-814X	2/1R	P	NA	P	/		F		10	
103-FM9	EMU-631	1/1				2/1R	P	P	F	5	X
104-FM1	EMU-658	1/1				2/1R	P	P	F	5	X
104-FM10	EMU-824X	2/1R	P	F	P	/					
104-FM11	EMU-647	2/1R	P	NA	P	/		F		10	
104-FM12	EMU-874X	2/1R	P	NA	P	/				9	
104-FM13	EMU-648	1/1				2/1R	P	P	F	5	X
104-FM14	EMU-875X	2/1R	P	F	P	/F				10	
104-FM15	EMU-876X	2/1R	P	NA	P	/				9	
104-FM16	EMU-877X	2/1R	P	NA	P	/				9	
104-FM17	EMU-878X	2/1R	P	NA	P	/		F		10	
104-FM18	EMU-879X	2/1R	P	NA	P	/		F		10	
104-FM19	EMU-880X	1/1				/					
104-FM2	EMU-873X	2/1R	P	NA	P	/				9	
104-FM20	EMU-827X	2/1R	P	F	P	/					
104-FM21	EMU-649	2/2				/					
104-FM22	EMU-650	1/1				2/1R	P	P	F	5	X

IDENTIFIERS		NASA				IOA RECOMMENDATIONS *					
NASA FMEA NUMBER	IOA ASSESSMENT NUMBER	CRIT HW/F	SCREENS A	B	C	CRIT HW/F	SCREENS A	B	C	OTHER (SEE LEGEND CODE)	ISSUE
104-FM23	EMU-828X	2/1R	P	NA	P	/		F		10	
104-FM24	EMU-651	2/1R	P	NA	P	/		F		10	
104-FM25	EMU-651A	2/1R	P	NA	P	/		F		10	
104-FM26	EMU-881X	2/1R	P	NA	P	/				9	
104-FM27	EMU-882X	2/1R	P	NA	P	/				9	
104-FM28	EMU-883X	3/3				/				0	
104-FM29	EMU-652	1/1				2/1R	P	P	F	5	X
104-FM3	EMU-657	3/2R	P	P	P	2/2				7	X
104-FM30	EMU-830X	2/1R	P	NA	P	/		F		10	
104-FM31	EMU-867X	2/1R	P	NA	P	/		F		10	
104-FM32	EMU-654	2/1R	P	NA	P	/		F		10	
104-FM33	EMU-654A	2/1R	P	NA	P	/	P			10	
104-FM34	EMU-653	1/1				2/1R	P	P	F	5	X
104-FM35	EMU-833X	2/1R	P	F	P	/					
104-FM36	EMU-831X	3/2R	P	F	P	/				9	
104-FM37	EMU-832X	3/3				2/2				7	X
104-FM38	EMU-655	3/3				/					
104-FM39	EMU-835X	3/3				/					
104-FM4	EMU-656	2/2				/					
104-FM40	EMU-856X	3/3				2/2				7	X
104-FM41	EMU-884X	3/3				/					
104-FM5	EMU-659	3/1R	P	F	P	/				9	
104-FM6	EMU-885X	3/3				/					
104-FM7	EMU-854X	3/3				/					
	EMU-855X	3/3				/					
104-FM8	EMU-853X	3/3				/				9	
104-FM9	EMU-646	1/1				2/1R	P	P	F	5	X
105-FM1	EMU-622	1/1				/				9	
105-FM2	EMU-809X	2/1R	P	F	P	/				9	
105-FM3	EMU-807X	2/2				/				9	
105-FM4	EMU-886X	2/2				/					
105-FM5	EMU-808X	2/2				/					
105-FM6	EMU-620	3/1R	P	NA	P	/				9	
105-FM7	EMU-621	2/2				2/1R	P	P	P	6	
106-FM1	EMU-637	3/2R	P	F	P	/				9	
106-FM10	EMU-642	1/1				2/1R	P	P	F	5	X
106-FM11	EMU-822X	2/1R	P	F	P	/					
106-FM12	EMU-823X	3/2R	P	P	P	2/2				6	X
106-FM13	EMU-643	2/2				/					
106-FM14	EMU-645	2/2				/					
106-FM15	EMU-644	2/2				/					
106-FM16	EMU-859X	3/3				/					
106-FM17	EMU-858X	2/2				/					
106-FM18	EMU-860X	3/3				/					
106-FM19	EMU-864X	2/2				/					
106-FM2	EMU-640A	1/1				/				9	
106-FM20	EMU-857X	3/3				/					
106-FM3	EMU-640	2/1R	P	NA	P	/		F		10	
106-FM4	EMU-887X	1/1				/					
106-FM5	EMU-639	3/3				2/2				7	

IDENTIFIERS		NASA				IOA RECOMMENDATIONS *				
NASA FMEA NUMBER	IOA ASSESSMENT NUMBER	CRIT HW/F	SCREENS A	B	C	CRIT HW/F	SCREENS A	B	C	OTHER (SEE LEGEND CODE)	ISSUE
106-FM6	EMU-819X	2/2				/NA				11	X
106-FM7	EMU-638	3/3				2/2				7	X
106-FM8	EMU-641	1/1				2/1R	P	P	F	5	X
106-FM9	EMU-821X	2/1R	P	P	P	/				9	
107-FM1	EMU-868X	3/3				2/2				7	X
107-FM10	EMU-664	3/3				/				9	
107-FM11	EMU-837X	3/3				/					
107-FM12	EMU-838X	3/3				/					
107-FM13	EMU-665	2/1R	P	P	P	/					
107-FM14	EMU-839X	3/3				/					
107-FM15	EMU-667	3/3				/					
107-FM16	EMU-668	2/1R	P	P	P	/				9	
107-FM17	EMU-666	2/2				/					
107-FM2	EMU-660A	2/2				/				9	
107-FM3	EMU-660	2/2				/				9	
107-FM4	EMU-661	3/3				/					
107-FM5	EMU-836X	3/3				/					
107-FM6	EMU-662	2/1R	P	P	P	/					
107-FM7	EMU-861X	3/3				/					
107-FM8	EMU-862X	2/2				/					
107-FM9	EMU-663	3/3				/					
108-FM1	EMU-810X	2/2				/					
108-FM10	EMU-863X	3/3				/					
108-FM2	EMU-889X	2/2				/					
108-FM3	EMU-625	2/2				/					
108-FM4	EMU-890X	2/2				/					
108-FM5	EMU-811X	3/3				3/2R	P	P	P	6	
108-FM6	EMU-812X	3/2R	P	F	P	/		P		10	
108-FM7	EMU-626	3/3	P	P	P	2/2				7	X
108-FM8	EMU-623	2/2				/					
	EMU-624	2/2				3/3				5,8	X
108-FM9	EMU-891X	3/2R	P	F	P	/				9	
110-FM1	EMU-669	2/1R	P	P	P	/				9	
110-FM2	EMU-670	3/3				/				0	
110-FM3	EMU-670A	3/3				/					
110-FM4	EMU-671	2/1R	P	P	P	/				9	
110-FM5	EMU-672	3/3				2/2				7	X
110-FM6	EMU-674	3/3				/					
110-FM7	EMU-673	2/1R	P	P	P	/				9	
111-FM1	EMU-247	1/1				/					
111-FM2	EMU-246	2/1R	P	P	P	/					
112-FM1	EMU-249	2/2				/					
112-FM2	EMU-252	3/2R	P	F	P	2/2				6	X
112-FM3	EMU-250	2/2				/					
112-FM4	EMU-251	3/2R	P	F	P	2/1R				6	X
112-FM5	EMU-253	1/1				/					
112-FM6	EMU-254	2/1R	P	F	P	/					
112-FM7	EMU-248	2/1R	P	P	P	/					
113A-FM1	EMU-227	2/2				/					
113A-FM2	EMU-228	3/1R	P	F	P	/					

IDENTIFIERS		NASA					IOA RECOMMENDATIONS *					
NASA FMEA NUMBER	IOA ASSESSMENT NUMBER	CRIT HW/F	SCREENS A	B	C		CRIT HW/F	SCREENS A	B	C	OTHER (SEE LEGEND CODE)	ISSUE
113A-FM3	EMU-222	2/2					2/1R	P	P	P	6	X
113A-FM4	EMU-223	2/1R	P	P	P		/					
113B-FM1	EMU-230	2/1R	P	P	P		/					
113B-FM2	EMU-231	2/1R	P	F	P		/					
113B-FM3	EMU-229	2/1R	P	P	P		/					
113C-FM1	EMU-234	2/2					/					
113C-FM2	EMU-233	2/1R	P	P	P		2/2				5	X
113C-FM3	EMU-232	2/1R	P	P	P		/					
113D-FM1	EMU-236	2/1R	P	P	P		/					
113D-FM2	EMU-237	2/1R	P	P	P		/					
113D-FM3	EMU-238	3/3					2/1R	P	P	P	7	X
	EMU-239	3/3					2/1R	P	P	P	7	X
113D-FM4	EMU-235	2/1R	P	P	P		/				9	
113D-FM5, FM6	EMU-240	2/2					/					
113D-FM7	EMU-712X	3/3					/					
113E-FM1	EMU-242	2/1R	P	P	P		/					
113E-FM2	EMU-243	3/3					2/1R	P	P	P	7	X
113E-FM3	EMU-245	2/1R	P	P	P		/					
113E-FM4	EMU-244	2/2					2/1R	P	P	P	6	X
113E-FM5	EMU-241	2/1R	P	P	P		/					
113E-FM6	EMU-713X	3/3					/					
114-FM1, FM2	EMU-209	3/1R	P	P	P		3/2R				5	
114-FM3, FM4	EMU-210	2/2					/				9	
114-FM5	EMU-212	2/1R	P	F	P		/					
114-FM6	EMU-211	2/1R	P	P	P		/					
114-FM7	EMU-752X	3/1R	P	P	P		3/2R				5	X
115-FM1	EMU-259	2/2					/					
115-FM10	EMU-268	2/2					/					
115-FM11	EMU-270	3/1R	P	NA	P		/				9	
115-FM12	EMU-269	3/1R	P	F	P		/				9	
115-FM13	EMU-257	2/2					3/1R	P	F	P	6	X
115-FM14	EMU-258	2/1R	P	P	P		/					
115-FM15	EMU-258A	2/1R	P	P	P		/					
115-FM16	EMU-255	2/1R	P	P	P		/				9	
115-FM17	EMU-714X	2/2					/					
115-FM18	EMU-256	2/1R	P	F	P		/				9	
115-FM19	EMU-715X	3/1R	P	F	P		/				9	
115-FM2	EMU-260	2/2					/					
115-FM20	EMU-753X	2/1R	P	P	P		/					
115-FM21	EMU-754X	2/1R	P	F	P		3/1R		F		5.10	X
115-FM3	EMU-261	2/2					/					
115-FM4	EMU-262	2/2					/					
115-FM5	EMU-265	2/1R	P	NA	P		/				9	
115-FM6	EMU-266	2/2					/					
115-FM7	EMU-263	2/2					/					
115-FM8	EMU-264	2/2					/					
115-FM9	EMU-267	2/2					/				9	
116-FM1	EMU-271	2/2					/					
116-FM2	EMU-272	2/2					/					
120A-FM1	EMU-275	3/1R	P	F	P		3/2R				5	X

IDENTIFIERS		NASA				IOA RECOMMENDATIONS *					
NASA FMEA NUMBER	IOA ASSESSMENT NUMBER	CRIT HW/F	SCREENS A	B	C	CRIT HW/F	SCREENS A	B	C	OTHER (SEE LEGEND CODE)	ISSUE
120A-FM2	EMU-274	2/1R	P	P	P	/				9	
120A-FM3	EMU-273	2/1R	P	P	P	/					
120B-FM1	EMU-276	2/1R	P	P	P	/				9	
120B-FM2, FM3	EMU-277	2/1R	P	P	P	/					
120B-FM4	EMU-279	3/1R	P	NA	P	/		P		9	
120B-FM5	EMU-278	3/3				3/2R	P	NA	P	6	
120C-FM1	EMU-282	2/1R	P	P	P	/					
120C-FM2	EMU-281	3/3				/				9	
120C-FM3	EMU-280	2/1R	P	P	P	/					
121-FM1	EMU-201	2/1R	P	F	P	/				9	
121-FM2	EMU-199	2/2				/					
121-FM3	EMU-198	2/1R	P	P	P	/					
121-FM4	EMU-200	2/2				/					
121-FM5	EMU-197	2/1R	P	P	P	/					
122-FM1	EMU-204	2/2				/					
122-FM2	EMU-205	2/1R	P	F	P	/				9	
122-FM3	EMU-716X	2/1R	P	F	P	/					
122-FM4	EMU-206	2/1R	P	F	P	/				9	
122-FM5	EMU-203	2/1R	P	P	P	/					
123-FM1	EMU-185	2/1R	P	P	P	/					
123-FM10	EMU-187	2/1R	P	P	P	/					
	EMU-188	2/1R	P	P	P	/					
123-FM11	EMU-190	2/1R	P	P	P	/					
123-FM12	EMU-751X	1/1				/					
123-FM2	EMU-717X	2/1R	P	P	P	/				9	
123-FM3	EMU-184	2/1R	P	P	P	/					
123-FM4	EMU-178	2/1R	P	P	P	/		F	F	10	
123-FM5	EMU-182	2/2				2/1R	P	P	P	6	X
123-FM6	EMU-179	2/1R	P	P	P	/					
	EMU-181	2/1R	P	P	P	/					
123-FM7	EMU-183	2/1R	P	P	P	/		F		10,12	
123-FM8	EMU-189	2/2				2/1R	P	P	P	6	X
123-FM9	EMU-180	2/2				2/1R	P	P	F	6	X
	EMU-186	2/2				2/1R	P	P	P	6	X
125-FM1	EMU-147	3/1R	P	NA	P	/		F		2,9,10	X
125-FM2	EMU-148	2/1R	P	P	P	/		F		10	
125-FM3	EMU-149	2/1R	P	P	P	/					
125-FM4	EMU-150	2/2				2/1R	P	F	P	9	
	EMU-151	2/2				2/1R	P	F	P	9	
126-FM1	EMU-208	2/1R	P	F	P	/				9	
126-FM2	EMU-207	2/1R	P	P	P	/					
127-FM1	EMU-157	2/2				2/1R	P	F	F	6	X
127-FM2	EMU-156	2/2				2/1R	P	F	P	6	X
127-FM3	EMU-155	2/1R	P	P	P	/					
128-FM1	EMU-153	2/2				/					
128-FM2	EMU-154	2/2				2/1R	P	P	P	6	X
128-FM3	EMU-152	2/1R	P	P	P	/					
131/162-FM1	EMU-100	2/2				2/1R	P	F	P	6	X
	EMU-103	2/2				2/1R	P	F	P	6	X
131/162-FM2	EMU-102	2/1R	P	P	P	/					

IDENTIFIERS		NASA				IOA RECOMMENDATIONS *				
NASA FMEA NUMBER	IOA ASSESSMENT NUMBER	CRIT HW/F	SCREENS A	B	C	CRIT HW/F	SCREENS A	B	C	OTHER (SEE LEGEND CODE)	ISSUE
131/162-FM2	EMU-105	2/1R	P	P	P	/					
131/162-FM3	EMU-101	2/1R	P	P	P	/					
	EMU-104	2/1R	P	P	P	/					
131/162-FM4	EMU-719X	3/1R	P	F	P	/					
131/162-FM5	EMU-718X	2/1R	P	F	P	3/1R				5	X
131/162-FM6	EMU-720X	2/1R	P	P	P	/				9	
132A-FM1	EMU-284	2/2				3/2R	P	P	P	5	X
132A-FM2, FM3	EMU-285	2/2				/				9	
132A-FM4	EMU-286	2/1R	P	F	P	/				9	
132A-FM5	EMU-283	2/1R	P	P	P	/				9	
132B-FM1	EMU-109	2/2				3/2R	P	F	P	5	X
132B-FM2, FM3	EMU-110	2/2				/				9	
132B-FM4	EMU-112	2/1R	P	F	P	/				9	
132B-FM5	EMU-111	2/1R	P	P	P	/					
134-FM1	EMU-163	3/1R	P	NA	P	/		F		9,10	X
134-FM2	EMU-164	2/1R	P	P	P	/		F		10	
	EMU-165	2/1R	P	P	P	/		F		10	
134-FM3	EMU-162	2/1R	P	P	P	/					
135-FM1	EMU-123	2/1R	P	P	P	/					
135-FM2	EMU-125	3/2R	P	NA	P	/				9,12	
135-FM3	EMU-124	3/1R	P	F	P	/		NA		9,10	
136-FM1	EMU-121	3/3				2/1R	P	P	P	7	X
136-FM2	EMU-119	2/1R	P	P	P	/					
136-FM3	EMU-120	2/1R	P	P	P	/					
136-FM4	EMU-122	2/1R	P	P	P	/					
137-FM1	EMU-128	2/1R	P	P	P	/					
137-FM2	EMU-129	2/2				/					
137-FM3	EMU-131	2/2				/				9	
137-FM4	EMU-126	2/2				/					
137-FM5	EMU-127	2/1R	P	P	P	/				9	
137-FM6	EMU-130	2/2				2/1R	P	P	P	6	X
138-FM1	EMU-132	2/2				/				9	
138-FM2	EMU-133	2/2				/					
138-FM3	EMU-135	2/1R	P	F	P	/					
138-FM4	EMU-134	2/1R	P	P	P	/				9	
139-FM1, FM4	EMU-144	3/3				/					
139-FM2, FM3	EMU-146	3/3				/					
139-FM5	EMU-143	2/1R	P	P	P	/					
140-FM1	EMU-721X	2/1R	P	P	P	/					
140-FM10	EMU-756X	2/1R	P	P	P	/F				10	
140-FM2	EMU-137	2/1R	P	P	P	/					
140-FM3	EMU-755X	2/1R	P	P	P	/		F		10	
140-FM4	EMU-142	2/1R	P	P	P	/		F		10	
140-FM5	EMU-140	2/1R	P	P	P	/				9	
140-FM6	EMU-139	2/1R	P	P	P	/				9	
140-FM7	EMU-138	2/1R	P	P	P	/				9	
140-FM8	EMU-136	2/1R	F	P	P	/				9	
140-FM9	EMU-141	2/1R	P	P	P	/					
141-FM1, FM3	EMU-159	2/2				2/1R	P	P	P	6	X
141-FM2	EMU-160	2/2				2/1R	P	P	P	6	X

IDENTIFIERS		NASA				IOA RECOMMENDATIONS *				
NASA FMEA NUMBER	IOA ASSESSMENT NUMBER	CRIT HW/F	SCREENS A	B	C	CRIT HW/F	SCREENS A	B	C	OTHER (SEE LEGEND CODE)	ISSUE
141-FM4	EMU-158	2/1R	P	P	P	/					
141-FM5	EMU-161	2/1R	P	P	P	/		F		10	
142-FM1	EMU-113	3/1R	P	NA	P	/		F		2,10	X
142-FM2	EMU-114	3/1R	P	NA	P	2/1R		F		2,6,10	X
142-FM3	EMU-115	2/1R	P	P	P	/					
143-FM1	EMU-116	3/1R	P	F	P	3/1R					
143-FM2	EMU-117	2/1R	P	NA	P	/		F		10	
143-FM3	EMU-118	2/1R	P	P	P	/					
145-FM1	EMU-213	2/1R	P	P	P	/					
145-FM2	EMU-214	2/2				/					
145-FM3	EMU-215	3/2R	P	NA	P	2/1R				7	X
146-FM1	EMU-217	2/1R	P	P	P	/					
146-FM2	EMU-216	2/1R	P	P	P	/					
146-FM3	EMU-218	2/1R	P	NA	P	/				9	
146-FM4	EMU-723X	3/3				/					
147-FM1	EMU-219	2/1R	P	P	P	/		P			
147-FM2	EMU-220	2/2				2/1R	P	P	P	6	X
147-FM3	EMU-221	3/2R	P	NA	P	/				9	
148-FM1	EMU-106	2/2				2/1R	P	P	P		X
148-FM2	EMU-108	2/1R	P	F	P	/		P		10,12	
148-FM3	EMU-107	2/1R	P	P	P	/					
148-FM4	EMU-724X	2/1R	P	F	P	/				9	
150-FM1	EMU-704X	2/2				/					
150-FM10	EMU-466	3/2R	P	F	P	2/2				6	X
150-FM11	EMU-467	3/1R	P	F	P	2/2				9	
150-FM12	EMU-711X	2/1R	P	F	P	/					
150-FM13	EMU-757X	2/1R	P	F	P	/					
150-FM14	EMU-758X	2/1R	P	P	P	/		F		10	
150-FM2	EMU-705X	2/2				/					
150-FM3	EMU-465	2/2				/					
150-FM4	EMU-706X	2/2				/					
150-FM5	EMU-707X	2/2				/					
150-FM6	EMU-708X	2/1R	P	F	P	/					
150-FM7	EMU-709X	2/2				/					
150-FM8	EMU-462	2/2				/					
150-FM9	EMU-710X	2/2				2/1R	P	P	P	6	X
161-FM1	EMU-726X	3/3				1/1				7	X
170-FM1	EMU-191	2/1R	P	P	P	/					
171-FM1	EMU-169	3/1R	P	F	P	/				9	
	EMU-171	3/1R	P	F	P	/					
171-FM2, FM4	EMU-166	3/2R	P	F	P	/				9	
171-FM3	EMU-170	2/2				2/1R	P	P	P	6	X
171-FM5	EMU-167	2/1R	P	P	P	/					
171-FM6	EMU-172	2/2				3/1R	P	P	P	6	X
172-FM1	EMU-174	3/2R	P	F	P	/				9	
172-FM2	EMU-176	3/1R	P	F	P	/				9	
172-FM3	EMU-173	2/1R	P	P	P	/					
174-FM1	EMU-727X	3/3				/					
174-FM2	EMU-728X	2/2				2/1R	P	F	P	6	X
200-FM1	EMU-322	1/1				2/1R	P	P	P	5	X

IDENTIFIERS		NASA				IOA RECOMMENDATIONS *				
NASA FMEA NUMBER	IOA ASSESSMENT NUMBER	CRIT HW/F	SCREENS A	B	C	CRIT HW/F	SCREENS A	B	C	OTHER (SEE LEGEND CODE)	ISSUE
200-FM2	EMU-295A	1/1				/				9	
210-FM1	EMU-295	1/1				/				9	
210-FM2	EMU-296	1/1				/					
213B-FM1	EMU-307	1/1				/					
213B-FM2	EMU-305	1/1				/				9	
	EMU-306	1/1				/				9	
213B-FM3	EMU-303	2/1R	P	F	P	/					
213B-FM4	EMU-302	1/1				/				9	
213B-FM5	EMU-729X	3/3				/					
213D-FM1	EMU-309	1/1				/				9	
213D-FM10	EMU-313	2/2				/					
213D-FM2, FM3, FM4	EMU-310	1/1				/				9	
213D-FM5	EMU-311	1/1				/				9	
213D-FM6	EMU-312	1/1				/				9	
213D-FM7	EMU-308	1/1				/				9	
213D-FM8	EMU-730X	3/3				/					
213D-FM9	EMU-312A	2/2				/				9	
213E-FM1	EMU-317	3/2R	P	P	P	/					
213E-FM2	EMU-316	3/2R	P	P	P	/					
213E-FM3	EMU-314	1/1				/				9	
213E-FM4	EMU-315	1/1				/					
213F-FM1	EMU-318	1/1				/				9	
215-FM1, FM7	EMU-301	2/1R	P	P	P	2/2				5	X
215-FM2	EMU-300	2/1R	P	F	P	/				9	
215-FM3	EMU-297	1/1				/				9	
215-FM4	EMU-298	1/1				/					
215-FM5	EMU-298A	2/1R	P	P	P	1/1				6	X
215-FM6	EMU-299	2/1R	P	F	P	/				9	
300-FM1	EMU-508	3/3				/					
300-FM2	EMU-505	3/3				/				9	
	EMU-760X	3/1R	P	NA	P	/		F		2,10	X
300-FM3	EMU-507	2/2				3/3				5	X
300-FM4	EMU-504	3/3				/					
300-FM5	EMU-506	3/3				/					
300-FM6	EMU-503	2/2				3/3				5	X
300-FM7	EMU-759X	3/2R	F	F	P	3/1R	P		F	6	X
311-FM1, FM3	EMU-363	3/2R	P	P	P	/					
311-FM2	EMU-362	3/2R	P	P	P	/					
311-FM4	EMU-359	2/1R	P	P	P	/					
314-FM1	EMU-365	3/1R	P	NA	P	/				9	
	EMU-366	3/1R	P	NA	P	/				9	
	EMU-368	3/1R	P	NA	P	/				9	
314-FM2	EMU-367	2/1R	P	P	P	/					
314-FM3	EMU-364	2/1R	P	P	P	/					
321-FM1, FM2	EMU-501	2/2				/				9	
321-FM3	EMU-502	2/2				/				9	
321-FM4	EMU-500	2/1R	P	P	P	/				9	
330-FM1	EMU-369A	2/2				3/1R	P	NA	P	2,5	X
330-FM10	EMU-375	2/2				/					
330-FM11	EMU-376	2/2				2/2				9	

IDENTIFIERS		NASA				IDA RECOMMENDATIONS *				
NASA FMEA NUMBER	IDA ASSESSMENT NUMBER	CRIT HW/F	SCREENS A	B	C	CRIT HW/F	SCREENS A	B	C	OTHER (SEE LEGEND CODE)	ISSUE
330-FM12	EMU-377	2/2				/					
330-FM13	EMU-383	2/2				/				9	
330-FM14	EMU-382	3/3				/					
330-FM15	EMU-378	2/2				/				9	
330-FM16	EMU-379	2/2				/				9	
330-FM17	EMU-731X	2/2				/					
330-FM18	EMU-732X	2/2				/					
330-FM19	EMU-372	2/2				/					
330-FM2	EMU-369	3/1R	P	NA	P	/				9	
330-FM20	EMU-373	2/2				/					
330-FM3	EMU-371	2/1R	P	P	P	/				9	
330-FM4	EMU-371A	2/2				2/1R	P	P	P	6	X
330-FM5	EMU-370	2/1R	F	P	P	/		P		10	
330-FM6	EMU-370A	2/2				2/1R	P	P	P	6	X
330-FM7	EMU-381	3/2R	P	P	P	/					
330-FM8	EMU-380	3/2R	P	P	P	/					
330-FM9	EMU-374	2/2				/					
350-FM1	EMU-484	3/2R	P	F	P	/					
350-FM10	EMU-766X	2/1R	P	P	P	/					
350-FM11	EMU-767X	3/3				/					
350-FM12	EMU-768X	3/3				/					
350-FM13	EMU-769X	3/3				3/1R	P	P	P	6	X
350-FM14	EMU-472	3/3				/				9	
350-FM15	EMU-471	2/2				/				9	
350-FM16	EMU-469	3/1R	P	F	P	/				9	
350-FM17	EMU-470	2/2				/				9	
350-FM18	EMU-498	2/1R	P	F	P	/				9	
350-FM19	EMU-499	2/2				/					
350-FM20	EMU-492	2/2				/					
350-FM21	EMU-493	3/3				/				9	
350-FM22	EMU-490	2/1R	P	F	P	/				9	
	EMU-494	2/1R	P	F	P	/				9	
	EMU-495	2/1R	P	F	P	/				9	
	EMU-497	2/1R	P	F	P	/				9	
350-FM23	EMU-481	2/2				/				9	
350-FM24	EMU-770X	3/1R	P	NA	P	/		F		2,10	X
350-FM25	EMU-771X	2/1R	P	F	P	/					
350-FM26	EMU-772X	3/1R	P	NA	P	/		F		2,10	X
350-FM27	EMU-773X	2/1R	P	F	P	/					
350-FM28	EMU-774X	3/3				/					
350-FM29	EMU-775X	3/3				/				11	
350-FM3	EMU-475	2/1R	P	P	P	/					
	EMU-477	2/1R	P	P	P	/					
	EMU-489	2/1R	P	P	P	/					
350-FM30	EMU-776X	3/3				/				11	
350-FM31	EMU-482	3/2R	P	F	P	/				9	
350-FM32	EMU-777X	3/1R	P	NA	P	/		F		2,10	X
350-FM33	EMU-491	2/1R	P	F	P	/				9	
350-FM34	EMU-778X	3/1R	P	F	P	2/1R				6	X
350-FM35	EMU-779X	2/1R	P	F	P	/					

IDENTIFIERS		NASA				IOA RECOMMENDATIONS *				
NASA FMEA NUMBER	IOA ASSESSMENT NUMBER	CRIT HW/F	SCREENS A	B	C	CRIT HW/F	SCREENS A	B	C	OTHER (SEE LEGEND CODE)	ISSUE
350-FM4	EMU-483	2/2				/				9	
350-FM5	EMU-761X	3/1R	P	NA	P	/		F		2,10	X
350-FM6	EMU-762X	3/1R	P	F	P	/					
350-FM7	EMU-763X	3/3				/					
350-FM8	EMU-764X	3/3				/					
350-FM9	EMU-765X	3/3				/					
351-FM1	EMU-458	3/2R	P	F	P	2/2				6	X
351-FM2	EMU-457	3/1R	P	F	P	/				9	
351-FM3	EMU-459	2/1R	P	F	P	/				9	
351-FM4	EMU-780X	2/1R	P	F	P	/					
351-FM5	EMU-781X	3/3				/					
351-FM6	EMU-782X	3/3				/					
360-FM1, FM6	EMU-392	3/2R	P	P	P	/					
360-FM2	EMU-393	3/2R	P	P	P	/					
360-FM3, FM8	EMU-733X	3/2R	P	P	P	/					
360-FM4, FM9	EMU-734X	3/2R	P	P	P	/					
360-FM5, FM10	EMU-391	3/2R	P	P	P	/					
360-FM7	EMU-393A	2/2				3/2R	P	P	P	5,8	X
361-FM1	EMU-396	3/3				2/2				2,6	X
	EMU-398	3/3				2/2				2,6	X
361-FM2	EMU-735X	3/3				2/2				2,6	X
361-FM3	EMU-397	3/3				/				9	
361-FM4	EMU-399	3/3				2/2				2,6	X
361-FM5	EMU-736X	3/3				2/2				2,6	X
362-FM1	EMU-410	2/2				/					
362-FM2	EMU-400	3/2R	P	F	P	/					
	EMU-401	3/2R	P	F	P	/				9	
362-FM3	EMU-411	3/2R	P	P	NA	3/3				5	
362-FM4	EMU-402	3/2R	P	F	P	/					
	EMU-403	3/2R	P	F	P	/				9	
362-FM5	EMU-412	3/2R	P	P	NA	3/3				5	
362-FM6	EMU-404	3/2R	P	F	P	/					
	EMU-405	3/2R	P	F	P	/				9	
362-FM7	EMU-406	3/2R	P	NA	P	/				9	
	EMU-407	3/2R	P	NA	P	/				9	
362-FM8	EMU-413	3/2R	P	F	NA	3/3				5,8	X
362-FM9	EMU-408	3/2R	P	F	P	/					
	EMU-409	3/2R	P	F	P	/					
364-FM1	EMU-423	2/2				/					
364-FM10	EMU-419	2/1R	P	P	P	/				9	
364-FM11	EMU-417A	2/2				/					
364-FM12	EMU-418A	2/1R	P	P	P	/					
364-FM13	EMU-415	2/2				/					
364-FM14	EMU-414	2/2				/				9	
364-FM15	EMU-416	2/2				/					
364-FM16	EMU-414A	2/2				/				9	
364-FM17	EMU-415A	2/1R	P	F	P	2/2				5	X
364-FM18	EMU-426	2/1R	P	P	P	/					
364-FM19	EMU-425	2/2				/					
364-FM2	EMU-424	2/2				/					

IDENTIFIERS		NASA				IOA RECOMMENDATIONS *					
NASA FMEA NUMBER	IOA ASSESSMENT NUMBER	CRIT HW/F	SCREENS A	B	C	CRIT HW/F	SCREENS A	B	C	OTHER (SEE LEGEND CODE)	ISSUE
364-FM3	EMU-421	2/2				/				9	
364-FM4	EMU-420	2/2				/					
364-FM5	EMU-422	2/2				/				9	
364-FM6	EMU-420A	2/2				/					
364-FM7	EMU-421A	2/2				/				9	
364-FM8	EMU-418	2/2				/				9	
364-FM9	EMU-417	2/2				/					
365-FM1	EMU-427	3/2R	P	P	P	/		P			
365-FM2	EMU-435	3/2R	P	P	P	/			F	9	
365-FM3	EMU-436	3/2R	P	P	P	/				9	
365-FM4	EMU-432	3/2R	P	P	P	/					
	EMU-433	3/2R	P	P	P	/				9	
365-FM5	EMU-434	2/2				/					
365-FM6	EMU-429	3/2R	P	P	P	/					
365-FM7	EMU-430A	3/3				3/2R	P	P	P	6	
365-FM8	EMU-430	3/2R	P	P	P	/				9	
365-FM9	EMU-431	2/2				3/2R	P	P	P	5.8	X
366-FM1	EMU-444	3/3				/					
366-FM2	EMU-437	2/1R	P	P	P	/					
	EMU-443	2/1R	P	P	P	/				9	
366-FM3	EMU-441	2/2				2/1R	P	F	P	6	X
366-FM4	EMU-438	2/1R	P	P	P	/					
366-FM5	EMU-701X	3/1R	P	F	P	/				9	
366-FM6	EMU-702X	3/1R	P	F	P	/				9	
367-FM1	EMU-445	2/2				/				9	
367-FM2	EMU-450	2/2				/					
367-FM3	EMU-449	2/2				/				9	
367-FM4	EMU-446	2/2				/					
367-FM5	EMU-447	2/2				2/1R	P	P	P	6	X
367-FM6	EMU-448	2/2				/					
368-FM1	EMU-451	2/2				/					
368-FM2	EMU-453	2/2				2/1R	P	F	P	6	X
368-FM3	EMU-452	2/2				/					
368-FM4	EMU-454	2/1R	P	F	P	/				9	
368-FM5	EMU-737X	2/2				/					
368-FM6	EMU-455	2/2				/					
368-FM7	EMU-456	2/2				/					
368-FM8	EMU-703X	2/2				/					
384-FM1	EMU-739X	3/3				/					
385-FM1	EMU-388	2/1R	P	P	P	/					
385-FM2	EMU-389	2/1R	P	P	P	/					
	EMU-390	2/1R	P	P	P	/					
385-FM3	EMU-738X	3/3				/					
385-FM4	EMU-474	2/2				/				9	
385-FM5	EMU-473	3/3				2/2				2.6	X
410-FM1	EMU-323	2/2				/				9	
410-FM2	EMU-323A	3/3				2/2				2,6	X
410-FM3	EMU-325	3/3				2/2				2,6	X
410-FM4	EMU-325A	2/2				/				9	
410-FM5	EMU-324	3/3				2/2				2.6	X

IDENTIFIERS		NASA				IOA RECOMMENDATIONS *					
NASA FMEA NUMBER	IOA ASSESSMENT NUMBER	CRIT HW/F	SCREENS A	B	C	CRIT HW/F	SCREENS A	B	C	OTHER (SEE LEGEND CODE)	ISSUE
410-FM6, FM7	EMU-324A	2/2				/				9	
410-FM8	EMU-326	2/2				/				9	
410-FM9	EMU-327	2/2				/				9	
411-FM1	EMU-336	2/2				/				9	
412A-FM1	EMU-337	2/2				/				9	
412B&C-FM1	EMU-338	2/2				/				9	
	EMU-339	2/2				/				9	
416-FM1	EMU-340	2/2				/				9	
418-FM1	EMU-343	2/2				/				9	
	EMU-345	2/2				/				9	
418-FM2	EMU-344	2/2				/					
	EMU-346	2/2				/					
418-FM3	EMU-347	2/2				/				9	
418-FM4	EMU-341	2/2				/				9	
419-FM1	EMU-349	3/2R	F	P	P	2/2				6	X
419-FM2	EMU-350	2/2				/				9	
419-FM3	EMU-348	2/2				/				9	
420-FM1	EMU-357	2/2				/				9	
420-FM2	EMU-356	2/2				/				9	
423-FM1, FM2	EMU-353	2/1R	F	P	P	/				9	
423-FM3	EMU-352	2/2				/					
423-FM4	EMU-351	2/2				/				9	
424-FM1	EMU-354	2/2				/				9	
424-FM2	EMU-355	2/2				/					
425-FM1	EMU-332	3/2R	P	P	P	/					
	EMU-333	3/2R	P	P	P	/					
425-FM2	EMU-328	2/2				/				9	
425-FM3	EMU-329	2/2				/				9	
425-FM4	EMU-334	2/2				/				9	
425-FM5	EMU-335	2/2				/				9	
425-FM6	EMU-330	2/2				/				9	
425-FM7	EMU-331	2/2				/				9	
425-FM8	EMU-749X	2/2				/					
425-FM9	EMU-750X	2/2				/					
440-FM5	EMU-783X	2/1R	P	P	P	/					
470-FM1	EMU-743X	2/2				/					
470-FM2	EMU-744X	2/2				/					
470-FM3	EMU-745X	2/2				/					
480-FM1	EMU-746X	2/1R	P	P	P	/					
480-FM2	EMU-193	2/1R	P	P	P	/				9	
	EMU-194	2/1R	P	P	P	/					
480-FM3	EMU-195	2/1R	P	P	P	/		F		10	
480-FM4	EMU-747	2/1R				/				8,11	X
480-FM5, FM6	EMU-748X	2/1R	P	P	P	/					
480-FM7	EMU-192	2/1R	P	P	P	/					
480-FM8	EMU-192A	1/1				2/1R	P	F	F	5	X
490-FM1	EMU-290	2/1R	P	P	P	/					
	EMU-292	2/1R	P	P	P	/					
490-FM2	EMU-289	3/1R	F	NA	P	2/1R				6	X
490-FM3	EMU-288	3/1R	F	F	P	/		P		9,10	

IDENTIFIERS		NASA				IOA RECOMMENDATIONS *					
NASA FMEA NUMBER	IOA ASSESSMENT NUMBER	CRIT HW/F	SCREENS A	B	C	CRIT HW/F	SCREENS A	B	C	OTHER (SEE LEGEND CODE)	ISSUE
490-FM4	EMU-287	2/1R	F	P	P	/				9	
490-FM5	EMU-291	2/1R	P	P	P	/					

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