INDEPENDENT ORBITER ASSESSMENT

ANALYSIS
OF THE
REACTION CONTROL
SYSTEM
Vol. 3 of 3

19 JANUARY 1987
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
SUBSYSTEM: ARCS
MDAC ID: 1607

HIGHEST CRITICITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 A
5) RESISTOR, 5.1K 1/4W

CRITICALITIES

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REDUNDANCY SCREENS: A [ ]   B [ ]   C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114R J2-19; J2-94

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "OX TK ISOL 3/4/5 A VALVE" IN OPEN POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1509
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
SUBSYSTEM: ARCS
MDAC ID: 1608

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 A
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114R J2-19; J2-94

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1510
**INDEPENDENT ORBITER ASSESSMENT**  
**ORBITER SUBSYSTEM ANALYSIS WORKSHEET**

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**ITEM:** RESISTOR, 1.2K 2W  
**FAILURE MODE:** FAILS OPEN

**LEAD ANALYST:** W.A. HAUFLE, **SUBSYS LEAD:** D.J. PAUL  

**BREAKDOWN HIERARCHY:**
1) ELECTRICAL COMPONENTS  
2) CONTROLS  
3) PROP STOR & DIST SUBSYSTEM  
4) L/R OX & FU TK ISOL VLV 3/4/5 A  
5) RESISTOR, 1.2K 2W  
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**REDUNDANCY SCREENS:** A [ ]  
B [ ]  
C [ ]

**LOCATION:** AV BAY 4, MCA 1  
**PART NUMBER:** 54V76A114R J2-38; J2-26

**CAUSES:** CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

**EFFECTS/RATIONALE:**
LOSE CAPABILITY TO STOP THE "OX & FU TK ISOL 3/4/5 A VALVE" MOTORS WHEN VALVE REACHES OPEN OR CLOSED POSITION. POWER TO MOTORS CONTINUES UNTIL "AFT L/R RCS TK ISOL 3/4/5 A SWITCH" IS MOVED TO ITS GPC POSITION, IF NOT THERE ALREADY, OR GPC CLOSE OR OPEN VALVE COMMANDS END. PROLONGED POWER TO VALVE MOTOR WILL NOT DAMAGE IT. ALSO LOSE VALVE POSITION TALKBACKS AND BARBERPOLE INDICATOR WILL BE STUCK ON BARBERPOLE INDICATION.

**REFERENCES:** VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

**REPORT DATE 3/20/87**

C-1511
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
SUBSYSTEM: ARCS
MDAC ID: 1610

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VALV 3/4/5 A
5) RESISTOR, 1.2K 2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114R J2-38; J2-26

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
SUBSYSTEM: ARCS
MDAC ID: 1611

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 A
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114R J2-91; J2-98

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "OX TK ISOL 3/4/5 A VALVE" IN CLOSED POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1513
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT:  3/3
MDAC ID: 1612  ABORT:  3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAULFER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 A
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114R J2-91; J2-98

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1514
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
SUBSYSTEM: ARCS
MDAC ID: 1613

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 A
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114R J2-10; J2-93

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "AFT L/R RCS TK ISOL 3/4/5 A SWITCH" IN OPEN POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1515
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87

SUBSYSTEM: ARCS

MDAC ID: 1614

HIGHEST CRITICALITY

HDW/FUNC

FLIGHT: 3/3

ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W

FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLE Subsys Lead: D.J. PAUL

BREAKDOWN HIERARCHY:

1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 A
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, MCA 1

PART NUMBER: 54V76A114R J2-10; J2-93

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1516
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
SUBSYSTEM: ARCS
MDAC ID: 1615

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 A
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114R J2-9; J2-76

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "AFT L/R RCS TK ISOL 3/4/5 A SWITCH" IN CLOSED POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1517
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
SUBSYSTEM: ARCS
MDAC ID: 1616

HDW/FUNC
HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114R J2-9; J2-76

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1518
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
SUBSYSTEM: ARCS
MDAC ID: 1617

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114R J2-92; J2-16

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "FU TK ISOL 3/4/5 A VALVE" IN CLOSED POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1519
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87

SUBSYSTEM: ARCS
MDAC ID: 1618

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLE SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 A
5) RESISTOR, 5.1K 1/4W
6)
7)
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CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114R J2-92; J2-16

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO THE GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1520
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87

HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
MDAC ID: 1619

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 A
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114R J2-20; J2-86

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "FU TK ISOL 3/4/5 A VALVE" IN OPEN POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1521
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
SUBSYSTEM: ARCS
MDAC ID: 1620

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 A
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114R J2-20; J2-86

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO THE GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1522
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
SUBSYSTEM: ARCS
MDAC ID: 1621

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 A
5) RESISTOR, 1.2K 2W
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114R J2-59; J2-27

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE CAPABILITY TO STOP THE "OX & FU TK ISOL 3/4/5 A VALVE" MOTORS WHEN VALVE REACHES OPEN OR CLOSED POSITION. POWER TO MOTORS CONTINUES UNTIL "AFT L/R RCS TK ISOL 3/4/5 A SWITCH" IS MOVED TO ITS GPC POSITION, IF NOT THERE ALREADY, OR GPC CLOSE OR OPEN VALVE COMMANDS END. PROLONGED POWER TO VALVE MOTOR WILL NOT DAMAGE IT. ALSO LOSE VALVE POSITION TALKBACKS AND BARBERPOLE INDICATOR WILL BE STUCK ON BARBERPOLE INDICATION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1523
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
SUBSYSTEM: ARCS
MDAC ID: 1622

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 A
5) RESISTOR, 1.2K 2W
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114R J2-59; J2-27

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1524
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87        HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS        FLIGHT: 3/3
MDAC ID: 1623        ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER        SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 B
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 55V76A115R J2-89; J2-27

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "OX TK ISOL 3/4/5 B VALVE" IN OPEN POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1525
INDEPENDENT ORBITER ASSESSMENT  
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87  
SUBSYSTEM: ARCS  
MDAC ID: 1624  

ITEM: RESISTOR, 5.1K 1/4W  
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLE R  
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:  
1) ELECTRICAL COMPONENTS  
2) CONTROLS  
3) PROP STOR & DIST SUBSYSTEM  
4) L/R OX & FU TK ISOL VLV 3/4/5 B
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 5, MCA 2  
PART NUMBER: 55V76A115R J2-89; J2-27

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:  
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  
C-1526
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87  HIGHEST CRITICALITY: HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 1625  ABORT: 3/3

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 B
5) RESISTOR, 1.2K 2W
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 55V76A115R J2-76; J1-62

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE CAPABILITY TO STOP THE "OX & FU TK ISOL 3/4/5 B VALVE" MOTORS WHEN VALVE REACHES OPEN OR CLOSED POSITION. POWER TO MOTORS CONTINUES UNTIL "AFT L/R RCS TK ISOL 3/4/5 B SWITCH" IS MOVED TO ITS GPC POSITION, IF NOT THERE ALREADY, OR GPC CLOSE OR OPEN VALVE COMMANDS END. PROLONGED POWER TO VALVE MOTOR WILL NOT DAMAGE IT. ALSO LOSE VALVE POSITION TALKBACKS AND BARBERPOLE INDICATOR WILL BE STUCK ON BARBERPOLE INDICATION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1527
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
SUBSYSTEM: ARCS
MDAC ID: 1626

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 B
5) RESISTOR, 1.2K 2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 55V76A115R J2-76; J1-62

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1528
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87  HIGHEST CRITICALITY HDW/FUNC
  SUBSYSTEM: ARCS  FLIGHT: 3/3
  MDAC ID: 1627  ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURR MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 B
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 55V76A115R J2-91; J2-42

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "OX TK ISOL 3/4/5 B VALVE" IN CLOSED POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1529
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 1628 ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 B
5) RESISTOR, 5.1K 1/4W
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CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 55V76A115R J2-91; J2-42

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1530
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
SUBSYSTEM: ARCS
MDAC ID: 1629

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 B
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 55V76A115R J2-95; J2-19

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "AFT L/R RCS TK ISOL 3/4/5 B SWITCH" IN OPEN POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1531
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 1630  ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W  FAILURE MODE: FAILS SHORT
LEAD ANALYST: W.A. HAUFLE SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROPELLANT & DISTRIBUTION SUBSYSTEM
4) L/R OX & FUEL TANK ISOL VLV 3/4/5 B
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 55V76A115R J2-95; J2-19

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1532
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
HIGHEST CRITICALITY
SUBSYSTEM: ARCS
MDAC ID: 1631
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE R SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 B
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 55V76A115R J2-92; J2-18

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "AFT L/R RCS TK ISOL 3/4/5 B SWITCH" IN CLOSED POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1533
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
SUBSYSTEM: ARCS
MDAC ID: 1632

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLE
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VALV 3/4/5 B
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 55V76A115R J2-92; J2-18

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1534
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
SUBSYSTEM: ARCS
MDAC ID: 1633

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 B
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV' BAY 5, MCA 2
PART NUMBER: 55V76A115R J2-90; J2-26

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "FU TK ISOL 3/4/5 B VALVE" IN CLOSED POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1535
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
SUBSYSTEM: ARCS
MDAC ID: 1634

HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLEL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 B
5) RESISTOR, 5.1K 1/4W

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 55V76A115R J2-90; J2-26

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALBACK IS STILL AVAILABLE TO THE GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

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REPORT DATE 3/20/87 C-1536
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87 HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 1635 ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 B
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 55V76A115R J2-81; J2-28

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE: LOSE TALKBACK FOR "FU TK ISOL 3/4/5 B VALVE" IN OPEN POSITION.

REFERENCES: VS70-943099 REV B EO BL2; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1537
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
SUBSYSTEM: ARCS
MDAC ID: 1636

HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLE
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 B
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 55V76A115R J2-81; J2-28

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO THE GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1538
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
SUBSYSTEM: ARCS
MDAC ID: 1637

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 B
5) RESISTOR, 1.2K 2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 55V76A115R J2-86; J1-49

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE CAPABILITY TO STOP THE "OX & FU TK ISOL 3/4/5 B VALVE" MOTORS WHEN VALVE REACHES OPEN OR CLOSED POSITION. POWER TO MOTORS CONTINUES UNTIL "AFT L/R RCS TK ISOL 3/4/5 A SWITCH" IS MOVED TO ITS GPC POSITION, IF NOT THERE ALREADY, OR GPC CLOSE OR OPEN VALVE COMMANDS END. PROLONGED POWER TO VALVE MOTOR WILL NOT DAMAGE IT. ALSO LOSE VALVE POSITION TALKBACKS AND BARBERPOLE INDICATOR WILL BE STUCK ON BARBERPOLE INDICATION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1539
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87

SUBSYSTEM: ARCS
MDAC ID: 1638

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLE SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 B
5) RESISTOR, 1.2K 2W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 55V76A115R J2-86; J1-49

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1540
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87

HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
FLIGHT: 3/3
MDAC ID: 1639
ABORT: 3/3

ITEM: RESISTOR, 12K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2
5) RESISTOR, 12K 1/4W
6)
7)
8)
9)

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J3-118; A1R19

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
AFFECT TALKBACK FOR THE "OX XFEED 1/2 VALVE" IN OPEN POSITION.
LOSE VOLTAGE DIVISION TO MDM FA1, SO PROVIDES FULL (0 TO 28 VDC) INSTEAD OF HALF (0 TO 14 VDC) VOLTAGE RANGE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1541
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 1640

ITEM: RESISTOR, 12K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLE
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
   2) CONTROLS
   3) PROP STOR & DIST SUBSYSTEM
   4) L/R OX & FU CROSSFEED VLV 1/2
   5) RESISTOR, 12K 1/4W
   6)
   7)
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J3-118; A1R19

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR THE "OX XFEED 1/2 VALVE" IN OPENED POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1542
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
FLIGHT: 3/3
MDAC ID: 1641
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J3-118;; A1R8

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR THE "OX XFEED 1/2 VALVE" IN OPENED POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1543
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 1642

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLE SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VALVE 1/2
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J3-118;; A1R8

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
AFFECT TALKBACK FOR THE "OX XFEED 1/2 VALVE" IN OPEN POSITION. LOSE VOLTAGE DIVISION TO MDM FA1, SO PROVIDES FULL (0 TO 28 VDC) INSTEAD OF HALF (0 TO 14 VDC) VOLTAGE RANGE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1544
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
HIGHEST CRITICALITY
SUBSYSTEM: ARCS
FLIGHT: 3/3
MDAC ID: 1643
ABORT: 3/3

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VALVE 1/2
5) RESISTOR, 1.2K 2W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J2-75; A3R6

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE CAPABILITY TO STOP THE "OX & FU XFEED 1/2 VALVE" MOTORS WHEN VALVE REACHES OPEN OR CLOSED POSITION. POWER TO MOTORS CONTINUES UNTIL "AFT L/R RCS XFEED 1/2 SWITCH" IS MOVED TO ITS GPC POSITION, IF NOT THERE ALREADY, OR GPC CLOSE OR OPEN VALVE COMMANDS END. PROLONGED POWER TO VALVE MOTOR WILL NOT DAMAGE IT. ALSO LOSE THE TWO "OX ISOL VALVE" POSITION TALKBACKS AND BARBERPOLE INDICATOR WILL BE STUCK ON BARBERPOLE INDICATION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1545
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87  HIGHEST CRITICALITY: HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 1644  ABORT: 3/3

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2
5) RESISTOR, 1.2K 2W

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J2-75; A3R6

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1546
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 1645

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2
5) RESISTOR, 1.2K 2W

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J2-55; A3R4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE CAPABILITY TO STOP THE "OX XFEED 1/2 VALVE" MOTORS WHEN VALVE REACHES OPEN POSITION. POWER TO MOTORS CONTINUES UNTIL "AFT L/R RCS XFEED 1/2 SWITCH" IS MOVED TO ITS GPC POSITION, IF NOT THERE ALREADY, OR GPC OPEN OR CLOSE VALVE COMMANDS END. PROLONGED POWER TO VALVE MOTOR WILL NOT DAMAGE IT. ALSO BARBERPOLE INDICATOR WILL BE STUCK ON BARBERPOLE INDICATION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1547
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 1646

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2
5) RESISTOR, 1.2K 2W
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J2-55; A3R4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 1647

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J2-56; A2R13

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "AFT L/R RCS XFEED 1/2 SWITCH" IN OPEN POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1549
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 1648

HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J2-56; A2R13

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1550
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 1649  ABORT: 3/3

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2
5) RESISTOR, 1.2K 2W

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J2-65; A3R5

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE CAPABILITY TO STOP THE "FU XFEED 1/2 VALVE" MOTORS WHEN VALVE REACHES OPEN POSITION. POWER TO MOTORS CONTINUES UNTIL "AFT L/R RCS XFEED 1/2 SWITCH" IS MOVED TO ITS GPC POSITION, IF NOT THERE ALREADY, OR GPC OPEN VALVE COMMANDS END. PROLONGED POWER TO VALVE MOTOR WILL NOT DAMAGE IT. ALSO BARBERPOLE INDICATOR WILL BE STUCK ON BARBERPOLE INDICATION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1551
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 1650

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLEER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2
5) RESISTOR, 1.2K 2W
6)
7)
8)
9)

CRITICALITIES

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REDUNDANCY SCREENS: A [ ]   B [ ]   C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J2-65; A3R5

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87   C-1552
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 1651

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2
5) RESISTOR, 5.1K 1/4W

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J2-31; J5-41

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "AFT L/R RCS XFEED 1/2 SWITCH" IN CLOSED POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 1174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1553
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87

HIGHEST CRITICALITY

SUBSYSTEM: ARCS

MDAC ID: 1652

FLIGHT: 3/3

ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W

FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLEI

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2
5) RESISTOR, 5.1K 1/4W

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3

PART NUMBER: 56V76A116 J2-31; J5-41

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

NO EFFECTS. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1554
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87

HIGHEST CRITICALITY

MDAC: ARCS

ID: 1653

FLIGHT: 3/3

ABORT: 3/3

ITEM: RESISTOR, 12K 1/4W

FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2
5) RESISTOR, 12K 1/4W

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3

PART NUMBER: 56V76A116 J3-81; J3-44

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
AFFECT TALKBACK FOR THE "FU XFEED 1/2 VALVE" IN OPEN POSITION.
LOSE VOLTAGE DIVISION TO MDM FAI, SO PROVIDES FULL (0 TO 28 VDC)
INSTEAD OF HALF (0 TO 14 VDC) VOLTAGE RANGE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1555
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

### Date: 1/20/87

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**Item:** RESISTOR, 1.2K 2W

**Failure Mode:** FAILS SHORT

**Lead Analyst:** W.A. Haufler  
**Subsys Lead:** D.J. Paul

**Breakdown Hierarchy:**
1. ELECTRICAL COMPONENTS
2. CONTROLS
3. PROP STOR & DIST SUBSYSTEM
4. L/R OX & FU CROSSFEED VLV 1/2
5. RESISTOR, 1.2K 2W

**Criticalities**

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**Redundancy Screens:** A [ ] B [ ] C [ ]

**Location:** AV BAY 6, MCA 3

**Part Number:** 56V76A116 J3-81; J3-44

**Causes:** CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

**Effects/Rationale:** LOSE TALKBACK FOR THE "FU XFEED 1/2 VALVE" IN OPENED POSITION.

**References:** VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

**Report Date:** 3/20/87
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 1655

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2
5) RESISTOR, 5.1K 1/4W

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J3-81; J3-44

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR THE "FU XFEED 1/2 VALVE" IN OPENED POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1557
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 1656

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2
5) RESISTOR, 5.1K 1/4W

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J3-81; J3-44

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
AFFECT TALKBACK FOR THE "FU XFEED 1/2 VALVE" IN OPEN POSITION.
LOSE VOLTAGE DIVISION TO MDM FAI, SO PROVIDES FULL (0 TO 28 VDC) INSTEAD OF HALF (0 TO 14 VDC) VOLTAGE RANGE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1558
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 1657

ITEM: RESISTOR, 12K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) RESISTOR, 12K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114 J6-1; A1R20

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
AFFECT TALKBACK FOR THE "OX XFEED 3/4/5 VALVE" IN OPEN POSITION.
LOSE VOLTAGE DIVISION TO MDM FA1, SO PROVIDES FULL (0 TO 28 VDC) INSTEAD OF HALF (0 TO 14 VDC) VOLTAGE RANGE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1559
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
HIGHEST CRITICALITY
HDW/FUNC

SUBSYSTEM: ARCS
FLIGHT: 3/3
MDAC ID: 1658
ABORT: 3/3

ITEM: RESISTOR, 12K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLE
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) RESISTOR, 12K 1/4W

CRITICALITIES

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114 J6-1; 41R20

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR THE "OX XFEED 3/4/5 VALVE" IN OPENED POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1560
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT:  3/3
MDAC ID: 1659  ABORT:  3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114R J6-1;; J3-89

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR THE "OX XFEED 3/4/5 VALVE" IN OPENED POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1561
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 1660  ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLEER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) RESISTOR, 5.1K 1/4W

CRITICALITIES

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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114R J6-1; J3-89

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
AFFECT TALKBACK FOR THE "OX XFEED 3/4/5 VALVE" IN OPEN POSITION.
LOSE VOLTAGE DIVISION TO MDM FA1, SO PROVIDES FULL (0 TO 28 VDC)
INSTEAD OF HALF (0 TO 14 VDC) VOLTAGE RANGE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1562
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 1661

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) RESISTOR, 1.2K 2W

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REdundancy SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114 J3-85; A3R8

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE CAPABILITY TO STOP THE "OX & FU XFEED 3/4/5 VALVE" MOTORS WHEN VALVE REACHES OPEN OR CLOSED POSITION. POWER TO MOTORS CONTINUES UNTIL "AFT L/R RCS XFEED 3/4/5 SWITCH" IS MOVED TO ITS GPC POSITION, IF NOT THERE ALREADY, OR GPC CLOSE OR OPEN VALVE COMMANDS END. PROLONGED POWER TO VALVE MOTOR WILL NOT DAMAGE IT. ALSO LOSE THE TWO "OX ISOL VALVE" POSITION TALKBACKS AND BARBERPOLE INDICATOR WILL BE STUCK ON BARBERPOLE INDICATION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1563
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87

SUBSYSTEM: ARCS
MDAC ID: 1662

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLE
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) RESISTOR, 1.2K 2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114 J3-85; A3R8

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1564
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 1663

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLEGER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VALVE 3/4/5
5) RESISTOR, 1.2K 2W

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114 J3-56; A3R9

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE CAPABILITY TO STOP THE "OX XFEED 3/4/5 VALVE" MOTORS WHEN VALVE REACHES OPEN POSITION. POWER TO MOTORS CONTINUES UNTIL "AFT L/R RCS XFEED 3/4/5 SWITCH" IS MOVED TO ITS GPC POSITION, IF NOT THERE ALREADY, OR GPC OPEN OR CLOSE VALVE COMMANDS END. PROLONGED POWER TO VALVE MOTOR WILL NOT DAMAGE IT. ALSO BARBERPOLE INDICATOR WILL BE STUCK ON BARBERPOLE INDICATION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1565
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 1664  ABORT: 3/3

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLEER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) RESISTOR, 1.2K 2W

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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114 J3-56; A3R9

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1566
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 1665

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114R J6-60; J2-79

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "AFT L/R RCS XFEED 3/4/5 SWITCH" IN OPEN POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1567
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 1666

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114R J6-60; J2-79

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1568
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 1667

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) RESISTOR, 1.2K 2W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114 J3-77; A3R10

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE CAPABILITY TO STOP THE "FU XFEED 3/4/5 VALVE" MOTORS WHEN VALVE REACHES OPEN POSITION. POWER TO MOTORS CONTINUES UNTIL "AFT L/R RCS XFEED 3/4/5 SWITCH" IS MOVED TO ITS GPC POSITION, IF NOT THERE ALREADY, OR GPC OPEN VALVE COMMANDS END. PROLONGED POWER TO VALVE MOTOR WILL NOT DAMAGE IT. ALSO BARBERPOLE INDICATOR WILL BE STUCK ON BARBERPOLE INDICATION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87

SUBSYSTEM: ARCS
MDAC ID: 1668

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) RESISTOR, 1.2K 2W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114 J3-77; A3R10

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1570
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 1669

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) RESISTOR, 5.1K 1/4W
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HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114R J6-59;; J2-78

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "AFT L/R RCS XFEED 3/4/5 SWITCH" IN CLOSED POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1571
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 1670

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114R J6-59;; J2-78

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECTS. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1572
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 1671

ITEM: RESISTOR, 12K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) RESISTOR, 12K 1/4W
6)
7)
8)
9)

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114 J6-2; A1R19

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
AFFECT TALKBACK FOR THE "FU XFEED 3/4/5 VALVE" IN OPEN POSITION.
LOSE VOLTAGE DIVISION TO MDM FA1, SO PROVIDES FULL (0 TO 28 VDC) INSTEAD OF HALF (0 TO 14 VDC) VOLTAGE RANGE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1573
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 1672

ITEM: RESISTOR, 12K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLE
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) RESISTOR, 12K 1/4W
6) 
7) 
8) 
9)

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76AL114 J6-2; A1R19

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR THE "FU XFEED 3/4/5 VALVE" IN OPENED POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1574
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 1673 ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A114R J6-2; J3-88

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR THE "FU XFEED 3/4/5 VALVE" IN OPENED POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1575
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
HIGHEST CRITICALITY
HDW/FUNC
SUBSYSTEM: ARCS
MDAC ID: 1674
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLE; SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) RESISTOR, 5.1K 1/4W
6)
7)
8)
9)

CRITICALITIES
FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC
PRELAUNCH: 3/3 RTL: 3/3
LIFTOFF: 3/3 TAL: 3/3
ONORBIT: 3/3 AOA: 3/3
DEORBIT: 3/3 ATO: 3/3
LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 54V76A14R J6-2; J3-88

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
AFFECT TALKBACK FOR THE "FU XFEED 3/4/5 VALVE" IN OPEN POSITION.
LOSE VOLTAGE DIVISION TO MDM FAI, SO PROVIDES FULL (0 TO 28 VDC)
INSTEAD OF HALF (0 TO 14 VDC) VOLTAGE RANGE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1576
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
SUBSYSTEM: ARCS
MDAC ID: 1675

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE R SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 1, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 55V76A115 J1-31; J1-76

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "AFT L/R RCS MANIF ISOL 1 SWITCH" IN CLOSED POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1577
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87

SUBSYSTEM: ARCS
MDAC ID: 1676

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLE SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 1, L/R OX & FUEL ISOL VLVS
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 55V76A115 J1-31; J1-76

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1578
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 1677  ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 1, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 55V76A115 JI-32; JI-88

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "AFT L/R RCS MANIF 1 ISOL SWITCH" IN OPEN POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1579
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
SUBSYSTEM: ARCS
MDAC ID: 1678

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 1, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 55V76A115 J1-32; J1-88

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1580
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87

SUBSYSTEM: ARCS
MDAC ID: 1679

HIGHEST CRITICALITY

HDW/FUNC: 3/3
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 1, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 55V76A115 J1-21; J1-75

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "FU MANIF 1 ISOL VALVE" IN OPEN POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1581
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87

SUBSYSTEM: ARCS
MDAC ID: 1680

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLE
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 1, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 55V76A115 J1-21; J1-75

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1582
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87

SUBSYSTEM: ARCS
MDAC ID: 1681

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN
LEAD ANALYST: W.A. HAUFNER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 1, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 55V76A115 J1-12; J1-73

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "FU MANIF 1 ISOL VALVE" IN CLOSED POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1583
**INDEPENDENT ORBITER ASSESSMENT**  
**ORBITER SUBSYSTEM ANALYSIS WORKSHEET**

**DATE:** 1/21/87  
**HIGHEST CRITICALITY**  
**HDW/FUNC**

**SUBSYSTEM:** ARCS  
**MDAC ID:** 1682

**ITEM:** RESISTOR, 5.1K 1/4W  
**FAILURE MODE:** FAILS SHORT

**LEAD ANALYST:** W.A. HAUFLER  
**SUBSYS LEAD:** D.J. PAUL

**BREAKDOWN HIERARCHY:**

1) ELECTRICAL COMPONENTS  
2) CONTROLS  
3) PROP STOR & DIST SUBSYSTEM  
4) MANIFOLD 1, L/R OX & FU ISOL VLVS  
5) RESISTOR, 5.1K 1/4W  
6)  
7)  
8)  
9)

**CRITICALITIES**

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**REDUNDANCY SCREENS:** A [ ]  
B [ ]  
C [ ]

**LOCATION:** AV BAY 5, MCA 2  
**PART NUMBER:** 55V76A115 J1-12; J1-73

**CAUSES:** CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL  
SHOCK, OVERLOAD

**EFFECTS/RATIONALE:**

NO EFFECT. TALKBACK IS STILL AVAILABLE.

**REFERENCES:** VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE  
SYSTEMS HANDBOOK

**REPORT DATE:** 3/20/87  
**C-1584**
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87

ARCS
MDAC ID: 1683

FAILING MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 1, L/R OX & FU ISOL VLVS
5) RESISTOR, 1.2K 2W

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 55V76A115 J1-68; J1-65

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE CAPABILITY TO STOP THE "OX & FU MANIF 1 ISOL VALVE" MOTORS WHEN VALVE REACHES OPEN OR CLOSED POSITION. POWER TO MOTORS CONTINES UNTIL "AFT L/R RCS MANIF ISOL 1 SWITCH" IS MOVED TO ITS GPC POSITION, IF NOT THERE ALREADY, OR GPC CLOSE OR OPEN VALVE COMMANDS END. PROLONGED POWER TO VALVE MOTOR WILL NOT DAMAGE IT. ALSO LOSE VALVE POSITION TALKBACKS AND BARBERPOLE INDICATOR WILL BE STUCK ON BARBERPOLE INDICATION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1585
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
SUBSYSTEM: ARCS
MDAC ID: 1684

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 1, L/R OX & FU ISOL VLVS
5) RESISTOR, 1.2K 2W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, MCA 1
PART NUMBER: 55V76A115 J1-68; J1-65

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1586
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 1685  ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 1, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 55V76A115 JI-22; J1-74

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "OX MANIF 1 ISOL VALVE" IN OPEN POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1587
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
FLIGHT: 3/3
MDAC ID: 1686
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT
LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 1, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 55V76A115 J1-22; J1-74

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1588
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87

SUBSYSTEM: ARCS
MDAC ID: 1687

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 1, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 55V76A115 J1-13; J1-72

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "OX MANIF 1 ISOL VALVE" IN CLOSED POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1589
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87

SUBSYSTEM: ARCS
MDAC ID: 1688

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 1, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 55V76A115 J1-13; J1-72

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87  
SUBSYSTEM: ARCS  
MDAC ID: 1689

ITEM: RESISTOR, 5.1K 1/4W  
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE  
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS  
2) CONTROLS  
3) PROP STOR & DIST SUBSYSTEM  
4) MANIFOLD 2, L/R OX & FU ISOL VLVS  
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 54V76A114 J2-24; J2-8

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "AFT L/R RCS MANIF ISOL 2 SWITCH" IN CLOSED POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1591
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
SUBSYSTEM: ARCS
MDAC ID: 1690

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLE SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 2, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 54V76A114 J2-24; J2-8

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1592
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
SUBSYSTEM: ARCS
MDAC ID: 1691

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE R SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 2, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A. [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 54V76A114 J2-45; J2-35

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "AFT L/R RCS MANIF 2 ISOL SWITCH" IN OPEN POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
MDAC ID: 1692

FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAULFER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 2, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A[ ] B[ ] C[ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 54V76A114 J2-45; J2-35

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1594
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
HIGHEST CRITICALITY: HDW/FUNC: 3/3

SUBSYSTEM: ARCS
MDAC ID: 1693

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 2, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

CRITICALITIES

FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC
PRELANCEH: 3/3 RTLS: 3/3
LIFTOFF: 3/3 TAL: 3/3
ONORBIT: 3/3 AOA: 3/3
DEORBIT: 3/3 ATO: 3/3
LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 54V76A114 J2-3; J2-60

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "FU MANIF 2 ISOL VALVE" IN OPEN POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1595
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87

SUBSYSTEM: ARCS
MDAC ID: 1694

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLE
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 2, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W
6) 
7) 
8) 
9) 

CRITICALITIES

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REDUNDANCY SCREENS:
A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 54V76A114 J2-3; J2-60

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1596
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87

SUBSYSTEM: ARCS
MDAC ID: 1695

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 2, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

CRITICALITIES

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REDUNDANCY SCREENS: A [] B [] C []

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 54V76A114 J2-2; J2-95

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "FU MANIF 2 ISOL VALVE" IN CLOSED POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1597
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
SUBSYSTEM: ARCS
MDAC ID: 1696

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLE
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 2, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 54V76A114 J2-2; J2-95

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1598
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
SUBSYSTEM: ARCS
MDAC ID: 1697

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 2, L/R OX & FU ISOL VLVS
5) RESISTOR, 1.2K 2W

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 54V76A114 J2-30; J2-53

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE CAPABILITY TO STOP THE "OX & FU MANIF 2 ISOL VALVE" Mmotors WHEN VALVE REACHES OPEN OR CLOSED POSITION. POWER TO MOTORS CONTINUES UNTIL "AFT L/R RCS MANIF ISOL 2 SWITCH" IS MOVED TO ITS GPC POSITION, IF NOT THERE ALREADY, OR GPC CLOSE OR OPEN VALVE COMMANDS END. PROLONGED POWER TO VALVE MOTOR WILL NOT DAMAGE IT. ALSO LOSE VALVE POSITION TALKBACKS AND BARBERPOLE INDICATOR WILL BE STUCK ON BARBERPOLE INDICATION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1599
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
SUBSYSTEM: ARCS
MDAC ID: 1698

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLE 

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 2, L/R OX & FU ISOL VLVS
5) RESISTOR, 1.2K 2W

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 54V76A114 J2-30; J2-53

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1600
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87
SUBSYSTEM: ARCS
MDAC ID: 1699

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 2, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 54V76A114 J2-6; J2-61

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "OX MANIF 2 ISOL VALVE" IN OPEN POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1601
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT: 3/3

MDAC ID: 1700

ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W

FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLE - SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 2, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, MCA 2

PART NUMBER: 5476A114 J2-6; J2-61

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943009 rev B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1602
**INDEPENDENT ORBITER ASSESSMENT**

**ORBITER SUBSYSTEM ANALYSIS WORKSHEET**

**DATE:** 1/21/87  
**SUBSYSTEM:** ARCS  
**MDAC ID:** 1701

**ITEM:** RESISTOR, 5.1K 1/4W  
**FAILURE MODE:** FAILS OPEN  
**LEAD ANALYST:** W.A. HAUFLE;

**SUBSYS LEAD:** D.J. PAUL

**BREAKDOWN HIERARCHY:**
1) ELECTRICAL COMPONENTS  
2) CONTROLS  
3) PROP STOR & DIST SUBSYSTEM  
4) MANIFOLD 2, L/R OX & FU ISOL VLVS  
5) RESISTOR, 5.1K 1/4W

**CRITICALITIES**

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**REDUNDANCY SCREENS:** A [ ] B [ ] C [ ]

**LOCATION:** AV BAY 5, MCA 2  
**PART NUMBER:** 54V76A114 J2-4; J2-97

**CAUSES:** CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

**EFFECTS/RATIONALE:**  
LOSE TALKBACK FOR "OX MANIF 2 ISOL VALVE" IN CLOSED POSITION.

**REFERENCES:** VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

**REPORT DATE 3/20/87**  
**C-1603**
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/21/87  HIGHEST CRITICALITY  FLIGHT: 3/3
MDAC ID: 1702  ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLEIZER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 2, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 5, MCA 2
PART NUMBER: 54V76A114 J2-4; J2-97

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1604
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87

SUBSYSTEM: ARCS
MDAC ID: 1703

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 3, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W
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CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J2-69; A5R6

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "AFT L/R RCS MANIF ISOL 3 SWITCH" IN CLOSED POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1605
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87

SUBSYSTEM: ARCS
MDAC ID: 1704

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLEIER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 3, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J2-69; A5R6

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1606
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1705

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 3, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W
6)
7)
8)
9)

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J2-68; A5R2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "AFT L/R RCS MANIF 3 ISOL SWITCH" IN OPEN POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1607
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1706

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLE
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 3, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J2-68; A5R2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1608
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1707

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 3, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J2-32; A2R27

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "FU MANIF 3 ISOL VALVE" IN OPEN POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1609
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1708

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 3, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J2-32; A2R27

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1610
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87   HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS   FLIGHT: 3/3
MDAC ID: 1709   ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER   SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 3, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ]    B [ ]    C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J2-34; A2R29

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "FU MANIF 3 ISOL VALVE" IN CLOSED POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87   C-1611
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1710

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLE
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 3, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J2-34; A2R29

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1612
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1711

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 3, L/R OX & FU ISOL VLVS
5) RESISTOR, 1.2K 2W

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J2-91; A4R10

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE CAPABILITY TO STOP THE "OX & FU MANIF 3 ISOL VALVE" MOTORS WHEN VALVE REACHES OPEN OR CLOSED POSITION. POWER TO MOTORS CONTINUES UNTIL "AFT L/R RCS MANIF ISOL 3 SWITCH" IS MOVED TO ITS GPC POSITION, IF NOT THERE ALREADY, OR GPC CLOSE OR OPEN VALVE COMMANDS END. PROLONGED POWER TO VALVE MOTOR WILL NOT DAMAGE IT. ALSO LOSE VALVE POSITION TALKBACKS AND BARBERPOLE INDICATOR WILL BE STUCK ON BARBERPOLE INDICATION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1613
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1712

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 3, L/R OX & FU ISOL VLVS
5) RESISTOR, 1.2K 2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J2-91; A4R10

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1614
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1713

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 3, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J2-33; A2R30

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "OX MANIF 3 ISOL VALVE" IN OPEN POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1615
INDEPENDENT ORBITER ASSESSMENT  
ORBITER SUBSYSTEM ANALYSIS WORKSHEET  

**DATE:** 1/22/87  
**SUBSYSTEM:** ARCS  
**MDAC ID:** 1714  

**ITEM:** RESISTOR, 5.1K 1/4W  
**FAILURE MODE:** FAILS SHORT  

**LEAD ANALYST:** W.A. HAUFLER  
**SUBSYS LEAD:** D.J. PAUL  

**BREAKDOWN HIERARCHY:**  
1) ELECTRICAL COMPONENTS  
2) CONTROLS  
3) PROP STOR & DIST SUBSYSTEM  
4) MANIFOLD 3, L/R OX & FU ISOL VLVS  
5) RESISTOR, 5.1K 1/4W  

**CRITICALITIES**  

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**REDUNDANCY SCREENS:** A [ ]  
**LOCATION:** AV BAY 6, MCA 3  
**PART NUMBER:** 56V76A116 J2-33; A2R30  

**CAUSES:** CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD  

**EFFECTS/RATIONALE:**  
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.  

**REFERENCES:** VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK  

**REPORT DATE 3/20/87**  
**C-1616**
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 1715 ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 3, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

CRITICALITIES
FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC
PRELAUNCH: 3/3 RTLS: 3/3
LIPOFF: 3/3 TAL: 3/3
ONORBIF: 3/3 AOA: 3/3
DEOORBIF: 3/3 ATO: 3/3
LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J2-45; A2R28

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "OX MANIF 3 ISOL VALVE" IN CLOSED POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1617
INDEPENDENT ORBITER ASSESSMENT  
ORBITER SUBSYSTEM ANALYSIS WORKSHEET 

DATE: 1/22/87  
HIGHEST CRITICALITY: HDW/FUNC  
FLIGHT: 3/3  
ABORT: 3/3  

SUBSYSTEM: ARCS  
MDAC ID: 1716  

ITEM: RESISTOR, 5.1K 1/4W  
FAILURE MODE: FAILS SHORT  

LEAD ANALYST: W.A. HAUFLER  
SUBSYS LEAD: D.J. PAUL  

BREAKDOWN HIERARCHY:  
1) ELECTRICAL COMPONENTS  
2) CONTROLS  
3) PROP STOR & DIST SUBSYSTEM  
4) MANIFOLD 3, L/R OX & FU ISOL VLVS  
5) RESISTOR, 5.1K 1/4W  
6)  
7)  
8)  
9)  

CRITICALITIES  

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]  

LOCATION: AV BAY 6, MCA 3  
PART NUMBER: 56V76A116 J2-45; A2R28  

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD  

EFFECTS/RATIONALE:  
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.  

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK  

REPORT DATE 3/20/87 C-1618
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1717

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 4, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J3-74; ASR3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "AFT L/R RCS MANIF ISOL 4 SWITCH" IN CLOSED POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87   C-1619
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1718

HIGHEST CRITICALLY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 4, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J3-74; A5R3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1620
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1719

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 4, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J3-74; A1R24

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "AFT L/R RCS MANIF 4 ISOL SWITCH" IN OPEN POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1621
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1720

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 4, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W
6) 7) 8) 9)

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J3-74; A1R24

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1622
### INDEPENDENT ORBITER ASSESSMENT
### ORBITER SUBSYSTEM ANALYSIS WORKSHEET

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#### REDUNDANCY SCREENS:

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#### CAUSES:

- CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

#### EFFECTS/RATIONALE:

LOSE TALKBACK FOR "FU MANIF 4 ISOL VALVE" IN OPEN POSITION.

#### REFERENCES:

- VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1623
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1722

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 4, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J3-23; A2R44

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1624
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1723

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 4, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

CRITICALITIES
FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC
PRELAUNCH: 3/3 RTLS: 3/3
LIFTOFF: 3/3 TAL: 3/3
ONORBIT: 3/3 AOA: 3/3
DEORBIT: 3/3 ATO: 3/3
LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J3-45; A2R47

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "FU MANIF 4 ISOL VALVE" IN CLOSED POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1625
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87

SUBSYSTEM: ARCS
MDAC ID: 1724

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 4, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J3-45; A2R47

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1626
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 1725  ABORT: 3/3

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 4, L/R OX & FU ISOL VLVS
5) RESISTOR, 1.2K 2W

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J3-73; A3R10

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE CAPABILITY TO STOP THE "OX & FU MANIF 4 ISOL VALVE" MOTORS WHEN VALVE REACHES OPEN OR CLOSED POSITION. POWER TO MOTORS CONTINUES UNTIL "AFT L/R RCS MANIF ISOL 4 SWITCH" IS MOVED TO ITS GPC POSITION, IF NOT THERE ALREADY, OR GPC CLOSE OR OPEN VALVE COMMANDS END. PROLONGED POWER TO VALVE MOTOR WILL NOT DAMAGE IT. ALSO LOSE VALVE POSITION TALKBACKS AND BARBERPOLE INDICATOR WILL BE STUCK ON BARBERPOLE INDICATION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1627
**INDEPENDENT ORBITER ASSESSMENT**

**ORBITER SUBSYSTEM ANALYSIS WORKSHEET**

**DATE:** 1/22/87  
**SUBSYSTEM:** ARCS  
**MDAC ID:** 1726

**HIGHEST CRITICALITY**  
**HDW/FUNC**

**FLIGHT:** 3/3  
**ABORT:** 3/3

**ITEM:** RESISTOR, 1.2K 2W  
**FAILURE MODE:** FAILS SHORT

**LEAD ANALYST:** W.A. HAUFLE  
**SUBSYS LEAD:** D.J. PAUL

**BREAKDOWN HIERARCHY:**
1) ELECTRICAL COMPONENTS  
2) CONTROLS  
3) PROP STOR & DIST SUBSYSTEM  
4) MANIFOLD 4, L/R OX & FU ISOL VLVS  
5) RESISTOR, 1.2K 2W  
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**CRITICALITIES**

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**REDUNDANCY SCREENS:**  
A [ ]  B [ ]  C [ ]

**LOCATION:** AV BAY 6, MCA 3

**PART NUMBER:** 56V76A116 J3-73; A3R10

**CAUSES:** CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

**EFFECTS/RATIONALE:**  
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

**REFERENCES:** VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

**REPORT DATE** 3/20/87  
**C-1628**
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1727

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 4, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J3-34; A2R46

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "OX MANIF 4 ISOL VALVE" IN OPEN POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1728

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 4, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J3-34; A2R46

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1630
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1729

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 4, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J3-46; A2R48

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "OX MANIF 4 ISOL VALVE" IN CLOSED POSITION.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1631
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1730

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 4, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76A116 J3-46; A2R48

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1632
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1731

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123R J2-43; R125

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR THE "AFT L/R RCS MANIFOLD 5 ISOL" SWITCH IN CLOSE POSITION. SWITCH OPERATION CAN BE DETERMINED FROM FOUR "MANIFOLD 5 ISOL VALVE" TALKBACKS AND FROM THE BARBERPOLE INDICATOR.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1633
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1732

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAULFETR
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123R J2-43; R125

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
AFFECT TALKBACK FOR THE "AFT L/R RCS MANIFOLD 5 ISOL" SWITCH IN CLOSE POSITION. LOSE VOLTAGE DIVISION TO MDM OA1, SO PROVIDES FULL (0 TO 28 VDC) INSTEAD OF HALF (0 TO 14 VDC) VOLTAGE RANGE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1634
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1733
HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123R J2-43; J2-29

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
AFFECT TALKBACK FOR THE "AFT L/R RCS MANIFOLD 5 ISOL" SWITCH IN CLOSE POSITION. LOSE VOLTAGE DIVISION TO MDM OAI, SO PROVIDES FULL (0 TO 28 VDC) INSTEAD OF HALF (0 TO 14 VDC) VOLTAGE RANGE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1635
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1734

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLE\ER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123R J2-43; J2-29

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR THE "AFT L/R RCS MANIFOLD 5 ISOL" SWITCH IN CLOSE POSITION. SWITCH OPERATION CAN BE DETERMINED FROM FOUR "ISOL VALVE" TALKBACKS AND FROM THE BARBERPOLE INDICATOR.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1636
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 1735 ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, LCA 1
PART NUMBER: 56V76A123R J2-42; J2-27

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR THE "AFT L/R RCS MANIFOLD 5 ISOL" SWITCH IN OPEN POSITION. SWITCH OPERATION CAN BE DETERMINED FROM FOUR "HE ISOL VLV" TALKBACKS AND FROM THE BARBERPOLE INDICATOR.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1637
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
MDAC ID: 1736
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLE SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, LCA 1
PART NUMBER: 56V76A123R J2-42; J2-27

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1638
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1737

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

CRITICALITIES

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123R J2-46; R118

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "OX MANIFOLD 5 ISOL Valve" IN OPEN POSITION.
VALVE OPERATION CAN BE DETERMINED FROM OTHER TALKBACKS AND BARBERPOLE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1639
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1738

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLE SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123R J2-46; R118

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1640
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 1739  ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123R J2-41; R121

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "OX MANIFOLD 5 ISOL VALVE" IN CLOSED POSITION. VALVE OPERATION CAN BE DETERMINED FROM OTHER TALKBACKS AND BARBERPOLE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1641
INDEPENDENT ORBITER ASSESSMENT

ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1740

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ] B [..] C [ ]

LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123R J2-41; R121

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1642
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87

SUBSYSTEM: ARCS

MDAC ID: 1741

HIGHEST CRITICALITY: HDW/FUNC

FLIGHT: 3/3

ABORT: 3/3

ITEM: RESISTOR, 1.2K 2W

FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVS
5) RESISTOR, 1.2K 2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, LCA 3

PART NUMBER: 56V76A123R J8-66; R120

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE THE FOUR TALKBACKS FOR OPEN AND CLOSED POSITIONS OF BOTH "OX & FU MANIFOLD 5 ISOL VALVES". ALSO LOSE INHIBITS TO STOP OPENING OR CLOSING VALVES WHEN THEY ARE FULLY OPENED OR CLOSED, RESPECTIVELY, BUT THIS WILL NOT DAMAGE VALVES. ALSO LOSE INHIBITS TO STOP OPENING OR CLOSING VALVES WHEN THEY ARE FULLY OPENED OR CLOSED, RESPECTIVELY, BUT THIS WILL NOT DAMAGE VALVES.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1643
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 1742 ABORT: 3/3

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFELER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVs
5) RESISTOR, 1.2K 2W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123R J8-66; R120

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1644
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1743

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123R J2-45; R119

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK FOR "FU MANIFOLD 5 ISOL VALVE" IN OPENED POSITION. VALVE OPERATION CAN BE DETERMINED FROM OTHER TALKBACKS AND BARBERPOLE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1645
**INDEPENDENT ORBITER ASSESSMENT**
**ORBITER SUBSYSTEM ANALYSIS WORKSHEET**

**DATE:** 1/22/87  
**SUBSYSTEM:** ARCS  
**MDAC ID:** 1744  

**ITEM:** RESISTOR, 5.1K 1/4W  
**FAILURE MODE:** FAILS SHORT

**LEAD ANALYST:** W.A. HAUFLEER  
**SUBSYS LEAD:** D.J. PAUL

**BREAKDOWN HIERARCHY:**

1) ELECTRICAL COMPONENTS  
2) CONTROLS  
3) PROP STOR & DIST SUBSYSTEM  
4) MANIFOLD 5, L/R OX & FU ISOL VLVS  
5) RESISTOR, 5.1K 1/4W  
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**REDUNDANCY SCREENS:** A [ ] B [ ] C [ ]

**LOCATION:** AV BAY 6, LCA 3  
**PART NUMBER:** 56V76A123R J2-45; R119

**CAUSES:** CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

**EFFECTS/RATIONALE:**  
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

**REFERENCES:** VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

**REPORT DATE** 3/20/87  
**C-1646**
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87

SUBSYSTEM: ARCS
MDAC ID: 1745

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

HIGHEST CRITICALITY: HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

LEAD ANALYST: W.A. HAULFER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123R J2-40; R122

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSE TALKBACK "FU MANIFOLD 5 ISOL VALVE" IN CLOSED POSITION.
VALVE OPERATION CAN BE DETERMINED FROM OTHER TALKBACKS AND BARBERPOLE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1647
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1746

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVS
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123R J2-40; R122

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1648
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87

HIGHEST CRITICALITY

HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT: 3/2R

MDAC ID: 1747

ABORT: 2/1R

ITEM: L/R OX & FU TK ISOL VLV 1/2 SWITCH

FAILURE MODE: SWITCH FAILS IN THE OPEN POSITION.

LEAD ANALYST: V.J. BURKEMPER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 1/2
5) L/R OX & FU TK ISOL VLV 1/2 SWITCH
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LOCATION: PNL 07 S16; PNL 07 S19

PART NUMBER: 33V73A7S16; S19

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DC, CC

REPORT DATE 03/22/87
C-1649
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1748

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/1R
ABORT: 2/1R

ITEM: L/R OX & FU TK ISOL VLV 1/2 SWITCH
FAILURE MODE: SWITCH FAILS IN THE CLOSED POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 1/2
5) L/R OX & FU TK ISOL VLV 1/2 SWITCH
6)
7)
8)
9)

CRITICALITIES
FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC
PRELAUNCH: 3/3 RTLS: 2/1R
LIFTOFF: 3/3 TAL: 3/1R
ONORBIT: 3/2R AOA: 3/1R
DEORBIT: 3/1R ATO: 3/1R
LANDING/SAFING: 3/3


LOCATION: PNL 07 S16; PNL 07 S19
PART NUMBER: 33V73A7S16; S19

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DC, CC

REPORT DATE 03/22/87 C-1650
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87

SUBSYSTEM: ARCS
MDAC ID: 1749

HIGHEST CRITICALITY
HDW/FUNC

FLIGHT: 3/1R
ABORT: 2/1R

ITEM: L/R OX & FU TK ISOL VLV 1/2 SWITCH
FAILURE MODE: SWITCH FAILS IN THE GPC POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 1/2
5) L/R OX & FU TK ISOL VLV 1/2 SWITCH

CRITICALITIES

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LOCATION: PNL 07 S16; PNL 07 S19
PART NUMBER: 33V73A7S16; S19

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
VALVE CANNOT BE CONTROLLED BY SWITCH, ONLY BY MDM COMMANDS. TO OPERATE THE VALVE, THE CREW MUST USE THE GPC READ/WRITE PROCEDURES. FAILURE OF THE MDM COMMAND PATHS WILL AFFECT PROPELLANT DUMP LENGTHS DURING ABORTS AND ENTRY, CROSSFEED CAPABILITY, AND MAY CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS DURING RTLS ABORTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES, AND MAY AFFECT ENTRY DTOs AND PTIs.

REFERENCES: VS70-943099 REV B EO B12, DC, CC

REPORT DATE 03/22/87 C-1651
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/2R
MDAC ID: 1750  ABORT: 3/1R

ITEM: L/R OX & FU TK ISOL VLV 1/2 SWITCH OPEN CONTACTS 1, 2
FAILURE MODE: SWITCH OPEN CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 1/2
5) L/R OX & FU TK ISOL VLV 1/2 SWITCH OPEN CONTACTS 1, 2
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LOCATION: PNL 07 S16; PNL 07 S19
PART NUMBER: 33V73A7S16; S19

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE MDM OPEN COMMANDS. IF EITHER SETS OF OPEN CONTACTS FAIL OPEN WHILE THE SWITCH IS IN THE ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION AND CAN BE OPENED OR CLOSED BY THE SWITCH OR BY MDM COMMANDS. FAILURE OF ALL REDUNDANCY WILL AFFECT PROPELLANT DUMP LENGTHS DURING ABORTS AND ENTRY, CROSSFEED CAPABILITY, AND MAY CAUSE THE INABILITY TO BURN ENOUGH PROPELLANT DURING ABORTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES, AND MAY AFFECT ENTRY DTOs AND PTIs.

REFERENCES: VS70-943099 REV B EO B12, DC, CC

REPORT DATE 03/22/87  C-1652
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1751

ITEM: L/R OX & FU TK ISOL VLV 1/2 SWITCH OPEN CONTACTS 1, 2
FAILURE MODE: SWITCH OPEN CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 1/2
5) L/R OX & FU TK ISOL VLV 1/2 SWITCH OPEN CONTACTS 1, 2
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LOCATION: PNL 07 S16; PNL 07 S19
PART NUMBER: 33V/73A7S16; S19

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DC, CC; FLIGHT RULE 6-95

REPORT DATE 03/22/87 C-1653
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1752

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: L/R OX & FU TK ISOL VLV 1/2 SWITCH GPC CONTACTS 3, 4
FAILURE MODE: SWITCH GPC CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 1/2
5) L/R OX & FU TK ISOL VLV 1/2 SWITCH GPC CONTACTS 3, 4

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 07 S16; PNL 07 S19
PART NUMBER: 33V73A7S16; S19

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, DC, CC

REPORT DATE 3/20/87 C-1654
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87  HIGHEST CRITICALITY
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 1753  ABORT: 3/3

ITEM: L/R OX & FU TK ISOL VLV 1/2 SWITCH GPC CONTACTS 3, 4
FAILURE MODE: SWITCH GPC CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 1/2
5) L/R OX & FU TK ISOL VLV 1/2 SWITCH GPC CONTACTS 3, 4
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CRITICALITIES

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: PNL 07 S16; PNL 07 S19
PART NUMBER: 33V73A7S16; S19

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, DC, CC

REPORT DATE 3/20/87  C-1655
**INDEPENDENT ORBITER ASSESSMENT**

**ORBITER SUBSYSTEM ANALYSIS WORKSHEET**

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**ITEM:** L/R OX & FU TK ISOL VLV 1/2 SWITCH CLOSE CONTACTS 5, 6  
**FAILURE MODE:** SWITCH CLOSE CONTACTS FAIL OPEN.

**LEAD ANALYST:** V.J. BURKEMPER  
**SUBSYS LEAD:** D.J. PAUL

**BREAKDOWN HIERARCHY:**
1) ELECTRICAL COMPONENTS  
2) CONTROLS  
3) PROP STOR & DIST SUBSYSTEM  
4) L/R OX & FU TK ISOL VLV 1/2  
5) L/R OX & FU TK ISOL VLV 1/2 SWITCH CLOSE CONTACTS 5, 6

**CRITICALITIES**

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**REDUNDANCY SCREENS:** A [ 2 ]  
B [ P ]  
C [ P ]

**LOCATION:** PNL 07 S16; PNL 07 S19  
**PART NUMBER:** 33V73A7S16; S19

**CAUSES:** CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

**EFFECTS/RATIONALE:**
REDUNDANCY PROVIDED BY MDM CLOSE COMMANDS. IF EITHER OR BOTH SETS OF CLOSE CONTACTS FAIL OPEN WHILE THE SWITCH IS IN ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION, CAN BE OPENED BY SWITCH OR MDM COMMANDS, AND CANNOT BE CLOSED BY SWITCH COMMANDS, BY MDM COMMANDS. FAILURE OF EITHER THE INDIVIDUAL VALVE OR DUAL VALVE MDM CLOSE COMMANDS WILL AFFECT PROPELLANT DUMP LENGTHS DURING ABORTS OR ENTRY, CROSSFEED CAPABILITY, AND MAY CAUSE THE INABILITY TO BURN ENOUGH PROPELLANT DURING ABORTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES, AND MAY AFFECT ENTRY DTOs AND PTIs.

**REFERENCES:** VS70-943099 REV B EO B12, DC, CC

**REPORT DATE 03/22/87 C-1656**
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1755

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/1R
ABORT: 2/1R

ITEM: L/R OX & FU TK ISOL VLV 1/2 SWITCH CLOSE CONTACTS 5, 6
FAILURE MODE: SWITCH CLOSE CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 1/2
5) L/R OX & FU TK ISOL VLV 1/2 SWITCH CLOSE CONTACTS 5, 6
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LOCATION:  PNL 07 S16; PNL 07 S19
PART NUMBER:  33V73A7S16; S19

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY MDM COMMANDS AND THE OTHER SWITCH CLOSE CONTACTS. IF EITHER SETS OF CLOSE CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION AND CAN BE OPENED OR CLOSED BY SWITCH OR MDM COMMANDS. FAILURE OF ALL REDUNDANCY WILL AFFECT PROPELLANT DUMP LENGTHS DURING ABORTS OR ENTRY, CROSSFEED CAPABILITY AND MAY CAUSE THE INABILITY TO BURN ENOUGH PROPELLANT DURING ABORTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR CG SAFETY BOUNDARIES, AND MAY AFFECT ENTRY DTOs AND PTIs.

REFERENCES: VS70-943099 REV B EO B12, DC, CC

REPORT DATE 03/22/87  C-1657
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/1R
MDAC ID: 1756  ABORT: 2/1R

ITEM: L/R OX & FU TK ISOL VLV 1/2 SWITCH OPEN CONTACTS 7, 8
FAILURE MODE: SWITCH OPEN CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 1/2
5) L/R OX & FU TK ISOL VLV 1/2 SWITCH OPEN CONTACTS 7, 8

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LOCATION: PNL 07 S16; PNL 07 S19
PART NUMBER: 33V73A7S16; S19

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE MDM COMMANDS. IF EITHER SETS OF OPEN CONTACTS FAIL OPEN WHILE THE SWITCH IS IN THE ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION AND CAN BE OPENED OR CLOSED BY THE SWITCH OR BY MDM COMMANDS. FAILURE OF ALL REDUNDANCY WILL AFFECT PROPELLANT DUMP LENGTHS DURING ABORTS OR ENTRY, CROSSFEED CAPABILITY, AND MAY CAUSE THE INABILITY TO BURN ENOUGH PROPELLANT DURING ABORTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES, AND MAY AFFECT ENTRY DTOS AND PTIS.

REFERENCES: VS70-943099 REV B EO B12, DC, CC

REPORT DATE 03/22/87  C-1658
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1757

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 2/1R

ITEM: L/R OX & FU TK ISOL VLV 1/2 SWITCH OPEN CONTACTS 7, 8
FAILURE MODE: SWITCH OPEN CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 1/2
5) L/R OX & FU TK ISOL VLV 1/2 SWITCH OPEN CONTACTS 7, 8
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LOCATION: PNL 07 S16; PNL 07 S19
PART NUMBER: 33V73A7S16; S19

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DC, CC; FLIGHT RULE 6-95

REPORT DATE 3/20/87  C-1659
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
MDAC ID: 1758

SUBSYSTEM: ARCS

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 3/3
ABORT: 3/3

ITEM: L/R OX & FU TK ISOL VLV 1/2 SWITCH GPC CONTACTS 9, 10

FAILURE MODE: SWITCH GPC CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 1/2
5) L/R OX & FU TK ISOL VLV 1/2 SWITCH GPC CONTACTS 9, 10

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 07 S16; PNL 07 S19

PART NUMBER: 33V73A7S16; S19

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, DC, CC

REPORT DATE 3/20/87 C-1660
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1759

ITEM: L/R OX & FU TK ISOL VLV 1/2 SWITCH GPC CONTACTS 9, 10
FAILURE MODE: SWITCH GPC CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER    SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 1/2
5) L/R OX & FU TK ISOL VLV 1/2 SWITCH GPC CONTACTS 9, 10

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 07 S16; PNL 07 S19
PART NUMBER: 33V73A7S16; S19

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, DC, CC

REPORT DATE 3/20/87  C-1661
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1760

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 2/1R

ITEM: L/R OX & FU TK ISOL VLV 1/2 SWITCH CLOSE CONTACTS 11, 12
FAILURE MODE: SWITCH CLOSE CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 1/2
5) L/R OX & FU TK ISOL VLV 1/2 SWITCH CLOSE CONTACTS 11, 12

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LOCATION: PNL 07 S16; PNL 07 S19
PART NUMBER: 33V73A7S16; S19

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY MDM CLOSE COMMANDS. IF EITHER OR BOTH SETS OF CLOSE CONTACTS FAIL OPEN WHILE THE SWITCH IS IN ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION, CAN BE OPENED BY SWITCH OR MDM COMMANDS, AND CANNOT BE CLOSED BY SWITCH COMMANDS, ONLY BY MDM COMMANDS. FAILURE OF EITHER THE INDIVIDUAL VALVE OR DUAL VALVE MDM CLOSE COMMANDS WILL AFFECT CROSSFEED CAPABILITY, AND MAY CAUSE THE INABILITY TO BURN ENOUGH PROPELLANT DURING ABORTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES, AND MAY AFFECT ENTRY DTOs AND PTIs.

REFERENCES: VS70-943099 REV B EO B12, DC, CC

REPORT DATE 03/22/87 C-1662
INDEPENDENT ORBITER ASSESSMENT
ORBiter SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1761

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/1R
ABORT: 2/1R

ITEM: L/R OX & FU TK ISOL VLV 1/2 SWITCH CLOSE CONTACTS 11, 12
FAILURE MODE: SWITCH CLOSE CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 1/2
5) L/R OX & FU TK ISOL VLV 1/2 SWITCH CLOSE CONTACTS 11, 12
6) 7) 8) 9)

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LOCATION: PNL 07 S16; PNL 07 S19
PART NUMBER: 33V73A7S16; S19

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY MDM OPEN COMMANDS. IF EITHER SETS OF CLOSE CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION AND CAN BE OPENED OR CLOSED BY SWITCH OR MDM COMMANDS. WORST CASE FAILURE OF EITHER THE INDIVIDUAL VALVE AND DUAL VALVE MDM OPEN COMMANDS WILL AFFECT PROPELLANT DUMP LENGTHS DURING ABORTS AND ENTRY, CROSSFEED CAPABILITY, AND MAY CAUSE THE INABILITY TO BURN ENOUGH PROPELLANT DURING ABORTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES, AND MAY AFFECT ENTRY DTOs AND PTIs.

REFERENCES: VS70-943099 REV B EO B12, DC, CC

REPORT DATE 03/22/87 C-1663
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
HIGHEST CRITICALITY
SUBSYSTEM: ARCS
ABORT: 2/1R
MDAC ID: 1762

ITEM: L/R OX & FU TK ISOL VLV 3/4/5 A OR B SWITCH
FAILURE MODE: SWITCH FAILS IN THE GPC POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 A OR B
5) L/R OX & FU TK ISOL VLV 3/4/5 A OR B SWITCH

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LOCATION: PNL 07 S17, S18; PNL 07 S20, S21
PART NUMBER: 33V73A7S17, S18; 33V73A7S20, S21

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DB, CB

REPORT DATE 03/27/87 C-1664
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1763

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 2/1R

ITEM: L/R OX & FU TK ISOL VLV 3/4/5 A OR B SWITCH
FAILURE MODE: SWITCH FAILS IN THE OPEN POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 A OR B
5) L/R OX & FU TK ISOL VLV 3/4/5 A OR B SWITCH

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LOCATION: PNL 07 S17, S18; PNL 07 S20, S21
PART NUMBER: 33V73A7S17, S18; 33V73A7S20, S21

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DB, CB

REPORT DATE 3/20/87 C-1665
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT:  3/1R
MDAC ID: 1764  ABORT:  2/1R

ITEM: L/R OX & FU TK ISOL VLV 3/4/5 A OR B SWITCH
FAILURE MODE: SWITCH FAILS IN CLOSED POSITION.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 A OR B
5) L/R OX & FU TK ISOL VLV 3/4/5 A OR B SWITCH
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LOCATION: PNL 07 S17, S18; PNL 07 S20, S21
PART NUMBER: 33V73A7S17, S18; 33V73A7S20, S21

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DB, CB

REPORT DATE 3/20/87  C-1666
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

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ITEM: L/R OX & FU TK ISOL VLV 3/4/5 A OR B SWITCH OPEN CONTACTS 1, 2
FAILURE MODE: SWITCH OPEN CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 A OR B
5) L/R OX & FU TK ISOL VLV 3/4/5 A OR B SWITCH OPEN CONTACTS 1, 2

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LOCATION: PNL O7 S17, S18; PNL O7 S20, S21
PART NUMBER: 33V73A7S17, S18; 33V73A7S20, S21

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE MDM COMMANDS OR BY THE PARALLEL ISOLATION VALVE. IF THE OPEN CONTACTS FAIL OPEN WHILE THE SWITCH IS IN ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION AND CANNOT BE OPENED BY SWITCH COMMAND, ONLY BY MDM COMMAND. FAILURE OF ALL REDUNDANCY WILL AFFECT CROSSFEED OPERATIONS, AND MAY CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, DB, CB

REPORT DATE 3/20/87 C-1667
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1766

HIGHEST CRITICALITY HDW/FUNC FLIGHT: 3/2R
ABORT: 2/1R

ITEM: L/R OX & FU TK ISOL VLV 3/4/5 A OR B SWITCH OPEN CONTACTS 1, 2
FAILURE MODE: SWITCH OPEN CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 A OR B
5) L/R OX & FU TK ISOL VLV 3/4/5 A OR B SW OPEN CONTACTS 1, 2

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LOCATION: PNL 07 S17, S18; PNL 07 S20, S21
PART NUMBER: 33V73A7S17, S18; 33V73A7S20, S21

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DB, CB

REPORT DATE 3/20/87 C-1668
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 1767  ABORT: 3/3

ITEM: L/R OX & FU TK ISOL VLV 3/4/5 A OR B SWITCH GPC CONTACTS 3, 4
FAILURE MODE: SWITCH GPC CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 A OR B
5) L/R OX & FU TK ISOL VLV 3/4/5 A OR B SWITCH GPC CONTACTS 3, 4

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: PNL 07 S17, S18; PNL 07 S20, S21
PART NUMBER: 33V73A7S17, S18; 33V73A7S20, S21

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, DB, CB

REPORT DATE 3/20/87  C-1669
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 1768  ABORT: 3/3

ITEM: L/R OX & FU TK ISOL VLV 3/4/5 A OR B SWITCH GPC CONTACTS 3, 4
FAILURE MODE: SWITCH GPC CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 A OR B
5) L/R OX & FU TK ISOL VLV 3/4/5 A OR B SWITCH GPC CONTACTS 3, 4
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7) 
8) 
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: PNL 07 S17, S18; PNL 07 S20, S21
PART NUMBER: 33V73A7S17, S18; 33V73A7S20, S21

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE MDM COMMANDS OR BY THE PARALLEL ISOLATION VALVE. IF THE OPEN CONTACTS FAIL OPEN WHILE THE SWITCH IS IN ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION AND CANNOT BE OPENED BY SWITCH COMMAND, ONLY BY MDM COMMAND.

REFERENCES: VS70-943099 REV B EO B12, DB, CB

REPORT DATE 03/22/87  C-1670
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/2R
MDAC ID: 1769  ABORT: 2/1R

ITEM: L/R OX & FU TK ISOL VLV 3/4/5 A OR B SWITCH CLOSE
CONTACTS 5, 6
FAILURE MODE: SWITCH CLOSE CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 A OR B
5) L/R OX & FU TK ISOL VLV 3/4/5 A OR B SWITCH CLOSE CONTACTS 5, 6

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LOCATION: PNL 07 S17, S18; PNL 07 S20, S21
PART NUMBER: 33V73A7S17, S18; 33V73A7S20, S21

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE MDM COMMANDS. IF THE CLOSE CONTACTS FAIL OPEN WHILE THE SWITCH IS IN ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION, CANNOT BE CLOSED BY SWITCH COMMAND, ONLY BY MDM COMMAND, AND CAN BE OPENED BY SWITCH OR MDM COMMANDS. TO CLOSE THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM THE CONTACTS, AND USE THE GPC READ/WRITE PROCEDURES. FAILURE OF ALL REDUNDANCY WILL AFFECT CROSSFEED OPERATIONS AND MAY CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS DURING ABORTS TO MEET THE TANK WEIGHT LANDING CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, DB, CB

REPORT DATE 03/27/87  C-1671
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1770
HDW/FUNC: HIGHEST CRITICALITY
FLIGHT: 3/2R
ABORT: 2/1R

ITEM: L/R OX & FU TK ISOL VLV 3/4/5 A OR B SWITCH CLOSE CONTACTS 5, 6
FAILURE MODE: SWITCH CLOSE CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 A OR B
5) L/R OX & FU TK ISOL VLV 3/4/5 A OR B SWITCH CLOSE CONTACTS 5, 6
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LOCATION: PNL 07 S17, S18; PNL 07 S20, S21
PART NUMBER: 33V73A7S17, S18; 33V73A7S20, S21

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DB, CB

REPORT DATE 03/22/87 C-1672
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1771

HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 3/1R
ABORT: 2/1R

ITEM: L/R OX & FU CROSSFEED VLV 1/2 SWITCH
FAILURE MODE: SWITCH FAILS IN THE OPEN POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2
5) L/R OX & FU CROSSFEED VLV 1/2 SWITCH

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LOCATION: PNL 07 S32; PNL 07 S34
PART NUMBER: 33V73A7S32; S34

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE MDM COMMANDS. IF THE SWITCH FAILS IN THE OPEN POSITION, THE VALVE WILL OPEN AND CANNOT BE CLOSED BY THE SWITCH OR BY THE MDM COMMANDS. TO OPEN THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM CONTACT SETS 1, 2, AND THEN USE THE GPC READ/WRITE PROCEDURES. FAILURE OF EITHER THE INDIVIDUAL VALVE OR DUAL VALVE MDM COMMANDS WILL AFFECT ONORBIT CROSSFEED OPERATIONS.

REFERENCES: VS70-943099 REV B EO B12, DC, CC

REPORT DATE 3/20/87 C-1673
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1772

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/1R
ABORT: 2/1R

ITEM: L/R OX & FU CROSSFEED VLV 1/2 SWITCH
FAILURE MODE: SWITCH FAILS IN THE CLOSED POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2
5) L/R OX & FU CROSSFEED VLV 1/2 SWITCH
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LOCATION: PNL O7 S32; PNL O7 S34
PART NUMBER: 33V73A7S32; S34

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DD, CD

REPORT DATE 3/20/87  C-1674
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

MDAC ID: 1773

ABORT:

FLIGHT: 3/1R

2/1R

ITEM: L/R OX & FU CROSSFEED VLV 1/2 SWITCH

FAILURE MODE: SWITCH FAILS IN THE GPC POSITION.

LEAD ANALYST: V.J. BURKEMPER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

1) ELECTRICAL COMPONENTS

2) CONTROLS

3) PROP STOR & DIST SUBSYSTEM

4) L/R OX & FU CROSSFEED VLV 1/2

5) L/R OX & FU CROSSFEED VLV 1/2 SWITCH

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LOCATION: PNL 07 S32; PNL 07 S34

PART NUMBER: 33V73A7S32; S34

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

VALVE CANNOT BE CONTROLLED BY SWITCH, ONLY BY MDIM COMMANDS. TO OPERATE THE VALVE, THE CREW MUST USE THE GPC READ/WRITE PROCEDURES. FAILURE OF THE MDIM COMMAND PATHS WILL AFFECT CROSSFEED CAPABILITY AND MAY CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS DURING ABORTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES, AND MAY AFFECT ENTRY DTOs AND PTIs.

REFERENCES: VS70-943099 REV B EO B12, DD, CD

REPORT DATE 3/20/87  C-1675
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87

SUBSYSTEM: ARCS

MDAC ID: 1774

HIGHEST CRITICALITY HDW/FUNC

FAILURE MODE: SWITCH OPEN CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2
5) L/R OX & FU CROSSFEED VLV 1/2 SWITCH OPEN CONTACTS 1, 2

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LOCATION: PNL 07 S32; PNL 07 S34

PART NUMBER: 33V73A7S32; S34

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE MDM COMMANDS. IF EITHER SETS OF OPEN CONTACTS FAIL OPEN WHILE THE SWITCH IS IN THE ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION AND CANNOT BE OPENED OR CLOSED BY THE SWITCH OR BY MDM COMMAND. FAILURE OF ALL REDUNDANCY WILL AFFECT CROSSFEED CAPABILITY AND MAY CAUSE THE INABILITY TO BURN ENOUGH PROPELLANT DURING ABORTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, DD, CD

REPORT DATE 3/20/87 C-1676
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1775

HIGHEST CRITICALITY
HDW/FLIGHT: 3/3
ABORT: 3/3

ITEM: L/R OX & FU CROSSFEED VLV 1/2 SWITCH OPEN CONTACTS 1, 2
FAILURE MODE: SWITCH OPEN CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2
5) L/R OX & FU CROSSFEED VLV 1/2 SWITCH OPEN CONTACTS 1, 2

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 07 532; PNL 07 534
PART NUMBER: 33V73A73S32; S34

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DD, CD; FLIGHT RULE 6-95

REPORT DATE 3/20/87 C-1677
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

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ITEM: L/R OX & FU CROSSFEED VLV 1/2 SWITCH GPC CONTACTS 3, 4
FAILURE MODE: SWITCH GPC CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2
5) L/R OX & FU CROSSFEED VLV 1/2 SWITCH GPC CONTACTS 3, 4

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 07 S32; PNL 07 S34
PART NUMBER: 33V73A7S32; S34

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, DD, CD

REPORT DATE 3/20/87 C-1678
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87

SUBSYSTEM: ARCS
MDAC ID: 1777

ITEM: L/R OX & FU CROSSFEED VLV 1/2 SWITCH GPC CONTACTS 3, 4
FAILURE MODE: SWITCH GPC CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2
5) L/R OX & FU CROSSFEED VLV 1/2 SWITCH GPC CONTACTS 3, 4

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 07 S32; PNL 07 S34

PART NUMBER: 33V73A7S32; S34

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, DD, CD

REPORT DATE 3/20/87 C-1679
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1778

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 3/3

ITEM: L/R OX & FU CROSSFEED VLV 1/2 SWITCH CLOSE CONTACTS 5, 6
FAILURE MODE: SWITCH CLOSE CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2
5) L/R OX & FU CROSSFEED VLV 1/2 SWITCH CLOSE CONTACTS 5, 6

CRITICALITIES

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LOCATION: PNL 07 S32; PNL 07 S34
PART NUMBER: 33V73A7S32; S34

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY MDM COMMANDS. IF EITHER OR BOTH SETS OF CLOSE CONTACTS FAIL OPEN WHILE THE SWITCH IS IN ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION AND CANNOT BE CLOSED BY SWITCH COMMANDS, ONLY BY MDM COMMANDS. FAILURE OF ALL REDUNDANCY WILL AFFECT ONORB CROSSEED OPERATIONS.

REFERENCES: VS70-943099 REV B EO B12, DD, CD

REPORT DATE 3/20/87 C-1680
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87

SUBSYSTEM: ARCS
MDAC ID: 1779

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/1R
ABORT: 2/1R

ITEM: L/R OX & FU CROSSFEED VLV 1/2 SWITCH CLOSE CONTACTS 5, 6
FAILURE MODE: SWITCH CLOSE CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2
5) L/R OX & FU CROSSFEED VLV 1/2 SWITCH CLOSE CONTACTS 5, 6

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LOCATION: PNL 07 S32; PNL 07 S34
PART NUMBER: 33V73A7S32; S34

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY MDM COMMANDS. IF EITHER SETS OF CLOSE CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION AND CAN BE OPENED OR CLOSED BY SWITCH OR MDM COMMAND. FAILURE OF ALL REDUNDANCY WILL AFFECT CROSSFEED CAPABILITY AND MAY CAUSE THE INABILITY TO BURN ENOUGH PROPELLANT DURING ABORTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES. TO OPERATE THE VALVE, THE CREW MUST REMOVE POWER FROM THE SWITCH'S CONTROL BUSSES AND THEN USE THE GPC READ/ WRITE PROCEDURES.

REFERENCES: VS70-943099 REV B EO B12, DD, CD

REPORT DATE 3/20/87 C-1681
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/1R
MDAC ID: 1780  ABORT: 2/1R

ITEM: L/R OX & FU CROSSFEED VLV 1/2 SWITCH OPEN CONTACTS 7, 8
FAILURE MODE: SWITCH OPEN CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2
5) L/R OX & FU CROSSFEED VLV 1/2 SWITCH OPEN CONTACTS 7, 8

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LOCATION: PNL 07 S32; PNL 07 S34
PART NUMBER: 33V73A7S32; S34

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE MDM COMMANDS. IF EITHER SETS OF OPEN CONTACTS FAIL OPEN WHILE THE SWITCH IS IN THE ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION AND CANNOT BE OPENED OR CLOSED BY THE SWITCH OR BY MDM COMMAND. FAILURE OF ALL REDUNDANCY WILL AFFECT AFFECT CROSSFEED CAPABILITY AND MAY CAUSE THE INABILITY TO BURN ENOUGH PROPELLANT DURING ABORTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, DD, CD

REPORT DATE 3/20/87  C-1682
INDEPENDENT ORBITER ASSESSMENT  
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87  HIGHEST CRITICALITY HDW/FUNC  
SUBSYSTEM: ARCS  FLIGHT: 3/2R  
MDAC ID: 1781  ABORT: 3/3

ITEM: L/R OX & FU CROSSFEED VLV 1/2 SWITCH OPEN CONTACTS 7, 8
FAILURE MODE: SWITCH OPEN CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2
5) L/R OX & FU CROSSFEED VLV 1/2 SWITCH OPEN CONTACTS 7, 8
6) 7)
8) 9)

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LOCATION: PNL 07 S32; PNL 07 S34
PART NUMBER: 33V73A7S32; S34

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DD, CD; FLIGHT RULE 6-95

REPORT DATE 3/20/87  C-1683
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
MDAC ID: 1782

ITEM: L/R OX & FU CROSSFEED VLV 1/2 SWITCH GPC CONTACTS 9, 10
FAILURE MODE: SWITCH GPC CONTACTS FAIL OPEN.
LEAD ANALYST: V. J. BURKEMPER

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2
5) L/R OX & FU CROSSFEED VLV 1/2 SWITCH GPC CONTACTS 9, 10

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: PNL 07 S32; PNL 07 S34
PART NUMBER: 33V73A7S32; S34

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, DD, CD

REPORT DATE 3/20/87 C-1684
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1783

ITEM: L/R OX & FU CROSSFEED VLV 1/2 SWITCH GPC CONTACTS 9, 10
FAILURE MODE: SWITCH GPC CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2
5) L/R OX & FU CROSSFEED VLV 1/2 SWITCH GPC CONTACTS 9, 10
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 07 S32; PNL 07 S34
PART NUMBER: 33V73A7S32; S34

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, DD, CD

REPORT DATE 3/20/87  C-1685
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1784

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 3/3

ITEM: L/R OX & FU CROSSFEED VLV 1/2 SWITCH CLOSE
CONTACTS 11, 12

FAILURE MODE: SWITCH CLOSE CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2
5) L/R OX & FU CROSSFEED VLV 1/2 SWITCH CLOSE CONTACTS 11, 12

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LOCATION: PNL 07 S32; PNL 07 S34
PART NUMBER: 33V73A7S32; S34

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY MDM COMMANDS. IF EITHER OR BOTH SETS OF CLOSE CONTACTS FAIL OPEN WHILE THE SWITCH IS IN ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION AND CANNOT BE CLOSED BY SWITCH COMMANDS, ONLY BY MDM COMMANDS. FAILURE OF ALL REDUNDANCY WILL AFFECT ONORBIT CROSSFEED OPERATIONS.

REFERENCES: VS70-943099 REV B EO B12, DD, CD

REPORT DATE 3/20/87 C-1686
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87

| SUBSYSTEM: | ARCS |
| MDAC ID:    | 1785 |

HIGHEST CRITICALITY

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ITEM: L/R OX & FU CROSSFEED VLV 1/2 SWITCH CLOSE CONTACTS 11, 12
FAILURE MODE: SWITCH CLOSE CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2
5) L/R OX & FU CROSSFEED VLV 1/2 SWITCH CLOSE CONTACTS 11, 12

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LOCATION: PNL 07 S32; PNL 07 S34

PART NUMBER: 33V73A7S32; S34

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY MDM COMMANDS. IF EITHER SETS OF CLOSE CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION AND CAN BE OPENED OR CLOSED BY SWITCH OR MDM COMMAND. FAILURE OF ALL REDUNDANCY WILL AFFECT CROSSFEED CAPABILITY AND MAY CAUSE THE INABILITY TO BURN ENOUGH PROPELLANT DURING ABORTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES. TO OPERATE THE VALVE, THE CREW MUST REMOVE POWER FROM THE SWITCH'S CONTROL BUSSES AND THEN USE THE GPC READ/WRITE PROCEDURES.

REFERENCES: VS70-943099 REV B EO B12, DD, CD

REPORT DATE 3/20/87 C-1687
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1786

ITEM: MASTER RCS CROSSFEED SWITCH
FAILURE MODE: SWITCH FAILS IN FEED FROM RIGHT OR FEED FROM LEFT POSITION.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2 & 3/4/5
5) MASTER RCS CROSSFEED SWITCH

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LOCATION: PNL 07 S36
PART NUMBER: 33V73A7S36

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
RCS/RCS CROSSFEED IS POSSIBLE ONLY FROM THE RIGHT OR ONLY FROM THE LEFT. FAILURE OF ALL REDUNDANCY WILL AFFECT ONORBIT CROSSFEED OPERATIONS AND MAY CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS DURING ENTRY OR ABORTS TO MEET THE TANK WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CD

REPORT DATE 3/20/87  C-1688
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1787

ITEM: MASTER RCS CROSSFEED SWITCH
FAILURE MODE: SWITCH FAILS IN OFF POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2 & 3/4/5
5) MASTER RCS CROSSFEED SWITCH

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LOCATION: PNL 07 S36
PART NUMBER: 33V73A7S36

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE WILL RESULT IN THE LOSS OF THE GPC CONTROLLED RCS/RCS CROSSFEED. CROSSFEED CAN BE ACCOMPLISHED BY MDM COMMANDS OR BY MANUAL RCS SWITCH RECONFIGURATION.
FAILURE OF ALL REDUNDANCY WILL AFFECT CROSSFEED CAPABILITY AND MAY CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS DURING ABORTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS, AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CD

REPORT DATE 3/20/87 C-1689
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87  HIGHEST CRITICALITY  HDW/FUNC  FLIGHT: 3/1R  ABORT: 2/1R
SUBSYSTEM: ARCS  MDAC ID: 1788
ITEM: MASTER RCS CROSSFEED SWITCH FEED FROM RIGHT OR FEED FROM LEFT SWITCH CONTACTS
FAILURE MODE: SWITCH FEED FROM RIGHT OR FEED FROM LEFT CONTACTS FAIL OPEN.
LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2 & 3/4/5
5) MASTER RCS CROSSFEED SWITCH FEED FROM RIGHT OR FEED FROM LEFT SWITCH CONTACTS

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LOCATION: PNL 07 S36
PART NUMBER: 33V73A7536

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE: CROSSFEED CAN BE CONTROLLED BY MDM COMMANDS, OR BY MANUAL RCS SWITCH RECONFIGURATION. FAILURE OF ALL REDUNDANCY WILL CAUSE THE INABILITY TO CROSSFEED, AND MAY CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS DURING ABORTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS, AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CD

REPORT DATE 3/20/87  C-1690
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 2/1R
MDAC ID: 1789  ABORT: 2/1R

ITEM: MASTER RCS CROSSFEED SWITCH FEED FROM RIGHT OR
FEED FROM LEFT SWITCH CONTACTS
FAILURE MODE: SWITCH FEED FROM RIGHT OR FEED FROM LEFT CONTACTS
FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2 & 3/4/5
5) MASTER RCS CROSSFEED SWITCH FEED FROM RIGHT OR FEED FROM
LEFT SWITCH CONTACTS
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LOCATION: PNL O7 S36
PART NUMBER: 33V73A7S36

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL
SHOCK, OVERLOAD

EFFECTS/RATIONALE:
RCS/RCS CROSSFEED IS POSSIBLE ONLY FROM THE RIGHT OR ONLY FROM
THE LEFT. FAILURE OF ALL REDUNDANCY WILL AFFECT ONORBIT
CROSSFEED OPERATIONS AND MAY CAUSE THE INABILITY TO EXPEL ENOUGH
PROPELLANTS DURING ENTRY OR ABORTS TO MEET THE TANK WEIGHT
CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CD

REPORT DATE 3/20/87  C-1691
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1790

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 3/3

ITEM: L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH
FAILURE MODE: SWITCH FAILS IN THE OPEN POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH

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LOCATION: PNL 07 S33; PNL 07 S35
PART NUMBER: 33V73A7S33; S35

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE MDM COMMANDS. IF THE SWITCH FAILS IN THE OPEN POSITION, THE VALVE WILL OPEN AND CANNOT BE CLOSED BY THE SWITCH OR BY THE MDM COMMANDS. TO OPEN THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM CONTACT SET 1, 2, AND THEN USE THE GPC READ/WRITE PROCEDURES. FAILURE OF EITHER THE INDIVIDUAL VALVE OR DUAL VALVE MDM COMMANDS WILL AFFECT ONORBIT CROSSFEED OPERATIONS.

REFERENCES: VS70-943099 REV B EO B12, DD, CD

REPORT DATE 3/20/87 C-1692
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1791

HIGHEST CRITICALITY
FLIGHT: 3/1R
ABORT: 2/1R

ITEM: L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH
FAILURE MODE: SWITCH FAILS IN THE CLOSED POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH

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LOCATION: PNL 07 S33; PNL 07 S35
PART NUMBER: 33V73A7S33; S35

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DD, CD

REPORT DATE 03/30/87 C-1693
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1792

ITEM: L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH
FAILURE MODE: SWITCH FAILS IN THE GPC POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH

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LOCATION: PNL 07 S33; PNL 07 S35
PART NUMBER: 33V73A7S33; S35

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
VALVE CANNOT BE CONTROLLED BY SWITCH, ONLY BY MDM COMMANDS. TO OPERATE THE VALVE, THE CREW MUST USE THE GPC READ/WRITE PROCEDURES. FAILURE OF THE MDM COMMAND PATHS WILL AFFECT CROSSFEED CAPABILITY AND MAY CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS DURING ABORTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES, AND MAY AFFECT ENTRY DTOS AND PTIs.

REFERENCES: VS70-943099 REV B EO B12, DD, CD

REPORT DATE 3/20/87 C-1694
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87

SUBSYSTEM: ARCS

MDAC ID: 1793

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/1R
ABORT: 2/1R

ITEM: L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH OPEN

CONTACTS 1, 2

FAILURE MODE: SWITCH OPEN CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH OPEN CONTACTS 1, 2
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LOCATION: PNL 07 S33; PNL 07 S35

PART NUMBER: 33V73A7533; S35

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE MDM COMMANDS. IF EITHER SETS OF OPEN CONTACTS FAIL OPEN WHILE THE SWITCH IS IN ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION AND CANNOT BE OPENED OR CLOSED BY THE SWITCH OR BY MDM COMMAND. FAILURE OF ALL REDUNDANCY WILL AFFECT CROSSFEED CAPABILITY AND MAY CAUSE THE INABILITY TO BURN ENOUGH PROPELLANT DURING ABORTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, DD, CD

REPORT DATE 3/20/87 C-1695
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87    HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS    FLIGHT: 3/2R
MDAC ID: 1794    ABORT: 3/3

ITEM: L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH OPEN
CONTACTS 1, 2
FAILURE MODE: SWITCH OPEN CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER    SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH OPEN CONTACTS 1, 2

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LOCATION: PNL 07 S33; PNL 07 S35
PART NUMBER: 33V73A7S33; S35

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DD, CD; FLIGHT RULE 6-95

REPORT DATE 3/20/87    C-1696
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87

HIGHEST CRITICALITY

SUBSYSTEM: ARCS

MDAC ID: 1795

ABORT: 3/3

FLIGHT: 3/3

ITEM: L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH GPC CONTACTS 3, 4

FAILURE MODE: SWITCH GPC CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH GPC CONTACTS 3, 4

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 07 S33; PNL 07 S35

PART NUMBER: 33V73A7S33; S35

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, DD, CD

REPORT DATE 3/20/87 C-1697
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1796

HDW/FUNC CRITICALITIES

ITEM: L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH GPC CONTACTS 3, 4 FAILURE MODE: SWITCH GPC CONTACTS FAIL CLOSED

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH GPC CONTACTS 3, 4
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 07 S33; PNL 07 S35
PART NUMBER: 33V73A7S33; S35

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, DD, CD

REPORT DATE 3/20/87 C-1698
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1797

HIGHEST CRITICALITY
FLIGHT: 3/2R
ABORT: 3/3

ITEM: L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH CLOSE CONTACTS 5, 6
FAILURE MODE: SWITCH CLOSE CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH CLOSE CONTACTS 5, 6

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LOCATION: PNL 07 S33; PNL 07 S35
PART NUMBER: 33V73A7S33; S35

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY MDM COMMANDS. IF EITHER OR BOTH SETS OF CLOSE CONTACTS FAIL OPEN WHILE THE SWITCH IS IN ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION AND CANNOT BE CLOSED BY SWITCH COMMANDS, ONLY BY MDM COMMANDS. FAILURE OF ALL REDUNDANCY WILL AFFECT CROSSFEED OPERATIONS, AND MAY CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS DURING ENTRY OR ABORTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B E0 B12, DD, CD

REPORT DATE 3/20/87  C-1699
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
HIGHEST CRITICALITY: HDW/FUNC
SUBSYSTEM: ARCS
MDAC ID: 1798
FLIGHT: 3/1R
ABORT: 2/1R

ITEM: L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH CLOSE
CONTACTS 5, 6
FAILURE MODE: SWITCH CLOSE CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH CLOSE CONTACTS 5, 6
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LOCATION: PNL O7 S33; PNL O7 S35
PART NUMBER: 33V73A7S33; S35

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY MDM COMMANDS. IF EITHER SET OF CLOSE CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION AND CAN BE OPENED OR CLOSED BY SWITCH OR MDM COMMAND. FAILURE OF ALL REDUNDANCY WILL AFFECT CROSSFEED CAPABILITY AND MAY CAUSE THE INABILITY TO BURN ENOUGH PROPELLANT DURING ABORTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CS SAFETY BOUNDARIES. TO OPERATE THE VALVE, THE CREW MUST REMOVE POWER FROM THE SWITCH'S CONTROL BUSSES AND THEN USE THE GPC READ/WRITE PROCEDURES.

REFERENCES: VS70-943099 REV B EO B12, DD, CD

REPORT DATE 3/20/87 C-1700
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1799

HIGHEST CRITICALITY
HDW/FUNC

FLIGHT: 3/1R
ABORT: 2/1R

ITEM: L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH OPEN CONTACTS 7, 8
FAILURE MODE: SWITCH OPEN CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH OPEN CONTACTS 7, 8

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LOCATION:  PNL 07 S33; PNL 07 S35
PART NUMBER:  33V73A7S33; S35

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE MDM COMMANDS. IF EITHER SETS OF OPEN CONTACTS FAIL OPEN WHILE THE SWITCH IS IN ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION AND CANNOT BE OPENED OR CLOSED BY THE SWITCH OR BY MDM COMMAND. FAILURE OF ALL REDUNDANCY WILL AFFECT CROSSFEED CAPABILITY AND MAY CAUSE THE INABILITY TO BURN ENOUGH PROPELLANT DURING ABORTS TO MEET THE TAK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, DD, CD

REPORT DATE 3/20/87  C-1701
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
ABORT: 3/3
MDAC ID: 1800
FLIGHT: 3/2R

ITEM: L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH OPEN CONTACTS 7, 8
FAILURE MODE: SWITCH OPEN CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH OPEN CONTACTS 7, 8

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LOCATION: PNL 07 S33; PNL 07 S35
PART NUMBER: 33V73A7S33; S35

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DD, CD; FLIGHT RULE 6-95

REPORT DATE 3/20/87 C-1702
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1801

HIGHEST CRITICALITY
HDW/FUNC

FLIGHT: 3/3
ABORT: 3/3

ITEM: L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH GPC CONTACTS 9, 10
FAILURE MODE: SWITCH GPC CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH GPC CONTACTS 9, 10
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 07 S33; PNL 07 S35
PART NUMBER: 33V73A7S33; S35

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE: NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, DD, CD

REPORT DATE 3/20/87  C-1703
INDEPENDENT ORBITER ASSESSMENT  
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87  
SUBSYSTEM: ARCS  
MDAC ID: 1802  

HDW/FUNC  
FLIGHT: 3/3  
ABORT: 3/3  

ITEM: L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH GPC CONTACTS 9, 10  
FAILURE MODE: SWITCH GPC CONTACTS FAIL CLOSED.  

LEAD ANALYST: V.J. BURKEMPER  
SUBSYS LEAD: D.J. PAUL  

BREAKDOWN HIERARCHY:  
1) ELECTRICAL COMPONENTS  
2) CONTROLS  
3) PROP STOR & DIST SUBSYSTEM  
4) L/R OX & FU CROSSFEED VLV 3/4/5  
5) L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH GPC CONTACTS 9, 10  
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]  

LOCATION: PNL 07 S33; PNL 07 S35  
PART NUMBER: 33V73A7S33; S35  

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD  

EFFECTS/RATIONALE:  
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.  

REFERENCES: VS70-943099 REV B EO B12, DD, CD

REPORT DATE 3/20/87  
C-1704
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1803

HIGHEST CRITICALITY: HDW/FUNC
FLIGHT: 3/2R
ABORT: 3/3

ITEM: L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH CLOSE CONTACTS 11, 12
FAILURE MODE: SWITCH CLOSE CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH CLOSE CONTACTS 11, 12
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LOCATION: PNL 07 S33; PNL 07 S35
PART NUMBER: 33V73A7S33; S35

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY MDM COMMANDS. IF EITHER OR BOTH SETS OF CLOSE CONTACTS FAIL OPEN WHILE THE SWITCH IS IN ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION AND CANNOT BE CLOSED BY SWITCH COMMANDS, ONLY BY MDM COMMANDS. FAILURE OF ALL REDUNDANCY WILL AFFECT ONORBIT CROSSFEED OPERATIONS.

REFERENCES: VS70-943099 REV B EO B12, DD, CD

REPORT DATE 3/20/87 C-1705
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1804

ITEM: L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH CLOSE CONTACTS 11, 12

FAILURE MODE: SWITCH CLOSE CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 3/4/5
5) L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH CLOSE CONTACTS 11, 12

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LOCATION: PNL 07 S33; PNL 07 S35
PART NUMBER: 33V73A7S33; S35

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY MDM COMMANDS. IF EITHER SET OF CLOSE CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION AND CAN BE OPENED OR CLOSED BY SWITCH OR MDM COMMAND. FAILURE OF ALL REDUNDANCY WILL AFFECT CROSSFEED CAPABILITY AND MAY CAUSE THE INABILITY TO BURN ENOUGH PROPELLANT DURING ABORTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CS SAFETY BOUNDARIES. TO OPERATE THE VALVE, THE CREW MUST REMOVE POWER FROM THE SWITCH'S CONTROL BUSSSES AND THEN USE THE GPC READ/WRITE PROCEDURES.

REFERENCES: VS70-943099 REV B EO B12, DD, CD

REPORT DATE 3/20/87 C-1706
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 1805  ABORT: 3/3

ITEM: MANIFOLD 1, L/R OX & FU ISOL VLV SWITCH
FAILURE MODE: SWITCH FAILS IN THE OPEN POSITION.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 1, L/R OX & FU ISOL VLVS
5) MANIFOLD 1, L/R OX & FU ISOL VLV SWITCH
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 07 S22; PNL 07 S27
PART NUMBER: 33V73A7S22; S27

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DE, CE

REPORT DATE 3/20/87  C-1707
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87

SUBSYSTEM: ARCS

MDAC ID: 1806

ABORT: 2/1R

ITEM: MANIFOLD 1, L/R OX & FU ISOL VLV SWITCH

FAILURE MODE: SWITCH FAILS IN THE CLOSED POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 1, L/R OX & FU ISOL VLVS
5) MANIFOLD 1, L/R OX & FU ISOL VLV SWITCH
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LOCATION: PNL 07 S22; PNL 07 S27

PART NUMBER: 33V73A7S22; S27

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DE, CE

REPORT DATE 03/22/87 C-1708
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE:  1/22/87
SUBSYSTEM:  ARCS
MDAC ID:  1807

ITEM:  MANIFOLD 1, L/R OX & FU ISOL VLV SWITCH
FAILURE MODE:  SWITCH FAILS IN THE GPC POSITION.

LEAD ANALYST:  V.J. BURKEMPER  SUBSYS LEAD:  D.J. PAUL

BREAKDOWN HIERARCHY:
1)  ELECTRICAL COMPONENTS
2)  CONTROLS
3)  PROP STOR & DIST SUBSYSTEM
4)  MANIFOLD 1, L/R OX & FU ISOL VLVS
5)  MANIFOLD 1, L/R OX & FU ISOL VLV SWITCH
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LOCATION:  PNL 07 S22; PNL 07 S27
PART NUMBER:  33V73A7S22; S27

CAUSES:  CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL
SHOCK, OVERLOAD

EFFECTS/RATIONALE:
VALVE CANNOT BE CONTROLLED BY SWITCH, ONLY BY MDM OPEN OR CLOSE
COMMANDS. TO OPERATE THE VALVE, THE CREW MUST USE THE GPC
READ/WRITE PROCEDURES. FAILURE OF THE SWITCH WHILE THE VALVE IS
IN THE CLOSED POSITION AND FAILURE OF EITHER INDIVIDUAL VALVE
AND DUAL VALVE MDM OPEN COMMAND PATHS WILL AFFECT PROPELLANT DUMP
LENGTHS DURING ABORTS OR ENTRY, MAY CAUSE THE INABILITY TO EXPEL
ENOUGH PROPELLANTS DURING RTLS ABORTS TO MEET THE TANK LANDING
WEIGHT CONSTRAINTS, AND/OR THE CG SAFETY BOUNDARIES, AND
MAY AFFECT ENTRY DTOs AND PTIs.

REFERENCES:  VS70-943099 REV B EO B12, DE, CE

REPORT DATE 03/22/87  C-1709
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1808

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 2/1R

ITEM: MANIFOLD 1, L/R OX & FU ISOL VLVS SWITCH OPEN
CONTACTS 1, 2
FAILURE MODE: SWITCH OPEN CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 1, L/R OX & FU ISOL VLVS
5) MANIFOLD 1, L/R OX & FU ISOL VLV SWITCH OPEN CONTACTS 1, 2
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CRITICALITIES

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LOCATION: PNL 07 S22; PNL 07 S27
PART NUMBER: 33V73A7S22; S27

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DE, CE

REPORT DATE 03/22/87 C-1710
INDEPENDENT ORBITER ASSESSMENT  
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87  HIGHEST CRITICALITY HDW/FUNC  FLIGHT: 3/3  ABORT: 3/3
SUBSYSTEM: ARCS  MDAC ID: 1809
ITEM: MANIFOLD 1, L/R OX & FU ISOL VLV SWITCH OPEN CONTACTS 1, 2
FAILURE MODE: SWITCH OPEN CONTACTS FAIL CLOSED.
LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS  
2) CONTROLS  
3) PROP STOR & DIST SUBSYSTEM  
4) MANIFOLD 1, L/R OX & FU ISOL VLVS  
5) MANIFOLD 1, L/R OX & FU ISOL VLV SWITCH OPEN CONTACTS 1, 2

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: PNL O7 S22; PNL O7 S27
PART NUMBER: 33V73A7S22; S27

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY MDM CLOSE COMMANDS. IF THE OPEN CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE OPEN OR GPC POSITION, THE VALVE WILL OPEN AND CANNOT BE CLOSED BY SWITCH OR MDM COMMAND.

REFERENCES: VS70-943099 REV B EO B12, DE, CE

REPORT DATE 3/20/87  C-1711
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
HIGHEST CRITICALITY: HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

SUBSYSTEM: ARCS
MDAC ID: 1810

ITEM: MANIFOLD 1, L/R OX & FU ISOL VLVS SWITCH GPC CONTACTS 3, 4
FAILURE MODE: SWITCH GPC CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. Burkemper
SUBSYS LEAD: D.J. Paul

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 1, L/R OX & FU ISOL VLVS
5) MANIFOLD 1, L/R OX & FU ISOL VLVS SWITCH GPC CONTACTS 3, 4
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 07 S22; PNL 07 S27
PART NUMBER: 33V73A7S22; S27

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, DE, CE

REPORT DATE 3/20/87 C-1712
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 1811  ABORT: 3/3

ITEM: MANIFOLD 1, L/R OX & FU ISOL VLVS SWITCH GPC CONTACTS 3, 4
FAILURE MODE: SWITCH GPC CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 1, L/R OX & FU ISOL VLVS
5) MANIFOLD 1, L/R OX & FU ISOL VLVS SWITCH GPC CONTACTS 3, 4

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: PNL 07 S22; PNL 07 S27
PART NUMBER: 33V73A7S22; S27

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, DE, CE

REPORT DATE 3/20/87  C-1713
### Independent Orbiter Assessment

**Orbiter Subsystem Analysis Worksheet**

**Date:** 1/22/87  
**Highest Criticality HDW/Func**: FLIGHT: 3/3  
**ABORT: 3/3**

**Item:** MANIFOLD 1, L/R OX & FU ISOL VLV SWITCH CLOSE CONTACTS 5, 6

**Failure Mode:** SWITCH CLOSE CONTACTS FAIL OPEN.

**Lead Analyst:** V.J. Burkemper  
**Subsys Lead:** D.J. Paul

**Breakdown Hierarchy:**
1) ELECTRICAL COMPONENTS  
2) CONTROLS  
3) PROP STOR & DIST SUBSYSTEM  
4) MANIFOLD 1, L/R OX & FU ISOL VLVLS  
5) MANIFOLD 1, L/R OX & FU ISOL VLV SWITCH CLOSE CONTACTS 5, 6

**Criticalities**

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**Redundancy Screens:** A [ ]  
**B [ ]**  
**C [ ]**

**Location:** PNL 07 S22; PNL 07 S27  
**Part Number:** 33V73A7S22; S27

**Causes:** CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

**Effects/Rationale:**  
REUNDANCY PROVIDED BY THE MDM CLOSE COMMANDS. IF THE CLOSE CONTACTS FAIL OPEN WHILE THE SWITCH IS IN ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION, CAN BE OPENED BY SWITCH COMMAND, BUT CANNOT BE CLOSED BY SWITCH COMMAND, ONLY BY MDM COMMAND. FAILURE OF ALL REDUNDANCY WILL CAUSE INABILITY TO CLOSE VALVE.

**References:** VS70-943099 REV B EO B12, DE, CE

**Report Date:** 3/20/87  
**C-1714**
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1813

ITEM: MANIFOLD 1, L/R OX & FU ISOL VLV SWITCH CLOSE CONTACTS 5, 6
FAILURE MODE: SWITCH CLOSE CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 1, L/R OX & FU ISOL VLVs
5) MANIFOLD 1, L/R OX & FU ISOL VLV SWITCH CLOSE CONTACTS 5, 6

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LOCATION: PNL 07 S22; PNL 07 S27
PART NUMBER: 33V73A7S22; S27

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DE, CE

REPORT DATE 03/22/87 C-1715
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1814
HIGHEST CRITICALITY HDW/FUNC FLIGHT: 3/3
ABORT: 3/3

ITEM: MANIFOLD 2, L/R OX & FU ISOL VLV SWITCH
FAILURE MODE: SWITCH FAILS IN THE OPEN POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 2, L/R OX & FU ISOL VLVS
5) MANIFOLD 2, L/R OX & FU ISOL VLV SWITCH

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 07 S23; PNL 07 S28
PART NUMBER: 33V73A7S23; S28

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DE, CE
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1815
HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 2/1R

ITEM: MANIFOLD 2, L/R OX & FU ISOL VLV SWITCH
FAILURE MODE: SWITCH FAILS IN THE CLOSED POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 2, L/R OX & FU ISOL VLVS
5) MANIFOLD 2, L/R OX & FU ISOL VLV SWITCH

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LOCATION: PNL 07 S23; PNL 07 S28
PART NUMBER: 33V73A7S23; S28

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DE, CE

REPORT DATE 03/22/87 C-1717
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
MDAC ID: 1816
FLIGHT: 3/2R
ABORT: 2/1R

ITEM: MANIFOLD 2, L/R OX & FU ISOL VLVS SWITCH
FAILURE MODE: SWITCH FAILS IN THE GPC POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 2, L/R OX & FU ISOL VLVS
5) MANIFOLD 2, L/R OX & FU ISOL VLVS SWITCH

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LOCATION: PNL 07 S23; PNL 07 S28
PART NUMBER: 33V73A7S23; S28

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
VALVE CANNOT BE CONTROLLED BY SWITCH, ONLY BY MDM OPEN OR CLOSE COMMANDS. TO OPERATE THE VALVE, THE CREW MUST USE THE GPC READ/WRITE PROCEDURES. FAILURE OF THE SWITCH WHILE THE VALVE IS IN THE CLOSED POSITION AND FAILURE OF EITHER INDIVIDUAL VALVE AND DUAL VALVE MDM OPEN COMMAND PATHS WILL AFFECT PROPELLANT DUMP LENGTHS DURING ABORTS OR ENTRY, MAY CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS DURING RTLS ABORTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS, AND/OR THE CG SAFETY BOUNDARIES, AND MAY AFFECT ENTRY DTOs AND PTIs.

REFERENCES: VS70-943099 REV B EO B12, DE, CE

REPORT DATE 03/22/87 C-1718
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/2R
MDAC ID: 1817  ABORT: 2/1R

ITEM: MANIFOLD 2, L/R OX & FU ISOL VLV SWITCH OPEN
FAILURE MODE: SWITCH OPEN CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 2, L/R OX & FU ISOL VLVs
5) MANIFOLD 2, L/R OX & FU ISOL VLV SWITCH OPEN CONTACTS 1, 2
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LOCATION: PNL 07 S23; PNL 07 S28
PART NUMBER: 33V73A7S23; S28

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DE, CE

REPORT DATE 03/22/87  C-1719
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87

SUBSYSTEM: ARCS

MDAC ID: 1818

ABORT: HDW/FUNC 3/3

ITEM: MANIFOLD 2, L/R OX & FU ISOL VLV SWITCH OPEN CONTACTS 1, 2

FAILURE MODE: SWITCH OPEN CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 2, L/R OX & FU ISOL VLVS
5) MANIFOLD 2, L/R OX & FU ISOL VLV SWITCH OPEN CONTACTS 1, 2

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 07 S23; PNL 07 S28

PART NUMBER: 33V73A7S23; S28

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DE, CE

REPORT DATE 3/20/87 C-1720
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1819

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: MANIFOLD 2, L/R OX & FU ISOL VLVS SWITCH GPC CONTACTS 3, 4
FAILURE MODE: SWITCH GPC CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 2, L/R OX & FU ISOL VLVS
5) MANIFOLD 2, L/R OX & FU ISOL VLV SWITCH GPC CONTACTS 3, 4

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 07 S23; PNL 07 S28
PART NUMBER: 33V73A7S23; S28

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, DE, CE

REPORT DATE 3/20/87 C-1721
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT: 3/3

MDAC ID: 1820

ABORT: 3/3

ITEM: MANIFOLD 2, L/R OX & FU ISOL VLVS SWITCH GPC CONTACTS 3, 4

FAILURE MODE: SWITCH GPC CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 2, L/R OX & FU ISOL VLVS
5) MANIFOLD 2, L/R OX & FU ISOL VLVS SWITCH GPC CONTACTS 3, 4

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 07 S23; PNL 07 S28

PART NUMBER: 33V73A7S23; S28

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, DE, CE

REPORT DATE 3/20/87 C-1722
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1821

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: MANIFOLD 2, L/R OX & FU ISOL VLV SWITCH CLOSE CONTACTS 5, 6
FAILURE MODE: SWITCH CLOSE CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 2, L/R OX & FU ISOL VLVS
5) MANIFOLD 2, L/R OX & FU ISOL VLV SWITCH CLOSE CONTACTS 5, 6
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 07 S23; PNL 07 S28
PART NUMBER: 33V73A7S23; S28

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE MDM CLOSE COMMANDS. IF THE CLOSE CONTACTS FAIL OPEN WHILE THE SWITCH IS IN ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION, CAN BE OPEED BY SWITCH COMMAND, BUT CANNOT BE CLOSED BY SWITCH COMMAND, ONLY BY MDM COMMAND. FAILURE OF ALL REDUNDANCY WILL CAUSE INABILITY TO CLOSE VALVE.

REFERENCES: VS70-943099 REV B EO B12, DE, CE

REPORT DATE 3/20/87 C-1723
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/2R
MDAC ID: 1822  ABORT: 2/1R

ITEM: MANIFOLD 2, L/R OX & FU ISOL VLV SWITCH CLOSE
CONTACTS 5, 6
FAILURE MODE: SWITCH CLOSE CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER   SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 2, L/R OX & FU ISOL VLVs
5) MANIFOLD 2, L/R OX & FU ISOL VLV SWITCH CLOSE CONTACTS 5, 6
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LOCATION: PNL 07 S23; PNL 07 S28
PART NUMBER: 33V73A7S23; S28

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DE, CE

REPORT DATE 03/22/87   C-1724
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
FLIGHT: 3/3
MDAC ID: 1823
ABORT: 3/3

ITEM: MANIFOLD 3, L/R OX & FU ISOL VLV SWITCH
FAILURE MODE: SWITCH FAILS IN THE OPEN POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 3, L/R OX & FU ISOL VLVs
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 07 S24; PNL 07 S29
PART NUMBER: 33V73A7S24; S29

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DF, CF

REPORT DATE 3/20/87 C-1725
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

MDAC ID: 1824

FLIGHT: 3/2R

ABORT: 2/1R

ITEM: MANIFOLD 3, L/R OX & FU ISOL VLVS SWITCH

FAILURE MODE: SWITCH FAILS IN THE CLOSED POSITION.

LEAD ANALYST: V.J. BURKEMPER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 3, L/R OX & FU ISOL VLVS
5) MANIFOLD 3, L/R OX & FU ISOL VLVS SWITCH

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LOCATION: PNL 07 S24; PNL 07 S29

PART NUMBER: 33V73A7S24; S29

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE MDM COMMANDS. IF THE SWITCH FAILS IN THE CLOSED POSITION, THE VALVE WILL CLOSE AND CANNOT BE OPENED BY SWITCH OR MDM COMMAND. TO OPEN THE VALVE, THE CREW MUST REMOVE POWER FROM THE SWITCH'S CONTROL BUSSES AND USE GPC READ/WRITE PROCEDURES. FAILURE OF ALL REDUNDANCY WILL AFFECT PROPPELLANT DUMP LENGTHS DURING ABORTS OR ENTRY, MAY CAUSE THE INABILITY TO EXPEL ENOUGH PROPPELLANTS DURING RTLS ABORTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES, AND MAY AFFECT ENTRY DTOs AND PTIs.

REFERENCES: VS70-943099 REV B EO B12, DF, CF

REPORT DATE 03/22/87 C-1726
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/2R
MDAC ID: 1825  ABORT: 2/1R

ITEM: MANIFOLD 3, L/R OX & FU ISOL VLV SWITCH
FAILURE MODE: SWITCH FAILS IN THE GPC POSITION.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 3, L/R OX & FU ISOL VLVs
5) MANIFOLD 3, L/R OX & FU ISOL VLV SWITCH

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LOCATION: PNL 07 S24; PNL 07 S29
PART NUMBER: 33V73A7S24; S29

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
VALVE CANNOT BE CONTROLLED BY SWITCH, ONLY BY MDM OPEN OR CLOSE COMMANDS. TO OPERATE THE VALVE, THE CREW MUST USE THE GPC READ/WRITE PROCEDURES. FAILURE OF THE SWITCH WHILE THE VALVE IS IN THE CLOSED POSITION AND FAILURE OF EITHER INDIVIDUAL VALVE AND DUAL VALVE MDM OPEN COMMAND PATHS WILL AFFECT PROPELLANT DUMP LENGTHS DURING ABORTS OR ENTRY, MAY CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS DURING RTLS ABORTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS, AND/OR THE CG SAFETY BOUNDARIES, AND MAY AFFECT ENTRY DTOs AND PTIs.

REFERENCES: VS70-943099 REV B EO B12, DE, CE

REPORT DATE 03/22/87   C-1727
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1826

ITEM: MANIFOLD 3, L/R OX & FU ISOL VLV SWITCH OPEN
FAILURE MODE: SWITCH OPEN CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 3, L/R OX & FU ISOL VLVs
5) MANIFOLD 3, L/R OX & FU ISOL VLV SWITCH OPEN CONTACTS 1, 2

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LOCATION: PNL 07 S24; PNL 07 S29
PART NUMBER: 33V73A7S24; S29

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DF, CF

REPORT DATE 03/22/87 C-1728
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
MDAC ID: 1827
FLIGHT: 3/3
ABORT: 3/3

ITEM: MANIFOLD 3, L/R OX & FU ISOL VLVS SWITCH OPEN
CONTACTS 1, 2
FAILURE MODE: SWITCH OPEN CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 3, L/R OX & FU ISOL VLVS
5) MANIFOLD 3, L/R OX & FU ISOL VLVS SWITCH OPEN CONTACTS 1, 2

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 07 S24; PNL 07 S29
PART NUMBER: 33V73A7S24; S29

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DF, CF

REPORT DATE 3/20/87 C-1729
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

SUBSYSTEM: ARCS
MDAC ID: 1828

ITEM: MANIFOLD 3, L/R OX & FU ISOL VLVS SWITCH GPC CONTACTS 3, 4

FAILURE MODE: SWITCH GPC CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 3, L/R OX & FU ISOL VLVS
5) MANIFOLD 3, L/R OX & FU ISOL VLVS SWITCH GPC CONTACTS 3, 4
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 07 S24; PNL 07 S29
PART NUMBER: 33V73A7S24; S29

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, DE, CE

REPORT DATE 3/20/87 C-1730
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 1829  ABORT: 3/3

ITEM: MANIFOLD 3, L/R OX & FU ISOL VLV SWITCH GPC CONTACTS 3, 4
FAILURE MODE: SWITCH GPC CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 3, L/R OX & FU ISOL VLVS
5) MANIFOLD 3, L/R OX & FU ISOL VLV SWITCH GPC CONTACTS 3, 4

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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION:  PNL 07 S24; PNL 07 S29
PART NUMBER:  33V73A7S24; S29

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, DE, CE

REPORT DATE 3/20/87  C-1731
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1830

HIGHEST CRITICALITY
HDW/ func: 3/3
FLIGHT: 3/3
ABORT: 3/3

ITEM: MANIFOLD 3, L/R OX & FU ISOL VLV SWITCH CLOSE CONTACTS 5, 6
FAILURE MODE: SWITCH CLOSE CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 3, L/R OX & FU ISOL VLVs
5) MANIFOLD 3, L/R OX & FU ISOL VLV SWITCH CLOSE CONTACTS 5, 6
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 07 S24; PNL 07 S29
PART NUMBER: 33V73A7S24; S29

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE MDM CLOSE COMMANDS. IF THE CLOSE CONTACTS FAIL OPEN WHILE THE SWITCH IS IN ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION, CAN BE OPEED BY SWITCH COMMAND, BUT CANNOT BE CLOSED BY SWITCH COMMAND, ONLY BY MDM COMMAND. FAILURE OF ALL REDUNDANCY WILL CAUSE INABILITY TO CLOSE VALVE.

REFERENCES: VS70-943099 REV B EO B12, DF, CF

REPORT DATE 3/20/87
C-1732
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1831

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 2/1R

ITEM: MANIFOLD 3, L/R OX & FU ISOL VLV SWITCH CLOSE CONTACTS 5, 6
FAILURE MODE: SWITCH CLOSE CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 3, L/R OX & FU ISOL VLV SWITCH CLOSE CONTACTS 5, 6
5) MANIFOLD 3, L/R OX & FU ISOL VLV SWITCH CLOSE CONTACTS 5, 6
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LOCATION: PNL 07 S24; PNL 07 S29
PART NUMBER: 33V73A7S24; S29

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DF, CF

REPORT DATE 03/22/87 C-1733
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1832

HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: MANIFOLD 4, L/R OX & FU ISOL VLV SWITCH
FAILURE MODE: SWITCH FAILS IN THE OPEN POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 4, L/R OX & FU ISOL VLVS
5) MANIFOLD 4, L/R OX & FU ISOL VLV SWITCH

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 07 S25; PNL 07 S30
PART NUMBER: 33V73A7S25; S30

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DF, CF

REPORT DATE 3/20/87 C-1734
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1833

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 2/1R

ITEM: MANIFOLD 4, L/R OX & FU ISOL VLV SWITCH
FAILURE MODE: SWITCH FAILS IN THE CLOSED POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 4, L/R OX & FU ISOL VLVs
5) MANIFOLD 4, L/R OX & FU ISOL VLV SWITCH

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LOCATION: PNL 07 S25; PNL 07 S30
PART NUMBER: 33V73A7S25; S30

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DF, CF

REPORT DATE 03/22/87 C-1735
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/2R
MDAC ID: 1834  ABORT: 2/1R

ITEM: MANIFOLD 4, L/R OX & FU ISOL VLV SWITCH
FAILURE MODE: SWITCH FAILS IN THE GPC POSITION.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 4, L/R OX & FU ISOL VLVS
5) MANIFOLD 4, L/R OX & FU ISOL VLV SWITCH

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LOCATION: PNL 07 S25; PNL 07 S30
PART NUMBER: 33V73A7S25; S30

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
VALVE CANNOT BE CONTROLLED BY SWITCH, ONLY BY MDM OPEN OR CLOSE COMMANDS. TO OPERATE THE VALVE, THE CREW MUST USE THE GPC READ/WRITE PROCEDURES. FAILURE OF THE SWITCH WHILE THE VALVE IS IN THE CLOSED POSITION AND FAILURE OF EITHER INDIVIDUAL VALVE AND DUAL VALVE MDM OPEN COMMAND PATHS WILL AFFECT PROPELLANT DUMP LENGTHS DURING ABORTS OR ENTRY, MAY CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS DURING RTLS ABORTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS, AND/OR THE CG SAFETY BOUNDARIES, AND MAY AFFECT ENTRY DTOS AND PTIS.

REFERENCES: VS70-943099 REV B EO B12, DE, CE

REPORT DATE 03/22/87  C-1736
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/2R
MDAC ID: 1835  ABORT: 2/1R

ITEM: MANIFOLD 4, L/R OX & FU ISOL VLV SWITCH OPEN
COMMAND 1, 2
FAILURE MODE: SWITCH OPEN CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 4, L/R OX & FU ISOL VLVS
5) MANIFOLD 4, L/R OX & FU ISOL VLV SWITCH OPEN COMMAND 1, 2
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LOCATION: PNL 07 S25; PNL 07 S30
PART NUMBER: 33V73A7S25; S30

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DF, CF

REPORT DATE 03/22/87    C-1737
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1836
HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: MANIFOLD 4, L/R OX & FU ISOL VLV SWITCH OPEN
COMMAND 1, 2
FAILURE MODE: SWITCH OPEN CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 4, L/R OX & FU ISOL VLVS
5) MANIFOLD 4, L/R OX & FU ISOL VLV SWITCH OPEN COMMAND 1, 2

CRITICALITIES
FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC
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LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 07 S25; PNL 07 S30
PART NUMBER: 33V73A7S25; S30

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DF, CF

REPORT DATE 3/20/87 C-1738
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87

HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 1837 ABORT: 3/3

ITEM: MANIFOLD 4, L/R OX & FU ISOL VLV SWITCH GPC
COMMAND 3, 4
FAILURE MODE: SWITCH GPC CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 4, L/R OX & FU ISOL VLVs
5) MANIFOLD 4, L/R OX & FU ISOL VLV SWITCH GPC COMMAND 3, 4
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: PNL 07 S25; PNL 07 S30

PART NUMBER: 33V73A7S25; S30

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE: NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, DE, CE

REPORT DATE 3/20/87 C-1739
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 1838  ABORT: 3/3

ITEM: MANIFOLD 4, L/R OX & FU ISOL VLVS SWITCH GPC
COMMAND 3, 4
FAILURE MODE: SWITCH GPC CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 4, L/R OX & FU ISOL VLVS
5) MANIFOLD 4, L/R OX & FU ISOL VLVS SWITCH GPC COMMAND 3, 4
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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION: PNL 07 S25; PNL 07 S30
PART NUMBER: 33V73A7S25; S30

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, DE, CE

REPORT DATE 3/20/87  C-1740
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 1839 ABORT: 3/3

ITEM: MANIFOLD 4, L/R OX & FU ISOL VLV SWITCH CLOSE
COMMAND 5, 6
FAILURE MODE: SWITCH CLOSE CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 4, L/R OX & FU ISOL VLVS
5) MANIFOLD 4, L/R OX & FU ISOL VLV SWITCH CLOSE COMMAND 5, 6

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 07 S25; PNL 07 S30
PART NUMBER: 33V73A7S25; S30

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE MDM CLOSE COMMANDS. IF THE CLOSE CONTACTS FAIL OPEN WHILE THE SWITCH IS IN ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION, CAN BE OPENED BY SWITCH COMMAND, BUT CANNOT BE CLOSED BY SWITCH COMMAND, ONLY BY MDM COMMAND.
FAILURE OF ALL REDUNDANCY WILL CAUSE INABILITY TO CLOSE VALVE.

REFERENCES: VS70-943099 REV B EO B12, DF, CF

REPORT DATE 3/20/87 C-1741
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87

SUBSYSTEM: ARCS

MDAC ID: 1840

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 3/2R

ABORT: 2/1R

ITEM: MANIFOLD 4, L/R OX & FU ISOL VLV SWITCH CLOSE

COMMAND 5, 6

FAILURE MODE: SWITCH CLOSE CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 4, L/R OX & FU ISOL VLV

5) MANIFOLD 4, L/R OX & FU ISOL VLV SWITCH CLOSE COMMAND 5, 6

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LOCATION: PNL 07 S25; PNL 07 S30

PART NUMBER: 33V73A7S25; S30

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DF, CF

REPORT DATE 03/22/87 C-1742
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 1841  ABORT: 3/3

ITEM: MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH
FAILURE MODE: SWITCH FAILS IN THE OPEN POSITION

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVS
5) MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: PNL 07 S26; PNL 07 S31
PART NUMBER: 33V73A7S26; S31

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO REDUNDANCY PROVIDED TO CLOSE THE VALVE. IF THE SWITCH FAILS IN THE OPEN POSITION WHILE THE VALVE IS IN ANY POSITION, THE VALVE WILL OPEN. FAILURE WILL CAUSE THE INABILITY TO CLOSE THE VALVE.

REFERENCES: VS70-943099 REV B EO B12, DA, CA

REPORT DATE 3/20/87  C-1743
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/2R
MDAC ID: 1842  ABORT: 3/3

ITEM: MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH
FAILURE MODE: SWITCH FAILS IN THE CLOSED POSITION

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVS
5) MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH

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LOCATION:  PNL 07 S26; PNL 07 S31
PART NUMBER: 33V73A7S26; S31

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DA, CA
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/2R
MDAC ID: 1843  ABORT: 3/3

ITEM: MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH
FAILURE MODE: SWITCH FAILS IN THE GPC POSITION

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVS
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LOCATION: PNL 07 S26; PNL 07 S31
PART NUMBER: 33V73A7S26; S31

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL
SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE MDM OPEN COMMANDS. TO OPERATE THE
VALVE, THE CREW MUST USE THE GPC READ/WRITE PROCEDURES. IF THE
VALVE IS CLOSED AND THE MDM OPEN COMMAND PATH FAILS, THE VALVE
CANNOT BE OPENED BY THE MDM SWITCH COMMANDS, CAUSING THE LOSS OF
THE VERNIER RCS.

REFERENCES: VS70-943099 REV B EO B12, DA, CA

REPORT DATE 3/20/87  C-1745
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87

SUBSYSTEM: ARCS
MDAC ID: 1844

HDW/FUNC

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH OPEN CONTACTS 1, 2
FAILURE MODE: SWITCH OPEN CONTACTS FAIL OPEN

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVS
5) MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH OPEN CONTACTS 1, 2

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REDUNDANCY SCREENS: A [ ]    B [ ]    C [ ]

LOCATION: PNL 07 S26; PNL 07 S31
PART NUMBER: 33V73A7826; S31

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, DA, CA

REPORT DATE 3/20/87 C-1746
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 1845 ABORT: 3/3

ITEM: MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH OPEN
CONTACTS 1, 2
FAILURE MODE: SWITCH OPEN CONTACTS FAIL CLOSED

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVS
5) MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH OPEN CONTACTS 1, 2

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 07 S26; PNL 07 S31
PART NUMBER: 33V73A7S26; S31

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, DA, CA

REPORT DATE 3/20/87 C-1747
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1846

HIGHEST CRITICALITY

HDW/FUNC

FLIGHT: 3/3
ABORT: 3/3

ITEM: MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH GPC CONTACTS 3, 4

FAILURE MODE: SWITCH OPEN CONTACTS FAIL OPEN

LEAD ANALYST: V.J. BURKEMPER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVs
5) MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH GPC CONTACTS 3, 4

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 07 S26; PNL 07 S31
PART NUMBER: 33V73A7S26; S31

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, DA, CA

REPORT DATE 3/20/87 C-1748
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1847

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH GPC
CONTACTS 3, 4
FAILURE MODE: SWITCH OPEN CONTACTS FAIL CLOSED

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVS
5) MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH GPC CONTACTS 3, 4

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 07 S26; PNL 07 S31
PART NUMBER: 33V73A7S26; S31

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, DA, CA

REPORT DATE 3/20/87   C-1749
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 1848  ABORT: 3/3

ITEM: MANIFOLD 5, L/R OX & FU ISOL VLVS SWITCH CLOSE
CONTACTS 5, 6
FAILURE MODE: SWITCH CLOSE CONTACTS FAIL OPEN

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVS
5) MANIFOLD 5, L/R OX & FU ISOL VLVS SWITCH CLOSE CONTACTS 5, 6

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: PNL 07 S26; PNL 07 S31
PART NUMBER: 33V73A7S26; S31

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE MDM CLOSE COMMAND. IF THE CLOSE CONTACTS FAIL OPEN WHILE THE SWITCH IS IN ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION, CAN BE OPENED BY THE SWITCH OR BY THE MDM COMMAND, AND CANNOT BE CLOSED BY THE SWITCH COMMAND, ONLY BY THE MDM COMMAND. FAILURE OF ALL REDUNDANCY WILL RESULT IN THE INABILITY TO CLOSE THE VALVE.

REFERENCES: VS70-943099 REV B EO B12, DA, CA

REPORT DATE 3/20/87  C-1750
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87

HIGHEST CRITICALITY
HDW/FUNC

SUBSYSTEM: ARCS
MDAC ID: 1849

FLIGHT: 3/2R
ABORT: 3/3

ITEM: MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH CLOSE CONTACTS 5, 6
FAILURE MODE: SWITCH CLOSE CONTACTS FAIL CLOSED

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVS
5) MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH CLOSE CONTACTS 5, 6

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LOCATION: PNL 07 S26; PNL 07 S31
PART NUMBER: 33V73A7S26; S31

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DA, CA

REPORT DATE 3/20/87 C-1751
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1850

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 3/3

ITEM: MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH OPEN
CONTACTS 7, 8
FAILURE MODE: SWITCH OPEN CONTACTS FAIL OPEN

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVs
5) MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH OPEN CONTACTS 7, 8

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LOCATION: PNL 07 S26; PNL 07 S31
PART NUMBER: 33V73A7S26; S31

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE MDM OPEN COMMAND. IF THE OPEN CONTACTS FAIL OPEN WHILE THE SWITCH IS IN ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION, CAN BE CLOSED BY SWITCH OR MDM COMMAND, BUT CANNOT BE OPENED BY SWITCH COMMAND, ONLY BY MDM COMMAND. FAILURE OF ALL REDUNDANCY WILL CAUSE THE INABILITY TO OPEN THE VALVE, AND WILL CAUSE LOSS OF THE VERNIER RCS.

REFERENCES: VS70-943099 REV B EO B12, DA, CA

REPORT DATE 3/20/87  C-1752
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1851

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: MANIFOLD 5, L/R OX & FU ISOL VLVS SWITCH OPEN CONTACTS 7, 8
FAILURE MODE: SWITCH OPEN CONTACTS FAIL CLOSED

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVS
5) MANIFOLD 5, L/R OX & FU ISOL VLVS SWITCH OPEN CONTACTS 7, 8
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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION: PNL 07 S26; PNL 07 S31
PART NUMBER: 33V73A7S26; S31

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO REDUNDANCY PROVIDED TO CLOSE THE VALVE. IF THE OPEN CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE OPEN OR GPC POSITION, THE VALVE WILL OPEN. IF THE OPEN CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE CLOSED POSITION, OR IF THE MDM CLOSE COMMAND IS ALSO PRESENT, THE VALVE WILL CYCLE OPEN AND CLOSED UNTIL CONTROL BUS POWER TO THE OPEN OR CLOSE CONTACTS IS REMOVED, OR UNTIL THE MDM CLOSE COMMAND IS REMOVED. FAILURE OF ALL REDUNDANCY WILL CAUSE THE INABILITY TO CLOSE THE VALVE.

REFERENCES: VS70-943099 REV B EO B12, DA, CA

REPORT DATE 3/20/87  C-1753
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87

SUBSYSTEM: ARCS
MDAC ID: 1852

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 3/3

ITEM: MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH GPC CONTACTS 9, 10
FAILURE MODE: SWITCH GPC CONTACTS FAIL OPEN

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVs
5) MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH GPC CONTACTS 9, 10
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LOCATION: PNL 07 $26; PNL 07 $31
PART NUMBER: 33V73A7S26; $31

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, DA, CA

REPORT DATE 3/20/87 C-1754
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
HIGHEST CRITICALITY
SUBSYSTEM: ARCS
MDAC ID: 1853

ITEM: MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH GPC CONTACTS 9, 10
FAILURE MODE: SWITCH GPC CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVs
5) MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH GPC CONTACTS 9, 10

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LOCATION: PNL 07 S26; PNL 07 S31
PART NUMBER: 33V73A7S26; S31

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE OTHER CLOSE CONTACTS AND THE SWITCH AND MDM OPEN COMMANDS. FIRST FAILURE WILL HAVE NO EFFECT. FAILURE OF ALL REDUNDANCY WILL CAUSE THE INABILITY TO OPEN THE VALVE AMD LOSS OF THE VERNIER RCS.

REFERENCES: VS70-943099 REV B EO B12, DA, CA

REPORT DATE 3/20/87 C-1755
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1854

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH CLOSE CONTACTS 11, 12
FAILURE MODE: SWITCH CLOSE CONTACTS FAIL OPEN

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DTST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVS
5) MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH CLOSE CONTACTS 11, 12
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 07 S26; PNL 07 S31
PART NUMBER: 33V73A7S26; S31

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL
SHock, OVERLOAD

EFFECTS/RATIONALE:
NO REDUNDANCY. IF THE CLOSE CONTACTS FAIL OPEN WHILE THE SWITCH
IS IN ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION, CAN
BE OPENED BY THE SWITCH OR BY MDM COMMAND, BUT CANNOT BE CLOSED
BY THE SWITCH OR MDM COMMAND. FAILURE WILL CAUSE THE INABILITY
TO CLOSE THE VALVE.

REFERENCES: VS70-943099 REV B EO B12, DA, CA

REPORT DATE 3/20/87 C-1756
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1855

ITEM: MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH CLOSE CONTACTS 11, 12
FAILURE MODE: SWITCH CLOSE CONTACTS FAIL CLOSED

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 5, L/R OX & FU ISOL VLVs
5) MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH CLOSE CONTACTS 11, 12

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LOCATION: PNL 07 S26; PNL 07 S31
PART NUMBER: 33V73A7S26; S31

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE OTHER SWITCH CLOSE CONTACTS. IF THE CLOSE CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION, AND CAN BE CLOSED AND OPENED BY SWITCH OR MDM COMMAND. FAILURE OF ALL REDUNDANCY WILL CAUSE THE INABILITY TO OPEN THE VALVE, AND LOSS OF THE VERNIER RCS.

REFERENCES: VS70-943099 REV B EO B12, DA, CA

REPORT DATE 3/20/87 C-1757
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87

SUBSYSTEM: ARCS

MDAC ID: 1856

ITEM: L/R OX & FU CROSSFEED VLV 1/2 & 3/4/5 SWITCH

TALKBACK FAILURE MODE: ERRONEOUS INDICATION (FAILS HIGH, FAILS LOW, FAILS MIDTRAVEL)

LEAD ANALYST: V.J. BURKEMPER

SUBSYSTEM: ARCS

DATE: 1/22/87

SUBSYSTEM: ARCS

MDAC ID: 1856

ITEM: L/R OX & FU CROSSFEED VLV 1/2 & 3/4/5 SWITCH

TALKBACK FAILURE MODE: ERRONEOUS INDICATION (FAILS HIGH, FAILS LOW, FAILS MIDTRAVEL)

LEAD ANALYST: V.J. BURKEMPER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU CROSSFEED VLV 1/2 & 3/4/5 SWITCH
5) L/R OX & FU CROSSFEED VLV 1/2 & 3/4/5 SWITCH TALKBACK
6) 7) 8) 9)

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LOCATION: PNL 07 DS23, DS24; PNL 07 DS25, DS26

PART NUMBER: 33V73A7DS23, DS24; DS25, DS26

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

AFT L/R RCS CROSSFEED 1/2 & 3/4/5 POSITION INDICATION WOULD FALSELY SHOW A BARBERPOLE INDICATING EITHER THE FU OR OX VALVES ARE STUCK PARTIALLY OPEN/CLOSED OR THERE IS A POSITION MISMATCH BETWEEN THE TWO VALVES. LOSS OF ALL REDUNDANCY WOULD RESULT IN LOSS OF DIRECT VALVE TALKBACK TO CREW. WORST CASE WOULD BE FALSELY FAILING THE VALVE CLOSED RESULTING IN LOSS OF MISSION DUE TO SAFETY CONSIDERATIONS (ONE FAILURE AWAY FROM LOSS OF VEHICLE/LIFE).

REFERENCES: VS70-943099 REV B EO B12, DA, CA

REPORT DATE 3/20/87 C-1758
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1857

ITEM: L/R OX & FU TK ISOL VLV 1/2 SWITCH TALKBACK
FAILURE MODE: ERRONEOUS INDICATION (FAILS HIGH, FAILS LOW, FAILS MIDTRAVEL)

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 1/2 SWITCH
5) L/R OX & FU TK ISOL VLV 1/2 SWITCH TALKBACK

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LOCATION: PNL 07 DS7; PNL 07 DS10
PART NUMBER: 33V73A7DS7; DS10

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
AFT L/R RCS TK ISOL 1/2 POSITION INDICATION WOULD FALSELY SHOW A BARBERPOLE INDICATING EITHER THE FU OR OX VALVES ARE STUCK PARTIALLY OPEN/CLOSED OR THERE IS A POSITION MISMATCH BETWEEN THE TWO VALVES. LOSS OF ALL REDUNDANCY WOULD RESULT IN LOSS OF DIRECT VALVE TALKBACK TO CREW. WORST CASE WOULD BE FALSELY FAILING THE VALVE CLOSED RESULTING IN LOSS OF MISSION DUE TO SAFETY CONSIDERATIONS (ONE FAILURE AWAY FROM LOSS OF VEHICLE/LIFE).

REFERENCES: VS70-943099 REV B EO B12, DA, CA

REPORT DATE 3/20/87 C-1759
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87

SUBSYSTEM: ARCS

MDAC ID: 1858

ITEM: L/R OX & FU TK ISOL VLV 3/4/5 A OR B SWITCH
TAILBACK
FAILURE MODE: ERRONEOUS INDICATION (FAILS HIGH, FAILS LOW, FAILS MIDTRAVEL)

LEAD ANALYST: V.J. BURKEMPER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) PROP STOR & DIST SUBSYSTEM
4) L/R OX & FU TK ISOL VLV 3/4/5 A OR B SWITCH
5) L/R OX & FU TK ISOL VLV 3/4/5 A OR B SWITCH TALKBACK
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LOCATION: PNL 07 DS8, DS9; PNL 07 DS11, DS12

PART NUMBER: 33V73DS8, DS9; DS11, DS12

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
AFT L/R RCS TK ISOL 3/4/5 POSITION INDICATION WOULD FALSELY SHOW A BARBERPOLE INDICATING EITHER THE FU OR OX A OR B VALVES ARE STUCK PARTIALLY OPEN/CLOSED OR THERE IS A POSITION MISMATCH BETWEEN THE TWO VALVES. LOSS OF ALL REDUNDANCY WOULD RESULT IN LOSS OF DIRECT VALVE TALKBACK TO CREW. WORST CASE WOULD BE FALSELY FAILING THE A OR B VALVE CLOSED RESULTING IN LOSS OF MISSION DUE TO SAFETY CONSIDERATIONS (ONE FAILURE AWAY FROM LOSS OF VEHICLE/LIFE).

REFERENCES: VS70-943099 REV B EO B12, DA, CA

REPORT DATE 3/20/87 C-1760
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/22/87
SUBSYSTEM: ARCS
MDAC ID: 1859

ITEM: MANIFOLD 1, 2, 3, 4, 5, L/R OX & FU VLV SWITCH TALKBACK
FAILURE MODE: ERRONEOUS INDICATION (FAILS HIGH, FAILS LOW, FAILS MIDTRAVEL)

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) PROP STOR & DIST SUBSYSTEM
4) MANIFOLD 1, 2, 3, 4, 5, L/R OX & FU ISOL VLV SWITCH
5) MANIFOLD 1, 2, 3, 4, 5, L/R OX & FU VLV SWITCH TALKBACK

CRITICALITIES

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LOCATION: PNL 07 DS13-DS17; PNL 07 DS18-DS22
PART NUMBER: 33V73A7DS13-DS17; DS18-DS22

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
AFT RCS MANIFOLD 1, 2, 3, 4, 5 L/R POSITION INDICATION WOULD FALSELY SHOW A BARBERPOLE INDICATING EITHER THE FU OR OX A OR B VALVES ARE STUCK PARTIALLY OPEN/CLOSED OR THERE IS A POSITION MISMATCH BETWEEN THE TWO VALVES. LOSS OF ALL REDUNDANCY WOULD RESULT IN LOSS OF DIRECT VALVE TALKBACK TO CREW. WORST CASE WOULD BE FALSELY FAILING THE VALVE CLOSED RESULTING IN LOSS OF MISSION DUE TO SAFETY CONSIDERATIONS (ONE FAILURE AWAY FROM LOSS OF VEHICLE/LIFE).

REFERENCES: VS70-943099 REV B EO B12, DA, CA

REPORT DATE 03/22/87 C-1761
INDEPENDENT ORBITER ASSESSMENT
ORBiter SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
FLIGHT: 3/3
MDAC ID: 1860
ABORT: 3/3

ITEM: L/R FU TANK ULLAGE PPRESS SENSOR
FAILURE MODE: INDICATES HIGHER PRESSURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) PROP STOR & DIST SUBSYSTEM
4) FU TK
5) L/R FU TANK ULLAGE PPRESS SENSOR
6)
7)
8)
9)

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42PT205; 52V42PT305

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE OF TANK TEMPERATURE SENSOR AND REDUNDANT PRESSURE SENSOR WILL CAUSE CREW AND GROUND DIFFICULTY IN DETECTING A TANK LEAK. CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1762
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 1861

ITEM: L/R FU TANK ULLAGE PPRESS SENSOR
FAILURE MODE: INDICATES LOWER PRESSURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) PROP STOR & DIST SUBSYSTEM
4) FU TK
5) L/R FU TANK ULLAGE PPRESS SENSOR

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42PT205; 52V42PT305

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE OF TANK TEMPERATURE SENSOR AND REDUNDANT PRESSURE SENSOR WILL CAUSE CREW AND GROUND DIFFICULTY IN DETECTING A TANK LEAK. CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1763
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 1862

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: L/R FU TANK OUT PRESS SENSOR
FAILURE MODE: INDICATES HIGHER PRESSURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) PROP STOR & DIST SUBSYSTEM
4) FU TK
5) L/R FU TANK OUT PRESS SENSOR

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42PT207; 52V42PT307

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE OF TANK TEMPERATURE SENSOR AND REDUNDANT PRESSURE SENSOR WILL CAUSE CREW AND GROUND DIFFICULTY IN DETECTING A TANK LEAK. CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1764
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87  HIGHEST CRITICALITY
SUBSYSTEM: ARCS  HDW/FUNC  FLIGHT: 3/3
MDAC ID: 1863  ABORT: 3/3

ITEM: L/R FU TANK OUT PRESS SENSOR
FAILURE MODE: INDICATES LOWER PRESSURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) PROP STOR & DIST SUBSYSTEM
4) FU TK
5) L/R FU TANK OUT PRESS SENSOR

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42PT207; 52V42PT307

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE OF TANK TEMPERATURE SENSOR AND REDUNDANT PRESSURE SENSOR WILL CAUSE CREW AND GROUND DIFFICULTY IN DETECTING A TANK LEAK. CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1765
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 1864  ABORT: 3/3

ITEM: L/R OX TANK ULLAGE PPRESS SENSOR
FAILURE MODE: INDICATES HIGHER PRESSURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) PROP STOR & DIST SUBSYSTEM
4) OX TK
5) L/R OX TANK ULLAGE PPRESS SENSOR
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42PT206; 52V42PT306

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE OF TANK TEMPERATURE SENSOR AND REDUNDANT PRESSURE SENSOR WILL CAUSE CREW AND GROUND DIFFICULTY IN DETECTING A TANK LEAK. CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1766
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87

HIGHEST CRITICALITY

HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT: 3/3

MDAC ID: 1865

ABORT: 3/3

ITEM: L/R OX TANK ULLAGE PPRESS SENSOR

FAILURE MODE: INDICATES LOWER PRESSURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) PROP STOR & DIST SUBSYSTEM
4) OX TK
5) L/R OX TANK ULLAGE PPRESS SENSOR

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS

PART NUMBER: 51V42PT206; 52V42PT306

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE OF TANK TEMPERATURE SENSOR AND REDUNDANT PRESSURE SENSOR WILL CAUSE CREW AND GROUND DIFFICULTY IN DETECTING A TANK LEAK. CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1767
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87

HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

SUBSYSTEM: ARCS
MDAC ID: 1866

ITEM: L/R OX TANK OUT PRESS SENSOR
FAILURE MODE: INDICATES HIGHER PRESSURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) PROP STOR & DIST SUBSYSTEM
4) OX TK
5) L/R OX TANK OUT PRESS SENSOR

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42PT208; 52V42PT308

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE OF TANK TEMPERATURE SENSOR AND REDUNDANT PRESSURE SENSOR WILL CAUSE CREW AND GROUND DIFFICULTY IN DETECTING A TANK LEAK. CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1768
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 1867 ABORT: 3/3

ITEM: L/R OX TANK OUT PRESS SENSOR
FAILURE MODE: INDICATES LOWER PRESSURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) PROP STOR & DIST SUBSYSTEM
4) OX TK
5) L/R OX TANK OUT PRESS SENSOR

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42PT208; 52V42PT308

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE OF TANK TEMPERATURE SENSOR AND REDUNDANT PRESSURE SENSOR WILL CAUSE CREW AND GROUND DIFFICULTY IN DETECTING A TANK LEAK. CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1769
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 1868

ITEM: L/R FU TANK TEMP-1 TEMP SENSOR
FAILURE MODE: INDICATES HIGHER TEMPERATURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) PROP STOR & DIST SUBSYSTEM
4) FU TK
5) L/R FU TANK TEMP-1 TEMP SENSOR
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42TT203; 52V42TT303

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE OF TANK PRESSURE SENSORS WILL CAUSE CREW AND GROUND DIFFICULTY IN DETECTING A TANK LEAK. CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1770
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 1869

ITEM: L/R FU TANK TEMP-1 TEMP SENSOR
FAILURE MODE: INDICATES LOWER TEMPERATURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) PROP STOR & DIST SUBSYSTEM
4) FU TK
5) L/R FU TANK TEMP-1 TEMP SENSOR

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42TT203; 52V42TT303

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE OF TANK PRESSURE SENSORS WILL CAUSE CREW AND GROUND DIFFICULTY IN DETECTING A TANK LEAK. CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1771
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 1870  ABORT: 3/3

ITEM: L/R OX TANK TEMP-1 TEMP SENSOR
FAILURE MODE: INDICATES HIGHER TEMPERATURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) PROP STOR & DIST SUBSYSTEM
4) OX TK
5) L/R OX TANK TEMP-1 TEMP SENSOR
6)
7)
8)
9)

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42TT204; 52V42TT304

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE OF TANK PRESSURE SENSORS WILL CAUSE CREW AND GROUND DIFFICULTY IN DETECTING A TANK LEAK. CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1772
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87

SUBSYSTEM: ARCS
MDAC ID: 1871

ITEM: L/R OX TANK TEMP-1 TEMP SENSOR
FAILURE MODE: INDICATES LOWER TEMPERATURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) PROP STOR & DIST SUBSYSTEM
4) OX TK
5) L/R OX TANK TEMP-1 TEMP SENSOR

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS

PART NUMBER: 51V42TT204; 52V42TT304

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE OF TANK PRESSURE SENSORS WILL CAUSE CREW AND GROUND DIFFICULTY IN DETECTING A TANK LEAK. CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1773
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  
SUBSYSTEM: ARCS  
MDAC ID: 1872  

HIGHEST CRITICALITY
FLIGHT: 3/2R  
ABORT: 3/3

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS HIGH

LEAD ANALYST: R.A. O'DONNELL  
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, RJDA
5) CONTROLLER, REMOTE POWER
6)
7)
8)
9)

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LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131RPC22

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
POWER SUPPLIED TO MANIFOLD DRIVER AND LOGIC CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION VALVE. PRI MANIFOLD DRIVER PWR REQUIRED OFF FOR FCS CHECKOUT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1774
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1873

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, RJDA
5) CONTROLLER, REMOTE POWER
6) 
7) 
8) 
9) 

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LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131RPC22

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs.
DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1775
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1874

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 3/3

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS HIGH

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, RJDA
5) CONTROLLER, REMOTE POWER

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LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132RPC18

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
POWER SUPPLIED TO MANIFOLD DRIVER AND LOGIC CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION VALVE. PRI MANIFOLD DRIVER PWR REQUIRED OFF FOR FCS CHECKOUT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1776
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1875

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O’DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, RJDA
5) CONTROLLER, REMOTE POWER

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LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132RPC18

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1777
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1876

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS HIGH

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) CONTROLLER, REMOTE POWER

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131RPC18

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
POWER SUPPLIED TO MANIFOLD LOGIC CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION VALVE.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87   C-1778
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1877

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) CONTROLLER, REMOTE POWER

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LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131RPC18

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD LOGIC AND DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. WITH THE LOSS OF THE GATE SIGNAL TO THE VERNIER DRIVER POWER CIRCUITS, THE ONORBIT VERNIER JETS ARE UNAVAILABLE. AFFECTS PRI JET ONORBIT OPERATIONS (RNDV, PROX OPS) CRIT 3/2R. AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1779
### INDEPENDENT ORBITER ASSESSMENT
### ORBITER SUBSYSTEM ANALYSIS WORKSHEET

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**ITEM:** CONTROLLER, REMOTE POWER  
**FAILURE MODE:** FAILS HIGH

**LEAD ANALYST:** R.A. O'DONNELL  
**SUBSYS LEAD:** D.J. PAUL

#### BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS  
2) CONTROLS  
3) THRUSTER SUBSYSTEM  
4) MANIFOLD 1/L5, RJDA  
5) CONTROLLER, REMOTE POWER

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**REDUNDANCY SCREENS:** A [ ]  
**LOCATION:** AV BAY 5, PCA 2  
**PART NUMBER:** 55V76A132RPC8

**CAUSES:** CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD  
**EFFECTS/RATIONALE:**  
POWER SUPPLIED TO MANIFOLD LOGIC CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION VALVE.

**REFERENCES:** VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

**REPORT DATE** 3/20/87  
**C-1780**
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS FLIGHT: 3/2R
MDAC ID: 1879 ABORT: 2/1R

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O’DONNELL

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) CONTROLLER, REMOTE POWER

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LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132RPC8

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-1781
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS

MDAC ID: 1880

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 3/2R

ABORT: 3/3

ITEM: CONTROLLER, REMOTE POWER

FAILURE MODE: FAILS HIGH

LEAD ANALYST: R.A. O'DONNELL

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) CONTROLLER, REMOTE POWER
6) 
7) 
8) 
9) 

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LOCATION: AV BAY 6, PCA 3

PART NUMBER: 56V76A133RPC16

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:

POWER SUPPLIED TO MANIFOLD DRIVER AND LOGIC CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION VALVE. PRI MANIFOLD DRIVER PWR REQUIRED OFF FOR FCS CHECKOUT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1782
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/2R
MDAC ID: 1881  ABORT: 2/1R

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) CONTROLLER, REMOTE POWER
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LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133RPC16

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD
JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS
OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs.
DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS)
WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE
TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE
TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS
(RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE
SYSTEMS HANDBOOK

REPORT DATE 03/22/87  C-1783
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

HIGHEST CRITICALITY:

SUBSYSTEM: ARCS
MDAC ID: 1882

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS HIGH

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) CONTROLLER, REMOTE POWER

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133RPC36

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
POWER SUPPLIED TO MANIFOLD LOGIC CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION VALVE.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1784
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 1883

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS OPEN
LEAD ANALYST: R.A. O’DONNELL

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) CONTROLLER, REMOTE POWER

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LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133RPC36

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD LOGIC AND DRIVER CIRCUITS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1785
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1884

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 3/3

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS HIGH

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) CONTROLLER, REMOTE POWER
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LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131RPC23

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
POWER SUPPLIED TO MANIFOLD DRIVER AND LOGIC CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION VALVE. PRI MANIFOLD DRIVER POWER REQUIRED OFF FOR FCS CHECKOUT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1786
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 1885

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) CONTROLLER, REMOTE POWER

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LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131RPC23

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1787
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
HIGHEST CRITICALITY
SUBSYSTEM: ARCS
HDW/FUNC
MDAC ID: 1886
FLIGHT: 3/3
ABORT: 3/3

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS HIGH

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) CONTROLLER, REMOTE POWER
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REDUNDANCY SCREENS: A [ ]   B [ ]      C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131RPC19

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
POWER SUPPLIED TO MANIFOLD LOGIC CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION VALVE.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1788
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1887
HDW/FUNC FLIGHT: 3/2R
ABORT: 2/1R

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) CONTROLLER, REMOTE POWER

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LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131RPC19

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD LOGIC AND DRIVER CIRCUITS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1789
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 1888

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3, RJDA
5) CONTROLLER, REMOTE POWER
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LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132RPC17

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1790
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1889

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS HIGH

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3, RJDA
5) CONTROLLER, REMOTE POWER

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LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133RPC39

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
POWER SUPPLIED TO MANIFOLD DRIVER AND LOGIC CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION VALVE. PRI MANIFOLD DRIVER PWR REQUIRED OFF FOR FCS CHECKOUT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1791
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1890

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3, RJDA
5) CONTROLLER, REMOTE POWER
6)
7)
8)
9)

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LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133RPC39

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1792
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/2R
MDAC ID: 1891  ABORT: 3/3

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS HIGH

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) CONTROLLER, REMOTE POWER

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LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132RPC17

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
POWER SUPPLIED TO MANIFOLD DRIVER AND LOGIC CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION VALVE. PRI MANIFOLD DRIVER PWR REQUIRED OFF FOR FCS CHECKOUT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1793
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
FLIGHT: 3/3
MDAC ID: 1892
ABORT: 3/3

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS HIGH

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUST SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) CONTROLLER, REMOTE POWER

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132RPC7

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
POWER SUPPLIED TO MANIFOLD LOGIC CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION VALVE.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1794
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1893

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) CONTROLLER, REMOTE POWER

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LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132RPC7

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS AND LOGIC. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. WITH THE LOSS OF THE GATE SIGNAL TO THE VERNIER DRIVER POWER CIRCUITS, THE ONORBIT VERNIER JETS ARE UNAVAILABLE. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS) CRIT 3/2R. AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1795
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1894

HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS HIGH

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) CONTROLLER, REMOTE POWER
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CRITICALITIES
FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC
PRELAUNCH: 3/3 RTLS: 3/3
LIFTOFF: 3/3 TAL: 3/3
ONORBIT: 3/3 AOA: 3/3
DEORBIT: 3/3 ATO: 3/3
LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133RPC40

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
POWER SUPPLIED TO MANIFOLD LOGIC CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION VALVE.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1796
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1895

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS OPEN
LEAD ANALYST: R.A. O'DONNELL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) CONTROLLER, REMOTE POWER
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LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133RPC40

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1797
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1896

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS HIGH

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) CONTROLLER, REMOTE POWER

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REDUNDANCY SCREENS:

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131RPC21

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
POWER SUPPLIED TO MANIFOLD DRIVER AND LOGIC CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION VALVE. PRI MANIFOLD DRIVER PWR REQUIRED FOR FCS CHECKOUT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1798
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1897

HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 3/2R
ABORT: 2/1R

ITEM:
FAILURE MODE:
CONTROLLER, REMOTE POWER
Fails Open

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) CONTROLLER, REMOTE POWER

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LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131RPC21

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ON ORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1799
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1898

HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS HIGH

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) CONTROLLER, REMOTE POWER
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131RPC17

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
POWER SUPPLIED TO MANIFOLD LOGIC CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION VALVE.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1800
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1899

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 2/1R

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O’DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) CONTROLLER, REMOTE POWER

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LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131RPC17

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD LOGIC AND DRIVER CIRCUITS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1801
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1900

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS HIGH

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) CONTROLLER, REMOTE POWER
6)
7)
8)
9)

CRITICALITIES

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LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133RPC37

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
POWER SUPPLIED TO MANIFOLD DRIVER AND LOGIC CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE Appropriate ISOLATION VALVE. PRI MANIFOLD DRIVER PWR REQUIRED OFF FOR FCS CHECKOUT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1802
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/2R
MDAC ID: 1901  ABORT: 2/1R

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) CONTROLLER, REMOTE POWER
6)  
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REDUNDANCY SCREENS: [A] [2] [B] [P] [C] [P]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133RPC37

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD 
JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS 
OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. 
DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) 
WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE 
TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE 
TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS 
(RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH 
(TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE 
SYSTEMS HANDBOOK

REPORT DATE 03/22/87  C-1803
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1902

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS HIGH

LEAD ANALYST: R.A. O'DONNELL    SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) CONTROLLER, REMOTE POWER

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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133RPC38

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
POWER SUPPLIED TO MANIFOLD LOGIC CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION VALVE.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87   C-1804
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1903

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) CONTROLLER, REMOTE POWER

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LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133RPC38

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD LOGIC AND DRIVER CIRCUITS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1805
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1904

HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS HIGH

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L5, RJDA
5) CONTROLLER, REMOTE POWER
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131RPC41

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
POWER SUPPLIED TO VERNIER JETS L5L AND L5D MANIFOLD DRIVER POWER CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION VALVE.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1806
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
MDAC ID: 1905

FLIGHT: 2/2
ABORT: 3/3

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L5, RJDA
5) CONTROLLER, REMOTE POWER
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131RPC41

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD
EFFECTS/RATIONALE:
LOSS OF POWER TO VERNIER MANIFOLD L5 DRIVER POWER CIRCUIT. LOSS OF L5L AND L5D VERNIER JETS, AND RESULTING IN LOSS OF VERNIER RCS.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1807
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1906

HIGHEST CRITICALITY
HDW/FUNC

FLIGHT: 3/3
ABORT: 3/3

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS HIGH

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD LS, RJDA
5) CONTROLLER, REMOTE POWER

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131RPC40

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
POWER SUPPLIED TO VERNIER JETS LSL AND LSD MANIFOLD DRIVER POWER CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION VALVE.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1808
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1907

ITEM: CONTROLLER, REMOTE POWER
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L5, RJDA
5) CONTROLLER, REMOTE POWER

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131RPC40

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF POWER TO VERNIER MANIFOLD L5 DRIVER POWER CIRCUIT. LOSS OF L5L AND L5D VERNIER JETS, AND RESULTING IN LOSS OF VERNIER RCS.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1809
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1908

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, RJDA
5) DIODE

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LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A3CR1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY AFFECT CURRENT FLOW BETWEEN THE TWO DIFFERENT BUSES. DUE TO UNEQUAL BUS VOLTAGES AND CURRENT SHARING, ONE OF THE RPC'S IN THE REDUNDANT CIRCUIT COULD TRIP OPEN. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINT AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1810
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1909

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, RJDA
5) DIODE
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LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A3CR1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1811
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1910
HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 3/2R
ABORT: 2/1R

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, RJDA
5) DIODE

CRITICALITIES

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LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A3CR1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY AFFECT CURRENT FLOW BETWEEN THE TWO DIFFERENT BUSES. DUE TO UNEQUAL BUS Voltages and current sharing, one of the RPC's in the redundant circuit could trip open. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINT AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIR OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1812
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1911

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, RJDA
5) DIODE
6)
7)
8)
9)

CRITICALITIES

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LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A3CR1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1813
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS

MDAC ID: 1912

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 3/2R

ABORT: 2/1R

ITEM: DIODE

FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL

LEAD SUBSYS: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, RJDA
5) DIODE

CRITICALITIES

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LOCATION: AV BAY 5, PCA 2

PART NUMBER: 55V76A132A2CR7

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1814
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1913

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, RJDA
5) DIODE

CRITICALITIES

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LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A2CR7

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1815
**INDEPENDENT ORBITER ASSESSMENT**

**ORBITER SUBSYSTEM ANALYSIS WORKSHEET**

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**ITEM:** DIODE  
**FAILURE MODE:** FAILS SHORT  
**LEAD ANALYST:** R.A. O'DONNELL  
**SUBSYS LEAD:** D.J. PAUL

**BREAKDOWN HIERARCHY:**
1) ELECTRICAL COMPONENTS  
2) CONTROLS  
3) THRUSTER SUBSYSTEM  
4) MANIFOLD 1/L5, RJDA  
5) DIODE  
6)  
7)  
8)  
9)  

**CRITICALITIES**

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**REDUNDANCY SCREENS:** A [ ] B [ ] C [ ]

**LOCATION:** AV BAY 4, PCA 1  
**PART NUMBER:** 54V76A131A1CR4

**CAUSES:** CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

**EFFECTS/RATIONALE:** SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY CAUSE A CHANGE IN CURRENT FLOW BETWEEN TWO DIFFERENT BUSES, DUE TO UNEQUAL BUS VOLTAGE AND CURRENT SHARING. THE 1.2K CURRENT LIMITING RESISTOR WILL MINIMIZE CHANGE IN CONTROL BUS CURRENT.

**REFERENCES:** VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

**REPORT DATE:** 3/20/87  
**C-1816**
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1915

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) DIODE

CRITICALITIES

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LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1CR4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1817
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1916

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) DIODE

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1CR3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY CAUSE A CHANGE IN CURRENT FLOW BETWEEN TWO DIFFERENT BUSES, DUE TO UNEQUAL BUS VOLTAGE AND CURRENT SHARING. THE 1.2K CURRENT LIMITING RESISTOR WILL MINIMIZE CHANGE IN CONTROL BUS CURRENT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS

MDAC ID: 1917

ITEM: DIODE

FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) DIODE

CRITICALITIES

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LOCATION: AV BAY 4, PCA 1

PART NUMBER: 54V76A131A1CR3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1819
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1918

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) DIODE

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1CR7

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY CAUSE A CHANGE IN CURRENT FLOW BETWEEN TWO DIFFERENT BUSES, DUE TO UNEQUAL BUS VOLTAGE AND CURRENT SHARING. THE 1.2K CURRENT LIMITING RESISTOR WILL MINIMIZE CHANGE IN CONTROL BUS CURRENT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1820
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
MDAC ID: 1919

ABORT: 3/1R

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) DIODE

CRITICALITIES

FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC
PRELAUNCH: 3/3 RTLS: 3/1R
LIFTOFF: 3/3 TAL: 3/2R
ONORBIT: 3/2R AOA: 3/2R
DEORBIT: 3/2R ATO: 3/2R
LANDING/SAFING: 3/3


LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1CR7

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1821
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1920

Highest Criticality HDW/Func
Flight: 3/2R
Abort: 2/1R

Item: Diode
Failure Mode: Fails Short

Lead Analyst: R.A. O'Donnell
Subsys Lead: D.J. Paul

Breakdown Hierarchy:
1) Electrical Components
2) Controls
3) Thruster Subsystem
4) Manifold 1/L5, RJDA
5) Diode

Criticalities

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Location: AV Bay 5, PCA 2
Part Number: 55V76A132A2CR8

Causes: Contamination, Vibration, Mechanical Shock, Thermal Shock, Overload

Effects/Rationale:
Shorted diode allows redundant circuit operation. May affect current flow between the two different buses. Due to unequal bus voltages and current sharing, one of the RPC's in the redundant circuit could trip open. Other manifold jets are also available for attitude control. During entry, loss of this manifold will affect any scheduled entry DTOS or PTOs. During RTLS, the loss of a manifold (six primary jets) will cause the inability to expel enough propellants to meet the tank landing constraint and CG safety boundaries. Onorbit, the loss of Vernier jet manifold would result in the loss of Vernier jets. Affects pri jet onorbit operations (RNDZ, PROX OPS). Affects abort prop dump length (TAL, AOA, ATO).

References: VS70-943099 Rev B EO B12, JSC 11174, Space Shuttle Systems Handbook

Report Date 03/22/87 C-1822
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1921

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) DIODE
6)
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CRITICALITIES

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LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A2CR8

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1823
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1922

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) DIODE

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1CR4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY CAUSE A CHANGE IN CURRENT FLOW BETWEEN TWO DIFFERENT BUSES, DUE TO UNEQUAL BUS VOLTAGE AND CURRENT SHARING. THE 1.2K CURRENT LIMITING RESISTOR WILL MINIMIZE CHANGE IN CONTROL BUS CURRENT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1824
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS FLIGHT: 3/2R
MDAC ID: 1923 ABORT: 3/1R

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) DIODE

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LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1CR4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1825
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1924

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/15, RJDA
5) DIODE

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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION:  AV BAY 5, PCA 2
PART NUMBER:  55V76A132A1CR3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY CAUSE A CHANGE IN CURRENT FLOW BETWEEN TWO DIFFERENT BUSES, DUE TO UNEQUAL BUS VOLTAGE AND CURRENT SHARING. THE 1.2K CURRENT LIMITING RESISTOR WILL MINIMIZE CHANGE IN CONTROL BUS CURRENT.

REFERENCES:  VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1826
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1925

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) DIODE

CRITICALITIES

| FLIGHT PHASE | PRELAUNCH: 3/3 | RTLS: 3/1R |
| LIFTOFF:     | 3/3            | TAL: 3/2R  |
| ONORBIT:     | 3/2R           | AOA: 3/2R  |
| DEORBIT:     | 3/2R           | ATO: 3/2R  |
| LANDING/SAFING: | 3/3   |         |


LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1CR3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 1926

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O’DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) DIODE

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1CR8

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY CAUSE A CHANGE IN CURRENT FLOW BETWEEN TWO DIFFERENT BUSES, DUE TO UNEQUAL BUS VOLTAGE AND CURRENT SHARING. THE 1.2K CURRENT LIMITING RESISTOR WILL MINIMIZE CHANGE IN CONTROL BUS CURRENT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1828
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS FLIGHT: 3/2R
MDAC ID: 1927 ABORT: 3/1R

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) DIODE
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LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1CR8

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD LOGIC AND DRIVER CIRCUITS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1829
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1928

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) DIODE
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1CR7

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY CAUSE A CHANGE IN CURRENT FLOW BETWEEN TWO DIFFERENT BUSES, DUE TO UNEQUAL BUS VOLTAGE AND CURRENT SHARING. THE 1.2K CURRENT LIMITING RESISTOR WILL MINIMIZE CHANGE IN CONTROL BUS CURRENT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1830
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1929

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) DIODE
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LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1CR7

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OPEN DIODE REMOVES CAPABILITY OF THE DRIVER POWER LATCHING ON THE LOGIC POWER. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1831
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS FLIGHT: 3/2R
MDAC ID: 1930 ABORT: 2/1R

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) DIODE
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LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A2CR2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY AFFECT CURRENT FLOW BETWEEN THE TWO DIFFERENT BUSES. DUE TO UNEQUAL BUS VOLTAGES AND CURRENT SHARING, ONE OF THE RPC'S IN THE REDUNDANT CIRCUIT COULD TRIP OPEN. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOS OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINT AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1832
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1931

HIGHEST CRITICALITY
HDW/FUNC

FLIGHT: 3/2R
ABORT: 2/1R

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) DIODE

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LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A2CR2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1833
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1932

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 2/1R

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) DIODE

CRITICALITIES

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LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A3CR7

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY AFFECT CURRENT FLOW BETWEEN THE TWO DIFFERENT BUSES. DUE TO UNEQUAL BUS VOLTAGES AND CURRENT SHARING, ONE OF THE RPC'S IN THE REDUNDANT CIRCUIT COULD TRIP OPEN. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINT AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1834
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 1933

HIGHEST CRITICALITY
HDW/FUNC FLIGHT: 3/2R
ABORT: 2/1R

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) DIODE

CRITICALITIES
HDW/FUNC FLIGHT PHASE ABORT HDW/FUNC
PRELAUNCH: 3/3 RTLS: 2/1R
LIFTOFF: 3/3 TAL: 3/2R
ONORB: 3/2R AOA: 3/2R
DEORB: 3/2R ATO: 3/2R
LANDING/SAFING: 3/3


LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A3CR7

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD LOGIC CIRCUIT. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOS OR PTIS. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPUL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORB OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1835
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1934

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) DIODE
6) 7) 8) 9)

ELECTRICAL COMPONENTS
CONTROLS
THRUSTER SUBSYSTEM
MANIFOLD 2, RJDA
DIODE

CRITICALITIES

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1CR6

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY CAUSE A CHANGE IN CURRENT FLOW BETWEEN TWO DIFFERENT BUSES, DUE TO UNEQUAL BUS VOLTAGE AND CURRENT SHARING. THE 1.2K CURRENT LIMITING RESISTOR WILL MINIMIZE CHANGE IN CONTROL BUS CURRENT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1836
## INDEPENDENT ORBITER ASSESSMENT

### ORBITER SUBSYSTEM ANALYSIS WORKSHEET

**DATE:** 1/15/87  
**SUBSYSTEM:** ARCS  
**MDAC ID:** 1935  
**HIGHEST CRITICALITY**  
**FLIGHT:** 3/2R  
**ABORT:** 3/1R  

**ITEM:** DIODE  
**FAILURE MODE:** FAILS OPEN  

**LEAD ANALYST:** R.A. O’DONNELL  
**SUBSYS LEAD:** D.J. PAUL

### BREAKDOWN HIERARCHY:

1. ELECTRICAL COMPONENTS  
2. CONTROLS  
3. THRUSTER SUBSYSTEM  
4. MANIFOLD 2, RJDA  
5. DIODE

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**LOCATION:** AV BAY 4, PCA 1  
**PART NUMBER:** 54V76A131A1CR6

**CAUSES:** CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

**EFFECTS/RATIONALE:**  
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD LOGIC AND DRIVER CIRCUITS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

**REFERENCES:** VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

**REPORT DATE 03/22/87**  
**C-1837**
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1936

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) DIODE

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A19C5

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY CAUSE A CHANGE IN CURRENT FLOW BETWEEN TWO DIFFERENT BUSES, DUE TO UNEQUAL BUS VOLTAGE AND CURRENT SHARING. THE 1.2K CURRENT LIMITING RESISTOR WILL MINIMIZE CHANGE IN CONTROL BUS CURRENT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1838
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

HIGHEST CRITICALITY

HDW/FUNC

FLIGHT: 3/2R

ABORT: 3/1R

SUBSYSTEM: ARCS

MDAC ID: 1937

ITEM: DIODE

FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O’DONNELL

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) DIODE
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LOCATION: AV BAY 4, PCA 1

PART NUMBER: 54V76A131A1CR5

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OPEN DIODE REMOVES CAPABILITY OF THE DRIVER POWER LATCHING ON THE LOGIC POWER. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1839
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 1938

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) DIODE

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LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A3CR8

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY AFFECT CURRENT FLOW BETWEEN THE TWO DIFFERENT BUSSES. DUE TO UNEQUAL BUS VOLTAGES AND CURRENT SHARING, ONE OF THE RPC'S IN THE REDUNDANT CIRCUIT COULD TRIP OPEN. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINT AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1840
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
HIGHEST CRITICALITY: HDW/FUNC
FLIGHT: 3/2R
ABORT: 2/1R

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O‘DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) DIODE
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LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A3CR8

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD LOGIC CIRCUIT. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1841
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1940

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) DIODE

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LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A2CR1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY AFFECT CURRENT FLOW BETWEEN THE TWO DIFFERENT BUSES. DUE TO UNEQUAL BUS VOLTAGES AND CURRENT SHARING, ONE OF THE RPC'S IN THE REDUNDANT CIRCUIT COULD TRIP OPEN. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTO's OR PTI's. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINT AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87    C-1842
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 1941

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
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LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A2CR1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87  C-1843
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1942

HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 3/2R
ABORT: 2/1R

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3, RJDA
5) DIODE

CRITICALITIES

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LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A2CR1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY AFFECT CURRENT FLOW BETWEEN THE TWO DIFFERENT BUSES. DUE TO UNEQUAL BUS VOLTAGES AND CURRENT SHARING, ONE OF THE RPC'S IN THE REDUNDANT CIRCUIT COULD TRIP OPEN. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINT AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1844
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
HIGHEST CRITICALITY
HDW/FUNC

SUBSYSTEM: ARCS
MDAC ID: 1943

FLIGHT: 3/2R
ABORT: 2/1R

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3, RJDA
5) DIODE
6) 
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8) 
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LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A2CR1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORB OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1845
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS FLIGHT: 3/2R
MDAC ID: 1944 ABORT: 2/1R

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3, RJDA
5) DIODE

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LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A3CR1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY AFFECT CURRENT FLOW BETWEEN THE TWO DIFFERENT BUSES. DUE TO UNEQUAL BUS VOLTAGES AND CURRENT SHARING, ONE OF THE RPC'S IN THE REDUNDANT CIRCUIT COULD TRIP OPEN. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINT AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87  C-1846
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1945

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3, RJDA
5) DIODE

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LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A3CR1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1847
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1946

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) DIODE

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1CR7

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY CAUSE A CHANGE IN CURRENT FLOW BETWEEN TWO DIFFERENT BUSES, DUE TO UNEQUAL BUS VOLTAGE AND CURRENT SHARING. THE 1.2K CURRENT LIMITING RESISTOR WILL MINIMIZE CHANGE IN CONTROL BUS CURRENT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1848
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1947

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) DIODE

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LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1CR7

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1849
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1948

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) DIODE
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1CR2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY CAUSE A CHANGE IN CURRENT FLOW BETWEEN TWO DIFFERENT BUSES, DUE TO UNEQUAL BUS VOLTAGE AND CURRENT SHARING. THE 1.2K CURRENT LIMITING RESISTOR WILL MINIMIZE CHANGE IN CONTROL BUS CURRENT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1850
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/2R
MDAC ID: 1949  ABORT: 3/1R

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O’DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) DIODE

CRITICALITIES
FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC
PRELAUNCH: 3/3 RTLS: 3/1R
LIPOFF: 3/3 TAL: 3/2R
ONORBIT: 3/2R AOA: 3/2R
DEORBIT: 3/2R ATO: 3/2R
LANDING/SAFING: 3/3


LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1CR2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87  C-1851
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 1950  ABORT: 3/3

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) DIODE
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1CR1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY CAUSE A CHANGE IN CURRENT FLOW BETWEEN TWO DIFFERENT BUSES, DUE TO UNEQUAL BUS VOLTAGE AND CURRENT SHARING. THE 1.2K CURRENT LIMITING RESISTOR WILL MINIMIZE CHANGE IN CONTROL BUS CURRENT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1852
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 1951

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) DIODE

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LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1CR1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1853
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/2R
MDAC ID: 1952  ABORT: 2/1R

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) DIODE
6)
7)
8)
9)

CRITICALITIES

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LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A3CR8

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87  C-1854
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 2/1R

SUBSYSTEM: ARCS
MDAC ID: 1953

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) DIODE
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LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A3CR8

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1855
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 1954  ABORT: 3/3

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) DIODE

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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1CR4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY CAUSE A CHANGE IN CURRENT FLOW BETWEEN TWO DIFFERENT BUSES, DUE TO UNEQUAL BUS VOLTAGE AND CURRENT SHARING. THE 1.2K CURRENT LIMITING RESISTOR WILL MINIMIZE CHANGE IN CONTROL BUS CURRENT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1856
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 1955

HIGHEST CRITICALITY

FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) DIODE

CRITICALITIES

FLIGHT PHASE        HDW/FUNC     ABORT     HDW/FUNC
PRELAUNCH:           3/3          RTLS:     3/1R
LIFTOFF:             3/3          TAL:      3/2R
ONORBIT:             3/2R         AOA:      3/2R
DEORBIT:             3/2R         ATO:      3/2R
LANDING/SAFING:      3/3


LOCATION: AV BAY 6, PCA 3

PART NUMBER: 56V76A133A1CR4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87  C-1857
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 1956 ABORT: 3/3

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) DIODE

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1CR3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY CAUSE A CHANGE IN CURRENT FLOW BETWEEN TWO DIFFERENT BUSES, DUE TO UNEQUAL BUS VOLTAGE AND CURRENT SHARING. THE 1.2K CURRENT LIMITING RESISTOR WILL MINIMIZE CHANGE IN CONTROL BUS CURRENT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1858
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

HIGHEST CRITICALITY
MDAC ID: ARCS

HDW/FUNC: 3/2R

ABORT: 3/1R

ITEM: DIODE

FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) DIODE

CRITICALITIES

FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC
PRELAUNCH: 3/3 RTLS: 3/1R
LIFTOFF: 3/3 TAL: 3/2R
ONORBIT: 3/2R AOA: 3/2R
DEORBIT: 3/2R ATO: 3/2R
LANDING/SAFING: 3/3


B [ F ]

C [ P ]

LOCATION: AV BAY 6, PCA 3

PART NUMBER: 56V76A133A1CR3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1859
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1958

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) DIODE

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LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A3CR7

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY AFFECT CURRENT FLOW BETWEEN THE TWO DIFFERENT BUSES. DUE TO UNEQUAL BUS VOLTAGES AND CURRENT SHARING, ONE OF THE RPC'S IN THE REDUNDANT CIRCUIT COULD/TRIP OPEN. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPPELLANTS TO MEET THE TANK LANDING CONSTRAINT AND CG SAFETY BOUNDARIES. ONORBIT, THE LOSS OF THE VERNIER JET MANIFOLD WOULD RESULT IN THE LOSS OF VERNIER JETS. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1860
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1959

HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 3/2R
ABORT: 2/1R

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O’DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) DIODE

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LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A3CR7

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD LOGIC CIRCUIT. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOS OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEND ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. ONORBIT, LOSS OF THE VERNIER JET MANIFOLD WOULD RESULT IN THE LOSS OF VERNIER JETS. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1861
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1960

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) DIODE

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1CR2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY CAUSE A CHANGE IN CURRENT FLOW BETWEEN TWO DIFFERENT BUSES, DUE TO UNEQUAL BUS VOLTAGE AND CURRENT SHARING. THE 1.2K CURRENT LIMITING RESISTOR WILL MINIMIZE CHANGE IN CONTROL BUS CURRENT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1862
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/2R
MDAC ID: 1961  ABORT: 3/1R

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) DIODE
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LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1CR2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD LOGIC AND DRIVER CIRCUITS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87  C-1863
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1962

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: DIODE
FAILURE MODE: Fails Short

LEAD ANALYST: R.A. O’DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) DIODE
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1CR1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY CAUSE A CHANGE IN CURRENT FLOW BETWEEN TWO DIFFERENT BUSES, DUE TO UNEQUAL BUS VOLTAGE AND CURRENT SHARING. THE 1.2K CURRENT LIMITING RESISTOR WILL MINIMIZE CHANGE IN CONTROL BUS CURRENT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1864
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 1963

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) DIODE

CRITICALITIES

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LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1CR1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OPEN DIODE REMOVES CAPABILITY OF THE DRIVER POWER LATCHING ON THE LOGIC POWER. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1865
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1964

HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 3/2R
ABORT: 2/1R

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) DIODE
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LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A2CR2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY AFFECT CURRENT FLOW BETWEEN THE TWO DIFFERENT BUSES. DUE TO UNEQUAL BUS VOLTAGES AND CURRENT SHARING, ONE OF THE RPC'S IN THE REDUNDANT CIRCUIT COULD TRIP OPEN. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINT AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1866
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 1965

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) DIODE

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LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A2CR2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1867
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1966

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) DIODE

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LOCATION: AV BAY 3, PCA 3
PART NUMBER: 56V76A133A3CR13

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY AFFECT CURRENT FLOW BETWEEN THE TWO DIFFERENT BUSES. DUE TO UNEQUAL BUS VOLTAGES AND CURRENT SHARING, ONE OF THE RPC'S IN THE REDUNDANT CIRCUIT COULD TRIP OPEN. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINT AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1868
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE:  1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1967

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) DIODE
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LOCATION: AV BAY 3, PCA 3
PART NUMBER: 56V76A133A3CR13

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD LOGIC CIRCUIT. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87  C-1869
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1968

HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1CR2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY CAUSE A CHANGE IN CURRENT FLOW BETWEEN TWO DIFFERENT BUSSES, DUE TO UNEQUAL BUS VOLTAGE AND CURRENT SHARING. THE 1.2K CURRENT LIMITING RESISTOR WILL MINIMIZE CHANGE IN CONTROL BUS CURRENT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1870
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/2R
MDAC ID: 1969  ABORT: 3/1R

ITEM: DIODE  FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) DIODE

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LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1CR2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD LOGIC AND DRIVER CIRCUITS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87  C-1871
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1970

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1CR1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY CAUSE A CHANGE IN CURRENT FLOW BETWEEN TWO DIFFERENT BUSES, DUE TO UNEQUAL BUS VOLTAGE AND CURRENT SHARING. THE 1.2K CURRENT LIMITING RESISTOR WILL MINIMIZE CHANGE IN CONTROL BUS CURRENT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1872
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1971

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O’DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) DIODE
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LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1CR1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OPEN DIODE REMOVES CAPABILITY OF THE DRIVER POWER LATCHING ON THE LOGIC POWER. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1873
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1972

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
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LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A3CR5

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY AFFECT CURRENT FLOW BETWEEN THE TWO DIFFERENT BUSES. DUE TO UNEQUAL BUS VOLTAGES AND CURRENT SHARING, ONE OF THE RPC'S IN THE REDUNDANT CIRCUIT COULD TRIP OPEN. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOS OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINT AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1874
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 1973

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) DIODE

CRITICALITIES

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LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A3CR5

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD LOGIC CIRCUIT. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87  C-1875
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1974

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) DIODE

CRITICALITIES

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LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A2CR1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SHORTED DIODE ALLOWS REDUNDANT CIRCUIT OPERATION. MAY AFFECT CURRENT FLOW BETWEEN THE TWO DIFFERENT BUSES. DUE TO UNEQUAL BUS VOLTAGES AND CURRENT SHARING, ONE OF THE RPC'S IN THE REDUNDANT CIRCUIT COULD TRIP OPEN. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOS OR PTIS. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINT AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1876
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

HIGHEST CRITICALITY: FLIGHT: 3/2R
MDAC ID: 1975

ABORT: 2/1R

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) DIODE

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LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A2CR1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1877
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1976

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L5, RJDA
5) DIODE

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A3CR2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO IMPACT ON CIRCUIT OPERATION. CURRENT LIMITING RESISTOR WILL PROTECT OTHER CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1878
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1977

ITEM: DIODE
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O’DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L5, RJDA
5) DIODE
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A3CR2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF POWER TO VERNIER MANIFOLD L5 DRIVER POWER CIRCUIT. LOSS OF L5L AND L5D VERNIER JETS, AND RESULTING IN LOSS OF VERNIER RCS.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1879
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 1978  ABORT: 3/3

ITEM: DIODE
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD R5, RJDA
5) DIODE
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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 54V76A131A3CR3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO IMPACT ON CIRCUIT OPERATION. CURRENT LIMITING RESISTOR WILL PROTECT OTHER CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1880
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

HIGHEST CRITICALITY

SUBSYSTEM: ARCS

MDAC ID: 1979

FLIGHT: 2/2

ABORT: 3/3

ITEM: DIODE

FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD R5, RJDA
5) DIODE

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 5, PCA 2

PART NUMBER: 54V76A131A3CR3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF POWER TO VERNIER MANIFOLD R5 DRIVER POWER CIRCUIT. LOSS OF R5R AND R5D VERNIER JETS, AND RESULTING IN LOSS OF VERNIER RCS.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1881
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
HIGHEST CRITICALITY
SUBSYSTEM: ARCS
HDW/FUNC
MDAC ID: 1980
FLIGHT: 3/2R
ABORT: 3/3

ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS HIGH

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, RJDA
5) DRIVER, HYBRID

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LOCATION: AV BAY 4, LCA 1
PART NUMBER: 54V76A121AR J9-46 TYPE II

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
POWER SUPPLIED TO MANIFOLD DRIVER AND LOGIC CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION VALVE. PRI MANIFOLD DRIVER PWR REQUIRED OFF FOR FCS CHECKOUT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1882
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 1981

ITEM:
FAILURE MODE:

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, RJDA
5) DRIVER, HYBRID

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LOCATION: AV BAY 4, LCA 1
PART NUMBER: 54V76A121AR J9-46 TYPE II

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTos OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK.

REPORT DATE 03/22/87 C-1883
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1982

ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS HIGH

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, RJDA
5) DRIVER, HYBRID
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LOCATION: AV BAY 5, LCA 2
PART NUMBER: 55V76A122AR J9-46 TYPE II

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
POWER SUPPLIED TO MANIFOLD DRIVER AND LOGIC CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION VALVE. PRI MANIFOLD DRIVER PWR REQUIRED OFF FOR FCS CHECKOUT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

HIGHEST CRITICALITY

SUBSYSTEM: ARCS
MDAC ID: 1983

ABORT:

FLIGHT:

HIGHEST CRITICALITY

ITEM:

FAILURE MODE:

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, RJDA
5) DRIVER, HYBRID

CRITICALITIES

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LOCATION: AV BAY 5, LCA 2
PART NUMBER: 55V76A122AR J9-46 TYPE II

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87  C-1885
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1984

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 3/3

ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS HIGH

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) DRIVER, HYBRID
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LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123AR J9-47 TYPE II

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
POWER SUPPLIED TO MANIFOLD DRIVER AND LOGIC CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION VALVE. PRI MANIFOLD DRIVER PWR REQUIRED OFF FOR FCS CHECKOUT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1886
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/2R
MDAC ID: 1985  ABORT: 2/1R

ITEM: DRIVER, HYBRID  FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) DRIVER, HYBRID
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LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123AR J9-47 TYPE II

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOS OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87     C-1887
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 1986

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 3/3

ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS HIGH

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) DRIVER, HYBRID
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LOCATION: AV BAY 4, LCA 1
PART NUMBER: 54V76A121AR J9-45 TYPE II

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
POWER SUPPLIED TO MANIFOLD DRIVER AND LOGIC CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION VALVE. PRI MANIFOLD DRIVER POWER REQUIRED OFF FOR FCS CHECKOUT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1888
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1987

ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) DRIVER, HYBRID

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LOCATION: AV BAY 4, LCA 1
PART NUMBER: 54V76A121AR J9-45 TYPE II

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOS OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1889
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1988

ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS HIGH

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3, RJDA
5) DRIVER, HYBRID
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LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123AR·J9-46 TYPE II

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
POWER SUPPLIED TO MANIFOLD DRIVER AND LOGIC CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION VALVE. PRI MANIFOLD DRIVER PWR REQUIRED OFF FOR FCS CHECKOUT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1890
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1989

ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O’DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3, RJDA
5) DRIVER, HYBRID
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LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123AR J9-46 TYPE II

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD
JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS
OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOS OR PTIS.
DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS)
JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO
MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO
THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT
OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH
(TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE
SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1891
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1990

ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS HIGH

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) DRIVER, HYBRID
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LOCATION: AV BAY 5, LCA 2
PART NUMBER: 55V76A122AR J9-45 TYPE II

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
POWER SUPPLIED TO MANIFOLD DRIVER AND LOGIC CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION VALVE. PRI MANIFOLD DRIVER PWR REQUIRED OFF FOR FCS CHECKOUT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87   C-1892
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
HIGHEST CRITICALITY
SUBSYSTEM: ARCS
FLIGHT: 3/2R
MDAC ID: 1991
ABORT: 2/1R
ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS OPEN
LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) DRIVER, HYBRID
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LOCATION: AV BAY 5, LCA 2
PART NUMBER: 55V76A122AR J9-45 TYPE II

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOS OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1893
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87                     HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS                     FLIGHT: 3/2R
MDAC ID: 1992                     ABORT: 3/3

ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS HIGH

LEAD ANALYST: R.A. O'DONNELL       SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) DRIVER, HYBRID
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LOCATION: AV BAY 4, LCA 1
PART NUMBER: 54V76A121AR J9-47 TYPE II

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
POWER SUPPLIED TO MANIFOLD DRIVER AND LOGIC CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION VALVE. PRI MANIFOLD DRIVER PWR REQUIRED OFF FOR FCS CHECKOUT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1894
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 1993

ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O’DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) DRIVER, HYBRID

CRITICALITIES

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LOCATION: AV BAY 4, LCA 1
PART NUMBER: 54V76A121AR J9-47 TYPE II

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1895
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1994

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 3/3

ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS HIGH

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) DRIVER, HYBRID

6)
7)
8)
9)

CRITICALITIES
FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC
PRELAUNCH: 3/3 RTL: 3/3
LIFTOFF: 3/3 TAL: 3/3
ONORBIT: 3/2R AOA: 3/3
DEORBIT: 3/3 ATO: 3/3
LANDING/SAFING: 3/3


LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123AR J9-45 (182) TYPE II

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
POWER SUPPLIED TO MANIFOLD DRIVER AND LOGIC CIRCUIT. MAY CAUSE
SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC
POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY
INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE
APPROPRIATE ISOLATION VALVE. PRI MANIFOLD DRIVER PWR REQUIRED
OFF FOR FCS CHECKOUT.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE
SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1896
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
MDAC ID: 1995
FLIGHT: 3/2R
ABORT: 2/1R

ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O’DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) DRIVER, HYBRID
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LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123AR J9-45 (182) TYPE II

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1897
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS 3/3
MDAC ID: 1996

ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS HIGH

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L5, RJDA
5) DRIVER, HYBRID

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, LCA 1
PART NUMBER: 54V76A121AR J4-7 TYPE II

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
POWER SUPPLIED TO VERNIER JETS L5L AND L5D MANIFOLD DRIVER POWER CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION VALVE.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1898
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1997

ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L5, RJDA
5) DRIVER, HYBRID

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, LCA 1
PART NUMBER: 54V76A121AR J4-7 TYPE II

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF POWER TO VERNIER MANIFOLD L5 DRIVER POWER CIRCUIT. LOSS OF L5L AND L5D VERNIER JETS, AND RESULTING IN LOSS OF VERNIER RCS.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1899
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 1998  ABORT: 3/3

ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS HIGH

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD R5, RJDA
5) DRIVER, HYBRID

CRITICALITIES

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REDUNDANCY SCREENS: A [ ]  B [ . ]  C [ ]

LOCATION: AV BAY 5, LCA 2
PART NUMBER: 55V76A122AR J4-7 TYPE II

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
POWER SUPPLIED TO VERNIER JETS R5R AND R5D MANIFOLD DRIVER POWER CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION VALVE.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1900
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 1999

ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD R5, RJDA
5) DRIVER, HYBRID
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, LCA 2
PART NUMBER: 55V76A122AR J4-7 TYPE II

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF POWER TO VERNIER MANIFOLD R5 DRIVER POWER CIRCUIT. LOSS OF R5R AND R5D VERNIER JETS, AND RESULTING IN LOSS OF VERNIER RCS.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1901
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2000
ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS HIGH
LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL
BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD R5, RJDA
5) DRIVER, HYBRID
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REDUNDANCY SCREENS: A [    ] B [    ] C [    ]

LOCATION: AV BAY 5, LCA 2
PART NUMBER: 55V76A122AR J6-K TYPE III

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
POWER SUPPLIED TO VERNIER JETS R5R AND R5D MANIFOLD DRIVER POWER CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION VALVE.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK
# INDEPENDENT ORBITER ASSESSMENT
## ORBITER SUBSYSTEM ANALYSIS WORKSHEET

**DATE:** 1/15/87  
**HIGHEST CRITICALITY**  
**MDAC ID:** 2001  
**ITEM:** DRIVER, HYBRID  
**FAILURE MODE:** FAILS OPEN  
**LEAD ANALYST:** R.A. O'DONNELL  
**SUBSYS LEAD:** D.J. PAUL  

**BREAKDOWN HIERARCHY:**
1. ELECTRICAL COMPONENTS
2. CONTROLS
3. THRUSTER SUBSYSTEM
4. MANIFOLD R5, RJDA
5. DRIVER, HYBRID

**CRITICALITIES**

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**REDUNDANCY SCREENS:** A [ ] B [ ] C [ ]

**LOCATION:** AV BAY 5, LCA 2  
**PART NUMBER:** 55V76A122AR J6-K TYPE III

**CAUSES:** CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

**EFFECTS/RATIONALE:**
LOSS OF POWER TO VERNIER MANIFOLD R5 DRIVER POWER CIRCUIT. LOSS OF R5R AND R5D VERNIER JETS, AND RESULTING IN LOSS OF VERNIER RCS.

**REFERENCES:** VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

**REPORT DATE** 3/20/87  
**C-1903**
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2002

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS HIGH

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD R5, RJDA
5) DRIVER, HYBRID

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, LCA 2
PART NUMBER: 55V76A122AR J6-X TYPE III

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
POWER SUPPLIED TO VERNIER JETS R5R AND R5D MANIFOLD DRIVER POWER CIRCUIT. MAY CAUSE SOME ADDITIONAL POWER CONSUMPTION. IF MANIFOLD DRIVER OR LOGIC POWER FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION VALVE.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1904
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
MDAC ID: 2003
FLIGHT: 2/2
ABORT: 3/3

ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD R5, RJDA
5) DRIVER, HYBRID
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, LCA 2
PART NUMBER: 55V76A122AR J6-X TYPE III

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF POWER TO VERNIER MANIFOLD R5 DRIVER POWER CIRCUIT. LOSS OF R5R AND R5D VERNIER JETS, AND RESULTING IN LOSS OF VERNIER RCS.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1905
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 2004

ITEM: FUSE, IA
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, RJDA
5) FUSE, IA
6) 
7) 
8) 
9) 

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LOCATION: PNL 015 S4
PART NUMBER: 33V73A15F8

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOS OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1906
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2005

HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 3/2R
ABORT: 2/1R

ITEM: FUSE, 1A
FAILURE MODE: Fails Open

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, RJDA
5) FUSE, 1A

CRITICALITIES

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LOCATION: PNL 015 S4
PART NUMBER: 33V73A15F6

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1907
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE:  1/15/87
SUBSYSTEM:  ARCS
MDAC ID:  2006

ITEM:  FUSE, 2A
FAILURE MODE:  FAILS OPEN

LEAD ANALYST:  R.A. O'DONNELL
SUBSYS LEAD:  D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/2/4, RJDA
5) FUSE, 2A

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LOCATION:  PNL O14'S4
PART NUMBER:  33V73A14F9

CAUSES:  CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NOT ABLE TO SWITCH RJDA BUS A POWER. LOSS OF 1 OF 2 PWR SOURCES TO MANIFOLDS 1, 2, AND 4 DRIVER POWER CIRCUIT. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF A MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs AND PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. ABORT CRITICALITY IS 3/3 SINCE THE POWER LATCHING RELAY WAS SWITCH TO "ON" PRIOR TO LIFTOFF (OPS-9). AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS).

REFERENCES:  VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87   C-1908
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2007

HIGHEST CRITICALITY

FLIGHT: 3/2R
ABORT: 3/3

ITEM: FUSE, 2A
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O' DONNELL

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/3, RJDA
5) FUSE, 2A
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LOCATION: PNL 015 S4
PART NUMBER: 33V73A15F7

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NOT ABLE TO SWITCH RJDA BUS B POWER. LOSS OF 1 OF 2 PWR SOURCES TO MANIFOLDS 1 AND 3 DRIVER POWER CIRCUITS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF A MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs AND PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. ABORT CRITICALITY IS 3/3 SINCE THE POWER LATCHING RELAY WAS SWITCHED TO "ON" PRIOR TO LIFTOFF (OPS-9). AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87  C-1909
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

HIGHEST CRITICALITY

HDW/FUNC

ORBITER: 3/2R

ABORT: 3/1R

SUBSYSTEM: ARCS

MDAC ID: 2008

ITEM: FUSE, 1A

FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

1) ELECTRICAL COMPONENTS

2) CONTROLS

3) THRUSTER SUBSYSTEM

4) MANIFOLD 1/L5, RJDA

5) FUSE, 1A

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LOCATION: PNL 015 S3

PART NUMBER: 33V73A15F4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:


REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1910
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2009

ITEM: FUSE, 1A
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) FUSE, 1A

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LOCATION: PNL 015 S3
PART NUMBER: 33V73A15F5

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1911
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2010

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LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUST SUBSYSTEM
4) MANIFOLD 2, RJDA
5) FUSE, 1A

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LOCATION: PNL 014 S4
PART NUMBER: 33V73A14F4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1912
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS

MDAC ID: 2011

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 3/2R

ABORT: 3/1R

ITEM: FUSE, 1A

FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) FUSE, 1A

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LOCATION: PNL 014 S3

PART NUMBER: 33V73A14F2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD LOGIC AND DRIVER CIRCUITS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1913
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2012

HIGHEST CRITICALITY
FLIGHT: 3/2R
ABORT: 2/1R

ITEM: FUSE, 1A
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) FUSE, 1A

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LOCATION: PNL 014 S4
PART NUMBER: 33V73A14F3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1914
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 2013

ITEM: FUSE, 1A
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRuster SUBSYSTEM
4) MANIFOLD 2, RJDA
5) FUSE, 1A

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LOCATION: PNL 014 S3
PART NUMBER: 33V73A14F1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD LOGIC AND DRIVER CIRCUITS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1915
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2014

ITEM: FUSE, 2A
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2/3/4, RJDA
5) FUSE, 2A

CRITICALITIES

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LOCATION: PNL 016 S4
PART NUMBER: 33V73A16F5

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NOTABLE TO SWITCH RJDA BUS C POWER. LOSS OF 1 OF 2 PWR SOURCES TO MANIFOLDS 2, 3, AND 4 DRIVER POWER CIRCUITS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF A MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. ABORT CRITICALITY IS 3/3 SINCE THE POWER LATCHING RELAY WAS SWITCHED TO "ON" PRIOR TO LIFTOFF (OPS-9). AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1916
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS MDAC ID: 2015

HIGHEST CRITICALITY
FLIGHT: 3/2R
ABORT: 2/1R

ITEM: FUSE, 1A
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O’DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3, RJDA
5) FUSE, 1A

CRITICALITIES

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LOCATION: PNL 016 S4
PART NUMBER: 33V73A16F4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1917
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/2R
MDAC ID: 2016  ABORT: 2/1R

ITEM: FUSE, 1A
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/5R, RJDA
5) FUSE, 1A
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LOCATION: PNL 016 S4
PART NUMBER: 33V73A16P3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87  C-1918
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/2R
MDAC ID: 2017  ABORT: 3/1R

ITEM: FUSE, 1A
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) FUSE, 1A
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LOCATION: PNL 016 S3
PART NUMBER: 33V73A16F2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87  C-1919
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2018

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 3/1R

ITEM: FUSE, 1A
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) FUSE, 1A

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LOCATION: PNL 016 S3
PART NUMBER: 33V73A16F1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1920
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
MDAC ID: 2019
FLIGHT: 3/2R
ABORT: 2/1R

ITEM: FUSE, 1A
FAI爾 ALYST: R.A. O’DONNELL
FAILURE MODE: FAILS OPEN
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) FUSE, 1A
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LOCATION: PNL 014 S6
PART NUMBER: 33V73A14F8

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1921
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2020

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 3/1R

ITEM: FUSE, 1A
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) FUSE, 1A

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LOCATION: PNL 014 S5
PART NUMBER: 33V73A14F6

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD LOGIC AND DRIVER CIRCUITS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOS OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1922
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2021

ITEM: FUSE, 1A
FAILURE MODE: FAILS OPEN
LEAD ANALYST: R.A. O’DONNELL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANrifOLD 4, RJDA
5) FUSE, 1A

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LOCATION: PNL 014 S6
PART NUMBER: 33V73A14F7

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD DRIVERS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1923
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2022

ITEM: FUSE, 1A
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) FUSE, 1A

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LOCATION: PNL 014 S5
PART NUMBER: 33V73A14F5

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD LOGIC AND DRIVER CIRCUITS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOS OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORB OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1924
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2023

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 2/1R

ITEM: LATCHING RELAY, RJDA BUS A
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/2/4, RJDA
5) LATCHING RELAY, RJDA BUS A
6)
7)
8)
9)

CRITICALITIES

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LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131 LATCHING RELAY K1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LATCHING RELAY FAILING OPEN WILL REMOVE 1 OF 2 REDUNDANT POWER SOURCES FROM FWD MANIFOLDS 1, 2, AND 4 DRIVER CIRCUITS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF AN AFT MANIFOLD (6 PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1925
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
HIGHEST CRITICALITY

SUBSYSTEM: ARCS
HDW/FUNC FLIGHT: 3/3
MDAC ID: 2024
ABORT: 3/3

ITEM: LATCHING RELAY, RJDA BUS A
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/2/4, RJDA
5) LATCHING RELAY, RJDA BUS A
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131 LATCHING RELAY K1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LATCHING RELAY FAILING CLOSED, WILL APPLY MN-A POWER TO AFT MANIFOLDS 1, 2, AND 4 DRIVER CIRCUITS. NO EFFECT, SINCE POWER CAN STILL BE CONTROLLED BY THE CORRESPONDING MANIFOLD DRIVER SWITCHES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1926
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2025

ITEM: LATCHING RELAY, RJDA BUS B
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/3, RJDA
5) LATCHING RELAY, RJDA BUS B

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LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132 LATCHING RELAY K2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LATCHING RELAY FAILING OPEN WILL REMOVE 1 OF 2 REDUNDANT POWER SOURCES FROM AFT MANIFOLDS 1 AND 3 DRIVER CIRCUITS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF AN AFT MANIFOLD (6 PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1927
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87

SUBSYSTEM: ARCS
MDAC ID: 2026

ITEM: LATCHING RELAY, RJDA BUS B
FAILURE MODE: Fails short

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/3, RJDA
5) LATCHING RELAY, RJDA BUS B

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132 LATCHING RELAY K2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LATCHING RELAY FAILING CLOSED, WILL APPLY MN-B POWER TO AFT MANIFOLDS 1 AND 3 DRIVER CIRCUITS. NO EFFECT, SINCE POWER CAN STILL BE CONTROLLED BY THE CORRESPONDING MANIFOLD DRIVER SWITCHES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1928
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87

SUBSYSTEM: ARCS
MDAC ID: 2027

HIGHEST CRITICALITY
FLIGHT: 3/2R
ABORT: 2/1R

ITEM: LATCHING RELAY, RJDA BUS C
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2/3/4, RJDA
5) LATCHING RELAY, RJDA BUS C

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LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133 LATCHING RELAY K2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LATCHING RELAY FAILING OPEN WILL REMOVE 1 OF 2 REDUNDANT POWER SOURCES FROM AFT MANIFOLDS 2, 3, AND 4 DRIVER CIRCUITS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. DURING ENTRY, LOSS OF THE MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF AN AFT MANIFOLD (6 PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1929
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

SUBSYSTEM: ARCS
MDAC ID: 2028

ITEM: LATCHING RELAY, RJDA BUS C
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2/3/4, RJDA
5) LATCHING RELAY, RJDA BUS C

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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133 LATCHING RELAY K2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LATCHING RELAY FAILING CLOSED, WILL APPLY MN-C POWER TO AFT MANIFOLDS 2, 3, AND 4 DRIVER CIRCUITS. NO EFFECT, SINCE POWER CAN STILL BE CONTROLLED BY THE CORRESPONDING MANIFOLD DRIVER SWITCHES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1930
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2029

HIGHEST CRITICALITY: HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, RJDA
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, LCA 1
PART NUMBER: 54V76A121R J4-106

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1931
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS                   FLIGHT:  3/3
MDAC ID:  2030                    ABORT:  3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL       SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, RJDA
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ]   B [ ]   C [ ]

LOCATION: AV BAY 4, LCA 1
PART NUMBER: 54V76A121R J4-106

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87          C-1932
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 2031

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, RJDA
5) RESISTOR, 1.8K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R17

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1933
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2032

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, RJDA
5) RESISTOR, 1.8K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R17

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
THE MDM WILL SEE AN ERRONEOUS "ON" SIGNAL WHEN RPC IS OFF. THE BLEED RESISTOR NORMALLY SHUNTS LEAKAGE CURRENT TO GROUND AND PREVENTS ERRONEOUS VOLTAGE READING TO MDM WITH INPUT CIRCUIT OFF.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1934
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 2033  ABORT: 3/3

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, RJDA
5) RESISTOR, 2.2K 1/2W
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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R18

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1935
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 2034

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, RJDA
5) RESISTOR, 2.2K 1/2W
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R18

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1936
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2035

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, RJDA
5) RESISTOR, 1.8K 1/4W

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1R10

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1937
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT: 3/3

MDAC ID: 2036

ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W

FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, RJDA
5) RESISTOR, 1.8K 1/4W
6)
7)
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9)

CRITICALITIES

FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC

PRELAUNCH: 3/3 RTLS: 3/3

LIFTOFF: 3/3 TAL: 3/3

ONORBIT: 3/3 AOA: 3/3

DEORBIT: 3/3 ATO: 3/3

LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, PCA 2

PART NUMBER: 55V76A132A1R10

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

THE MDM WILL SEE AN ERRONEOUS "ON" SIGNAL WHEN RPC IS OFF. THE BLEED RESISTOR NORMALLY SHUNTS LEAKAGE CURRENT TO GROUND AND PREVENTS ERRONEOUS VOLTAGE READING TO MDM WITH INPUT CIRCUIT OFF.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1938
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 2037  ABORT: 3/3

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, RJDA
5) RESISTOR, 2.2K 1/2W
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1R11

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1939
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
FLIGHT: 3/3
MDAC ID: 2038
ABORT: 3/3

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, RJDA
5) RESISTOR, 2.2K 1/2W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1R11

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1940
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2039

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/2/4, RJDA
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R7

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1941
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

SUBSYSTEM: ARCS
MDAC ID: 2040

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/2/4, RJDA
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R7

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1942
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

SUBSYSTEM: ARCS
MDAC ID: 2041

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/3, RJDA
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 56V76A132A1R15

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD Respond to PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1943
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2042

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/3, RJDA
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 56V76A132A1R15

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1944
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2043

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) RESISTOR, 1.2K 2W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R47

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF CURRENT LIMITING TO RPC. EXPECT NO PROBLEM WITH RPC OPERATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1945
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
HIGHEST CRITICALITY
SUBSYSTEM: ARCS
HDW/FUNC
MDAC ID: 2044
ABORT: 3/2R

ITEM: RESISTOR, 1.2K 2W
FAILING MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) RESISTOR, 1.2K 2W
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LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R47

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1946
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2045

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O’DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) RESISTOR, 1.2K 2W
6) 
7) 
8) 
9) 

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF CURRENT LIMITING TO RPC. EXPECT NO PROBLEM WITH RPC OPERATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1947
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2046
ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS OPEN
LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) RESISTOR, 1.2K 2W

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LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1948
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 2047

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) RESISTOR, 1.8K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R19

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1949
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 2048

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) RESISTOR, 1.8K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R19

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
THE MDM WILL SEE AN ERRONEOUS "ON" SIGNAL WHEN RPC IS OFF. THE BLEED RESISTOR NORMALLY SHUNTS LEAKAGE CURRENT TO GROUND AND PREVENTS ERRONEOUS VOLTAGE READING TO MDM WITH INPUT CIRCUIT OFF.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1950
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 2049  ABORT: 3/3

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O’DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) RESISTOR, 2.2K 1/2W

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R20

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1951
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 2050 ABORT: 3/3

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) RESISTOR, 2.2K 1/2W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R20

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1952
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2051

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) RESISTOR, 1.8K 1/4W

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R21

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1953
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 2052

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) RESISTOR, 1.8K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R21

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
The MDM will see an erroneous "ON" signal when RPC is off. The bleed resistor normally shunts leakage current to ground and prevents erroneous voltage reading to MDM with input circuit off.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1954
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 2053

HIGHEST CRITICALITY

FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O’DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) RESISTOR, 2.2K 1/2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R22

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1955
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2054

HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O’DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) RESISTOR, 2.2K 1/2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R22

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1956
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2055

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) RESISTOR, 1.2K 2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1R2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF CURRENT LIMITING TO RPC. EXPECT NO PROBLEM WITH RPC OPERATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1957
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/2R
MDAC ID: 2056  ABOFT: 3/1R

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) RESISTOR, 1.2K 2W

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LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1R2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87  C-1958
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS
MDAC ID: 2057

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) RESISTOR, 1.8K 1/4W
6)
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CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1R19

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1959
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

SUBSYSTEM: ARCS
MDAC ID: 2058

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O’DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) RESISTOR, 1.8K 1/4W

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REDUNDANCY SCREENS: A [ ]   B [ ]   C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1R19

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
THE MDM WILL SEE AN ERRONEOUS "ON" SIGNAL WHEN RPC IS OFF. THE BLEED RESISTOR NORMALLY SHUNTS LEAKAGE CURRENT TO GROUND AND PREVENTS ERRONEOUS VOLTAGE READING TO MDM WITH INPUT CIRCUIT OFF.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1960
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2059

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) RESISTOR, 2.2K 1/2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1R20

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1961
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2060

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1/L5, RJDA
5) RESISTOR, 2.2K 1/2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1R20

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1962
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2061

HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) RESISTOR, 1.2K 2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF CURRENT LIMITING TO RPC. EXPECT NO PROBLEM WITH RPC OPERATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1963
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 2062

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) RESISTOR, 1.2K 2W

CRITICALITIES

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LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OPEN RESISTOR REMOVES CAPABILITY OF THE DRIVER POWER LATCHING ON THE LOGIC POWER. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANT TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1964
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2063

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O’DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) RESISTOR, 1.8K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R36

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1965
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 2064

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) RESISTOR, 1.8K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R36

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
THE MDM WILL SEE AN ERRONEOUS "ON" SIGNAL WHEN RPC IS OFF. THE BLEED RESISTOR NORMALLY SHUNTS LEAKAGE CURRENT TO GROUND AND PREVENTS ERRONEOUS VOLTAGE READING TO MDM WITH INPUT CIRCUIT OFF.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1966
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2065

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) RESISTOR, 2.2K 1/2W

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REDUNDANCY SCREENS: A[ ] B[ ] C[ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R37

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1967
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2066

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) RESISTOR, 2.2K 1/2W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R37

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1968
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 2067 ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) RESISTOR, 1.8K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R38

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1969
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2068

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) RESISTOR, 1.8K 1/4W

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R38

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
THE MDM WILL SEE AN ERRONEOUS "ON" SIGNAL WHEN RPC IS OFF. THE BLEED RESISTOR NORMALLY SHUNTS LEAKAGE CURRENT TO GROUND AND PREVENTS ERRONEOUS VOLTAGE READING TO MDM WITH INPUT CIRCUIT OFF.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1970
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2069

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) RESISTOR, 2.2K 1/2W
6) 
7) 
8) 
9) 

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R39

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1971
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
HIGHEST CRITICALITY
SUBSYSTEM: ARCS
MDAC ID: 2070
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) RESISTOR, 2.2K 1/2W
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R39

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70–943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1972
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

HIGHEST CRITICALITY

SUBSYSTEM: ARCS
MDAC ID: 2071

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) RESISTOR, 5.1K 1/4W

REDUNDANCY SCREENS: A [ ] B [ ] C [..]

LOCATION: AV BAY 4, LCA 1
PART NUMBER: 54V76A121R J4-104

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL
SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE
SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1973
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS

MDAC ID: 2072

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 3/3

ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W

FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, LCA 1

PART NUMBER: 54V76A121R J4-104

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE: LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1974
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2073

HIGHEST CRITICALITY

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ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) RESISTOR, 1.2K 2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF CURRENT LIMITING TO RPC. EXPECT NO PROBLEM WITH RPC OPERATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87
C-1975
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2074

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) RESISTOR, 1.2K 2W

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LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OPEN RESISTOR REMOVES CAPABILITY OF THE DRIVER POWER LATCHING ON THE LOGIC POWER. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANT TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/30/87 C-1976
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2075

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) RESISTOR, 1.8K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R27

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1977
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2076

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) RESISTOR, 1.8K 1/4W

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76AL31A1R27

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
THE MDM WILL SEE AN ERRONEOUS "ON" SIGNAL WHEN RPC IS OFF. THE BLEED RESISTOR NORMALLY SHUNTS LEAKAGE CURRENT TO GROUND AND PREVENTS ERRONEOUS VOLTAGE READING TO MDM WITH INPUT CIRCUIT OFF.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2077

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) RESISTOR, 2.2K 1/2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R28

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1979
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2078

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) RESISTOR, 2.2K 1/2W
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R28

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1980
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 2079  ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W  FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRuster SUBSYSTEM
4) MANIFOLD 2, RJDA
5) RESISTOR, 1.8K 1/4W
6)
7)
8)
9)

CRITICALITIES

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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R29

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1981
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2080

HIGHEST CRITICALITY
HDW/FUNC FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) RESISTOR, 1.8K 1/4W
6)
7)
8)
9)

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R29

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
THE MDM WILL SEE AN ERRONEOUS "ON" SIGNAL WHEN RPC IS OFF. THE BLEED RESISTOR NORMALLY SHUNTS LEAKAGE CURRENT TO GROUND AND PREVENTS ERRONEOUS VOLTAGE READING TO MDM WITH INPUT CIRCUIT OFF.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1982
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 2081

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) RESISTOR, 2.2K 1/2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R30

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1983
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2082

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) RESISTOR, 2.2K 1/2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R30

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1984
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS              FLIGHT:  3/3
MDAC ID: 2083                ABORT:  3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) RESISTOR, 1.8K 1/4W

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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R31

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1985
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2084

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O’DONNELL
SUBSYS LEAD: D.J. PAUL

LEAD ANALYST: R.A. O’DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) RESISTOR, 1.8K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R31

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
THE MDM WILL SEE AN ERRONEOUS "ON" SIGNAL WHEN RPC IS OFF. THE BLEED RESISTOR NORMALLY SHUNTS LEAKAGE CURRENT TO GROUND AND PREVENTS ERRONEOUS VOLTAGE READING TO MDM WITH INPUT CIRCUIT OFF.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1986
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2085

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) RESISTOR, 2.2K 1/2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R32

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1987
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2086

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, RJDA
5) RESISTOR, 2.2K 1/2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R32

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1988
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2087

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2/3/4, RJDA
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R16

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1989
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 2088  ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W  FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2/3/4, RJDA
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R16

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1990
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT:  3/3
MDAC ID: 2089  ABORT:  3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3, RJDA
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123R J4-106

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1991
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2090

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3, RJDA
5) RESISTOR, 5.1K 1/4W
6)
7)
8)
9)

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123R J4-106

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1992
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
HIGHEST CRITICALITY
SUBSYSTEM: ARCS
HDW/FUNC
MDAC ID: 2091
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3, RJDA
5) RESISTOR, 1.8K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R46

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1993
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2092

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3, RJDA
5) RESISTOR, 1.8K 1/4W
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R46

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
THE MDM WILL SEE AN ERRONEOUS "ON" SIGNAL WHEN RPC IS OFF. THE BLEED RESISTOR NORMALLY SHUNTS LEAKAGE CURRENT TO GROUND AND PREVENTS ERRONEOUS VOLTAGE READING TO MDM WITH INPUT CIRCUIT OFF.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-1994
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2093

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3, RJDA
5) RESISTOR, 2.2K 1/2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R47

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1995
INDEPENDENT ORBITER ASSESSMENT  
ORBITER SUBSYSTEM ANALYSIS WORKSHEET  

DATE: 1/15/87  
HIGHEST CRITICALITY HDW/FUNC  
SUBSYSTEM: ARCS  
FLIGHT: 3/3  
MDAC ID: 2094  
ABORT: 3/3  

ITEM: RESISTOR, 2.2K 1/2W  
FAILURE MODE: FAILS OPEN  

LEAD ANALYST: R.A. O'DONNELL  
SUBSYS LEAD: D.J. PAUL  

BREAKDOWN HIERARCHY:  
1) ELECTRICAL COMPONENTS  
2) CONTROLS  
3) THRUSTER SUBSYSTEM  
4) MANIFOLD 3, RJDA  
5) RESISTOR, 2.2K 1/2W  
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REDUNDANCY SCREENS: A [ ]  
B [ ]  
C [ ]  

LOCATION: AV BAY 6, PCA 3  
PART NUMBER: 56V76A133A1R47  

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD  

EFFECTS/RATIONALE:  
LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.  

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK  

REPORT DATE 3/20/87  
C-1996
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2095

HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) RESISTOR, 1.2K 2W

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1R1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF CURRENT LIMITING TO RPC. EXPECT NO PROBLEM WITH RPC OPERATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-1997
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

HIGHEST CRITICALITY
HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT: 3/2R

MDAC ID: 2096

ABORT: 3/1R

ITEM: RESISTOR, 1.2K 2W

FALLURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) RESISTOR, 1.2K 2W

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LOCATION: AV BAY 5, PCA 2

PART NUMBER: 55V76A132A1R1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-1998
INDEPENDENT ORBITER ASSESSMENT  
ORBITER SUBSYSTEM ANALYSIS WORKSHEET  

DATE: 1/15/87  
HIGHEST CRITICALITY  
SUBSYSTEM: ARCS  
FLIGHT: 3/3  
MDAC ID: 2097  
ABORT: 3/3  

ITEM: RESISTOR, 1.8K 1/4W  
FAILURE MODE: FAILS SHORT  

LEAD ANALYST: R.A. O'DONNELL  
SUBSYS LEAD: D.J. PAUL  

BREAKDOWN HIERARCHY:  
1) ELECTRICAL COMPONENTS  
2) CONTROLS  
3) THRUSTER SUBSYSTEM  
4) MANIFOLD 3/R5, RJDA  
5) RESISTOR, 1.8K 1/4W  
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]  

LOCATION: AV BAY 5, PCA 2  
PART NUMBER: 55V76A132A1R27  

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD  

EFFECTS/RATIONALE:  
LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.  

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK  

REPORT DATE 3/20/87  

C-1999
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2098

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) RESISTOR, 1.8K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1R27

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
THE MDM WILL SEE AN ERRONEOUS "ON" SIGNAL WHEN RPC IS OFF. THE BLEED RESISTOR NORMALLY SHUNTS LEAKAGE CURRENT TO GROUND AND PREVENTS ERRONEOUS VOLTAGE READING TO MDM WITH INPUT CIRCUIT OFF.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2000
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

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ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) RESISTOR, 2.2K 1/2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1R28

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2001
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 2100  ABORT: 3/3

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) RESISTOR, 2.2K 1/2W
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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1R28

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-2002
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

HIGHEST CRITICALITY
HDW/FUNC

FLIGHT: 3/3
ABORT: 3/3

SUBSYSTEM: ARCS
MDAC ID: 2101

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) RESISTOR, 1.8K 1/4W

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1R7

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2003
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2102

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) RESISTOR, 1.8K 1/4W
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1R7

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
THE MDM WILL SEE AN ERRONEOUS "ON" SIGNAL WHEN RPC IS OFF. THE BLEED RESISTOR NORMALLY SHUNTS LEAKAGE CURRENT TO GROUND AND PREVENTS ERRONEOUS VOLTAGE READING TO MDM WITH INPUT CIRCUIT OFF.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-2004
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2103

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) RESISTOR, 2.2K 1/2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1R8

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2005
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
MDAC ID: 2104
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) RESISTOR, 2.2K 1/2W

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1R8

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-2006
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 2105  ABORT: 3/3

ITEM: RESISTOR, 1.2K 2W  FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) RESISTOR, 1.2K 2W
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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF CURRENT LIMITING TO RPC. EXPECT NO PROBLEM WITH RPC OPERATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-2007
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2106

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) RESISTOR, 1.2K 2W

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LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A-133A1R3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-2008
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2107

HIGHEST CRITICALITY
   HDW/FUNC
   FLIGHT: 3/3
   ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) RESISTOR, 1.8K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R50

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2009
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2108

HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) RESISTOR, 1.8K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ .. ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R50

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
THE MDM WILL SEE AN ERRONEOUS "ON" SIGNAL WHEN RPC IS OFF. THE BLEED RESISTOR NORMALLY SHUNTS LEAKAGE CURRENT TO GROUND AND PREVENTS ERRONEOUS VOLTAGE READING TO MDM WITH INPUT CIRCUIT OFF.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2010
INDEPENDENT ORBITER ASSESSMENT
ORBITE SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 2109 ABORT: 3/3

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) RESISTOR, 2.2K 1/2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R51

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2011
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2110

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) RESISTOR, 2.2K 1/2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R51

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2012
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT: 3/3

MDAC ID: 2111

ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W

FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) RESISTOR, 1.8K 1/4W
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 6, PCA 3

PART NUMBER: 56V76A133A1R48

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-2013
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
HIGHEST CRITICALITY

SUBSYSTEM: ARCS
HDW/FUNC

MDAC ID: 2112
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) RESISTOR, 1.8K 1/4W
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R48

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
THE MDM WILL SEE AN ERRONEOUS "ON" SIGNAL WHEN RPC IS OFF. THE BLEED RESISTOR NORMALLY SHUNTS LEAKAGE CURRENT TO GROUND AND PREVENTS ERRONEOUS VOLTAGE READING TO MDM WITH INPUT CIRCUIT OFF.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-2014
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2113
HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) RESISTOR, 2.2K 1/2W
6) 
7) 
8) 
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CRITICALITIES

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REDUNDANCY SCREENS: A [ ].. B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R49

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2015
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 3/3

ABORT: 3/3

SUBSYSTEM: ARCS

MDAC ID: 2114

ITEM: RESISTOR, 2.2K 1/2W

FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3/R5, RJDA
5) RESISTOR, 2.2K 1/2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3

PART NUMBER: 56V76A133A1R49

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2016
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

SUBSYSTEM: ARCS
MDAC ID: 2115

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) RESISTOR, 1.2K 2W

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF CURRENT LIMITING TO RPC. EXPECT NO PROBLEM WITH RPC OPERATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-2017
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 3/2R
ABORT: 3/1R

SUBSYSTEM: ARCS
MDAC ID: 2116

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) RESISTOR, 1.2K 2W

CONVENIENCE DATA:

CRITICALITIES

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LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OPEN RESISTOR REMOVES CAPABILITY OF THE DRIVER POWER LATCHING ON THE LOGIC POWER. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOS OR PTIS. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANT TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-2018
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
HIGHEST CRITICALITY

SUBSYSTEM: ARCS
MDAC ID: 2117

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) RESISTOR, 1.8K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R14

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 2118  ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) RESISTOR, 1.8K 1/4W

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R14

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
THE MDM WILL SEE AN ERRONEOUS "ON" SIGNAL WHEN RPC IS OFF. THE BLEED RESISTOR NORMALLY SHUNTS LEAKAGE CURRENT TO GROUND AND PREVENTS ERRONEOUS VOLTAGE READING TO MDM WITH INPUT CIRCUIT OFF.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-2020
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS          FLIGHT: 3/3
MDAC ID: 2119        ABORT: 3/3

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) RESISTOR, 2.2K 1/2W
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R15

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-2021
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2120

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) RESISTOR, 2.2K 1/2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R15

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2022
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 2121

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O’DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) RESISTOR, 1.8K 1/4W

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REDUNDANCY SCREENS: A [] B [] C []

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R11

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2023
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 2122  ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) RESISTOR, 1.8K 1/4W

CRITICALITIES

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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R11

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
THE MDM WILL SEE AN ERRONEOUS "ON" SIGNAL WHEN RPC IS OFF. THE BLEED RESISTOR NORMALLY SHUNTS LEAKAGE CURRENT TO GROUND AND PREVENTS ERRONEOUS VOLTAGE READING TO MDM WITH INPUT CIRCUIT OFF.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-2024
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 2123  ABORT: 3/3

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) RESISTOR, 2.2K 1/2W

CRITICALITIES

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REDUNDANCY SCREENS:  A [ ]    B [ ]    C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R12

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-2025
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 2124  ABORT: 3/3

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) RESISTOR, 2.2K 1/2W

CRITICALITIES

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REDUNDANCY SCREENS:  A [ ]   B [ ]   C [ ]

LOCATION:  AV BAY 4, PCA 1
PART NUMBER:  54V76A131A1R12

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE: LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-2026
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2125
HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123R141

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2027
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 2126  ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123R141

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-2028
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2127

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) RESISTOR, 1.2K 2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF CURRENT LIMITING TO RPC. EXPECT NO PROBLEM WITH RPC OPERATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2029
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2128

HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 3/2R
ABORT: 3/1R

ITEM: RESISTOR, 1.2K 2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O’DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) RESISTOR, 1.2K 2W

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LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56v76a133a1r2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OPEN RESISTOR REMOVES CAPABILITY OF THE DRIVER POWER LATCHING ON THE LOGIC POWER. DURING ENTRY, LOSS OF THIS MANIFOLD WILL AFFECT ANY SCHEDULED ENTRY DTOs OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WILL CAUSE THE INABILITY TO EXPLOD ENOUGH PROPELLANT TO MEET THE TANK LANDING CONSTRAINTS AND CG SAFETY BOUNDARIES DUE TO THE TRAPPED PROPELLANT WEIGHT. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-2030
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2129

HIGHEST CRITICALITY

FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) RESISTOR, 1.8K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R44

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2031
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 2130 ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) RESISTOR, 1.8K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R44

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
THE MDM WILL SEE AN ERRONEOUS "ON" SIGNAL WHEN RPC IS OFF. THE BLEED RESISTOR NORMALLY SHUNTS LEAKAGE CURRENT TO GROUND AND PREVENTS ERRONEOUS VOLTAGE READING TO MDM WITH INPUT CIRCUIT OFF.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2032
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 2131

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) RESISTOR, 2.2K 1/2W

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R45

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL
SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE
SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2033
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 2132  ABORT: 3/3

ITEM:  RESISTOR, 2.2K 1/2W  FAILURE MODE: FAILS OPEN
LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) RESISTOR, 2.2K 1/2W

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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION:  AV BAY 6, PCA 3
PART NUMBER:  56V76A133A1R45

CAUSES:  CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES:  VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-2034
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
FLIGHT: 3/3
MDAC ID: 2133
ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O’DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) RESISTOR, 1.8K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6,PCA 3
PART NUMBER: 56V76A133A1R40

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2035
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2134
HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O’DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) RESISTOR, 1.8K 1/4W
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CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R40

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
The MDM WILL SEE AN ERRONEOUS "ON" SIGNAL WHEN RPC IS OFF. THE BLEED RESISTOR NORMALLY SHUNTS LEAKAGE CURRENT TO GROUND AND PREVENTS ERRONEOUS VOLTAGE READING TO MDM WITH INPUT CIRCUIT OFF.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2036
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2135

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) RESISTOR, 2.2K 1/2W
6) 
7) 
8) 
9) 

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R41

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2037
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2136

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) RESISTOR, 2.2K 1/2W

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R41

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2137

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) RESISTOR, 1.8K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R42

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2039
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 2138  ABDOT: 3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) RESISTOR, 1.8K 1/4W
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R42

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
THE MDM WILL SEE AN ERRONEOUS "ON" SIGNAL WHEN RPC IS OFF. THE BLEED RESISTOR NORMALLY SHUNTS LEAKAGE CURRENT TO GROUND AND PREVENTS ERRONEOUS VOLTAGE READING TO MDM WITH INPUT CIRCUIT OFF.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-2040
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 2139

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) RESISTOR, 2.2K 1/2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R43

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2041
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2140

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, RJDA
5) RESISTOR, 2.2K 1/2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76A133A1R43

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2042
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

SUBSYSTEM: ARCS
MDAC ID: 2141

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L5, RJDA
5) RESISTOR, 1.8K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R43

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2043
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
MDAC ID: 2142

FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L5, RJDA
5) RESISTOR, 1.8K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R43

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
The MDM will see an erroneous "ON" signal when RPC is off. The bleed resistor normally shunts leakage current to ground and prevents erroneous voltage reading to MDM with input circuit off.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2044
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 2143

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L5, RJDA
5) RESISTOR, 2.2K 1/2W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R42

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-2045
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
MDAC ID: 2144
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L5, RJDA
5) RESISTOR, 2.2K 1/2W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R42

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-2046
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 2145  ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD R5, RJDA
5) RESISTOR, 1.8K 1/4W
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REdundancy Screens: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1R47

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87  C-2047
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 2146

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD R5, RJDA
5) RESISTOR, 1.8K 1/4W
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CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1R47

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
THE MDM WILL SEE AN ERRONEOUS "ON" SIGNAL WHEN RPC IS OFF. THE BLEED RESISTOR NORMALLY SHUNTS LEAKAGE CURRENT TO GROUND AND Prevents ERRONEOUS VOLTAGE READING TO MDM WITH INPUT CIRCUIT OFF.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2048
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87

SUBSYSTEM: ARCS
MDAC ID: 2147

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD R5, RJDA
5) RESISTOR, 2.2K 1/2W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1R48

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2049
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/15/87
SUBSYSTEM: ARCS
MDAC ID: 2148

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 2.2K 1/2W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD R5, RJDA
5) RESISTOR, 2.2K 1/2W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1R48

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VSS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/22/87 C-2050
INDEPENDENT ORBITER ASSESSMENT
ORBITE SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2149

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD R5, RJDA
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, LCA 2
PART NUMBER: 55V76A122R J2-11

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2051
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
HIGHEST CRITICALITY
SUBSYSTEM: ARCS
MDAC ID: 2150
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD RS, RJDA
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, LCA 2
PART NUMBER: 55V76A122R J2-11

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 3/20/87 C-2052
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87

SUBSYSTEM: ARCS
MDAC ID: 2151

ITEM: RJDA1B LI/L5/R1 MANIFOLD DRIVER SWITCH

FAILURE MODE: SWITCH FAILS IN THE ON POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD LI/L5/R1, RJDA1B
5) RJDA1B LI/L5/R1 MANIFOLD DRIVER SWITCH

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LOCATION: PNL O15 S4
PART NUMBER: 33V73A15S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
DRIVER POWER CAN BE REMOVED BY PLACING THE LI/L5/R1 MANIFOLD LOGIC SWITCH IN THE CLOSED POSITION. POWER CAN BE REMOVED FROM RJDA BUS A AND B ONLY BY REMOVING POWER FROM MAIN BUS A AND B. FAILURE OF ALL REDUNDANCY WILL CAUSE THE INABILITY TO REMOVE DRIVER POWER FROM THE MANIFOLD, WHICH WILL AFFECT ONORBIT OPERATIONS, AND POWER TO RJDA BUS A AND B.

REFERENCES: VS70-943099 REV B EO BL2, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2053
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2152

ITEM: RJDA1B L1/L5/R1 MANIFOLD DRIVER SWITCH
FAILURE MODE: SWITCH FAILS IN THE OFF POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L1/L5/R1, RJDA1B
5) RJDA1B L1/L5/R1 MANIFOLD DRIVER SWITCH

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 015 S 4
PART NUMBER: 33V73A15S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED FOR POWER TO RJDA BUS A AND B BY THE L4/R4 AND L3/R5/L3 MANIFOLD DRIVER SWITCHES, RESPECTIVELY. THERE IS NO REDUNDANCY FOR LOSS OF DRIVER POWER. FAILURE OF ALL REDUNDANCY WILL RESULT IN THE LOSS OF DRIVER POWER TO THE MANIFOLD AND POWER TO RJDA BUS B AND C, AND MAY AFFECT ONORB OPERATIONS, ENTRY DTOs AND PTIs, AND ABORT DUMP LENGTHS. FAILURE OF ALL REDUNDANCY DURING RTLS WILL CAUSE LOSS OF VEHICLE DUE TO THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 03/22/87 C-2054
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS   FLIGHT: 3/2R
MDAC ID: 2153   ABORT: 2/1R

ITEM: RJDA1B L1/L5/R1 MANIFOLD DRIVER ON SWITCH CONTACTS 1, 2
FAILURE MODE: SWITCH ON CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L1/L5/R1, RJDA1B
5) RJDA1B L1/L5/R1 MANIFOLD DRIVER ON SWITCH CONTACTS 1, 2
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LOCATION: PNL O15 S4
PART NUMBER: 33V73A15S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE OTHER OPEN CONTACTS OF THE SWITCH. FAILURE OF ALL REDUNDANCY WILL RESULT IN THE LOSS OF DRIVER POWER TO THE L1/L5/R1 MANIFOLD AND MAY AFFECT ONORBIT OPERATIONS, ENTRY DTOs AND PTIs, AND ABORT DUMP LENGTHS. FAILURE OF ALL REDUNDANCY DURING RTLS WILL CAUSE LOSS OF VEHICLE DUE TO INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 03/22/87 C-2055
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87   HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS   FLIGHT: 3/2R
MDAC ID: 2154   ABORT: 3/3

ITEM: RJDA1B L1/L5/R1 MANIFOLD DRIVER ON SWITCH CONTACTS 1, 2
FAILURE MODE: SWITCH ON CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER   SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L1/L5/R1, RJDA1B
5) RJDA1B L1/L5/R1 MANIFOLD DRIVER ON SWITCH CONTACTS 1, 2
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LOCATION: PNL O15 S4
PART NUMBER: 33V73A15S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
DRIVER POWER CAN BE REMOVED FROM THE MANIFOLD BY PLACING THE L1/L5/R1 MANIFOLD LOGIC SWITCH IN THE CLOSED POSITION. FAILURE OF ALL REDUNDANCY WILL CAUSE THE INABILITY TO REMOVE DRIVER POWER FROM MANIFOLD L1/ L5/R1 AND MAY AFFECT ONIBORIT OPERATIONS.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2056
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2155

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: RJDA1B L1/L5/R1 MANIFOLD DRIVER OFF SWITCH CONTACTS 3, 4
FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L1/L5/R1, RJDA1B
5) RJDA1B L1/L5/R1 MANIFOLD DRIVER OFF SWITCH CONTACTS 3, 4

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL O15 S4
PART NUMBER: 33V73A15S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2057
### INDEPENDENT ORBITER ASSESSMENT

**ORBITER SUBSYSTEM ANALYSIS WORKSHEET**

**DATE:** 1/27/87  
**HIGHEST CRITICALITY**  
**HDW/FUNC**

**SUBSYSTEM:** ARCS  
**FLIGHT:** 3/3  
**ABORT:** 3/3

**ITEM:** RJDA1B L1/L5/R1 MANIFOLD DRIVER OFF SWITCH  
**CONTACTS 3, 4**  
**FAILURE MODE:** SWITCH OFF CONTACTS FAIL CLOSED (SHORTED).

**LEAD ANALYST:** V.J. BURKEMPER  
**SUBSYS LEAD:** D.J. PAUL

### BREAKDOWN HIERARCHY:

1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L1/L5/R1, RJDA1B
5) RJDA1B L1/L5/R1 MANIFOLD DRIVER OFF SWITCH CONTACTS 3, 4
6) 
7) 
8) 
9) 

### CRITICALITIES

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### REDUNDANCY SCREENS:

A [ ]  
B [ ]  
C [ ]

**LOCATION:** PNL O15 S4  
**PART NUMBER:** 33V73A15S4

**CAUSES:** CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

**EFFECTS/RATIONALE:**  
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT

**REFERENCES:** VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

**REPORT DATE 3/20/87**  
**C-2058**
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2157

ITEM: RJDA1B L1/L5/R1 MANIFOLD DRIVER ON SWITCH CONTACTS 5, 6
FAILURE MODE: SWITCH ON CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L1/L5/R1, RJDA1B
5) RJDA1B L1/L5/R1 MANIFOLD DRIVER ON SWITCH CONTACTS 5, 6

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LOCATION: PNL 015 S4
PART NUMBER: 33V73A15S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE L3/R5/R3 MANIFOLD DRIVER SWITCH AND THE LATCHING BUS POWER RELAY. FAILURE OF ALL REDUNDANCY WILL RESULT IN THE LOSS OF POWER TO RJDA BUS B AND MAY AFFECT ONORBIT OPERATIONS, ENTRY DTOs AND PTIs, AND ABORT DUMP LENGTHS. FAILURE OF ALL REDUNDANCY DURING RTLS WILL CAUSE LOSS OF VEHICLE DUE TO INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 03/22/87 C-2059
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2158

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 3/3
ABORT: 3/3

ITEM: RJDA1B L1/L5/R1 MANIFOLD DRIVER ON SWITCH CONTACTS 5, 6

FAILURE MODE: SWITCH ON CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L1/L5/R1, RJDA1B
5) RJDA1B L1/L5/R1 MANIFOLD DRIVER ON SWITCH CONTACTS 5, 6

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 015 S4
PART NUMBER: 33V73A15S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
POWER CAN BE REMOVED FROM RJDA BUS B BY REMOVING POWER FROM MAIN BUS B. FAILURE OF ALL REDUNDANCY WILL RESULT IN INABILITY TO REMOVE POWER FROM RJDA BUS B.

REFERENCES: VS70-943099 REV B EO B12, CP: JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2060
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 2159 ABORT: 3/3

ITEM: RJDA1B L1/L5/R1 MANIFOLD DRIVER OFF SWITCH
CONTACTS 7, 8
FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L1/L5/R1, RJDA1B
5) RJDA1B L1/L5/R1 MANIFOLD DRIVER OFF SWITCH CONTACTS 7, 8

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 015 S4
PART NUMBER: 33V73A15S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE WILL CAUSE THE INABILITY TO REMOVE BUS B POWER FROM RJDA BUS B DUE TO THE LATCHING BUS POWER RELAY.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2061
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87

HIGHEST CRITICALITY

SUBSYSTEM: ARCS

MDAC ID: 2160

ABORT: 3/3

ITEM: RJDA1B L1/L5/R1 MANIFOLD DRIVER OFF SWITCH

FAILURE MODE: SWITCH OFF CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L1/L5/R1, RJDA1B
5) RJDA1B L1/L5/R1 MANIFOLD DRIVER OFF SWITCH CONTACTS 7, 8
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 015 S4

PART NUMBER: 33V73A15S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2062
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87                  HIGHEST CRITICALITY
SUBSYSTEM: ARCS               HDW/FUNC
MDAC ID: 2161                  FLIGHT: 3/2R

ITEM: RJDA1B L1/L5/R1 MANIFOLD DRIVER ON SWITCH CONTACTS 9, 10
FAILURE MODE: SWITCH ON CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER   SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L1/L5/R1, RJDA1B
5) RJDA1B L1/L5/R1 MANIFOLD DRIVER ON SWITCH CONTACTS 9, 10

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LOCATION: PNL 015 S4
PART NUMBER: 33V73A1554

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE OTHER OPEN CONTACTS OF THE SWITCH.
FAILURE OF ALL REDUNDANCY WILL RESULT IN THE LOSS OF DRIVER POWER TO THE L1/L5/R1 MANIFOLD AND MAY AFFECT ONORBBIT OPERATIONS, ENTRY DTOs AND PTIs, AND ABORT DUMP LENGTHS. FAILURE OF ALL REDUNDANCY DURING RTLS WILL CAUSE LOSS OF VEHICLE DUE TO INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 03/22/87  C-2063
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2162

HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 3/2R
ABORT: 3/3

ITEM: RJDAIB L1/L5/R1 MANIFOLD DRIVER ON SWITCH CONTACTS 9, 10
FAILURE MODE: SWITCH ON CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L1/L5/R1, RJDAIB
5) RJDAIB L1/L5/R1 MANIFOLD DRIVER ON SWITCH CONTACTS 9, 10

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LOCATION: PNL 015 S4
PART NUMBER: 33V73A15S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
DRIVER POWER CAN BE REMOVED FROM THE MANIFOLD BY PLACING THE L1/L5/R1 MANIFOLD LOGIC SWITCH IN THE CLOSED POSITION. FAILURE OF ALL REDUNDANCY WILL CAUSE THE INABILITY TO REMOVE DRIVER POWER FROM MANIFOLD L1/ 5/R1 AND MAY AFFECT ONORBIT OPERATIONS.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2064
## INDEPENDENT ORBITER ASSESSMENT
### ORBITER SUBSYSTEM ANALYSIS WORKSHEET

**DATE:** 1/27/87  
**HIGHEST CRITICALITY** HDW/FUNC

| SUBSYSTEM: | ARCS  
| MDAC ID: | 2163  

### ITEM: RJDA1B L1/L5/R1 MANIFOLD DRIVER OFF SWITCH CONTACTS 11, 12  
**FAILURE MODE:** SWITCH OFF CONTACTS FAIL OPEN.

**LEAD ANALYST:** V.J. BURKEMPER  
**SUBSYS LEAD:** D.J. PAUL

### BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS  
2) CONTROLS  
3) THRUSTER SUBSYSTEM  
4) MANIFOLD L1/L5/R1, RJDA1B  
5) RJDA1B L1/L5/R1 MANIFOLD DRIVER OFF SWITCH CONTACTS 11, 12

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**REDUNDANCY SCREENS:** A [ ] B [ ] C [ ]

**LOCATION:** PNL 015 S4  
**PART NUMBER:** 33V73A15S4

**CAUSES:** CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

**EFFECTS/RATIONALE:**  
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT

**REFERENCES:** VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

**REPORT DATE 3/20/87**  
C-2065
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 3/3
ABORT: 3/3

MDAC ID: 2164

ITEM: RJDA1B L1/L5/R1 MANIFOLD DRIVER OFF SWITCH

CONTACTS 11, 12

FAILURE MODE: SWITCH OFF CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L1/L5/R1, RJDA1B
5) RJDA1B L1/L5/R1 MANIFOLD DRIVER OFF SWITCH CONTACTS 11, 12

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 015 S4
PART NUMBER: 33V73A15S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2066
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/2R
MDAC ID: 2165  ABORT: 3/1R

ITEM: RJDA1B L1/L5/R1 MANIFOLD DRIVER ON SWITCH CONTACTS 13, 14
FAILURE MODE: SWITCH ON CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L1/L5/R1, RJDA1B
5) RJDA1B L1/L5/R1 MANIFOLD DRIVER ON SWITCH CONTACTS 13, 14
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LOCATION: PNL 015 S4
PART NUMBER: 33V73A15S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE L2/R2 AND THE L4/R4 MANIFOLD DRIVER SWITCHES AND THE LATCHING BUS POWER RELAY. FAILURE OF ALL REDUNDANCY WILL RESULT IN THE LOSS OF POWER TO RJDA BUS A AND MAY AFFECT ONORBIT OPERATIONS, ENTRY DTOS AND PTIs, AND ABORT DUMP LENGTHS. FAILURE OF ALL REDUNDANCY DURING RTLS WILL CAUSE LOSS OF VEHICLE DUE TO INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 03/22/87  C-2067
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2166

ITEM: RJDA1B L1/L5/R1 MANIFOLD DRIVER ON SWITCH CONTACTS 13, 14
FAILURE MODE: SWITCH ON CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L1/L5/R1, RJDA1B
5) RJDA1B L1/L5/R1 MANIFOLD DRIVER ON SWITCH CONTACTS 13, 14

CRITICALITIES

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: PNL 015 S4
PART NUMBER: 33V73A15S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
POWER CAN BE REMOVED FROM RJDA BUS A BY REMOVING POWER FROM MAIN BUS A. FAILURE OF ALL REDUNDANCY WILL RESULT IN INABILITY TO REMOVE POWER FROM RJDA BUS A.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87  C-2068
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87

SUBSYSTEM: ARCS

MDAC ID: 2167

HIGHEST CRITICALITY

HDW/FUNC: 3/3

FLIGHT: 3/3

ABORT: 3/3

ITEM: RJDA1B L1/L5/R1 MANIFOLD DRIVER OFF SWITCH

CONTACTS 15, 16

FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L1/L5/R1, RJDA1B
5) RJDA1B L1/L5/R1 MANIFOLD DRIVER OFF SWITCH CONTACTS 15, 16

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 015 S4

PART NUMBER: 33V73A15S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE WILL CAUSE THE INABILITY TO REMOVE BUS A POWER FROM RJDA BUS A DUE TO THE LATCHING BUS POWER RELAY.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2069
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2168

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RJDA1B L1/L5/R1 MANIFOLD DRIVER OFF SWITCH CONTACTS 15, 16
FAILURE MODE: SWITCH OFF CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L1/L5/R1, RJDA1B
5) RJDA1B L1/L5/R1 MANIFOLD DRIVER OFF SWITCH CONTACTS 15, 16
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 015 S4
PART NUMBER: 33V73A15S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2070
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/2R
MDAC ID: 2169  ABORT: 3/3

ITEM: RJDA1B L1/L5/R1 MANIFOLD LOGIC SWITCH
FAILURE MODE: SWITCH FAILS IN THE ON POSITION.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L1/L5/R1, RJDA1B
5) RJDA1B L1/L5/R1 MANIFOLD LOGIC SWITCH

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LOCATION: PNL 015 S3
PART NUMBER: 33V73A15S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOGIC POWER CAN BE REMOVED BY REMOVING POWER TO CONTROL BUSSES AB1 AND AB2. DRIVER POWER CAN BE REMOVED FROM THE MANIFOLD BY PLACING THE L1/L5/R1 MANIFOLD DRIVER SWITCH IN THE CLOSED POSITION. FAILURE OF ALL REDUNDANCY WILL CAUSE THE INABILITY TO REMOVE LOGIC AND DRIVER POWER FROM MANIFOLD L1/L5/R1, AND WILL AFFECT ONORBIT OPERATIONS.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 03/22/87  C-2071
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2170

ITEM: RJDA1B L1/L5/R1 MANIFOLD LOGIC Switch
FAILURE MODE: SWITCH FAILS IN THE OFF POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L1/L5/R1, RJDA1B
5) RJDA1B L1/L5/R1 MANIFOLD LOGIC SWITCH

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 015 S3
PART NUMBER: 33V73A15S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE CAUSES LOSS OF LOGIC POWER TO THE L1/L5/R1 MANIFOLD AND MAY AFFECT ONORBIT OPERATIONS, ENTRY DTS AND PTIS, AND ABORT DUMP LENGTHS. FAILURE DURING RTLS WILL CAUSE LOSS OF VEHICLE DUE TO INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2072
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2171

ITEM: RJDA1B L1/L5/R1 MANIFOLD LOGIC ON SWITCH CONTACTS 1, 2
FAILURE MODE: SWITCH ON CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER

SUBSYSTEM: MDAC
ID:
1/27/87 HIGHEST CRITICALITY HDW/FUNC
ARCS FLIGHT: 3/2R
ABORT: 2/1R

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L1/L5/R1, RJDA1B
5) RJDA1B L1/L5/R1 MANIFOLD LOGIC ON SWITCH CONTACTS 1, 2

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LOCATION: PNL 015 S3
PART NUMBER: 33V73A15S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE OTHER ON SWITCH CONTACTS. FAILURE RESULTS IN THE LOSS OF LOGIC AND DRIVER POWER TO THE L1/L5/R1 MANIFOLD AND MAY AFFECT ONORBIT OPERATIONS AND ENTRY DTOs AND PTIs. FAILURE OF ALL REDUNDANCY DURING RTLS WILL CAUSE LOSS OF VEHICLE DUE TO INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDRIES.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 03/22/87 C-2073
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

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**BREAKDOWN HIERARCHY:**
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L1/L5/R1, RJDA1B
5) RJDA1B L1/L5/R1 MANIFOLD LOGIC ON SWITCH CONTACTS 1, 2

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**LOCATION:** PNL 015 S3
**PART NUMBER:** 33V73A15S3

**CAUSES:** CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

**EFFECTS/RATIONALE:** DRIVER POWER CAN BE REMOVED FROM THE MANIFOLD BY PLACING THE L1/L5/R1 MANIFOLD DRIVER SWITCH IN THE CLOSED POSITION. FAILURE OF ALL REDUNDANCY WILL CAUSE THE INABILITY TO REMOVE LOGIC AND DRIVER POWER FROM MANIFOLD L1/L5/R1 AND MAY AFFECT ONORBIT OPERATIONS.

**REFERENCES:** VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87  C-2074
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87

SUBSYSTEM: ARCS
MDAC ID: 2173

ITEM: RJDA1B L1/L5/R1 MANIFOLD LOGIC OFF SWITCH CONTACTS 3, 4
FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L1/L5/R1, RJDA1B
5) RJDA1B L1/L5/R1 MANIFOLD LOGIC OFF SWITCH CONTACTS 3, 4

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 015 S3
PART NUMBER: 33V73A15S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2075
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2174

HIGHEST CRITICALITY
HDW/FUNC: FLIGHT: 3/3
ABORT: 3/3

ITEM: RJDA1B L1/L5/R1 MANIFOLD LOGIC OFF SWITCH CONTACTS 3, 4
FAILURE MODE: SWITCH OFF CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L1/L5/R1, RJDA1B
5) RJDA1B L1/L5/R1 MANIFOLD LOGIC OFF SWITCH CONTACTS 3, 4

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 015 S3
PART NUMBER: 33V73A15S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2076
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2175

ITEM: RJDA1B L1/L5/R1 MANIFOLD LOGIC ON SWITCH CONTACTS 5, 6
FAILURE MODE: SWITCH ON CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L1/L5/R1, RJDA1B
5) RJDA1B L1/L5/R1 MANIFOLD LOGIC ON SWITCH CONTACTS 5, 6

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LOCATION: PNL 015 S3
PART NUMBER: 33V73A15S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE OF ALL REDUNDANCY DURING RTLS MAY CAUSE LOSS OF VEHICLE DUE TO INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO BI2, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 03/22/87 C-2077
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2176

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 3/3

ITEM: RJDA1B L1/L5/R1 MANIFOLD LOGIC ON SWITCH CONTACTS 5, 6
FAILURE MODE: SWITCH ON CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L1/L5/R1, RJDA1B
5) RJDA1B L1/L5/R1 MANIFOLD LOGIC ON SWITCH CONTACTS 5, 6


LOCATION: PNL O15 S3
PART NUMBER: 33V73A15S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
DRIVER POWER CAN BE REMOVED FROM THE MANIFOLD BY PLACING THE L1/L5/R1 MANIFOLD DRIVER SWITCH IN THE CLOSED POSITION. FAILURE OF ALL REDUNDANCY WILL CAUSE THE INABILITY TO REMOVE LOGIC AND DRIVER POWER FROM MANIFOLD L1/L5/R1 AND MAY AFFECT ONORBIT OPERATIONS.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2078
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2177

ITEM: RJDA1B L1/L5/R1 MANIFOLD LOGIC OFF SWITCH CONTACTS 7, 8
FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L1/L5/R1, RJDA1B
5) RJDA1B L1/L5/R1 MANIFOLD LOGIC OFF SWITCH CONTACTS 7, 8
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: PNL 015 S3
PART NUMBER: 33V73A15S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87  C-2079
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2178

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RJDA1B L1/L5/R1 MANIFOLD LOGIC OFF SWITCH CONTACTS 7, 8
FAILURE MODE: SWITCH OFF CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L1/L5/R1, RJDA1B
5) RJDA1B L1/L5/R1 MANIFOLD LOGIC OFF SWITCH CONTACTS 7, 8

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 015 S3
PART NUMBER: 33V73A15S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2080
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2179

HIGHEST CRITICALITY
FLIGHT: 3/2R
ABORT: 3/3

ITEM: RJDA1A L2/R2 MANIFOLD DRIVER SWITCH
FAILURE MODE: SWITCH FAILS IN THE ON POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L2/R2, RJDA1A
5) RJDA1A L2/R2 MANIFOLD DRIVER SWITCH
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LOCATION: PNL O14 S4
PART NUMBER: 33V73A14S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
DRIVER POWER CAN BE REMOVED BY PLACING THE L2/R2 MANIFOLD LOGIC SWITCH IN THE CLOSED POSITION. POWER CAN BE REMOVED FROM RJDA BUS A AND C ONLY BY REMOVING POWER FROM MAIN BUS A AND C. FAILURE OF ALL REDUNDANCY WILL CASE THE INABILITY TO REMOVE DRIVER POWER FROM THE MANIFOLD, WHICH WILL AFFECT ONORBIT OPERATIONS, AND POWER TO RJDA BUS A AND C.

REFERENCES: VS70-943099 REV B EO B12, CP: JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2081
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2180

HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 2/2
ABORT: 1/1

ITEM: RJDA1A L2/R2 MANIFOLD DRIVER SWITCH
FAILURE MODE: SWITCH FAILS IN THE OFF POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L2/R2, RJDA1A
5) RJDA1A L2/R2 MANIFOLD DRIVER SWITCH
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL O14 S4
PART NUMBER: 33V73A14S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED FOR POWER TO RJDA BUS A BY THE L4/R4 AND L1/L5/L1 MANIFOLD DRIVER SWITCHES. REDUNDANCY FOR POWER TO RJDA BUS C IS PROVIDED BY THE L3/R5/R3 AND THE L4/R4 MANIFOLD DRIVER SWITCHES. THERE IS NO REDUNDANCY FOR THE DRIVER POWER.

FAILURE OF ALL REDUNDANCY WILL RESULT IN THE LOSS OF DRIVER POWER TO THE MANIFOLD AND POWER TO RJDA BUS B AND C, AND MAY AFFECT ONORBIT OPERATIONS, ENTRY DTOS AND PTIS, AND ABORT DUMP LENGTHS.

FAILURE OF ALL REDUNDANCY DURING RTLS WILL CAUSE LOSS OF VEHICLE DUE TO THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2082
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87  HIGHEST CRITICALITY
SUBSYSTEM: ARCS  HDW/FUNC: FLIGHT: 3/2R
MDAC ID: 2181  ABORT: 2/1R

ITEM: RJDA1A L2/R2 MANIFOLD DRIVER ON SWITCH CONTACTS 1, 2
FAILURE MODE: SWITCH ON CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L2/R2, RJDA1A
5) RJDA1A L2/R2 MANIFOLD DRIVER ON SWITCH CONTACTS 1, 2

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LOCATION: PNL 014 S4
PART NUMBER: 33V73A14S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE OTHER OPEN CONTACTS OF THE SWITCH.
FAILURE OF ALL REDUNDANCY WILL RESULT IN THE LOSS OF DRIVER POWER
TO THE L2/R2 MANIFOLD AND MAY AFFECT ONORBIT OPERATIONS, ENTRY
DTOs AND PTIs, AND ABORT DUMP LENGTHS. FAILURE OF ALL
REDUNDANCY DURING RTLS WILL CAUSE LOSS OF VEHICLE DUE TO
INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING
WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE
SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 03/22/87 C-2083
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2182

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 3/3

ITEM: RJDA1A L2/R2 MANIFOLD DRIVER ON SWITCH CONTACTS 1, 2
FAILURE MODE: SWITCH ON CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L2/R2, RJDA1A
5) RJDA1A L2/R2 MANIFOLD DRIVER ON SWITCH CONTACTS 1, 2
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LOCATION: PNL 014 S4
PART NUMBER: 33V73A14S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
DRIVER POWER CAN BE REMOVED FROM THE MANIFOLD BY PLACING THE L2/R2 MANIFOLD LOGIC SWITCH IN THE CLOSED POSITION. FAILURE OF ALL REDUNDANCY WILL CAUSE THE INABILITY TO REMOVE DRIVER POWER FROM MANIFOLD L2/R2 AND MAY AFFECT ONORBIT OPERATIONS.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2084
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2183

HDW/FUNC
HIGHEST CRITICALITY

FLIGHT: 3/3
ABORT: 3/3

ITEM: RJDA1A L2/R2 MANIFOLD DRIVER OFF SWITCH CONTACTS 3, 4
FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L2/R2, RJDA1A
5) RJDA1A L2/R2 MANIFOLD DRIVER OFF SWITCH CONTACTS 3, 4

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 014 S4
PART NUMBER: 33V73A14S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2085
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS               FLIGHT:  3/3
MDAC ID: 2184           ABORT:  3/3

ITEM: RJDA1A L2/R2 MANIFOLD DRIVER OFF SWITCH CONTACTS 3, 4
FAILURE MODE: SWITCH OFF CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L2/R2, RJDA1A
5) RJDA1A L2/R2 MANIFOLD DRIVER OFF SWITCH CONTACTS 3, 4

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REDUNDANCY SCREENS:  A [   ]  B [   ]  C [   ]

LOCATION: PNL 014 S4
PART NUMBER: 33V73A14S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87    C-2086
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2185

ITEM: RJDA1A L2/R2 MANIFOLD DRIVER ON SWITCH CONTACTS 5, 6
FAILURE MODE: SWITCH ON CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L2/R2, RJDA1A
5) RJDA1A L2/R2 MANIFOLD DRIVER ON SWITCH CONTACTS 5, 6
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LOCATION: PNL 014 S4
PART NUMBER: 33V73A14S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE LD1/L5/R1 AND THE L4/R4 MANIFOLD DRIVER SWITCHES AND THE LATCHING BUS POWER RELAY. FAILURE OF ALL REDUNDANCY WILL RESULT IN THE LOSS OF POWER TO RJDA BUS A AND MAY AFFECT ONORBIT OPERATIONS, ENTRY DTOs AND PTIs, AND ABORT DUMP LENGTHS. FAILURE OF ALL REDUNDANCY DURING RTLS WILL CAUSE LOSS OF VEHICLE DUE TO INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 03/22/87  C-2087
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2186

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RJDA1A L2/R2 MANIFOLD DRIVER ON SWITCH CONTACTS 5, 6
FAILURE MODE: SWITCH ON CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L2/R2, RJDA1A
5) RJDA1A L2/R2 MANIFOLD DRIVER ON SWITCH CONTACTS 5, 6
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 014 S4
PART NUMBER: 33V73A14S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
POWER CAN BE REMOVED FROM RJDA BUS A BY REMOVING POWER FROM MAIN BUS A. FAILURE OF ALL REDUNDANCY WILL RESULT IN INABILITY TO REMOVE POWER FROM RJDA BUS A.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2088
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87

SUBSYSTEM: ARCS

MDAC ID: 2187

ITEM: RJDA1A L2/R2 MANIFOLD DRIVER OFF SWITCH CONTACTS 7, 8
FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L2/R2, RJDA1A
5) RJDA1A L2/R2 MANIFOLD DRIVER OFF SWITCH CONTACTS 7, 8

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 014 S4
PART NUMBER: 33V73A14S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE WILL CAUSE THE INABILITY TO REMOVE BUS A POWER FROM RJDA BUS A DUE TO THE LATCHING BUS POWER RELAY.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2089
INDEPENDENT ORBITER ASSESSMENT  
ORBITER SUBSYSTEM ANALYSIS WORKSHEET  

DATE: 1/27/87  
SUBSYSTEM: ARCS  
MDAC ID: 2188  

HIGHEST CRITICALITY HDW/FUNC  
FLIGHT: 3/3  
ABORT: 3/3  

ITEM: RJDA1A L2/R2 MANIFOLD DRIVER OFF SWITCH CONTACTS 7, 8  
FAILURE MODE: SWITCH OFF CONTACTS FAIL CLOSED (SHORTED).  

LEAD ANALYST: V.J. BURKEMPER  
SUBSYS LEAD: D.J. PAUL  

BREAKDOWN HIERARCHY:  
1) ELECTRICAL COMPONENTS  
2) CONTROLS  
3) THRUSTER SUBSYSTEM  
4) MANIFOLD L2/R2, RJDA1A  
5) RJDA1A L2/R2 MANIFOLD DRIVER OFF SWITCH CONTACTS 7, 8  
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]  
LOCATION: PNL 014 S4  
PART NUMBER: 33V73A14S4  

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD  

EFFECTS/RATIONALE:  

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2  

REPORT DATE 3/20/87  
C-2090
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2189

ITEM: RJDA1A L2/R2 MANIFOLD DRIVER ON SWITCH CONTACTS 9, 10
FAILURE MODE: SWITCH ON CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L2/R2, RJDA1A
5) RJDA1A L2/R2 MANIFOLD DRIVER ON SWITCH CONTACTS 9, 10

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LOCATION: PNL 014 S4
PART NUMBER: 33V73A14S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE OTHER OPEN CONTACTS OF THE SWITCH.
FAILURE OF ALL REDUNDANCY WILL RESULT IN THE LOSS OF DRIVER POWER TO THE L2/R2 MANIFOLD AND MAY AFFECT ONORBIT OPERATIONS, ENTRY DTOs AND PTIs, AND ABORT DUMP LENGTHS. FAILURE OF ALL REDUNDANCY DURING RTLS WILL CAUSE LOSS OF VEHICLE DUE TO INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 03/22/87 C-2091
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2190

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 3/3

ITEM: RJDA1A L2/R2 MANIFOLD DRIVER ON SWITCH CONTACTS 9, 10
FAILURE MODE: SWITCH ON CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER Subsys Lead: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L2/R2, RJDA1A
5) RJDA1A L2/R2 MANIFOLD DRIVER ON SWITCH CONTACTS 9, 10
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LOCATION: PNL 014 S4
PART NUMBER: 33V73A14S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
DRIVER POWER CAN BE REMOVED FROM THE MANIFOLD BY PLACING THE L2/R2 MANIFOLD LOGIC SWITCH IN THE CLOSED POSITION. FAILURE OF ALL REDUNDANCY WILL CAUSE THE INABILITY TO REMOVE DRIVER POWER FROM MANIFOLD L2/R2 AND MAY AFFECT ONORBIT OPERATIONS.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2092
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2191

ITEM: RJDA1A L2/R2 MANIFOLD DRIVER OFF SWITCH CONTACTS 11, 12
FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L2/R2, RJDA1A
5) RJDA1A L2/R2 MANIFOLD DRIVER OFF SWITCH CONTACTS 11, 12

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 014 S4
PART NUMBER: 33V73A14S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2093
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2192

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RJDA1A L2/R2 MANIFOLD DRIVER OFF SWITCH CONTACTS 11, 12
FAILURE MODE: SWITCH OFF CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L2/R2, RJDA1A
5) RJDA1A L2/R2 MANIFOLD DRIVER OFF SWITCH CONTACTS 11, 12

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 014 S4
PART NUMBER: 33V73A14S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2094
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/2R
MDAC ID: 2193  ABORT: 3/1R

ITEM: RJDA1A L2/R2 MANIFOLD DRIVER ON SWITCH CONTACTS
13, 14
FAILURE MODE: SWITCH ON CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L2/R2, RJDA1A
5) RJDA1A L2/R2 MANIFOLD DRIVER ON SWITCH CONTACTS 13, 14
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LOCATION: PNL 014 S4
PART NUMBER: 33V73A14S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL
SHOCK, OVERLOAD

EFFECTS/RATIONALE:
SWITCHES AND THE LATCHING BUS POWER RELAY. FAILURE OF ALL
REDUNDANCY WILL RESULT IN THE LOSS OF POWER TO RJDA BUS C AND MAY
AFFECT ONORBIT OPERATIONS, ENTRY DTOS AND PTIs, AND
ABORT DUMP LENGTHS. FAILURE OF ALL REDUNDANCY DURING RTLS WILL
CAUSE LOSS OF VEHICLE DUE TO INABILITY TO EXPEL ENOUGH
PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR
THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE
SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 03/22/87  C-2095
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2194

ITEM: RJDA1A L2/R2 MANIFOLD DRIVER ON SWITCH CONTACTS 13, 14
FAILURE MODE: SWITCH ON CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L2/R2, RJDA1A
5) RJDA1A L2/R2 MANIFOLD DRIVER ON SWITCH CONTACTS 13, 14

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 014 S4
PART NUMBER: 33V73A14S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
POWER CAN BE REMOVED FROM RJDA BUS C BY REMOVING POWER FROM MAIN BUS C. FAILURE OF ALL REDUNDANCY WILL RESULT IN INABILITY TO REMOVE POWER FROM RJDA BUS C.

REFERENCES: VS70-943099 REV B EO B12, CP: JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2096
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2195

ITEM: RJDA1A L2/R2 MANIFOLD DRIVER OFF SWITCH CONTACTS 15, 16
FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L2/R2, RJDA1A
5) RJDA1A L2/R2 MANIFOLD DRIVER OFF SWITCH CONTACTS 15, 16

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL O14 S4
PART NUMBER: 33V73A14S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE WILL CAUSE THE INABILITY TO REMOVE BUS C POWER FROM RJDA BUS C DUE TO THE LATCHING BUS POWER RELAY.

REFERENCES: VS70-943099 REV B EO B12, CP: JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2097
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 2196  ABORT: 3/3

ITEM: RJDA1A L2/R2 MANIFOLD DRIVER OFF SWITCH CONTACTS 15, 16
FAILURE MODE: SWITCH OFF CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L2/R2, RJDA1A
5) RJDA1A L2/R2 MANIFOLD DRIVER OFF SWITCH CONTACTS 15, 16

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LOCATION: PNL O14 S4
PART NUMBER: 33V73A14S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87  C-2098
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2197

ITEM: RJDA1A L2/R2 MANIFOLD LOGIC SWITCH
FAILURE MODE: SWITCH FAILS IN THE ON POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L2/R2, RJDA1A
5) RJDA1A L2/R2 MANIFOLD LOGIC SWITCH
6)
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9)

CRITICALITIES

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LOCATION: PNL 014 S3
PART NUMBER: 33V73A14S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOGIC POWER CAN BE REMOVED BY REMOVING POWER TO CONTROL BUSSES CA1 AND CA2. DRIVER POWER CAN BE REMOVED FROM THE MANIFOLD BY PLACING THE L2/R2 MANIFOLD DRIVER SWITCH IN THE CLOSED POSITION. FAILURE OF ALL REDUNDANCY WILL CAUSE THE INABILITY TO REMOVE LOGIC AND DRIVER POWER FROM MANIFOLD L2/R2, AND MAY AFFECT ONORBIT OPERATIONS.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2099
INDEPENDENT ORBITER ASSESSMENT
ORBTER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87

SUBSYSTEM: ARCS
MDAC ID: 2198

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 2/2
ABORT: 1/1

ITEM: RJDA1A L2/R2 MANIFOLD LOGIC SWITCH

FAILURE MODE: SWITCH FAILS IN THE OFF POSITION.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L2/R2, RJDA1A
5) RJDA1A L2/R2 MANIFOLD LOGIC SWITCH

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 014 S3
PART NUMBER: 33V73A14S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE CAUSES LOSS OF LOGIC POWER TO THE L2/R2 MANIFOLD AND MAY AFFECT ONORBIT OPERATIONS, ENTRY DTOs AND PTIs, AND ABORT DUMP LENGTHS. FAILURE DURING RTLS WILL CAUSE LOSS OF VEHICLE DUE TO INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 03/22/87 C-2100
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
MDAC ID: 2199

ITEM: RJDA1A L2/R2 MANIFOLD LOGIC ON SWITCH CONTACTS 1, 2
FAILURE MODE: SWITCH ON CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L2/R2, RJDA1A
5) RJDA1A L2/R2 MANIFOLD LOGIC ON SWITCH CONTACTS 1, 2

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LOCATION: PNL 014 S3
PART NUMBER: 33V73A14S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE OTHER ON SWITCH CONTACTS. FAILURE RESULTS IN THE LOSS OF LOGIC AND DRIVER POWER TO THE L2/R2 MANIFOLD AND MAY AFFECT ONORBUT OPERATIONS AND ENTRY DTOS AND PTIs. FAILURE OF ALL REDUNDANCY DURING RTLS WILL CAUSE LOSS OF VEHICLE DUE TO INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 03/22/87  C-2101
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2200

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 3/3

ITEM: RJDA1A L2/R2 MANIFOLD LOGIC ON SWITCH CONTACTS 1, 2
FAILURE MODE: SWITCH ON CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L2/R2, RJDA1A
5) RJDA1A L2/R2 MANIFOLD LOGIC ON SWITCH CONTACTS 1, 2
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LOCATION: PNL O14 S3
PART NUMBER: 33V73A14S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL
SHOCK, OVERLOAD

EFFECTS/RATIONALE:
DRIVER POWER CAN BE REMOVED FROM THE MANIFOLD BY PLACING THE
L2/R2 MANIFOLD DRIVER SWITCH IN THE CLOSED POSITION. FAILURE OF
ALL REDUNDANCY WILL CAUSE THE INABILITY TO REMOVE LOGIC AND
DRIVER POWER FROM MANIFOLD L4/R4 AND MAY AFFECT ONORBIT
OPERATIONS.

REFERENCES: VS70-943099 REV B EO B12, CP: JSC 11174, SPACE
SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 03/22/87 C-2102
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87

SUBSYSTEM: ARCS

MDAC ID: 2201

HIGHEST CRITICALITY HDW/FUNC

FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L2/R2, RJDA1A
5) RJDA1A L2/R2 MANIFOLD LOGIC OFF SWITCH CONTACTS 3, 4

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 014 S3

PART NUMBER: 33V73A14S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2103
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2202

HIGHEST CRITICALITY HDW/FUNC:
FLIGHT: 3/3
ABORT: 3/3

ITEM:
RJDA1A L2/R2 MANIFOLD LOGIC OFF SWITCH CONTACTS 3, 4

FAILURE MODE:
SWITCH OFF CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L2/R2, RJDA1A
5) RJDA1A L2/R2 MANIFOLD LOGIC OFF SWITCH CONTACTS 3, 4

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 014 S3
PART NUMBER: 33V73A14S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2203

Highest Criticality
HDW/FUNC
Flight: 3/2R
Abort: 3/1R

Item: RJDA1A L2/R2 MANIFOLD LOGIC ON SWITCH CONTACTS 5, 6
Failure Mode: SWITCH ON CONTACTS FAIL OPEN.

Lead Analyst: V.J. Burkemper
Subsys Lead: D.J. Paul

Breakdown Hierarchy:
1) Electrical Components
2) Controls
3) Thruster Subsystem
4) Manifold L2/R2, RJDA1A
5) RJDA1A L2/R2 Manifold Logic on Switch Contacts 5, 6
6)
7)
8)
9)

Criticalities

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Location: PNL 014 S3
Part Number: 33V73A14S3

Causes: Contamination, Vibration, Mechanical Shock, Thermal Shock, Overload

Effects/Rationale:
Redundancy provided by the L1/L5/R1 and the L4/R4 manifold driver switches and the latching bus power relay. Failure results in the loss of logic and driver power to the L2/R2 manifold and may affect onorbit operations and entry DTOs and PTIs. Failure of all redundancy during RTLS may cause loss of vehicle due to the inability to expel enough propellants to meet the tank landing weight constraints and/or the CG safety boundaries.

References: VS70-943099 Rev B EO B12, CP; JSC 11174, Space Shuttle Systems Handbook, PG 11.10, RCS SIG 2

Report Date 03/22/87 C-2105
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/2R
MDAC ID: 2204  ABORT: 3/3

ITEM: RJDA1A L2/R2 MANIFOLD LOGIC ON SWITCH CONTACTS 5, 6
FAILURE MODE: SWITCH ON CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L2/R2, RJDA1A
5) RJDA1A L2/R2 MANIFOLD LOGIC ON SWITCH CONTACTS 5, 6
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LOCATION: PNL O14 S3
PART NUMBER: 33V73A14S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
DRIVER POWER CAN BE REMOVED FROM THE MANIFOLD BY PLACING THE L2/R2 MANIFOLD DRIVER SWITCH IN THE CLOSED POSITION. FAILURE OF ALL REDUNDANCY WILL CAUSE THE INABILITY TO REMOVE LOGIC AND DRIVER POWER FROM MANIFOLD L4/R4 AND MAY AFFECT ONORBIT OPERATIONS.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87  C-2106
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2205

ITEM: RJDA1A L2/R2 MANIFOLD LOGIC OFF SWITCH CONTACTS 7, 8

FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L2/R2, RJDA1A
5) RJDA1A L2/R2 MANIFOLD LOGIC OFF SWITCH CONTACTS 7, 8
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 014 S3
PART NUMBER: 33V73A14S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87  C-2107
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
FLIGHT: 3/3
MDAC ID: 2206
ABORT: 3/3

ITEM: RJDA1A L2/R2 MANIFOLD LOGIC OFF SWITCH CONTACTS 7, 8
FAILURE MODE: SWITCH OFF CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L2/R2, RJDA1A
5) RJDA1A L2/R2 MANIFOLD LOGIC OFF SWITCH CONTACTS 7, 8

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL O14 S3
PART NUMBER: 33V73A14S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2108
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87

SUBSYSTEM: ARCS
MDAC ID: 2207

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 3/3

ITEM: RJDA2B L3/R3/R5 MANIFOLD DRIVER SWITCH
FAILURE MODE: SWITCH FAILS IN THE ON POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L3/R3/R5, RJDA2B
5) RJDA2B L3/R3/R5 MANIFOLD DRIVER SWITCH

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LOCATION: PNL 016 S4
PART NUMBER: 33V73A16S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
DRIVER POWER CAN BE REMOVED BY PLACING THE L3/R5/R3 MANIFOLD LOGIC SWITCH IN THE CLOSED POSITION. POWER CAN BE REMOVED FROM RJDA BUS B AND C ONLY BY REMOVING POWER FROM MAIN BUS B AND C. FAILURE OF ALL REDUNDANCY WILL CAUSE THE INABILITY TO REMOVE DRIVER POWER FROM THE MANIFOLD, WHICH WILL AFFECT ONORBIT OPERATIONS, AND POWER TO RJDA BUS B AND C.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2109
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2208

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 2/2
ABORT: 1/1

ITEM: RJDA2B L3/R3/R5 MANIFOLD DRIVER SWITCH
FAILURE MODE: SWITCH FAILS IN THE OFF POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L3/R3/R5, RJDA2B
5) RJDA2B L3/R3/R5 MANIFOLD DRIVER SWITCH

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 016 S4
PART NUMBER: 33V73A16S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED FOR POWER TO RJDA BUS B BY THE L1/L5/L1 MANIFOLD DRIVER SWITCH. REDUNDANCY FOR POWER TO RJDA BUS C PROVIDED BY THE L2/R2 AND THE L4/R4 MANIFOLD DRIVER SWITCHES. THERE IS NO REDUNDANCY LOSS OF DRIVER POWER. FAILURE OF ALL REDUNDANCY WILL RESULT IN THE LOSS OF DRIVER POWER TO THE MANIFOLD AND POWER TO RJDA BUS B AND C, AND MAY AFFECT ONORBIT OPERATIONS, ENTRY DTOs AND PTIs, AND ABORT DUMP LENGTHS. FAILURE OF ALL REDUNDANCY DURING RTLS WILL CAUSE LOSS OF VEHICLE DUE TO INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 03/22/87 C-2110
INDEPENDENT ORBITER ASSESSMENT  
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87  
HIGHEST CRITICALITY HDW/FUNC  
SUBSYSTEM: ARCS  
FLIGHT: 3/2R  
MDAC ID: 2209  
ABORT: 2/1R  

ITEM: RJDA2B L3/R3/R5 MANIFOLD DRIVER ON SWITCH CONTACTS 1, 2  
FAILURE MODE: SWITCH ON CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER  
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS  
2) CONTROLS  
3) THRUSTER SUBSYSTEM  
4) MANIFOLD L3/R3/R5, RJDA2B  
5) RJDA2B L3/R3/R5 MANIFOLD DRIVER ON SWITCH CONTACTS 1, 2

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LOCATION: PNL 016 S4  
PART NUMBER: 33V73A16S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE OTHER OPEN CONTACTS OF THE SWITCH.
FAILURE OF ALL REDUNDANCY WILL RESULT IN THE LOSS OF DRIVER POWER TO THE L3/R5/R3 MANIFOLD AND MAY AFFECT ONORBIT OPERATIONS, ENTRY DTOs AND PTIs, AND ABORT DUMP LENGTHS. FAILURE OF ALL REDUNDANCY DURING RTLS WILL CAUSE LOSS OF VEHICLE DUE TO INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG II.10, RCS SIG 2

REPORT DATE 03/22/87  C-2111
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2210

ITEM: RJDA2B L3/R3/R5 MANIFOLD DRIVER ON SWITCH CONTACTS 1, 2
FAILURE MODE: SWITCH ON CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L3/R3/R5, RJDA2B
5) RJDA2B L3/R3/R5 MANIFOLD DRIVER ON SWITCH CONTACTS 1, 2

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LOCATION: PNL 016 S4
PART NUMBER: 33V73A16S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2112
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2211

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: RJDA2B L3/R3/R5 MANIFOLD DRIVER OFF SWITCH CONTACTS 3, 4
FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L3/R3/R5, RJDA2B
5) RJDA2B L3/R3/R5 MANIFOLD DRIVER OFF SWITCH CONTACTS 3, 4

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REduNDANCy SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION: PNL 016 S4
PART NUMBER: 33V73A16S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT

REFERENCES: VS70-943099 REV B EO BI2, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87  C-2113
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2212
HIGHEST CRITICALITY: HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RJDA2B L3/R3/R5 MANIFOLD DRIVER OFF SWITCH
CONTACTS 3, 4
FAILURE MODE: SWITCH OFF CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L3/R3/R5, RJDA2B
5) RJDA2B L3/R3/R5 MANIFOLD DRIVER OFF SWITCH CONTACTS 3, 4

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 016 S4
PART NUMBER: 33V73A16S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2114
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

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| LOCATION: | PNL 016 S4 |
| PART NUMBER: | 33V73A16S4 |

| CAUSES: | CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD |

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<td>FAILURE OF ALL REDUNDANCY DURING RTLS WILL CAUSE LOSS OF VEHICLE DUE TO INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.</td>
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| REFERENCES: | VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2 |

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INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2214

ITEM: RJDA2B L3/R3/R5 MANIFOLD DRIVER ON SWITCH CONTACTS 5, 6
FAILURE MODE: SWITCH ON CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L3/R3/R5, RJDA2B
5) RJDA2B L3/R3/R5 MANIFOLD DRIVER ON SWITCH CONTACTS 5, 6

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 016 S4
PART NUMBER: 33V73A16S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
POWER CAN BE REMOVED FROM RJDA BUS B BY REMOVING POWER FROM MAIN BUS B. FAILURE OF ALL REDUNDANCY WILL RESULT IN INABILITY TO REMOVE POWER FROM RJDA B.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2215

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: RJDA2B L3/R3/R5 MANIFOLD DRIVER OFF SWITCH CONTACTS 7, 8
FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L3/R3/R5, RJDA2B
5) RJDA2B L3/R3/R5 MANIFOLD DRIVER OFF SWITCH CONTACTS 7, 8

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL O16 S4
PART NUMBER: 33V73A16S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE WILL CAUSE THE INABILITY TO REMOVE BUS B POWER FROM RJDA BUS B DUE TO THE LATCHING BUS POWER RELAY.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2117
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2216

ITEM: RJDA2B L3/R3/R5 MANIFOLD DRIVER OFF SWITCH
CONTACTS 7, 8
FAILURE MODE: SWITCH OFF CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER   SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L3/R3/R5, RJDA2B
5) RJDA2B L3/R3/R5 MANIFOLD DRIVER OFF SWITCH CONTACTS 7, 8

CRITICALITIES
FLIGHT PHASE   HDW/FUNC   ABORT   HDW/FUNC
PRELAUNCH: 3/3   RTLS: 3/3
LIFTOFF: 3/3   TAL: 3/3
ONORBIT: 3/3   AOA: 3/3
DEORBIT: 3/3   ATO: 3/3
LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [ ]   B [ ]   C [ ]

LOCATION: PNL O16 $4
PART NUMBER: 33V73A16S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY TO OPEN THE POWER PATH THROUGH CONTACT SET 7, 8 TO RJDA BUS B IS PROVIDED BY THE L1/L5/R1 MANIFOLD DRIVER SWITCH. REDUNDANCY TO PREVENT REMOVAL OF RJDA BUS B POWER IS ALSO PROVIDED BY THE ON POSITIONS OF THE L1/L5/R1 AND THE L3/R5/R3 MANIFOLD DRIVER SWITCHES. FAILURE OF ALL REDUNDANCY WILL RESULT IN THE LOSS OF POWER TO RJDA BUS B.

REFERENCES: VS70-943099 REV B EO B12, CP: JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87   C-2118
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2217

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 2/1R

ITEM: RJDA2B L3/R3/R5 MANIFOLD DRIVER ON SWITCH CONTACTS 9, 10
FAILURE MODE: SWITCH ON CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L3/R3/R5, RJDA2B
5) RJDA2B L3/R3/R5 MANIFOLD DRIVER ON SWITCH CONTACTS 9, 10
6) 
7) 
8) 
9) 

ELECTRICAL COMPONENTS
CONTROLS
THRUSTER SUBSYSTEM
MANIFOLD L3/R3/R5, RJDA2B
RJDA2B L3/R3/R5 MANIFOLD DRIVER ON SWITCH CONTACTS 9, 10

CRITICALITIES

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LOCATION: PNL 016 S4
PART NUMBER: 33V73A16S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE OTHER OPEN CONTACTS OF THE SWITCH.
FAILURE OF ALL REDUNDANCY WILL RESULT IN THE LOSS OF DRIVER POWER
TO THE L3/R5/R3 MANIFOLD AND MAY AFFECT ONORBIT OPERATIONS, ENTRY
DTOs AND PTIs, AND ABORT DUMP LENGTHS. FAILURE OF ALL
REDUNDANCY DURING RTLS WILL CAUSE LOSS OF VEHICLE DUE TO
INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING
WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2119
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/2R
MDAC ID: 2218  ABORT: 3/3

ITEM: RJDA2B L3/R3/R5 MANIFOLD DRIVER ON SWITCH CONTACTS 9, 10
FAILURE MODE: SWITCH ON CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L3/R3/R5, RJDA2B
5) RJDA2B L3/R3/R5 MANIFOLD DRIVER ON SWITCH CONTACTS 9, 10

CRITICALITIES

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LOCATION: PNL 016 S4
PART NUMBER: 33V73A16S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD


REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87  C-2120
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2219

HIGHEST CRITICALITY  HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RJDA2B L3/R3/R5 MANIFOLD DRIVER OFF SWITCH CONTACTS 11, 12
FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L3/R3/R5, RJDA2B
5) RJDA2B L3/R3/R5 MANIFOLD DRIVER OFF SWITCH CONTACTS 11, 12

CRITICALITIES

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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION:  PNL 016 S4
PART NUMBER:  33V73A16S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11714, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87  C-2121
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2220

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RJDA2B L3/R3/R5 MANIFOLD DRIVER OFF SWITCH CONTACTS 11, 12
FAILURE MODE: SWITCH OFF CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L3/R3/R5, RJDA2B
5) RJDA2B L3/R3/R5 MANIFOLD DRIVER OFF SWITCH CONTACTS 11, 12

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 016 S4
PART NUMBER: 33V73A16S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2122
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2221

ITEM: RJDA2B L3/R3/R5 MANIFOLD DRIVER ON SWITCH CONTACTS 13, 14
FAILURE MODE: SWITCH ON CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L3/R3/R5, RJDA2B
5) RJDA2B L3/R3/R5 MANIFOLD DRIVER ON SWITCH CONTACTS 13, 14
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CRITICALITIES

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LOCATION: PNL 016 S4
PART NUMBER: 33V73A16S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REdundancy provided by the L2/R2 and the L4/R4 manifold driver switches and the latching bus power relay. Failure of all redundancy will result in the loss of power to RJDA bus C and may affect onorbit operations, entry DTOS and PTIs, and abort dump lengths. Failure of all redundancy during RTLS will cause loss of vehicle due to inability to expel enough propellants to meet the tank landing weight constraints and/or the CG safety boundaries.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 03/22/87 C-2123
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS        FLIGHT: 3/3
MDAC ID: 2222         ABORT: 3/3

ITEM: RJDA2B L3/R3/R5 MANIFOLD DRIVER ON SWITCH CONTACTS 13, 14
FAILURE MODE: SWITCH ON CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER        SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L3/R3/R5, RJDA2B
5) RJDA2B L3/R3/R5 MANIFOLD DRIVER ON SWITCH CONTACTS 13, 14
...

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION:    PNL 016 S4
PART NUMBER: 33V73A16S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
POWER CAN BE REMOVED FROM RJDA BUS C BY REMOVING POWER FROM MAIN BUS C. FAILURE OF ALL REDUNDANCY WILL RESULT IN INABILITY TO REMOVE POWER FROM RJDA B.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2124
**INDEPENDENT ORBITER ASSESSMENT**

**ORBITER SUBSYSTEM ANALYSIS WORKSHEET**

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**ITEM:** RJDA2B L3/R3/R5 MANIFOLD DRIVER OFF SWITCH CONTACTS 15, 16

**FAILURE MODE:** SWITCH OFF CONTACTS FAIL OPEN.

**LEAD ANALYST:** V.J. BURKEMPER  
**SUBSYS LEAD:** D.J. PAUL

**BREAKDOWN HIERARCHY:**

1) ELECTRICAL COMPONENTS  
2) CONTROLS  
3) THRUSTER SUBSYSTEM  
4) MANIFOLD L3/R3/R5, RJDA2B  
5) RJDA2B L3/R3/R5 MANIFOLD DRIVER OFF SWITCH CONTACTS 15, 16

**CRITICALITIES**

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**REDUNDANCY SCREENS:** A [ ] B [ ] C [ ]

**LOCATION:** PNL 016 S4  
**PART NUMBER:** 33V73A16S4

**CAUSES:** CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

**EFFECTS/RATIONALE:**  
FAILURE WILL CAUSE THE INABILITY TO REMOVE BUS C POWER FROM RJDA BUS C DUE TO THE LATCHING BUS POWER RELAY.

**REFERENCES:** VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

**REPORT DATE:** 3/20/87  
**C-2125**
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87

HIGHEST CRITICALITY

SUBSYSTEM: ARCS
MDAC ID: 2224

ITEM:

RJDA2B L3/R3/R5 MANIFOLD DRIVER OFF SWITCH

CONTACTS 15, 16

FAILURE MODE: SWITCH OFF CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L3/R3/R5, RJDA2B
5) RJDA2B L3/R3/R5 MANIFOLD DRIVER OFF SWITCH CONTACTS 15, 16

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 016 S4

PART NUMBER: 33V73A16S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2126
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

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**LEAD ANALYST:** V.J. BURKEMPER  **SUBSYS LEAD:** D.J. PAUL

**BREAKDOWN HIERARCHY:**
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L3/R3/R5, RJDA2B
5) RJDA2B L3/R3/R5 MANIFOLD LOGIC SWITCH
6) 
7) 
8) 
9) 

**CRITICALITIES**

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**LOCATION:** PNL O16 S3  **PART NUMBER:** 33V73A163S3

**CAUSES:** CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

**EFFECTS/RATIONALE:**

**REFERENCES:** VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

**REPORT DATE:** 3/20/87  **C-2127**
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87  HIGHEST CRITICALITY    HDW/FUNC
SUBSYSTEM: ARCS   FLIGHT: 2/2
MDAC ID: 2226  ABORT: 1/1

ITEM: RJDA2B L3/R3/R5 MANIFOLD LOGIC SWITCH
FAILURE MODE: SWITCH FAILS IN THE OFF POSITION.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L3/R3/R5, RJDA2B
5) RJDA2B L3/R3/R5 MANIFOLD LOGIC SWITCH
6)
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8)
9)

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REDUNDANCY SCREENS: A  [ ]  B  [ ]  C  [ ]

LOCATION: PNL 016 S3
PART NUMBER: 33V73A1653

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE CAUSES LOSS OF LOGIC POWER TO THE L3/R5/R3 MANIFOLD AND MAY AFFECT ONORBIT OPERATIONS, ENTRY DTOs AND PTIs, AND ABORT DUMP LENGTHS. FAILURE DURING RTLS WILL CAUSE LOSS OF VEHICLE DUE TO INABILITY TO EXPEL ANOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 03/22/87  C-2128
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87

SUBSYSTEM: ARCS
MDAC ID: 2227

ITEM: RJDA2B L3/R3/R5 MANIFOLD LOGIC ON SWITCH CONTACTS 1, 2
FAILURE MODE: SWITCH ON CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L3/R3/R5, RJDA2B
5) RJDA2B L3/R3/R5 MANIFOLD LOGIC ON SWITCH CONTACTS 1, 2

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LOCATION: PNL O16 S3
PART NUMBER: 33V73A16S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY OTHER ON SWITCH CONTACTS. FAILURE RESULTS IN THE LOSS OF LOGIC AND DRIVER POWER TO THE L3/R5/R3 MANIFOLD AND MAY AFFECT ONORB OPERATIONS AND ENTRY DTOs AND PTIs. FAILURE OF ALL REDUNDANCY DURING RTLS WILL CAUSE LOSS OF VEHICLE DUE TO INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 03/22/87 C-2129
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2228

HIGHEST CRITICALITY HDW/FUNC FLIGHT: 3/2R ABORT: 3/3

ITEM: RJDA2B L3/R3/R5 MANIFOLD LOGIC ON SWITCH CONTACTS 1, 2

FAILURE MODE: SWITCH ON CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L3/R3/R5, RJDA2B
5) RJDA2B L3/R3/R5 MANIFOLD LOGIC ON SWITCH CONTACTS 1, 2
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LOCATION: PNL 016 S3
PART NUMBER: 33V73A16S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2130
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87    HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS    FLIGHT: 3/3
MDAC ID: 2229    ABORT: 3/3

ITEM: RJDA2B L3/R3/R5 MANIFOLD LOGIC OFF SWITCH CONTACTS 3, 4
FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER    SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L3/R3/R5, RJDA2B
5) RJDA2B L3/R3/R5 MANIFOLD LOGIC OFF SWITCH CONTACTS 3, 4
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 016 S3
PART NUMBER: 33V73A16S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2131
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 2230  ABORT: 3/3

ITEM: RJDA2B L3/R3/R5 MANIFOLD LOGIC OFF SWITCH CONTACTS 3, 4
FAILURE MODE: SWITCH OFF CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L3/R3/R5, RJDA2B
5) RJDA2B L3/R3/R5 MANIFOLD LOGIC OFF SWITCH CONTACTS 3, 4
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: PNL 016 S3
PART NUMBER: 33V73A16S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87  C-2132
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

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**ITEM:** RJDA2B L3/R3/R5 MANIFOLD LOGIC ON SWITCH CONTACTS 5, 6
**FAILURE MODE:** SWITCH ON CONTACTS FAIL OPEN.

**LEAD ANALYST:** V.J. BURKEMPER **SUBSYS LEAD:** D.J. PAUL

**BREAKDOWN HIERARCHY:**

1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L3/R3/R5, RJDA2B
5) RJDA2B L3/R3/R5 MANIFOLD LOGIC ON SWITCH CONTACTS 5, 6


**LOCATION:** PNL 016 S3
**PART NUMBER:** 33V73A16S3

**CAUSES:** CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

**EFFECTS/RATIONALE:**
REDUNDANCY PROVIDED BY THE L1/L5/R1 MANIFOLD DRIVER SWITCH AND THE LATCHING BUS POWER RELAY. FAILURE RESULTS IN THE LOSS OF LOGIC AND DRIVER POWER TO THE L3/R5/R3 MANIFOLD AND MAY AFFECT ONORBIT OPERATIONS AND ENTRY DTOs AND PTIs. FAILURE OF ALL REDUNDANCY DURING RTLS WILL CAUSE LOSS OF VEHICLE DUE TO INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

**REFERENCES:** VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

**REPORT DATE 03/22/87**  C-2133
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87  
HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  
FLIGHT: 3/2R
MDAC ID: 2232  
ABORT: 3/3

ITEM: RJDA2B L3/R3/R5 MANIFOLD LOGIC ON SWITCH CONTACTS 5, 6
FAILURE MODE: SWITCH ON CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER  
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANNIFOLD L3/R3/R5, RJDA2B
5) RJDA2B L3/R3/R5 MANIFOLD LOGIC ON SWITCH CONTACTS 5, 6

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LOCATION: PNL O16 S3
PART NUMBER: 33V73A16S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87  C-2134
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2233

ITEM: RJDA2B L3/R3/R5 MANIFOLD LOGIC OFF SWITCH CONTACTS 7, 8
FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L3/R3/R5, RJDA2B
5) RJDA2B L3/R3/R5 MANIFOLD LOGIC OFF SWITCH CONTACTS 7, 8

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]
LOCATION: PNL 016 S3
PART NUMBER: 33V73A16S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87  C-2135
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87

HIGHEST CRITICITY HDW/FUNC

SUBSYSTEM: ARCS

MDAC ID: 2234

FLIGHT: 3/3

ABORT: 3/3

ITEM: RJDA2B L3/R3/R5 MANIFOLD LOGIC OFF SWITCH CONTACTS 7, 8

FAILURE MODE: SWITCH OFF CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER

LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L3/R3/R5, RJDA2B
5) RJDA2B L3/R3/R5 MANIFOLD LOGIC OFF SWITCH CONTACTS 7, 8
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: PNL 016 S3

PART NUMBER: 33V73A16S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87  C-2136
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2235

ITEM: RJDA2A L4/R4 MANIFOLD DRIVER SWITCH
FAILURE MODE: SWITCH FAILS IN THE ON POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L4/R4, RJDA2A
5) RJDA2A L4/R4 MANIFOLD DRIVER SWITCH

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LOCATION: PNL 016 S6
PART NUMBER: 33V73A14S6

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
DRIVER POWER CAN BE REMOVED BY PLACING THE L4/R4 MANIFOLD LOGIC SWITCH IN THE CLOSED POSITION. POWER CAN BE REMOVED FROM RJDA BUS A AND C ONLY BY REMOVING POWER FROM MAIN BUS A NAD C. FAILURE OF ALL REDUNDANCY WILL CAUSE THE INABILITY TO REMOVE DRIVER POWER FROM THE MANIFOLD, WHICH WILL AFFECT ONORBIT OPERATIONS, AND POWER TO RJDA BUS A AND C.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2137
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2236

ITEM: RJDA2A L4/R4 MANIFOLD DRIVER SWITCH
FAILURE MODE: SWITCH FAILS IN THE OFF POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L4/R4, RJDA2A
5) RJDA2A L4/R4 MANIFOLD DRIVER SWITCH

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 016 S6
PART NUMBER: 33V73A14S6

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED FOR POWER TO RJDA BUS A AND B BY THE L2/R2 AND L1/L5/L1 MANIFOLD DRIVER SWITCH. REDUNDANCY FOR POWER TO RJDA BUS C PROVIDED BY THE L3/R2 AND THE L3/R5/R3 MANIFOLD DRIVER SWITCHES. THERE IS NO REDUNDANCY FOR LOSS OF DRIVER POWER. FAILURE OF ALL REDUNDANCY WILL RESULT IN THE LOSS OF DRIVER POWER TO THE MANIFOLD AND POWER TO RJDA BUS A AND C, AND MAY AFFECT ONORBIT OPERATIONS, ENTRY DTOs AND PTIs, AND ABORT DUMP LENGTHS. FAILURE OF ALL REDUNDANCY DURING RTLS WILL CAUSE LOSS OF VEHICLE DUE TO THE INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 03/22/87 C-2138
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2237

ITEM: RJDA2A L4/R4 MANIFOLD DRIVER ON SWITCH CONTACTS 1, 2
FAILURE MODE: SWITCH ON CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L4/R4, RJDA2A
5) RJDA2A L4/R4 MANIFOLD DRIVER ON SWITCH CONTACTS 1, 2

CRITICALITIES

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LOCATION: PNL 016 S6
PART NUMBER: 33V73A1456

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE OTHER OPEN CONTACTS OF THE SWITCH. FAILURE OF ALL REDUNDANCY WILL RESULT IN THE LOSS OF DRIVER POWER TO THE L4/R4 MANIFOLD AND MAY AFFECT ONORBIT OPERATIONS, ENTRY DTOS AND PTIs, AND ABORT DUMP LENGTHS. FAILURE OF ALL REDUNDANCY DURING RTLS WILL CAUSE LOSS OF VEHICLE DUE TO INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 03/22/87  C-2139
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2238

ITEM: RJDA2A L4/R4 MANIFOLD DRIVER ON SWITCH CONTACTS 1, 2
FAILURE MODE: SWITCH ON CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L4/R4, RJDA2A
5) RJDA2A L4/R4 MANIFOLD DRIVER ON SWITCH CONTACTS 1, 2

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LOCATION: PNL 016 S6
PART NUMBER: 33V73A14S6

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
DRIVER POWER CAN BE REMOVED FROM THE MANIFOLD BY PLACING THE L4/R4 MANIFOLD LOGIC SWITCH IN THE CLOSED POSITION. FAILURE OF ALL REDUNDANCY WILL CAUSE THE INABILITY TO REMOVE DRIVER POWER FROM MANIFOLD L4/R4 AND MAY AFFECT ONORBIT OPERATIONS.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2140
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 2239 ABORT: 3/3

ITEM: RJDA2A L4/R4 MANIFOLD DRIVER OFF SWITCH CONTACTS 3, 4
FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L4/R4, RJDA2A
5) RJDA2A L4/R4 MANIFOLD DRIVER OFF SWITCH CONTACTS 3, 4
6) MANIFOLD L4/R4
7) RJDA2A
8) L4/R4
9) CONTACTS

CRITICALITIES

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: PNL 016 S6
PART NUMBER: 33V73A14S6

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE: NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87  C-2141
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 2240  ABORT: 3/3

ITEM: RJDA2A L4/R4 MANIFOLD DRIVER OFF SWITCH CONTACTS 3, 4
FAILURE MODE: SWITCH OFF CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L4/R4, RJDA2A
5) RJDA2A L4/R4 MANIFOLD DRIVER OFF SWITCH CONTACTS 3, 4

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: PNL 016 S6
PART NUMBER: 33V73A14S6

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, CP: JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87  C-2142
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2241

ITEM: RJDA2A L4/R4 MANIFOLD DRIVER ON SWITCH CONTACTS 5, 6
FAILURE MODE: SWITCH ON CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L4/R4, RJDA2A
5) RJDA2A L4/R4 MANIFOLD DRIVER ON SWITCH CONTACTS 5, 6

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LOCATION: PNL 016 S6
PART NUMBER: 33V73A14S6

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE L3/R5/R3 AND THE L4/R4 MANIFOLD DRIVER SWITCHES AND THE LATCHING BUS POWER RELAY. FAILURE OF ALL REDUNDANCY WILL RESULT IN THE LOSS OF POWER TO RJDA BUS C AND MAY AFFECT ONORBIT OPERATIONS, ENTRY DTOs AND PTIs, AND ABORT DUMP LENGTHS. FAILURE OF ALL REDUNDANCY DURING RTLS WILL CAUSE LOSS OF VEHICLE DUE TO INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 03/22/87 C-2143
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2242

ITEM: RJDA2A L4/R4 MANIFOLD DRIVER ON SWITCH CONTACTS 5, 6

FAILURE MODE: SWITCH ON CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L4/R4, RJDA2A
5) RJDA2A L4/R4 MANIFOLD DRIVER ON SWITCH CONTACTS 5, 6

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 016 S6
PART NUMBER: 33V73A14S6

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
POWER CAN BE REMOVED FROM RJDA BUS C BY REMOVING POWER FROM MAIN BUS C. FAILURE OF ALL REDUNDANCY WILL RESULT IN INABILITY TO REMOVE POWER FROM RJDA BUS C.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2144
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2243

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RJDA2A L4/R4 MANIFOLD DRIVER OFF SWITCH CONTACTS 7, 8
FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L4/R4, RJDA2A
5) RJDA2A L4/R4 MANIFOLD DRIVER OFF SWITCH CONTACTS 7, 8
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 016 S6
PART NUMBER: 33V73A14S6

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE WILL CAUSE THE INABILITY TO REMOVE BUS C POWER FROM RJDA BUS C DUE TO THE LATCHING BUS POWER RELAY.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2145
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2244

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RJDA2A L4/R4 MANIFOLD DRIVER OFF SWITCH CONTACTS 7, 8

FAILURE MODE: SWITCH OFF CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L4/R4, RJDA2A
5) RJDA2A L4/R4 MANIFOLD DRIVER OFF SWITCH CONTACTS 7, 8

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 016 S6
PART NUMBER: 33V73A14S6

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2146
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2245

HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 3/2R
ABORT: 2/1R

ITEM: RJDA2A L4/R4 MANIFOLD DRIVER ON SWITCH CONTACTS 9, 10
FAILURE MODE: SWITCH ON CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L4/R4, RJDA2A
5) RJDA2A L4/R4 MANIFOLD DRIVER ON SWITCH CONTACTS 9, 10
6) RJDA2A L4/R4 MANIFOLD DRIVER ON SWITCH CONTACTS 9, 10
7) RJDA2A L4/R4 MANIFOLD DRIVER ON SWITCH CONTACTS 9, 10
8) RJDA2A L4/R4 MANIFOLD DRIVER ON SWITCH CONTACTS 9, 10
9) RJDA2A L4/R4 MANIFOLD DRIVER ON SWITCH CONTACTS 9, 10

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LOCATION: PNL 016 S6
PART NUMBER: 33V73A14S6

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE OTHER OPEN CONTACTS OF THE SWITCH.
FAILURE OF ALL REDUNDANCY WILL RESULT IN THE LOSS OF DRIVER POWER TO THE L4/R4 MANIFOLD AND MAY AFFECT ONORBIT OPERATIONS, ENTRY DTOs AND RTLS, AND ABORT DUMP LENGTHS. FAILURE OF ALL REDUNDANCY DURING RTLS WILL CAUSE LOSS OF VEHICLE DUE TO INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 03/22/87 C-2147
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2246

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 3/3

ITEM: RJDA2A L4/R4 MANIFOLD DRIVER ON SWITCH CONTACTS 9, 10
FAILURE MODE: SWITCH ON CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L4/R4, RJDA2A
5) RJDA2A L4/R4 MANIFOLD DRIVER ON SWITCH CONTACTS 9, 10

CRITICALITIES

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LOCATION: PNL 016 S6
PART NUMBER: 33V73A14S6

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
DRIVER POWER CAN BE REMOVED FROM THE MANIFOLD BY PLACING THE L4/R4 MANIFOLD LOGIC SWITCH IN THE CLOSED POSITION. FAILURE OF ALL REDUNDANCY WILL CAUSE THE INABILITY TO REMOVE DRIVER POWER FROM MANIFOLD L4/R4 AND MAY AFFECT ONORBIT OPERATIONS.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2148
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2247

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RJDA2A L4/R4 MANIFOLD DRIVER OFF SWITCH CONTACTS 11, 12
FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L4/R4, RJDA2A
5) RJDA2A L4/R4 MANIFOLD DRIVER OFF SWITCH CONTACTS 11, 12
6)
7)
8)
9)

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 016 S6
PART NUMBER: 33V73A14S6

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2149
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

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<td>SWITCH OFF CONTACTS FAIL CLOSED (SHORTED).</td>
<td>V.J. Burkemper</td>
<td>D.J. Paul</td>
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**Breakdown Hierarchy:**
1. ELECTRICAL COMPONENTS
2. CONTROLS
3. THRUSTER SUBSYSTEM
4. MANIFOLD L4/R4, RJDA2A
5. RJDA2A L4/R4 MANIFOLD DRIVER OFF SWITCH CONTACTS 11, 12

**Criticalities**

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**Redundancy Screens:**
- A [ ]
- B [ ]
- C [ ]

**Location:**
- PNL 016 S6

**Part Number:**
- 33V73A14S6

**Causes:**
- Contamination, Vibration, Mechanical Shock, Thermal Shock, Overload

**Effects/Rationale:**
- None, the off contacts are not in a circuit

**References:**
- VS70-943099 REV B EO B12, CP; JSC 11174, Space Shuttle Systems Handbook, PG 11.10, RCS SIG 2

**Report Date:** 3/20/87

**C-2150**
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2249

HIGHEST CRITICALITY  HDW/FUNC
FLIGHT: 3/2R
ABORT: 3/1R

ITEM: RJDA2A L4/R4 MANIFOLD DRIVER ON SWITCH CONTACTS 13, 14
FAILURE MODE: SWITCH ON CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L4/R4, RJDA2A
5) RJDA2A L4/R4 MANIFOLD DRIVER ON SWITCH CONTACTS 13, 14
6) 
7) 
8) 
9) 

CRITICALITIES

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LOCATION: PNL 016 S6
PART NUMBER: 33V73A14S6

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THE L1/L5/R1 AND THE L2/R2 MANIFOLD DRIVER SWITCHES AND THE LATCHING BUS POWER RELAY. FAILURE OF ALL REDUNDANCY WILL RESULT IN THE LOSS OF POWER TO RJDA BUS A AND MAY AFFECT ONORBIT OPERATIONS, ENTRY DTOs AND PTIs, AND ABORT DUMP LENGTHS. FAILURE OF ALL REDUNDANCY DURING RTLS WILL CAUSE LOSS OF VEHICLE DUE TO INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 03/22/87 C-2151
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2250

ITEM: RJDA2A L4/R4 MANIFOLD DRIVER ON SWITCH CONTACTS 13, 14
FAILURE MODE: SWITCH ON CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L4/R4, RJDA2A
5) RJDA2A L4/R4 MANIFOLD DRIVER ON SWITCH CONTACTS 13, 14

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 016 S6
PART NUMBER: 33V73A14S6

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
POWER CAN BE REMOVED FROM RJDA BUS A BY REMOVING POWER FROM MAIN BUS A. FAILURE OF ALL REDUNDANCY WILL RESULT IN INABILITY TO REMOVE POWER FROM RJDA BUS A.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2152
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87  
SUBSYSTEM: ARCS  
MDAC ID: 2251  

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3  
ABORT: 3/3  

ITEM: RJDA2A L4/R4 MANIFOLD DRIVER OFF SWITCH CONTACTS 15, 16
FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER  
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L4/R4, RJDA2A
5) RJDA2A L4/R4 MANIFOLD DRIVER OFF SWITCH CONTACTS 15, 16

CRITICALITIES

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: PNL 016 S6
PART NUMBER: 33V73A14S6

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE WILL CAUSE THE INABILITY TO REMOVE BUS A POWER FROM RJDA BUS A DUE TO THE LATCHING BUS POWER RELAY.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87  C-2153
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2252

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RJDA2A L4/R4 MANIFOLD DRIVER OFF SWITCH CONTACTS 15, 16
FAILURE MODE: SWITCH OFF CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L4/R4, RJDA2A
5) RJDA2A L4/R4 MANIFOLD DRIVER OFF SWITCH CONTACTS 15, 16
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 016 S6
PART NUMBER: 33V73A14S6

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2154
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87

SUBSYSTEM: ARCS
MDAC ID: 2253

HIGHEST CRITICALITY
HDW/FUNC: FLIGHT: 3/2R
ABORT: 3/3

ITEM: RJDA2A L4/R4 MANIFOLD LOGIC SWITCH
FAILURE MODE: SWITCH FAILS IN THE ON POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L4/R4, RJDA2A
5) RJDA2A L4/R4 MANIFOLD LOGIC SWITCH

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LOCATION: PNL 016 S5
PART NUMBER: 33Y73A1455

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
LOGIC POWER CAN BE REMOVED BY REMOVING POWER TO CONTROL BUSSES CA2 AND CA3. DRIVER POWER CAN BE REMOVED FROM THE MANIFOLD BY PLACING THE L4/R4 MANIFOLD DRIVER SWITCH IN THE CLOSED POSITION. FAILURE OF ALL REDUNDANCY WILL CAUSE THE INABILITY TO REMOVE LOGIC AND DRIVER POWER FROM MANIFOLD L4/R4, AND WILL AFFECT ONORBIT OPERATIONS.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2155
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
FLIGHT: 2/2
MDAC ID: 2254
ABORT: 1/1

ITEM: RJDA2A L4/R4 MANIFOLD LOGIC SWITCH
FAILURE MODE: SWITCH FAILS IN THE OFF POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L4/R4, RJDA2A
5) RJDA2A L4/R4 MANIFOLD LOGIC SWITCH
6)
7)
8)
9)

CRITICALITIES
FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC
PRELAUNCH: 3/3 RTLS: 1/1
LIFTOFF: 3/3 TAL: 2/2
ONORBIT: 2/2 AOA: 2/2
DEORBIT: 2/2 ATO: 2/2
LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 016 S5
PART NUMBER: 33V73A14S5

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE CAUSES LOSS OF LOGIC POWER TO THE L4/R4 MANIFOLD AND MAY AFFECT ONORBIT OPERATIONS, ENTRY DTOs AND PTIs, AND ABORT DUMP LENGTHS. FAILURE DURING RTLS WILL CAUSE LOSS OF VEHICLE DUE TO INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2156
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87

SUBSYSTEM: ARCS
MDAC ID: 2255

HIGHEST CRITICALITY HDW/FUNC FLIGHT: 3/2R
ABORT: 2/1R

ITEM: RJDA2A L4/R4 MANIFOLD LOGIC ON SWITCH CONTACTS 1, 2

FAILURE MODE: SWITCH ON CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L4/R4, RJDA2A
5) RJDA2A L4/R4 MANIFOLD LOGIC ON SWITCH CONTACTS 1, 2

CRITICALITIES

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LOCATION: PNL 016 S5
PART NUMBER: 33V73A14S5

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY OTHER ON SWITCH CONTACTS. FAILURE RESULTS IN THE LOSS OF LOGIC AND DRIVER POWER TO THE L4/R4 MANIFOLD AND MAY AFFECT ONORBIT OPERATIONS AND ENTRY DTOs AND PTIs. FAILURE OF ALL REDUNDANCY DURING RTLS MAY CAUSE LOSS OF VEHICLE DUE TO INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2157
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/2R
MDAC ID: 2256  ABORT: 3/3

ITEM: RJDA2A L4/R4 MANIFOLD LOGIC ON SWITCH CONTACTS 1, 2
FAILURE MODE: SWITCH ON CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L4/R4, RJDA2A
5) RJDA2A L4/R4 MANIFOLD LOGIC ON SWITCH CONTACTS 1, 2

CRITICALITIES

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LOCATION: PNL 016 S5
PART NUMBER: 33V73A14S5

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
DRIVER POWER CAN BE REMOVED FROM THE MANIFOLD BY PLACING THE L4/R4 MANIFOLD DRIVER SWITCH IN THE CLOSED POSITION. FAILURE OF ALL REDUNDANCY WILL CAUSE THE INABILITY TO REMOVE LOGIC AND DRIVER POWER FROM MANIFOLD L4/R4 AND MAY AFFECT ONORBIT OPERATIONS.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87  C-2158
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 2257  ABORT: 3/3

ITEM: RJDA2A L4/R4 MANIFOLD LOGIC OFF SWITCH CONTACTS 3, 4
FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L4/R4, RJDA2A
5) RJDA2A L4/R4 MANIFOLD LOGIC OFF SWITCH CONTACTS 3, 4
6) 
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8) 
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REdundancy SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION: PNL 016 S5
PART NUMBER: 33V73A14S5

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87  C-2159
INDEPENDENT ORBITER ASSESSMENT
ORBTER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 2258  ABORT: 3/3

ITEM: RJDA2A L4/R4 MANIFOLD LOGIC OFF SWITCH CONTACTS 3, 4
FAILURE MODE: SWITCH OFF CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L4/R4, RJDA2A
5) RJDA2A L4/R4 MANIFOLD LOGIC OFF SWITCH CONTACTS 3, 4
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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION: PNL 016 S5
PART NUMBER: 33V73A14S5

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87  C-2160
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2259

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 3/1R

ITEM: RJDA2A L4/R4 MANIFOLD LOGIC ON SWITCH CONTACTS 5, 6
FAILURE MODE: SWITCH ON CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L4/R4, RJDA2A
5) RJDA2A L4/R4 MANIFOLD LOGIC ON SWITCH CONTACTS 5, 6
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LOCATION: PNL 016 S5
PART NUMBER: 33V73A14S5

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

FAILURE OF ALL REDUNDANCY DURING RTLS MAY CAUSE LOSS OF VEHICLE DUE TO INABILITY TO EXPEL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2161
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2260
HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/2R
ABORT: 3/3

ITEM: RJDA2A L4/R4 MANIFOLD LOGIC ON SWITCH CONTACTS 5, 6
FAILURE MODE: SWITCH ON CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER   SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L4/R4, RJDA2A
5) RJDA2A L4/R4 MANIFOLD LOGIC ON SWITCH CONTACTS 5, 6
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LOCATION: PNL 016 S5
PART NUMBER: 33V73A14S5

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
DRIVER POWER CAN BE REMOVED FROM THE MANIFOLD BY PLACING THE L4/R4 MANIFOLD DRIVER SWITCH IN THE CLOSED POSITION. FAILURE OF ALL REDUNDANCY WILL CAUSE THE INABILITY TO REMOVE LOGIC AND DRIVER POWER FROM MANIFOLD L4/R4 AND MAY AFFECT ONORB OPERATIONS.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87   C-2162
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2261

ITEM: RJDA2A L4/R4 MANIFOLD LOGIC OFF SWITCH CONTACTS 7, 8
FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L4/R4, RJDA2A
5) RJDA2A L4/R4 MANIFOLD LOGIC OFF SWITCH CONTACTS 7, 8

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL 016 S5
PART NUMBER: 33V73A1455

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87 C-2163
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/27/87
SUBSYSTEM: ARCS
MDAC ID: 2262

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RJDA2A L4/R4 MANIFOLD LOGIC OFF SWITCH CONTACTS 7, 8
FAILURE MODE: SWITCH OFF CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) CONTROLS
3) THRUSTER SUBSYSTEM
4) MANIFOLD L4/R4, RJDA2A
5) RJDA2A L4/R4 MANIFOLD LOGIC OFF SWITCH CONTACTS 7, 8

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL O16 S5
PART NUMBER: 33V73A14S5

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REPORT DATE 3/20/87  C-2164
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2263

HIGHEST CRITICALITY: FLIGHT: 3/3
ABORT: 3/3

ITEM: RJDA1B MANIFOLD L1/R1/L5 TRICKLE TEST
FAILURE MODE: TEST DOES NOT OPERATE OR OPERATES ERRATICALLY.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) MANIFOLD L1/R1/L5, RJDA1B
5) RJDA1B MANIFOLD L1/R1/L5 TRICKLE TEST

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: L/R OMS POD
PART NUMBER: MANIFOLD L1/R1/L5

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
CREW AND GROUND CANNOT DETERMINE THE OPERATIONAL STATUS OF THE AFT RCS JETS. ENTRY MAY BE DELAYED SO THAT A HOT FIRE TEST CAN BE DONE ON CRITICAL JETS.

REFERENCES: VS70-943099 REV B EO B12, CJ

REPORT DATE 03/27/87  C-2165
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 2264  ABORT: 3/3

ITEM: RJDA1A MANIFOLD L2/R2 TRICKLE TEST
FAILURE MODE: TEST DOES NOT OPERATE OR OPERATES ERRATICALLY.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) MANIFOLD L2/R2, RJDA1A
5) RJDA1A MANIFOLD L2/R2 TRICKLE TEST

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: L/R OMS POD
PART NUMBER: MANIFOLD L2/R2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
CREW AND GROUND CANNOT DETERMINE THE OPERATIONAL STATUS OF THE AFT RCS JETS. ENTRY MAY BE DELAYED SO THAT A HOT FIRE TEST CAN BE DONE ON CRITICAL JETS.

REFERENCES: VS70-943099 REV B EO B12, CJ

REPORT DATE 03/27/87  C-2166
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87

HIGHEST CRITICALITY: HDW/FUNC

SUBSYSTEM: ARCS

MDAC ID: 2265

FLIGHT: 3/3

ABORT: 3/3

ITEM: RJDA2B MANIFOLD L3/R3/R5 TRICKLE TEST

FAILURE MODE: TEST DOES NOT OPERATE OR OPERATES ERRATICALLY.

LEAD ANALYST: V.J. BURKEMPER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) MANIFOLD L3/R3/R5, RJDA2B
5) RJDA2B MANIFOLD L3/R3/R5 TRICKLE TEST
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: L/R OMS POD


CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
CREW AND GROUND CANNOT DETERMINE THE OPERATIONAL STATUS OF THE AFT RCS JETS. ENTRY MAY BE DELAYED SO THAT A HOT FIRE TEST CAN BE DONE ON CRITICAL JETS.

REFERENCES: VS70-943099 REV B EO B12, CJ

REPORT DATE 03/27/87 C-2167
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 2266  ABORT: 3/3

ITEM: RJDA2A MANIFOLD L4/R4 TRICKLE TEST
FAILURE MODE: TEST DOES NOT OPERATE OR OPERATES ERRATICALLY.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) MANIFOLD L4/R4, RJDA2A
5) RJDA2A MANIFOLD L4/R4 TRICKLE TEST

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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION: L/R OMS POD
PART NUMBER: MANIFOLD L4/R4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
CREW AND GROUND CANNOT DETERMINE THE OPERATIONAL STATUS OF THE AFT RCS JETS. ENTRY MAY BE DELAYED SO THAT A HOT FIRE TEST CAN BE DONE ON CRITICAL JETS.

REFERENCES: VS70-943099 REV B EO B12, CJ

REPORT DATE 03/27/87  C-2168
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2267

ITEM: RCS ACTIVITY LIGHTS
FAILURE MODE: LIGHTS FAIL OFF OR ON.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) RCS ACTIVITY LIGHTS

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: L/R OMS POD
PART NUMBER: ALL MANIFOLDS

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
CREW HAS NO VISUAL INDICATION WHAT AXIS AND DIRECTIONS JETS ARE FIRING IN OR IF THE ELEVON DRIVE RATE IS SATURATED.

REFERENCES: VS70-943099 REV B EO B12, CJ

REPORT DATE 03/27/87 C-2169
**INDEPENDENT ORBITER ASSESSMENT**  
**ORBITER SUBSYSTEM ANALYSIS WORKSHEET**

**DATE:** 1/20/87  
**SUBSYSTEM:** ARCS  
**MDAC ID:** 2268  

**ITEM:** L/R OX OR FU MANIFOLD 1 PRESS SENSOR  
**FAILURE MODE:** INDICATES HIGHER PRESSURE THAN ACTUAL.

**LEAD ANALYST:** V.J. BURKEMPER  
**SUBSYS LEAD:** D.J. PAUL

**BREAKDOWN HIERARCHY:**
1) ELECTRICAL COMPONENTS  
2) INSTRUMENTATION  
3) THRUSTER SUBSYSTEM  
4) MANIFOLD 1, L/R OX & FU  
5) L/R OX OR FU MANIFOLD 1 PRESS SENSOR

**CRITICALITIES**

|---------------|----------------|-----------|--------------|---------|--------------|---------|--------------|---------|---------------------|

**REDUNDANCY SCREENS:** A [ ]  
**LOCATION:** L/R OMS POD, RCS MANIFOLDS AND THRUSTERS  
**PART NUMBER:** 51V42PT210, 51V42PT209; 52V42PT310, 52V42PT309

**CAUSES:** CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

**EFFECTS/RATIONALE:**  
FAILURE OF THE MANIFOLD TEMPERATURE SENSOR WILL CAUSE CREW AND GROUND DIFFICULTY IN DETERMINING A LEAKING MANIFOLD. CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

**REFERENCES:** VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

**REPORT DATE 03/27/87 C-2170**
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87  HIGHEST CRITICALITY   HDW/FUNC
SUBSYSTEM: ARCS             FLIGHT: 3/3
MDAC ID: 2269        ABORT: 3/3

ITEM: L/R OX OR FU MANIFOLD 1 PRESS SENSOR
FAILURE MODE: INDICATES LOWER PRESSURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER       SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, L/R OX & FU
5) L/R OX OR FU MANIFOLD 1 PRESS SENSOR
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REDUNDANCY SCREENS: A [ ]   B [ ]   C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42PT210, 51V42PT209; 52V42PT310, 52V42PT309

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE OF THE MANIFOLD TEMPERATURE SENSOR WILL CAUSE CREW AND GROUND DIFFICULTY IN DETERMINING A LEAKING MANIFOLD. CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87  C-2171
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 2270

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: L/R OX OR FU MANIFOLD 2 PRESS SENSOR
FAILURE MODE: INDICATES HIGHER PRESSURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, L/R OX & FU
5) L/R OX OR FU MANIFOLD 2 PRESS SENSOR
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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42PT212, 51V42PT217; 52V42PT312, 52V42PT317

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE WILL CAUSE GROUND AND CREW DIFFICULTY IN DETERMINING A LEAKING MANIFOLD. CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE
SYSTEMS HANDBOOK

REPORT DATE 03/27/87  C-2172
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
HIGHEST CRITICALITY: HDW/FUNC: 3/3
SUBSYSTEM: ARCS
FLIGHT: 3/3
MDAC ID: 2271
ABORT: 3/3

ITEM: L/R OX OR FU MANIFOLD 2 PRESS SENSOR
FAILURE MODE: INDICATES LOWER PRESSURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) MANIFOLD 2, L/R OX & FU
5) L/R OX OR FU MANIFOLD 2 PRESS SENSOR
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42PT212, 51V42PT217; 52V42PT312, 52V42PT317

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE WILL CAUSE GROUND AND CREW DIFFICULTY IN DETERMINING A LEAKING MANIFOLD. CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2173
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 2272
HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: L/R OX OR FU MANIFOLD 3 PRESS SENSOR
FAILURE MODE: INDICATES HIGHER PRESSURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3, L/R OX & FU
5) L/R OX OR FU MANIFOLD 3 PRESS SENSOR

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42PT219, 51V42PT214; 52V42PT319, 52V42PT314

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE WILL CAUSE GROUND AND CREW DIFFICULTY IN DETERMINING A LEAKING MANIFOLD. CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2174
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 2273

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: L/R OX OR FU MANIFOLD 3 PRESS SENSOR
FAILURE MODE: INDICATES LOWER PRESSURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) MANIFOLD 3, L/R OX & FU
5) L/R OX OR FU MANIFOLD 3 PRESS SENSOR

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42PT219, 51V42PT214; 52V42PT319, 52V42PT314

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE WILL CAUSE GROUND AND CREW DIFFICULTY IN DETERMINING A LEAKING MANIFOLD. CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2175
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87

SUBSYSTEM: ARCS
MDAC ID: 2274

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: L/R OX OR FU MANIFOLD 4 PRESS SENSOR
FAILURE MODE: INDICATES HIGHER PRESSURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, L/R OX & FU
5) L/R OX OR FU MANIFOLD 4 PRESS SENSOR
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42PT216, 51V42PT221; 52V42PT316, 52V42PT321

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE WILL CAUSE GROUND AND CREW DIFFICULTY IN DETERMINING A LEAKING MANIFOLD. CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2176
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 2275

ITEM: L/R OX OR FU MANIFOLD 4 PRESS SENSOR
FAILURE MODE: INDICATES LOWER PRESSURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) MANIFOLD 4, L/R OX & FU
5) L/R OX OR FU MANIFOLD 4 PRESS SENSOR

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REDOUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42PT216, 51V42PT221; 52V42PT316, 52V42PT321

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE WILL CAUSE GROUND AND CREW DIFFICULTY IN DETERMINING A LEAKING MANIFOLD. CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87  C-2177
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 2276

ITEM: L/R OX MANIFOLD 1 TEMP SENSOR
FAILURE MODE: INDICATES HIGHER TEMPERATURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, L/R OX
5) L/R OX MANIFOLD 1 TEMP SENSOR

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42T208; 52V42T308

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE OF THE MANIFOLD PRESSURE SENSOR WILL CAUSE GROUND AND CREW DIFFICULTY IN DETERMINING A LEAKING MANIFOLD. CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2178
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 2277

HIGHEST CRITICALITY _ HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: L/R OX MANIFOLD 1 TEMP SENSOR
FAILURE MODE: INDICATES LOWER TEMPERATURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) MANIFOLD 1, L/R OX
5) L/R OX MANIFOLD 1 TEMP SENSOR

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42TT208; 52V42TT308

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE OF THE MANIFOLD PRESSURE SENSOR WILL CAUSE GROUND AND CREW DIFFICULTY IN DETERMINING A LEAKING MANIFOLD. CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2179
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87

SUBSYSTEM: ARCS
MDAC ID: 2278

ITEM: L/R OX MANIFOLD 5 TEMP SENSOR
FAILURE MODE: INDICATES HIGHER TEMPERATURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) MANIFOLD 5, L/R OX
5) L/R OX MANIFOLD 5 TEMP SENSOR
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CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42TT2XX; 52V42TT3XX

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE WILL CAUSE GROUND AND CREW DIFFICULTY IN DETERMINING A LEAKING MANIFOLD. CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2180
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 2279

ITEM: L/R OX MANIFOLD 5 TEMP SENSOR
FAILURE MODE: INDICATES LOWER TEMPERATURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) MANIFOLD 5, L/R OX
5) L/R OX MANIFOLD 5 TEMP SENSOR

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42TT2XX; 52V42TT3XX

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
FAILURE WILL CAUSE GROUND AND CREW DIFFICULTY IN DETERMINING A LEAKING MANIFOLD. CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2181
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 2280

ITEM: L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L1A, L3A, R1A, R3A
FAILURE MODE: INDICATES HIGHER PRESSURE THAN ACTUAL.
LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) THRUSTERS, AFT
5) L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L1A, L3A, R1A, R3A

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42ENL1A, 51V42ENL3A; 52V42ENR1A, 52V42ENR3A

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD
EFFECTS/RATIONALE:
CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2182
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 2281

HIGHEST CRITICALITY HDW/FUNC: 3/1R
FLIGHT: 3/1R
ABORT: 3/1R

ITEM: L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L1A, L3A, R1A, R3A
FAILURE MODE: INDICATES LOWER PRESSURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) THRUSTERS, AFT
5) L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L1A, L3A, R1A, R3A

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LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42ENL1A, 51V42ENL3A; 52V42ENR1A, 52V42ENR3A

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE: REDUNDANCY MANAGEMENT WILL DESELECT THE JET AND ANNOUNCE IT AS FAILED OFF.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2183
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87

HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
MDAC ID: 2282
FLIGHT: 3/1R
ABORT: 3/1R

ITEM: L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L1A, L3A, R1A, R3A
FAILURE MODE: FAILS ON, INDICATING A PRESSURE HIGHER THAN THE CHAMBER PRESSURE DETECTION LEVEL IN THE RJD.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) THRUSTERS, AFT
5) L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L1A, L3A, R1A, R3A

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LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42ENL1A, 51V42ENL3A, 52V42ENR1A, 52V42ENR3A

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY MANAGEMENT WILL ANNOUNCE THE JET AS FAILED ON, BUT WILL NOT DESELECT THE JET.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2184
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87

SUBSYSTEM: ARCS
MDAC ID: 2283

ITEM: L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L1L, L2L, L3L, L4L, R1R, R2R, R3R, R4R

FAILURE MODE: INDICATES HIGHER PRESSURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) THRUSTERS, L/R
5) L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L1L, L2L, L3L, L4L, R1R, R2R, R3R, R4R

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42ENL1L, 51V42ENL2L, 51V42ENL3L, 51V42ENL4L;
52V42ENR1L, 52V42ENR2L, 52V42ENR3L, 52V42ENR4L

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2185
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: CS
MDAC ID: 2284
MDAC ID: 2284
FLIGHT: 3/1R
ABORT: 3/1R

ITEM: L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L1L, L2L, L3L, L4L, R1R, R2R, R3R, R4R
FAILURE MODE: INDICATES LOWER PRESSURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) THRUSTERS, L/R
5) L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L1L, L2L, L3L, L4L, R1R, R2R, R3R, R4R
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LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS

PART NUMBER: 51V42ENL1L, 51V42ENL2L, 51V42ENL3L, 51V42EN L4L; 52V42ENR1L, 52V42ENR2L, 52V42ENR3L, 52V42ENR4L

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY MANAGEMENT WILL DESELECT THE JET AND ANNOUNCE IT AS FAILED OFF.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2186
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 2285

HIGHEST CRITICALITY
FLIGHT: 3/1R
ABORT: 3/1R

ITEM: L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L1L, L2L, L3L, L4L, R1R, R2R, R3R, R4R
FAILURE MODE: FAILS ON, INDICATING A PRESSURE HIGHER THAN THE CHAMBER PRESSURE DETECTION LEVEL IN THE RJD.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) THRUSTERS, L/R
5) L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L1L, L2L, L3L, L4L, R1R, R2R, R3R, R4R
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LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42ENL1L, 51V42ENL2L, 51V42ENL3L, 51V42ENL4L; 52V42ENR1L, 52V42ENR2L, 52V42ENR3L, 52V42ENR4L

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY MANAGEMENT WILL Deselected THE JET AND ANNOUNCE IT AS FAILED OFF.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2187
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
FLIGHT: 3/3
MDAC ID: 2286
ABORT: 3/3

ITEM: L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L5L, L5D, R5R, R5D
FAILURE MODE: INDICATES HIGHER PRESSURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) THRUSTERS, L/R
5) L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L5L, L5D, R5R, R5D
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42ENL5L, 51V42ENL5D, 51V42ENR5R, 51V42ENR5D

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2188
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 2287

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/1R
ABORT: 3/1R

ITEM: L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L5L, L5D, R5R, R5D
FAILURE MODE: INDICATES LOWER PRESSURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) THRUSTERS, L/R
5) L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L5L, L5D, R5R, R5D

CRITICALITIES

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LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42ENL5L, 51V42ENL5D, 51V42ENR5R, 51V42ENR5D

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY MANAGEMENT WILL DESELECT THE JET AND ANNOUNCE IT AS FAILED OFF.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2189
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 2288

ITEM: L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L5L, L5D, R5R, R5D
FAILURE MODE: FAILS ON, INDICATING A PRESSURE HIGHER THAN THE CHAMBER PRESSURE DETECTION LEVEL IN THE RJD.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) THRUSTERS, L/R
5) L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L5L, L5D, R5R, R5D

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LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS

PART NUMBER: 51V42ENL5L, 51V42ENL5D, 51V42ENR5R, 51V42ENR5D

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY MANAGEMENT WILL DESELECT THE JET AND ANNOUNCE IT AS FAILED OFF.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87  C-2190
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 2289

HIGHEST CRITICALITY: HDW/FLIGHT ABORT: 3/3

ITEM: L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L1U, L2U, L4U, L2D, L3D, L4D, R1U, R2U, R4U, R2D, R3D, R4D
FAILURE MODE: INDICATES HIGHER PRESSURE THAN ACTUAL.
LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) THRUSTERS, UP/DOWN
5) L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L1U, L2U, L4U, L2D, L3D, L4D, R1U, R2U, R4U, R2D, R3D, R4D
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42ENL1U, 51V42ENL2U, 51V42ENL4U, 51V42ENL2D, 51V42ENL3D, 51V42ENL4D; 51V42ENR1U, 51V42ENR2U, 51V42ENR4U, 52V42ENR2D, 52V42ENR3D, 52V42ENR4D

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2191
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/1R
MDAC ID: 2290  ABORT: 3/1R

ITEM: L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L1U, L2U, L4U, L2D, L3D, L4D, R1U, R2U, R4U, R2D, R3D, R4D
FAILURE MODE: INDICATES LOWER PRESSURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) THRUSTERS, UP/DOWN
5) L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L1U, L2U, L4U, L2D, L3D, L4D, R1U, R2U, R4U, R2D, R3D, R4D
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LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42ENL1U, 51V42ENL2U, 51V42ENL4U, 51V42ENL2D, 51V42ENL3D, 51V42ENL4D; 52V42ENR1U, 52V42ENR2U, 52V42ENR4U, 52V42ENR2D, 52V42ENR3D, 52V42ENR4D

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY MANAGEMENT WILL DESSELECT THE JET AND ANNOUNCE IT AS FAILED OFF.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87  C-2192
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 2291

ITEM: L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L1U, L2U, L4U, L2D, L3D, L4D, R1U, R2U, R4U, R2D, R3D, R4D
FAILURE MODE: FAILS ON, INDICATING A PRESSURE HIGHER THAN THE CHAMBER PRESSURE DETECTION LEVEL IN THE RJD.

LEAD ANALYST: V.J. BURKEMPER

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) THRUSTERS, UP/DOWN
5) L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L1U, L2U, L4U, L2D, L3D, L4D, R1U, R2U, R4U, R2D, R3D, R4D

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LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42ENLIU, 51V42ENL2U, 51V42ENL4U, 51V42ENL2D, 51V42ENL3D, 51V42ENL4D; 52V42ENRIU, 52V42ENR2U, 52V42ENR4U, 52V42ENR2D, 52V42ENR3D, 52V42ENR4D

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY MANAGEMENT WILL DESELECT THE JET AND ANNOUNCE IT AS FAILED OFF.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2193
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87

HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
FLIGHT: 3/3
MDAC ID: 2292
ABORT: 3/3

ITEM: L/R OX OR FU INJECTOR TEMP SENSOR THRUSTER L1A, L3A, R1A, R3A
FAILURE MODE: INDICATES HIGHER TEMPERATURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) THRUSTERS, AFT
5) L/R OX OR FU INJECTOR TEMP SENSOR THRUSTER L1A, L3A, R1A, R3A

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42ENL1A, 51V42ENL3A, 52V42ENR1A, 52V42ENR3A

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87  C-2194
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 2293

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/1R
ABORT: 3/1R

ITEM: L/R OX OR FU INJECTOR TEMP SENSOR THRUSTER L1A, L3A, R1A, R3A
FAILURE MODE: INDICATES LOWER TEMPERATURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) THRUSTERS, AFT
5) L/R OX OR FU INJECTOR TEMP SENSOR THRUSTER L1A, L3A, R1A, R3A

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LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42ENL1A, 51V42ENL3A, 52V42ENR1A, 52V42ENR3A

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY MANAGEMENT WILL DESELECT THE JET AND ANNOUNCE IT AS FAILED OFF.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87  C-2195
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 2294  ABORT: 3/3

FAILURE MODE: INDICATES HIGHER TEMPERATURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) THRUSTERS, L/R
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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42ENL1L, 51V42ENL2L, 51V42ENL3L, 51V42ENL4L, 52V42ENR1R, 52V42ENR2R, 52V42ENR3R, 52V42ENR4R

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87  C-2196
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 2295

HIGHEST CRITICALITY
FLIGHT: 3/1R
ABORT: 3/1R

FAILURE MODE: INDICATES LOWER TEMPERATURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) THRUSTERS, L/R
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LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42ENL1L, 51V42ENL2L, 51V42ENL3L, 51V42ENL4L, 52V42ENR1R, 52V42ENR2R, 52V42ENR3R, 52V42ENR4R

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REdundancy management will deselect the jet and announce it as failed off.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2197
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 2296

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: L/R OX OR FU INJECTOR TEMP SENSOR, THRUSTERS L5L, L5D, R5R, R5D

FAILURE MODE: INDICATES HIGHER TEMPERATURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) THRUSTERS, L/R
5) L/R OX OR FU INJECTOR TEMP SENSOR, THRUSTERS L5L, L5D, R5R, R5D
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS

PART NUMBER: 51V42ENL5L, 51V42ENL5D, 51V42ENR5R, 51V42ENR5D

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2198
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 2297

HIGHEST CRITICALITY

FLIGHT: 3/2R
ABORT: 3/3

ITEM: L/R OX OR FU INJECTOR TEMP SENSOR, THRUSTERS L5L, L5D, R5R, R5D

FAILURE MODE: INDICATES LOWER TEMPERATURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) THRUSTERS, L/R
5) L/R OX OR FU INJECTOR TEMP SENSOR, THRUSTERS L5L, L5D, R5R, R5D
6)
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CRITICALITIES

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LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42ENL5L, 51V42ENL5D, 51V42ENR5R, 51V42ENR5D

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY MANAGEMENT WILL DESELECT THE JET AND ANNOUNCE IT AS FAILED OFF.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2199
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
SUBSYSTEM: ARCS
MDAC ID: 2298

HIGHEST CRITICALITY
HDW/FUNC: FLIGHT: 3/3
ABORT: 3/3

ITEM:
L/R OX OR FU INJECTOR TEMP SENSOR, THRUSTERS L1U, L2U, L4U, L2D, L3D, L4D, R1U, R2U, R4U, R2D, R3D, R4D

FAILURE MODE:
INDICATES HIGHER TEMPERATURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) THRUSTERS, UP/DOWN
5) L/R OX OR FU INJECTOR TEMP SENSOR, THRUSTERS L1U, L2U, L4U, L2D, L3D, L4D, R1U, R2U, R4U, R2D, R3D, R4D

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION:
L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER:
51V42ENL1U, 51V42ENL2U, 51V42ENL4U, 51V42ENL2D, 51V42ENL3D, 51V42ENL4D, 52V42ENR1U, 52V42ENR2U, 52V42ENR4U, 52V42ENR2R2D, 52V42ENR3D, 52V42ENR4D

CAUSES:
CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

REFERENCES:
VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87  C-2200
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/20/87
HIGHEST CRITICALITY: FLIGHT: 3/1R
SUBSYSTEM: ARCS
MDAC ID: 2299
ABORT: 3/1R

ITEM: L/R OX OR FU INJECTOR TEMP SENSOR, THRUSTERS L1U, L2U, L4U, L2D, L3D, L4D, R1U, R2U, R4U, R2D, R3D, R4D
FAILURE MODE: INDICATES LOWER TEMPERATURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) INSTRUMENTATION
3) THRUSTER SUBSYSTEM
4) THRUSTERS, UP/DOWN
5) L/R OX OR FU INJECTOR TEMP SENSOR, THRUSTERS L1U, L2U, L4U, L2D, L3D, L4D, R1U, R2U, R4U, R2D, R3D, R4D

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LOCATION: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS
PART NUMBER: 51V42ENLIU, 51V42ENL2U, 51V42ENL4U, 51V42ENL2D, 51V42ENL3D, 51V42ENL4D, 52V42ENR1U, 52V42ENR2U, 52V42ENR4U, 52V42ENR2D, 52V42ENR3D, 52V42ENR4D

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY MANAGEMENT WILL DESELECT THE JET AND ANNOUNCE IT AS FAILED OFF.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87  C-2201
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2300

ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE R
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM MANIFOLD 1 JETS
4) DRIVER, HYBRID

CRITICALITIES

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LOCATION: AV BAY 5, LCA 2
PART NUMBER: 55V76A122AR J11-F; J11-G

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
EFFECTS ARE THE SAME AS "OX & FU MANIF 1 ISOL" VALVES FAIL TO OPEN CASE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2202
**INDEPENDENT ORBITER ASSESSMENT**

**ORBITER SUBSYSTEM ANALYSIS WORKSHEET**

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**LEAD ANALYST:** W.A. HAUFLER  
**SUBSYS LEAD:** D.J. PAUL

**BREAKDOWN HIERARCHY:**
1) ELECTRICAL COMPONENTS  
2) THRUSTER  
3) THERMAL CONTROL SUBSYSTEM  
4) MANIFOLD 1 JETS  
5) DRIVER, HYBRID

**CRITICALITIES**

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**REDUNDANCY SCREENS:**  
A [ 2 ]  
B [ F ]  
C [ P ]

**LOCATION:** AV BAY 5, LCA 2  
**PART NUMBER:** 55V76A122AR J11-F; J11-G

**CAUSES:** CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

**EFFECTS/RATIONALE:**
OPERATION OF THERMOSTAT IN EACH JET ASSEMBLY WILL PREVENT OVERHEATING OF PROPELLANT. CREW CAN REMOVE POWER FROM THE HEATER SWITCHES. OVERHEATING OF PROPELLANTS COULD CAUSE ZOTS.

**REFERENCES:** VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

**REPORT DATE 03/27/87 C-2203**
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS FLIGHT: 3/1R
MDAC ID: 2302 ABORT: 1/1

ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 2 JETS
5) DRIVER, HYBRID
6) 
7) 
8) 
9) 

CRITICALITIES

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LOCATION: AV BAY 4, LCA 1
PART NUMBER: 54V76A121AR J11-H; J11-I

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
EFFECTS ARE THE SAME AS "OX & FU MANIF 2 ISOL" VALVES FAIL TO OPEN CASE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2204
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2303

ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS HIGH

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 2 JETS
5) DRIVER, HYBRID

CRITICALITIES

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LOCATION: AV BAY 4, LCA 1
PART NUMBER: 54V76A121AR J11-H; J11-I

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
OPERATION OF THERMOSTAT IN EACH JET ASSEMBLY WILL PREVENT OVERHEATING OF PROPELLANT. CREW CAN REMOVE POWER FROM THE HEATER SWITCHES. OVERHEATING OF PROPELLANTS COULD CAUSE ZOTS.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2205
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2304

ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER
LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 3 JETS
5) DRIVER, HYBRID

CRITICALITIES

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LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123AR J11-F; AR J11-G

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
EFFECTS ARE THE SAME AS "OX & FU MANIF 3 ISOL" VALVES FAIL TO OPEN CASE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2206
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2305

ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS HIGH

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 3 JETS
5) DRIVER, HYBRID
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CRITICALITIES

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Location: AV BAY 6, LCA 3
Part Number: 56V76A123AR J11-F; AR J11-G

Causes: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

Effects/Rationale:
OPERATION OF THERMOSTAT IN EACH JET ASSEMBLY WILL PREVENT OVERHEATING OF PROPELLANT. CREW CAN REMOVE POWER FROM THE HEATER SWITCHES. OVERHEATING OF PROPELLANTS COULD CAUSE ZOTS.

References: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

Report Date 03/27/87 C-2207
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2306

HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 3/1R
ABORT: 1/1

ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 4 JETS
5) DRIVER, HYBRID

CRITICALITIES

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LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123AR J11-H TYPE III; AR J11-I (181) TYPE III

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
EFFECTS ARE THE SAME AS "OX & FU MANIF 4 ISOL" VALVES FAIL TO OPEN CASE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2208
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2307

ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS HIGH

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 4 JETS
5) DRIVER, HYBRID

CRITICALITIES

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LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123AR J11-H TYPE III; AR J11-I (181) TYPE III

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
OPERATION OF THERMOSTAT IN EACH JET ASSEMBLY WILL PREVENT OVERHEATING OF PROPELLANT. CREW CAN REMOVE POWER FROM THE HEATER SWITCHES. OVERHEATING OF PROPELLANTS COULD CAUSE ZOTS.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2209
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 2/2
MDAC ID: 2308  ABORT: 2/2

ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 5 JETS
5) DRIVER, HYBRID
6)
7)
8)
9)

CRITICALITIES

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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123AR J8-73

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
PROPELLANT IN JETS WILL FREEZE. THIS WILL CAUSE LOSS OF ALL JETS ON THE LEFT OR RIGHT MANIFOLD 5. VERNIER THRUSTERS ARE NOT USED DURING ENTRY OR ABORTS.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87  C-2210
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2309

ITEM: DRIVER, HYBRID
FAILURE MODE: FAILS HIGH

LEAD ANALYST: W.A. HAUFLE
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 5 JETS
5) DRIVER, HYBRID

CRITICALITIES

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REDUNDANCY SCREENS:

LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123AR J8-73

CAUSES: CONTAMINATION, VIBRATION, PIECE PART FAILURE, OVERLOAD

EFFECTS/RATIONALE:
OPERATION OF THERMOSTAT IN EACH JET ASSEMBLY WILL PREVENT OVERHEATING OF PROPELLANT. CREW CAN REMOVE POWER FROM THE HEATER SWITCHES. OVERHEATING OF PROPELLANTS COULD CAUSE ZOTS. VERNIER THRUSTERS ARE NOT USED DURING ENTRY OR ABORTS.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2211
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2310

ITEM: FUSE, 1A
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 1 JETS
5) FUSE, 1A

CRITICALITIES

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LOCATION: PNL A14 S9
PART NUMBER: 36V73A14F27

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
EFFECTS ARE THE SAME AS "OX & FU MANIF 1 ISOL" VALVES FAIL TO OPEN CASE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2212
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2311

ITEM: FUSE, IA
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 2 JETS
5) FUSE, IA

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LOCATION: PNL A14 S10
PART NUMBER: 36V73A14F28

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
EFFECTS ARE THE SAME AS "OX & FU MANIF 2 ISOL" VALVES FAIL TO OPEN CASE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87  C-2213
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2312

ITEM: FUSE, 1A
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 3 JETS
5) FUSE, 1A
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LOCATION: PNL A14 S11
PART NUMBER: 36V73A14F29

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
EFFECTS ARE THE SAME AS "OX & FU MANIF 3 ISOL" VALVES FAIL TO OPEN CASE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2214
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2313

ITEM: FUSE, 1A
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 4 JETS
5) FUSE, 1A

CRITICALITIES

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LOCATION: PNL A14 S12
PART NUMBER: 36V73A14F30

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
EFFECTS ARE THE SAME AS "OX & FU MANIF 4 ISOL" VALVES FAIL TO OPEN CASE.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87  C-2215
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87

| SUBSYSTEM: ARCS | MDAC ID: 2314 |

| ITEM: FUSE, 1A | FAILURE MODE: Fails Open |

LEAD ANALYST: W.A. HAUFLE SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 5 JETS
5) FUSE, 1A

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL A14 S13

PART NUMBER: 36V73A14F31

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
PROPELLANT IN JETS WILL FREEZE. THIS WILL CAUSE LOSS OF ALL JETS ON THE LEFT AND RIGHT MANIFOLD 5. VERNIER THRUSTERS ARE NOT USED DURING ENTRY OR ABORTS.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2216
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2315

ITEM: FUSE, 5A
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE R SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 5 JETS
5) FUSE, 5A

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123F

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
PROPELLANT IN JETS WILL FREEZE. THIS WILL CAUSE LOSS OF ALL JETS ON THE LEFT OR RIGHT MANIFOLD 5. VERNIER THRUSTERS ARE NOT USED DURING ENTRY OR ABORTS.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2217
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS FLIGHT: 3/1R
MDAC ID: 2316 ABORT: 3/3

ITEM: HEATER 30W, THRUSTER, PRIMARY, +X AXIS
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE, SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) PRIMARY MANIFOLD JETS
5) HEATER 30W, THRUSTER, PRIMARY, +X AXIS
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LOCATION: L/R OMS POD, RCS THRUSTERS
PART NUMBER: 51V42ENL1A, L3A; 52V42EN1A, R3A

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THRUSTERS WHICH FIRE IN THE SAME DIRECTION. PROPELLANT IN THIS JET WILL FREEZE ONORBIT. IF JET'S TEMPERATURE DROPS BELOW LIMITS, THE RM WILL DESELECT THIS JET. FAILURE MAY AFFECT ONORBIT OPERATIONS AND FAILURE OF ALL RCS DEORBIT CAPABILITY. PROPELLANT WILL NOT FREEZE IN JETS DURING ABOARTS DUE TO LACK OF TIME.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2218
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87

HIGHEST CRITICALITY

SUBSYSTEM: ARCS
MDAC ID: 2317

HDW/FUNC
FLIGHT: 3/1R
ABORT: 3/3

ITEM: HEATER 20W, THRUSTER, PRIMARY, Y AXIS
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) PRIMARY MANIFOLD JETS
5) HEATER 20W, THRUSTER, PRIMARY, Y AXIS

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LOCATION: L/R OMS POD, RCS THRUSTERS

PART NUMBER: 51V42ENL1L, L2L, L3L, L4L; 52V42ENR1R, R2R, R3R, R4R

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THRUSTERS WHICH FIRE IN THE SAME DIRECTION. PROPELLANT IN THIS JET WILL FREEZE ONORBIT. IF JET'S TEMPERATURE DROPS BELOW LIMITS, THE RM WILL DESELECT THIS JET. FAILURE MAY AFFECT ONORBIT OPERATIONS AND FAILURE OF ALL REDUNDANCY DURING ENTRY MAY CAUSE LOSS OF VEHICLE DUE TO THE INABILITY TO EXPELL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES. PROPELLANTS WILL NOT FREEZE IN JETS DURING ABORTS DUE TO LACK OF TIME.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2219
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/1R
MDAC ID: 2318  ABORT: 3/3

ITEM: HEATER 20W, THRUSTER, PRIMARY, Z AXIS
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) PRIMARY MANIFOLD JETS
5) HEATER 20W, THRUSTER, PRIMARY, Z AXIS

CRITICALITIES

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LOCATION: L/R OMS POD, RCS THRUSTERS
PART NUMBER: 51V42ENL1U, L2U, L2U, L2D, L3D, L4D; 52V42ENR1U, R2U, R4U, R2D, R3D, R4D;

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THRUSTERS WHICH FIRE IN THE SAME DIRECTION. PROPELLANT IN THIS JET WILL FREEZE ONORB. IF JET'S TEMPERATURE DROPS BELOW LIMITS, THE RM WILL Deselect THIS JET. FAILURE MAY AFFECT ONORB OPERATIONS AND FAILURE OF ALL REDUNDANCY DURING ENTRY MAY CAUSE LOSS OF VEHICLE DUE TO THE INABILITY TO EXPELL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES. PROPELLANTS WILL NOT FREEZE IN JETS DURING ABORTS DUE TO LACK OF TIME.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87  C-2220
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2319

HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 3/1R
ABORT: 3/3

ITEM: HEATER 30W, THRUSTER, PRIMARY, +X AXIS
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLE
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) PRIMARY MANIFOLD JETS
5) HEATER 30W, THRUSTER, PRIMARY, +X AXIS

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LOCATION: L/R OMS POD, RCS THRUSTERS

PART NUMBER: 51V42ENL1A, L3A; 52V42ENR1A, R3A

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THRUSTERS WHICH FIRE IN THE SAME DIRECTION. PROPELLANT IN THIS JET WILL FREEZE ON ORBIT. IF JET'S TEMPERATURE DROPS BELOW LIMITS, THE RM WILL DESSELECT THIS JET. FAILURE MAY AFFECT ORBIT OPERATIONS AND WILL AFFECT THE +X JET RCS DEORB CAPABILITY. PROPELLANT WILL NOT FREEZE IN JETS DURING ABORTS DUE TO LACK OF TIME.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2221
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/1R
MDAC ID: 2320  ABORT: 3/3

ITEM: HEATER 20W, THRUSTER, PRIMARY, Y AXIS
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLE  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) PRIMARY MANIFOLD JETS
5) HEATER 20W, THRUSTER, PRIMARY, Y AXIS

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LOCATION: L/R OMS POD, RCS THRUSTERS
PART NUMBER: 51V42ENL1L, L2L, L3L, L4L; 52V42ENR1R, R2R, R3R, R4R

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THRUSTERS WHICH FIRE IN THE SAME DIRECTION. PROPELLANT IN THIS JET WILL FREEZE ONORBIT. IF JET'S TEMPERATURE DROPS BELOW LIMITS, THE RM WILL Deselect THIS JET. FAILURE MAY AFFECT ONORBIT OPERATIONS AND FAILURE OF ALL REDUNDANCY DURING ENTRY MAY CAUSE LOSS OF VEHICLE DUE TO THE INABILITY TO EXPELl ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES. PROPELLANTS WILL NOT FREEZE IN JETS DURING ABORTS DUE TO LACK OF TIME.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87  C-2222
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2321

HIGHEST CRITICALITY
FLIGHT: 3/1R
ABORT: 3/3

ITEM: HEATER 20W, THRUSTER, PRIMARY, Z AXIS
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) PRIMARY MANIFOLD JETS
5) HEATER 20W, THRUSTER, PRIMARY, Z AXIS

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LOCATION: L/R OMS POD, RCS THRUSTERS
PART NUMBER: 51V42ENLIU, L2U, L2U, L2D, L3D, L4D; 52V42ENRIU, R2U, R4U, R2D, R3D, R4D

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THRUSTERS WHICH FIRE IN THE SAME DIRECTION. PROPELLANT IN THIS JET WILL FREEZE ONORBIT. IF JET'S TEMPERATURE DROPS BELOW LIMITS, THE RM WILL DESSELECT THIS JET. FAILURE MAY AFFECT ONORBIT OPERATIONS AND FAILURE OF ALL REDUNDANCY DURING ENTRY MAY CAUSE LOSS OF VEHICLE DUE TO THE INABILITY TO EXPELL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES. PROPELLANTS WILL NOT FREEZE IN JETS DURING ABORTS DUE TO LACK OF TIME.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87  C-2223
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87

SUBSYSTEM: ARCS

MDAC ID: 2322

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 2/2
ABORT: 3/3

ITEM: HEATER 10W, THRUSTER, VERNIER, ALL AXES

FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) VERNIER MANIFOLD JETS
5) HEATER 10W, THRUSTER, VERNIER, ALL AXES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: L/R OMS POD, RCS THRUSTERS

PART NUMBER: 51V42ENL5D; 51V42ENL5L; 52V42ENR5D; 52V42ENR5R

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
THERE IS NO REDUNDANCY FOR VERNIER JETS. PROPELLANT IN THIS JET WILL FREEZE ONORBIT. IF JET'S TEMPERATURE DROPS BELOW LIMITS, THE RM WILL DESELECT THIS JET. FAILURE WILL AFFECT ONORBIT OPERATIONS.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2224
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2323

ITEM: HEATER 10W, THRUSTER, VERNIER, ALL AXES
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLE
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) VERNIER MANIFOLD JETS
5) HEATER 10W, THRUSTER, VERNIER, ALL AXES

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: L/R OMS POD, RCS THRUSTERS
PART NUMBER: 51V42ENL5D; 51V42ENL5L; 52V42ENR5D; 52V42ENR5R

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
THERE IS NO REDUNDANCY FOR VERNIER JETS. PROPELLANT IN THIS JET WILL FREEZE ONORBIT. IF JET'S TEMPERATURE DROPS BELOW LIMITS, THE RM WILL DESELECT THIS JET. FAILURE WILL AFFECT ONORBIT OPERATIONS.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2225
INDEPENDENT ORBITER ASSESSMENT  
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87  
SUBSYSTEM: ARCS  
MDAC ID: 2324

HIGHEST CRITICALITY  
HDW/FUNC  
FLIGHT: 3/3  
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W  
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER  
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS  
2) THRUSTER  
3) THERMAL CONTROL SUBSYSTEM  
4) MANIFOLD 1 JETS  
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 5, LCA 2  
PART NUMBER: 55V76A122R J4-43

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
GROUND AND CREW CANNOT DETERMINE IF "AFT MANIFOLD 1 JETS HEATER CONTROL SWITCH" IS WORKING, EXCEPT BY MONITORING THRUSTER TEMPERATURES. THERE ARE NO TALKBACKS ASSOCIATED WITH THIS SWITCH.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2325

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 1 JETS
5) RESISTOR, 5.1K 1/4W
6) 
7) 
8) 
9) 

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 5, LCA 2
PART NUMBER: 55V76A122R J4-43

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2227
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87

HIGHEST CRITICALITY
HDW/FUNC

HDW/FUNC

FLIGHT: 3/3

ABORT: 3/3

SUBSYSTEM: ARCS
MDAC ID: 2326

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLETER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 2 JETS
5) RESISTOR, 5.1K 1/4W
6)
7)
8)
9)

CRITICALITIES

FLIGHT PHASE
PRELAUNCH: 3/3
LIFTOFF: 3/3
ONORBIT: 3/3
DEORBIT: 3/3
LANDING/SAFING: 3/3

HDW/FUNC
RTLS: 3/3
TAL: 3/3
AOA: 3/3
ATO: 3/3

HDW/FUNC

REEDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, LCA 1
PART NUMBER: 54V76A121R J4-42

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
GROUND AND CREW CANNOT DETERMINE IF "AFT MANIFOLD 2 JETS HEATER CONTROL SWITCH" IS WORKING, EXCEPT BY MONITORING THRUSTER TEMPERATURES. THERE ARE NO TALKBACKS ASSOCIATED WITH THIS SWITCH.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2228
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
HIGHEST CRITICALITY
SUBSYSTEM: ARCS
MDAC ID: 2327
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 2 JETS
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 4, LCA 1
PART NUMBER: 54V76A121R J4-42

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2229
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2328

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 3 JETS
5) RESISTOR, 5.1K 1/4W
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123R J4-43

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
GROUND AND CREW CANNOT DETERMINE IF "AFT MANIFOLD 3 JETS HEATER CONTROL SWITCH" IS WORKING, EXCEPT BY MONITORING THRUSTER TEMPERATURES. THERE ARE NO TALKBACKS ASSOCIATED WITH THIS SWITCH.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87  C-2230
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2329

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 3 JETS
5) RESISTOR, 5.1K 1/4W
6) 
7) 
8) 
9) 

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123R J4-43

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2231
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2330

HIGHEST CRITICALITY
HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 4 JETS
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123R J4-42

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
GROUND AND CREW CANNOT DETERMINE IF "AFT MANIFOLD 4 JETS HEATER CONTROL SWITCH" IS WORKING, EXCEPT BY MONITORING THRUSTER TEMPERATURES. THERE ARE NO TALKBACKS ASSOCIATED WITH THIS SWITCH.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2232
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

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<td>FAILURE MODE:</td>
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LEAD ANALYST: W.A. HAUFLER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 4 JETS
5) RESISTOR, 5.1K 1/4W

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123R J4-42

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2233
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2332

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLE SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 5 JETS
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123R J4-44

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
GROUND AND CREW CANNOT DETERMINE IF "AFT MANIFOLD 5 JETS HEATER CONTROL SWITCH" IS WORKING, EXCEPT BY MONITORING THRUSTER TEMPERATURES. THERE ARE NO TALKBACKS ASSOCIATED WITH THIS SWITCH.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2234
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2333

HIGHEST CRITICALITY
FLIGHT: 3/3
ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W
FAILURE MODE: FAILS SHORT

LEAD ANALYST: W.A. HAUFLEER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 5 JETS
5) RESISTOR, 5.1K 1/4W

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123R J4-44

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

REPORT DATE 03/27/87 C-2235
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2334

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/1R
ABORT: 3/3

ITEM: THERMOSTAT, PRIMARY THRUSTERS, +X AXIS
FAILURE MODE: FAILS TO CLOSE (FAILS OPEN).

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) THRUSTERS, PRIMARY, +X AXIS
5) THERMOSTAT, PRIMARY THRUSTERS, +X AXIS

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LOCATION: L/R OMS POD, RCS THRUSTER ASSEMBLIES
PART NUMBER: 51V42ENL1A, L3A; R1A, R3A

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THRUSTERS WHICH FIRE IN THE SAME DIRECTION. PROPELLANT IN THIS JET WILL FREEZE ONORBIT. IF JET'S TEMPERATURE DROPS BELOW LIMITS, THE RM WILL Deselect THIS JET. FAILURE MAY AFFECT ONORBIT OPERATIONS AND WILL AFFECT THE +X JET RCS DEORBIT CAPABILITY. PROPELLANT WILL NOT FREEZE IN JETS DURING ABORTS DUE TO LACK OF TIME.

REFERENCES: VS70-943099, REV B EO B12; FLIGHT RULE 6-95

REPORT DATE 03/27/87 C-2236
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87

SUBSYSTEM: ARCS
MDAC ID: 2335

HIGHEST CRITICALITY

HDW/FUNC: FLIGHT: 2/1R
ABORT: 2/1R

ITEM: THERMOSTAT, PRIMARY THRUSTERS, +X AXIS
FAILURE MODE: FAILS TO OPEN (FAILS CLOSED).

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) THRUSTERS, PRIMARY, +X AXIS
5) THERMOSTAT, PRIMARY THRUSTERS, +X AXIS
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LOCATION: L/R OMS POD, RCS THRUSTER ASSEMBLIES
PART NUMBER: 51V42ENL1A, L3A; R1A, R3A

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
CREW CAN REMOVE POWER FROM THE HEATER SWITCHES, BUT C&W DOES NOT ANNUNCIATE THE HIGH TEMPERATURE CONDITION. OVERHEATING OF PROPELLANTS COULD CAUSE ZOTS, LEADING TO LOSS OF VEHICLE IN ANY FLIGHT PHASE IN WHICH THE JET IS USED.

REFERENCES: VS70-943099, REV B EO B12; FLIGHT RULE 6-95

REPORT DATE 03/27/87 C-2237
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS            FLIGHT: 3/1R
MDAC ID: 2336          ABORT: 3/3

ITEM: THERMOSTAT, PRIMARY THRUSTERS, Y AXIS
FAILURE MODE: FAILS TO CLOSE (FAILS OPEN).

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) THRUSTERS, PRIMARY, Y AXIS
5) THERMOSTAT, PRIMARY THRUSTERS, Y AXIS

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LOCATION: L/R OMS POD, RCS THRUSTER ASSEMBLIES
PART NUMBER: 51V42ENLIL, L2L, L3L, L4L; R1R, R2R, R3R, R4R

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THRUSTERS WHICH FIRE IN THE SAME DIRECTION. PROPELLANT IN THIS JET WILL FREEZE ON ORBIT. IF JET'S TEMPERATURE DROPS BELOW LIMITS, THE RM WILL DESELECT THIS JET. FAILURE MAY AFFECT ON ORBIT OPERATIONS AND FAILURE OF ALL REDUNDANCY DURING ENTRY MAY CAUSE LOSS OF VEHICLE DUE TO THE INABILITY TO EXPELL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES. PROPELLANTS WILL NOT FREEZE IN JETS DURING ABORTS DUE TO LACK OF TIME.

REFERENCES: VS70-943099, REV B EO B12; FLIGHT RULE 6-95

REPORT DATE 03/27/87  C-2238
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
HIGHEST CRITICALITY
SUBSYSTEM: ARCS
MDAC ID: 2337
FLIGHT: 2/1R
ABORT: 2/1R

ITEM: THERMOSTAT, PRIMARY THRUSTERS, Y AXIS
FAILURE MODE: FAILS TO OPEN (FAILS CLOSED).

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) THRUSTERS, PRIMARY, Y AXIS
5) THERMOSTAT, PRIMARY THRUSTERS, Y AXIS
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LOCATION: L/R OMS POD, RCS THRUSTER ASSEMBLIES
PART NUMBER: 51V42ENL1L, L2L, L3L, L4L; R1R, R2R, R3R, R4R

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
CREW CAN REMOVE POWER FROM THE HEATER SWITCHES, BUT C&W DOES NOT ANNUNCIATE THE HIGH TEMPERATURE CONDITION. OVERHEATING OF PROPELLANTS COULD CAUSE ZOTS, LEADING TO LOSS OF VEHICLE IN ANY FLIGHT PHASE IN WHICH THE JET IS USED.

REFERENCES: VS70-943099, REV B EO B12; FLIGHT RULE 6-95

REPORT DATE 03/27/87  C-2239
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARC
MDAC ID: 2338

HIGHEST CRITICALITY
HDW/FUNC
FLIGHT:
ABORT:

3/1R
3/3

ITEM: THERMOSTAT, PRIMARY THRUSTERS, Z AXIS
FAILURE MODE: FAILS TO CLOSE (FAILS OPEN).

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) THRUSTERS, PRIMARY, Z AXIS
5) THERMOSTAT, PRIMARY THRUSTERS, Z AXIS
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LOCATION: L/R OMS POD, RCS THRUSTER ASSEMBLIES
PART NUMBER: 51V42ENLIU, L2U, L4U, L2D, L3D, L4D; R1U, R2U, R4U, R2D, R3D, R4D

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THRUSTERS WHICH FIRE IN THE SAME DIRECTION. PROPELLANT IN THIS JET WILL FREEZE ONORBIT. IF JET'S TEMPERATURE DROPS BELOW LIMITS, THE RM WILL DESELECT THIS JET. FAILURE MAY AFFECT ONORBIT OPERATIONS AND FAILURE OF ALL REDUNDANCY DURING ENTRY MAY CAUSE LOSS OF VEHICLE DUE TO THE INABILITY TO EXPELL ENOUGH PROPELLANTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES. PROPELLANTS WILL NOT FREEZE IN JETS DURING ABORTS DUE TO LACK OF TIME.

REFERENCES: VS70-943099, REV B EO B12; FLIGHT RULE 6-95

REPORT DATE 03/27/87 C-2240
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2339
HIGHEST CRITICALITY
FLIGHT: 2/1R
ABORT: 2/1R

ITEM: THERMOSTAT, PRIMARY THRUSTERS, Z AXIS
FAILURE MODE: FAILS TO OPEN (Fails Closed).

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) THRUSTERS, PRIMARY, Z AXIS
5) THERMOSTAT, PRIMARY THRUSTERS, Z AXIS
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LOCATION: L/R OMS POD, RCS THRUSTER ASSEMBLIES
PART NUMBER: 51V42ENL1U, L2U, L4U, L2D, L3D, L4D; R1U, R2U, R4U, R2D, R3D, R4D

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
CREW CAN REMOVE POWER FROM THE HEATER SWITCHES, BUT C&W DOES NOT ANNUNCIATE THE HIGH TEMPERATURE CONDITION. OVERHEATING OF PROPELLANTS COULD CAUSE ZotS, LEADING TO LOSS OF VEHICLE IN ANY FLIGHT PHASE IN WHICH THE JET IS USED.

REFERENCES: VS70-943099, REV B EO B12; FLIGHT RULE 6-95

REPORT DATE 03/27/87 C-2241
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS FLIGHT: 2/2
MDAC ID: 2340 ABORT: 3/3

ITEM: THERMOSTAT, VERNIER THRUSTERS, ALL AXES
FAILURE MODE: FAILS TO CLOSE (FAILS OPEN).

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) THRUSTERS, VERNIER, ALL AXES
5) THERMOSTAT, VERNIER THRUSTERS, ALL AXES

CRITICALITIES

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REDUNDANCY SCREENS:  A [ ]   B [ ]   C [ ]

LOCATION: L/R OMS POD, RCS THRUSTER ASSEMBLIES
PART NUMBER: 51V42ENL5D; R5D

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
THERE IS NO REDUNDANCY FOR VERNIER JETS. PROPELLANT IN THIS JET WILL FREEZE ONORB. IF JET'S TEMPERATURE DROPS BELOW LIMITS, THE RM WILL DESSELECT THIS JET. FAILURE WILL AFFECT ONORB OPERATIONS.

REFERENCES: VS70-943099, REV B EO B12; FLIGHT RULE 6-95

REPORT DATE 03/27/87  C-2242
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87

SUBSYSTEM: ARCS

MDAC ID: 2341

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 2/1R
ABORT: 2/1R

ITEM: THERMOSTAT, VERNIER THRUSTERS, ALL AXES

FAILURE MODE: FAILS TO OPEN (FAILS CLOSED).

LEAD ANALYST: V.J. BURKEMPER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) THRUSTERS, VERNIER, ALL AXES
5) THERMOSTAT, VERNIER THRUSTERS, ALL AXES

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LOCATION: L/R OMS POD, RCS THRUSTER ASSEMBLIES

PART NUMBER: 51V42ENL5D; R5D

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
CREW CAN REMOVE POWER FROM THE HEATER SWITCHES, BUT C&W DOES NOT ANNUNCIATE THE HIGH TEMPERATURE CONDITION. OVERHEATING OF PROPELLANTS COULD CAUSE ZOTS, LEADING TO LOSS OF VEHICLE IN ANY FLIGHT PHASE IN WHICH THE JET IS USED.

REFERENCES: VS70-943099, REV B EO B12; FLIGHT RULE 6-95

REPORT DATE 03/27/87 C-2243
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/1R
MDAC ID: 2342  ABORT: 3/1R

ITEM: MANIFOLD 1, JETS HEATER CONTROL SWITCH
FAILURE MODE: SWITCH FAILS IN THE ON POSITION.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 1 JETS
5) MANIFOLD 1, JETS HEATER CONTROL SWITCH

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LOCATION: PNL A14 S9
PART NUMBER: 36V73A14S9

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THERMOSTATS IN EACH JET ASSEMBLY AND BY CIRCUIT BREAKERS. FAILURE OF ALL REDUNDANCY COULD CAUSE OVERHEATING OF PROPELLANTS, RESULTING IN ZOTS. THIS COULD RESULT IN LOSS OF VEHICLE IN ANY FLIGHT PHASE IN WHICH THE JETS ARE USED.

REFERENCES: VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87  C-2244
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87  HIGHEST CRITICALITY: HDW/FUNC FLIGHT: 2/2
SUBSYSTEM: ARCS  ABORT: 3/3
MDAC ID: 2343

ITEM: MANIFOLD 1, JETS HEATER CONTROL SWITCH
FAILURE MODE: SWITCH FAILS IN THE OFF POSITION.

LEAD ANALYST: V. J. BURKEMPER  SUBSYS LEAD: D. J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 1 JETS
5) MANIFOLD 1, JETS HEATER CONTROL SWITCH
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CRITICALITIES

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REDUNDANCY SCREENS:  A [ ]   B [ ]   C [ ]

LOCATION: PNL A14 S9
PART NUMBER: 36V73A14S9

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
PROPELLANT IN JETS WILL FREEZE. THIS WILL CAUSE LOSS OF ALL JETS ON THE LEFT AND RIGHT MANIFOLD. THIS COULD AFFECT ONORBIT OPERATIONS ENTRY DTOs AND PTIs.

REFERENCES: VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87  C-2245
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2344

HIGHEST CRITICALITY
FLIGHT: 2/2
ABORT: 3/3

ITEM: MANIFOLD 1, JETS HEATER CONTROL SWITCH OPEN CONTACTS 1, 2
FAILURE MODE: SWITCH OPEN CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 1 JETS
5) MANIFOLD 1, JETS HEATER CONTROL SWITCH OPEN CONTACTS 1, 2

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL A14 S9
PART NUMBER: 36V73A14S9

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
PROPELLANT IN JETS WILL FREEZE. THIS WILL CAUSE LOSS OF ALL JETS ON THE LEFT AND RIGHT MANIFOLD. THIS COULD AFFECT ONORBIT OPERATIONS AND ENTRY DTOs AND PTIs.

REFERENCES: VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87 C-2246
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2345

HIGHEST CRITICALITY: HDW/FUNC
FLIGHT: 3/1R
ABORT: 3/1R

ITEM: MANIFOLD 1, JETS HEATER CONTROL SWITCH OPEN
CONTACTS 1, 2
FAILURE MODE: SWITCH OPEN CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 1 JETS
5) MANIFOLD 1, JETS HEATER CONTROL SWITCH OPEN CONTACTS 1, 2
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LOCATION: PNL A14 S9
PART NUMBER: 36V73A14S9

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THERMOSTATS IN EACH JET ASSEMBLY AND BY CIRCUIT BREAKERS. FAILURE OF ALL REDUNDANCY COULD CAUSE OVERHEATING OF PROPELLANTS, RESULTING IN ZOTS. THIS COULD RESULT IN LOSS OF VEHICLE IN ANY FLIGHT PHASE IN WHICH THE JETS ARE USED.

REFERENCES: VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87 C-2247
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2346

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: MANIFOLD 1, JETS HEATER CONTROL SWITCH OPEN
CONTACTS 3, 4
FAILURE MODE: SWITCH CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER           SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 1 JETS
5) MANIFOLD 1, JETS HEATER CONTROL SWITCH OPEN CONTACTS 3, 4

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL A14 S9
PART NUMBER: 36V73A14S9

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87 C-2248
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2347

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/3
ABORT: 3/3

ITEM: MANIFOLD 1, JETS HEATER CONTROL SWITCH OPEN CONTACTS 3, 4
FAILURE MODE: SWITCH CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 1 JETS
5) MANIFOLD 1, JETS HEATER CONTROL SWITCH OPEN CONTACTS 3, 4

CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL A14 S9
PART NUMBER: 36V73A14S9

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87 C-2249
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/1R
MDAC ID: 2348  ABORT: 3/1R

ITEM: MANIFOLD 2, JETS HEATER CONTROL SWITCH
FAILURE MODE: SWITCH FAILS IN THE ON POSITION.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 2 JETS
5) MANIFOLD 2, JETS HEATER CONTROL SWITCH
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LOCATION: PNL A14 S10
PART NUMBER: 36V73A14S10

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THERMOSTATS IN EACH JET ASSEMBLY AND BY CIRCUIT BREAKERS. FAILURE OF ALL REDUNDANCY COULD CAUSE OVERHEATING OF PROPELLANTS, RESULTING IN ZOTS. THIS COULD RESULT IN LOSS OF VEHICLE IN ANY FLIGHT PHASE IN WHICH THE JETS ARE USED.

REFERENCES: VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87  C-2250
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87       HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS    FLIGHT: 2/2
MDAC ID: 2349     ABORT: 3/3

ITEM: MANIFOLD 2, JETS HEATER CONTROL SWITCH
FAILURE MODE: SWITCH FAILS IN THE OFF POSITION.

LEAD ANALYST: V.J. BURKEMPER     SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 2 JETS
5) MANIFOLD 2, JETS HEATER CONTROL SWITCH
6) 
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CRITICALITIES

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL A14 S10
PART NUMBER: 36V73A14S10

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
PROPELLANT IN JETS WILL FREEZE. THIS WILL CAUSE LOSS OF ALL JETS ON THE LEFT AND RIGHT MAIFOLD. THIS COULD AFFECT ONORBIT OPERATIONS ENTRY DTOs AND PTIs.

REFERENCES: VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87 C-2251
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2350

ITEM: MANIFOLD 2, JETS HEATER CONTROL SWITCH OPEN
CONTACTS 1, 2
FAILURE MODE: SWITCH OPEN CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 2 JETS
5) MANIFOLD 2, JETS HEATER CONTROL SWITCH OPEN CONTACTS 1, 2

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL A14 S10
PART NUMBER: 36V73A14S10

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
PROPELLANT IN JETS WILL FREEZE. THIS WILL CAUSE LOSS OF ALL JETS ON THE LEFT AND RIGHT MANIFOLD. THIS COULD AFFECT ONORBIT OPERATIONS AND ENTRY DTOS AND PTIS.

REFERENCES: VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87 C-2252
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
HIGHEST CRITICALITY
SUBSYSTEM: ARCS
MDAC ID: 2351
FLIGHT: 3/1R
ABORT: 3/1R

ITEM: MANIFOLD 2, JETS HEATER CONTROL SWITCH OPEN
CONTACTS 1, 2
FAILURE MODE: SWITCH OPEN CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 2 JETS
5) MANIFOLD 2, JETS HEATER CONTROL SWITCH OPEN CONTACTS 1, 2

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LOCATION: PNL A14 S10
PART NUMBER: 36V73A14S10

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THERMOSTATS IN EACH JET ASSEMBLY AND BY CIRCUIT BREAKERS. FAILURE OF ALL REDUNDANCY COULD CAUSE OVERHEATING OF PROPELLANTS, RESULTING IN ZOTS. THIS COULD RESULT IN LOSS OF VEHICLE IN ANY FLIGHT PHASE IN WHICH THE JETS ARE USED.

REFERENCES: VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87 C-2253
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 2352  ABORT: 3/3

ITEM: MANIFOLD 2, JETS HEATER CONTROL SWITCH OPEN
CONTACTS 3, 4
FAILURE MODE:  SWITCH CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 2 JETS
5) MANIFOLD 2, JETS HEATER CONTROL SWITCH OPEN CONTACTS 3, 4
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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION:  PNL A14 S10
PART NUMBER:  36V73A14S10

CAUSES:  CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES:  VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87  C-2254
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
HIGHEST CRITICALITY
HDW/FUNC
SUBSYSTEM: ARCS
FLIGHT: 3/3
MDAC ID: 2353
ABORT: 3/3

ITEM: MANIFOLD 2, JETS HEATER CONTROL SWITCH OPEN CONTACTS 3, 4
FAILURE MODE: SWITCH CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 2 JETS
5) MANIFOLD 2, JETS HEATER CONTROL SWITCH OPEN CONTACTS 3, 4

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REDUNDANCY SCREENS: A [ ]   B [ ]   C [ ]

LOCATION: PNL A14 S10
PART NUMBER: 36V73A14S10

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87      C-2255
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/1R
MDAC ID: 2354  ABORT: 3/1R

ITEM: MANIFOLD 3, JETS HEATER CONTROL SWITCH
FAILURE MODE: SWITCH FAILS IN THE ON POSITION.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 3 JETS
5) MANIFOLD 3, JETS HEATER CONTROL SWITCH

CRITICALITIES

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LOCATION: PNL A14 S11
PART NUMBER: 36V73A14S11

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THERMOSTATS IN EACH JET ASSEMBLY AND BY CIRCUIT BREAKERS. FAILURE OF ALL REDUNDANCY COULD CAUSE OVERHEATING OF PROPELLANTS, RESULTING IN ZOTS. THIS COULD RESULT IN LOSS OF VEHICLE IN ANY FLIGHT PHASE IN WHICH THE JETS ARE USED.

REFERENCES: VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87  C-2256
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87  HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT:  2/2
MDAC ID: 2355  ABORT: 3/3

ITEM: MANIFOLD 3, JETS HEATER CONTROL SWITCH
FAILURE MODE: SWITCH FAILS IN THE OFF POSITION.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 3 JETS
5) MANIFOLD 3, JETS HEATER CONTROL SWITCH

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: PNL A14 S11
PART NUMBER: 36V73A14S11

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
PROPELLANT IN JETS WILL FREEZE. THIS WILL CAUSE LOSS OF ALL JETS ON THE LEFT AND RIGHT MANIFOLD. THIS COULD AFFECT ONORBIT OPERATIONS ENTRY DTOs AND PTIs.

REFERENCES: VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87  C-2257
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2356
HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 2/2
ABORT: 3/3

ITEM: MANIFOLD 3, JETS HEATER CONTROL SWITCH OPEN CONTACTS 1, 2
FAILURE MODE: SWITCH OPEN CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 3 JETS
5) MANIFOLD 3, JETS' HEATER CONTROL SWITCH OPEN CONTACTS 1, 2

REDUNDANCY SCREENS: A [ ] B [ ] C [ ]
LOCATION: PNL A14 S11
PART NUMBER: 36V73A14S11
CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
PROPELLANT IN JETS WILL FREEZE. THIS WILL CAUSE LOSS OF ALL JETS ON THE LEFT AND RIGHT MANIFOLD. THIS COULD AFFECT ONORBIT OPERATIONS AND ENTRY DTOs AND PTIs.

REFERENCES: VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87 C-2258
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/1R
MDAC ID: 2357  ABORT: 3/1R

ITEM: MANIFOLD 3, JETS HEATER CONTROL SWITCH OPEN
CONTACTS 1, 2
FAILURE MODE: SWITCH OPEN CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 3 JETS
5) MANIFOLD 3, JETS HEATER CONTROL SWITCH OPEN CONTACTS 1, 2

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LOCATION: PNL A14 S11
PART NUMBER: 36V73A14S11

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE: REDUNDANCY PROVIDED BY THERMOSTATS IN EACH JET ASSEMBLY AND BY CIRCUIT BREAKERS. FAILURE OF ALL REDUNDANCY COULD CAUSE OVERHEATING OF PROPELLANTS, RESULTING IN ZOTS. THIS COULD RESULT IN LOSS OF VEHICLE IN ANY FLIGHT PHASE IN WHICH THE JETS ARE USED.

REFERENCES: VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87  C-2259
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
FLIGHT: 3/3
MDAC ID: 2358
ABORT: 3/3

ITEM: MANIFOLD 3, JETS HEATER CONTROL SWITCH OPEN
CONTACTS 3, 4
FAILURE MODE: SWITCH CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 3 JETS
5) MANIFOLD 3, JETS HEATER CONTROL SWITCH OPEN CONTACTS 3, 4
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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION: PNL A14 S11
PART NUMBER: 36V73A14S11

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87  C-2260
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS
FLIGHT: 3/3
MDAC ID: 2359
ABORT: 3/3

ITEM: MANIFOLD 3, JETS HEATER CONTROL SWITCH OPEN
CONTACTS 3, 4
FAILURE MODE: SWITCH CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 3 JETS
5) MANIFOLD 3, JETS HEATER CONTROL SWITCH OPEN CONTACTS 3, 4
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL A14 S11
PART NUMBER: 36V73A14S11

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87 C-2261
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2360

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/1R
ABORT: 3/1R

ITEM: MANIFOLD 4, JETS HEATER CONTROL SWITCH
FAILsU R MODE: SWITCH FAILS IN THE ION POSITION.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 4 JETS
5) MANIFOLD 4, JETS HEATER CONTROL SWITCH
6)
7)
8)
9)

CRITICALITIES

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LOCATION: PNL A14 S12
PART NUMBER: 36V73A14S12

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THERMOSTATS IN EACH JET ASSEMBLY AND BY CIRCUIT BREAKERS. FAILURE OF ALL REDUNDANCY COULD CAUSE OVERHEATING OF PROPELLANTS, RESULTING IN ZOTS. THIS COULD RESULT IN LOSS OF VEHICLE IN ANY FLIGHT PHASE IN WHICH THE JETS ARE USED.

REFERENCES: VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87 C-2262
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 2/2
MDAC ID: 2361  ABORT: 3/3

ITEM: MANIFOLD 4, JETS HEATER CONTROL SWITCH
FAILURE MODE: SWITCH FAILS IN THE OFF POSITION.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 4 JETS
5) MANIFOLD 4, JETS HEATER CONTROL SWITCH

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REDUNDANCY SCREENS:  A [ ]  B [ ]  C [ ]

LOCATION:  PNL A14 S12
PART NUMBER:  36V73A14S12

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
PROPELLANT IN JETS WILL FREEZE. THIS WILL CAUSE LOSS OF ALL JETS ON THE LEFT AND RIGHT MANIFOLD. THIS COULD AFFECT ONORBIT OPERATIONS ENTRY DETOS AND PTIS.

REFERENCES:  VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87  C-2263
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2362

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 2/2
ABORT: 3/3

ITEM: MANIFOLD 4, JETS HEATER CONTROL SWITCH OPEN
CONTACTS 1, 2

FAILURE MODE: SWITCH OPEN CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 4 JETS
5) MANIFOLD 4, JETS HEATER CONTROL SWITCH OPEN CONTACTS 1, 2

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: PNL A14 S12
PART NUMBER: 36V73A14S12

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
PROPELLANT IN JETS WILL FREEZE. THIS WILL CAUSE LOSS OF ALL JETS ON THE LEFT AND RIGHT MANIFOLD. THIS COULD AFFECT ONORBIT OPERATIONS AND ENTRY DTOS AND PTIS.

REFERENCES: VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87 C-2264
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2363

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/1R
ABORT: 3/1R

ITEM: MANIFOLD 4, JETS HEATER CONTROL SWITCH OPEN CONTACTS 1, 2
FAILURE MODE: SWITCH OPEN CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 4 JETS
5) MANIFOLD 4, JETS HEATER CONTROL SWITCH OPEN CONTACTS 1, 2
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LOCATION: PNL A14 S12
PART NUMBER: 36V73A14S12

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THERMOSTATS IN EACH JET ASSEMBLY AND BY CIRCUIT BREAKERS. FAILURE OF ALL REDUNDANCY COULD CAUSE OVERHEATING OF PROPELLANTS, RESULTING IN ZOTS. THIS COULD RESULT IN LOSS OF VEHICLE IN ANY FLIGHT PHASE IN WHICH THE JETS ARE USED.

REFERENCES: VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87 C-2265
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 3/3
MDAC ID: 2364  ABORT: 3/3

ITEM: MANIFOLD 4, JETS HEATER CONTROL SWITCH OPEN
CONTACTS 3, 4
FAILURE MODE: SWITCH CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 4 JETS
5) MANIFOLD 4, JETS HEATER CONTROL SWITCH OPEN CONTACTS 3, 4

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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: PNL A14 S12
PART NUMBER: 36V73A14S12

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87  C-2266
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2365

ITEM: MANIFOLD 4, JETS HEATER CONTROL SWITCH OPEN
CONTACTS 3, 4
FAILURE MODE: SWITCH CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 4 JETS
5) MANIFOLD 4, JETS HEATER CONTROL SWITCH OPEN CONTACTS 3, 4
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL A14 S12
PART NUMBER: 36V73A14S12

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE: NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87 C-2267
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87

SUBSYSTEM: ARCS
MDAC ID: 2366

HIGHEST CRITICALITY HDW/FUNC
FLIGHT: 3/1R
ABORT: 3/3

ITEM: MANIFOLD 5, JETS HEATER CONTROL SWITCH
FAILURE MODE: SWITCH FAILS IN THE ON POSITION.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 5 JETS
5) MANIFOLD 5, JETS HEATER CONTROL SWITCH

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LOCATION: PNL A14 S13
PART NUMBER: 36V73A14S13

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THERMOSTATS IN EACH JET ASSEMBLY AND BY CIRCUIT BREAKERS. FAILURE OF ALL REDUNDANCY COULD CAUSE OVERHEATING OF PROPELLANTS, RESULTING IN ZOTS.

REFERENCES: VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87 C-2268
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87  HIGHEST CRITICALITY  HDW/FUNC
SUBSYSTEM: ARCS  FLIGHT: 2/2
MDAC ID: 2367  ABORT: 3/3

ITEM: MANIFOLD 5, JETS HEATER CONTROL SWITCH
FAILURE MODE: SWITCH FAILS IN THE OFF POSITION.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 5 JETS
5) MANIFOLD 5, JETS HEATER CONTROL SWITCH
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REDUNDANCY SCREENS: A [ ]  B [ ]  C [ ]

LOCATION: PNL A14 S13
PART NUMBER: 36V73A14S13

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
PROPELLANT IN JETS WILL FREEZE. THIS WILL CAUSE LOSS OF ALL JETS ON THE LEFT AND RIGHT MANIFOLD.

REFERENCES: VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87  C-2269
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2368

HIGHEST CRITICALITY
HDW/FUNC

ITEM: MANIFOLD 5, JETS HEATER CONTROL SWITCH OPEN
CONTACTS 1, 2

FAILURE MODE: SWITCH CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 5 JETS
5) MANIFOLD 5, JETS HEATER CONTROL SWITCH OPEN CONTACTS 1, 2

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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL A14 S13
PART NUMBER: 36V73A145S13

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
PROPELLANT IN JETS WILL FREEZE. THIS WILL CAUSE LOSS OF ALL JETS ON THE LEFT AND RIGHT MANIFOLD.

REFERENCES: VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87 C-2270
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2369

ITEM: MANIFOLD 5, JETS HEATER CONTROL SWITCH OPEN
CONTACTS 1, 2
FAILURE MODE: SWITCH CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 5 JETS
5) MANIFOLD 5, JETS HEATER CONTROL SWITCH OPEN CONTACTS 1, 2

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LOCATION: PNL A14 S13
PART NUMBER: 36V73A14S13

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
REDUNDANCY PROVIDED BY THERMOSTATS IN EACH JET ASSEMBLY AND BY CIRCUIT BREAKERS. FAILURE OF ALL REDUNDANCY COULD CAUSE OVERHEATING OF PROPELLANTS, RESULTING IN ZOTS.

REFERENCES: VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87 C-2271
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87  HIGHEST CRITICALITY  FLIGHT: 3/3
SUBSYSTEM: ARCS  HDW/FUNC  ABORT: 3/3
MDAC ID: 2370

ITEM: MANIFOLD 5, JETS HEATER CONTROL SWITCH OPEN
CONTACTS 3, 4
FAILURE MODE: SWITCH CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER  SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 5 JETS
5) MANIFOLD 5, JETS HEATER CONTROL SWITCH OPEN CONTACTS 3, 4
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL A14 S13
PART NUMBER: 36V73A14S13

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87  C-2272
INDEPENDENT ORBITER ASSESSMENT
ORBITER SUBSYSTEM ANALYSIS WORKSHEET

DATE: 1/23/87
SUBSYSTEM: ARCS
MDAC ID: 2371

ITEM: MANIFOLD 5, JETS HEATER CONTROL SWITCH OPEN CONTACTS 3, 4
FAILURE MODE: SWITCH CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER
SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:
1) ELECTRICAL COMPONENTS
2) THRUSTER
3) THERMAL CONTROL SUBSYSTEM
4) MANIFOLD 5 JETS
5) MANIFOLD 5, JETS HEATER CONTROL SWITCH OPEN CONTACTS 3, 4

CRITICALITIES

<table>
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<tr>
<th>FLIGHT PHASE</th>
<th>HDW/FUNC</th>
<th>ABORT</th>
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REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: PNL A14 S13
PART NUMBER: 36V73A14S13

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:
NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099, REV B EO B12, DL, CL

REPORT DATE 03/27/87 C-2273
### APPENDIX D
#### POTENTIAL CRITICAL ITEMS

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<tr>
<th>MDAC ID</th>
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<td>100</td>
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<td>2368</td>
<td>MANIFOLD 5, JETS HEATER CONTROL SWITCH OPEN CONTACTS 1, 2</td>
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