INDEPENDENT ORBITER ASSESSMENT

ANALYSIS
OF THE
REACTION CONTROL
SYSTEM
Vol. 3 of 3

19 JANUARY 1987

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

1607 MDAC ID:

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
- CONTROLS 2)
- PROP STOR & DIST SUBSYSTEM 3)
- L/R OX & FU TK ISOL VLV 3/4/5 A 4)
- RESISTOR, 5.1K 1/4W 5)
- 6)
- 7) 8)
- 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 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

Officer services

HIGHEST CRITICALITY HDW/FUNC DATE: 1/21/87 SUBSYSTEM: ARCS FLIGHT: 3/3 ABORT: 3/3 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 6) 7) 8) 9) CRITICALITIES

FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC
PRELAUNCH: 3/3 RTLS: 3/3

TAL: 3/3 3/3 3/3 AOA: ATO: ONORBIT: DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: AV BAY 4, MCA 1 PART NUMBER: 54V76All4R 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

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

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1609 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 A
- 5) RESISTOR, 1.2K 2W
- 6)
- 7)
- 8)
- 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 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/21/87 SUBSYSTEM: ARCS FLIGHT: 3/3 ABORT: MDAC ID: 1610 3/3 ITEM: RESISTOR, 1.2K 2W FAILURE MODE: FAILS SHORT LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: The second secon 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 6) 7) 8) 9) CRITICALITIES ### HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: 3/3 3/3 TAL: 3/3 3/3 AOA: 3/3 FLIGHT PHASE PRELAUNCH: LIFTOFF: 3/3 ONORBIT: DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: AV BAY 4, MCA 1 PART NUMBER: 54V76All4R 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

DATE: 1/21/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: 1611 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
- 6)
- 7)
- 8)
- 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 4, MCA 1

PART NUMBER: 54V76All4R 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.

DATE: HIGHEST CRITICALITY HDW/FUNC 1/21/87 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: 3/3 MDAC ID: 1612 RESISTOR, 5.1K 1/4W ITEM: 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 6) 7) 8) 9)

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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 4, MCA 1

PART NUMBER: 54V76Al14R J2-91; J2-98

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

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

MDAC ID: 1613

RESISTOR, 5.1K 1/4W

FAILURE MODE: FAILS OPEN

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

BREAKDOWN HIERARCHY:

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

ITEM:

- 7)
- 8)
- 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 []

AV BAY 4, MCA 1 LOCATION:

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/21/87 SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1614 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 TK ISOL VLV 3/4/5 A
- 5) RESISTOR, 5.1K 1/4W

6)

7)

8) 9)

CRITICALITIES

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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 4, MCA 1

PART NUMBER: 54V76All4R J2-10; J2-93

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

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

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1615 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
- 6)
- 7)
- 8)
- 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 4, MCA 1

PART NUMBER: 54V76All4R 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.

DATE: 1/21/87 HIGHEST CRITICALITY HDW/FUNC FLIGHT: 3/3 SUBSYSTEM: ARCS 1616 3/3 ABORT: MDAC ID: 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
- 6)
- 7) 8)
- 9)

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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 4, MCA 1

PART NUMBER: 54V76All4R J2-9; J2-76

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

DATE: 1/21/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: 1617 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
- 6)
- 7)
- 8)
- 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 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

HIGHEST CRITICALITY HDW/FUNC DATE: 1/21/87 FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 1618 RESISTOR, 5.1K 1/4W ITEM: 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 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 3/3 TAL: 3/3 LIFTOFF: 3/3 3/3 AOA: ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 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

HIGHEST CRITICALITY HDW/FUNC DATE: 1/21/87 3/3 SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1619 ABORT: 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 CONTROLS PROP STOR & DIST SUBSYSTEM 3) L/R OX & FU TK ISOL VLV 3/4/5 A 4) RESISTOR, 5.1K 1/4W 5) 6) 7) 8) 9)

CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC
3/3	RTLS:	3/3
3/3	TAL:	3/3
3/3	AOA:	3/3
3/3	ATO:	3/3
: 3/3		·
	3/3 3/3 3/3 3/3	3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO:

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.

1/21/87 HIGHEST CRITICALITY HDW/FUNC DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 1620 RESISTOR, 5.1K 1/4W ITEM: 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 6) 7) 8) 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 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.

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

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1621 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 A

5) RESISTOR, 1.2K 2W

6)

7)

8) 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 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..

HIGHEST CRITICALITY HDW/FUNC 1/21/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1622 RESISTOR, 1.2K 2W ITEM: FAILURE MODE: FAILS SHORT LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: a was entropy of the con-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

6) 7) 8) 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 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.

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
- 6)
- 7)
- 8) 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, 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.

HIGHEST CRITICALITY HDW/FUNC 1/21/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1624 RESISTOR, 5.1K 1/4W ITEM: FAILURE MODE: FAILS SHORT LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS 2) CONTROLS PROP STOR & DIST SUBSYSTEM 3) 4) L/R OX & FU TK ISOL VLV 3/4/5 B RESISTOR, 5.1K 1/4W 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: TAL: AOA: 3/3 3/3 PRELAUNCH: 3/3 3/3 3/3 3/3 LIFTOFF: ONORBIT: DEORBIT: ATO: 3/3 3/3 LANDING/SAFING: 3/3 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 Bl2; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

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

6)

7)

8)

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, 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/21/87 FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1626 RESISTOR, 1.2K 2W ITEM: FAILURE MODE: FAILS SHORT LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS 2) CONTROLS PROP STOR & DIST SUBSYSTEM 4) L/R OX & FU TK ISOL VLV 3/4/5 B 5) RESISTOR, 1.2K 2W 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: TAL: 3/3 PRELAUNCH: 3/3 3/3 3/3 LIFTOFF: AOA: 3/3 ONORBIT: 3/3 DEORBIT: 3/3 3/3 ATO: LANDING/SAFING: 3/3 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:

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

NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC. - Tipe - Tipe - Mark 1980 (Asserting American Control of American American Co

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

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

6)

7)

8) 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, 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/21/87 FLIGHT: 3/3 ARCS SUBSYSTEM: 3/3 ABORT: MDAC ID: 1628 RESISTOR, 5.1K 1/4W ITEM: FAILURE MODE: FAILS SHORT LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 2) 3) PROP STOR & DIST SUBSYSTEM 4) L/R OX & FU TK ISOL VLV 3/4/5 B 5) RESISTOR, 5.1K 1/4W 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 3/3 PRELAUNCH: TAL: 3/3 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: 3/3 DEORBIT: 3/3 ATO: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C []

LOCATION: AV BAY 5, MCA 2

PART NUMBER: 55V76All5R J2-91; J2-42

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

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

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1629 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
- L/R OX & FU TK ISOL VLV 3/4/5 B 4)
- RESISTOR, 5.1K 1/4W 5)

6)

7)

8) 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, MCA 2

PART NUMBER: 55V76All5R 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

HIGHEST CRITICALITY HDW/FUNC 1/21/87 DATE: FLIGHT: 3/3
ABORT: 3/3 SUBSYSTEM: ARCS MDAC ID: 1630 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 B
5) RESISTOR, 5.1K 1/4W 6) 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC
PRELAUNCH: 3/3 RTLS: 3/3
LIFTOFF: 3/3 TAL: 3/3 3/3 3/3 AOA: 3/3 ONORBIT: DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: AV BAY 5, MCA 2
PART NUMBER: 55V76All5R J2-95; J2-19 CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD EFFECTS/RATIONALE: NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

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

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1631 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
- 6)
- 7)
- 8) 9)

CRITICALITIES

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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, 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

HIGHEST CRITICALITY HDW/FUNC 1/21/87 DATE: SUBSYSTEM: ARCS FLIGHT: 3/3 ABORT: 3/3 MDAC ID: 1632 RESISTOR, 5.1K 1/4W ITEM: 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, 5.1K 1/4W

6)

7) 8)

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, 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.

DATE: 1/21/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1633 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
- 6)
- 7)
- 8)
- 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, 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.

HIGHEST CRITICALITY HDW/FUNC 1/21/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1634 RESISTOR, 5.1K 1/4W ITEM: 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 RESISTOR, 5.1K 1/4W 6) 7) 8) 91 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 PRELAUNCH: 3/3 RTLS: TAL: 3/3 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] : A CASHAGARA LOCATION: AV BAY 5, MCA 2 PART NUMBER: 55V76All5R J2-90; J2-26 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

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. 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

6)

7)

8) 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, MCA 2

PART NUMBER: 55V76All5R 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.

1/21/87 HIGHEST CRITICALITY HDW/FUNC DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 1636 RESISTOR, 5.1K 1/4W ITEM: FAILURE MODE: FAILS SHORT LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 2) 3) PROP STOR & DIST SUBSYSTEM 4) L/R OX & FU TK ISOL VLV 3/4/5 B 5) RESISTOR, 5.1K 1/4W 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 3/3 TAL: 3/3 LIFTOFF: AOA: 3/3 3/3 ONORBIT: DEORBIT: ATO: 3/3 3/3 LANDING/SAFING: 3/3 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

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

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1637 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

6)

7)

8) 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, 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..

1/21/87 HIGHEST CRITICALITY HDW/FUNC DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1638 RESISTOR, 1.2K 2Water and the second second ITEM: FAILURE MODE: FAILS SHORT LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 2) 3) PROP STOR & DIST SUBSYSTEM 4) L/R OX & FU TK ISOL VLV 3/4/5 B 5) RESISTOR, 1.2K 2W 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 RTLS: TAL: AOA: 3/3 PRELAUNCH: 3/3 3/3 3/3 3/3 LIFTOFF: ONORBIT: 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 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

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

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 J3-118; 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/20/87 FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 1640 ITEM: RESISTOR, 12K 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, 12K 1/4W 6) 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC
PRELAUNCH: 3/3 RTLS: 3/3
LIFTOFF: 3/3 TAL: 3/3 3/3 3/3 3/3 3/3 3/3 ONORBIT: AOA: DEORBIT: ATO: LANDING/SAFING: 3/3 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

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

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

MDAC ID: 1641 ABORT: 3/3

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

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
- 6)
- 7)
- 8)

9)

CRI'	ΤI	CALI	TIES
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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: 56V76All6 J3-118;; AlR8

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

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

HIGHEST CRITICALITY HDW/FUNC 1/20/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: 1642 MDAC ID: RESISTOR, 5.1K 1/4W ITEM: 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 RESISTOR, 5.1K 1/4W 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 3/3 PRELAUNCH: 3/3 TAL: 3/3 LIFTOFF: AOA: 3/3 3/3 ONORBIT: ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 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

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

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1643 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

6)

7)

8) 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 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 INDICATION.

HIGHEST CRITICALITY HDW/FUNC 1/20/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1644 RESISTOR, 1.2K 2W ITEM: 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 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 3/3 3/3 TAL: LIFTOFF: 3/3 3/3 AOA: ONORBIT: DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 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

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

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1645 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

6)

7)

8) 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 6, MCA 3

PART NUMBER: 56V76All6 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 INDICATION.

HIGHEST CRITICALITY HDW/FUNC 1/20/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 1646 RESISTOR, 1.2K 2W== = ITEM: 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 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 3/3 PRELAUNCH: RTLS: TAL: 3/3 3/3 LIFTOFF: AOA: 3/3 3/3 ONORBIT: ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: AV BAY 6, MCA 3 PART NUMBER: 56V76All6 J2-55; A3R4

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

NO EFFECT. TALKBACK IS STILL AVAILABLE.

REFERENCES: VS70-943099 REV B EO Bl2; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

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

SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 1647 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
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

VI(2.2.4.1.2.4.1.2.4.4.4.4.4.4.4.4.4.4.4.4.			
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 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.

HIGHEST CRITICALITY HDW/FUNC 1/20/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1648 RESISTOR, 5.1K 1/4W ITEM: 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 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 RTLS: PRELAUNCH: 3/3 LIFTOFF: 3/3 TAL: 3/3 3/3 ONORBIT: 3/3 AOA: DEORBIT: ATO: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: AV BAY 6, MCA 3 PART NUMBER: 56V76All6 J2-56;; A2Rl3 CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

EFFECTS/RATIONALE:

NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

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

6)

7)

8) 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 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 INDICATION.

HIGHEST CRITICALITY HDW/FUNC 1/20/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1650 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 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 3/3 RTLS: PRELAUNCH: TAL: 3/3 3/3 LIFTOFF: 3/3 3/3 AOA: ONORBIT: 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: AV BAY 6, MCA 3
PART NUMBER: 56V76Al16 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

DATE: 1/20/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1651 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
- 6)
- 7)
- 8) 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 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/20/87 FLIGHT: SUBSYSTEM: ARCS 3/3 3/3 MDAC ID: 1652 ABORT: 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

6)

7)

8) 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 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.

DATE: 1/20/87 HIGHEST CRITICALITY HDW/FUNC 3/3 SUBSYSTEM: ARCS FLIGHT: MDAC ID: 1653 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)

CRITICALITIES

V.\			
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: 56V76All6 J3-81; J3-44

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

EFFECTS/RATIONALE:

8) 9)

AFFECT TALKBACK FOR THE "FU 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.

HIGHEST CRITICALITY HDW/FUNC 1/20/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 1654 RESISTOR, 1.2K 2W ITEM: 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 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 TAL: 3/3 AOA: 3/3 3/3 3/3 PRELAUNCH: LIFTOFF: ONORBIT: 3/3 DEORBIT: ATO: 3/3 3/3 LANDING/SAFING: 3/3 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

DATE: 1/20/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: 1655 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
- 6)
- 7)
- 8)
- 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 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.

HIGHEST CRITICALITY HDW/FUNC 1/20/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 1656 RESISTOR, 5.1K 1/4W ITEM: 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 RESISTOR, 5.1K 1/4W 6) 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 3/3 PRELAUNCH: RTLS: LIFTOFF: 3/3 TAL: 3/3 3/3 AOA: 3/3-----ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [· .] C [] LOCATION: AV BAY 6, MCA 3 PART NUMBER: 56V76All6 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 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

DATE: 1/20/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 1657 MDAC ID: 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 3/4/5
- 5) RESISTOR, 12K 1/4W
- 6)
- 7)
- 8)
- 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 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.

HIGHEST CRITICALITY HDW/FUNC 1/20/87 FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1658 ITEM: RESISTOR, 12K 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, 12K 1/4W 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: 3/3 3/3 PRELAUNCH: 3/3 3/3 TAL: 3/3 LIFTOFF: AOA: 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: AV BAY 4, MCA 1 PART NUMBER: 54V76A114 J6-1; AlR20 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

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

6)

7)

8) 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 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.

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. 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
- 6)
- 7)
- 8) 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 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.

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

SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 1661 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 3/4/5
- 5) RESISTOR, 1.2K 2W

`6)

7)

8)

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 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 INDICATION.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/20/87 FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1662 RESISTOR, 1.2K 2W ITEM: 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 6) 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: 3/3 PRELAUNCH: 3/3 3/3 TAL: 3/3 LIFTOFF: AOA: ONORBIT: 3/3 3/3 ATO: DEORBIT: 3/3 3/3 LANDING/SAFING: 3/3

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

LOCATION: AV BAY 4, MCA 1

PART NUMBER: 54V76All4 J3-85; A3R8

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

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

SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 1663 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 3/4/5
- 5) RESISTOR, 1,2K 2W
- 6)
- 7)
- 8)
- 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 4, MCA 1

PART NUMBER: 54V76All4 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 INDICATION.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/20/87 SUBSYSTEM: ARCS FLIGHT: 3/3 ABORT: 3/3 MDAC ID: 1664 RESISTOR, 1.2K 2W ITEM: 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 7) 8) 9) CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: TAL: PRELAUNCH: 3/3 3/3 LIFTOFF: 3/3 3/3 AOA: 3/3 ONORBIT: 3/3 DEORBIT: ATO: 3/3 3/3 LANDING/SAFING: 3/3 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.

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

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1665 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
- 6)
- 7)
- 8) 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 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.

DATE: 1/20/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS 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
- 6)
- 7) 8)
- 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 4, MCA 1

PART NUMBER: 54V76All4R J6-60; J2-79

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

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

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1667 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 3/4/5
- 5) RESISTOR, 1.2K 2W

6)

7)

8) 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 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 INDICATION.

HIGHEST CRITICALITY HDW/FUNC 1/20/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 1668 ABORT: MDAC ID: 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 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC 3/3 RTLS: TAL: 3/3 PRELAUNCH: 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: 3/3 3/3 DEORBIT: ATO: 3/3 LANDING/SAFING: 3/3 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

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

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1669 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
- 6)
- 7)
- 8)

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 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.

HIGHEST CRITICALITY HDW/FUNC 1/20/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 1670 RESISTOR, 5.1K 1/4W ITEM: 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 RESISTOR, 5.1K 1/4W 5) 6) 7) 8) 9) CRITICALITIES FLIGHT PHASE · HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: 3/3 PRELAUNCH: LIFTOFF: 3/3 TAL: 3/3 3/3 AOA: 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: AV BAY 4, MCA 1 PART NUMBER: 54V76A114R J6-59;; J2-78

EFFECTS/RATIONALE:

SHOCK, OVERLOAD

NO EFFECTS. TALKBACK IS STILL AVAILABLE TO GPC.

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

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

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

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1671 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 3/4/5
- 5) RESISTOR, 12K 1/4W
- 6)
- 7)
- 8)
- 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: 3/3		•

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

Enclosed to the

HIGHEST CRITICALITY HDW/FUNC 1/20/87 FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 1672 ITEM: RESISTOR, 12K 1/4W FAILURE MODE: FAILS SHORT LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 2) 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 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 4, MCA 1
PART NUMBER: 54V76All4 J6-2; AlR19 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

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. 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
- 6)
- 7)
- 8)
- 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 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.

HIGHEST CRITICALITY HDW/FUNC 1/20/87 DATE: FLIGHT: 3/3 ABORT: 3/3 SUBSYSTEM: ARCS MDAC ID: 1674 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 6) 7) 8) 9) 3/3 3/3 3/3 AOA: ATO: 3/3 ONORBIT: 3/3 DEORBIT: LANDING/SAFING: 3/3 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: 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. · 克雷克 (1996年) 《阿克福斯》(1996年) 《阿尔克·西西尔·西西尔·西西尔尔·西西尔尔 REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK

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

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1675 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
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE . H	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, 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

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HIGHEST CRITICALITY HDW/FUNC DATE: 1/21/87 SUBSYSTEM: ARCS FLIGHT: 3/3 3/3 ABORT: MDAC ID: 1676 RESISTOR, 5.1K 1/4W ITEM: FAILURE MODE: FAILS SHORT LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 2) 3) PROP STOR & DIST SUBSYSTEM 4) MANIFOLD 1, L/R OX & FU ISOL VLVS RESISTOR, 5.1K 1/4W 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE PRELAUNCH: 3/3 RTLS: 3/3 TAL: 3/3 LIFTOFF: 3/3 3/3 ONORBIT: 3/3 AOA: DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 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.

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. 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

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, MCA 2

PART NUMBER: 55V76A115 J1-32; J1-88

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSE TALKBACK FOR "AFT L/R RCS MANIF 1 ISOL SWITCH" IN OPEN

POSITION.

HIGHEST CRITICALITY HDW/FUNC 1/21/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 1678 MDAC ID: RESISTOR, 5.1K 1/4W - RESISTOR - ITEM: 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 RESISTOR, 5.1K 1/4W 6)

7) 8) 9)

CRITICALITIES

	01/4 4 4 01 1			
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, MCA 2

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

EFFECTS/RATIONALE:

NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

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

SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 1679 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
- 6)
- 7)
- 8) 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, 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.

HIGHEST CRITICALITY HDW/FUNC 1/21/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1680 RESISTOR, 5.1K 1/4W ITEM: 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 HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 3/3 RTLS: TAL: PRELAUNCH: 3/3 3/3 LIFTOFF: AOA: 3/3 ONORBIT: 3/3 ATO: 3/3 3/3 DEORBIT: LANDING/SAFING: 3/3 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

DATE: 1/21/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: 1681 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

6)

7)

8)

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, 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.

HIGHEST CRITICALITY HDW/FUNC 1/21/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 1682 RESISTOR, 5.1K 1/4W ITEM: 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 HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 3/3 TAL: 3/3 LIFTOFF: AOA: 3/3 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 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

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

SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 1683 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 1, L/R OX & FU ISOL VLVS
- 5) RESISTOR, 1.2K 2W

6)

7)

8) 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 4, MCA 1

PART NUMBER: 55V76Al15 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 CONTINUES 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.

HIGHEST CRITICALITY HDW/FUNC 1/21/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1684 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 1, L/R OX & FU ISOL VLVS 5) RESISTOR, 1.2K 2W 6) 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: 3/3 PRELAUNCH: 3/3 TAL: LIFTOFF: 3/3 3/3 AOA: 3/3 ONORBIT: DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: AV BAY 4, MCA 1
PART NUMBER: 55V76All5 J1-68; J1-65 CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD EFFECTS/RATIONALE: NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

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

MDAC ID:

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
- PROP STOR & DIST SUBSYSTEM
- 4) MANIFOLD 1, L/R OX & FU ISOL VLVS
- RESISTOR, 5.1K 1/4W 5)
- 6)

ITEM:

- 7)
- 8)
- 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, MCA 2

PART NUMBER: 55V76A115 J1-22; J1-74

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSE TALKBACK FOR "OX MANIF 1 ISOL VALVE" IN OPEN POSITION.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/21/87 FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1686 RESISTOR, 5.1K 1/4W ITEM: 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 HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 3/3 PRELAUNCH: 3/3 TAL: 3/3 LIFTOFF: AÖA: 3/3 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 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.

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

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1687 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
- 6)
- 7)
- 8) 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, 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.

HIGHEST CRITICALITY HDW/FUNC 1/21/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: 1688 MDAC ID: RESISTOR, 5.1K 1/4W ITEM: 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 RESISTOR, 5.1K 1/4W 5) 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 LIFTOFF: 3/3 TAL: 3/3 3/3 AOA: 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3

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.

DATE: 1/21/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: 1689 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 2, L/R OX & FU ISOL VLVS
- 5) RESISTOR, 5.1K 1/4W
- 6)
- 7)
- 8)
- 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, MCA 2

PART NUMBER: 54V76All4 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/21/87 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1690 RESISTOR, 5.1K 1/4W ITEM: FAILURE MODE: FAILS SHORT LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS 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 HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE PRELAUNCH: 3/3 3/3 RTLS: 3/3 LIFTOFF: 3/3 TAL: 3/3 AOA: 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCÝ SCREENS: A [] B [] C [] AV BAY 5, MCA 2 LOCATION: 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

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

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1691 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 2, L/R OX & FU ISOL VLVS
- 5) RESISTOR, 5.1K 1/4W

6)

7)

8) 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, 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.

HIGHEST CRITICALITY HDW/FUNC 1/21/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: 1692 MDAC ID: RESISTOR, 5.1K 1/4W ITEM: FAILURE MODE: FAILS SHORT SUBSYS LEAD: D.J. PAUL LEAD ANALYST: W.A. HAUFLER BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS 2) CONTROLS 3) PROP STOR & DIST SUBSYSTEM 4) MANIFOLD 2, L/R OX & FU ISOL VLVS RESISTOR, 5.1K 1/4W 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC 3/3 RTLS: 3/3 PRELAUNCH: 3/3 3/3 TAL: LIFTOFF: 3/3 AOA: ONORBIT: 3/3 ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 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.

DATE: 1/21/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: 1693 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 2, L/R OX & FU ISOL VLVS
- 5) RESISTOR, 5.1K 1/4W

6)

7)

8) 9)

CRITICALITIES

HDW/FUNC	- ABORT	HDW/FUNC
3/3	RTLS:	3/3
3/3	TAL:	3/3
3/3	AOA:	3/3
3/3	ATO:	3/3
3/3		ŕ
	3/3 3/3 3/3 3/3	3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO:

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.

HIGHEST CRITICALITY HDW/FUNC 1/21/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: 1694 MDAC ID: RESISTOR, 5.1K 1/4W * ... ITEM: FAILURE MODE: FAILS SHORT LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS The state of the second 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 HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 3/3 PRELAUNCH: 3/3 3/3 TAL: 3/3 LIFTOFF: 3/3 AOA: ONORBIT: ATO: 3/3 DEORBIT: 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: NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC. REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE

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

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1695 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 2, L/R OX & FU ISOL VLVS
- 5) RESISTOR, 5.1K 1/4W
- 6)
- 7)
- 8) 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, 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/21/87 FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1696 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 2, L/R OX & FU ISOL VLVS 5) RESISTOR, 5.1K 1/4W 6) 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 3/3 3/3 3/3 LIFTOFF: TAL: 3/3 ONORBIT: .3/3 AOA: DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: AV BAY 5, MCA 2 PART NUMBER: 54V76A114 J2-2; 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

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

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1697 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 2, L/R OX & FU ISOL VLVS
- 5) RESISTOR, 1.2K 2W
- 6)
- 7)
- 8) 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, 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" MOTORS 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/21/87 FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 1698 RESISTOR, 1.2K 2W ITEM: 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 2, L/R OX & FU ISOL VLVS 5) RESISTOR, 1.2K 2W 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 3/3 PRELAUNCH: TAL: 3/3 LIFTOFF: 3/3 3/3 3/3 AOA: ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] PART NUMBER: 54V76All4 J2-30; J2-53 LOCATION: AV BAY 5, MCA 2 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

DATE: 1/21/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: 1699 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 2, L/R OX & FU ISOL VLVS
- 5) RESISTOR, 5.1K 1/4W
- 6)
- 7)
- 8) 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, 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/21/87 FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1700 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 2, L/R OX & FU ISOL VLVS 5) RESISTOR, 5.1K 1/4W 6) 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC
PRELAUNCH: 3/3 RTLS: 3/3 3/3 TAL: LIFTOFF: 3/3 3/3 AOA: 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 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: NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC. REFERENCES: VS70-943099 REV B EO B12; JSC 11174, SPACE SHUTTLE

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

MDAC ID: 1701

RESISTOR, 5.1K 1/4W

FAILURE MODE: FAILS OPEN

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

BREAKDOWN HIERARCHY:

- 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)

ITEM:

- 7)
- 8)
- 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 ['] /3		-, -

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/21/87 FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: 1702 MDAC ID: RESISTOR, 5.1K 1/4W ITEM: 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 2, L/R OX & FU ISOL VLVS 5) RESISTOR, 5.1K 1/4W 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 3/3 RTLS: PRELAUNCH: TAL: 3/3 3/3 LIFTOFF: 3/3 3/3 AOA: ONORBIT: 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 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.

C-Z

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

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: 1703 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
- 6)
- 7)
- 8)
- 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 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.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1704 RESISTOR, 5.1K 1/4W ITEM: 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 HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 RTLS: TAL: 3/3 PRELAUNCH: 3/3 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: ATO: 3/3 3/3 DEORBIT: LANDING/SAFING: 3/3 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.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: 1705 3/3 ABORT:

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
- MANIFOLD 3, L/R OX & FU ISOL VLVS 4)
- 5) RESISTOR, 5.1K 1/4W
- 6)
- 7)
- 8)
- 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 6, MCA 3

PART NUMBER: 56V76Al16 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

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1706 RESISTOR, 5.1K 1/4W ITEM: FAILURE MODE: FAILS SHORT LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 2) 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 HDW/FUNC HDW/FUNC ABORT FLIGHT PHASE 3/3 RTLS: PRELAUNCH: 3/3 TAL: 3/3 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] AV BAY 6, MCA 3 LOCATION: PART NUMBER: 56V76A116 J2-68; A5R2 Harris Affilia water and the same a CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD EFFECTS/RATIONALE: NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1707 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
- 6)
- 7)
- 8) 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 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.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: 3/3 FLIGHT: ARCS SUBSYSTEM: ABORT: 3/3 1708 MDAC ID: RESISTOR, 5.1K 1/4W ITEM: 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 RESISTOR, 5.1K 1/4W 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 RTLS: PRELAUNCH: 3/3 3/3 TAL: 3/3 LIFTOFF: AOA: 3/3 3/3 . ONORBIT: ATO: 3/3 3/3 DEORBIT: LANDING/SAFING: 3/3 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.

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
- 6)
- 7)
- 8) 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 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.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: MDAC ID: 1710 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 3, L/R OX & FU ISOL VLVS RESISTOR, 5.1K 1/4W 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: 3/3 PRELAUNCH: 3/3 3/3 TAL: LIFTOFF: 3/3 ONORBIT: AOA: 3/3 3/3 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 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

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1711 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 3, L/R OX & FU ISOL VLVS

5) RESISTOR, 1.2K 2W

6)

7)

8) 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 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.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: 1712 MDAC ID: 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 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 RTLS: TAL: 3/3 PRELAUNCH: 3/3 3/3 LIFTOFF: 3/3 3/3 AOA: 3/3 ONORBIT: 3/3 ATO: DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: AV BAY 6, MCA 3 PART NUMBER: 56V76All6 J2-91; A4Rl0 CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD EFFECTS/RATIONALE: NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: 1713 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

6)

7)

8) 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 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.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 1714 MDAC ID: RESISTOR, 5.1K 1/4W ITEM: FAILURE MODE: FAILS SHORT LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 2) PROP STOR & DIST SUBSYSTEM 4) MANIFOLD 3, L/R OX & FU ISOL VLVS RESISTOR, 5.1K 1/4W 6) 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: 3/3 PRELAUNCH: 3/3 TAL: LIFTOFF: 3/3
ONORBIT: 3/3
DEORBIT: 3/3 3/3 3/3 AOA: ATO: LANDING/SAFING: 3/3 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: NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

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

6)

7)

8)

CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC
3/3	RTLS:	3/3
3/3	TAL:	3/3
3/3	AOA:	3/3
3/3	ATO:	3/3
3/3		•
	3/3 3/3 3/3 3/3	3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO:

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.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1716 RESISTOR, 5.1K 1/4W ITEM: FAILURE MODE: FAILS SHORT LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 3) PROP STOR & DIST SUBSYSTEM 4) MANIFOLD 3, L/R OX & FU ISOL VLVS RESISTOR, 5.1K 1/4W 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 3/3 PRELAUNCH: TAL: 3/3 3/3 LIFTOFF: AOA: 3/3 ONORBIT: 3/3 3/3 ATO: 3/3 DEORBIT: 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: NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1717 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

6)

7)

8) 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 6, MCA 3

PART NUMBER: 56V76Al16 J3-74; A5R3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSE TALKBACK FOR "AFT L/R RCS MANIF ISOL 4 SWITCH" IN CLOSED

POSITION.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 1718 RESISTOR, 5.1K 1/4W ITEM: FAILURE MODE: FAILS SHORT LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 2) 3) PROP STOR & DIST SUBSYSTEM 4) MANIFOLD 4, L/R OX & FU ISOL VLVS RESISTOR, 5.1K 1/4W 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 3/3 TAL: 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: AV BAY 6, MCA 3

PART NUMBER: 56V76All6 J3-74; A5R3

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

EFFECTS/RATIONALE:

NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1719 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

6)

7)

8) 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 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.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: 1720 MDAC ID: RESISTOR, 5.1K 1/4W ITEM: FAILURE MODE: FAILS SHORT LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS 2) CONTROLS PROP STOR & DIST SUBSYSTEM 4) MANIFOLD 4, L/R OX & FU ISOL VLVS RESISTOR, 5.1K 1/4W 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 RTLS: 3/3 PRELAUNCH: 3/3 TAL: LIFTOFF: 3/3 3/3 3/3 AOA: ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 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

HIGHEST CRITICALITY HDW/FUNC DATE: 1/22/87 FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 MDAC ID: 1721 ABORT: RESISTOR, 5.1K 1/4W ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: ELECTRICAL COMPONENTS CONTROLS 2) PROP STOR & DIST SUBSYSTEM 3) 4) MANIFOLD 4, L/R OX & FU ISOL VLVS 5) RESISTOR, 5.1K 1/4W 6) 7)

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 J3-23; A2R44

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

EFFECTS/RATIONALE:

8) 9)

LOSE TALKBACK FOR "FU MANIF 4 ISOL VALVE" IN OPEN POSITION.

1/22/87 HIGHEST CRITICALITY HDW/FUNC DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: 1722 MDAC ID: RESISTOR, 5.1K 1/4W ITEM: FAILURE MODE: FAILS SHORT LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 2) 3) PROP STOR & DIST SUBSYSTEM 4) MANIFOLD 4, L/R OX & FU ISOL VLVS RESISTOR, 5.1K 1/4W 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: TAL: 3/3 PRELAUNCH: 3/3 3/3 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: 3/3 3/3 ATO: DEORBIT: LANDING/SAFING: 3/3 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.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: 1723 ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W

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

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- 2) CONTROLS

FAILURE MODE:

- 3) PROP STOR & DIST SUBSYSTEM
- 4) MANIFOLD 4, L/R OX & FU ISOL VLVS

FAILS OPEN

- 5) RESISTOR, 5.1K 1/4W
- 6)
- 7)
- 8) 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 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.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1724 RESISTOR, 5.1K 1/4W ITEM: 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 FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 3/3 3/3 TAL: AOA: 3/3 LIFTOFF: 3/3 3/3 ONORBIT: 3/3 ATO: 3/3 DEORBIT: 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: NO EFFECT. TALKBACK IS STILL AVAILABLE.

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

SYSTEMS HANDBOOK

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. 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, 1.2K 2W
- 6)
- 7)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	TIDA / BITA
	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 J3-73; 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.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1726 RESISTOR, 1.2K 2W ITEM: FAILURE MODE: FAILS SHORT LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 2) 3) PROP STOR & DIST SUBSYSTEM 4) MANIFOLD 4, L/R OX & FU ISOL VLVS 5) RESISTOR, 1.2K 2W 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 TAL: 3/3 3/3 LIFTOFF: 3/3 🗄 3/3 AOA: ONORBIT: 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 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

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1727 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

6)

7)

8)

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 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.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1728 RESISTOR, 5.1K 1/4W ITEM: 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

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: 56V76Al16 J3-34; A2R46

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1729 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

6)

7)

8) 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 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.

1/22/87 HIGHEST CRITICALITY HDW/FUNC DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 1730 RESISTOR, 5.1K 1/4W ITEM: 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 RESISTOR, 5.1K 1/4W 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 3/3 LIFTOFF: 3/3 TAL: 3/3 AOA: ONORBIT: 3/3 3/3 3/3 DEORBIT: ATO: LANDING/SAFING: 3/3 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

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1731 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
- 6)
- 7)
- 8)
- 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 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.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1732 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 6) 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: 3/3 TAL: 3/3 PRELAUNCH: 3/3 LIFTOFF: AOA: 3/3 ONORBIT: 3/3 ATO: DEORBIT: 3/3 3/3 LANDING/SAFING: 3/3 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.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1733 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
- . 6)
 - 7)
 - 8)
- 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 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 OA1, SO PROVIDES FULL (0 TO 28 VDC) INSTEAD OF HALF (0 TO 14 VDC) VOLTAGE RANGE.

ORBITER SUBSYSTEM ANALYSIS WORKSHEET HIGHEST CRITICALITY HDW/FUNC DATE: 1/22/87 3/3 SUBSYSTEM: ARCS FLIGHT: 3/3 ABORT: MDAC ID: 1734 RESISTOR, 5.1K 1/4W ITEM: FAILURE MODE: FAILS SHORT LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS 2) CONTROLS PROP STOR & DIST SUBSYSTEM MANIFOLD 5, L/R OX & FU ISOL VLVS RESISTOR, 5.1K 1/4W 5) 6) 7) 8)

CR	TT	TC	AL	IТ	IES

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, LCA 3

PART NUMBER: 56V76A123R J2-43; J2-29

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

EFFECTS/RATIONALE:

9)

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.

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
- 6)
- 7)
- 8) 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 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.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1736 RESISTOR, 5.1K 1/4W ITEM: 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 6)

7) 8) 9)

CRITICALITIES

V1/2 2 V112			
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 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.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: 3/3 1737 ABORT:

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
- CONTROLS
- PROP STOR & DIST SUBSYSTEM
- 4) MANIFOLD 5, L/R OX & FU ISOL VLVS
- RESISTOR, 5.1K 1/4W . 5)
- 6)
- 7)
- 8)

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 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.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1738 RESISTOR, 5.1K 1/4W ITEM: 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 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 RTLS: PRELAUNCH: 3/3 TAL: 3/3 3/3 LIFTOFF: 3/3 ONORBIT: 3/3 AOA: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 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 Bl2; JSC 11174, SPACE SHUTTLE

SYSTEMS HANDBOOK

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
- 6)
- 7)
- 8) 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 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 Bl2; JSC 11174, SPACE SHUTTLE

SYSTEMS HANDBOOK

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1740 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
6)
7)

8) 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 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.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1741 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
- 6)
- 7)
- 8) 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 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.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1742 RESISTOR, 1.2K 2W ITEM: FAILURE MODE: FAILS SHORT LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 3) PROP STOR & DIST SUBSYSTEM 4) MANIFOLD 5, L/R OX & FU ISOL VLVS 5) RESISTOR, 1.2K 2W 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 3/3 PRELAUNCH: TAL: 3/3 3/3 3/3 LIFTOFF: AOA: 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 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

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DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 3/3 MDAC ID: 1743 ABORT: 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
- PROP STOR & DIST SUBSYSTEM 3)
- MANIFOLD 5, L/R OX & FU ISOL VLVS 4)
- RESISTOR, 5.1K 1/4W 5)
- 6)
- 7)
- 8) 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 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/22/87 FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 1744 RESISTOR, 5.1K 1/4W ITEM: 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 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 TAL: 3/3 LIFTOFF: 3/3 3/3 3/3 AOA: ONORBIT: DEORBIT: DEORBIT: 3/3 LANDING/SAFING: 3/3 ATO: 3/3 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.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1745 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
- 6)
- 7) 8)
- 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 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.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: 1746 MDAC ID: RESISTOR, 5.1K 1/4W ITEM: 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 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 PRELAUNCH: 3/3 RTLS: 3/3 TAL: 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] AV BAY 6, LCA 3 LOCATION: PART NUMBER: 56V76A123R J2-40; R122

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

EFFECTS/RATIONALE:

NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

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

6)

7) 8)

9)

CRITICALITIES

V-1			
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:	3/2R	ATO:	3/1R
LANDING/SAFING:	3/3		•

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 THE MDM CLOSE 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 CLOSE COMMANDS 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, DC, CC

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT:

3/1R

MDAC ID:

1748

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

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	•		•

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 THE MDM COMMANDS. IF THE SWITCH FAILS IN THE CLOSED POSITION, THE VALVE WILL CLOSE AND CANNOT BE OPENED BY THE SWITCH OR BY THE MDM COMMAND. TO OPERATE THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM THE CONTACTS, AND THEN USE THE GPC READ/WRITE PROCEDURES. FAILURE OF ALL REDUNDANCY 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

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 1749 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

6)

7)

8) 9)

CRITICALITIES

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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		•

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:

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.

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

6)

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/1R
LIFTOFF:	3/3	TAL:	3/1R
ONORBIT:	3/2R	AOA:	3/1R
DEORBIT:	3/2R	ATO:	3/1R
LANDING/SAFING:	•		•

REDUNDANCY SCREENS: A [2] B [F] 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 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.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1751 ABORT: 2/1R

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

6) 7)

8) 9)

CRITICALITIES

	CKITICKLITI			
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:	3/3	ATO:	3/1R	
LANDING/SAFING:	3/3		•	

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 THE MDM CLOSE COMMANDS. IF EITHER OR BOTH SETS OF OPEN CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN OPEN OR GPC POSITION, THE VALVE WILL OPEN AND CANNOT BE CLOSED BY SWITCH OR MDM COMMAND. IF EITHER OR BOTH SETS OF OPEN CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE CLOSED POSITION, THE VALVE WILL REMAIN CLOSED, CAN BE OPENED ONLY BY SWITCH COMMANDS, AND CANNOT BE CLOSED BY SWITCH OR MDM COMMANDS. TO CLOSE THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM THE CONTACTS, AND THEN USE THE GPC READ/WRITE PROCEDURES. 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, DC, CC; FLIGHT RULE 6-95

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: 3/3 FLIGHT: ARCS SUBSYSTEM: 3/3 ABORT: MDAC ID: 1752 L/R OX & FU TK ISOL VLV 1/2 SWITCH GPC CONTACTS 3, ITEM: 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 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 RTLS: PRELAUNCH: 3/3 TAL: LIFTOFF: 3/3 3/3 3/3 AOA: 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 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.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 ABORT: 3/3 MDAC ID: 1753 L/R OX & FU TK ISOL VLV 1/2 SWITCH GPC CONTACTS 3, ITEM: FAILURE MODE: SWITCH GPC CONTACTS FAIL CLOSED. LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 2) PROP STOR & DIST SUBSYSTEM 3) L/R OX & FU TK ISOL VLV 1/2 4) L/R OX & FU TK ISOL VLV 1/2 SWITCH GPC CONTACTS 3, 4 5) 6) 7) 8) 9) CRITICALITIES

V1/2 2 V1/2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2			
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 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.

HIGHEST CRITICALITY HDW/FUNC 1/22/87

3/2R FLIGHT: SUBSYSTEM: ARCS 2/1R ABORT: MDAC ID: 1754

L/R OX & FU TK ISOL VLV 1/2 SWITCH CLOSE CONTACTS ITEM:

5, 6

FAILURE MODE: SWITCH CLOSE CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

1) ELECTRICAL COMPONENTS

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

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:	3/2R	ATO:	3/1R
LANDING/SAFING:	3/3		

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.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 1755 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

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		

REDUNDANCY SCREENS: A [2] B [F] 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 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/22/87

3/1R FLIGHT: SUBSYSTEM: ARCS ABORT: 2/1R MDAC ID: 1756

L/R OX & FU TK ISOL VLV 1/2 SWITCH OPEN CONTACTS ITEM:

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
- PROP STOR & DIST SUBSYSTEM
- L/R OX & FU TK ISOL VLV 1/2
- L/R OX & FU TK ISOL VLV 1/2 SWITCH OPEN CONTACTS 7, 8

6)

7) 8)

9)

CRITICALITIES

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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		•

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 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 PROPELIANT 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.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1757 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
- 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:	3/3	ATO:	3/1R
LANDING/SAFING:	3/3		

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 THE MDM COMMANDS. IF EITHER OR BOTH SETS OF OPEN CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN OPEN OR GPC POSITION, THE VALVE WILL OPEN AND CANNOT BE CLOSED BY SWITCH OR MDM COMMAND. IF EITHER OR BOTH SETS OF OPEN CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE CLOSED POSITION, THE VALVE WILL REMAIN CLOSED, CAN BE OPENED ONLY BY SWITCH COMMANDS, AND CANNOT BE CLOSED BY SWITCH OR MDM COMMANDS. TO CLOSE THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM THE CONTACTS, AND THEN USE THE GPC READ/WRITE PROCEDURES. 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, DC, CC; FLIGHT RULE 6-95

HIGHEST CRITICALITY HDW/FUNC DATE: 1/22/87 3/3 FLIGHT: SUBSYSTEM: ARCS ABORT: 3/3 1758 MDAC ID: L/R OX & FU TK ISOL VLV 1/2 SWITCH GPC CONTACTS 9, ITEM: 10 FAILURE MODE: SWITCH GPC CONTACTS FAIL OPEN. LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 2) 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 6) 7) 8) 9) CRITICALITIES

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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 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.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1759 L/R OX & FU TK ISOL VLV 1/2 SWITCH GPC CONTACTS 9, ITEM: 10 FAILURE MODE: SWITCH GPC CONTACTS FAIL CLOSED. LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: ELECTRICAL COMPONENTS CONTROLS 2) PROP STOR & DIST SUBSYSTEM 3) 4) L/R OX & FU TK ISOL VLV 1/2 L/R OX & FU TK ISOL VLV 1/2 SWITCH GPC CONTACTS 9, 10 5) 6) 7) 8) 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: 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.

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HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1760 ABORT: 2/1R

ITEM: L/R OX & FU TK ISOL VLV 1/2 SWITCH CLOSE CONTACTS

11, 12

DATE:

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

1/22/87

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)

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:	3/2R	ATO:	3/1R
LANDING/SAFING:	3/3		-

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, 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.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 1761 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)

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		•

REDUNDANCY SCREENS: A [2] B [F] 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 OPEN 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 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/22/87

3/1R FLIGHT: SUBSYSTEM: ARCS 2/1R ABORT: MDAC ID: 1762

L/R OX & FU TK ISOL VLV 3/4/5 A OR B SWITCH ITEM:

FAILURE MODE: SWITCH FAILS IN THE GPC POSITION.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- ELECTRICAL COMPONENTS
- 2) CONTROLS
- 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

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		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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 MDM OPEN COMMANDS, AND BY THE PARALLEL ISOLATION VALVE ONLY TO OPEN THE VALVE. VALVE CANNOT BE CONTROLLED BY SWITCH, ONLY BY MDM COMMANDS. TO OPERATE THE VALVE, THE CREW MUST USE THE GPC READ/WRITE PROCEDURES. IF THE VALVE IS VALVE IS OPEN WHEN THE FAILURE OCCURS, AND THE MDM CLOSE COMMAND PATH FAILS, THIS 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.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1763 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

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:	3/2R	ATO:	3/1R
LANDING/SAFING:			•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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 CLOSE COMMANDS. IF THE 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. IF THE OPEN CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE CLOSED POSITION, THE VALVE WILL REMAIN CLOSED, CAN BE OPENED ONLY BY SWITCH COMMAND, BUT CANNOT BE RECLOSED BY SWITCH OR MDM COMMAND. TO CLOSE THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM THE CONTACTS, AND THEN USE THE GPC READ/WRITE PROCEDURES. FAILURE OF ALL REDUNDANCY WILL AFFECT CROSSFEED CAPABILITY AND MAY CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS DURING ABORTS TO MEET THE TANK WEIGHT LANDING CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

1/22/87 DATE:

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

3/1R FLIGHT: 2/1R ABORT:

MDAC ID: 1764

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

CONTROLS 2)

PROP STOR & DIST SUBSYSTEM

L/R OX & FU TK ISOL VLV 3/4/5 A OR B

L/R OX & FU TK ISOL VLV 3/4/5 A OR B SWITCH

6)

ITEM:

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		

REDUNDANCY SCREENS: A [2] B [P] C ·[· P]

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 OPEN COMMANDS. IF THE CLOSE CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE CLOSED OR GPC POSITION, THE VALVE WILL REMAIN CLOSED AND CANNOT BE OPENED BY SWITCH OR GPC COMMAND. IF THE CLOSE CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE OPEN POSITION, THE VALVE WILL REMAIN OPEN, AND CAN BE CLOSED BY SWITCH COMMAND, BUT CANNOT BE REOPENED 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.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 1765 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 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,
 - 6)
 - 7)
 - 8)
- 9)

CRITICALITIES

ORT HDW/FUNC
RTLS: 2/1R
TAL: 3/1R
AOA: 3/1R
ATO: 3/1R
·

REDUNDANCY SCREENS: `A [2] B [F] C [P]

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. 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/22/87

FLIGHT: 3/2R SUBSYSTEM: ARCS ABORT: 2/1R MDAC ID: 1766

L/R OX & FU TK ISOL VLV 3/4/5 A OR B SWITCH OPEN ITEM:

> CONTACTS 1, 2 SWITCH OPEN CONTACTS FAIL CLOSED.

FAILURE MODE:

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

ELECTRICAL COMPONENTS

2) CONTROLS

PROP STOR & DIST SUBSYSTEM 3)

4) L/R OX & FU TK ISOL VLV 3/4/5 A OR B

L/R OX & FU TK ISOL VLV 3/4/5 A OR B SW OPEN CONTACTS 1, 2

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:	3/2R	ATO:	3/1R
LANDING/SAFING	•		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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 CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE OPEN OR GPC POSITION, THE FALVE WILL OPEN AND CANNOT BE CLOSED BY SWITCH OR MDM COMMAND. IF THE OPEN CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE CLOSED POSITION, THE VALVE WILL REMAIN CLOSED, CAN BE OPENED ONLY BY SWITCH COMMAND, BUT CANNOT BE RECLOSED BY SWITCH OR MDM COMMAND. TO CLOSE THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM THE CONTACTS, AND THEN USE THE GPC READ/WRITE PROCEDURES. FAILURE OF EITHER OF THE INDIVIDUAL VALVE MDM COMMANDS WILL AFFECT CROSSFEED CAPABILITY AND MAY CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS DURING ABORTS TO MEET THE TANK WEIGHT CONSTRAINTS AND/OR CG SAFETY BOUNDARIES.

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 L/R OX & FU TK ISOL VLV 3/4/5 A OR B 4) 5) L/R OX & FU TK ISOL VLV 3/4/5 A OR B SWITCH GPC CONTACTS 3, 4 6) 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 LIFTOFF: 3/3 3/3 TAL: ONORBIT: 3/3 AOA: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C []

TOCHTON: DWI AT ALL THE TOTAL THE

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/22/87 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1768 L/R OX & FU TK ISOL VLV 3/4/5 A OR B SWITCH GPC

ITEM: CONTACTS 3, 4

FAILURE MODE: SWITCH GPC CONTACTS FAIL CLOSED.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- ELECTRICAL COMPONENTS
- CONTROLS 2)
- 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,
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

A1/2 2 41:2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2			
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 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.

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

6)

7)

8)

9)

CRITICALITIES

	01111101			
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:	3/2R	ATO:	3/1R	
LANDING/SAFING:	3/3			

REDUNDANCY SCREENS: A [2] B [P] C [P]

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 BR 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.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1770 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

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:	3/2R	ATO:	3/1R
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [F] C [P]

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 CLOSED WHILE THE SWITCH IS IN THE CLOSED OR GPC POSITION, THE VALVE WILL REMAIN CLOSED AND CANNOT BE OPENED BY SWITCH OR GPC COMMAND. IF THE CLOSE CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE OPEN POSITION, THE VALVE WILL REMAIN OPEN, AND CAN BE CLOSED BY SWITCH COMMAND, BUT CANNOT BE REOPENED 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 EITHER OF THE INDIVIDUAL VALVE MDM COMMANDS 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.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT:

3/1R

MDAC ID: 1771

ABORT:

2/1R

L/R OX & FU CROSSFEED VLV 1/2 SWITCH ITEM: FAILURE MODE: SWITCH FAILS IN THE OPEN POSITION.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- ELECTRICAL COMPONENTS
- 2) CONTROLS
- PROP STOR & DIST SUBSYSTEM 3)
- L/R OX & FU CROSSFEED VLV 1/2 4)

L/R OX & FU CROSSFEED VLV 1/2 SWITCH

6) 7)

8)

9)

CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC	
3/3	RTLS:	2/1R	
3/3	TAL:	3/1R	
3/2R	AOA:	3/1R	
3/1R	ATO:	3/1R	
: 3/3			
	3/3 3/3 3/2R 3/1R	3/3 RTLS: 3/3 TAL: 3/2R AOA: 3/1R ATO:	

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 1772 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

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		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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 CLOSED POSITION, THE VALVE WILL CLOSE AND CANNOT BE OPENED BY THE SWITCH OR BY THE MDM COMMAND. TO OPERATE THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM THE CONTACTS AND THEN USE THE GPC READ/WRITE PROCEDURES. FAILURE OF ALL REDUNDANCY WILL AFFECT CROSSFEED CAPABILITY AND MAY CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS DURING RTLS OR TAL ABORTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES, AND MAY AFFECT ENTRY DTOS AND PTIS.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 1773 ABORT: 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

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		•	

REDUNDANCY SCREENS: A [2] B [P] C [P]

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 BVY 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.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1774 ABORT: 2/1R

ITEM: L/R OX & FU CROSSFEED 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 CROSSFEED VLV 1/2
- 5) L/R OX & FU CROSSFEED VLV 1/2 SWITCH OPEN CONTACTS 1, 2

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:	3/2R	ATO:	3/1R	
LANDING/SAFING	3/3		,	

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 1775 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

6) 7)

8)

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: 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 OR BOTH SETS OF OPEN CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN OPEN OR GPC POSITION, THE VALVE WILL OPEN AND CANNOT BE CLOSED BY SWITCH OR MDM COMMAND. IF EITHER OR BOTH SETS OF OPEN CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE CLOSED POSITION, THE VALVE WILL REMAIN CLOSED, CAN BE OPENED ONLY BY SWITCH COMMANDS, AND CANNOT BE CLOSED BY SWITCH OR MEM COMMANDS. TO CLOSE THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM THE CONTACTS, AND THEN USE THE GPC READ/WRITE PROCEDURES. FAILURE OF ALL REDUNDANCY WILL AFFECT ONORBIT CROSSFEED OPERATIONS.

REFERENCES: VS70-943099 REV B EO B12, DD, CD; FLIGHT RULE 6-95

HIGHEST CRITICALITY HDW/FUNC DATE: 1/22/87 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1776 L/R OX & FU CROSSFEED VLV 1/2 SWITCH GPC CONTACTS ITEM: 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 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 3/3 PRELAUNCH: 3/3 TAL: 3/3 LIFTOFF: AOA: 3/3 3/3 ONORBIT: 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: PNL 07 S32; PNL 07 S34 PART NUMBER: 33V73A7S32; S34 CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD

REFERENCES: VS70-943099 REV B EO B12, DD, CD

NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

EFFECTS/RATIONALE:

HIGHEST CRITICALITY HDW/FUNC DATE: 1/22/87 FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 1777 MDAC ID: L/R OX & FU CROSSFEED VLV 1/2 SWITCH GPC CONTACTS ITEM: 3, 4 FAILURE MODE: SWITCH GPC CONTACTS FAIL CLOSED. SUBSYS LEAD: D.J. PAUL LEAD ANALYST: V.J. BURKEMPER BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS 2) CONTROLS PROP STOR & DIST SUBSYSTEM L/R OX & FU CROSSFEED VLV 1/2 4) L/R OX & FU CROSSFEED VLV 1/2 SWITCH GPC CONTACTS 3, 4 5) 6) 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: PRELAUNCH: 3/3 3/3 3/3 TAL: LIFTOFF: AOA: 3/3 ONORBIT: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B[] C[] PNL 07 S32; PNL 07 S34 LOCATION: PART NUMBER: 33V73A7S32; S34 CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD EFFECTS/RATIONALE: NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1778 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

6) 7)

8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 1779 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

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		-

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

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

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		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

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)

E : 1

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

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 OR BOTH SETS OF OPEN CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN OPEN OR GPC POSITION, THE VALVE WILL OPEN AND CANNOT BE CLOSED BY SWITCH OR MDM COMMAND. IF EITHER OR BOTH SETS OF OPEN CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE CLOSED POSITION, THE VALVE WILL REMAIN CLOSED, CAN BE OPENED ONLY BY SWITCH COMMANDS, AND CANNOT BE CLOSED BY SWITCH OR MEM COMMANDS. TO CLOSE THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM THE CONTACTS, AND THEN USE THE GPC READ/WRITE PROCEDURES. FAILURE OF ALL REDUNDANCY WILL AFFECT ONORBIT CROSSFEED OPERATIONS.

REFERENCES: VS70-943099 REV B EO Bl2, DD, CD; FLIGHT RULE 6-95

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1782 L/R OX & FU CROSSFEED VLV 1/2 SWITCH GPC CONTACTS ITEM: 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 1/2 5) L/R OX & FU CROSSFEED VLV 1/2 SWITCH GPC CONTACTS 9, 10 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: 3/3 PRELAUNCH: TAL: 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: 3/3 ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 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.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: 1783 MDAC ID: L/R OX & FU CROSSFEED VLV 1/2 SWITCH GPC CONTACTS ITEM: 9, 10 FAILURE MODE: SWITCH GPC CONTACTS FAIL CLOSED. LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS PROP STOR & DIST SUBSYSTEM 3) L/R OX & FU CROSSFEED VLV 1/2 4) L/R OX & FU CROSSFEED VLV 1/2 SWITCH GPC CONTACTS 9, 10 5) 6) 7) 8) 9) CRITICALITIES

CVIIICUTIIID		
HDW/FUNC	ABORT	HDW/FUNC
3/3	RTLS:	3/3
3/3	TAL:	_3/3
3/3	AOA:	3/3
3/3	ATO:	3/3
: 3/3		
	HDW/FUNC 3/3 3/3 3/3 3/3	HDW/FUNC ABORT 3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO:

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

PNL 07 S32; PNL 07 S34 LOCATION:

PART NUMBER: 33V73A7S32; S34

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

EFFECTS/RATIONALE:

NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

1/22/87 DATE:

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT:

3/2R

MDAC ID:

1784

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
- 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

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	: 3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE:

FLIGHT: 3/1R SUBSYSTEM: ARCS ABORT: 2/1R MDAC ID: 1785

L/R OX & FU CROSSFEED VLV 1/2 SWITCH CLOSE ITEM:

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
- CONTROLS 2)
- 3) PROP STOR & DIST SUBSYSTEM
- L/R OX & FU CROSSFEED VLV 1/2 4)
- L/R OX & FU CROSSFEED VLV 1/2 SWITCH CLOSE CONTACTS 11, 12 5)

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:	•		•

REDUNDANCY SCREENS: A [3] B [F] C [P]

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.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

ARCS SUBSYSTEM:

FLIGHT:

2/1R

MDAC ID:

1786

ABORT:

2/1R

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
- 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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CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	2/1R
ONORBIT:	3/2R	AOA:	2/1R
DEORBIT:	2/1R	ATO:	2/1R
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 1787 ABORT: 2/1R

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

6)

7)

8) 9)

CRITICALITIES

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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		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT: 3/1R

MDAC ID:

1788

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 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
- MASTER RCS CROSSFEED SWITCH FEED FROM RIGHT OR FEED FROM LEFT SWITCH CONTACTS
- 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	•		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: PNL 07 S36 PART NUMBER: 33V73A7S36

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.

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

6)

7)

8)

9)

CRITICALITIES

	O2(2 2 2 O2)		
FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	2/1R
ONORBIT:	3/2R	AOA:	2/1R
DEORBIT:	2/1R	ATO:	2/1R
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

1/22/87 DATE:

HIGHEST CRITICALITY HDW/FUNC

ARCS SUBSYSTEM:

FLIGHT:

3/2R

MDAC ID:

1790

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

CONTROLS 2)

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

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 1791 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

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	•	

REDUNDANCY SCREENS: A [2] B [P] C [P]

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 CLOSED POSITION, THE VALVE WILL CLOSE AND CANNOT BE OPENED BY THE SWITCH OR BY THE MDM COMMAND. TO OPERATE THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM TRHE CONTACTS, AND THEN USE THE GPC READ/WRITE PROCEDURES. FAILURE OF ALL REDUNDANCY WILL AFFECT CROSSFEED CAPABILITY AND MAY CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS DURING RTLS OR TAL ABORTS TO MEEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES, AND MAY AFFECT ENTRY DTOS AND PTIS.

DATE:

1/22/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT:

3/1R

MDAC ID:

1792

ABORT:

2/1R

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
- 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

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		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: PNL 07 S33; PNL 07 S35

PART NUMBER: 33V73A7S33; S35 of the same of the same and the same of the same

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/ORO THE CG SAFETY BOUNDARIES, AND MAY AFFECT ENTRY DTOS AND PTIS.

DATE:

1/22/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS MDAC ID:

FLIGHT:

3/1R

1793

ABORT:

2/1R

ITEM:

L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH OPEN

CONTACTS 1, 2

SWITCH OPEN CONTACTS FAIL OPEN. FAILURE MODE:

LEAD ANALYST: V.J. BURKEMPER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- ELECTRICAL COMPONENTS
- 2) CONTROLS
- PROP STOR & DIST SUBSYSTEM 3)
- L/R OX & FU CROSSFEED VLV 3/4/5 4)

L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH OPEN CONTACTS 1, 2 5)

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		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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 TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES.

1/22/87 DATE:

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

SWITCH OPEN CONTACTS FAIL CLOSED. FAILURE MODE:

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

1) ELECTRICAL COMPONENTS

CONTROLS

3) PROP STOR & DIST SUBSYSTEM

4) L/R OX & FU CROSSFEED VLV 3/4/5

L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH OPEN CONTACTS 1, 2

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [F] C [P]

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 OR BOTH SETS OF OPEN CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN OPEN OR GPC POSITION, THE VALVE WILL OPEN AND CANNOT BE CLOSED BY SWITCH OR MDM COMMAND. IF EITHER OR BOTH SETS OF OPEN CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE CLOSED POSITION, THE VALVE WILL REMAIN CLOSED, CAN BE OPENED ONLY BY SWITCH COMMANDS, AND CANNOT BE CLOSED BY SWITCH OR MDM COMMANDS. TO CLOSE THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM THE CONTACTS, AND THEN USE THE GPC READ/WRITE PROCEDURES. FAILURE OF ALL REDUNDANCY WILL AFFECT ONORBIT CROSSFEED OPERATIONS.

REFERENCES: VS70-943099 REV B EO B12, DD, CD; FLIGHT RULE 6-95

HIGHEST CRITICALITY HDW/FUNC DATE: 1/22/87 3/3 SUBSYSTEM: ARCS FLIGHT: 3/3 ABORT: MDAC ID: 1795 L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH GPC ITEM: 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 PROP STOR & DIST SUBSYSTEM 3) 4) L/R OX & FU CROSSFEED VLV 3/4/5 L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH GPC CONTACTS 3, 4 5) 6) 7) 8) 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: 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.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1796 L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH GPC ITEM: 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 CONTROLS 2) 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 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 3/3 LIFTOFF: TAL: 3/3 3/3 ONORBIT: 3/3 AOA: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 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.

DATE:

1/22/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT:

3/2R

MDAC ID:

1797

ABORT:

3/3

ITEM:

L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH CLOSE

CONTACTS 5, 6

SWITCH CLOSE CONTACTS FAIL OPEN. FAILURE MODE:

LEAD ANALYST: V.J. BURKEMPER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- ELECTRICAL COMPONENTS
- CONTROLS 2)
- PROP STOR & DIST SUBSYSTEM 3)
- L/R OX & FU CROSSFEED VLV 3/4/5 4)
- L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH CLOSE CONTACTS 5, 6 5)

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

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.

DATE:

1/22/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT:

3/1R

MDAC ID:

1798

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

CONTROLS

3) PROP STOR & DIST SUBSYSTEM

4) L/R OX & FU CROSSFEED VLV 3/4/5

L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH CLOSE CONTACTS 5, 6

7)

8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/2R	TAL:	3/1R
ONORBIT:	3/2R	AOA:	3/1R
DEORBIT:	3/1R	ATO:	3/1R
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [3] B [F] C [P]

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 BUSSES AND THEN USE THE GPC READ/WRITE PROCEDURES.

DATE:

1/22/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS MDAC ID:

FLIGHT:

3/1R

1799

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

CONTROLS

PROP STOR & DIST SUBSYSTEM 3)

L/R OX & FU CROSSFEED VLV 3/4/5 4)

L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH OPEN CONTACTS 7, 8

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		·

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/22/87

FLIGHT: 3/2R SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 1800

L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH OPEN ITEM:

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

7)

8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [F] C [P]

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 OR BOTH SETS OF OPEN CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN OPEN OR GPC POSITION, THE VALVE WILL OPEN AND CANNOT BE CLOSED BY SWITCH OR MDM COMMAND. IF EITHER OR BOTH SETS OF OPEN CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE CLOSED POSITION, THE VALVE WILL REMAIN CLOSED, CAN BE OPENED ONLY BY SWITCH COMMANDS, AND CANNOT BE CLOSED BY SWITCH OR MDM COMMANDS. TO CLOSE THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM THE CONTACTS, AND THEN USE THE GPC READ/WRITE PROCEDURES. FAILURE OF ALL REDUNDANCY WILL AFFECT ONORBIT CROSSFEED OPERATIONS.

REFERENCES: VS70-943099 REV B EO B12, DD, CD; FLIGHT RULE 6-95

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1801 L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH GPC ITEM: CONTACTS 9, 10 FAILURE MODE: SWITCH GPC CONTACTS FAIL OPEN. SUBSYS LEAD: D.J. PAUL LEAD ANALYST: V.J. BURKEMPER BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS PROP STOR & DIST SUBSYSTEM 3) L/R OX & FU CROSSFEED VLV 3/4/5 4) L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH GPC CONTACTS 9, 10 5) 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE PRELAUNCH: 3/3 3/3 RTLS: 3/3 3/3 TAL: LIFTOFF: AOA: 3/3 ONORBIT: 3/3 ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 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.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1802 L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH GPC ITEM: 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 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 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: PRELAUNCH: 3/3 3/3 3/3 LIFTOFF: 3/3 TAL: ONORBIT: 3/3 3/3 AOA: DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3

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

LOCATION: PNL C

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.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1803 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

6) 7)

8)

9)

CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC
3/3	RTLS:	3/3
3/3	TAL:	3/3
3/2R	AOA:	3/3
3/3	ATO:	3/3
: 3/3		,
	3/3 3/3 3/2R 3/3	3/3 RTLS: 3/3 TAL: 3/2R AOA: 3/3 ATO:

REDUNDANCY SCREENS: A [2] B [F] C [P]

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.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE:

FLIGHT: 3/1R SUBSYSTEM: ARCS 2/1R ABORT: MDAC ID: 1804

L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH CLOSE ITEM:

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
- PROP STOR & DIST SUBSYSTEM
- 4) L/R OX & FU CROSSFEED VLV 3/4/5
- L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH CLOSE CONTACTS 11, 12

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:	•		•

REDUNDANCY SCREENS: A [3] B [F] C [P]

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 BUSSES AND THEN USE THE GPC READ/WRITE PROCEDURES.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

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
- 6)
- 7)
- 8)
- 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: PNL 07 S22; PNL 07 S27

PART NUMBER: 33V73A7S22; S27

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REDUNDANCY PROVIDED BY MDM COMMANDS. IF THE SWITCH FAILS IN THE OPEN POSITION, THE VALVE WILL OPEN AND CANNOT BE CLOSED BY SWITCH OR MDM COMMAND. TO CLOSE THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM THE CONTACTS, AND THEN USE GPC READ/WRITE PROCEDURES. FAILURE OF ALL REDUNDANCY WILL RESULT IN THE INABILITY TO CLOSE THE VALVE.

DATE: HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2/1R 1806 ABORT:

MANIFOLD 1, L/R OX & FU ISOL VLV SWITCH ITEM:

FAILURE MODE: SWITCH FAILS IN THE CLOSED POSITION.

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LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- 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

7)

8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: PNL 07 S22; PNL 07 S27

PART NUMBER: 33V73A7S22; S27

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 OPEED 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 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.

DATE: HIGHEST CRITICALITY HDW/FUNC 1/22/87

SUBSYSTEM: ARCS FLIGHT: 3/2R 1807 ABORT: 2/1R MDAC ID:

MANIFOLD 1, L/R OX & FU ISOL VLV SWITCH ITEM:

FAILURE MODE: SWITCH FAILS IN THE GPC POSITION.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- ELECTRICAL COMPONENTS 1)
- 2) CONTROLS
- 3) PROP STOR & DIST SUBSYSTEM
- 4) MANIFOLD 1, L/R OX & FU ISOL VLVS
- MANIFOLD 1, L/R OX & FU ISOL VLV SWITCH

6) 7)

8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE:

1/22/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT:

3/2R

MDAC ID:

1808

ABORT:

2/1R

ITEM:

MANIFOLD 1, 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 1, L/R OX & FU ISOL VLVS

5) MANIFOLD 1, L/R OX & FU ISOL VLV SWITCH OPEN CONTACTS 1, 2

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/3R
LANDING/SAFING:	3/3	•	•

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: PNL 07 S22; PNL 07 S27

PART NUMBER: 33V73A7S22; S27

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REDUNDANCY PROVIDED BY THE MDM OPEN COMMANDS. IF THE OPEN CONTACTS FAIL OPEN WHILE THE SWITCH IS IN ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION, CAN BE OPENED ONLY BY MDM COMMAND, AND CAN CLOSE BY THE SWITCH OR THE MDM COMMAND. TO OPEN THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM THE CONTACTS, AND THEN USE GPC READ/WRITE PROCEDURES. FAILURE OF ALL REDUNDANCY WILL AFFECT PROPELLANT DUMP LENGTHS DUMPS DURING ABORTS OR ENTRY, MAY CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANT DURING RTLS ABORTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES, AND MAY AFFECT ENTRY DTOS AND PTIS.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1809 ABORT: 3/3

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

6) 7)

8)

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: PNL 07 S22; PNL 07 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. IF THE OPEN CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE CLOSED POSITION, THE VALVE WILL REMAIN CLOSED AND CAN BE OPENED WITH THE SWITCH, BUT CANNOT BE CLOSED AGAIN BY SWITCH OR MDM COMMAND. TO CLOSE THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM THE CONTACTS, AND THEN USE GPC READ/WRITE PROCEDURES. FAILURE OF ALL REDUNDANCY WILL RESULT IN THE INABILITY TO CLOSE THE VALVE.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/22/87 FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 1810 MANIFOLD 1, L/R OX & FU ISOL VLV SWITCH GPC ITEM: 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 VLV SWITCH GPC CONTACTS 3, 4 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: PRELAUNCH: 3/3 3/3 3/3 TAL: 3/3 LIFTOFF: AOA: 3/3 ONORBIT: 3/3 3/3 ATO: DEORBIT: LANDING/SAFING: 3/3 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.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1811 MANIFOLD 1, L/R OX & FU ISOL VLV SWITCH GPC ITEM: CONTACTS 3, 4 FAILURE MODE: SWITCH GPC CONTACTS FAIL CLOSED. SUBSYS LEAD: D.J. PAUL LEAD ANALYST: V.J. BURKEMPER BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 2) PROP STOR & DIST SUBSYSTEM MANIFOLD 1, L/R OX & FU ISOL VLVS 4) MANIFOLD 1, L/R OX & FU ISOL VLV SWITCH GPC CONTACTS 3, 4 6) 7) 8) 9) CRITICALITIES

	CILTICALITIC		
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 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/22/87 SUBSYSTEM: ARCS FLIGHT: 3/3 ABORT: 3/3 MDAC ID: 1812 MANIFOLD 1, L/R OX & FU ISOL VLV SWITCH CLOSE ITEM: 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 VLVS
- 5) MANIFOLD 1, L/R OX & FU ISOL VLV SWITCH CLOSE CONTACTS 5, 6

6) 7)

8)

9)

CRITTCALITTES

	Orta a a Crima a a and			
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 07 S22; PNL 07 S27

PART NUMBER: 33V73A7S22; S27

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/22/87

FLIGHT: SUBSYSTEM: ARCS 3/2R ABORT: 2/1R MDAC ID: 1813

MANIFOLD 1, L/R OX & FU ISOL VLV SWITCH CLOSE ITEM:

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
- CONTROLS 2)
- 3) PROP STOR & DIST SUBSYSTEM
- MANIFOLD 1, L/R OX & FU ISOL VLVS
- MANIFOLD 1, L/R OX & FU ISOL VLV SWITCH CLOSE CONTACTS 5, 6 5)

6)

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	•		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: PNL 07 S22; PNL 07 S27

PART NUMBER: 33V73A7S22; S27

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REDUNDANCY PROVIDED BY THE MDM OPEN COMMANDS. IF THE CLOSE CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE CLOSED OR GPC POSITION, THE VALVE WILL CLOSE AND CANNOT BE OPENED BY SWITCH OR MDM COMMAND. IF THE CLOSE CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE OPEN POSITION, THE VALVE WILL REMAIN OPEN AND CAN BE CLOSED WITH THE SWITCH, BUT CANNOT BE OPENED AGAIN BY SWITCH OR MDM COMMAND. TO OPEN THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM THE CONTACTS, AND THEN USE GPC READ/WRITE PRO CEDURES. FAILURE OF ALL REDUNDANCY WILL AFFECT PROPELLANT DUMP LENGTHS MAY CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS DURING ABORTS TO MEET TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES, AND MAY AFFECT ENTRY DTOS AND PTIS.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1814 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

9) 71

8)

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: PNL 07 S23; PNL 07 S28

PART NUMBER: 33V73A7S23; S28

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REDUNDANCY PROVIDED BY MDM COMMANDS. IF THE SWITCH FAILS IN THE OPEN POSITION, THE VALVE WILL OPEN AND CANNOT BE CLOSED BY SWITCH OR MDM COMMAND. TO CLOSE THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM THE CONTACTS, AND THEN USE GPC READ/WRITE PROCEDURES. FAILURE OF ALL REDUNDANCY WILL RESULT IN THE INABILITY TO CLOSE THE VALVE.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1815 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

6) 7)

8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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 COMMANDS. IF THE SWITCH FAILS IN THE CLOSED POSITION, THE VALVE WILL CLOSE AND CANNOT BE OPEED 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 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.

1/22/87 DATE:

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT: 3/2R

MDAC ID: 1816

ABORT:

2/1R

ITEM:

MANIFOLD 2, 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

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

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/22/87

3/2R FLIGHT: SUBSYSTEM: ARCS 2/1R ABORT: 1817 MDAC ID:

MANIFOLD 2, L/R OX & FU ISOL VLV SWITCH OPEN ITEM:

CONTACTS 1, 2

SWITCH OPEN CONTACTS FAIL OPEN. FAILURE MODE:

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

ELECTRICAL COMPONENTS

2) CONTROLS

PROP STOR & DIST SUBSYSTEM 3)

MANIFOLD 2, L/R OX & FU ISOL VLVS 4)

MANIFOLD 2, L/R OX & FU ISOL VLV SWITCH OPEN CONTACTS 1, 2 5)

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/3R
LANDING/SAFING:	•		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

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 OPEN COMMANDS. IF THE OPEN CONTACTS FAIL OPEN WHILE THE SWITCH IS IN ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION, CAN BE OPENED ONLY BY MDM COMMAND, AND CAN CLOSE BY THE SWITCH OR THE MDM COMMAND. TO OPEN THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM THE CONTACTS, AND THEN USE GPC READ/WRITE PROCEDURES. FAILURE OF ALL REDUNDANCY WILL AFFECT PROPELLANT DUMP LENGTHS DUMPS DURING ABORTS OR ENTRY, MAY CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANT DURING RTLS ABORTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES, AND MAY AFFECT ENTRY DTOS AND PTIS.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 1818 ABORT: 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
 - 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

6) 7)

8) 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: PNL 07 S23; PNL 07 S28

PART NUMBER: 33V73A7S23; S28

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. IF THE OPEN CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE CLOSED POSITION, THE VALVE WILL REMAIN CLOSED AND CAN BE OPENED WITH THE SWITCH, BUT CANNOT BE CLOSED AGAIN BY SWITCH OR MDM COMMAND. TO CLOSE THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM THE CONTACTS, AND THEN USE GPC READ/WRITE PROCEDURES. FAILURE OF ALL REDUNDANCY WILL RESULT IN THE INABILITY TO CLOSE THE VALVE.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1819 MANIFOLD 2, L/R OX & FU ISOL VLV SWITCH GPC ITEM: 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 CONTROLS 2) PROP STOR & DIST SUBSYSTEM 3) MANIFOLD 2, L/R OX & FU ISOL VLVS MANIFOLD 2, L/R OX & FU ISOL VLV SWITCH GPC CONTACTS 3, 4 6) 7). 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 3/3 RTLS: PRELAUNCH: 3/3 TAL: LIFTOFF: 3/3 AOA: 3/3 ONORBIT: 3/3 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/22/87 3/3 SUBSYSTEM: ARCS FLIGHT: ABORT: 3/3 MDAC ID: 1820 MANIFOLD 2, L/R OX & FU ISOL VLV SWITCH GPC ITEM: 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 VLV SWITCH GPC CONTACTS 3, 4 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 3/3 TAL: 3/3 LIFTOFF: AOA: ONORBIT: 3/3 3/3 ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 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.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: 1821 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

6)

7)

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: 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.

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

6) 7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

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 OPEN COMMANDS. IF THE CLOSE CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE CLOSED OR GPC POSITION, THE VALVE WILL CLOSE AND CANNOT BE OPENED BY SWITCH OR MDM COMMAND. IF THE CLOSE CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE OPEN POSITION, THE VALVE WILL REMAIN OPEN AND CAN BE CLOSED WITH THE SWITCH, BUT CANNOT BE OPENED AGAIN BY SWITCH OR MDM COMMAND. TO OPEN THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM THE CONTACTS, AND THEN USE GPC READ/WRITE PROCEDURES. FAILURE OF ALL REDUNDANCY WILL AFFECT PROPELLANT DUMP LENGTHS MAY CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANTS DURING ABORTS TO MEET THE TAK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES, AND MAY AFFECT ENTRY DTOS AND PTIS.

HIGHEST CRITICALITY HDW/FUNC 1/22/87

3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1823

MANIFOLD 3, L/R OX & FU ISOL VLV SWITCH ITEM:

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
- 5) MANIFOLD 3, L/R OX & FU ISOL VLV SWITCH
- 6)
- 7)
- 8)

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: PNL 07 S24; PNL 07 S29

PART NUMBER: 33V73A7S24; S29

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

EFFECTS/RATIONALE:

REDUNDANCY PROVIDED BY MDM COMMANDS. IF THE SWITCH FAILS IN THE OPEN POSITION, THE VALVE WILL OPEN AND CANNOT BE CLOSED BY SWITCH OR MDM COMMAND. TO CLOSE THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM THE CONTACTS, AND THEN USE GPC READ/WRITE PROCEDURES. FAILURE OF ALL REDUNDANCY WILL RESULT IN THE INABILITY TO CLOSE THE VALVE.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/22/87

SUBSYSTEM: ARCS FLIGHT: 3/2R 1824 ABORT: 2/1R MDAC ID:

MANIFOLD 3, L/R OX & FU ISOL VLV SWITCH ITEM: FAILURE MODE: SWITCH FAILS IN THE CLOSED POSITION.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- CONTROLS
- 3) PROP STOR & DIST SUBSYSTEM
- 4) MANIFOLD 3, L/R OX & FU ISOL VLVS
- MANIFOLD 3, L/R OX & FU ISOL VLV SWITCH

6)

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING	3: 3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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 OPEED 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 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.

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

6)

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC	
PRELAUNCH:	3/3	RTLS:	2/1R	
LIFTOFF:	3/3	TAL:	3/2R	
ONORBIT:	3/2R	AOA:	3/2R	
DEORBIT:	3/2R	ATO:	3/2R	
LANDING/SAFING:	3/3		·	

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

1/22/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

MDAC ID: 1826

FLIGHT:

3/2R

ABORT:

2/1R

ITEM:

MANIFOLD 3, 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

CONTROLS

3) PROP STOR & DIST SUBSYSTEM

MANIFOLD 3, L/R OX & FU ISOL VLVS

MANIFOLD 3, L/R OX & FU ISOL VLV SWITCH OPEN CONTACTS 1, 2

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/3R
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

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 OPEN COMMANDS. IF THE OPEN CONTACTS FAIL OPEN WHILE THE SWITCH IS IN ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION, CAN BE OPENED ONLY BY MDM COMMAND, AND CAN CLOSE BY THE SWITCH OR THE MDM COMMAND. TO OPEN THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM THE CONTACTS, AND THEN USE GPC READ/WRITE PROCEDURES. FAILURE OF ALL REDUNDANCY WILL AFFECT PROPELLANT DUMP LENGTHS DUMPS DURING ABORTS OR ENTRY, MAY CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANT DURING RTLS ABORTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES, AND MAY AFFECT ENTRY DTOS AND PTIS.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE:

3/3 FLIGHT: SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 1827

MANIFOLD 3, L/R OX & FU ISOL VLV SWITCH OPEN ITEM:

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
- PROP STOR & DIST SUBSYSTEM 3)
- MANIFOLD 3, L/R OX & FU ISOL VLVS
- MANIFOLD 3, L/R OX & FU ISOL VLV SWITCH OPEN CONTACTS 1, 2 5)
- 6) 7)
- 8)
- 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 []

PNL 07 S24; PNL 07 S29 LOCATION:

PART NUMBER: 33V73A7S24; S29

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. IF THE OPEN CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE CLOSED POSITION, THE VALVE WILL REMAIN CLOSED AND CAN BE OPENED WITH THE SWITCH, BUT CANNOT BE CLOSED AGAIN BY SWITCH OR MDM COMMAND. TO CLOSE THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM THE CONTACTS, AND THEN USE GPC READ/WRITE PROCEDURES. FAILURE OF ALL REDUNDANCY WILL RESULT IN THE INABILITY TO CLOSE THE VALVE.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/22/87 SUBSYSTEM: ARCS FLIGHT: 3/3 ABORT: 3/3 MDAC ID: 1828 ITEM: MANIFOLD 3, L/R OX & FU ISOL VLV 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 VLV SWITCH GPC CONTACTS 3, 4 6) 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 RTLS: 3/3
TAL: 3/3
AOA: 3/3
ATO: 3/3 3/3 3/3 LIFTOFF: 3/3 ONORBIT: DEORBIT: 3/3 LANDING/SAFING: 3/3 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. time to the state of the state

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 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
- 6) 7)
- 8)
- 9)

CRITICALITIES

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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 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/22/87 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1830 MANIFOLD 3, L/R OX & FU ISOL VLV SWITCH CLOSE ITEM: CONTACTS 5, 6 FAILURE MODE: SWITCH CLOSE CONTACTS FAIL OPEN. SUBSYS LEAD: D.J. PAUL LEAD ANALYST: V.J. BURKEMPER BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 2) 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 6) 7) 8) 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: 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/22/87

FLIGHT: SUBSYSTEM: ARCS 3/2R ABORT: 2/1R MDAC ID: 1831

MANIFOLD 3, L/R OX & FU ISOL VLV SWITCH CLOSE ITEM:

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
- CONTROLS 2)
- PROP STOR & DIST SUBSYSTEM 3)
- MANIFOLD 3, L/R OX & FU ISOL VLVS

MANIFOLD 3, L/R OX & FU ISOL VLV SWITCH CLOSE CONTACTS 5, 6 5)

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	•		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

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 OPEN COMMANDS. IF THE CLOSE CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE CLOSED OR GPC POSITION, THE VALVE WILL CLOSE AND CANNOT BE OPENED BY SWITCH OR MDM COMMAND. IF THE CLOSE CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE OPEN POSITION, THE VALVE WILL REMAIN OPEN AND CAN BE CLOSED WITH THE SWITCH, BUT CANNOT BE OPENED AGAIN BY SWITCH OR MDM COMMAND. TO OPEN THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM THE CONTACTS, AND THEN USE GPC READ/WRITE PROCEDURES. FAILURE OF ALL REDUNDANCY WILL AFFECT PROPELLANT DUMP LENGTHS 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.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 MDAC ID: 1832 ABORT:

MANIFOLD 4, L/R OX & FU ISOL VLV SWITCH ITEM:

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

6)

7) 8)

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: PNL 07 S25; PNL 07 S30

PART NUMBER: 33V73A7S25; S30

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

EFFECTS/RATIONALE:

REDUNDANCY PROVIDED BY MDM COMMANDS. IF THE SWITCH FAILS IN THE OPEN POSITION, THE VALVE WILL OPEN AND CANNOT BE CLOSED BY SWITCH OR MDM COMMAND. TO CLOSE THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM THE CONTACTS, AND THEN USE GPC READ/WRITE PROCEDURES. FAILURE OF ALL REDUNDANCY WILL RESULT IN THE INABILITY TO CLOSE THE VALVE.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1833 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
- 6) 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC	
PRELAUNCH:	3/3	RTLS:	2/1R	
LIFTOFF:	3/3	TAL:	3/2R	
ONORBIT:	3/2R	AOA:	3/2R	
DEORBIT:	3/2R	ATO:	3/2R	
LANDING/SAFING:	: 3/3		•	

REDUNDANCY SCREENS: A [2] B [P] C [P]

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 COMMANDS. IF THE SWITCH FAILS IN THE CLOSED POSITION, THE VALVE WILL CLOSE AND CANNOT BE OPEED 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 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/22/87

FLIGHT: 3/2R SUBSYSTEM: ARCS ABORT: 2/1R MDAC ID: 1834

MANIFOLD 4, L/R OX & FU ISOL VLV SWITCH ITEM:

FAILURE MODE: SWITCH FAILS IN THE GPC POSITION.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- CONTROLS
- 3) PROP STOR & DIST SUBSYSTEM
- 4) MANIFOLD 4, L/R OX & FU ISOL VLVS
- MANIFOLD 4, L/R OX & FU ISOL VLV SWITCH

6) 7)

8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	, TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

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

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/3R
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

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 OPEN COMMANDS. IF THE OPEN CONTACTS FAIL OPEN WHILE THE SWITCH IS IN ANY POSITION, THE VALVE WILL REMAIN IN THAT POSITION, CAN BE OPENED ONLY BY MDM COMMAND, AND CAN CLOSE BY THE SWITCH OR THE MDM COMMAND. TO OPEN THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM THE CONTACTS, AND THEN USE GPC READ/WRITE PROCEDURES. FAILURE OF ALL REDUNDANCY WILL AFFECT PROPELLANT DUMP LENGTHS DUMPS DURING ABORTS OR ENTRY, MAY CAUSE THE INABILITY TO EXPEL ENOUGH PROPELLANT DURING RTLS ABORTS TO MEET THE TANK LANDING WEIGHT CONSTRAINTS AND/OR THE CG SAFETY BOUNDARIES, AND MAY AFFECT ENTRY DTOS AND PTIS.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS

3/3 ABORT: MDAC ID: 1836

MANIFOLD 4, L/R OX & FU ISOL VLV SWITCH OPEN ITEM:

COMMAND 1, 2

FAILURE MODE: SWITCH OPEN CONTACTS FAIL CLOSED.

SUBSYS LEAD: D.J. PAUL LEAD ANALYST: V.J. BURKEMPER

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- CONTROLS
- 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

7)

8)

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: PNL 07 S25; PNL 07 S30

PART NUMBER: 33V73A7S25; S30

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. IF THE OPEN CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE CLOSED POSITION, THE VALVE WILL REMAIN CLOSED AND CAN BE OPENED WITH THE SWITCH, BUYT CANNOT BE CLOSED AGAIN BY SWITCH OR MDM COMMAND. TO CLOSE THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM THE CONTACTS, AND THEN USE GPC READ/WRITE PROCEDURES. FAILURE OF ALL REDUNDANCY WILL RESULT IN THE INABILITY TO CLOSE THE VALVE.

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
- 6) 7)
- 8)
- 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: 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.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1838 MANIFOLD 4, L/R OX & FU ISOL VLV SWITCH GPC ITEM: 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 CONTROLS 2) PROP STOR & DIST SUBSYSTEM 3) 4) MANIFOLD 4, L/R OX & FU ISOL VLVS 5) MANIFOLD 4, L/R OX & FU ISOL VLV SWITCH GPC COMMAND 3, 4 6) 7) 8) 9) CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC
3/3	RTLS:	3/3
3/3	TAL:	3/3
3/3	AOA:	3/3
3/3	ATO:	3/3
3/3		
	3/3 3/3 3/3	3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO:

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.

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
- 6) 7)
- 8)
- 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: 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 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/22/87

FLIGHT: SUBSYSTEM: ARCS 3/2R 2/1R MDAC ID: 1840 ABORT:

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
- 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

7)

8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		-

REDUNDANCY SCREENS: A [2] B [F] C [P]

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 OPEN COMMANDS. IF THE CLOSE CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE CLOSED OR GPC POSITION, THE VALVE WILL CLOSE AND CANNOT BE OPENED BY SWITCH OR MDM COMMAND. IF THE CLOSE CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE OPEN POSITION, THE VALVE WILL REMAIN OPEN AND CAN BE CLOSED WITH THE SWITCH, BUT CANNOT BE OPENED AGAIN BY SWITCH OR MDM COMMAND. TO OPEN THE VALVE, THE CREW MUST REMOVE CONTROL BUS POWER FROM THE CONTACTS, AND THEN USE GPC READ/WRITE PROCEDURES. FAILURE OF ALL REDUNDANCY WILL AFFECT PROPELLANT DUMP LENGTHS 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.

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
- 6)
- 7)
- 8)

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: 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.

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

CONTROLS

PROP STOR & DIST SUBSYSTEM

4) MANIFOLD 5, L/R OX & FU ISOL VLVS

5) MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH

6)

7)

8) 9)

CRITICALITIES

VIII VIII			
HDW/FUNC	ABORT	HDW/FUNC	
3/3	RTLS:	3/3	
3/3	TAL:	3/3	
3/2R	AOA:	3/3	
3/3	ATO:	3/3	
3/3		·	
	3/3 3/3 3/2R 3/3	3/3 RTLS: 3/3 TAL: 3/2R AOA: 3/3 ATO:	

REDUNDANCY SCREENS: A [2] B [P] C [P]

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 SWITCH FAILS IN THE CLOSED POSITION WHILE THE VALVE IS IN ANY POSITION. THE VALVE WILL CLOSE. IF THE MDM OPEN COMMAND IS ALSO PRESENT, OR THE SWITCH OPEN COMMAND IS ALSO PRESENT THE VALVE WILL CYCLE OPEN AND CLOSED UNTIL THE MDM OR SWITCH OPEN COMMAND IS REMOVED, OR UNTIL THE CONTROL BUS POWER IS REMOVED FROM EITHER OF THE SWITCH'S CLOSE CONTACTS. TO OPEN THE VALVE, CREW MUST REMOVE POWER FROM EITHER OF THE SWITCH'S CLOSE CONTACTS, AND USE THE GPC READ/WRITE PROCEDURES. FAILURE OF ALL REDUNDANCY WILL AFFECT ONORBIT OPREATIONS, AND WILL CAUSE THE LOSS OF THE VERNIER RCS.

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
- 5) MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH

6)

7) 8)

9)

CRITICALITIES

V1/2			
FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 MDAC ID: ABORT: 1844 MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH OPEN ITEM: 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 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 RTLS: PRELAUNCH: 3/3 3/3 TAL: 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 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.

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
- 6) 7)
- 8)
- 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: 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/22/87 FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 1846 MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH GPC ITEM: 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 CONTROLS 2) 4) MANIFOLD 5, L/R OX & FU ISOL VLVS 5) MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH GPC CONTACTS 3, 4 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE PRELAUNCH: 3/3 RTLS: 3/3 TAL: 3/3 LIFTOFF: 3/3 3/3 ONORBIT: AOA: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 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.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: 1847 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
- 6) 7)
- 8)
- 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: 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.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE:

ARCS FLIGHT: 3/3 SUBSYSTEM: ABORT: 3/3 1848 MDAC ID:

MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH CLOSE ITEM:

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
- 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

7)

8)

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: 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.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1849 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
- 6) 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		•
•	•		

REDUNDANCY SCREENS: A [2] B [F] C [P]

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 AND THE OTHER SWITCH CLOSE CONTACTS. IF THE CLOSE CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE GPC OR CLOSED POSITION, THE VALVE WILL CLOSE, AND CANNOT BE OPENED BY MDM COMMAND, ONLY BY THE SWITCH COMMAND. IF THE CLOSE CONTACTS FAIL CLOSED WHILE THE SWITCH IS IN THE OPEN POSITION, THE VALVE WILL REMAIN OPEN, AND CANNOT BE CLOSED BY MDM COMMAND, ONLY BY SWITCH COMMAND. TO OPEN THE VALVE WITH THE MDM COMMAND, THE CREW MUST REMOVE CONTROL BUS POWER FROM THE CLOSE CONTACT SET 5,6 THEN USE THE GPC READ/WRITE PROCEDURES. FAILURE OF ALL REDUNDANCY WILL CAUSE THE LOSS OF THE VERNIER RCS.

HIGHEST CRITICALITY HDW/FUNC 1/22/87 DATE:

FLIGHT: 3/2R SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 1850

MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH OPEN ITEM:

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

7)

8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		·

REDUNDANCY SCREENS: A [2] B [F] C [P]

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/22/87

3/3 FLIGHT: SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 1851

MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH OPEN ITEM:

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
- PROP STOR & DIST SUBSYSTEM 3)
- MANIFOLD 5, L/R OX & FU ISOL VLVS 4)
- MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH OPEN CONTACTS 7, 8 5)
- 6) 7)
- 8)

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 []

PNL 07 S26; PNL 07 S31 LOCATION:

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.

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1852 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

6) 7)

8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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 AND THE MANUAL SWITCH COMMAND. IF THE GPC CONTACTS FAIL OPEN, THE VALVE CAN BE OPENED BY SWITCH OR MDM COMMAND, CAN BE CLOSED BY SWITCH COMMAND, AND CANNOT BE CLOSED BY MDM COMMAND UNLESS THE SWITCH IS IN THE CLOSED POSITION. FAILURE OF ALL REDUNDANCY WILL CAUSE LOSS OF THE VERNIER RCS.

DATE:

1/22/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT:

3/2R

MDAC ID:

1853

ABORT:

3/3

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
- CONTROLS 2)
- PROP STOR & DIST SUBSYSTEM 3)
- MANIFOLD 5, L/R OX & FU ISOL VLVS 4)
- MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH GPC CONTACTS 9, 10 5)
- 6) 7)
- 8)
- 9)

CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC	
3/3	RTLS:	3/3	
3/3	TAL:	3/3	
3/2R	AOA:	3/3	
3/3	ATO:	3/3	
3/3		•	
	3/3 3/3 3/2R 3/3	3/3 RTLS: 3/3 TAL: 3/2R AOA: 3/3 ATO:	

REDUNDANCY SCREENS: A [3] B [F] C [P]

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/22/87 FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 1854 MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH CLOSE ITEM: 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) MANIFOLD 5, L/R OX & FU ISOL VLVS 5) MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH CLOSE CONTACTS 11, 12 6) 7) 8) 9) 131111 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE PRELAUNCH: PRELAUNCH: 3/3
LIFTOFF: 3/3
ONORBIT: 3/3
DEORBIT: 3/3
LANDING/SAFING: 3/3 RTLS: TAL: AOA: 3/3 3/3 3/3 ATO: 3/3 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.

DATE:

1/22/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT:

3/2R

MDAC ID:

1855

ABORT:

3/3

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
- CONTROLS 2)
- PROP STOR & DIST SUBSYSTEM 3)
- 4) MANIFOLD 5, L/R OX & FU ISOL VLVS
- MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH CLOSE CONTACTS 11, 5)

12 6)

7)

8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING	: 3/3		

REDUNDANCY SCREENS: A [3] B [F] C [P]

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.

1/22/87 DATE:

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: MDAC ID:

ARCS

FLIGHT:

3/2R

1856

ABORT:

2/1R

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

INSTRUMENTATION

3) PROP STOR & DIST SUBSYSTEM

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)

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:	3/3	ATO:	3/1R
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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).

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 1857 ABORT: 2/1R

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

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		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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

DATE: 1/22/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT:

ABORT:

3/1R 3/1R

MDAC ID: 1858

L/R OX & FU TK ISOL VLV 3/4/5 A OR B SWITCH

TALKBACK

ITEM:

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 NAME OF A COLUMN AS A CO

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

6) 7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/1R
LIFTOFF:	3/3	TAL:	3/1R
ONORBIT:	3/2R	AOA:	3/1R
DEORBIT:	3/1R	ATO:	3/1R
LANDING/SAFING	3: 3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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

DATE: 1/22/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 1859 ABORT: 2/1R

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
- 6) 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/1R	ATO:	3/2R
LANDING/SAFING:	3/3		·

REDUNDANCY SCREENS: A [2] B [P] 'C [P]

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

HIGHEST CRITICALITY HDW/FUNC DATE: 1/20/87 FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 1860 MDAC ID: L/R FU TANK ULLAGE PPRESS SENSOR ITEM: FAILURE MODE: INDICATES HIGHER PRESSURE THAN ACTUAL. SUBSYS LEAD: D.J. PAUL LEAD ANALYST: V.J. BURKEMPER BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS INSTRUMENTATION 3) PROP STOR & DIST SUBSYSTEM FU TK 4) L/R FU TANK ULLAGE PPRESS SENSOR 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: TAL: 3/3 3/3 PRELAUNCH: 3/3 LIFTOFF: 3/3 ONORBIT: 3/3 AOA: 3/3 ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3

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.

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

3/3 FLIGHT: ARCS SUBSYSTEM: 3/3 ABORT: MDAC ID: 1861

L/R FU TANK ULLAGE PPRESS SENSOR ITEM:

FAILURE MODE: INDICATES LOWER PRESSURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- ELECTRICAL COMPONENTS 1)
- 2) INSTRUMENTATION
- PROP STOR & DIST SUBSYSTEM 3)
- FU TK 4)
- L/R FU TANK ULLAGE PPRESS SENSOR 5)
- 6)
- 7)
- 8)
- 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	,		•

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

L/R OMS POD, RCS MANIFOLDS AND THRUSTERS LOCATION:

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.

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

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1862 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
- 6) 7)
- 8)
- 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: 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.

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

SUBSYSTEM: ARCS 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
- 6)
- 7)
- 8)
- 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: 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/20/87 FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1864 L/R OX TANK ULLAGE PPRESS SENSOR ITEM: FAILURE MODE: INDICATES HIGHER PRESSURE THAN ACTUAL. LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS INSTRUMENTATION PROP STOR & DIST SUBSYSTEM 3) OX TK 4) L/R OX TANK ULLAGE PPRESS SENSOR 6) 7) 8) 9) CRITICALITIES HDW/FUNC FLIGHT PHASE HDW/FUNC ABORT RTLS: PRELAUNCH: 3/3 3/3 TAL: LIFTOFF: 3/3 3/3 AOA: 3/3 ONORBIT: 3/3 ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 C []

A[] B[] REDUNDANCY SCREENS:

L/R OMS POD, RCS MANIFOLDS AND THRUSTERS LOCATION: 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.

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
- 6)
- 7)
- 8)
- 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: 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.

DATE: 1/20/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1866 ABORT: 3/3

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

6)

7)

8) 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: 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.

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
- 6)
- 7)
- 8) 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: 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.

DATE: 1/20/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: 1868 ABORT: 3/3

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

6)

7) 8)

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: 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.

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

MDAC ID: 1869

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
- FU TK 4)
- L/R FU TANK TEMP-1 TEMP SENSOR 5)
- 6)

ITEM:

- 7)
- 8)

9)

CRITICALITI	ES	
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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:

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.

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)

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: 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.

DATE: 1/20/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: 1871 ABORT: 3/3

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
- 6) 7)
- 8)
- 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: 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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1872 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)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1873 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, RJDA
- 5) CONTROLLER, REMOTE POWER
- 6)
- 7)
- 8).
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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).

1/15/87 DATE:

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT:

3/2R

MDAC ID:

1874

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
- CONTROLLER, REMOTE POWER

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING	: 3/3		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1875 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, RJDA
- 5) CONTROLLER, REMOTE POWER
- 6)
- 7) 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING	•		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1876 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/L5, RJDA
- 5) CONTROLLER, REMOTE POWER

6)

7) 8)

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 4, PCA 1 PART NUMBER: 54V76Al3lRPCl8

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.

HDW/FUNC DATE: HIGHEST CRITICALITY 1/15/87

3/2R SUBSYSTEM: ARCS FLIGHT: 2/1R MDAC ID: 1877 ABORT:

CONTROLLER, REMOTE POWER ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- ELECTRICAL COMPONENTS
- CONTROLS 2)
- 3) THRUSTER SUBSYSTEM
- MANIFOLD 1/L5, RJDA 4)
- CONTROLLER, REMOTE POWER 5)

6)

7) 8)

9)

· CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	- 3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		·

REDUNDANCY SCREENS: A [2] B [P] C [P]

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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1878 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/L5, RJDA
- 5) CONTROLLER, REMOTE POWER

6) 7)

8)

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: 55V76Al32RPC8

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

3/2R SUBSYSTEM: ARCS FLIGHT: 2/1R ABORT: MDAC ID: 1879

CONTROLLER, REMOTE POWER ITEM:

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
- MANIFOLD 1/L5, RJDA 4)
- CONTROLLER, REMOTE POWER 5)

6)

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [P] C [P]

AV BAY 5, PCA 2 LOCATION: PART NUMBER: 55V76A132RPC8

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. 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).

DATE:

1/15/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS MDAC ID:

FLIGHT:

3/2R

1880

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
- CONTROLS 2)
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD 2, RJDA
- CONTROLLER, REMOTE POWER

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/.3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: AV BAY 6, PCA 3

PART NUMBER: 56V76Al33RPC16

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.

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
- 6)
- 7)
- 8)
- 9).

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		·

REDUNDANCY SCREENS: A [2] B [P] C [P]

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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1882 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)

CRITICALITIES

	C1/+ + + C11H+ + + HD		
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: 56V76Al33RPC36

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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1883 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

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3.	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		·

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: AV BAY 6, PCA 3 PART NUMBER: 56V76Al33RPC36

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).

DATE:

1/15/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT: 3/2R

MDAC ID: 1884

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
- CONTROLS
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD 2, RJDA
- 5) CONTROLLER, REMOTE POWER

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC	
PRELAUNCH:	3/3	RTLS:	3/3	
LIFTOFF:	3/3	TAL:	3/3	
ONORBIT:	3/2R	AOA:	3/3	
DEORBIT:	3/3	ATO:	3/3	
LANDING/SAFING:	3/3		•	

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1885 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

6)

7)

8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87 FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 1886 CONTROLLER, REMOTE POWER ITEM: FAILURE MODE: FAILS HIGH LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 3) THRUSTER SUBSYSTEM 4) MANIFOLD 2, RJDA 5) CONTROLLER, REMOTE POWER 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 TAL: 3/3 LIFTOFF: 3/3 AOA: 3/3 3/3 ONORBIT: DEORBIT: ATO: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] AV BAY 4, PCA 1 LOCATION: 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

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

FAILS ON, THE CREW CAN PREVENT JETS FROM FIRING BY INHIBITING THE JETS ON THE MANIFOLD, OR BY CLOSING THE APPROPRIATE ISOLATION

VALVE.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1887 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

6)

7)

8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING	: 3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: AV BAY 4, PCA 1 PART NUMBER: 54V76Al31RPC19

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).

DATE:

1/15/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS MDAC ID:

1888

FLIGHT: ABORT:

3/2R 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
- CONTROLS 2)
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD 3, RJDA
- 5) CONTROLLER, REMOTE POWER

6)

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1889 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, RJDA
- 5) CONTROLLER, REMOTE POWER

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		·

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: AV BAY 6, PCA 3 PART NUMBER: 56V76Al33RPC39

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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1890 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 3, RJDA
- 5) CONTROLLER, REMOTE POWER

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		·

REDUNDANCY SCREENS: A [2] B [P] C [P]

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).

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
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		·

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87 FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 1892 CONTROLLER, REMOTE POWER ITEM: 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 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC

3/3 RTLS: 3/3

3/3 TAL: 3/3

3/3 AOA: 3/3 FLIGHT PHASE PRELAUNCH: LIFTOFF: ONORBIT: DEORBIT: 3/3 ATO: 3/3

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

LOCATION: AV BAY 5, PCA 2 PART NUMBER: 55V76A132RPC7

LANDING/SAFING: 3/3

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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1893 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 3/R5, RJDA
- 5) CONTROLLER, REMOTE POWER

6)

7) 8)

9)

CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC
I: 3/3	RTLS:	2/1R
3/3	TAL:	3/2R
3/2R	AOA:	3/2R
3/2R	ATO:	3/2R
		•
	3/3 3/3 3/2R 3/2R	I: 3/3 RTLS: 3/3 TAL: 3/2R AOA: 3/2R ATO:

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: AV BAY 5, PCA 2 PART NUMBER: 55V76Al32RPC7

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).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87 FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: 1894 MDAC ID: CONTROLLER, REMOTE POWER ITEM: FAILURE MODE: FAILS HIGH LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 3) THRUSTER SUBSYSTEM 4) MANIFOLD 3/R5, RJDA 5) CONTROLLER, REMOTE POWER 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 3/3 PRELAUNCH: 3/3 TAL: 3/3 LIFTOFF: 3/3 AOA: ONORBIT: 3/3 DEORBIT: 3/3 ATO: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: AV BAY 6, PCA 3 PART NUMBER: 56V76Al33RPC40 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 anamaka (<mark>jak</mark>aka) banga sa Pilikipa Jarana atau Kasin alikin 1914, atau mengantanggan REFERENCES: VS70-943099 REV B EO B12, JSC 11174, SPACE SHUTTLE

SYSTEMS HANDBOOK

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1895 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 3/R5, RJDA
- 5) CONTROLLER, REMOTE POWER
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: AV BAY 6, PCA 3 PART NUMBER: 56V76Al33RPC40

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. 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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS MDAC ID:

1896

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 4, RJDA
- 5) CONTROLLER, REMOTE POWER

7)

8) 9)

CRITICALITIES

	V. (2 2 2 V. 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1			
FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC	
PRELAUNCH:	3/3	RTLS:	3/3	
LIFTOFF:	3/3	TAL:	3/3	
ONORBIT:	3/2R	AOA:	3/3	
DEORBIT:	3/3	ATO:	3/3	
LANDING/SAFING:	3/3		•	

THUDING SALING:

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1897 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)

7)

8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING	•		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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 ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS 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
- 6)
- 7) 8)
- 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 4, PCA 1 PART NUMBER: 54V76Al31RPC17

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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1899 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) 7)

8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING	: 3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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).

REF

DATE:

1/15/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT: 3/2R

MDAC ID:

1900

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

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		

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:

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.

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)

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		•

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).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 1902 ABORT: MDAC ID: CONTROLLER, REMOTE POWER ITEM: 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 FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: PRELAUNCH: 3/3 3/3 LIFTOFF: 3/3 TAL: AOA: 3/3 3/3 ONORBIT: ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] AV BAY 6, PCA 3 LOCATION: PART NUMBER: 56V76Al33RPC38

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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1903 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)
- 7)
- 8)
- 9)

CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC
3/3	RTLS:	2/1R
3/3	TAL:	3/2R
3/2R	AOA:	3/2R
3/2R	ATO:	3/2R
3/3		•
	3/3 3/3 3/2R 3/2R	3/3 RTLS: 3/3 TAL: 3/2R AOA: 3/2R ATO:

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: AV BAY 6, PCA 3 PART NUMBER: 56V76Al33RPC38

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).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87 FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 1904 CONTROLLER, REMOTE POWER ITEM: FAILURE MODE: FAILS HIGH LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 3) THRUSTER SUBSYSTEM 4) MANIFOLD L5, RJDA 5) CONTROLLER, REMOTE POWER 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 RTLS: 3/3 PRELAUNCH: TAL: 3/3 LIFTOFF: 3/3 AOA: ONORBIT: 3/3 3/3 DEORBIT: ATO: 3/3 LANDING/SAFING: 3/3 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

大学 化磺基基基基环 医皮肤 医外侧性 医乳腺学 医电流性 化二甲基甲基 计电流 医二氏征 医二氏征 医二异乙酰基酚

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 2/2 MDAC ID: 1905 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

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	2/2	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING	: 3/3		

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

LOCATION: AV BAY 4, PCA 1 PART NUMBER: 54V76Al3lRPC41

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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 1906 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

6)

7) 8)

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 4, PCA 1
PART NUMBER: 54V76Al31RPC40

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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 2/2

MDAC ID: 1907 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
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	2/2	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING	3/3		

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

FLIGHT: 3/2R SUBSYSTEM: ARCS ABORT: 2/1R 1908 MDAC ID:

ITEM: DIODE

FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- CONTROLS
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD 1, RJDA
- DIODE 5)

6)

7) 8)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1909 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 1, RJDA
- 5) DIODE
- 6)
- 7)
- 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING	: 3/3		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1910 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
- 6)
- 7) 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

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 ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, ĀŌA, ĀTO).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1911 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 1, RJDA
- 5) DIODE
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		·

REDUNDANCY SCREENS: A [2] B [F] C [P]

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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1912 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

6)

7)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A2CR7

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. 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).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: ABORT: 2/1R 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
- 6)
- 7)
- 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	: 3/3		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: AV BAY 5, PCA 2 PART NUMBER: 55V76A132A2CR7

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 ABORTS, 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. ONORBIT, THE LOSS OF THE VERNIER JET MANIFOLD WOULD RESULT IN THE LOSS OF THE VERNIER JETS. AFFECTS PRI JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87 FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1914 DIODE ITEM: 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 DIODE 5) 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 RTLS: 3/3 PRELAUNCH: 3/3 TAL: LIFTOFF: 3/3 3/3 AOA: 3/3 ONORBIT: DEORBIT: ATO: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] AV BAY 4, PCA 1 LOCATION: Specification of the property of the control of the 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 and the second

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

3/2R SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 1915 ABORT:

ITEM: DIODE

FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- ELECTRICAL COMPONENTS
- CONTROLS 2)
- THRUSTER SUBSYSTEM 3)
- MANIFOLD 1/L5, RJDA 4)
- . 5) DIODE
 - 6)
 - 7)
 - 8)

9)

CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC
3/3	RTLS:	3/1R
3/3	TAL:	3/2R
3/2R	AOA:	3/2R
•	ATO:	3/2R
3/3		•
	3/3 3/3 3/2R 3/2R	3/3 RTLS: 3/3 TAL: 3/2R AOA: 3/2R ATO:

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: AV BAY 4, PCA 1 PART NUMBER: 54V76A131A1CR4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

OPEN RESISTOR OR DIODE REMOVES THE CAPABILITY OF THE DRIVER POWER LATCHING ON THE LOGIC POWER. 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. LOGIC PWR INPUTS AND LATCHING SIGNALS FAIL OFF, LOSS OF MANIFOLD LOGIC POWER AND DRIVER POWER WOULD RESULT FOR BOTH VERNIER AND DURING ENTRY, THE LOSS OF THE MANIFOLD WOULD AFFECT ENTRY DTOS AND PTIS. ONORBIT, THE LOSS OF THE VERNIER JET MANIFOLD WOULD RESULT IN THE LOSS OF VERNIER JETS. AFFECTS PRI JET ONORBIT OPERATIONS (RNDV, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87 FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: 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 CONTROLS 3) THRUSTER SUBSYSTEM 4) MANIFOLD 1/L5, RJDA 5) DIODE 6) 7) 8) 9) CRITICALITIES HDW/FUNC FLIGHT PHASE HDW/FUNC ABORT

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 4, PCA 1 PART NUMBER: 54V76Al3lAlCR3

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.

DATE: HIGHEST CRITICALITY HDW/FUNC 1/15/87

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1917 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
- CONTROLS
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD 1/L5, RJDA
- 5)
- 6)
- 7)
- 8)

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		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: AV BAY 4, PCA 1 PART NUMBER: 54V76A131A1CR3

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

EFFECTS/RATIONALE: OPEN RESISTOR OR DIODE REMOVES THE CAPABILITY OF THE DRIVER POWER LATCHING ON THE LOGIC POWER. 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. LOGIC PWR INPUTS AND LATCHING SIGNALS FAIL OFF, LOSS OF MANIFOLD LOGIC POWER AND DRIVER POWER WOULD RESULT FOR BOTH VERNIER AND PRIMARY. DURING ENTRY, THE LOSS OF THE MANIFOLD WOULD AFFECT ENTRY DTOS AND PTIS. 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).

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE:

FLIGHT: 3/3 ABORT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 1918

DIODE ITEM:

FAILURE MODE: FAILS SHORT

SUBSYS LEAD: D.J. PAUL LEAD ANALYST: R.A. O'DONNELL

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- 2) CONTROLS
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD 1/L5, RJDA
- DIODE
- 6)
- 7)
- 8) 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 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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R 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
 - 6)
 - 7)
 - 8)
 - 9)

CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC
3/3	RTLS:	3/1R
3/3	TAL:	3/2R
3/2R	AOA:	3/2R
3/2R	ATO:	3/2R
3/3		•
	3/3 3/3 3/2R 3/2R	3/3 RTLS: 3/3 TAL: 3/2R AOA: 3/2R ATO:

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: AV BAY 4, PCA 1 PART NUMBER: 54V76Al3lAlCR7

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

OPEN RESISTOR OR DIODE REMOVES THE CAPABILITY OF THE DRIVER POWER LATCHING ON THE LOGIC POWER. 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. IF BOTH LOGIC PWR INPUTS AND LATCHING SIGNALS FAIL OFF, LOSS OF MANIFOLD LOGIC POWER AND DRIVER POWER WOULD RESULT FOR BOTH VERNIER AND PRIMARY. DURING ENTRY, THE LOSS OF THE MANIFOLD WOULD AFFECT ENTRY DTOS AND PTIS. 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).

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE:

FLIGHT: 3/2R SUBSYSTEM: ARCS 2/1R ABORT: MDAC ID: 1920

DIODE ITEM:

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

DIODE

6)

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [F] C [P]

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 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. 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).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1921 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
- THRUSTER SUBSYSTEM
- MANIFOLD 1/L5, RJDA 4)
- DIODE 5)
- 6)
- 7)
- 8)

9)

CRITICALITIES

HDW/FUNC
: 2/1R
3/2R
3/2R
3/2R
•

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: AV BAY 5, PCA 2 PART NUMBER: 55V76A132A2CR8

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD LOGIC CIRCUIT. 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. 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).

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 1922 DIODE ITEM: FAILURE MODE: FAILS SHORT SUBSYS LEAD: D.J. PAUL LEAD ANALYST: R.A. O'DONNELL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS 2) CONTROLS 3) THRUSTER SUBSYSTEM 4) MANIFOLD 1/L5, RJDA DIODE 5) 6) 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: 3/3 3/3 PRELAUNCH: 3/3 TAL: 3/3 LIFTOFF: 3/3 3/3 AOA: ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3

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.

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
- 6)
- 7)
- 8)
- 9)

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		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: AV BAY 5, PCA 2 PART NUMBER: 55V76Al32AlCR4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

OPEN RESISTOR OR DIODE REMOVES THE CAPABILITY OF THE DRIVER POWER LATCHING ON THE LOGIC POWER. 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. IF BOTH LOGIC PWR INPUTS AND LATCHING SIGNALS FAIL OFF, LOSS OF MANIFOLD LOGIC POWER AND DRIVER POWER WOULD RESULT FOR BOTH VERNIER AND PRIMARY. DURING ENTRY, THE LOSS OF THE MANIFOLD WOULD AFFECT ENTRY DTOS AND PTIS. 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).

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1924 ITEM: DIODE FAILURE MODE: FAILS SHORT SUBSYS LEAD: D.J. PAUL LEAD ANALYST: R.A. O'DONNELL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 2) 3) THRUSTER SUBSYSTEM 4) MANIFOLD 1/L5, RJDA 5) DIODE 6) 7) 8) 9)

CRI	TI	CA	LI	Т	I	ES
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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: 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

FLIGHT: 3/2R SUBSYSTEM: ARCS MDAC ID: 1925 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
- THRUSTER SUBSYSTEM 3)
- MANIFOLD 1/L5, RJDA 4)
- 5) DIODE
- 6)
- 7)
- 8) 9)

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		•

LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: AV BAY 5, PCA 2 PART NUMBER: 55V76A132A1CR3

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

EFFECTS/RATIONALE:

OPEN RESISTOR OR DIODE REMOVES THE CAPABILITY OF THE DRIVER POWER LATCHING ON THE LOGIC POWER. 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. LOGIC PWR INPUTS AND LATCHING SIGNALS FAIL OFF, LOSS OF MANIFOLD LOGIC POWER AND DRIVER POWER WOULD RESULT FOR BOTH VERNIER AND DURING ENTRY, THE LOSS OF THE MANIFOLD WOULD AFFECT ENTRY DTOS AND PTIS. 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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 1926 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)

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: 56V76Al33AlCR8

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.

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
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC
3/3	RTLS:	3/1R
3/3	TAL:	3/2R
3/2R	AOA:	3/2R
3/2R	ATO:	3/2R
3/3		·
	3/3 3/3 3/2R 3/2R	3/3 RTLS: 3/3 TAL: 3/2R AOA: 3/2R ATO:

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: AV BAY 6, PCA 3 PART NUMBER: 56V76Al33AlCR8

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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1928 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)

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: 56V76Al33AlCR7

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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1929 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
- 6)
- 7)
- 8)
- 9)

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		ř

REDUNDANCY SCREENS: A [2] B [F] C [P]

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).

HIGHEST CRITICALITY HDW/FUNC 1/15/87

FLIGHT: 3/2R SUBSYSTEM: ARCS

2/1R ABORT: MDAC ID: 1930

DIODE ITEM:

FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

1) ELECTRICAL COMPONENTS

CONTROLS 2)

THRUSTER SUBSYSTEM 3)

4) MANIFOLD 2, RJDA

5) DIODE

6)

7) 8)

9)

CRITICALITIES

JULY 100

HDW/FUNC	ABORT	HDW/FUNC	
3/3	RTLS:	2/1R	
3/3	TAL:	3/2R	
3/2R	AOA:	3/2R	
3/2R	ATO:	3/2R	
3/3		•	
	3/3 3/2R 3/2R	3/3 RTLS: 3/3 TAL: 3/2R AOA: 3/2R ATO:	

REDUNDANCY SCREENS: A [2] B [F] C [P]

AV BAY 6, PCA 3 LOCATION: 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).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

FLIGHT: 3/2R SUBSYSTEM: ARCS MDAC ID: 1931 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
- THRUSTER SUBSYSTEM 3)
- MANIFOLD 2, RJDA 4)
- DIODE 5)
- 6)
- 7)
- 8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC	
PRELAUNCH:	3/3	RTLS:	2/1R	
LIFTOFF:	3/3	TAL:	3/2R	
ONORBIT:	3/2R	AOA:	3/2R	
DEORBIT:	3/2R	ATO:	3/2R	
LANDING/SAFING:	3/3		•	

REDUNDANCY SCREENS: A [2] B [F] C [P]

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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1932 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

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

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).

1/15/87 HIGHEST CRITICALITY HDW/FUNC DATE:

FLIGHT: 3/2R SUBSYSTEM: ARCS ABORT: 2/1R MDAC ID: 1933

DIODE ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

ELECTRICAL COMPONENTS

- CONTROLS
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD 2, RJDA
- 5) DIODE
- 6)
- 7) 8)
- 9)

CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC
3/3	RTLS:	2/1R
3/3	TAL:	3/2R
3/2R	AOA:	3/2R
3/2R	ATO:	3/2R
3/3		•
	3/3 3/3 3/2R 3/2R	3/3 RTLS: 3/3 TAL: 3/2R AOA: 3/2R ATO:

REDUNDANCY SCREENS: A [2] B [F] C [P]

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 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).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1934

ITEM:

DIODE

FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- CONTROLS 2)
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD 2, RJDA
- 5) DIODE
- 6)
- 7) 8)
- 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 4, PCA 1

PART NUMBER: 54V76Al3lAlCR6

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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1935 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
- 6)
- 7)
- 8)
- 9)

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		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

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 ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS 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)

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 4, PCA 1
PART NUMBER: 54V76A131A1CR5

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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1937 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
- 6)
- 7)
- 8)
- 9)

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		

REDUNDANCY SCREENS: A [2] B [F] C [P]

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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1938 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
- 6)
- 7) 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		·

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76Al3lA3CR8

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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1939 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 ·
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	: 3/3		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

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).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

FLIGHT: 3/2R SUBSYSTEM: ARCS ABORT: 2/1R 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
- THRUSTER SUBSYSTEM 3)
- MANIFOLD 2, RJDA 4)
- 5} DIODE
- 6)
- 7)
- 8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	•		·

REDUNDANCY SCREENS: A [2] B [F] C [P]

AV BAY 4, PCA 1 LOCATION: 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 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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1941 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
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING	G: 3/3		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: AV BAY 4, PCA 1 PART NUMBER: 54V76Al3lA2CR1

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).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

FLIGHT: 3/2R SUBSYSTEM: ARCS

2/1R ABORT: MDAC ID: 1942

DIODE ITEM:

FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

1) ELECTRICAL COMPONENTS

- CONTROLS
- THRUSTER SUBSYSTEM
- 4) MANIFOLD 3, RJDA
- 5) DIODE
- 6)
- 7) 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		·

REDUNDANCY SCREENS: A [2] B [F] C [P]

AV BAY 5, PCA 2 LOCATION: 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).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1943 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)
- 7)
- 8)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

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 ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE:

FLIGHT: 3/2R SUBSYSTEM: ARCS ABORT: 2/1R 1944

MDAC ID:

DIODE ITEM:

FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

1) ELECTRICAL COMPONENTS

CONTROLS 2)

3) THRUSTER SUBSYSTEM

4) MANIFOLD 3, RJDA

DIODE

6)

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [F] C [P]

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).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

SUBSYSTEM: ARCS FLIGHT: 3/2R 2/1R ABORT: MDAC ID: 1945

DIODE ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- 2) CONTROLS
- THRUSTER SUBSYSTEM 3)
- 4) MANIFOLD 3, RJDA
- 5) DIODE
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

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).

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1946 DIODE ITEM: 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 HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 TAL: 3/3 LIFTOFF: 3/3 AOA: 3/3 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 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

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

SUBSYSTEM: ARCS FLIGHT: 3/2R 1947 3/1R MDAC ID: ABORT:

ITEM: DIODE

FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- 2) CONTROLS
- THRUSTER SUBSYSTEM 3)
- 4) MANIFOLD 3/R5, RJDA
- 5) DIODE
- 6)
- 7)
- 8) 9)

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		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: AV BAY 5, PCA 2 PART NUMBER: 55V76A132A1CR7

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

OPEN RESISTOR OR DIODE REMOVES THE CAPABILITY OF THE DRIVER POWER LATCHING ON THE LOGIC POWER. 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. LOGIC PWR INPUTS AND LATCHING SIGNALS FAIL OFF, LOSS OF MANIFOLD LOGIC POWER AND DRIVER POWER WOULD RESULT FOR BOTH VERNIER AND PRIMARY. DURING ENTRY, THE LOSS OF THE MANIFOLD WOULD AFFECT ENTRY DTOS AND PTIS. 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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 ABORT: 3/3

ITEM: DIODE 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

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: 55V76Al32AlCR2

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.

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
- DIODE 5)
- 6)
- 7)
- 8)

CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC
3/3	RTLS:	3/1R
3/3	TAL:	3/2R
3/2R	AOA:	3/2R
3/2R	ATO:	3/2R
3/3		•
	3/3 3/3 3/2R 3/2R	3/3 RTLS: 3/3 TAL: 3/2R AOA: 3/2R ATO:

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: AV BAY 5, PCA 2 PART NUMBER: 55V76A132A1CR2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

OPEN RESISTOR OR DIODE REMOVES THE CAPABILITY OF THE DRIVER POWER LATCHING ON THE LOGIC POWER. 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. LOGIC PWR INPUTS AND LATCHING SIGNALS FAIL OFF, LOSS OF MANIFOLD LOGIC POWER AND DRIVER POWER WOULD RESULT FOR BOTH VERNIER AND PRIMARY. DURING ENTRY, THE LOSS OF THE MANIFOLD WOULD AFFECT ENTRY DTOS AND PTIS. 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).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87 FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 1950 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 HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 3/3 PRELAUNCH: TAL: 3/3 LIFTOFF: 3/3 3/3 ONORBIT: 3/3 ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1951 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
- CONTROLS 2)
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD 3/R5, RJDA
- 5) DIODE
- 6)
- 7)
- 8) 9)

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		,	

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: AV BAY 5, PCA 2 PART NUMBER: 55V76A132A1CR1

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

EFFECTS/RATIONALE:

OPEN RESISTOR OR DIODE REMOVES THE CAPABILITY OF THE DRIVER POWER LATCHING ON THE LOGIC POWER. 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. LOGIC PWR INPUTS AND LATCHING SIGNALS FAIL OFF, LOSS OF MANIFOLD LOGIC POWER AND DRIVER POWER WOULD RESULT FOR BOTH VERNIER AND PRIMARY. DURING ENTRY, THE LOSS OF THE MANIFOLD WOULD AFFECT ENTRY DTOS AND PTIS. 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).

1/15/87 DATE:

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

CONTROLS

- THRUSTER SUBSYSTEM
- 4) MANIFOLD 3/R5, RJDA
- DIODE

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
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] REDUNDANCY SCREENS: A [2]

LOCATION: AV BAY 6, PCA 3 PART NUMBER: 56V76A133A3CR8

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. ONORBIT, THE LOSS OF THE VERNIER JET MANIFOLD WOULD RESULT IN THE LOSS OF VERNIER JETS. AFFECTS JET ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1953 ABORT: 2/1R

ITEM: DIODE

FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- ELECTRICAL COMPONENTS 1)
- 2) CONTROLS
- 3) THRUSTER SUBSYSTEM
- MANIFOLD 3/R5, RJDA 4)
- 5) DIODE
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC	
PRELAUNCH:	3/3	RTLS:	2/1R	
LIFTOFF:	3/3	TAL:	3/2R	
ONORBIT:	3/2R	AOA:	3/2R	
DEORBIT:	3/2R	ATO:	3/2R	
LANDING/SAFING:	3/3		·	

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: AV BAY 6, PCA 3 PART NUMBER: 56V76Al33A3CR8

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

EFFECTS/RATIONALE:

LOSS OF 1 OF 2 POWER SOURCES TO MANIFOLD LOGIC CIRCUIT. 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. 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).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87 3/3 SUBSYSTEM: ARCS FLIGHT: ABORT: 3/3 MDAC ID: 1954

ITEM:

DIODE

FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- CONTROLS
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD 3/R5, RJDA
- 5) DIODE
- 6)
- 7)
- 8)
- 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 r 1

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.

DATE: HIGHEST CRITICALITY 1/15/87 HDW/FUNC

FLIGHT: SUBSYSTEM: ARCS 3/2R MDAC ID: 1955 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
- CONTROLS 2)
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD 3/R5, RJDA
- 5) DIODE
- 6)
- 7)
- 8) 9)

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		·

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: AV BAY 6, PCA 3 PART NUMBER: 56V76A133A1CR4

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

EFFECTS/RATIONALE:

OPEN RESISTOR OR DIODE REMOVES THE CAPABILITY OF THE DRIVER POWER LATCHING ON THE LOGIC POWER. 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. LOGIC PWR INPUTS AND LATCHING SIGNALS FAIL OFF, LOSS OF MANIFOLD LOGIC POWER AND DRIVER POWER WOULD RESULT FOR BOTH VERNIER AND PRIMARY. DURING ENTRY, THE LOSS OF THE MANIFOLD WOULD AFFECT ENTRY DTOS AND PTIS. 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).

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: 1956 MDAC ID: DIODE ITEM: 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 DIODE 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: TAL: 3/3 3/3 PRELAUNCH: 3/3 3/3 LIFTOFF: AOA: 3/3 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3

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.

DATE: HIGHEST CRITICALITY 1/15/87 HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R ABORT: MDAC ID: 1957 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
- 6)
- 7)
- 8)

9)

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		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: AV BAY 6, PCA 3 PART NUMBER: 56V76A133A1CR3

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

EFFECTS/RATIONALE: OPEN RESISTOR OR DIODE REMOVES THE CAPABILITY OF THE DRIVER POWER LATCHING ON THE LOGIC POWER. 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. LOGIC PWR INPUTS AND LATCHING SIGNALS FAIL OFF, LOSS OF MANIFOLD LOGIC POWER AND DRIVER POWER WOULD RESULT FOR BOTH VERNIER AND PRIMARY. DURING ENTRY, THE LOSS OF THE MANIFOLD WOULD AFFECT ENTRY DTOS AND PTIS. 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

E. .

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE:

FLIGHT: 3/2R SUBSYSTEM: ARCS ABORT: 2/1R MDAC ID: 1958

DIODE ITEM:

FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- CONTROLS
- 3) THRUSTER SUBSYSTEM
- MANIFOLD 3/R5, RJDA
- 5)

6)

7) 8)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [F] C [P]

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 PROPELLANTS 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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1959 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
- 6)
- 7)
- 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	•		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

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 EXPELL 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).

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 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 DIODE 5) 6) 7) 8) 9)

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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 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.

DATE: HIGHEST CRITICALITY HDW/FUNC 1/15/87

FLIGHT: SUBSYSTEM: ARCS 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
- MANIFOLD 4, RJDA 4)
- 5) DIODE
- 6)
- 7)
- 8)

9)

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		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: AV BAY 4, PCA 1 PART NUMBER: 54V76Al3lAlCR2

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).

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 1962 DIODE ITEM: 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 DIODE 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 TAL: 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: 3/3 ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

FLIGHT: SUBSYSTEM: ARCS 3/2R 3/1R ABORT: 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
- CONTROLS 2)
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD 4, RJDA
- DIODE 5)
- 6)
- 7)
- 8)

9)

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		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

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).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

FLIGHT: 3/2R SUBSYSTEM: ARCS 2/1R ABORT: MDAC ID: 1964

ITEM: DIODE

FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- CONTROLS
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD 4, RJDA
- 5) DIODE

6)

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	: 3/3		-

REDUNDANCY SCREENS: A [2] B [F] C [P]

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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1965 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
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	. TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		·

REDUNDANCY SCREENS: A [2] B [F] C [P]

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).

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE:

FLIGHT: 3/2R SUBSYSTEM: ARCS 2/1R ABORT: MDAC ID: 1966

DIODE ITEM:

FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

1) ELECTRICAL COMPONENTS

- CONTROLS
- THRUSTER SUBSYSTEM
- MANIFOLD 4, RJDA 4)
- DIODE
- 6)
- 7)
- 8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC	
PRELAUNCH:	3/3	RTLS:	2/1R	
LIFTOFF:	3/3	TAL:	3/2R	
ONORBIT:	3/2R	AOA:	3/2R	
DEORBIT:	3/2R	ATO:	3/2R	
LANDING/SAFING:	3/3			

REDUNDANCY SCREENS: A [2] B [F] C [P]

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).

1/15/87 HIGHEST CRITICALITY HDW/FUNC DATE:

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1967 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
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING	: 3/3		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

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).

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: FLIGHT: 3/3 ARCS SUBSYSTEM: 3/3 ABORT: MDAC ID: 1968 DIODE ITEM: FAILURE MODE: FAILS SHORT SUBSYS LEAD: D.J. PAUL LEAD ANALYST: R.A. O'DONNELL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS 2) CONTROLS 3) THRUSTER SUBSYSTEM 4) MANIFOLD 4, RJDA 5) DIODE 6) 7) 8) 91 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: 3/3 3/3 PRELAUNCH: 3/3 LIFTOFF: 3/3 TAL: 3/3 3/3 AOA: ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 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 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

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS 3/2R FLIGHT: MDAC ID: 3/1R 1969 ABORT:

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
- MANIFOLD 4, RJDA 4)
- 5) DIODE
- 6)
- 7) 8)

9)

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		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 1970 ABORT: 3/3

ITEM: DIODE 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
- 6)
- 7)
- 8) 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 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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1971 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
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

71.41.41.41.41.41.41.41.41.41.41.41.41.41			
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		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

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).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

FLIGHT: 3/2R ABORT: 2/1R SUBSYSTEM: ARCS MDAC ID: 1972

DIODE ITEM:

FAILURE MODE: FAILS SHORT

SUBSYS LEAD: D.J. PAUL LEAD ANALYST: R.A. O'DONNELL

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- 2) CONTROLS
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD 4, RJDA
- DIODE
- 6)
- 7) 8)
- 9)

CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC
3/3	RTLS:	2/1R
3/3	TAL:	3/2R
3/2R	AOA:	3/2R
3/2R	ATO:	3/2R
: 3/3		•
	3/3 3/3 3/2R 3/2R	3/3 RTLS: 3/3 TAL: 3/2R AOA: 3/2R ATO:

REDUNDANCY SCREENS: A [2] B [F] C [P]

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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R 2/1R MDAC ID: 1973 ABORT:

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
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
TANDING/SAFING	3/3		•

LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [2] B [F] C [P]

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).

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE:

FLIGHT: 3/2R ABORT: 2/1R SUBSYSTEM: ARCS MDAC ID: 1974

DIODE ITEM:

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
- 6)
- 7) 8)
- 9)

CRITICALITIES

FLIGHT PHASE H	IDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [F] C [P]

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).

DATE: HIGHEST CRITICALITY HDW/FUNC 1/15/87

FLIGHT: SUBSYSTEM: ARCS 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
- 6)
- 7)
- 8)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		· · · · · · ·

REDUNDANCY SCREENS: A [2] B [F] C [P]

AV BAY 6, PCA 3 LOCATION: 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).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87 FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 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 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC
3/3 RTLS: 3/3
3/3 TAL: 3/3
3/3 AOA: 3/3 FLIGHT PHASE
PRELAUNCH: PRELAUNCH: LIFTOFF: ONORBIT: DEORBIT: ATO: 3/3 3/3 LANDING/SAFING: 3/3

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

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76Al31A3CR2

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

EFFECTS/RATIONALE:

NO IMPACT ON CIRCUIT OPERATION. CURRENT LIMITING RESISTOR WILL PROTECT OTHER CIRCUIT.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 2/2 MDAC ID: 1977 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 L5, RJDA
- 5) DIODE
- 6)
- 7) 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC	
PRELAUNCH:	3/3	RTLS:	3/3	
LIFTOFF:	3/3	TAL:	3/3	
ONORBIT:	2/2	AOA:	3/3	
DEORBIT:	3/3	ATO:	3/3	
LANDING/SAFING:	3/3		•	

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87 3/3 ARCS FLIGHT: SUBSYSTEM: ABORT: 3/3 MDAC ID: 1978 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 DIODE 5) 6) 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: 3/3 PRELAUNCH: 3/3 LIFTOFF: 3/3 TAL: 3/3 3/3 ONORBIT: AOA: 3/3 ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B[] C[] AV BAY 5, PCA 2 LOCATION: 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.

DATE: 1/15/87 .HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 2/2

MDAC ID: 1979 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
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	2/2	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: 54V76Al3lA3CR3

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.

DATE: 1/15/87 . HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1980 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
- 6)
- 7)
- 8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1981 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 1, RJDA
- 5) DRIVER, HYBRID
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1982 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
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1983 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 1, RJDA
- 5) DRIVER, HYBRID
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC
3/3	RTLS:	2/1R
3/3	TAL:	3/2R
3/2R	AOA:	3/2R
3/2R	ATO:	3/2R
: 3/3		•
	3/3 3/3 3/2R 3/2R	3/3 RTLS: 3/3 TAL: 3/2R AOA: 3/2R ATO:

REDUNDANCY SCREENS: A [2] B [P] C [P]

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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1984 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

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING	: 3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

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
- 6)
- 7)
- 8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING	: 3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1986 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

6)

7) 8)

9)

CRITICALITIES

	C1/1111111111		
FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	: 3/3		

LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [2] · · B [P] C [P]

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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1987 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
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING	: 3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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).

HIGHEST CRITICALITY HDW/FUNC 1/15/87

3/2R FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: 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
- CONTROLS 2)
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD 3, RJDA
- 5) DRIVER, HYBRID

6)

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		·

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1989 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, RJDA
- 5) DRIVER, HYBRID

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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).

1/15/87 DATE:

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: MDAC ID:

ARCS

FLIGHT:

3/2R

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1990

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
- CONTROLS
- THRUSTER SUBSYSTEM 3)
- 4) MANIFOLD 3/R5, RJDA
- 5) DRIVER, HYBRID

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

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
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC
3/3	RTLS:	2/1R
3/3	TAL:	3/2R
3/2R	AOA:	3/2R
3/2R	ATO:	3/2R
3/3		•
	3/3 3/3 3/2R 3/2R	3/3 RTLS: 3/3 TAL: 3/2R AOA: 3/2R ATO:

REDUNDANCY SCREENS: A [2] B [P] C [P]

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).

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
- 6)
- 7) 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC	
PRELAUNCH:	3/3	RTLS:	3/3	
LIFTOFF:	3/3	TAL:	3/3	
ONORBIT:	3/2R	AOA:	3/3	
DEORBIT:	3/3	ATO:	3/3	
LANDING/SAFING:	3/3		·	

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1993 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

6)

7)

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HDW/FUNC	ABORT	HDW/FUNC
3/3	RTLS:	2/1R
3/3	TAL:	3/2R
3/2R	AOA:	3/2R
•	ATO:	3/2R
: 3/3		•
	3/3 3/3 3/2R 3/2R	3/3 RTLS: 3/3 TAL: 3/2R AOA: 3/2R ATO:

REDUNDANCY SCREENS: A [2] B [P] C [P]

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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1994 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	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		·

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 1995 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
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING	•		,

REDUNDANCY SCREENS: A [2] B [P] C [P]

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).

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 1996 MDAC ID: DRIVER, HYBRID ITEM:

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
- 6) 7)
- 8)
- 9)

CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC	
3/3	RTLS:	3/3	
3/3	TAL:	3/3	
3/3	AOA:	3/3	
3/3	ATO:	3/3	
3/3		•	
	3/3 3/3 3/3	3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO:	

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87 FLIGHT: 2/2 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 1997 ITEM: DRIVER, HYBRID FAILURE MODE: FAILS OPEN SUBSYS LEAD: D.J. PAUL LEAD ANALYST: R.A. O'DONNELL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS 2) CONTROLS THRUSTER SUBSYSTEM 3) MANIFOLD L5, RJDA 4) 5) DRIVER, HYBRID 6) 7) 8) 9) CRITICALITIES

	01/7 7 7 01		
FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	2/2	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		·

REDUNDANCY SCREENS: A [] B [] · C []

LOCATION: AV BAY 4, LCA 1

PART NUMBER: 54V76Al2lAR 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87 FLIGHT: 3/3 SUBSYSTEM: ARCS

ABORT: 3/3 MDAC ID: 1998

DRIVER, HYBRID ITEM: FAILURE MODE: FAILS HIGH

SUBSYS LEAD: D.J. PAUL LEAD ANALYST: R.A. O'DONNELL

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- 2) CONTROLS
- THRUSTER SUBSYSTEM 3)
- 4) MANIFOLD R5, RJDA
- 5) DRIVER, HYBRID

6)

7) 8)

9)

CRITICALITIES

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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, 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 COMSUMPTION. 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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 2/2 MDAC ID: 1999 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
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	2/2	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		•

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87 FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 2000 DRIVER, HYBRID ITEM: FAILURE MODE: FAILS HIGH SUBSYS LEAD: D.J. PAUL LEAD ANALYST: R.A. O'DONNELL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 3) THRUSTER SUBSYSTEM 4) MANIFOLD R5, RJDA 5) DRIVER, HYBRID 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: 3/3 FLIGHT PHASE RTLS: PRELAUNCH: TAL: 3/3 3/3 LIFTOFF: 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, 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 COMSUMPTION. 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

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87 FLIGHT: 2/2 SUBSYSTEM: ARCS 3/3 ABORT: 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 CONTROLS 2) 3) THRUSTER SUBSYSTEM 4) MANIFOLD R5, RJDA 5) DRIVER, HYBRID 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC
3/3 RTLS: 3/3
3/3 TAL: 3/3 FLIGHT PHASE
PRELAUNCH: PRELAUNCH: LIFTOFF: AOA: 2/2 3/3 ONORBIT: DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 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. and the second of the second o

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2002 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
- 6)
- 7)
- 8) 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, 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 COMSUMPTION. 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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 2/2 MDAC ID: 2003 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

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	2/2	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		·

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.

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE:

FLIGHT: 3/2R SUBSYSTEM: ARCS 2/1R ABORT: MDAC ID: 2004

FUSE, 1A ITEM: FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- CONTROLS
- 3) THRUSTER SUBSYSTEM
- MANIFOLD 1, RJDA
- 5) FUSE, 1A

6) 7)

8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

FLIGHT: 3/2R SUBSYSTEM: ARCS ABORT: 2/1R 2005 MDAC ID:

ITEM: FUSE, 1A FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- CONTROLS 2)
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD 1, RJDA
- 5) FUSE, 1A
- 6)
- 7)
- 8)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		·

REDUNDANCY SCREENS: A [2] B [P] C [P]

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).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

FLIGHT: 3/2R SUBSYSTEM: ARCS 3/3 ABORT: 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
- MANIFOLD 1/2/4, RJDA
- 5) FUSE, 2A
- 6)
- 7) 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/2R	ATO:	3/3
LANDING/SAFING:	3/3		-

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: PNL 014 '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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R ABORT: MDAC ID: 2007 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
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/2R	ATO:	3/3
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2008 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 1/L5, RJDA

5) FUSE, 1A

6)

7)

8) 9)

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		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: PNL 015 S3
PART NUMBER: 33V73A15F4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF 1 OF 2 LOGIC POWER SOURCES TO MANIFOLDS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. IF BOTH LOGIC POWER INPUTS AND LATCHING SIGNALS FAIL OFF, LOSS OF MANIFOLD LOGIC POWER AND DRIVER POWER WOULD RESULT. DURING ENTRY, THE LOSS OF THE MANIFOLD WOULD AFFECT ANY SCHEDULED ENTRY DTOS OR PTIS. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WOULD INHIBIT DUMPING SUFFICIENT TRAPPED PROPELLANT WEIGHT TO SATISFY LANDING CONSTRAINTS 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).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

FLIGHT: 3/2R SUBSYSTEM: ARCS 3/1R MDAC ID: 2009 ABORT:

FUSE, 1A ITEM: FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- 2) CONTROLS
- THRUSTER SUBSYSTEM 3)
- 4) MANIFOLD 1/L5, RJDA
- 5) FUSE, 1A
- 6)
- 7)
- 8)
- 9)

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		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: PNL 015 S3 PART NUMBER: 33V73A15F5

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

EFFECTS/RATIONALE:

LOSS OF 1 OF 2 LOGIC POWER SOURCES TO MANIFOLDS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. IF BOTH LOGIC POWER INPUTS AND LATCHING SIGNALS FAIL OFF, LOSS OF MANIFOLD LOGIC POWER AND DRIVER POWER WOULD RESULT. DURING ENTRY, THE LOSS OF THE MANIFOLD WOULD AFFECT ANY SCHEDULED ENTRY DTOS OR PTIS. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WOULD INHIBIT DUMPING SUFFICIENT TRAPPED PROPELLANT WEIGHT TO SATISFY LANDING CONSTRAINTS 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).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

FLIGHT: 3/2R SUBSYSTEM: ARCS 2/1R ABORT: MDAC ID: 2010

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
- MANIFOLD 2, RJDA
- 5) FUSE, 1A

6)

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		•

ANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [2] B [P] C [P]

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).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

FLIGHT: 3/2R SUBSYSTEM: ARCS 3/1R ABORT: MDAC ID: 2011

ITEM: FUSE, 1A FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- CONTROLS 2)
- 3) THRUSTER SUBSYSTEM
- MANIFOLD 2, RJDA 4)
- FUSE, 1A 5)
- 6)
- 7)
- 8)

9)

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		·

REDUNDANCY SCREENS: A [2] B [F] C [P]

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).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

FLIGHT: 3/2R SUBSYSTEM: ARCS 2/1R ABORT: 2012 MDAC ID:

FUSE, 1A ITEM: 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

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	: 3/3	* *	•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2013 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
- 6)
- 7)
- 8) 9)

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		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2014 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 2/3/4, RJDA

5) FUSE, 2A

6)

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/2R	ATO:	3/3
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: PNL 016 S4
PART NUMBER: 33V73A16F5

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

NOT ABLE 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).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

SUBSYSTEM: ARCS FLIGHT: 3/2R ABORT: 2/1R MDAC ID: 2015

ITEM: FUSE, 1A FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- CONTROLS 2)
- 3) THRUSTER SUBSYSTEM
- MANIFOLD 3, RJDA 4)
- 5) FUSE, 1A
- 6)
- 7)
- 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING	3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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).

1/15/87 DATE:

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:

ELECTRICAL COMPONENTS

2) CONTROLS

THRUSTER SUBSYSTEM 3)

4) MANIFOLD 3/5R, RJDA

5) FUSE, 1A

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:

PNL 016 S4

PART NUMBER: 33V73A16F3

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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2017 ABORT: 3/1R

FUSE, 1A ITEM: 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
- 6)
- 7)
- 8)
- 9)

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		·

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: PNL 016 S3 PART NUMBER: 33V73A16F2

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

EFFECTS/RATIONALE:

LOSS OF 1 OF 2 LOGIC POWER SOURCES TO MANIFOLDS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. IF BOTH LOGIC POWER INPUTS AND LATCHING SIGNALS FAIL OFF, LOSS OF MANIFOLD LOGIC POWER AND DRIVER POWER WOULD RESULT. DURING ENTRY, THE LOSS OF THE MANIFOLD WOULD AFFECT ANY SCHEDULED ENTRY DTOS OR PTIs. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WOULD INHIBIT DUMPING SUFFICIENT TRAPPED PROPELLANT WEIGHT TO SATISFY LANDING CONSTRAINTS 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).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

FLIGHT: 3/2R SUBSYSTEM: ARCS

3/1R ABORT: MDAC ID: 2018

FUSE, 1A ITEM: FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

1) ELECTRICAL COMPONENTS

CONTROLS 2)

THRUSTER SUBSYSTEM

4) MANIFOLD 3/R5, RJDA

5) FUSE, lA

6)

7)

8) 9)

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	in the second second	The same of the same of

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: PNL 016 S3 PART NUMBER: 33V73A16F1

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF 1 OF 2 LOGIC POWER SOURCES TO MANIFOLDS. OTHER MANIFOLD JETS ARE ALSO AVAILABLE FOR ATTITUDE CONTROL. IF BOTH LOGIC POWER INPUTS AND LATCHING SIGNALS FAIL OFF, LOSS OF MANIFOLD LOGIC POWER AND DRIVER POWER WOULD RESULT. DURING ENTRY, THE LOSS OF THE MANIFOLD WOULD AFFECT ANY SCHEDULED ENTRY DTOS OR PTIS. DURING RTLS, THE LOSS OF A MANIFOLD (SIX PRIMARY JETS) WOULD INHIBIT DUMPING SUFFICIENT TRAPPED PROPELLANT WEIGHT TO SATISFY LANDING CONSTRAINTS 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, PROP OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2019 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 4, RJDA
- 5) FUSE, 1A
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2020 ABORT: 3/1R

MDAC ID: 2020 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
- 6)
- 7)
- 8) 9)

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	•		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R ABORT: 2/1R MDAC ID: 2021

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
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	: 3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2022 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

6)

7)

8) 9)

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		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: PNL 014 \$5 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 ONORBIT OPERATIONS (RNDZ, PROX OPS). AFFECTS ABORT PROP DUMP LENGTH (TAL, AOA, ATO).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/27/87

SUBSYSTEM: ARCS FLIGHT: 3/2R ABORT: 2/1R MDAC ID: 2023

LATCHING RELAY, RJDA BUS A ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- ELECTRICAL COMPONENTS 1)
- 2) CONTROLS
- THRUSTER SUBSYSTEM 3)
- 4) MANIFOLD 1/2/4, RJDA
- 5) LATCHING RELAY, RJDA BUS A

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING	: 3/3		·

REDUNDANCY SCREENS: A [2] B [P] C [P]

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).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/27/87

FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2024

LATCHING RELAY, RJDA BUS A ITEM:

FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- 2) CONTROLS
- THRUSTER SUBSYSTEM
- 4) MANIFOLD 1/2/4, RJDA
- LATCHING RELAY, RJDA BUS A
- 6)
- 7) 8)
- 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 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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2025 ABORT: 2/1R

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

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
TANDING / CARING .	2/2		•

LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [2] B [P] C [P]

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).

1/27/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT: 3/3

MDAC ID: 2026

ABORT: 3/3

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
- CONTROLS 2)
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD 1/3, RJDA
- 5) LATCHING RELAY, RJDA BUS B

7)

8) 9)

CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC
3/3	RTLS:	3/3
3/3	TAL:	3/3
•	AOA:	3/3
3/3	ATO:	3/3
3/3		·
	3/3 3/3 3/3 3/3	3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO:

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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2027 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

6)

7)

8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING	: 3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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).

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2028 ABORT: 3/3

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
- 6) 7)
- 7)
- 8) 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 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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: 2029 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
- 6)
- 7)
- 8)
- 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 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.

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 2030 RESISTOR, 5.1K 1/4W ITEM: 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 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 3/3 PRELAUNCH: 3/3 TAL: 3/3 LIFTOFF: AOA: 3/3 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 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

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2031 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

6)

7)

8)

9)

CRITICALITIES

71/2 2 4 7·····			
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 4, PCA 1
PART NUMBER: 54V76Al3lAlR17

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

HIGHEST CRITICALITY HDW/FUNC 1/15/87 FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2032 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) 8) 9) CRITICALITIES ### HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: 3/3 3/3 TAL: 3/3 3/3 AOA: 3/3 FLIGHT PHASE PRELAUNCH: LIFTOFF: ONORBIT: 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76Al3lAlRl7 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

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

PREVENTS ERRONEOUS VOLTAGE READING TO MDM WITH INPUT CIRCUIT OFF.

1/15/87 HIGHEST CRITICALITY HDW/FUNC DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS

3/3 MDAC ID: 2033 ABORT:

ITEM: RESISTOR, 2.2K 1/2W

FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- ELECTRICAL COMPONENTS
- 2) CONTROLS
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD 1, RJDA
- RESISTOR, 2.2K 1/2W 5)

6)

7)

8)

9)

CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC
3/3	RTLS:	3/3
3/3	TAL:	3/3
3/3	AOA:	3/3
3/3	ATO:	3/3
3/3		•
	3/3 3/3 3/3 3/3	3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO:

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.

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2034 RESISTOR, 2.2K 1/2W ITEM: 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 6) 7)

CRITICALITIE	ES
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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 4, PCA 1 PART NUMBER: 54V76Al3lAlR18

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

8) 9)

EFFECTS/RATIONALE:

LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2035 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
- 6)
- 7)
- 8)
- 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:

LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 2036 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) 8) 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: ATO: 3/3 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.

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

6)

7)

8)

9)

CRITICALITIES

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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: 55V76A132A1R11

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2038 RESISTOR, 2.2K 1/2W ITEM: 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 6) 7) 8) 9) CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC
3/3	RTLS:	3/3
3/3	TAL:	3/3
3/3	AOA:	3/3
3/3	ATO:	3/3
3: 3/3		
	3/3 3/3 3/3 3/3	3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO:

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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2039 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 1/2/4, RJDA
- 5) RESISTOR, 5.1K 1/4W
- 6)
- 7)
- 8)
- 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 4, PCA 1 PART NUMBER: 54V76Al3lAlR7

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

HIGHEST CRITICALITY HDW/FUNC 1/27/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 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 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: TAL: AOA: 3/3 PRELAUNCH: 3/3 3/3 LIFTOFF: 3/3 3/3 3/3 ONORBIT: ATO: 3/3 3/3 DEORBIT: LANDING/SAFING: 3/3 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

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 2041 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 1/3, RJDA
- 5) RESISTOR, 5.1K 1/4W
- 6)
- 7)
- 8) 9)

CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC
3/3	RTLS:	3/3
3/3	TAL:	3/3
3/3	AOA:	3/3
3/3	ATO:	3/3
3/3		
	3/3 3/3 3/3	3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO:

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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2042 ABORT: 3/3

ITEM: F

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

6)

7)

8) 9)

CRITICALITIES

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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: 56V76A132A1R15

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

DATE: HIGHEST CRITICALITY HDW/FUNC 1/15/87

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2043 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
- MANIFOLD 1/L5, RJDA 4)
- RESISTOR, 1.2K 2W 5)
- 6)
- 7)
- 8)
- 9)

#### CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC
3/3	RTLS:	3/3
3/3	TAL:	3/3
3/3	AOA:	3/3
3/3	ATO:	3/3
: 3/3		•
	3/3 3/3 3/3 3/3	3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO:

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

FLIGHT: 3/2R SUBSYSTEM: ARCS ABORT: 3/1R MDAC ID: 2044

RESISTOR, 1.2K 2W ITEM:

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

6) 7)

8)

9)

#### 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	•		•

REDUNDANCY SCREENS: A [ 2 ] B [ F ] C [ P ]

LOCATION: AV BAY 4, PCA 1 PART NUMBER: 54V76A131A1R47

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

## EFFECTS/RATIONALE:

OPEN RESISTOR OR DIODE REMOVES THE CAPABILITY OF THE DRIVER POWER LATCHING ON THE LOGIC POWER. 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. LOGIC PWR INPUTS AND LATCHING SIGNALS FAIL OFF, LOSS OF MANIFOLD LOGIC POWER AND DRIVER POWER WOULD RESULT FOR BOTH VERNIER AND PRIMARY. DURING ENTRY, THE LOSS OF THE MANIFOLD WOULD AFFECT ENTRY DTOS AND PTIS. 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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 2045 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
- 6)
- 7)
- 8)
- 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 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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2046 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 1/L5, RJDA
- 5) RESISTOR, 1.2K 2W

6)

7)

8) 9)

## 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		•

REDUNDANCY SCREENS: A [ 2 ] B [ F ] C [ P ]

LOCATION: AV BAY 4, PCA 1
PART NUMBER: 54V76A131A1R2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

## EFFECTS/RATIONALE:

OPEN RESISTOR OR DIODE REMOVES THE CAPABILITY OF THE DRIVER POWER LATCHING ON THE LOGIC POWER. 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. IF BOTH LOGIC PWR INPUTS AND LATCHING SIGNALS FAIL OFF, LOSS OF MANIFOLD LOGIC POWER AND DRIVER POWER WOULD RESULT FOR BOTH VERNIER AND PRIMARY. DURING ENTRY, THE LOSS OF THE MANIFOLD WOULD AFFECT ENTRY DTOS AND PTIS. 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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2047 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/L5, RJDA
- 5) RESISTOR, 1.8K 1/4W
- 6)
- 7)
- 8)
- 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 4, PCA 1
PART NUMBER: 54V76Al3lAlR19

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

1/15/87 HIGHEST CRITICALITY HDW/FUNC FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 2048 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
- CONTROLS
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD 1/L5, RJDA
- 5) RESISTOR, 1.8K 1/4W
- 6)
- 7) 8)
- 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 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.

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS

3/3 ABORT: MDAC ID: 2049

RESISTOR, 2.2K 1/2W

FAILURE MODE: FAILS SHORT

SUBSYS LEAD: D.J. PAUL LEAD ANALYST: R.A. O'DONNELL

#### BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- 2) CONTROLS
- THRUSTER SUBSYSTEM 3)
- MANIFOLD 1/L5, RJDA
- RESISTOR, 2.2K 1/2W 5)
- 6)
- 7)
- 8)
- 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		,

C [ REDUNDANCY SCREENS: A [ ] B [ ]

AV BAY 4, PCA 1 LOCATION: PART NUMBER: 54V76A131A1R20

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2050 RESISTOR, 2.2K 1/2W ITEM: 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 6) 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: TAL: 3/3 PRELAUNCH: 3/3 3/3 3/3 3/3 LIFTOFF: AOA: ONORBIT: 3/3 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 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.

HIGHEST CRITICALITY HDW/FUNC 1/15/87

SUBSYSTEM: ARCS FLIGHT: 3/3 3/3 ABORT: MDAC ID: 2051

RESISTOR, 1.8K 1/4W ITEM:

FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

## BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- CONTROLS 2)
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD 1/L5, RJDA
- RESISTOR, 1.8K 1/4W 5)
- 6)
- 7)
- 8)
- 9)

#### CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC	
3/3	RTLS:	3/3	
3/3	TAL:	3/3	
3/3	AOA:	3/3	
3/3	ATO:	3/3	
3/3			
	3/3 3/3 3/3 3/3	3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO:	

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

LOCATION: AV BAY 4, PCA 1 PART NUMBER: 54V76Al3lAlR21

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87 FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 2052 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 6) 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 LIFTOFF: 3/3 TAL: 3/3 3/3 3/3 , AOA: 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2053 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
- 6)
- 7)
- 8)
- 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 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.

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2054 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 CONTROLS 2) 3) THRUSTER SUBSYSTEM 4) MANIFOLD 1/L5, RJDA RESISTOR, 2.2K 1/2W 5) 6) 7) 8) 9) CRITICALITIES HDW/FUNC HDW/FUNC ABORT FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 3/3 TAL: LIFTOFF: 3/3 AOA: 3/3 3/3 ONORBIT: 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [ ] B [ ] C [ ] AV BAY 4, PCA 1 LOCATION: PART NUMBER: 54V76A131A1R22 CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD EFFECTS/RATIONALE: LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: 3/3 3/3 SUBSYSTEM: ARCS FLIGHT: ABORT: 3/3 MDAC ID: 2055

RESISTOR, 1.2K 2W ITEM:

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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HDW/FUNC	ABORT	HDW/FUNC	
3/3	RTLS:	3/3	
3/3	TAL:	3/3	
3/3	AOA:	3/3	
3/3	ATO:	3/3	
: 3/3			
	HDW/FUNC 3/3 3/3 3/3 3/3	HDW/FUNC ABORT 3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO:	

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

FLIGHT: 3/2R SUBSYSTEM: ARCS ABORT: 3/1R MDAC ID: 2056

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

7)

8)

9)

#### 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		•

REDUNDANCY SCREENS: A [ 2 ] B [ F ] C [ P ]

LOCATION: AV BAY 5, PCA 2 PART NUMBER: 55V76A132A1R2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

## EFFECTS/RATIONALE:

OPEN RESISTOR OR DIODE REMOVES THE CAPABILITY OF THE DRIVER POWER LATCHING ON THE LOGIC POWER. 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. LOGIC PWR INPUTS AND LATCHING SIGNALS FAIL OFF, LOSS OF MANIFOLD LOGIC POWER AND DRIVER POWER WOULD RESULT FOR BOTH VERNIER AND PRIMARY. DURING ENTRY, THE LOSS OF THE MANIFOLD WOULD AFFECT ENTRY DTOS AND PTIS. 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).

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: 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 MANIFOLD 1/L5, RJDA 4) 5) RESISTOR, 1.8K 1/4W 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: 3/3 3/3 TAL: 3/3 FLIGHT PHASE PRELAUNCH: LIFTOFF: 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: 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

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HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: 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
- 6)
- 7)
- 8) 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: 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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2059 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
- 6)
- 7)
- 8)
- 9)

#### CRITICALITIES

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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: 55V76A132A1R20

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87 FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2060 RESISTOR, 2.2K 1/2W ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 2) 3) THRUSTER SUBSYSTEM 4) MANIFOLD 1/L5, RJDA 5) RESISTOR, 2.2K 1/2W 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC 3/3 3/3 RTLS: PRELAUNCH: 3/3 TAL: 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: 3/3 3/3 ATO: DEORBIT:

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

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1R20

LANDING/SAFING: 3/3

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

EFFECTS/RATIONALE:

LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: 2061 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
- 6)
- 7)
- 8)
- 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 6, PCA 3
PART NUMBER: 56V76Al33AlR1

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

EFFECTS/RATIONALE:

LOSS OF CURRENT LIMITING TO RPC. EXPECT NO PROBLEM WITH RPC OPERATION.

## THE TAX LAND CONTRACTOR OF THE PROPERTY OF THE INDEPENDENT ORBITER ASSESSMENT ORBITER SUBSYSTEM ANALYSIS WORKSHEET

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE:

FLIGHT: 3/2R SUBSYSTEM: ARCS 3/1R ABORT: MDAC ID: 2062

RESISTOR, 1.2K 2W ITEM:

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

6)

7) 8)

9)

#### CRITICALITIES

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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		•	

REDUNDANCY SCREENS: A [ 2 ] B [ F ] C [ P ]

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).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2063

RESISTOR, 1.8K 1/4W ITEM:

FAILURE MODE: FAILS SHORT

SUBSYS LEAD: D.J. PAUL LEAD ANALYST: R.A. O'DONNELL

#### BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- 2) CONTROLS
- 3) THRUSTER SUBSYSTEM
- MANIFOLD 2, RJDA 4)
- RESISTOR, 1.8K 1/4W 5)

6)

7)

8)

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 6, PCA 3 PART NUMBER: 56V76A133A1R36

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 2064 RESISTOR, 1.8K 1/4W ITEM: 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) CRITICALITIES CRITICALITIES

HDW/FUNC ABORT HDW/FUNC

3/3 RTLS: 3/3

3/3 TAL: 3/3

3/3 AOA: 3/3 FLIGHT PHASE
PRELAUNCH: 3/3 3/3 3/3 3/3 PRELAUNCH: LIFTOFF: ONORBIT: 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [ ] B [ ] C [ ] LOCATION: AV BAY 6, PCA 3 PART NUMBER: 56V76A133A1R36 CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD EFFECTS/RATIONALE:

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

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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2065 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
- 6)
- 7)
- 8)
- 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: 3/3		•	

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

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76Al33AlR37

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

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EFFECTS/RATIONALE:

OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 2066 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

6)

7) 8)

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 6, PCA 3
PART NUMBER: 56V76A133A1R37

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

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

6)

7)

8) 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 6, PCA 3
PART NUMBER: 56V76Al33AlR38

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 2068 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) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: 3/3 TAL: 3/3 3/3 PRELAUNCH: 3/3 3/3 LIFTOFF: 3/3 3/3 AOA: ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [ ] B [ ] C [ ] LOCATION: AV BAY 6, PCA 3 PART NUMBER: 56V76A133A1R38 CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

EFFECTS/RATIONALE:

SHOCK, OVERLOAD

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.

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DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: 2069 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
- 6)
- 7)
- 8)
- 9)

#### CRITICALITIES

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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: 56V76Al33AlR39

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

1/15/87 HIGHEST CRITICALITY HDW/FUNC DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2070 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

6)

7) 8)

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 6, PCA 3 PART NUMBER: 56V76A133A1R39

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2071 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, RJDA
- 5) RESISTOR, 5.1K 1/4W
- 6)
- 7)8)
- 9)

CRITICALITIES

	41/4 + 4 41-14		
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 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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: 2072 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

6)

7)

8) 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 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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2073 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
- 6)
- 7)
- 8)
- 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 4, PCA 1
PART NUMBER: 54V76Al3lAlR3

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

EFFECTS/RATIONALE:

LOSS OF CURRENT LIMITING TO RPC. EXPECT NO PROBLEM WITH RPC OPERATION.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2074 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 2, RJDA
- 5) RESISTOR, 1.2K 2W

6)

7)

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9)

### 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	•		•

REDUNDANCY SCREENS: A [ 2 ] B [ F ] C [ P ]

LOCATION: AV BAY 4, PCA 1 PART NUMBER: 54V76Al3lAlR3

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).

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2075

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
- MANIFOLD 2, RJDA 4)
- RESISTOR, 1.8K 1/4W 5)
- 6)
- 7)
- 8)
- 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 4, PCA 1 PART NUMBER: 54V76A131A1R27

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: 2076 MDAC ID: RESISTOR, 1.8K 1/4W ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 3) THRUSTER SUBSYSTEM 4) MANIFOLD 2, RJDA 5) RESISTOR, 1.8K 1/4W 6) 7) 8) 9) CRITICALITIES HDW/FUNC HDW/FUNC ABORT FLIGHT PHASE 3/3 PRELAUNCH: RTLS: 3/3 3/3 TAL: 3/3 LIFTOFF: 3/3 ONORBIT: 3/3 AOA: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 B[] C[] REDUNDANCY SCREENS: A [ ] AV BAY 4, PCA 1 LOCATION: PART NUMBER: 54V76A131A1R27 CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL SHOCK, OVERLOAD EFFECTS/RATIONALE: THE MDM WILL SEE AN ERRONEOUS "ON" SIGNAL WHEN RPC IS OFF. BLEED RESISTOR NORMALLY SHUNTS LEAKAGE CURRENT TO GROUND AND PREVENTS ERRONEOUS VOLTAGE READING TO MDM WITH INPUT CIRCUIT OFF.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2077 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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## 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 4, PCA 1 PART NUMBER: 54V76Al3lalR28

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 2078 RESISTOR, 2.2K 1/2W ITEM: 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

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 4, PCA 1
PART NUMBER: 54V76Al3lAlR28

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

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6) 7) 8) 9)

EFFECTS/RATIONALE:
LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

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

HDW/FUNC	ABORT	HDW/FUNC	
3/3	RTLS:	3/3	
3/3	TAL:	3/3	
3/3	AOA:	3/3	
3/3	ATO:	3/3	
3/3		•	
	3/3 3/3 3/3 3/3	3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO:	

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

LOCATION: AV BAY 4, PCA 1 PART NUMBER: 54V76Al3lAlR29

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 2080 RESISTOR, 1.8K 1/4W ITEM: 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) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: TAL: AOA: 3/3 PRELAUNCH: 3/3 3/3 LIFTOFF: 3/3 3/3 ONORBIT: 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 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.

1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: ABORT: 3/3 2081

RESISTOR, 2.2K 1/2W ITEM:

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)

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 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: 2082 MDAC ID:

RESISTOR, 2.2K 1/2W ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

### BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- CONTROLS 2)
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD 2, RJDA
- 5) RESISTOR, 2.2K 1/2W
- 6)
- 7)
- 8) 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 4, PCA 1 PART NUMBER: 54V76A131A1R30

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

HIGHEST CRITICALITY HDW/FUNC 1/15/87 SUBSYSTEM: ARCS 3/3 FLIGHT: 3/3 MDAC ID: 2083 ABORT:

RESISTOR, 1.8K 1/4W ITEM:

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
- MANIFOLD 2, RJDA 4)
- RESISTOR, 1.8K 1/4W 5)
- 6)
- 7)
- 8)
- 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 4, PCA 1 PART NUMBER: 54V76Al3lAlR31

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: 2084 MDAC ID: RESISTOR, 1.8K 1/4W ITEM: 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)

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 4, PCA 1
PART NUMBER: 54V76A131A1R31

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

8) 9)

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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2085 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

6)

7)

8) 9)

CRITICALITIES

/FUNC	ABORT	HDW/FUNC
/3	RTLS:	3/3
/3	TAL:	3/3
/3	AOA:	3/3
/3	ATO:	3/3
/3		•
	//FUNC /3 /3 /3 /3 /3	/3 RTLS: /3 TAL: /3 AOA: /3 ATO:

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

LOCATION: AV BAY 4, PCA 1 PART NUMBER: 54V76Al3lAlR32

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 2086 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
- 6)
- 7)
- 8)
- 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 4, PCA 1 PART NUMBER: 54V76Al3lAlR32

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2087 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
- 6)
- 7)
- 8)
- 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 6, PCA 3 PART NUMBER: 56V76Al33AlR16

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

HIGHEST CRITICALITY HDW/FUNC 1/27/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 2088 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
- CONTROLS 2)
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD 2/3/4, RJDA
- 5) RESISTOR, 5.1K 1/4W

6)

7) 8)

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 6, PCA 3
PART NUMBER: 56V76Al33AlR16

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

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
- 6)
- 7)
- 8)
- 9)

#### CRITICALITIES

VIII. 2 VIII.			
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, 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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC
SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 2090 ABORT: 3/3

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

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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

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	,		•

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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2091 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

6)

7)

8) 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 6, PCA 3 PART NUMBER: 56V76Al33AlR46

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 2092 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, RJDA
- 5) RESISTOR, 1.8K 1/4W
- 6)
- 7)
- 8)
- 9j

#### 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: 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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 2093 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, RJDA
- 5) RESISTOR, 2.2K 1/2W
- 6)
- 7)
- 8)
- 9)

#### CRITICALITIES

	V*/* V*/*			
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: 56V76Al33AlR47

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

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
- 6)
- 7)
- 8) 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 6, PCA 3
PART NUMBER: 56V76A133A1R47

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 2095 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
- 6)
- 7)
- 8)
- 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: 55V76A132A1R1

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

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EFFECTS/RATIONALE:

LOSS OF CURRENT LIMITING TO RPC. EXPECT NO PROBLEM WITH RPC OPERATION.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2096 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 3/R5, RJDA
- 5) RESISTOR, 1.2K 2W

6)

7)

g)

#### 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		·	

REDUNDANCY SCREENS: A [ 2 ] B [ F ] C [ P ] ...

LOCATION: AV BAY 5, PCA 2 PART NUMBER: 55V76Al32AlR1

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

### EFFECTS/RATIONALE:

OPEN RESISTOR OR DIODE REMOVES THE CAPABILITY OF THE DRIVER POWER LATCHING ON THE LOGIC POWER. 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. IF BOTH LOGIC PWR INPUTS AND LATCHING SIGNALS FAIL OFF, LOSS OF MANIFOLD LOGIC POWER AND DRIVER POWER WOULD RESULT FOR BOTH VERNIER AND PRIMARY. DURING ENTRY, THE LOSS OF THE MANIFOLD WOULD AFFECT ENTRY DTOS AND PTIS. 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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC 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
- 6)
- 7)
- 8)
- 9)

#### CRITICALITIES

V-1			
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: 55V76Al32AlR27

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS 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
- 6)
- 7)
- 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: 55V76Al32AlR27

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

3/3 SUBSYSTEM: ARCS FLIGHT: 3/3 ABORT: MDAC ID: 2099

RESISTOR, 2.2K 1/2W ITEM:

FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

#### BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- 2) CONTROLS
- THRUSTER SUBSYSTEM 3)
- MANIFOLD 3/R5, RJDA 4)
- 5) RESISTOR, 2.2K 1/2W
- 6)
- 7)
- 8)
- 9)

#### CRITICALITIES

~		
HDW/FUNC	ABORT	HDW/FUNC
3/3	RTLS:	3/3
3/3	TAL:	3/3
3/3	AOA:	3/3
3/3	ATO:	3/3
3/3		
	3/3 3/3 3/3 3/3	3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO:

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.

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 2100 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 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: TAL: AOA: 3/3 3/3 PRELAUNCH: 3/3 LIFTOFF: 3/3 3/3 ONORBIT: 3/3 ATO: 3/3 3/3 DEORBIT: LANDING/SAFING: 3/3 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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: 2101 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
- 6)
- 7)
- 8) 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: 55V76A132A1R7

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2102 RESISTOR, 1.8K 1/4W ITEM: 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 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 3/3 PRELAUNCH: 3/3 TAL: 3/3 LIFTOFF: AOA: 3/3 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3

LOCATION: AV BAY 5, PCA 2
PART NUMBER: 55V76A132A1R7

REDUNDANCY SCREENS: A [ ]

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.

B[] C[]

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

SUBSYSTEM: ARCS FLIGHT: 3/3 ABORT: 3/3 MDAC ID: 2103

RESISTOR, 2.2K 1/2W ITEM:

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
- MANIFOLD 3/R5, RJDA 4)
- 5) RESISTOR, 2.2K 1/2W
- 6)
- 7)
- 8)
- 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: 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

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2104 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

6)

7) 8)

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: 55V76Al32AlR8

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 2105

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

6)

7)

8)

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 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

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R ABORT: 3/1R MDAC ID: 2106

RESISTOR, 1.2K 2W ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

### BREAKDOWN HIERARCHY:

- ELECTRICAL COMPONENTS
- CONTROLS
- THRUSTER SUBSYSTEM
- 4) MANIFOLD 3/R5, RJDA
- RESISTOR, 1.2K 2W

6)

7) 8)

9)

### 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		·

REDUNDANCY SCREENS: A [ 2 ] . B [ F ] C [ P ]

LOCATION: AV BAY 6, PCA 3 PART NUMBER: 56V76A133A1R3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

#### EFFECTS/RATIONALE:

OPEN RESISTOR OR DIODE REMOVES THE CAPABILITY OF THE DRIVER POWER LATCHING ON THE LOGIC POWER. 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. LOGIC PWR INPUTS AND LATCHING SIGNALS FAIL OFF, LOSS OF MANIFOLD LOGIC POWER AND DRIVER POWER WOULD RESULT FOR BOTH VERNIER AND PRIMARY. DURING ENTRY, THE LOSS OF THE MANIFOLD WOULD AFFECT ENTRY DTOS AND PTIS. 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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS 3/3 FLIGHT: MDAC ID: 2107 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 RESISTOR, 1.8K 1/4W 5) 6) 7)

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: 56V76A133A1R50

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

8) 9)

EFFECTS/RATIONALE:

LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

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

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HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3

MDAC ID: 2108

RESISTOR, 1.8K 1/4W ITEM:

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
- RESISTOR, 1.8K 1/4W

6)

7) 8)

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 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.

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
- 6)
- 7)
- 8)
- 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		ŕ

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

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76Al33AlR51

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87 FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 2110 RESISTOR, 2.2K 1/2W ITEM: 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 6) 7) 8) 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 6, PCA 3 PART NUMBER: 56V76A133A1R51

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

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
- 6)
- 7)
- 8)
- 9j

### 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: 56V76Al33AlR48

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2112 ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W FAILURE MODE: FAILS OPEN

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- 2) CONTROLS
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD 3/R5, RJDA
- 5) RESISTOR, 1.8K 1/4W
- 6)
- 7)
- 8)
- 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 6, PCA 3
PART NUMBER: 56V76Al33AlR48

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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 2113 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)

9)

#### CRITICALITIES

71/2 1 4 71.22 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2			
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: 56V76Al33AlR49

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: FLIGHT: 3/3 ABORT: 3/3 SUBSYSTEM: ARCS MDAC ID: 2114 RESISTOR, 2.2K 1/2W ITEM: 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
- 6)
- 7) 8)
- 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	•		•

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87 SUBSYSTEM: ARCS 3/3 FLIGHT: MDAC ID: 2115 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 CONTROLS 2) 3) THRUSTER SUBSYSTEM 4) MANIFOLD 4, RJDA RESISTOR, 1.2K 2W 5) 6) 7)

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 4, PCA 1 PART NUMBER: 54V76A131A1R1

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

EFFECTS/RATIONALE:

8) 9)

LOSS OF CURRENT LIMITING TO RPC. EXPECT NO PROBLEM WITH RPC OPERATION.

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE:

FLIGHT: SUBSYSTEM: ARCS 3/2R ABORT: 3/1R MDAC ID: 2116

RESISTOR, 1.2K 2W ITEM:

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
- RESISTOR, 1.2K 2W 5)

6) 7)

8)

9)

#### 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:			
	· -, -		

REDUNDANCY SCREENS: A [ 2 ] B [ F ] C [ P ]

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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2117 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
- 6)
- 7)
- 8) 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 4, PCA 1 PART NUMBER: 54V76Al3lAlRl4

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

EFFECTS/RATIONALE:

LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

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
- 6)
- 7)
- 8) 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 4, PCA 1 PART NUMBER: 54V76Al3lAlR14

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.

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
- 6)
- 7)
- 8)
- 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	G: 3/3		•

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

LOCATION: AV BAY 4, PCA 1 PART NUMBER: 54V76Al3lAlR15

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 2120 RESISTOR, 2.2K 1/2W ITEM:

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
- RESISTOR, 2.2K 1/2W
- 6)
- 7) 8)
- 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 4, PCA 1 PART NUMBER: 54V76A131A1R15

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2121 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
- 6)
- 7)
- 8)
- 9)

#### CRITICALITIES

	O1/4 1 1 O1/		
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 4, PCA 1 PART NUMBER: 54V76Al3lAlRll

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

EFFECTS/RATIONALE:

LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87 FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 2122 RESISTOR, 1.8K 1/4W ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 3) THRUSTER SUBSYSTEM 4) MANIFOLD 4, RJDA RESISTOR, 1.8K 1/4W 6) 7) 8) 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 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.

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
- 6)
- 7)8)
- 9)

CRITICALITIES

V-12			
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 4, PCA 1
PART NUMBER: 54V76Al31AlR12

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2124 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 6) 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 3/3 RTLS: PRELAUNCH: LIFTOFF: 3/3 TAL: 3/3 3/3 AOA: 3/3 ONORBIT: 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87 3/3 FLIGHT: SUBSYSTEM: ARCS

3/3 ABORT: MDAC ID: 2125

RESISTOR, 5.1K 1/4W ITEM:

FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

## BREAKDOWN HIERARCHY:

- ELECTRICAL COMPONENTS
- 2) CONTROLS
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD 4, RJDA
- 5) RESISTOR, 5.1K 1/4W

6)

7)

8)

9)

#### CRITICALITIES

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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, LCA 3 PART NUMBER: 56V76A123R141

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2126 RESISTOR, 5.1K 1/4W ITEM: 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 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 TAL: 3/3 3/3 LIFTOFF: AOA: 3/3 3/3 ONORBIT:

ATO:

3/3

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

3/3

LOCATION: AV BAY 6, LCA 3
PART NUMBER: 56V76A123R141

LANDING/SAFING: 3/3

DEORBIT:

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2127 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 4, RJDA
- 5) RESISTOR, 1.2K 2W

6)

7)8)

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 6, PCA 3
PART NUMBER: 56V76Al33AlR2

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF CURRENT LIMITING TO RPC. EXPECT NO PROBLEM WITH RPC OPERATION.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

FLIGHT: SUBSYSTEM: ARCS 3/2R 3/1R ABORT: MDAC ID: 2128

RESISTOR, 1.2K 2W ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

### BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- CONTROLS
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD 4, RJDA 5) RESISTOR, 1.2K 2W

6) 7)

8)

9)

#### 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:	•		•

REDUNDANCY SCREENS: A [ 2 ] B [ F ] C [ P ]

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 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).

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 3/3 MDAC ID: 2129 ABORT: 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 6) 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: AV BAY 6, PCA 3 PART NUMBER: 56V76A133A1R44

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

9)

EFFECTS/RATIONALE:

LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 2130 MDAC ID: RESISTOR, 1.8K 1/4W ITEM: 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 6) 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 3/3 PRELAUNCH: RTLS: 3/3 TAL: 3/3 LIFTOFF: AOA: 3/3 ONORBIT: 3/3 ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [ ] B [ ] C [ ] LOCATION: AV BAY 6, PCA 3 PART NUMBER: 56V76Al33AlR44 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

Beere (as in the first of the section)

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2131 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
- 6)
- 7)
- 8)
- 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 6, PCA 3 PART NUMBER: 56V76Al33AlR45

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2132 RESISTOR, 2.2K 1/2W ITEM: 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 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 3/3 PRELAUNCH: LIFTOFF: 3/3 TAL: 3/3 3/3 AOA: 3/3 ONORBIT: 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

LOCATION: AV BAY 6, PCA 3
PART NUMBER: 56V76Al33AlR45

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS 3/3 FLIGHT: ABORT: 3/3 MDAC ID: 2133

RESISTOR, 1.8K 1/4W ITEM:

FAILURE MODE: FAILS SHORT

LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL

### BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- CONTROLS 2)
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD 4, RJDA
- 5) RESISTOR, 1.8K 1/4W

6)

7)

8) 9)

#### CRITICALITIES

	O1/2 2 2 01122 2 2 2 2 2			
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: 56V76A133A1R40

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

HIGHEST CRITICALITY HDW/FUNC 1/15/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2134 RESISTOR, 1.8K 1/4W ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: R.A. O'DONNELL SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS

4) MANIFOLD 4, RJDA 5) RESISTOR, 1.8K 1/4W 6)

3) THRUSTER SUBSYSTEM

7) 8) 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 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2135 ABORT: 3/3

RESISTOR, 2.2K 1/2W ITEM:

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
- MANIFOLD 4, RJDA 4)
- 5) RESISTOR, 2.2K 1/2W

6)

7)

8) 9)

### CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC	
3/3	RTLS:	3/3	
3/3	TAL:	3/3	
3/3	AOA:	3/3	
3/3	ATO:	3/3	
: 3/3		•	
	3/3 3/3 3/3 3/3	3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO:	

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

LOCATION: AV BAY 6, PCA 3 PART NUMBER: 56V76Al33AlR41

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2136 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
- 6)
- 7)
- 8) 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 6, PCA 3 PART NUMBER: 56V76A133A1R41

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

EFFECTS/RATIONALE:

LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

HIGHEST CRITICALITY HDW/FUNC 1/15/87 3/3 SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2137 ABORT:

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
- CONTROLS 2)
- THRUSTER SUBSYSTEM 3)
- 4) MANIFOLD 4, RJDA
- 5) RESISTOR, 1.8K 1/4W

6)

7) 8)

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 6, PCA 3
PART NUMBER: 56V76Al33AlR42

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2138 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

6)

7) 8)

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 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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2139 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

6)

7)

8) 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 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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2140 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
- 6)
- 7)
- 8) 9)

CRITICALITIES

	V1/2 # # V1-2-1-2-7		
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: 56V76Al33AlR43

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2141 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 L5, RJDA
- 5) RESISTOR, 1.8K 1/4W
- 6)
- 7)
- 8) 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 4, PCA 1 PART NUMBER: 54V76A131A1R43

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87 3/3 FLIGHT: SUBSYSTEM: ARCS ABORT: 3/3 2142 MDAC ID: RESISTOR, 1.8K 1/4W ITEM: FAILURE MODE: FAILS OPEN SUBSYS LEAD: D.J. PAUL LEAD ANALYST: R.A. O'DONNELL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS 2) CONTROLS 3) THRUSTER SUBSYSTEM 4) MANIFOLD L5, RJDA RESISTOR, 1.8K 1/4W 6) 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 3/3 PRELAUNCH: RTLS: 3/3 3/3 LIFTOFF: TAL: ONORBIT: 3/3 AOA: 3/3 ATO: DEORBIT: 3/3 3/3 3/3 LANDING/SAFING: REDUNDANCY SCREENS: A [ ] B [ ] C [ ]

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LOCATION: AV BAY 4, PCA 1 PART NUMBER: 54V76Al3lAlR43

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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2143 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
- 6)
- 7)
- 8) 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 4, PCA 1 PART NUMBER: 54V76Al3lAlR42

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS 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
- 6)
- 7)
- 8)
- 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 4, PCA 1 PART NUMBER: 54V76Al3lAlR42

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF PWR ON INDICATION TO OA INSTRUMENTATION.

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
- 6)
- 7)
- 8)
- 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: 55V76A132A1R47

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOSS OF POWER ON INDICATION TO OA INSTRUMENTATION.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2146 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

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE H	IDW/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: 55V76Al32AlR47

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.

DATE: 1/15/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 2147 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 R5, RJDA
- 5) RESISTOR, 2.2K 1/2W

6)

7)

8) 9)

CRITICALITIES

V1.1.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2			
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: 55V76A132A1R48

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

• • • • • • • • •

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

OA MDM SHOULD RESPOND TO PWR ON/OFF CYCLES.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/15/87 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2148 RESISTOR, 2.2K 1/2W ITEM: 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 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 RTLS: PRELAUNCH: 3/3 3/3 TAL: 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 B[ ] C[ ] REDUNDANCY SCREENS: A [ ]

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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: 2149 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
- 6)
- 7) 8)
- 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, 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.

HIGHEST CRITICALITY HDW/FUNC 1/27/87 DATE:

FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2150

RESISTOR, 5.1K 1/4W ITEM:

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, 5.1K 1/4W
- 6)
- 7)
- 8) 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, 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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2151 ABORT: 3/3

ITEM: RJDA1B L1/L5/R1 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 L1/L5/R1, RJDA1B
- 5) RJDA1B L1/L5/R1 MANIFOLD DRIVER SWITCH

6)

7)

8)

9)

## CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING	3/3		•

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

LOCATION: PNL 015 S4 PART NUMBER: 33V73A15S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

## EFFECTS/RATIONALE:

DRIVER POWER CAN BE REMOVED BY PLACING THE L1/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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/27/87

FLIGHT: 2/2 SUBSYSTEM: ARCS 1/1 MDAC ID: 2152 ABORT:

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
- THRUSTER SUBSYSTEM 3)
- MANIFOLD L1/L5/R1, RJDA1B
- RJDA1B L1/L5/R1 MANIFOLD DRIVER SWITCH

7)

8)

9)

#### CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC
3/2	RTLS:	1/1
3/3	TAL:	2/2
2/2	AOA:	2/2
2/2	ATO:	2/2
3/3		•
	3/2 3/3 2/2 2/2	3/2 RTLS: 3/3 TAL: 2/2 AOA: 2/2 ATO:

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

PNL 015 S4 LOCATION: 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 DIRVER 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.

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

6)

7) 8)

9)

HDW/FUNC	ABORT	HDW/FUNC
3/3	RTLS:	2/1R
3/3	TAL:	3/2R
3/2R	AOA:	3/2R
3/2R	ATO:	3/2R
3/3		•
	3/3 3/3 3/2R 3/2R	3/3 RTLS: 3/3 TAL: 3/2R AOA: 3/2R ATO:

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

LOCATION: PNL 015 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.

HIGHEST CRITICALITY HDW/FUNC 1/27/87 DATE:

3/2R FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2154

RJDA1B L1/L5/R1 MANIFOLD DRIVER ON SWITCH CONTACTS ITEM:

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
- CONTROLS 2)
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD L1/L5/R1, RJDA1B
- 5) RJDA1B L1/L5/R1 MANIFOLD DRIVER ON SWITCH CONTACTS 1, 2

6) 7)

8)

9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL: .	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: 2155 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
- 6)
- 7)
- 8)
- 9)

## CRITICALITIES

HDW/FUNC
3/3
3/3
3/3
3/3
•

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

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2156 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

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 015 S4
PART NUMBER: 33V73A15S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2157 ABORT: 3/1R

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

6)

7)

8) 9)

#### 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		•

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

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.

HIGHEST CRITICALITY HDW/FUNC 1/27/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 2158 RJDA1B L1/L5/R1 MANIFOLD DRIVER ON SWITCH CONTACTS ITEM: 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 CONTROLS 3) THRUSTER SUBSYSTEM 4) MANIFOLD L1/L5/R1, RJDA1B 5) RJDA1B L1/L5/R1 MANIFOLD DRIVER ON SWITCH CONTACTS 5, 6 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 PRELAUNCH: 3/3 RTLS: TAL: 3/3 LIFTOFF: 3/3 3/3 AOA: ONORBIT: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 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.

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
- 6) 7)
- 8)
- 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: 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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2160 ABORT: 3/3

ITEM: RJDA1B L1/L5/R1 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 L1/L5/R1, RJDA1B
- 5) RJDA1B L1/L5/R1 MANIFOLD DRIVER OFF SWITCH CONTACTS 7, 8

6) 7)

8)

9)

### CRITICALITIES

4./2 + 2 4			
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 015 S4
PART NUMBER: 33V73A15S4

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 L3/R5/R3 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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2161 ABORT: 2/1R

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

6)

7)

8)

9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		٠.

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

LOCATION: PNL 015 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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2162 ABORT: 3/3

ITEM: RJDA1B 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, RJDA1B

5) RJDA1B L1/L5/R1 MANIFOLD DRIVER ON SWITCH CONTACTS 9, 10

6)

7)

8) 9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC	
PRELAUNCH:	3/3	RTLS:	3/3	
LIFTOFF:	3/3	TAL:	3/3	
ONORBIT:	3/2R	AOA:	3/3	
DEORBIT:	3/3	ATO:	3/3	
LANDING/SAFING:	3/3		·	

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/27/87 3/3 SUBSYSTEM: ARCS FLIGHT: 3/3 ABORT: MDAC ID: 2163 RJDA1B L1/L5/R1 MANIFOLD DRIVER OFF SWITCH ITEM: CONTACTS 11, 12 FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN. SUBSYS LEAD: D.J. PAUL LEAD ANALYST: V.J. BURKEMPER BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS 2) CONTROLS THRUSTER SUBSYSTEM 3) 4) MANIFOLD L1/L5/R1, RJDA1B RJDA1B L1/L5/R1 MANIFOLD DRIVER OFF SWITCH CONTACTS 11, 12 6) 7) 8) 9) CRITICALITIES HDW/FUNC FLIGHT PHASE HDW/FUNC ABORT PRELAUNCH: 3/3 RTLS: 3/3 LIFTOFF: 3/3 TAL: 3/3 3/3 3/3 AOA: ONORBIT: 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 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

DATE: HIGHEST CRITICALITY HDW/FUNC 1/27/87 FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: 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 THRUSTER SUBSYSTEM 3) 4) MANIFOLD L1/L5/R1, RJDA1B 5) RJDA1B L1/L5/R1 MANIFOLD DRIVER OFF SWITCH CONTACTS 11, 12 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE PRELAUNCH: RTLS: 3/3 3/3 TAL: LIFTOFF: 3/3 3/3 AOA: ONORBIT: 3/3 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 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

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R ABORT: 3/1R MDAC ID: 2165

RJDA1B L1/L5/R1 MANIFOLD DRIVER ON SWITCH CONTACTS ITEM:

13, 14

FAILURE MODE: SWITCH ON CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

## BREAKDOWN HIERARCHY:

ELECTRICAL COMPONENTS

CONTROLS 2)

3) THRUSTER SUBSYSTEM

4) MANIFOLD L1/L5/R1, RJDA1B

5) RJDA1B L1/L5/R1 MANIFOLD DRIVER ON SWITCH CONTACTS 13, 14

6)

7)

8) 9)

#### 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:	•		•

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 ABORT: 3/3

MDAC ID: 2166 ABORT: 3/3

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
- 6) 7)
- 8)
- 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: 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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2167 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
- 6)
- 7) 8)
- 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: 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.

HIGHEST CRITICALITY HDW/FUNC 1/27/87 DATE: SUBSYSTEM: ARCS FLIGHT: 3/3 ABORT: 3/3 MDAC ID: 2168

RJDA1B L1/L5/R1 MANIFOLD DRIVER OFF SWITCH ITEM:

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

7)

8)

9)

#### CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC
3/3	RTLS:	3/3
3/3	TAL:	3/3
3/3	AOA:	3/3
3/3	ATO:	3/3
3/3		·
	3/3 3/3 3/3	3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO:

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

LOCATION: PNL 015 S4 PART NUMBER: 33V73A15S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

#### EFFECTS/RATIONALE:

REDUNDANCY TO OPEN THE POWER PATH THROUGH CONTACT SET 15, 16 TO RJDA BUS A IS PROVIDED BY THE L2/R2 AND THE L4/R4 MANIFOLD DRIVER SWITCHES. REDUNDANCY TO PREVENT REMOVAL OF RJDA BUS A POWER IS ALSO PROVIDED BY THE ON POSITIONS OF THE L1/L5/R1, THE L4/R4, AND THE L2/R2 MANIFOLD DRIVER SWITCHES. FAILURE OF ALL REDUNDANCY WILL RESULT IN THE LOSS OF POWER TO RJDA BUS A.

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
- RJDA1B L1/L5/R1 MANIFOLD LOGIC SWITCH

6) 7)

8)

9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

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 FORM 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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 2/2

SUBSYSTEM: ARCS FLIGHT: 2/2
MDAC ID: 2170 ABORT: 1/1

ITEM: RJDAIB 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) RJDAIB L1/L5/R1 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 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 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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2171 ABORT: 2/1R

ITEM: RJDA1B L1/L5/R1 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 L1/L5/R1, RJDA1B

5) RJDA1B L1/L5/R1 MANIFOLD LOGIC ON SWITCH CONTACTS 1, 2

6)

7)

8)

9)

## CRITICALITIES

41,444,41			
FLIGHT PHASE H	IDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3	·	-

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

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 BOUNDARIES.

DATE: 1/27/87

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: SUBSYSTEM: ARCS

3/2R 3/3

2172 MDAC ID:

ABORT:

ITEM:

RJDA1B L1/L5/R1 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
- CONTROLS
- THRUSTER SUBSYSTEM 3)
- MANIFOLD L1/L5/R1, RJDA1B

RJDA1B L1/L5/R1 MANIFOLD LOGIC ON SWITCH CONTACTS 1, 2

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/27/87 SUBSYSTEM: ARCS FLIGHT: 3/3 3/3 MDAC ID: 2173 ABORT: 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 THRUSTER SUBSYSTEM 3) 4) MANIFOLD L1/L5/R1, RJDA1B 5) RJDA1B L1/L5/R1 MANIFOLD LOGIC OFF SWITCH CONTACTS 3, 4 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3

 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 015 S3
PART NUMBER: 33V73A15S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT.

HIGHEST CRITICALITY HDW/FUNC 1/27/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2174 RJDA1B L1/L5/R1 MANIFOLD LOGIC OFF SWITCH CONTACTS ITEM: 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 CONTROLS 2) 3) THRUSTER SUBSYSTEM 4) MANIFOLD L1/L5/R1, RJDA1B 5) RJDA1B L1/L5/R1 MANIFOLD LOGIC OFF SWITCH CONTACTS 3, 4 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 RTLS: 3/3 PRELAUNCH: 3/3 3/3 TAL: LIFTOFF: AOA: 3/3 ONORBIT: 3/3 ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/27/87

3/2R FLIGHT: SUBSYSTEM: ARCS 3/1R ABORT: MDAC ID: 2175

RJDA1B L1/L5/R1 MANIFOLD LOGIC ON SWITCH CONTACTS ITEM:

5, 6

FAILURE MODE: SWITCH ON CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

#### BREAKDOWN HIERARCHY:

ELECTRICAL COMPONENTS

- 2) CONTROLS
- THRUSTER SUBSYSTEM 3)
- MANIFOLD L1/L5/R1, RJDA1B 4)
- RJDA1B L1/L5/R1 MANIFOLD LOGIC ON SWITCH CONTACTS 5, 6 5)

6)

7)

8) 9)

CRITICALITIES

VI.2.1.VI			
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		-

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C[P]

LOCATION: PNL 015 S3 PART NUMBER: 33V73A15S3

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 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 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.

1/27/87 DATE:

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT:

3/2R

MDAC ID:

2176

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
- CONTROLS
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD L1/L5/R1, RJDA1B

5) RJDA1B L1/L5/R1 MANIFOLD LOGIC ON SWITCH CONTACTS 5, 6

6) 7)

8)

9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC	
PRELAUNCH:	3/3	RTLS:	3/3	
LIFTOFF:	3/3	TAL:	3/3	
ONORBIT:	3/2R	AOA:	3/3	
DEORBIT:	3/3	ATO:	3/3	
LANDING/SAFING	: 3/3		·	

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

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.

HIGHEST CRITICALITY HDW/FUNC 1/27/87 DATE: FLIGHT: SUBSYSTEM: ARCS 3/3 3/3 ABORT: MDAC ID: 2177 RJDA1B L1/L5/R1 MANIFOLD LOGIC OFF SWITCH CONTACTS ITEM: 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 RJDA1B L1/L5/R1 MANIFOLD LOGIC OFF SWITCH CONTACTS 7, 8 5) 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 RTLS: 3/3 PRELAUNCH: 3/3 TAL: 3/3 LIFTOFF: AOA: 3/3 3/3 ONORBIT: ATO: 3/3

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

3/3

LOCATION: PNL 015 S3 PART NUMBER: 33V73A15S3

DEORBIT:

LANDING/SAFING: 3/3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/27/87 3/3 SUBSYSTEM: ARCS FLIGHT: 3/3 2178 ABORT: MDAC ID:

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
- CONTROLS 2)
- THRUSTER SUBSYSTEM 3)
- MANIFOLD L1/L5/R1, RJDA1B
- RJDA1B L1/L5/R1 MANIFOLD LOGIC OFF SWITCH CONTACTS 7, 8

6) 7)

8)

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: 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.

1/27/87 DATE:

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM:

ARCS

FLIGHT:

3/2R

MDAC ID:

2179

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
- THRUSTER SUBSYSTEM 3)
- MANIFOLD L2/R2, RJDA1A
- RJDA1A L2/R2 MANIFOLD DRIVER SWITCH 5)

6)

7)

8)

9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING	3/3		

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

LOCATION: PNL 014 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 REWMOVING 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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 2/2

MDAC ID: 2180 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

6) 7)

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 014 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 TRHE 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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS 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

6)

7)

9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		·

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2182 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

6) 7)

8)

9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		·

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/27/87 3/3 FLIGHT: SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 2183 RJDA1A L2/R2 MANIFOLD DRIVER OFF SWITCH CONTACTS ITEM: 3, 4 FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN. LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 2) THRUSTER SUBSYSTEM 3) MANIFOLD L2/R2, RJDA1A 4) RJDA1A L2/R2 MANIFOLD DRIVER OFF SWITCH CONTACTS 3, 4 5) 6) 7) 8)

CRITICALITIES

V./2.2.4			
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 014 S4 PART NUMBER: 33V73A14S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

9)

EFFECTS/RATIONALE:

NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT

HIGHEST CRITICALITY HDW/FUNC DATE: 1/27/87 SUBSYSTEM: ARCS FLIGHT: 3/3 ABORT: 3/3 MDAC ID: 2184 RJDA1A L2/R2 MANIFOLD DRIVER OFF SWITCH CONTACTS ITEM: 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 CONTROLS THRUSTER SUBSYSTEM 4) MANIFOLD L2/R2, RJDA1A 5) RJDA1A L2/R2 MANIFOLD DRIVER OFF SWITCH CONTACTS 3, 4 7)

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-1	·-		$\sim$			_		

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 014 S4 PART NUMBER: 33V73A14S4

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

EFFECTS/RATIONALE:

8) 9)

NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 3/2R SUBSYSTEM: **ARCS** ABORT: 3/1R MDAC ID: 2185

RJDA1A L2/R2 MANIFOLD DRIVER ON SWITCH CONTACTS 5, ITEM:

FAILURE MODE: SWITCH ON CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

#### BREAKDOWN HIERARCHY:

- ELECTRICAL COMPONENTS
- CONTROLS 2)
- 3) THRUSTER SUBSYSTEM
- MANIFOLD L2/R2, RJDA1A 4)
- RJDA1A L2/R2 MANIFOLD DRIVER ON SWITCH CONTACTS 5, 6 5)

7) 8)

9)

#### 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		•

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

PNL 014 S4 LOCATION: 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.

HIGHEST CRITICALITY HDW/FUNC 1/27/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS

3/3 ABORT: MDAC ID: 2186

RJDA1A L2/R2 MANIFOLD DRIVER ON SWITCH CONTACTS 5, ITEM:

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
- THRUSTER SUBSYSTEM
- 4) MANIFOLD L2/R2, RJDA1A
- RJDA1A L2/R2 MANIFOLD DRIVER ON SWITCH CONTACTS 5, 6

7) 8)

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: 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/27/87 SUBSYSTEM: ARCS FLIGHT: 3/3 3/3 2187 ABORT: MDAC ID: RJDA1A L2/R2 MANIFOLD DRIVER OFF SWITCH CONTACTS ITEM: 7,8 FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN. LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS THRUSTER SUBSYSTEM 3) MANIFOLD L2/R2, RJDA1A 4) RJDA1A L2/R2 MANIFOLD DRIVER OFF SWITCH CONTACTS 7, 8 5) 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: TAL: 3/3 3/3 PRELAUNCH: 3/3 LIFTOFF: 3/3 3/3 AOA: 3/3 ONORBIT: ATO: 3/3 3/3 DEORBIT: LANDING/SAFING: 3/3 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.

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REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE

SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2188 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

7)

8)

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: PNL 014 S4
PART NUMBER: 33V73A14S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

#### EFFECTS/RATIONALE:

REDUNDANCY TO OPEN THE POWER PATH THROUGH CONTACT SET 7, 8 TO RJDA BUS A IS PROVIDED BY THE L4/R4 AND THE L1/L5/R1 MANIFOLD DRIVER SWITCHES. REDUNDANCY TO PREVENT REMOVAL OF RJDA BUS A POWER IS ALSO PROVIDED BY THE ON POSITIONS OF THE L1/L5/R1, THE L4/R4, AND THE L2/R2 MANIFOLD DRIVER SWITCHES. FAILURE OF ALL REDUNDANCY WILL RESULT IN THE LOSS OF POWER TO RJDA BUS A.

HIGHEST CRITICALITY HDW/FUNC 1/27/87 DATE:

FLIGHT: 3/2R SUBSYSTEM: ARCS 2/1R ABORT: MDAC ID: 2189

RJDA1A L2/R2 MANIFOLD DRIVER ON SWITCH CONTACTS 9, ITEM:

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

THRUSTER SUBSYSTEM 3)

MANIFOLD L2/R2, RJDA1A 4)

RJDA1A L2/R2 MANIFOLD DRIVER ON SWITCH CONTACTS 9, 10 5)

6)

7)

8)

9)

### CRITICALITIES

~*************************************			
FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING	3/3		

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

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.

1/27/87 DATE:

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT: 3/2R

MDAC ID: 2190

ABORT:

3/3

ITEM:

RJDA1A L2/R2 MANIFOLD DRIVER ON SWITCH CONTACTS 9,

FAILURE MODE: SWITCH ON CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

#### BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- CONTROLS 2)
- THRUSTER SUBSYSTEM
- 4) MANIFOLD L2/R2, RJDA1A
- 5) RJDA1A L2/R2 MANIFOLD DRIVER ON SWITCH CONTACTS 9, 10

6)

7)

8) 9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		·

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/27/87 FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2191 RJDA1A L2/R2 MANIFOLD DRIVER OFF SWITCH CONTACTS ITEM: 11, 12 FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN. LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 2) THRUSTER SUBSYSTEM 3) MANIFOLD L2/R2, RJDA1A 4) RJDA1A L2/R2 MANIFOLD DRIVER OFF SWITCH CONTACTS 11, 12 5) 6) 7) 8) 9) CRITICALITIES

	V-1		
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 014 S4 PART NUMBER: 33V73A14S4

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

EFFECTS/RATIONALE:

NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT

HIGHEST CRITICALITY HDW/FUNC 1/27/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2192 RJDA1A L2/R2 MANIFOLD DRIVER OFF SWITCH CONTACTS ITEM: 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 CONTROLS 2) 3) THRUSTER SUBSYSTEM MANIFOLD L2/R2, RJDA1A 4) 5) RJDA1A L2/R2 MANIFOLD DRIVER OFF SWITCH CONTACTS 11, 12 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 RTLS: 3/3 PRELAUNCH: TAL: 3/3 3/3 LIFTOFF: AOA: 3/3 3/3 ONORBIT: ATO: 3/3 3/3 DEORBIT: LANDING/SAFING: 3/3 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

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

6)

7)

8) 9)

#### 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		•

TWINDING SWIING: 3/3

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

LOCATION: PNL 014 S4
PART NUMBER: 33V73A14S4

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.

HIGHEST CRITICALITY HDW/FUNC 1/27/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2194 RJDA1A L2/R2 MANIFOLD DRIVER ON SWITCH CONTACTS ITEM: 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 6) 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 PRELAUNCH: 3/3 RTLS: TAL: 3/3 LIFTOFF: 3/3 ONORBIT: 3/3 AOA: 3/3 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 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.

HIGHEST CRITICALITY HDW/FUNC 1/27/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2195 RJDA1A L2/R2 MANIFOLD DRIVER OFF SWITCH CONTACTS ITEM: 15, 16 FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN. LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 2) THRUSTER SUBSYSTEM 3) 4) MANIFOLD L2/R2, RJDA1A RJDA1A L2/R2 MANIFOLD DRIVER OFF SWITCH CONTACTS 15, 16 5) 6) 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 014 S4 PART NUMBER: 33V73A14S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

9)

EFFECTS/RATIONALE:

FAILURE WILL CAUSE THE INABILITY TO REMOVE BUS C POWER FROM RJDA BUS C DUE TO THE LATCHING BUS POWER RELAY.

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

6) 7)

8) 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: PNL 014 S4 PART NUMBER: 33V73A14S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

## EFFECTS/RATIONALE:

REDUNDANCY TO OPEN THE POWER PATH THROUGH CONTACT SET 15, 16 TO RJDA BUS C IS PROVIDED BY THE L4/R4 AND THE L3/R5/R3 MANIFOLD DRIVER SWITCHES. REDUNDANCY TO PREVENT REMOVAL OF RJDA BUS C POWER IS ALSO PROVIDED BY THE ON POSITIONS OF THE L2/R2, THE L4/R4, AND THE L3/R5/R3 MANIVOLD DRIVER SWITCHES. FAILURE OF ALL REDUNDANCY WILL RESULT IN THE LOSS OF POWER TO RJDA BUS C.

DATE:

1/27/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS MDAC ID:

2197

FLIGHT: ABORT:

3/2R

ITEM:

3/3

FAILURE MODE:

RJDA1A L2/R2 MANIFOLD LOGIC SWITCH SWITCH FAILS IN THE ON POSITION.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

## BREAKDOWN HIERARCHY:

- ELECTRICAL COMPONENTS 1)
- CONTROLS 2)
- THRUSTER SUBSYSTEM 3)
- MANIFOLD L2/R2, RJDA1A 4)
- RJDA1A L2/R2 MANIFOLD LOGIC SWITCH 5)

6)

7)

8)

9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
TANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

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..

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 2/2 SUBSYSTEM: ARCS ABORT: 1/1 MDAC ID: 2198

RJDA1A L2/R2 MANIFOLD LOGIC SWITCH ITEM: FAILURE MODE: SWITCH FAILS IN THE OFF POSITION.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

## BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- CONTROLS
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD L2/R2, RJDA1A 5) RJDA1A L2/R2 MANIFOLD LOGIC SWITCH

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 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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2199 ABORT: 2/1R

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

6) 7)

8)

9)

#### CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC
3/3	RTLS:	2/1R
3/3	TAL:	3/2R
3/2R	AOA:	3/2R
3/2R	ATO:	3/2R
		•
	3/3 3/3 3/2R 3/2R	3/3 RTLS: 3/3 TAL: 3/2R AOA: 3/2R ATO:

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

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 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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 3/2R SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 2200

RJDA1A L2/R2 MANIFOLD LOGIC ON SWITCH CONTACTS 1,

ITEM:

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
- 6)
- 7)
- 8)
- .9)

### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3	•	

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

LOCATION: PNL 014 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.

HDW/FUNC HIGHEST CRITICALITY 1/27/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS ABORT: 3/3 2201 MDAC ID: RJDA1A L2/R2 MANIFOLD LOGIC OFF SWITCH CONTACTS 3, ITEM: FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN. LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS THRUSTER SUBSYSTEM 3) MANIFOLD L2/R2, RJDA1A 4) RJDA1A L2/R2 MANIFOLD LOGIC OFF SWITCH CONTACTS 3, 4 6) 7)

CRITICALITIES

	<b></b>		
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 014 S3 'PART NUMBER: 33V73A14S3

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

EFFECTS/RATIONALE:

8) 9)

NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/27/87 3/3 SUBSYSTEM: ARCS FLIGHT: 3/3 ABORT: MDAC ID: 2202 RJDA1A L2/R2 MANIFOLD LOGIC OFF SWITCH CONTACTS 3, ITEM: 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 RJDA1A L2/R2 MANIFOLD LOGIC OFF SWITCH CONTACTS 3, 4 5) 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: TAL: AOA: 3/3 PRELAUNCH: 3/3 3/3 3/3 LIFTOFF: 3/3 ONORBIT: 3/3 ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2203 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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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		•

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

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.

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,

5

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

6) 7)

8)

9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		

TWNDING\2WLING: 3\3

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

LOCATION: PNL 014 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.

HIGHEST CRITICALITY HDW/FUNC 1/27/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2205 RJDA1A L2/R2 MANIFOLD LOGIC OFF SWITCH CONTACTS 7, ITEM: FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN. SUBSYS LEAD: D.J. PAUL LEAD ANALYST: V.J. BURKEMPER BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS 2) CONTROLS 3) THRUSTER SUBSYSTEM 4) MANIFOLD L2/R2, RJDA1A RJDA1A L2/R2 MANIFOLD LOGIC OFF SWITCH CONTACTS 7, 8 6) 7) 8) 9) CRITICALITIES HDW/FUNC FLIGHT PHASE HDW/FUNC ABORT PRELAUNCH: 3/3 RTLS: 3/3 3/3 3/3 LIFTOFF: TAL: 3/3 ONORBIT: 3/3 AOA:

3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3

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.

HIGHEST CRITICALITY HDW/FUNC 1/27/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2206 RJDA1A L2/R2 MANIFOLD LOGIC OFF SWITCH CONTACTS 7, ITEM: 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 THRUSTER SUBSYSTEM 3) MANIFOLD L2/R2, RJDA1A RJDA1A L2/R2 MANIFOLD LOGIC OFF SWITCH CONTACTS 7, 8 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE

PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/3	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
TAMBENO /OBBENO.	ລໍ/ລ		•

LANDING/SAFING: 3/3

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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2207 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

6)

7)

8)

9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING	: 3/3		·

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

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.

HIGHEST CRITICALITY HDW/FUNC 1/27/87

FLIGHT: 2/2 SUBSYSTEM: ARCS 1/1 ABORT: MDAC ID: 2208

RJDA2B L3/R3/R5 MANIFOLD DRIVER SWITCH ITEM:

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
- RJDA2B L3/R3/R5 MANIFOLD DRIVER SWITCH

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 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.

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

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	•		•

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/27/87

FLIGHT: 3/2R SUBSYSTEM: ARCS ABORT: 3/3 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

6) 7)

8)

9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

LOCATION: PNL 016 S4 PART NUMBER: 33V73A16S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

#### EFFECTS/RATIONALE:

DRIVER POWER CAN BE REMOVED FROM THE MANIFOLD BY PLACING THE L3/R5/R3 MANIFOLD LOGIC SWITCH IN THE CLOSED POSITION. FAILURE OF ALL REDUNDANCY WILL CAUSE THE INABILITY TO REMOVE DRIVER POWER FROM THE L3/R5/R3 MANIFOLD AND MAY AFFECT ONORBIT OPERATIONS.

HIGHEST CRITICALITY HDW/FUNC 1/27/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2211 RJDA2B L3/R3/R5 MANIFOLD DRIVER OFF SWITCH ITEM: 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 RJDA2B L3/R3/R5 MANIFOLD DRIVER OFF SWITCH CONTACTS 3, 4 5) 6) 7) 8) 9) CRITICALITIES

	J112 1 2 J112 2 2 2 2 2 2 2 2 2 2 2 2 2		
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 016 S4
PART NUMBER: 33V73A16S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT

HIGHEST CRITICALITY HDW/FUNC 1/27/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2212 RJDA2B L3/R3/R5 MANIFOLD DRIVER OFF SWITCH ITEM: 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 CONTROLS THRUSTER SUBSYSTEM 3) 4) MANIFOLD L3/R3/R5, RJDA2B 5) RJDA2B L3/R3/R5 MANIFOLD DRIVER OFF SWITCH CONTACTS 3, 4 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 RTLS: 3/3 PRELAUNCH: 3/3 TAL: LIFTOFF: 3/3 3/3 ONORBIT: AOA: 3/3 ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 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

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2213 ABORT: 3/1R

ITEM: RJDA2B L3/R3/R5 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 L3/R3/R5, RJDA2B

5) RJDA2B L3/R3/R5 MANIFOLD DRIVER ON SWITCH CONTACTS 5, 6

6)

7)

8) 9)

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		•

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

LOCATION: PNL 016 S4
PART NUMBER: 33V73A16S4

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 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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 2214 ABORT: 3/3

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

6)

7)

8) 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: 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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 2215 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

6)

7)

8) 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: PNL 016 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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2216 ABORT: 3/3

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

6) 7)

8)

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: PNL 016 S4
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.

DATE:

1/27/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT:

3/2R

MDAC ID:

2217

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
- CONTROLS 2)
- THRUSTER SUBSYSTEM 3)
- 4) MANIFOLD L3/R3/R5, RJDA2B
- RJDA2B L3/R3/R5 MANIFOLD DRIVER ON SWITCH CONTACTS 9, 10

6)

7) 8)

9)

#### CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING	: 3/3		·

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

LOCATION: PNL 016 54

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.

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

6) 7)

8)

9)

## CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		·

REDUNDANCY SCREENS: A [ 2 ] B [ P ] C [ P ]

LOCATION: PNL 016 S4
PART NUMBER: 33V73A16S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

#### EFFECTS/RATIONALE:

DRIVER POWER CAN BE REMOVED FROM THE MANIFOLD BY PLACING THE L3/R5/R3 MANIFOLD LOGIC SWITCH IN THE CLOSED POSITION. FAILURE OF ALL REDUNDANCY WILL CAUSE THE INABILITY TO REMOVE DRIVER POWER FROM THE L3/R5/R3 MANIFOLD AND MAY AFFECT ONORBIT OPERATIONS.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2219 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

6) 7)

8)

9)

CRIT	ICA	LIT	IES
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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 016 S4 PART NUMBER: 33V73A16S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT

1/27/87 HIGHEST CRITICALITY HDW/FUNC DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 2220 RJDA2B L3/R3/R5 MANIFOLD DRIVER OFF SWITCH ITEM: 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 CONTROLS 2) THRUSTER SUBSYSTEM 3) MANIFOLD L3/R3/R5, RJDA2B RJDA2B L3/R3/R5 MANIFOLD DRIVER OFF SWITCH CONTACTS 11, 12 6) 7)

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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 016 S4 PART NUMBER: 33V73A16S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

8) 9)

EFFECTS/RATIONALE:

NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2221 ABORT: 3/1R

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

6) 7)

8)

9)

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		-

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: PNL 016 S4
PART NUMBER: 33V73A16S4

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

Direct, Overteens

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.

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

6) 7)

8)

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: 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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: 2223 ABORT: 3/3

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

6) 7)

8)

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: 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.

HIGHEST CRITICALITY HDW/FUNC 1/27/87 3/3 FLIGHT:

SUBSYSTEM: ARCS 3/3 MDAC ID: 2224 ABORT:

RJDA2B L3/R3/R5 MANIFOLD DRIVER OFF SWITCH ITEM:

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
- CONTROLS 2)
- THRUSTER SUBSYSTEM 3)
- 4) MANIFOLD L3/R3/R5, RJDA2B
- RJDA2B L3/R3/R5 MANIFOLD DRIVER OFF SWITCH CONTACTS 15, 16

6)

7) 8)

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: PNL 016 S4 PART NUMBER: 33V73A16S4

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REDUNDANCY TO OPEN THE POWER PATH THROUGH CONTACT SET 15, 16 TO RJDA BUS C IS PROVIDED BY THE L2/R2 AND THE L4/R4 MANIFOLD DRIVER SWITCHES. REDUNDANCY TO PREVENT REMOVAL OF RJDA BUS C POWER IS ALSO PROVIDED BY THE ON POSITIONS OF THE L2/R2, THE L4/R4, AND THE L3/R5/R3 MANIFOLD DRIVER SWITCHES. FAILURE OF ALL REDUNDANCY WILL RESULT IN THE LOSS OF POWER TO RJDA BUS C.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2225 ABORT: 3/3

ITEM: RJDA2B L3/R3/R5 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 L3/R3/R5, RJDA2B
- 5) RJDA2B L3/R3/R5 MANIFOLD LOGIC SWITCH

6) 7)

8)

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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:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: PNL 016 S3
PART NUMBER: 33V73A16S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

LOGIC POWER CAN BE REMOVED BY REMOVING POWER TO CONTROL BUSSES BC1 AND BC2. DRIVER POWER CAN BE REMOVED FROM THE MANIFOLD BY PLACING THE L3/R5/R3 MANIFOLD DRIVER SWITCH IN THE CLOSED POSITION. FAILURE OF ALL REDUNDANCY WILL CAUSE THE INABILITY TO REMOVE LOGIC AND DRIVER POWER FROM MANIFOLD L3/R5/R3, AND WILL AFFECT ONORBIT OPERATIONS.

HIGHEST CRITICALITY HDW/FUNC 1/27/87 DATE:

2/2 FLIGHT: SUBSYSTEM: ARCS 1/1 ABORT: MDAC ID: 2226

RJDA2B L3/R3/R5 MANIFOLD LOGIC SWITCH ITEM:

FAILURE MODE: SWITCH FAILS IN THE OFF POSITION.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- CONTROLS
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD L3/R3/R5, RJDA2B
- 5) RJDA2B L3/R3/R5 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 S3 PART NUMBER: 33V73A16S3

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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2227 ABORT: 2/1R

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

6)

7)

8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: PNL 016 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 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.

1/27/87 DATE:

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT:

3/2R

MDAC ID:

2228

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

6) 7)

8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		· ·

WINDING\ 2 VIING: 3\ 3

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: PNL 016 S3

PART NUMBER: 33V73A16S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

DRIVER POWER CAN BE REMOVED FROM THE MANIFOLD BY PLACING THE L3/R5/L3 MANIFOLD DRIVER SWITCH IN THE CLOSED POSITION. FAILURE OF ALL REDUNDANCY WILL CAUSE THE INABILITY TO REMOVE LOGIC AND DRIVER POWER FROM MANIFOLD L3/R5/R3 AND MAY AFFECT ONORBIT OPERATIONS.

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
- 6) 7)
- 8)
- 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: 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.

HIGHEST CRITICALITY HDW/FUNC 1/27/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2230 RJDA2B L3/R3/R5 MANIFOLD LOGIC OFF SWITCH CONTACTS ITEM: 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 MANIFOLD L3/R3/R5, RJDA2B RJDA2B L3/R3/R5 MANIFOLD LOGIC OFF SWITCH CONTACTS 3, 4

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 016 S3
PART NUMBER: 33V73A16S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

7) 8) 9)

EFFECTS/RATIONALE:

NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/27/87

FLIGHT: 3/2R SUBSYSTEM: ARCS 3/1R ABORT: MDAC ID: 2231

RJDA2B L3/R3/R5 MANIFOLD LOGIC ON SWITCH CONTACTS ITEM:

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
- THRUSTER SUBSYSTEM 3)
- 4) MANIFOLD L3/R3/R5, RJDA2B
- RJDA2B L3/R3/R5 MANIFOLD LOGIC ON SWITCH CONTACTS 5, 6

6)

. 7)

8) 9)

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		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

1/27/87 DATE:

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS MDAC ID: 2232

FLIGHT: ABORT:

3/2R 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
- CONTROLS 2)
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD L3/R3/R5, RJDA2B
- 5) RJDA2B L3/R3/R5 MANIFOLD LOGIC ON SWITCH CONTACTS 5, 6

6)

7)

8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		-

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: PNL 016 S3 PART NUMBER: 33V73A16S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

DRIVER POWER CAN BE REMOVED FROM THE MANIFOLD BY PLACING THE L3/R5/L3 MANIFOLD DRIVER SWITCH IN THE CLOSED POSITION. FAILURE OF ALL REDUNDANCY WILL CAUSE THE INABILITY TO REMOVE LOGIC AND MANIFOLD POWER FROM MANIFOLD L3/R5/R3 AND MAY AFFECT ONORBIT OPERATIONS.

HIGHEST CRITICALITY HDW/FUNC 1/27/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: 2233 MDAC ID: RJDA2B L3/R3/R5 MANIFOLD LOGIC OFF SWITCH CONTACTS ITEM: 7, 8 FAILURE MODE: SWITCH OFF CONTACTS FAIL OPEN. LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 2) 3) THRUSTER SUBSYSTEM MANIFOLD L3/R3/R5, RJDA2B 4) RJDA2B L3/R3/R5 MANIFOLD LOGIC OFF SWITCH CONTACTS 7, 8 5) 6) 7) 8)

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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 016 S3
PART NUMBER: 33V73A16S3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

9)

EFFECTS/RATIONALE:

NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/27/87 FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 2234 ABORT: MDAC ID: RJDA2B L3/R3/R5 MANIFOLD LOGIC OFF SWITCH CONTACTS ITEM: 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 THRUSTER SUBSYSTEM 3) MANIFOLD L3/R3/R5, RJDA2B 5) RJDA2B L3/R3/R5 MANIFOLD LOGIC OFF SWITCH CONTACTS 7, 8 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: PRELAUNCH: 3/3 3/3 LIFTOFF: 3/3 TAL: 3/3 ONORBIT: 3/3 AOA: 3/3 3/3 DEORBIT: ATO: 3/3

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

LOCATION: PNL 016 S3 PART NUMBER: 33V73A16S3

LANDING/SAFING: 3/3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2235 ABORT: 3/3

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
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC	
PRELAUNCH:	3/3	RTLS:	3/3	
LIFTOFF:	3/3	TAL:	3/3	
ONORBIT:	3/2R	AOA:	3/3	
DEORBIT:	3/3	ATO:	3/3	
LANDING/SAFING:	3/3	# * · ·		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/27/87

FLIGHT: 2/2 SUBSYSTEM: ARCS 1/1 2236 MDAC ID:

RJDA2A L4/R4 MANIFOLD DRIVER SWITCH ITEM: 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 DRÍVER 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 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 L2/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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2237 ABORT: 2/1R

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
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/3	ATO:	3/2R
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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 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.

1/27/87 DATE:

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT: 3/2R

MDAC ID: 2238

ABORT:

3/3

ITEM:

RJDA2A L4/R4 MANIFOLD DRIVER ON SWITCH CONTACTS 1,

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

7)

8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3 ·
LANDING/SAFING:	3/3		e reformance

REDUNDANCY SCREENS: A [2] B [P] C[P]

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.

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)
- 7)
- 8)
- 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: 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

HIGHEST CRITICALITY HDW/FUNC 1/27/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: 2240 MDAC ID: RJDA2A L4/R4 MANIFOLD DRIVER OFF SWITCH CONTACTS ITEM: 3, 4 FAILURE MODE: SWITCH OFF CONTACTS FAIL CLOSED (SHORTED). SUBSYS LEAD: D.J. PAUL LEAD ANALYST: V.J. BURKEMPER 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) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 3/3 PRELAUNCH: TAL: 3/3 3/3 LIFTOFF: 3/3 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: PNL 016 S6 PART NUMBER: 33V73A14S6 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

NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT

EFFECTS/RATIONALE:

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2241 ABORT: 3/1R

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

6)

7) 8)

9)

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		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

HIGHEST CRITICALITY HDW/FUNC 1/27/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2242 ITEM: RJDA2A L4/R4 MANIFOLD DRIVER ON SWITCH CONTACTS 5, FAILURE MODE: SWITCH ON CONTACTS FAIL CLOSED (SHORTED). LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 3) THRUSTER SUBSYSTEM 4) MANIFOLD L4/R4, RJDA2A 5) RJDA2A L4/R4 MANIFOLD DRIVER ON SWITCH CONTACTS 5, 6 6) 7) 8) 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 3/3 ONORBIT: DEORBIT: 3/3 ATO: LANDING/SAFING: 3/3 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

REFERENCES: VS70-943099 REV B EO B12, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

REMOVE POWER FROM RJDA BUS C.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2243 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

6) 7)

8)

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: 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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: 2244 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

7)

8) 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: PNL 016 S6
PART NUMBER: 33V73A14S6

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REDUNDANCY TO OPEN THE POWER PATH THROUGH CONTACT SET 7, 8 TO RJDA BUS A IS PROVIDED BY THE L2/R2 AND THE L3/R5/R3 MANIFOLD DRIVER SWITCHES. REDUNDANCY TO PREVENT REMOVAL OV RJDA BUS C POWER IS ALSO PROVIDED BY THE L2/RS, THE L4/R4, AND THE L3/R5/R3 MANIVOLD DRIVER SWITCHES. FAILURE OF ALL REDUNDANCY WILL RESULT IN THE LOSS OF POWER TO RJDA BUS C.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2245 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)

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/3	ATO:	3/2R
LANDING/SAFING:	3/3		• •

REDUNDANCY SCREENS: A [2] B [P] C [P]

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 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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2246 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

6) 7)

8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		-

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/27/87 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 2247 ABORT: MDAC ID: RJDA2A L4/R4 MANIFOLD DRIVER OFF SWITCH CONTACTS ITEM: 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 MANIFOLD L4/R4, RJDA2A 4) RJDA2A L4/R4 MANIFOLD DRIVER OFF SWITCH CONTACTS 11, 12 5) 6) 7) 8) 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: 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

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 ABORT: 3/3

MDAC ID: 2248 ABORT: 3/3

ITEM: RJDA2A L4/R4 MANIFOLD DRIVER OFF SWITCH CONTACTS

11, 12
FAILURE MODE: SWITCH OFF CONTACTS FAIL CLOSED (SHORTED).

FAILURE MODE: Switch Off Contacts that choose (checkles

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)

CDITTCALITTES

	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
エスいかずいで /でえをすいた。	2/2		

LANDING/SAFING: 3/3

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

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2249 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

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		·

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/27/87

FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 MDAC ID: 2250 ABORT:

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

6) 7)

8)

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: 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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: 2251

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
- 6)
- 7)
- 8) 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: 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.

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 ABORT: 3/3

MDAC ID: 2252 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

7)

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: PNL 016 S6
PART NUMBER: 33V73A14S6

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REDUNDANCY TO OPEN THE POWER PATH THROUGH CONTACT SET 15, 16 TO RJDA BUS A IS PROVIDED BY THE L2/R2 AND THE4 L1/L5/R1 MANIFOLD DRIVER SWITCHES. REDUNDANCY TO PREVENT REMOVAL OF RJDA BUS A POWER IS ALSO PROVIDED BY THE ON POSITIONS OF THE L1/L5/R1, THE L2/R2, AND THE L4/R4 MANIFOLD DRIVER SWITCHES. FAILURE OF ALL REDUNDANCY WILL RESULT IN THE LOSS OF POWER TO RJDA BUS A.

DATE:

1/27/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT:

3/2R

MDAC ID:

2253

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
- CONTROLS
- THRUSTER SUBSYSTEM 3)
- 4) MANIFOLD L4/R4, RJDA2A
- RJDA2A L4/R4 MANIFOLD LOGIC SWITCH

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		·

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: PNL 016 S5

PART NUMBER: 33V73A14S5

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

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)
- 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

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2255 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

6)

7)

8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/2R	ATO:	3/2R
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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

HIGHEST CRITICALITY HDW/FUNC 1/27/87 DATE:

FLIGHT: 3/2R SUBSYSTEM: ARCS

ABORT: 3/3 2256 MDAC ID:

RJDA2A L4/R4 MANIFOLD LOGIC ON SWITCH CONTACTS 1, ITEM:

FAILURE MODE: SWITCH ON CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- CONTROLS
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD L4/R4, RJDA2A
- 5) RJDA2A L4/R4 MANIFOLD LOGIC ON SWITCH CONTACTS 1, 2

6) 7)

8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC	
PRELAUNCH:	3/3	RTLS:	3/3	
LIFTOFF:	3/3	TAL:	3/3	
ONORBIT:	3/2R	AOA:	3/3	
DEORBIT:	3/3	ATO:	3/3	
LANDING/SAFING:	3/3			

REDUNDANCY SCREENS: A [2] B [P] C [P]

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

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) 7)

8)

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: 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

HIGHEST CRITICALITY HDW/FUNC 1/27/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: 2258 MDAC ID: RJDA2A L4/R4 MANIFOLD LOGIC OFF SWITCH CONTACTS 3, ITEM: FAILURE MODE: SWITCH OFF CONTACTS FAIL CLOSED (SHORTED). LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS 2) 3) THRUSTER SUBSYSTEM 4) MANIFOLD L4/R4, RJDA2A 5) RJDA2A L4/R4 MANIFOLD LOGIC OFF SWITCH CONTACTS 3, 4 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 RTLS: 3/3 PRELAUNCH: TAL: 3/3 3/3 LIFTOFF: AOA: 3/3 3/3 ONORBIT: ATO: 3/3 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] PNL 016 S5 LOCATION: 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

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2259 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

6)

7)

8)

9)

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		-

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: PNL 016 S5 PART NUMBER: 33V73A14S5

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

REDUNDANCY PROVIDED BY THE L2/R2 AND THE L3/R5/R3 MANIFOLD DRIVER SWITCHES AND THE LATCHING BUS POWER RELAY. 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 Bl2, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

1/27/87 DATE:

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT:

3/2R

MDAC ID:

2260

ABORT:

3/3

ITEM:

RJDA2A L4/R4 MANIFOLD LOGIC ON SWITCH CONTACTS 5,

FAILURE MODE: SWITCH ON CONTACTS FAIL CLOSED (SHORTED).

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

1) ELECTRICAL COMPONENTS

CONTROLS

3) THRUSTER SUBSYSTEM

4) MANIFOLD L4/R4, RJDA2A

5) RJDA2A L4/R4 MANIFOLD LOGIC ON SWITCH CONTACTS 5, 6

6)

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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 Bl2, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

DATE: 1/27/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2261 ABORT: 3/3

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

6)

7)

8) 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: 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

HIGHEST CRITICALITY HDW/FUNC DATE: 1/27/87 FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 2262 RJDA2A L4/R4 MANIFOLD LOGIC OFF SWITCH CONTACTS 7, ITEM: 8 FAILURE MODE: SWITCH OFF CONTACTS FAIL CLOSED (SHORTED). LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS CONTROLS THRUSTER SUBSYSTEM 3) 4) MANIFOLD L4/R4, RJDA2A 5) RJDA2A L4/R4 MANIFOLD LOGIC OFF SWITCH CONTACTS 7, 8 6) 7) 8) 9) CRITICALITIES ABORT FLIGHT PHASE HDW/FUNC HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 3/3 TAL: LIFTOFF: 3/3 ONORBIT: 3/3 AOA: 3/3 ATO: DEORBIT: 3/3 3/3 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:

NONE, THE OFF CONTACTS ARE NOT IN A CIRCUIT.

REFERENCES: VS70-943099 REV B EO Bl2, CP; JSC 11174, SPACE SHUTTLE SYSTEMS HANDBOOK, PG 11.10, RCS SIG 2

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3
MDAC ID: 2263 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

6)

7)

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: 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/23/87 FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 2264

RJDA1A MANIFOLD L2/R2 TRICKLE TEST ITEM:

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
- THRUSTER SUBSYSTEM
- MANIFOLD L2/R2, RJDA1A
- RJDA1A MANIFOLD L2/R2 TRICKLE TEST

6)

7) 8)

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: 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.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2265 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

6)

7)

8) 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: L/R OMS POD

PART NUMBER: MANIFOLD L3/R3/R5

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.

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
- MANIFOLD L4/R4, RJDA2A
- 5) RJDA2A MANIFOLD L4/R4 TRICKLE TEST

6)

7)

8) 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: 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.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2267 ABORT: 3/3

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
- 5) RCS ACTIVITY LIGHTS
- 6)
- 7)
- 8)
- 9)

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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: 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/20/87 3/3 SUBSYSTEM: ARCS FLIGHT:

ABORT: 3/3 MDAC ID: 2268

L/R OX OR FU MANIFOLD 1 PRESS SENSOR ITEM: FAILURE MODE: INDICATES HIGHER PRESSURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- INSTRUMENTATION 2)
- THRUSTER SUBSYSTEM
- 4) MANIFOLD 1, L/R OX & FU
- L/R OX OR FU MANIFOLD 1 PRESS SENSOR

6)

7) 8)

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: 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.

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
- 6)
- 7) 8)
- 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: 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/20/87 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 MDAC ID: 2270 ABORT: L/R OX OR FU MANIFOLD 2 PRESS SENSOR ITEM: FAILURE MODE: INDICATES HIGHER PRESSURE THAN ACTUAL. LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS INSTRUMENTATION 2) 3) THRUSTER SUBSYSTEM 4) MANIFOLD 2, L/R OX & FU 5) L/R OX OR FU MANIFOLD 2 PRESS SENSOR 6)

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: L/R OMS POD, RCS MANIFOLDS AND THRUSTERS

PART NUMBER: 51V42PT212, 51V42PT217; 52V42PT312, 52V42PT317

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

EFFECTS/RATIONALE:

7) 8) 9)

FAILURE WILL CAUSE GROUND AND CREW DIFFICULTY IN DETERMINING A LEAKING MANIFOLD. CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

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

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

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		7

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.

DATE: 1/20/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2272 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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7) 8)

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: 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.

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

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2273 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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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: 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.

HIGHEST CRITICALITY HDW/FUNC 1/20/87 3/3 FLIGHT: SUBSYSTEM: ARCS

3/3 ABORT: MDAC ID: 2274

L/R OX OR FU MANIFOLD 4 PRESS SENSOR ITEM: FAILURE MODE: INDICATES HIGHER PRESSURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- ELECTRICAL COMPONENTS
- INSTRUMENTATION 2)
- THRUSTER SUBSYSTEM 3)
- 4) MANIFOLD 4, L/R OX & FU
- L/R OX OR FU MANIFOLD 4 PRESS SENSOR

6)

7) 8)

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: 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.

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

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2275 ABORT: 3/3

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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8) 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: 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.

DATE: 1/20/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2276 ABORT: 3/3

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

6) 7)

7) 2)

8) 9)

CRITICALITIES

GHT PHASE	HDW/FUNC
PRELAUNCH:	3/3
LIFTOFF:	3/3
ONORBIT:	3/3
DEORBIT:	3/3
LANDING/SAFING	·
LANDING/SAFING	

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/20/87 FLIGHT: 3/3 **ARCS** SUBSYSTEM: 3/3

ABORT: 2277 MDAC ID:

L/R OX MANIFOLD 1 TEMP SENSOR ITEM:

INDICATES LOWER TEMPERATURE THAN ACTUAL. FAILURE MODE:

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- ELECTRICAL COMPONENTS 1)
- INSTRUMENTATION 2)
- THRUSTER SUBSYSTEM 3)
- MANIFOLD 1, L/R OX 4)
- 5) L/R OX MANIFOLD 1 TEMP SENSOR

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 []

L/R OMS POD, RCS MANIFOLDS AND THRUSTERS LOCATION:

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.

1/20/87 HIGHEST CRITICALITY HDW/FUNC DATE: 3/3 3/3 SUBSYSTEM: ARCS FLIGHT: ABORT: MDAC ID: 2278

L/R OX MANIFOLD 5 TEMP SENSOR ITEM:

FAILURE MODE: INDICATES HIGHER TEMPERATURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- ELECTRICAL COMPONENTS
- INSTRUMENTATION
- 3) THRUSTER SUBSYSTEM
- 4) MANIFOLD 5, L/R OX
- L/R OX MANIFOLD 5 TEMP SENSOR

6)

7)

8)

9)

CRITICALITIES

V-12			
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: 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.

DATE: 1/20/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2279 ABORT: 3/3

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

6)

7)

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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: 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/20/87 FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2280 L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS LlA, ITEM: L3A, R1A, R3A INDICATES HIGHER PRESSURE THAN ACTUAL. FAILURE MODE: LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS INSTRUMENTATION 3) THRUSTER SUBSYSTEM THRUSTERS, AFT 4) L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L1A, L3A, R1A, 5) R3A 6) 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: 3/3 3/3 PRELAUNCH: TAL: 3/3 3/3 LIFTOFF: 3/3 AOA: ONORBIT: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 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.

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

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 2281 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 6)
 - 7)
 - 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/1R
LIFTOFF:	3/2R	TAL:	3/1R
ONORBIT:	3/2R	AOA:	3/1R
DEORBIT:	3/1R	ATO:	3/1R
LANDING/SAFING	•		•

LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

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

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 2282 ABORT: 3/1R

ITEM: L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS LlA,

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
 - 6)
 - 7)
 - 8)
 - 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/1R
LIFTOFF:	3/2R	TAL:	3/1R
ONORBIT:	3/2R	AOA:	3/1R
DEORBIT:	3/1R	ATO:	3/1R
LANDING/SAFING:	3/3		-

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/20/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2283 ABORT: 3/3

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
 - 6) 7)
- 8)
- 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: 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:

CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

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

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 2284 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
- INSTRUMENTATION 2)
- THRUSTER SUBSYSTEM 3)
- 4) THRUSTERS, L/R
- 5) L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L1L, L2L, L3L, L4L, R1R, R2R, R3R, R4R

6)

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8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/1R
LIFTOFF:	3/2R	TAL:	3/1R
ONORBIT:	3/2R	AOA:	3/1R
DEORBIT:	3/1R	ATO:	3/1R
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

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

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 2285 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
 - 6)
 - 7)
 - 8)
 - 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/1R
LIFTOFF:	3/2R	TAL:	3/1R
ONORBIT:	3/2R	AOA:	3/1R
DEORBIT:	3/1R	ATO:	3/1R
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/20/87 FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 MDAC ID: 2286 ABORT: 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 L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L5L, L5D, R5R, R5D 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: TAL: PRELAUNCH: 3/3 3/3 3/3 3/3 LIFTOFF: 3/3 3/3 AOA: ONORBIT: DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3

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.

DATE: 1/20/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/1R

SUBSYSTEM: ARCS FLIGHT. 3/1R MDAC ID: 2287 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

- 6)
- 7)
- 8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/1R
LIFTOFF:	3/2R	TAL:	3/1R
ONORBIT:	3/2R	AOA:	3/1R
DEORBIT:	3/1R	ATO:	3/1R
LANDING/SAFING:	•		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

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

FLIGHT: 3/1R SUBSYSTEM: ARCS 3/1R ABORT: MDAC ID: 2288

L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L5L, ITEM:

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 6)
 - 7)
 - 8)
 - 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/1R
LIFTOFF:	3/2R	TAL:	3/1R
ONORBIT:	3/2R	AOA:	3/1R
DEORBIT:	3/1R	ATO:	3/1R
LANDING/SAFING:	3/3		-

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

HIGHEST CRITICALITY HDW/FUNC 1/20/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2289

ITEM: L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS LlU, L2U, L4U, L2D, L3D, L4D, R1U, R2U, R4U, R2D, R3D, R4D FAILURE MODE: INDICATES HIGHER PRESSURE THAN ACTUAL.

SUBSYS LEAD: D.J. PAUL LEAD ANALYST: V.J. BURKEMPER

BREAKDOWN HIERARCHY:

- ELECTRICAL COMPONENTS
- INSTRUMENTATION 2)
- 3) THRUSTER SUBSYSTEM
- THRUSTERS, UP/DOWN 4)
- L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L1U, L2U, L4U, 5) L2D, L3D, L4D, R1U, R2U, R4U, R2D, R3D, R4D

6) 7)

8)

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	!		•

REDUNDANCY SCREENS: A [] B [] C [

L/R OMS POD, RCS MANIFOLDS AND THRUSTERS LOCATION: PART NUMBER: 51V42ENL1U, 51V42ENL2U, 51V42ENL4U, 51V42ENL2D, 51V42ENL3D, 51V42ENL4D; 52V42ENR1U, 52V42ENR2U, 52V42ENR4U, 52V42ENR2D, 52V42ENR3D, 52V42ENR4D

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

EFFECTS/RATIONALE:

CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

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

5)

7)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/1R
LIFTOFF:	3/2R	TAL:	3/1R
ONORBIT:	3/2R	AOA:	3/1R
DEORBIT:	3/1R	ATO:	3/1R
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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 DESELECT THE JET AND ANNOUNCE IT AS FAILED OFF.

DATE: 1/20/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 2291 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: 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, UP/DOWN
- 5) L/R CHAMBER PRESSURE (Pc) SENSOR, THRUSTERS L1U, L2U, L4U, L2D, L3D, L4D, R1U, R2U, R4U, R2D, R3D, R4D
 - 6)
 - 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/1R
LIFTOFF:	3/2R	TAL:	3/1R
ONORBIT:	3/2R	AOA:	3/1R
DEORBIT:	3/1R	ATO:	3/1R
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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 DESELECT THE JET AND ANNOUNCE IT AS FAILED OFF.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/20/87 3/3 SUBSYSTEM: ARCS FLIGHT: 3/3 ABORT: MDAC ID: 2292 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 INSTRUMENTATION 2) THRUSTER SUBSYSTEM 3) 4) THRUSTERS, AFT L/R OX OR FU INJECTOR TEMP SENSOR THRUSTER L1A, L3A, R1A, R3A 6) 7) 8) 9)

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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 []

L/R OMS POD, RCS MANIFOLDS AND THRUSTERS LOCATION:

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.

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

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 2293 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
 - 6) 7)
 - 8)
 - 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/1R
LIFTOFF:	3/2R	TAL:	3/1R
ONORBIT:	3/2R	AOA:	3/1R
DEORBIT:	3/1R	ATO:	3/1R
LANDING/SAFING	: 3/3		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/20/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2294 ABORT: 3/3

ITEM: L/R OX OR FU INJECTOR TEMP SENSOR, THRUSTERS L1L,

L2L, L3L, L4L, R1R, R2R, R3R, R4R

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 L1L, L2L, L3L, L4L, R1R, R2R, R3R, R4R
- 6)
- 7)
- 8)
- 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/SAFIN	G: 3/3		* *

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.

DATE:

1/20/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT:

3/1R

MDAC ID:

2295

ABORT:

3/1R

ITEM:

L/R OX OR FU INJECTOR TEMP SENSOR, THRUSTERS L1L,

L2L, L3L, L4L, R1R, R2R, R3R, R4R

FAILURE MODE: INDICATES LOWER TEMPERATURE THAN ACTUAL.

LEAD ANALYST: V.J. BURKEMPER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- INSTRUMENTATION
- THRUSTER SUBSYSTEM 3)
- THRUSTERS, L/R 4)

L/R OX OR FU INJECTOR TEMP SENSOR, THRUSTERS L1L, L2L, L3L, 5) L4L, R1R, R2R, R3R, R4R

6)

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/1R
LIFTOFF:	3/2R	TAL:	3/1R
ONORBIT:	3/2R	AOA:	3/1R
DEORBIT:	3/1R	ATO:	3/1R
LANDING/SAFING:	•		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/20/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2296 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

6)

7)

8)

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: 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.

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

SUBSYSTEM: ARCS FLIGHT: 3/2R MDAC ID: 2297 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)

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/2R	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING	: 3/3	• •	•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

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

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2298 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

6)

7)

8)

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: 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:

CREW MAY MAKE BAD DECISION BASED ON ERRONEOUS DATA.

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

SUBSYSTEM: ARCS FLIGHT: 3/1R 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

6)

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/1R
LIFTOFF:	3/2R	TAL:	3/1R
ONORBIT:	3/2R	AOA:	3/1R
DEORBIT:	3/1R	ATO:	3/1R
LANDING/SAFING:	•		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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 DESELECT THE JET AND ANNOUNCE IT AS FAILED OFF.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/23/87

FLIGHT: 3/1R SUBSYSTEM: ARCS ABORT: 1/1 MDAC ID: 2300

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 1 JETS 5) DRIVER, HYBRID

6)

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	1/1
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/1R	ATO:	3/2R
LANDING/SAFING:	•		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 2301 ABORT: 3/3

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 1 JETS
- 5) DRIVER, HYBRID
- 6)
- 7)
- 8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/1R	AOA:	3/3
DEORBIT:	3/1R	ATO:	3/3
LANDING/SAFING:	•		•

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.

1/23/87 HIGHEST CRITICALITY HDW/FUNC DATE:

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

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	1/1
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/1R	ATO:	3/2R
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 2303 ABORT: 3/3

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
- 6)
- 7) 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/1R	AOA:	3/3
DEORBIT:	3/1R	ATO:	3/3
LANDING/SAFING:	3/3		·

REDUNDANCY SCREENS: A [2] B [F] C [P]

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.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 2304 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 3 JETS
- 5) DRIVER, HYBRID
- 6)
- 7) 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	1/1
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/1R	ATO:	3/2R
LANDING/SAFING	3/3		·

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/1R

SUBSYSTEM: ARCS FLIGHT: 3/1F MDAC ID: 2305 ABORT: 3/3

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
- 6)
- 7)8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/1R	AOA:	3/3
DEORBIT:	3/1R	ATO:	3/3
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

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.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 2306 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
- 6)
- 7)
- 8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	1/1
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/1R	ATO:	3/2R
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 2307 ABORT: 3/3

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
- 6)
- 7)
- 8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/1R	AOA:	3/3
DEORBIT:	3/1R	ATO:	3/3
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

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.

HIGHEST CRITICALITY HDW/FUNC 1/23/87 DATE: FLIGHT: 2/2 SUBSYSTEM: ARCS ABORT: 2/2 MDAC ID: 2308 DRIVER, HYBRID ITEM: 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 5 JETS 5) DRIVER, HYBRID 6) 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: 3/3 TAL: 3/3 3/3 PRELAUNCH: 3/3 2/2 LIFTOFF: AOA: 3/3 ONORBIT: ATO: 2/2 DEORBIT: 2/2 LANDING/SAFING: 3/3 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.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 2309 ABORT: 3/3

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 5 JETS
- 5) DRIVER, HYBRID

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/1R	AOA:	3/3
DEORBIT:	3/1R	ATO:	3/3
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

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.

DATE:

1/23/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT:

3/1R

MDAC ID:

2310

ABORT:

1/1

ITEM:

FUSE, 1A

FAILURE MODE: FAILS OPEN

LEAD ANALYST: W.A. HAUFLER

SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- THRUSTER 2)
- 3) THERMAL CONTROL SUBSYSTEM
- 4) MANIFOLD 1 JETS
- 5) FUSE, 1A
- 6)
- 7)
- 8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	1/1
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/1R	ATO:	3/3
LANDING/SAFING:	•		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION:

PNL Al4 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.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 2311 ABORT: 1/1

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 2 JETS
- 5) FUSE, 1A
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	1/1
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/1R	ATO:	3/3
LANDING/SAFIN	G: 3/3		.

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 2312 ABORT: 1/1

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 3 JETS
- 5) FUSE, 1A
- 6)
- 7)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	1/1
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/1R	ATO:	3/3
LANDING/SAFING	: 3/3		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 2313 ABORT: 1/1

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

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	1/1
LIFTOFF:	3/3	TAL:	3/2R
ONORBIT:	3/2R	AOA:	3/2R
DEORBIT:	3/1R	ATO:	3/3
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/23/87 2/2 FLIGHT: SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 2314 ITEM: FUSE, 1A FAILURE MODE: FAILS OPEN SUBSYS LEAD: D.J. PAUL LEAD ANALYST: W.A. HAUFLER BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS 2) THRUSTER 3) THERMAL CONTROL SUBSYSTEM 4) MANIFOLD 5 JETS 5) FUSE, 1A 6) 7) 8) 9) CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	2/2	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		-

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.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 2/2 MDAC ID: 2315 ABORT: 3/3

ITEM: FUSE, 5A 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 5 JETS
- 5) FUSE, 5A
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	2/2	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING	3: 3/3		·

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.

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. HAUFLER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- 2) THRUSTER
- 3) THERMAL CONTROL SUBSYSTEM
- PRIMARY MANIFOLD JETS
- 5) HEATER 30W, THRUSTER, PRIMARY, +X AXIS

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/1R	ATO:	3/3
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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 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 ABORTS DUE TO LACK OF TIME.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 2317 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

6)

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
· PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/1R	ATO:	3/3
LANDING/SAFING	: 3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

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

7)

8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/1R	ATO:	3/3
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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 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.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 2319 ABORT: 3/3

ITEM: HEATER 30W, THRUSTER, PRIMARY, +X 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 30W, THRUSTER, PRIMARY, +X AXIS

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC	
PRELAUNCH:	3/3	RTLS:	3/3	
LIFTOFF:	3/3	TAL:	3/3	
ONORBIT:	3/2R	AOA:	3/3	
DEORBIT:	3/1R	ATO:	3/3	
LANDING/SAFING:	3/3		·	

REDUNDANCY SCREENS: A [2] B [P] C [P]

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 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.

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. HAUFLER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

1) ELECTRICAL COMPONENTS

- 2) THRUSTER
- 3) THERMAL CONTROL SUBSYSTEM
- PRIMARY MANIFOLD JETS

5) HEATER 20W, THRUSTER, PRIMARY, Y AXIS

6)

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/1R	ATO:	3/3
LANDING/SAFING	: 3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE:

1/23/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS MDAC ID: 2321

FLIGHT:
ABORT:

3/1R 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

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/1R	ATO:	3/3
LANDING/SAFING:	•		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/23/87 SUBSYSTEM: ARCS FLIGHT: 2/2 3/3 ABORT: MDAC ID: 2322 HEATER 10W, THRUSTER, VERNIER, ALL AXES ITEM: 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) VERNIER MANIFOLD JETS 5) HEATER 10W, THRUSTER, VERNIER, ALL AXES 6) 7) 8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	2/2	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		

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.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 2/2

MDAC ID: 2323 ABORT: 3/3

ITEM: HEATER 10W, THRUSTER, VERNIER, ALL AXES

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) VERNIER MANIFOLD JETS
- 5) HEATER 10W, THRUSTER, VERNIER, ALL AXES
- 6)
- 7)
- 8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	2/2	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		

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.

HIGHEST CRITICALITY HDW/FUNC 1/23/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 2324 RESISTOR, 5.1K 1/4W ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: W.A. HAUFLER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS THRUSTER 3) THERMAL CONTROL SUBSYSTEM MANIFOLD 1 JETS RESISTOR, 5.1K 1/4W 5) 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 LIFTOFF: 3/3 TAL: 3/3 AOA: ONORBIT: 3/3 3/3 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 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

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

CONTROL SWITCH" IS WORKING, EXCEPT BY MONITORING THRUSTER TEMPERATURES. THERE ARE NO TALKBACKS ASSOCIATED WITH THIS

SWITCH.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/23/87 FLIGHT: 3/3 SUBSYSTEM: ARCS

ABORT: 3/3 MDAC ID: 2325

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
- THRUSTER
- THERMAL CONTROL SUBSYSTEM 3)
- MANIFOLD 1 JETS 4)
- 5) RESISTOR, 5.1K 1/4W
- 6)
- 7)
- 8)
- 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		•

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

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.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 ABORT: 3/3

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

INITION HODE.

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

6)

7) 8)

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 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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/23/87

SUBSYSTEM: ARCS FLIGHT: 3/3 3/3 MDAC ID: 2327 ABORT:

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
- THRUSTER 2)
- 3) THERMAL CONTROL SUBSYSTEM
- 4) MANIFOLD 2 JETS
- RESISTOR, 5.1K 1/4W 5)
- 6)
- 7)
- 8)
- 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 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.

HIGHEST CRITICALITY HDW/FUNC 1/23/87 DATE: FLIGHT: 3/3 ABORT: 3/3 SUBSYSTEM: ARCS ABORT: MDAC ID: 2328

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
- 6)
- 7)
- 8) 9)

CRITICALITIES

	V-1		
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, 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.

HIGHEST CRITICALITY HDW/FUNC 1/23/87 DATE: 3/3 SUBSYSTEM: ARCS FLIGHT: ABORT: 3/3 MDAC ID: 2329 RESISTOR, 5.1K 1/4W ITEM: FAILURE MODE: FAILS SHORT SUBSYS LEAD: D.J. PAUL LEAD ANALYST: W.A. HAUFLER BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS 2) THRUSTER 3) THERMAL CONTROL SUBSYSTEM MANIFOLD 3 JETS 4) RESISTOR, 5.1K 1/4W 5) 6) 7) 8) 9) COTOTONITOTES

	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		•

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

AV BAY 6, LCA 3 LOCATION: PART NUMBER: 56V76A123R J4-43

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

EFFECTS/RATIONALE:

NO EFFECT. TALKBACK IS STILL AVAILABLE TO GPC.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2330 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

6)

7)

8) 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 6, LCA 3
PART NUMBER: 56V76Al23R 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.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2331 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 4 JETS
- 5) RESISTOR, 5.1K 1/4W
- 6)
- 7)
- 8) 9)

CRITICALITIES

Q1/T1TQ111T1TT			
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, 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.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2332 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 5 JETS
- 5) RESISTOR, 5.1K 1/4W
- 6)
- 7) 8)
- 9)

CRITICALITIES

V.,			
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, 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.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: 2333 ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W

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

BREAKDOWN HIERARCHY:

1) ELECTRICAL COMPONENTS

FAILURE MODE: FAILS SHORT

- 2) THRUSTER
- 3) THERMAL CONTROL SUBSYSTEM
- 4) MANIFOLD 5 JETS
- 5) RESISTOR, 5.1K 1/4W
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

V.(=== V.:== = == = = = = = = = = = = = = = = =			
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/SAFIN	G: 3/3		-

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.

DATE:

1/23/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS MDAC ID:

2334

FLIGHT: ABORT:

3/1R 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
- THRUSTER
- THERMAL CONTROL SUBSYSTEM
- THRUSTERS, PRIMARY, +X AXIS 4)
- THERMOSTAT, PRIMARY THRUSTERS, +X AXIS

6)

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/1R	ATO:	3/3
LANDING/SAFING:	3/3		-

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 2/1R MDAC ID: 2335 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

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	2/1R	TAL:	2/1R
ONORBIT:	2/1R	AOA:	2/1R
DEORBIT:	2/1R	ATO:	2/1R
LANDING/SAFING	3/3		•

REDUNDANCY SCREENS: A [2] B [F] C [P]

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.

1/23/87 DATE:

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
- THRUSTER
- 3) THERMAL CONTROL SUBSYSTEM
- 4) THRUSTERS, PRIMARY, Y AXIS
- THERMOSTAT, PRIMARY THRUSTERS, Y AXIS

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	3/2R	AOA:	3/3
DEORBIT:	3/1R	ATO:	3/3
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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:

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.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 2/1R MDAC ID: 2337 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
- 6)
- 7)
- 8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC	
PRELAUNCH:	3/3	RTLS:	2/1R	
LIFTOFF:	2/1R	TAL:	2/1R	
ONORBIT:	2/1R	AOA:	2/1R	
DEORBIT:	2/1R	ATO:	2/1R	
LANDING/SAFING:	3/3			

REDUNDANCY SCREENS: A [2] B [F] C [P]

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.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 2338 ABORT: 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

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC	
PRELAUNCH:	3/3	RTLS:	3/3	
LIFTOFF:	3/3	TAL:	3/3	
ONORBIT:	3/2R	AOA:	3/3	
DEORBIT:	3/1R	ATO:	3/3	
LANDING/SAFING:	3/3		-	

REDUNDANCY SCREENS: A [2] B [P] C [P]

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:

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.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 2/1R MDAC ID: 2339 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
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC	
PRELAUNCH:	3/3	RTLS:	2/1R	
LIFTOFF:	2/1R	TAL:	2/1R	
ONORBIT:	2/1R	AOA:	2/1R	
DEORBIT:	2/1R	ATO:	2/1R	
LANDING/SAFING:			•	

REDUNDANCY SCREENS: A [2] B [F] C [P]

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.

HIGHEST CRITICALITY HDW/FUNC 1/23/87 DATE: FLIGHT: 2/2 SUBSYSTEM: ARCS 3/3 MDAC ID: 2340 ABORT:

THERMOSTAT, VERNIER THRUSTERS, ALL AXES ITEM:

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
- THERMOSTAT, VERNIER THRUSTERS, ALL AXES

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	2/2	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		•

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 ONORBIT. IF JET'S TEMPERATURE DROPS BELOW LIMITS, THE RM WILL DESELECT THIS JET. FAILURE WILL AFFECT ONORBIT OPERATIONS.

DATE:

1/23/87

HIGHEST CRITICALITY

HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT:

2/1R

MDAC ID:

2341

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
- THRUSTERS, VERNIER, ALL AXES 4)
- THERMOSTAT, VERNIER THRUSTERS, ALL AXES 5)

6)

7)

8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	2/1R
LIFTOFF:	2/1R	TAL:	2/1R
ONORBIT:	2/1R	AOA:	2/1R
DEORBIT:	2/1R	ATO:	2/1R
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2]

B [F]

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.

1/23/87 DATE:

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS MDAC ID:

2342

FLIGHT: 3/1R 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
- MANIFOLD 1 JETS
- MANIFOLD 1, JETS HEATER CONTROL SWITCH

7)

8) 9)

CRITICALITIES

HDW/FUNC	ABORT	HDW/FUNC	
3/3	RTLS:	3/1R	
3/1R	TAL:	3/1R	
3/1R	AOA:	3/1R	
3/1R	ATO:	3/1R	
3/3		·	
	3/3 3/1R 3/1R 3/1R	3/3 RTLS: 3/1R TAL: 3/1R AOA: 3/1R ATO:	

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 2/2

MDAC ID: 2343 ABORT: 3/3

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
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	2/2	AOA:	3/3
DEORBIT:	2/2	ATO:	3/3
LANDING/SAFING:	3/3		·

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/23/87 2/2 SUBSYSTEM: ARCS FLIGHT: 3/3 ABORT: MDAC ID: 2344

MANIFOLD 1, JETS HEATER CONTROL SWITCH OPEN ITEM:

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
- THRUSTER
- THERMAL CONTROL SUBSYSTEM
- 4) MANIFOLD 1 JETS
- 5) MANIFOLD 1, JETS HEATER CONTROL SWITCH OPEN CONTACTS 1, 2

6) 7)

8)

9)

	CRITICALITIES			
FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC	
PRELAUNCH:	3/3	RTLS:	3/3	
LIFTOFF:	3/3	TAL:	3/3	
ONORBIT:	2/2	AOA:	3/3	
DEORBIT:	2/2	ATO:	3/3	
LANDING/SAFING:	3/3			

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 R5IGHT MANIFOLD. THIS COULD AFFECT ONORBIT OPERATIONS AND ENTRY DTOS AND PTIS.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 2345 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
- 6) 7)
- 7) 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/1R
LIFTOFF:	3/1R	TAL:	3/1R
ONORBIT:	3/1R	AOA:	3/1R
DEORBIT:	3/1R	ATO:	3/1R
LANDING/SAFING:	3/3		•

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

HIGHEST CRITICALITY HDW/FUNC 1/23/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS ABORT: 3/3 2346 MDAC ID: MANIFOLD 1, JETS HEATER CONTROL SWITCH OPEN ITEM: 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 6) 7) 8) 9) COTOTONTATATES

	CVTTTCVTTTTCO		
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 A14 S9 PART NUMBER: 36V73A14S9

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3

MDAC ID: 2347 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
- 6) 7)
- 8)
- 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: PNL A14 S9 PART NUMBER: 36V73A14S9

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

1/23/87 DATE:

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
- THRUSTER
- 3) THERMAL CONTROL SUBSYSTEM
- MANIFOLD 2 JETS 4)
- 5) MANIFOLD 2, JETS HEATER CONTROL SWITCH
- 6)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/1R
LIFTOFF:	3/1R	TAL:	3/1R
ONORBIT:	3/1R	AOA:	3/1R
DEORBIT:	3/1R	ATO:	3/1R
LANDING/SAFING:	3/3		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

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)
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	2/2	AOA:	3/3
DEORBIT:	2/2	ATO:	3/3
LANDING/SAFING:	3/3		·

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/23/87 SUBSYSTEM: ARCS FLIGHT: 2/2 ABORT: 3/3 MDAC ID: 2350 MANIFOLD 2, JETS HEATER CONTROL SWITCH OPEN ITEM:

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
- 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	2/2	AOA:	3/3
DEORBIT:	2/2	ATO:	3/3
LANDING/SAFING:	3/3		·

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.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS FLIGHT: 3/1R MDAC ID: 2351 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
- 6)
- 7) 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/1R
LIFTOFF:	3/1R	TAL:	3/1R
ONORBIT:	3/1R	AOA:	3/1R
DEORBIT:	3/1R	ATO:	3/1R
LANDING/SAFING	3/3		•

REDUNDANCY SCREENS; A [2] B [P] C [P]

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.

HIGHEST CRITICALITY HDW/FUNC 1/23/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2352 MANIFOLD 2, JETS HEATER CONTROL SWITCH OPEN ITEM: CONTACTS 3, 4 FAILURE MODE: SWITCH CONTACTS FAIL OPEN. LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS THRUSTER 2) 3) THERMAL CONTROL SUBSYSTEM 4) MANIFOLD 2 JETS 5) MANIFOLD 2, JETS HEATER CONTROL SWITCH OPEN CONTACTS 3, 4 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC
3/3 RTLS: 3/3
3/3 TAL: 3/3
3/3 AOA: 3/3 FLIGHT PHASE PRELAUNCH: LIFTOFF: ONORBIT: ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 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.

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
- 6) 7)
- 8)
- 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: PNL A14 S10 PART NUMBER: 36V73A14S10

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

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

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/1R
LIFTOFF:	3/1R	TAL:	3/1R
ONORBIT:	3/1R	AOA:	3/1R
DEORBIT:	3/1R	ATO:	3/1R
LANDING/SAFING:	3/3		·

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: PNL A14 SI1 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.

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

6)

7)

8)

9)

CRITICALITIES

IC ABORT	HDW/FUNC
RTLS:	3/3
TAL:	3/3
AOA:	3/3
ATO:	3/3
	•
	TAL: AOA:

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/23/87 FLIGHT: 2/2 SUBSYSTEM: ARCS 3/3 ABORT: 2356 MDAC ID: MANIFOLD 3, JETS HEATER CONTROL SWITCH OPEN ITEM: 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 THRUSTER 3) THERMAL CONTROL SUBSYSTEM 4) MANIFOLD 3 JETS 5) MANIFOLD 3, JETS HEATER CONTROL SWITCH OPEN CONTACTS 1, 2 6) 7) 8) 9) CRITICALITIES
HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 3/3 RTLS: PRELAUNCH: 3/3 TAL: 3/3 LIFTOFF: AOA: 3/3 ONORBIT: 2/2 ATO: 3/3 2/2 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] PNL Al4 Sll LOCATION: 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.

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
- 6) 7)
- 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/1R
LIFTOFF:	3/1R	TAL:	3/1R
ONORBIT:	3/1R	AOA:	3/1R
DEORBIT:	3/1R	ATO:	3/1R
LANDING/SAFING	3: 3/3		·

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: PNL A14 S11 PART NUMBER: 36 V 73 A14 S11

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.

HIGHEST CRITICALITY HDW/FUNC 1/23/87 DATE: 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2358 MANIFOLD 3, JETS HEATER CONTROL SWITCH OPEN ITEM: CONTACTS 3, 4 FAILURE MODE: SWITCH CONTACTS FAIL OPEN. LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS THRUSTER 2) 3) THERMAL CONTROL SUBSYSTEM 4) MANIFOLD 3 JETS 5) MANIFOLD 3, JETS HEATER CONTROL SWITCH OPEN CONTACTS 3, 4 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 TAL: 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: 3/3 3/3 ATO: 3/3 DEORBIT:

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

LOCATION: PNL A14 S11 PART NUMBER: 36V73A14S11

LANDING/SAFING: 3/3

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

HIGHEST CRITICALITY HDW/FUNC 1/23/87 3/3 FLIGHT: SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2359 MANIFOLD 3, JETS HEATER CONTROL SWITCH OPEN ITEM: CONTACTS 3, 4 FAILURE MODE: SWITCH CONTACTS FAIL CLOSED. SUBSYS LEAD: D.J. PAUL LEAD ANALYST: V.J. BURKEMPER BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS 2) THRUSTER THERMAL CONTROL SUBSYSTEM 3) MANIFOLD 3 JETS 4) MANIFOLD 3, JETS HEATER CONTROL SWITCH OPEN CONTACTS 3, 4 5) 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 RTLS: 3/3 PRELAUNCH: 3/3 3/3 TAL: LIFTOFF: 3/3 3/3 AOA: ONORBIT: 3/3 ATO: 3/3 DEORBIT:

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

LOCATION: PNL A14 S11 PART NUMBER: 36V73A14S11

LANDING/SAFING: 3/3

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

EFFECTS/RATIONALE:

NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/23/87

FLIGHT: 3/1R SUBSYSTEM: ARCS 3/1R ABORT: MDAC ID: 2360

ITEM: MANIFOLD 4, JETS HEATER CONTROL SWITCH

FAILURE MODE: SWITCH FAILS IN THE ON POSITION.

SUBSYS LEAD: D.J. PAUL LEAD ANALYST: V.J. BURKEMPER

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- 2) THRUSTER
- THERMAL CONTROL SUBSYSTEM 3)
- 4) MANIFOLD 4 JETS
- 5) MANIFOLD 4, JETS HEATER CONTROL SWITCH

6)

7)

8) 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/1R
LIFTOFF:	3/1R	TAL:	3/1R
ONORBIT:	3/1R	AOA:	3/1R
DEORBIT:	3/1R	ATO:	3/1R
LANDING/SAFING:	3/3		-

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

HIGHEST CRITICALITY HDW/FUNC 1/23/87 DATE:

FLIGHT: 2/2 SUBSYSTEM: ARCS ABORT: 3/3 MDAC ID: 2361

MANIFOLD 4, JETS HEATER CONTROL SWITCH ITEM:

FAILURE MODE: SWITCH FAILS IN THE OFF POSITION.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- ELECTRICAL COMPONENTS
- 2) THRUSTER
- THERMAL CONTROL SUBSYSTEM 3)
- 4) MANIFOLD 4 JETS
- MANIFOLD 4, JETS HEATER CONTROL SWITCH

6)

7) 8)

9)

CRITICALITIES

	W-1		
FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	2/2	AOA:	3/3
DEORBIT:	2/2	ATO:	3/3
LANDING/SAFING:	3/3		

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.

HIGHEST CRITICALITY HDW/FUNC 1/23/87 SUBSYSTEM: ARCS FLIGHT: 2/2 ABORT: 3/3 MDAC ID: 2362 MANIFOLD 4, JETS HEATER CONTROL SWITCH OPEN ITEM: 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 THRUSTER 3) THERMAL CONTROL SUBSYSTEM 4) MANIFOLD 4 JETS 5) MANIFOLD 4, JETS HEATER CONTROL SWITCH OPEN CONTACTS 1, 2 6) 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 PRELAUNCH: 3/3 RTLS: TAL: 3/3 LIFTOFF: 3/3 AOA: 3/3 2/2 ONORBIT: DEORBIT: 2/2 ATO: 3/3 LANDING/SAFING: 3/3 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.

DATE:

1/23/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: ARCS

FLIGHT:

3/1R

MDAC ID:

2363

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
- THERMAL CONTROL SUBSYSTEM 3)
- MANIFOLD 4 JETS 4)

MANIFOLD 4, JETS HEATER CONTROL SWITCH OPEN CONTACTS 1, 2 5)

6)

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/1R
LIFTOFF:	3/1R	TAL:	3/1R
ONORBIT:	3/1R	AOA:	3/1R
DEORBIT:	3/1R	ATO:	3/1R
LANDING/SAFING	: 3/3		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/23/87 SUBSYSTEM: ARCS FLIGHT: 3/3 3/3 ABORT: MDAC ID: 2364 MANIFOLD 4, JETS HEATER CONTROL SWITCH OPEN ITEM: CONTACTS 3, 4 SWITCH CONTACTS FAIL OPEN. FAILURE MODE: LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS THRUSTER 3) THERMAL CONTROL SUBSYSTEM 4) MANIFOLD 4 JETS 5) MANIFOLD 4, JETS HEATER CONTROL SWITCH OPEN CONTACTS 3, 4 6) 7) 8) 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: PRELAUNCH: 3/3 3/3 3/3 LIFTOFF: 3/3 TAL: ONORBIT: 3/3 AOA: 3/3 DEORBIT: ATO: 3/3 3/3 LANDING/SAFING: 3/3 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.

HIGHEST CRITICALITY HDW/FUNC 1/23/87 DATE: FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2365 MANIFOLD 4, JETS HEATER CONTROL SWITCH OPEN ITEM: CONTACTS 3, 4 FAILURE MODE: SWITCH CONTACTS FAIL CLOSED. LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL BREAKDOWN HIERARCHY: 1) ELECTRICAL COMPONENTS THRUSTER 2) THERMAL CONTROL SUBSYSTEM 3) MANIFOLD 4 JETS 4) MANIFOLD 4, JETS HEATER CONTROL SWITCH OPEN CONTACTS 3, 4 5) 6) 7) 8) 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE

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 A14 S12 PART NUMBER: 36V73A14S12

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/23/87

FLIGHT: 3/1R SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2366

MANIFOLD 5, JETS HEATER CONTROL SWITCH ITEM:

FAILURE MODE: SWITCH FAILS IN THE ON POSITION.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- THRUSTER 2)
- 3) THERMAL CONTROL SUBSYSTEM
- 4) MANIFOLD 5 JETS
- 5) MANIFOLD 5, JETS HEATER CONTROL SWITCH

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/1R	TAL:	3/3
ONORBIT:	3/1R	AOA:	3/3
DEORBIT:	3/1R	ATO:	3/3
LANDING/SAFING:	3/3	•	·

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 2/2 ABORT: 3/3

MDAC ID: 2367 ABORT:

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
- 6)
- 7)
- 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	2/2	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3		

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.

HIGHEST CRITICALITY HDW/FUNC DATE: 1/23/87

FLIGHT: 2/2 SUBSYSTEM: ARCS 3/3 ABORT: MDAC ID: 2368

MANIFOLD 5, JETS HEATER CONTROL SWITCH OPEN ITEM:

CONTACTS 1, 2

FAILURE MODE: SWITCH CONTACTS FAIL OPEN.

LEAD ANALYST: V.J. BURKEMPER SUBSYS LEAD: D.J. PAUL

BREAKDOWN HIERARCHY:

- 1) ELECTRICAL COMPONENTS
- THRUSTER
- 3) THERMAL CONTROL SUBSYSTEM
- 4) MANIFOLD 5 JETS
- 5) MANIFOLD 5, JETS HEATER CONTROL SWITCH OPEN CONTACTS 1, 2

6)

7) 8)

9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/3	TAL:	3/3
ONORBIT:	2/2	AOA:	3/3
DEORBIT:	3/3	ATO:	3/3
LANDING/SAFING:	3/3	•	

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.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/1R

SUBSYSTEM: ARCS FLIGHT: 3/1F MDAC ID: 2369 ABORT: 3/3

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
- 6)
- 7) 8)
- 9)

CRITICALITIES

FLIGHT PHASE	HDW/FUNC	ABORT	HDW/FUNC
PRELAUNCH:	3/3	RTLS:	3/3
LIFTOFF:	3/1R	TAL:	3/3
ONORBIT:	3/1R	AOA:	3/3
DEORBIT:	3/1R	ATO:	3/3
LANDING/SAFING	: 3/3		

REDUNDANCY SCREENS: A [2] B [P] C [P]

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.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC FLIGHT: 3/3 SUBSYSTEM: ARCS 3/3 MDAC ID: 2370 ABORT: 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
- 6) 7)
- 8) 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: PNL A14 S13 PART NUMBER: 36V73A14S13

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

DATE: 1/23/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: ARCS FLIGHT: 3/3 MDAC ID: 2371 ABORT: 3/3

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

6) 7)

8)

. 9j

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 A14 S13 PART NUMBER: 36V73A14S13

CAUSES: CONTAMINATION, VIBRATION, MECHANICAL SHOCK, THERMAL

SHOCK, OVERLOAD

EFFECTS/RATIONALE:

NONE, THESE CONTACTS ARE NOT IN A CIRCUIT.

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APPENDIX D POTENTIAL CRITICAL ITEMS

MDAC		
<u>ID</u>	ITEM	FAILURE MODE
100	ITEM HELIUM STORAGE TANK HELIUM FILL COUPLING HE ISOL A & B VLVS HE LINE, ALL EXCEPT ISOL VLV TO PRESS REGULATOR HE LINE, ALL EXCEPT ISOL VLV TO PRESS REGULATOR	STRUCTURAL FAILURE (RUPTURE OR LEAK)
101	HELIUM FILL COUPLING	FAILS TO CLOSE (FAILS OPEN), OR LEAKS
104	HE ISOL A & B VLVS	FAILS TO OPEN (FAILS CLOSED)
105	HE LINE, ALL EXCEPT ISOL VLV	STRUCTURAL FAILURE (RUPTURE
106	HE LINE, ALL EXCEPT ISOL VLV TO PRESS REGULATOR	RESTRICTED FLOW
107	TO PRESS REGULATOR HE LINE, ISOL VLV TO PRESS REGULATOR HE LINE, ISOL VLV TO PRESS REGULATOR	STRUCTURAL FAILURE (RUPTURE OR LEAK)
108	HE LINE, ISOL VLV TO PRESS REGULATOR	RESTRICTED FLOW
112	HE PRESS REGULATOR ASSEMBLY HE PRESS REGULATOR ASSEMBLY HE PRESS REGULATOR ASSEMBLY HE PRESS REGULATOR PRIMARY	FAILS CLOSED
113	HE PRESS REGULATOR ASSEMBLY	RESTRICTED FLOW
115	HE PRESS REGULATOR PRIMARY	LEAKS EXTERNALLY
116	HE PRESS REGULATOR PRIMARY SENSING PORT	FAILS TO OPEN (FAILS
	SENSING PORT	CLOSED)
11/	TEST DODT COURTING	FAILS TO CLOSE (FAILS
119	HE PRESS REGULATOR OUTLET TEST PORT COUPLING QUAD CHECK VALVE ASSEMBLY	FAILS TO CLOSE (FAILS
	2012 01301 112 12 110 211 21	OPEN) OR LEAKS (REVERSE
		FLOW)
120	~	FAILS TO OPEN (FAILS CLOSED)
121	QUAD CHECK VALVE TEST PORT COUPLINGS A & B PROPELLANT TANK PROP LINES, ALL PROP LINES, ALL PROP FILL VENT REGULATOR CHECKOUT COUPLING	FAILS TO CLOSE (FAILS OPEN), OR LEAKS
123	PROPELLANT TANK	STRUCTURAL FAILURE (RUPTURE
		OR LEAK)
124	PROP LINES, ALL	STRUCTURAL FAILURE (RUPTURE
125	PROD LINES ALL	RESTRICTED FLOW
126	PROP FILL VENT REGULATOR	FAILS TO CLOSE (FAILS OPEN),
	CHECKOUT COUPLING	OK DEAKS DAIDKIANDDI
128	PROP CHANNEL SCREENS	STRUCTURAL FAILURE (RUPTURE)
129		RESTRICTED FLOW
130	PROP TK UPPER COMPARTMENT CHANNEL CHECKOUT COUPLING	FAILS TO CLOSE (FAILS OPEN), OR LEAKS EXTERNALLY
132	PROP TK LOWER COMPARTMENT	FAILS TO CLOSE (FAILS OPEN),
	CHANNEL BLEED COUPLING	OR LEAKS EXTERNALLY
134	PROP TK LOWER COMPARTMENT	FAILS TO CLOSE (FAILS OPEN),
126	BULKHEAD BLEED COUPLING	OR LEAKS EXTERNALLY
136	PROP TK VENT AND REGULATOR CHECKOUT COUPLING	FAILS TO CLOSE (FAILS OPEN), OR LEAKS EXTERNALLY
138	GIMBAL BELLOWS	STRUCTURAL FAILURE (RUPTURE OR LEAK)

MDAC ID	ITEM GIMBAL BELLOWS PRESSURE RELIEF ASSEMBLY PRESSURE RELIEF ASSEMBLY	FAILURE MODE
1 20	CIMBAL BELLOWS	PESTRICTED FLOW
140	PRESSURE RELIEF ASSEMBLY	BURST DISK RUPTURES AT LOW
141	PRESSURE RELIEF ASSEMBLY	BURST DISK FAILS TO RUPTURE, RUPTURES AT A HIGHER THAN NOMINAL PRESSURE OR POPPET
		VALVE FAIL
	GROUND MANUAL ISOLATION VALVE	FAILS TO REMAIN OPEN (FAILS
146	GROUND MANUAL ISOLATION VALVE PROP TK ISOL VLVS 1/2 & 3/4/5 PROP TK ISOL VLVS 1/2 & 3/4/5 PROP TK ISOL VLV 1/2 PROP TK ISOL VLV 3/4/5 MANIFOLD 1/2 FILL & DRAIN/PURGE COURT INC.	LEAKS EXTERNALLY
147	PROP TK ISOL VLVS 1/2 & 3/4/5	LEAKS EXTERNALLY
148	PROP TK ISOL VLVS 1/2 & 3/4/5	RESTRICTED FLOW
150	PROP TK ISOL VLV 1/2	FAILS TO OPEN (FAILS CLOSED)
152	PROP TK ISOL VLV 3/4/5	FAILS TO OPEN (FAILS CLOSED)
153	MANIFOLD 1/2 FILL & DRAIN/PURGE	FAILS TO CLOSE (FAILS OPEN),
3 5 5	COUPLING WANTEOLD 2/4/E BILL S	UR LEAKS EXTERNALLY
122	MANIFOLD 3/4/5 FILL &	OR TEXTS EVENDANTLY
150	MANTEOLD 1 ISOL VLV	FATIS TO OPEN (FATIS CIOSED)
159	MANIFOLD 1, ISOL VEV	FAILS TO CLOSE (FAILS OPEN)
100	COUPLING	OR LEAKS EXTERNALLY
162	MANIFOLD 2. ISOL VLV	FAILS TO OPEN (FAILS CLOSED)
163	MANIFOLD 2, GROUND PURGE/DRAIN	FAILS TO CLOSE (FAILS OPEN),
	COUPLING	OR LEAKS EXTERNALLY
166	MANIFOLD 3, ISOL VLV	FAILS TO OPEN (FAILS CLOSED)
167	COUPLING MANIFOLD 1/2 FILL & DRAIN/PORGE COUPLING MANIFOLD 3/4/5 FILL & DRAIN/PURGE COUPLING MANIFOLD 1, ISOL VLV MANIFOLD 1, GROUND PURGE/DRAIN COUPLING MANIFOLD 2, ISOL VLV MANIFOLD 2, GROUND PURGE/DRAIN COUPLING MANIFOLD 3, ISOL VLV MANIFOLD 3, GROUND PURGE/DRAIN COUPLING	FAILS TO CLOSE (FAILS OPEN),
170	COUPLING MANIFOLD 4, ISOL VLV MANIFOLD 4, GROUND PURGE/DRAIN	OR LEAKS EXTERNALLY
171	MANIFOLD 4, ISOL VLV	FAILS TO CLOSE (FAILS CLOSED)
1/1	COUPLING	OR LEAKS EXTERNALLY
174	MANIFOLD 5. ISOL VLV	FAILS TO OPEN (FAILS CLOSED)
175	COUPLING MANIFOLD 5, ISOL VLV MANIFOLD 5, GROUND PURGE/DRAIN COUPLING	FAILS TO CLOSE (FAILS OPEN), OR LEAKS EXTERNALLY
177	COUPLING MANIFOLD ISOL VLVS MANIFOLD ISOL VLVS	LEAKS EXTERNALLY
178	MANIFOLD ISOL VLVS	RESTRICTED FLOW
179	JET ALIGNMENT BELLOWS, PRIMARY,	STRUCTURAL FAILURE (RUPTURE
180	ALL AXES JET ALIGNMENT BELLOWS, PRIMARY,	OR LEAK) RESTRICTED FLOW
	ALL AXES	
181		FAILS TO CLOSE (FAILS
	PRIMARY, ALL AXES	OPEN/ON)
182	THRUSTER BIPROP SOLENOID VLV,	
		PROPELLANT
183	THRUSTER BIPROP SOLENOID VLV,	RESTRICTED FLOW
10E	PRIMARY, ALL AXIS THRUSTER BIPROP SOLENOID VLV,	TEARS THERDWALLY ONE
185	PRIMARY, -X AXIS	PROPELLANT
186	THRUSTER BIPROP SOLENOID VLV,	
200	PRIMARY, Y AXIS	CLOSED)
187	THRUSTER BIPROP SOLENOID VLV, PRIMARY, Y AXIS	

MDAC		
<u>ID</u>	ITEM	FAILURE MODE
189	THRUSTER BIPROP SOLENOID VLV, PRIMARY, Z AXIS	LEAKS INTERNALLY, ONE PROPELLANT
·190	JET ALIGNMENT BELLOWS, VERNIER,	STRUCTURAL FAILURE (RUPTURE OR LEAK)
	JET ALIGNMENT BELLOWS, VERNIER, ALL AXES	
192	THRUSTER BIPROP SOLENOID VLV, VERNIERS, ALL AXES	OPEN/ON)
	THRUSTER BIPROP SOLENOID VLV,	FAILS TO OPEN (FAILS
194	THRUSTER BIPROP SOLENOID VLV.	LEAKS EXTERNALLY, ONE PROPELLANT
195	VERNIERS, ALL AXES THRUSTER BIPROP SOLENOID VLV, VERNIERS, ALL AXES THRUSTER BIPROP SOLENOID VLV,	LEAKS INTERNALLY, ONE PROPELLANT
	VEDNITEDS ALL AVES	
197	THRUSTER COMBUSTION CHAMBER OR NOZZLE EXTENSION, PRIMARY, ALL AXES	THRUSTER COMBUSTION CHAMBER OR NOZZLE EXTENSION BURNTHROUGH
198	THRUSTER COMBUSTION CHAMBER OR NOZZLE EXTENSION, VERNIER,	THRUSTER COMBUSTION CHAMBER OR NOZZLE EXTENSION
199	THE TIME CHOP & CH. MANIE	BURNTHROUGH STRUCTURAL FAILURE (RUPTURE OR LEAK)
200	HELIUM FILL COUPLING	OR LEAK) FAILS TO CLOSE (FAILS OPEN), OR LEAKS
203	HE ISOL A & B VLVS	FAILS TO OPEN (FAILS CLOSED)
204	HE ISOL A & B VLVS HE LINE, ALL EXCEPT ISOL VLV TO PRESS REGULATOR	STRUCTURAL FAILURE (RUPTURE OR LEAK)
205	HE LINE, ALL EXCEPT ISOL VLV TO PRESS REGULATOR	RESTRICTED FLOW
206	REGULATOR	OR LEAK)
207	REGULATOR	
	HELIUM PRESSURE REGULATOR ASSEMBLY	FAILS CLOSED
	HELIUM PRESSURE REGULATOR ASSEMBLY	
	ASSEMBLY	LEAKS EXTERNALLY
214	HELIUM PRESSURE REGULATOR PRIMARY SENSING PORT	LEAKS EXTERNALLY
215	PRIMARY SENSING PORT	FAILS TO OPEN (FAILS CLOSED)
216	OUTLET TEST PORT COUPLING	FAILS TO CLOSE (FAILS OPEN), OR LEAKS
218	QUAD CHECK VALVE ASSEMBLY	FAILS TO CLOSE (FAILS OPEN) OR LEAKS (REVERSE FLOW)

MDAC ID	<u>ITEM</u>	FAILURE MODE
219	QUAD CHECK VALVE ASSEMBLY	FAILS TO OPEN (FAILS CLOSED)
222	PROPELLANT TANK	STRUCTURAL FAILURE (RUPTURE
223	PROP LINES, ALL	STRUCTURAL FAILURE (RUPTURE OR LEAK)
22 4 225	PROP LINES, ALL PROP FILL/VENT COUPLING	RESTRICTED FLOW FAILS TO CLOSE (FAILS OPEN), OR LEAKS EXTERNALLY
227 228 231	QUAD CHECK VALVE ASSEMBLY PROPELLANT TANK PROP LINES, ALL PROP LINES, ALL PROP FILL/VENT COUPLING PROP CHANNEL SCREENS PROP FEEDOUT TUBE PROP TK LOWER COMPARTMENT CHANNEL BLEED COUPLING PROP TK ENTRY SUMP BLEED COUPLING GIMBAL BELLOWS PRESSURE RELIEF ASSEMBLY	STRUCTURAL FAILURE (RUPTURE) RESTRICTED FLOW FAILS TO CLOSE (FAILS OPEN), OR LEAKS EXTERNALLY
237	PROP TK ENTRY SUMP BLEED COUPLING	FAILS TO CLOSE (FAILS OPEN), OR LEAKS EXTERNALLY
239	GIMBAL BELLOWS	STRUCTURAL FAILURE (RUPTURE OR LEAK)
240 241	GIMBAL BELLOWS PRESSURE RELIEF ASSEMBLY	RESTRICTED FLOW BURST DISK RUPTURES AT LOW PRESSURE, OR LEAKS
242	PRESSURE RELIEF ASSEMBLY	RUPTURES AT A HIGHER THAN NOMINAL PRESSURE, OR POPPET
246	GROUND MANUAL ISOLATION VALVE	VALVE FAIL FAILS TO REMAIN OPEN (FAILS CLOSED)
247	GROUND MANUAL ISOLATION VALVE	LEAKS EXTERNALLY
248	PROP TANK ISOL VLVS 1/2 & 3/4/5	LEAKS EXTERNALLY
249	PROP TANK ISOL VLVS 1/2 & 3/4/5	RESTRICTED FLOW
250	PROP TANK ISOL VLV 1/2	FAILS TO CLOSE (FAILS OPEN), OR LEAKS INTERNALLY
251	PROP TANK ISOL VLV 1/2	FAILS TO OPEN (FAILS CLOSED)
	PROP TANK ISOL VLV 3/4/5/ A & B	OR LEAKS INTERNALLY
	MANIFOLD 1/2 GROUND PURGE COUPLING	FAILS TO CLOSE (FAILS OPEN), OR LEAKS EXTERNALLY
		OR LEAKS EXTERNALLY
258	RCS CROSSFEED VLV 1/2 OR 3/4/5	RESTRICTED FLOW
259	RCS CROSSFEED VLV 1/2 OR 3/4/5	LEAKS EXTERNALLY
		FAILS TO CLOSE (FAILS OPEN), OR LEAKS INTERNALLY
261	RCS CROSSFEED VLV 1/2	FAILS TO OPEN (FAILS CLOSED)
262	RCS CROSSFEED VLV 1/2 RCS CROSSFEED VLV 3/4/5 RCS CROSSFEED VLV 3/4/5 CROSSFEED LINES CROSSFEED LINES	FAILS TO CLOSE (FAILS OPEN), OR LEAKS INTERNALLY
263	RCS CROSSFEED VLV 3/4/5	FAILS TO OPEN (FAILS CLOSED)
264	CROSSFEED LINES	RESTRICTED FLOW
		OR LEAK)
267	MANIFOLD 1, ISOL VLV	FAILS TO OPEN (FAILS CLOSED)

MDAC ID	ITEM	FAILURE MODE
	MANIFOLD 1, GROUND PURGE/DRAIN COUPLING	OR LEAKS EXTERNALLY
271	MANIFOLD 2, ISOL VLV	FAILS TO OPEN (FAILS CLOSED)
272	MANTEOID 2 COCIND DIDGE/DRAIN	FATES TO CLOSE (FATES OPEN)
	COUPLING	OR LEAKS EXTERNALLY
275	MANIFOLD 3, ISOL VLV	FAILS TO OPEN (FAILS CLOSED)
276	COUPLING MANIFOLD 3, ISOL VLV MANIFOLD 3, GROUND PURGE/DRAIN COUPLING	FAILS TO CLOSE (FAILS OPEN), OR LEAKS EXTERNALLY
279	MANIFOLD 4, ISOL VLV	FAILS TO OPEN (FAILS CLOSED)
280	MANIFOLD 3, GROUND PURGE/DRAIN COUPLING MANIFOLD 4, ISOL VLV MANIFOLD 4, GROUND PURGE/DRAIN COUPLING	FAILS TO CLOSE (FAILS OPEN), OR LEAKS EXTERNALLY
283	MANIFOLD 5, ISOL VLV	FAILS TO OPEN (FAILS CLOSED)
284	MANIFOLD 4, GROUND PURGE/DRAIN COUPLING MANIFOLD 5, ISOL VLV MANIFOLD 5, GROUND PURGE/DRAIN COUPLING MANIFOLD ISOL VLVS MANIFOLD ISOL VLVS JET ALIGNMENT BELLOWS, PRIMARY, ALL AXES JET ALIGNMENT BELLOWS, DRIMARY ALL AXES	FAILS TO CLOSE (FAILS OPEN), OR LEAKS EXTERNALLY
286	MANIFOLD ISOL VLVS	LEAKS EXTERNALLY
287	MANIFOLD ISOL VLVS	RESTRICTED. FLOW
288	JET ALIGNMENT BELLOWS,	STRUCTURAL FAILURE (RUPTURE
	PRIMARY, ALL AXES	OR LEAK)
289	JET ALIGNMENT BELLOWS,	RESTRICTED FLOW
	INTIMIT, ADD ANDO	
290		FAILS TO CLOSE (FAILS
	PRIMARY, ALL AXES	OPEN/ON)
291		LEAKS EXTERNALLY, ONE
		PROPELLANT
292		RESTRICTED FLOW
204	PRIMARY, ALL AXES THRUSTER BIPROP SOLENOID VLVS,	TEXPS THREDNATTY ONE
294	PRIMARY, +X AXIS	PROPELLANT
. 296	THRUSTER BIPROP SOLENOID VLVS,	
250	PRIMARY, Y AXIS	PROPELLANT
298		
-50	PRIMARY, Z AXIS	PROPELLANT
299	JET ALIGNMENT BELLOWS, VERNIER,	
	ALL AXES	OR LEAK)
300	JET ALIGNMENT BELLOWS, VERNIER, ALL AXES	RESTRICTED FLOW
301		FAILS TO CLOSE (FAILS
301	VERNIERS, ALL AXES	OPEN/ON)
302	THRUSTER BIPROP SOLENOID VLVS,	
302	VERNIERS, ALL AXES	,
303	THRUSTER BIPROP SOLENOID VLVS,	LEAKS EXTERNALLY, ONE
	VERNIERS, ALL AXES	PROPELLANT
304	·	
	VERNIERS, ALL AXES	PROPELLANT
305	THRUSTER BIPROP SOLENOID VLVS,	
	VERNIERS, ALL AXES	
306	THRUSTER COMBUSTION CHAMBER	
	OR NOZZLE EXTENSION, PRIMARY,	
	ALL AXES	BURNTHROUGH

MDAC ID	ITEM	FAILURE MODE
307	THRUSTER COMBUSTION CHAMBER OR NOZZLE EXTENSION, VERNIER, ALL AXES	THRUSTER COMBUSTION CHAMBER OR NOZZLE EXTENSION BURNTHROUGH
308	-	
	CONTROLLER, REMOTE POWER	
	CONTROLLER, REMOTE POWER	
316	DIODE	FAILS OPEN
317	DIODE	FAILS SHORT
	DIODE	FAILS OPEN
	DIODE	FAILS SHORT
	DIODE	FAILS OPEN
321	DIODE	FAILS SHORT
	DIODE	FAILS OPEN
	DIODE DRIVER, HYBRID	FAILS SHORT
330	DRIVER, HIBRID	FAILS HIGH FAILS OPEN
330	DRIVER, HYBRID	FAILS OPEN
335	DRIVER, HYBRID DRIVER, HYBRID DRIVER, HYBRID DRIVER, HYBRID DRIVER, HYBRID FUSE, 1A	FAILS OPEN FAILS OPEN FAILS HIGH FAILS HIGH
337	DRIVER, HYBRID	FAILS HIGH
340	FUSE, 1A	FAILS OPEN
365	HE OX & FU ISOL VLV A OR B SWITCH CLOSE CONTACTS 5, 6	SWITCH CLOSE CONTACTS FAIL OPEN
367	HE OX & FU ISOL VLV A OR B SWITCH OPEN CONTACTS 7, 8	SWITCH OPEN CONTACTS FAIL OPEN
370	HE OX & FU ISOL VLV A OR B SWITCH GPC CONTACTS 9, 10	SWITCH GPC CONTACTS FAIL CLOSED
371	FUSE, 1A HE OX & FU ISOL VLV A OR B SWITCH CLOSE CONTACTS 5, 6 HE OX & FU ISOL VLV A OR B SWITCH OPEN CONTACTS 7, 8 HE OX & FU ISOL VLV A OR B SWITCH GPC CONTACTS 9, 10 HE OX & FU ISOL VLV A OR B SWITCH CLOSE CONTACTS 11, 12 HE OX & FU ISOL VLV A OR B	SWITCH CLOSE CONTACTS FAIL OPEN
372	HE OX & FU ISOL VLV A OR B SWITCH CLOSE CONTACTS 11, 12	0.110:1 02002 00:11:010
390	DIODE	FAILS OPEN
391	DIODE	FAILS SHORT
392	DIODE	FAILS OPEN
393	DIODE	FAILS SHORT
395	DIODE	FAILS SHORT
397 398	DIODE DIODE	FAILS SHORT FAILS OPEN
399	DIODE	FAILS OPEN FAILS SHORT
400	DIODE	FAILS OPEN
401	DIODE	FAILS SHORT
403	DIODE	FAILS SHORT
413	DIODE	FAILS SHORT
423	DIODE	FAILS SHORT
426	DIODE	FAILS OPEN
427	DIODE	FAILS SHORT
428	DIODE	FAILS OPEN
429	DIODE	FAILS SHORT
431 433	DIODE	FAILS SHORT FAILS SHORT
433	DIODE DIODE	FAILS SHORT FAILS OPEN
434	DIODE	FAILS OFEN

•	MDAC ID	ITEM	FAILURE MODE
			EXIC OPEN
	436	DIODE	FAILS OPEN FAILS SHORT
-	437	DIODE	FAILS SHORT
	439	DIODE	FAILS SHORT
	449	DIODE	FAILS SHORT
	459 472	DIODE RELAY	FAILS OPEN
	475	RELAY	FAILS HIGH
	477	RELAY	FAILS HIGH
	478	RELAY	FAILS OPEN
	481	RELAY	FAILS HIGH
	483	RELAY	FAILS HIGH
	484	RELAY	FAILS OPEN
-	487	RELAY	FAILS HIGH
	489	RELAY	FAILS HIGH
	490	RELAY	FAILS OPEN
•	493	RELAY .	FAILS OPEN FAILS HIGH FAILS HIGH
	495	KELAI	THE BO HEGH
•	535	OX & FU TK ISOL VLV 1/2 SWITCH	
-		OPEN CONTACTS 1, 2	OPEN
	540	OX & FU TK ISOL VLV 1/2 SWITCH	SWITCH CLOSE CONTACTS FAIL
		CLOSE CONTACTS 5, 6	
_	546	OX & FU TK ISOL VLV 1/2 SWITCH	
		CLOSE CONTACTS 11, 12 OX & FU TK ISOL VLV 3/4/5	SWITCH OPEN CONTACTS FAIL
	550		
	555	SWITCH OPEN CONTACTS 1, 2 OX & FU TK ISOL VLV 3/4/5	SWITCH CLOSE CONTACTS FAIL
-	555	CA & FU IN ISOU VUV 3/4/5	CLOSED
	561	SWITCH CLOSE CONTACTS 5, 6 OX & FU TK ISOL VLV 3/4/5	SWITCH CLOSE CONTACTS FAIL
	301	SWITCH CLOSE CONTACTS 11, 12	CLOSED
-	571	DIODE	FAILS SHORT
	575	DIODE	FAILS SHORT
	585	DIODE .	FAILS SHORT
	587	DIODE	FAILS SHORT
	589	DIODE	FAILS SHORT
	593	DIODE	FAILS SHORT
	597	DIODE	FAILS SHORT
=-	607	DIODE	FAILS SHORT
	609	DIODE	FAILS SHORT
	611	DIODE	FAILS SHORT
-	615	DIODE	FAILS SHORT
	619	DIODE	FAILS SHORT FAILS SHORT
	629	DIODE	FAILS SHORT
_	631 633	DIODE DIODE	FAILS SHORT
	637	DIODE	FAILS SHORT
	641	DIODE	FAILS SHORT
<u> </u>	651	DIODE	FAILS SHORT
	653	DIODE	FAILS SHORT
	655	DIODE	FAILS SHORT
	661	DIODE	FAILS SHORT
_	663	DIODE	FAILS SHORT

MDAC	DRIVER, HYBRID DRIVER, HYBRID DRIVER, HYBRID DRIVER, HYBRID DRIVER, HYBRID RELAY	•
ID	ITEM	FAILURE MODE
669	DRIVER, HYBRID	FAILS HIGH
673	DRIVER, HYBRID	FAILS HIGH
677	DRIVER, HYBRID	FAILS HIGH
681	DRIVER, HYBRID	FAILS HIGH
693	DRIVER, HYBRID	FAILS HIGH
702	RELAY	FAILS OPEN
705	RELAY	FAILS HIGH
	RELAY	FAILS OPEN
	RELAY	FAILS HIGH
	RELAY RELAY	FAILS OPEN FAILS HIGH
	RELAY	FAILS OPEN
	RELAY	FAILS OPEN FAILS HIGH
793	MANTFOLD 1 OX & FILTSOL VLV	SWITCH OPEN CONTACTS FAIL
, , ,	RELAY MANIFOLD 1, OX & FU ISOL VLV SWITCH OPEN CONTACTS 1, 2	OPEN CONTACTS FATE
798		SWITCH CLOSE CONTACTS FAIL
	SWITCH CLOSE CONTACTS 5, 6	CLOSED
802	MANIFOLD 2, OX & FU ISOL VLV	SWITCH OPEN CONTACTS FAIL
	SWITCH ODEN CONTROTS 1 2	ODEN
807	MANIFOLD 2, OX & FU ISOL VLV SWITCH CLOSE CONTACTS 5, 6	SWITCH CLOSE CONTACTS FAIL
	SWITCH CLOSE CONTACTS 5, 6	CLOSED
811	MANIFOLD 3, OX & FU ISOL VLV	SWITCH OPEN CONTACTS FAIL
	SWITCH OPEN CONTACTS 1, 2	OPEN
816	MANIFOLD 3, OX & FU ISOL VLV	
	SWITCH CLOSE CONTACTS 5, 6	CLOSED
820	MANIFOLD 4, OX & FU ISOL VLV	
	SWITCH OPEN CONTACTS 1, 2	OPEN
825		SWITCH CLOSE CONTACTS FAIL
004	SWITCH CLOSE CONTACTS 5, 6	CLOSED
834		
835	SWITCH CLOSE CONTACTS 5, 6 MANIFOLD 5, OX & FU ISOL VLV	CLOSED
033	SWITCH OPEN CONTACTS 7, 8	OPEN CONTACTS FAIL
838	MANIFOLD 5, OX & FU ISOL VLV	
030	SWITCH GPC CONTACTS 9, 10	CLOSED CLOSED
840	MANIFOLD 5, OX & FU ISOL VLV	SWTICH CLOSE CONTACTS FAIL
0.10	SWITCH CLOSE CONTACTS 11, 12	
885	CONTROLLER, REMOTE POWER	FAILS OPEN
886	CONTROLLER, REMOTE POWER	FAILS HIGH
887	CONTROLLER, REMOTE POWER	FAILS OPEN
889	CONTROLLER, REMOTE POWER	FAILS OPEN
890	CONTROLLER, REMOTE POWER	FAILS HIGH
891	CONTROLLER, REMOTE POWER	FAILS OPEN
894	CONTROLLER, REMOTE POWER	FAILS HIGH
898	CONTROLLER, REMOTE POWER	FAILS HIGH
901	CONTROLLER, REMOTE POWER	FAILS HIGH
902	CONTROLLER, REMOTE POWER	FAILS OPEN
904	CONTROLLER, REMOTE POWER	FAILS OPEN
905	CONTROLLER, REMOTE POWER	FAILS OPEN
907	CONTROLLER, REMOTE POWER	FAILS OPEN
909	DIODE	FAILS OPEN

MDAC ID	ITEM	FAILURE MODE
011	DIODE	FAILS OPEN
	DIODE	FAILS OPEN
	DIODE	FAILS OPEN
	DIODE	FAILS OPEN
917	DIODE	
919	DIODE	FAILS OPEN
	DIODE	FAILS OPEN
922	DIODE	FAILS SHORT
923	DIODE	FAILS OPEN
925	DIODE	FAILS OPEN
	DIODE	FAILS OPEN
	DIODE	FAILS SHORT
_	DIODE	FAILS OPEN
931	DIODE	FAILS OPEN
	DIODE	FAILS OPEN
	DIODE	FAILS SHORT
935	DIODE •	FAILS OPEN
936	DIODE	FAILS SHORT FAILS OPEN
937	DIODE	
939	DIODE	FAILS OPEN
941	DIODE	FAILS OPEN
943	DIODE	FAILS OPEN
945	DIODE	FAILS OPEN
	DRIVER, HYBRID	FAILS OPEN
	DRIVER, HYBRID	FAILS HIGH
949	DRIVER, HYBRID	FAILS OPEN
950	DRIVER, HYBRID	FAILS HIGH
95 4	DRIVER, HYBRID	FAILS HIGH FAILS HIGH
	DRIVER, HYBRID	FAILS OPEN
	DRIVER, HYBRID	FAILS OPEN
	DRIVER, HYBRID	FAILS OPEN
960	FUSE, 1A	FAILS OPEN
963	FUSE, 1A	FAILS OPEN
966	FUSE, 1A	FAILS OPEN
968	FUSE, 1A	FAILS OPEN
970 071	FUSE, 1A	FAILS OPEN
	FUSE, 1A	FAILS OPEN
	RELAY	FAILS OPEN
	RELAY DELAY LATCHING	FAILS OPEN
	RELAY, LATCHING RESISTOR, 1.2K 2W	FAILS OPEN
1000	DEGIGEOR 1 OF OW	FAILS OPEN
1000	RESISTOR, 1.2K 2W RESISTOR, 1.2K 2W	FAILS OPEN
	RESISTOR, 1.2K 2W RESISTOR, 1.2K 2W	FAILS OPEN
	RESISTOR, 1.2K 2W RESISTOR, 1.2K 2W	FAILS OPEN
	RESISTOR, 1.2K 2W RESISTOR, 1.2K 2W	FAILS OPEN
1059	SWITCH	POSITION
1061		
1001	SWITCH CONTACTS 1, 2	OPEN CONTACTS FAILS
1065		
1003	SWITCH CONTACTS 5, 6	OPEN CONTROLS TALE
	DHILLI CONTACTO 3, 0	O1 411

MDAC		
ID	ITEM	FAILURE MODE
	en e	
1067	RJDF1B F1 MANIFOLD DRIVER OFF	SWITCH OFF CONTACTS FAIL
•	SWITCH CONTACTS 7, 8	CLOSED (SHORTED)
1069	RJDF1B F1 MANIFOLD LOGIC	SWITCH FAILS IN THE OFF
	SWITCH	POSITION
1071	RJDF1B F1 MANIFOLD LOGIC SWITCH ON CONTACTS 1. 2	SWITCH ON CONTACTS FAIL
	SWITCH ON CONTACTS 1, 2	OPEN
1075	RJDF1A F2 MANIFOLD DRIVER	SWITCH FAILS IN THE OFF
	SWITCH	POSITION
1077	RJDF1A F2 MANIFOLD DRIVER ON	SWITCH ON CONTACTS FAIL
	SWITCH CONTACTS 1, 2	OPEN
1081		SWITCH ON CONTACTS FAIL
	SWITCH CONTACTS 5, 6	OPEN
1083	• • • • • • • • • • • • • • • • • • •	
	SWITCH CONTACTS 7, 8	CLOSED (SHORTED)
1085	•	SWITCH FAILS IN THE OFF
-000	SWITCH	POSITION
1087		
	SWITCH ON CONTACTS 1, 2	OPEN
1091	· · · · · · · · · · · · · · · · · · ·	
1071	SWITCH	POSITION
1093	RJDF2A F3 MANIFOLD DRIVER ON	
_0,0	CUITMOU COUMA COMO I O	OPEN GOVINGTO THEE
1101	RJDF2A F3 MANIFOLD LOGIC	SWITCH FAILS IN THE OFF
	SWITCH	POSITION
1103	RJDF2A F3 MANIFOLD LOGIC	SWITCH ON CONTACTS FAIL
	SWITCH ON CONTACTS 1, 2	OPEN ON CONTROLS THE
1107	RJDF2B F4/F5 MANIFOLD DRIVER	SWITCH FAILS IN THE OFF
110,	SWITCH	POSITION
1109	RJDF2B F4/F5 MANIFOLD DRIVER	SWITCH ON CONTACTS FAIL
1107	ON SWITCH CONTACTS 1, 2	OPEN CONTROLS FALL
1117	RJDF2B F4/F5 MANIFOLD LOGIC	SWITCH FAILS IN THE OFF
***	SWITCH	POSITION
1119	RJDF2B F4/F5 MANIFOLD LOGIC	SWITCH ON CONTACTS FAIL
	SWITCH ON CONTACTS 1, 2	OPEN ON CONTROLS TALE
1122	RJDF2B L5/F5/R5 MANIFOLD	
	DRIVER SWITCH	POSITION
1124	RJDF2B L5/F5/R5 MANIFOLD	
	DRIVER ON SWITCH CONTACTS 1, 2	
1128	·	SWITCH ON CONTACTS FAIL
	DRIVER ON SWITCH CONTACTS 5, 6	
1192		FAILS OPEN
	FUSE, 7.5A	FAILS OPEN
	HEATER 10W, THRUSTER, VERNIER,	
1 <u>4</u> 1 J	ALL AXES	EATIN OFEN
1216	HEATER 10W, THRUSTER, VERNIER,	FATIS SHORT
+4+0	ALL AXES	TATES SHOKE
1251	MANIFOLD 1, JETS HEATER	SWITCH FAILS IN THE OFF
	CONTROL SWITCH	POSITION
		· · · · · · · · · · ·

_	MDAC ID	ITEM	FAILURE MODE
	<u> </u>		
	1252	MANIFOLD 1, JETS HEATER CONTROL SWITCH ON CONTACTS 1, 2	SWITCH ON CONTACTS FAIL OPEN
_	1257	SWITCH, TOGGLE RCS/OMS HEATERS FWD RCS JET 1	
_	1259	MANIFOLD 2, JETS HEATER CONTROL SWITCH	SWITCH FAILS IN THE OFF POSITION
	1260	MANIFOLD 2, JETS HEATER CONTROL SWITCH ON CONTACTS 1, 2	OPEN
	1261	MANIFOLD 2, JETS HEATER CONTROL SWITCH ON CONTACTS 1, 2	CLOSED
	1265	SWITCH, TOGGLE RCS/OMS HEATERS FWD RCS JET 2	FAILS TO SWITCH (FAILS IN OFF POSITION)
_	1267	MANIFOLD 3, JETS HEATER CONTROL SWITCH	POSITION
	1268	MANIFOLD 3, JETS HEATER CONTROL SWITCH ON CONTACTS 1, 2	OPEN
	1273	FWD RCS JET 3	OFF POSITION)
_	1275	SWITCH	POSITION
	1276	SWITCH ON CONTACTS 1, 2	OPEN
-	1281	FWD RCS JET 4	FAILS TO SWITCH (FAILS IN OFF POSITION)
	1283	MANIFOLD 5, JETS HEATER CONTROL SWITCH	SWITCH FAILS IN THE OFF POSITION
	1284		SWITCH ON CONTACTS FAIL OPEN
	1295		FAILS TO OPEN (FAILS CLOSED)
•	1297		FAILS TO OPEN FAILS CLOSED)
_	1299	THERMOSTAT, PRIMARY THRUSTERS, Z AXIS	FAILS TO OPEN (FAILS CLOSED)
	1300	THERMOSTAT, VERNIER THRUSTERS, ALL AXES	FAILS TO CLOSE (FAILS OPEN)
_	1301	THERMOSTAT, VERNIER THRUSTERS, ALL AXES	FAILS TO OPEN (FAILS CLOSED)
	1302	CONTROLLER, REMOTE POWER	FAILS OPEN
_		CONTROLLER, REMOTE POWER	FAILS HIGH
		CONTROLLER, REMOTE POWER CONTROLLER, REMOTE POWER	FAILS HIGH FAILS OPEN
		CONTROLLER, REMOTE POWER	FAILS HIGH
		CONTROLLER, REMOTE POWER	FAILS HIGH
	1318	DIODE	FAILS OPEN
	1320	DIODE	FAILS OPEN
	1322	DIODE	FAILS OPEN
	1324	DIODE	FAILS OPEN
	1328	DIODE	FAILS OPEN
		DIODE	FAILS OPEN
	1332	DIODE	FAILS OPEN

MDAC ID	<u>ITEM</u>	FAILURE MODE
1334	DIODE DRIVER, HYBRID	FAILS OPEN
1338	DRIVER, HYBRID	FAILS OPEN
1339	DRIVER, HYBRID	FAILS HIGH
1341	DRIVER, HYBRID	FAILS HIGH
1350	DRIVER, HYBRID	FAILS OPEN
1351	DRIVER, HYBRID	FAILS HIGH
1353	DRIVER, HYBRID	FAILS HIGH
1405	DIN THE ON & PO IDON VIIV A ON D	SWITCH CHOSE CONTACTS FAIL
1407	SWITCH CLOSE CONTACTS 5, 6	SWITCH OPEN CONTACTS FAIL
	L/R HE OX & FU ISOL VLV A OR B SWITCH OPEN CONTACTS 7, 8	ODEN
1410	I/R HE OX & FU ISOL VLV A OR B	SWITCH GPC CONTACTS FAIL
	SWITCH GPC CONTACTS 9, 10	CLOSED
1411	L/R HE OX & FU ISOL VLV A OR B	SWITCH CLOSE CONTACTS FAIL
	SWITCH CLOSE CONTACTS 11, 12	OPEN
1412	L/R HE OX & FU ISOL VLV A OR B SWITCH GPC CONTACTS 9, 10 L/R HE OX & FU ISOL VLV A OR B SWITCH CLOSE CONTACTS 11, 12 L/R HE OX & FU ISOL VLV A OR B SWITCH CLOSE CONTACTS 11, 12 CONTROLLER, REMOTE POWER CONTROLLER, REMOTE POWER DIODE	SWITCH CLOSE CONTACTS FAIL
	SWITCH CLOSE CONTACTS 11, 12	CLOSED
1427	CONTROLLER, REMOTE POWER	FAILS HIGH
1430	CONTROLLER, REMOTE POWER	FAILS OPEN
	DIODE	FAILS OPEN
	DIODE DIODE DIODE DIODE DIODE	FAILS SHORT
	DIODE	EVILO CHUBA
	DIODE	FAILS OPEN
	DIODE	FAILS SHORT
	DIODE	FAILS OPEN
	DIODE	FAILS SHORT
1444	DIODE	FAILS OPEN
	DIODE	FAILS SHORT
	DIODE	FAILS OPEN
1479 1481	DRIVER, HYBRID DRIVER, HYBRID	FAILS HIGH
1485	DRIVER, HYBRID	FAILS HIGH FAILS HIGH
1487	DRIVER, HYBRID	FAILS HIGH
1499	DRIVER, HYBRID	FAILS HIGH
1503	DRIVER, HYBRID	FAILS HIGH
1507	DRIVER, HYBRID	FAILS HIGH
1511	DRIVER, HYBRID	FAILS HIGH
1513	DRIVER, HYBRID	FAILS HIGH
	DRIVER, HYBRID	FAILS HIGH
-	RELAY	FAILS OPEN (DE-ENERGIZED)
	RELAY	FAILS HIGH (ENERGIZED)
	RELAY	FAILS OPEN (DE-ENERGIZED)
	RELAY	FAILS HIGH (ENERGIZED)
	RELAY	FAILS OPEN (DE-ENERGIZED)
1547 1548	RELAY RELAY	FAILS OPEN (DE-ENERGIZED) FAILS HIGH (ENERGIZED)
1340	KETUT	EVIDO UIQU (ENERGIVED)

	MDAC		
	ID	ITEM	FAILURE MODE
		RELAY	FAILS OPEN (DE-ENERGIZED)
_	1550	RELAY	FAILS CLOSED (FAILS IN
			ENERGIZED POSITION)
		RELAY	FAILS OPEN
		RELAY	FAILS OPEN
_	,	RELAY	FAILS HIGH
		RELAY	FAILS OPEN
		RELAY	FAILS OPEN
_		RELAY	FAILS HIGH
		RELAY	FAILS OPEN
		RELAY	FAILS HIGH
		RELAY	FAILS OPEN
		RELAY	FAILS OPEN
		RELAY	FAILS OPEN
		RELAY	FAILS HIGH
_		RELAY	FAILS OPEN
		RELAY	FAILS HIGH
		RELAY	FAILS OPEN
		RELAY	FAILS OPEN
		RELAY	FAILS OPEN
		RELAY	FAILS HIGH
		RELAY	FAILS OPEN
		RELAY	FAILS HIGH
		RELAY	FAILS OPEN
		RELAY	FAILS HIGH
		RELAY	FAILS OPEN
			FAILS HIGH SWITCH OPEN CONTACTS FAIL
	1750	L/R OX & FU TK ISOL VLV 1/2	
<u> </u>	1755	SWITCH OPEN CONTACTS 1, 2	OPEN SWITCH CLOSE CONTACTS FAIL
	1755	L/R OX & FU TK ISOL VLV 1/2	
	1761	SWITCH CLOSE CONTACTS 5, 6 L/R OX & FU TK ISOL VLV 1/2	SWITCH CLOSE CONTACTS FAIL
	1/61	CMITMOU OF ORE COMMACMS 11 12	CLOSED CONTACTS TATE
_	1765	SWITCH CLOSE CONTACTS 11, 12 L/R OX & FU TK ISOL VLV 3/4/5	CHOSED CHOSED CHOSED CHOSED CHOSED CHOSED
	1/65	A OR B SWITCH OPEN CONTACTS 1,2	OPEN CONTACTS TATE
	1770	L/R OX & FU TK ISOL VLV 3/4/5 A	SWITCH CLOSE CONTACTS FAIL
_	1770	OR B SWITCH CLOSE CONTACTS 5, 6	CLOSED
	1781	L/R OX & FU CROSSFEED VLV 1/2	SWITCH OPEN CONTACTS FAIL
	1701	SWITCH OPEN CONTACTS 7, 8	CLOSED
	1785	L/R OX & FU CROSSFEED VLV 1/2	SWITCH CLOSE CONTACTS FAIL
	1,00	SWITCH CLOSE CONTACTS 11, 12	CLOSED
•	1786		SWITCH FAILS IN FEED FROM
= . : = . :		1944 and 1974 and 19	RIGHT OR FEED FROM LEFT
_			POSITION
	1789	MASTER RCS CROSSFEED SWITCH	SWITCH FEED FROM RIGHT OR
		FEED FROM RIGHT OR FEED FROM	FEED FROM LEFT CONTACTS
-		LEFT SWITCH CONTACTS	FAIL CLOSED
	1794	•	SWITCH OPEN CONTACTS FAIL
	• -	3/4/5 SWITCH OPEN CONTACTS 1,2	
<u>.</u>	1797	L/R OX & FU CROSSFEED VLV 3/4/5	
		SWITCH CLOSE CONTACTS 5, 6	OPEN

MDAC ID	ITEM	FAILURE MODE
1798	L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH CLOSE CONTACTS 5, 6	SWITCH CLOSE CONTACTS FAIL CLOSED
1800	L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH OPEN CONTACTS 7, 8	SWITCH OPEN CONTACTS FAIL CLOSED
1803	L/R OX & FU CROSSFEED VLV 3/4/5 SWITCH CLOSE CONTACTS 11, 12	SWITCH CLOSE CONTACTS FAIL OPEN
1804	SWITCH CLOSE CONTACTS 11, 12	SWITCH CLOSE CONTACTS FAIL CLOSED
1808	MANIFOLD 1, L/R OX & FU ISOL VLV SWITCH OPEN CONTACTS 1, 2	SWITCH OPEN CONTACTS FAIL OPEN
1813	MANIFOLD 1, L/R OX & FU ISOL VLV SWITCH CLOSE CONTACTS 5, 6 MANIFOLD 2, L/R OX & FU ISOL	SWITCH CLOSE CONTACTS FAIL CLOSED SWITCH OPEN CONTACTS FAIL
1822	VLV SWITCH OPEN CONTACTS 1, 2 MANIFOLD 2, L/R OX & FU ISOL	OPEN SWITCH CLOSE CONTACTS FAIL
1826	VLV SWITCH CLOSE CONTACTS 5, 6 MANIFOLD 3, L/R OX & FU ISOL	CLOSED SWITCH OPEN CONTACTS FAIL
1831	VLV SWITCH OPEN CONTACTS 1, 2 MANIFOLD 3, L/R OX & FU ISOL	OPEN SWITCH CLOSE CONTACTS FAIL
1835	VLV SWITCH CLOSE CONTACTS 5, 6 MANIFOLD 4, L/R OX & FU ISOL	SWITCH OPEN CONTACTS FAIL
1840	VLV SWITCH OPEN COMMAND 1, 2 MANIFOLD 4, L/R OX & FU ISOL	OPEN SWITCH CLOSE CONTACTS FAIL
1849	VLV SWITCH CLOSE COMMAND 5, 6 MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH CLOSE CONTACTS 5, 6	CLOSED SWITCH CLOSE CONTACTS FAIL CLOSED
1850	MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH OPEN CONTACTS 7, 8	SWITCH OPEN CONTACTS FAIL OPEN
1853	MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH GPC CONTACTS 9, 10	SWITCH GPC CONTACTS FAIL CLOSED
1855	MANIFOLD 5, L/R OX & FU ISOL VLV SWITCH CLOSE CONTACTS 11,12	CLOSED
1905 1907	CONTROLLER, REMOTE POWER CONTROLLER, REMOTE POWER	FAILS OPEN FAILS OPEN
1908 1909	DIODE DIODE	FAILS SHORT FAILS OPEN
1910	DIODE	FAILS SHORT
1911 1912	DIODE	FAILS OPEN FAILS SHORT
1913	DIODE	FAILS OPEN
1915	DIODE	FAILS OPEN
1917	DIODE	FAILS OPEN
1919	DIODE	FAILS OPEN
1920 1921	DIODE	FAILS SHORT
1921	DIODE	FAILS OPEN FAILS OPEN
1925	DIODE	FAILS OPEN
1927	DIODE	FAILS OPEN
1929	DIODE	FAILS OPEN
1930	DIODE	FAILS SHORT
1931	DIODE	FAILS OPEN

_	MDAC ID	<u>ITEM</u>		FAILURE MODE
_	1932 1933 1935	DIODE DIODE DIODE	FAILS FAILS	
_	1937 1938 1939	DIODE DIODE DIODE	FAILS	SHORT OPEN
_	1940 1941 1942	DIODE DIODE DIODE	FAILS FAILS	SHORT
_	1943 1944 1945	DIODE DIODE	FAILS	SHORT
	1947 1949 1951	DIODE DIODE DIODE	FAILS FAILS	OPEN OPEN
_	1952 1953 1955	DIODE DIODE DIODE	FAILS FAILS	OPEN
_	1957 1958 1959	DIODE DIODE DIODE	FAILS FAILS FAILS	SHORT
_	1961 1963 1964 1965	DIODE DIODE DIODE DIODE	FAILS	OPEN SHORT
-	1966 1967 1969	DIODE DIODE DIODE		SHORT OPEN
	1971 1972 1973	DIODE DIODE DIODE	FAILS	OPEN SHORT
_	1974 1975 1977	DIODE DIODE DIODE	FAILS FAILS FAILS	OPEN
_	1979 1997 1999 2001	DIODE DRIVER, HYBRID DRIVER, HYBRID DRIVER, HYBRID	FAILS FAILS	OPEN OPEN OPEN
_	2003 2006 2007	DRIVER, HYBRID FUSE, 2A FUSE, 2A	FAILS FAILS	OPEN OPEN OPEN
_	2008 2011 2014 2018	FUSE, 1A FUSE, 1A FUSE, 2A FUSE, 1A	FAILS FAILS	OPEN OPEN OPEN OPEN
_	2016 2020 2044 2046	FUSE, 1A RESISTOR, 1.2K 2W	FAILS	OPEN OPEN
_	2056 2062 2074	RESISTOR, 1.2K 2W RESISTOR, 1.2K 2W	FAILS FAILS	OPEN OPEN

MDAC ID	ITEM RESISTOR, 1.2K 2W RJDA1B L1/L5/R1 MANIFOLD DRIVER SWITCH RJDA1B L1/L5/R1 MANIFOLD LOGIC SWITCH RJDA1A L2/R2 MANIFOLD DRIVER SWITCH RJDA1A L2/R2 MANIFOLD LOGIC SWITCH RJDA2B L3/R3/R5 MANIFOLD DRIVER SWITCH RJDA2B L3/R3/R5 MANIFOLD LOGIC SWITCH RJDA2A L4/R4 MANIFOLD DRIVER SWITCH RJDA2A L4/R4 MANIFOLD LOGIC	FAILURE MODE
2096	RESISTOR, 1.2K 2W	FAILS OPEN
2106	RESISTOR, 1.2K 2W	FAILS OPEN
2116	RESISTOR, 1.2K 2W	FAILS OPEN
2128	RESISTOR, 1.2K 2W	FAILS OPEN
2152	RJDA1B L1/L5/R1 MANIFOLD	SWITCH FAILS IN THE OFF
	DRIVER SWITCH	POSITION
2170	RJDA1B L1/L5/R1 MANIFOLD	SWITCH FAILS IN THE OFF
	LOGIC SWITCH	POSITION
2180	RJDA1A L2/R2 MANIFOLD DRIVER	SWITCH FAILS IN THE OFF
	SWITCH	POSITION
2198	RJDA1A L2/R2 MANIFOLD LOGIC	SWITCH FAILS IN THE OFF
	SWITCH	POSITION
2208	RJDA2B L3/R3/R5 MANIFOLD	SWITCH FAILS IN THE OFF
	DRIVER SWITCH	POSITION
2226	RJDA2B L3/R3/R5 MANIFOLD	SWITCH FAILS IN THE OFF
	LOGIC SWITCH	POSITION
2236	RJDA2A L4/R4 MANIFOLD DRIVER	SWITCH FAILS IN THE OFF
	SWITCH	POSITION
2254	RJDA2A L4/R4 MANIFOLD LOGIC	SWITCH FAILS IN THE OFF
	SWITCH	POSITION
2300	DRIVER, HYBRID	FAILS OPEN
2301	DRIVER, HYBRID	FAILS HIGH
2302	DRIVER, HYBRID	FAILS OPEN
2303	DRIVER, HYBRID	FAILS HIGH
2304	SWITCH RJDA2A L4/R4 MANIFOLD LOGIC SWITCH DRIVER, HYBRID FUSE, 1A FUSE, 1A FUSE, 1A FUSE, 1A FUSE, 1A FUSE, 5A	FAILS OPEN
2305	DRIVER, HYBRID	FAILS HIGH
2306	DRIVER, HYBRID	FAILS OPEN
2307	DRIVER, HYBRID	FAILS HIGH
2308	DRIVER, HYBRID	FAILS OPEN
2309	DRIVER, HYBRID	FAILS HIGH
2310	FUSE, IA	FAILS OPEN
2311	FUSE, IA	FAILS OPEN
2312	FUSE, IA	FAILS OPEN
2313	FUSE, IA	FAILS OPEN
2314	FUSE, IA	FAILS OPEN
2315	FUSE, 5A	FAILS OPEN
	HEATER 10W, THRUSTER, VERNIER,	FAILS OPEN
	ALL AXES	
2323	HEATER 10W, THRUSTER, VERNIER,	FAILS SHORT
0005	ALL AXES	
2335	• • • • • • • • • • • • • • • • • • •	
0007	+X AXIS	CLOSED)
2337		· · · · · · · · · · · · · · · · · · ·
	Y AXIS	CLOSED)
2339	THERMOSTAT, PRIMARY THRUSTERS,	• -
0040	Z AXIS	CLOSED)
2340	THERMOSTAT, VERNIER THRUSTERS,	• • • • • • • • • • • • • • • • • • • •
2247	ALL AXES	OPEN)
2341	THERMOSTAT, VERNIER THRUSTERS,	•
	ALL AXES	CLOSED)

MDAC ID	ITEM		FAILURE MODE
2343	SWITCH		SWITCH FAILS IN THE OFF POSITION
2344	MANIFOLD 1, JETS HEATER SWITCH OPEN CONTACTS 1,		SWITCH OPEN CONTACTS FAIL OPEN
2349	MANIFOLD 2, JETS HEATER SWITCH	CONTROL	POSITION
2350	MANIFOLD 2, JETS HEATER SWITCH OPEN CONTACTS 1,		SWITCH OPEN CONTACTS FAIL OPEN
2355	MANIFOLD 3, JETS HEATER SWITCH	CONTROL	SWITCH FAILS IN THE OFF POSITION
2356	MANIFOLD 3, JETS HEATER SWITCH OPEN CONTACTS 1,		SWITCH OPEN CONTACTS FAIL OPEN
2361	MANIFOLD 4, JETS HEATER SWITCH	CONTROL	POSITION
2362	MANIFOLD 4, JETS HEATER SWITCH OPEN CONTACTS 1,		SWITCH OPEN CONTACTS FAIL OPEN
2367	MANIFOLD 5, JETS HEATER SWITCH	CONTROL	SWITCH FAILS IN THE OFF POSITION
2368	MANIFOLD 5, JETS HEATER SWITCH OPEN CONTACTS 1,		SWITCH CONTACTS FAIL OPEN

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Britail Ass.