Emergency Procedures

V2.14

Directory

Emergency Procedures

V2.14

Negative Orbit Insertion Abort

2A

1. Confirmation of Negative Orbit Insertion status with Mission Commander

2. Identify trajectory point for return
   a. Return To Launch Site (RTLS) (Pre-negative return position)

   b. Transoceanic Abort Landing (TAL) (Post-negative return position)

   c. Abort Once Aroubnd (AOA)

3. Initiate landing procedures as indicated

Low Orbit Insertion Abort

2B

1. Confirmation of Abort To Orbit (AOA) status with Mission Commander

2. Evaluate orbital insertion status
   a. Lower stable orbit possible –

      As directed by Mission Control:
      i. Reconfigure for possible additional OMS burn
      or
      ii. continue operations

   b. Lower stable orbit not possible –

      As directed by Mission Control:
      i. Initiate In-flight abort procedure
      or
      ii. AOA as directed by Mission Control

In-Flight Abort

2C

1. Confirmation of Abort status with Mission Commander

2. Initiate de-orbit burn procedures as directed by Mission Control

Primary Landing Site Abort

2D

1. Confirmation of Primary Landing Site Abort (PLSA) status with Mission Commander

2. Determine abort landing procedure options based on abort status:
   a. Emergency landing location
   b. Water landing
   c. High altitude bailout

Emergency Procedures

V2.14

Smoke or Fire in Cabin

3A

1.	Mission Control confirms alarm and determines location	
2.	Visual inspection for smoke or fire	*Confirm*
3.	CAB HX IN T	*Check*
4.	O2 SYS2	CLOSE
5.	CABIN VENT ISOL A	CLOSE
6.	CABIN VENT B	CLOSE
7.	FIRE SUPPRESSION	
	a. AV BAY 1	ARM
	b. AV BAY 2	ARM
	c. AV BAY 3	ARM
8.	CAB HX IN T	*Check*
9.	FIRE SUPPRESSION	
	a. AV BAY 1	SAFE
	b. AV BAY 2	SAFE
	c. AV BAY 3	SAFE
10.	CABIN VENT ISOL A	OPEN
11.	CABIN VENT B	OPEN
12.	O2 SYS2	OPEN
13.	*Land as soon as practical*	

Smoke or Fire in Payload Bay

3B

1.	Mission Control confirms alarm and determines location	
2.	AV BAY	
	a. TEMP 1	*Check*
	b. TEMP 2	*Check*
	c. TEMP 3	*Check*
3.	FIRE SUPPRESSION	
	a. AV BAY 1	ARM
	b. AV BAY 2	ARM
	c. AV BAY 3	ARM
4.	AV BAY	
	a. TEMP 1	*Check*
	b. TEMP 2	*Check*
	c. TEMP 3	*Check*
5.	FIRE SUPPRESSION	
	a. AV BAY 1	SAFE
	b. AV BAY 2	SAFE
	c. AV BAY 3	SAFE
6.	*Land as soon as practical*	

APU Underspeed

1. Mission Control confirms alarm and proceeds with <u>isolation of malfunctioning system.</u>

2. APU SPEED %
   a. 1 *Check*
   b. 2 *Check*
   c. 3 *Check*

3. APU SHTDWN ENABLE

4. APU PWR OFF

5. APU CNTRL POWER
   a. 1 OFF
   b. 2 OFF
   c. 3 OFF

6. APU / HYDRAULICS
   a. 1 OFF
   b. 2 OFF
   c. 3 OFF

7. APU SPEED SELECT
   a. 1 GPC
   b. 2 GPC
   c. 3 GPC

8. APU SPEED %
   a. 1 *Check*
   b. 2 *Check*
   c. 3 *Check*

9. APU SPEED SELECT 1 HIGH
   APU SPEED % 1 *Check*
   APU SPEED SELECT 1 NORMAL

10. APU SPEED SELECT 2 HIGH
    APU SPEED % 2 *Check*
    APU SPEED SELECT 2 NORMAL

11. APU SPEED SELECT 3 HIGH
    APU SPEED % 3 *Check*
    APU SPEED SELECT 3 NORMAL

12. APU / HYDRAULICS
    a. 1 START/RUN
    b. 2 START/RUN
    c. 3 START/RUN

13. APU CNTRL POWER
    a. 1 ON
    b. 2 ON
    c. 3 ON

14. APU PWR ON

15. APU SHTDWN INHIBIT

16. APU SPEED %
    a. 1 *Check*
    b. 2 *Check*
    c. 3 *Check*

17. Re-assess system

APU Overspeed

1. Mission Control confirms alarm and proceeds with <u>isolation of malfunctioning system.</u>

2. APU SPEED %
   a. 1 *Check*
   b. 2 *Check*
   c. 3 *Check*

3. APU SHTDWN ENABLE

4. APU PWR OFF

5. APU CNTRL POWER
   a. 1 OFF
   b. 2 OFF
   c. 3 OFF

6. APU / HYDRAULICS
   a. 1 OFF
   b. 2 OFF
   c. 3 OFF

7. APU SPEED SELECT
   a. 1 GPC
   b. 2 GPC
   c. 3 GPC

8. APU SPEED %
   a. 1 *Check*
   b. 2 *Check*
   c. 3 *Check*

9. APU SPEED SELECT 1 NORMAL
   APU SPEED % 1 *Check*

10. APU SPEED SELECT 2 *NORMAL*
    APU SPEED % 2 *Check*

11. APU SPEED SELECT 3 NORMAL
    APU SPEED % 3 *Check*

12. APU / HYDRAULICS
    a. 1 START/RUN
    b. 2 START/RUN
    c. 3 START/RUN

13. APU CNTRL POWER
    a. 1 ON
    b. 2 ON
    c. 3 ON

14. APU PWR ON

15. APU SHTDWN INHIBIT

16. APU SPEED %
    a. 1 *Check*
    b. 2 *Check*
    c. 3 *Check*

17. Re-assess system

APU Temperature

1. Mission Control confirms alarm and proceeds with <u>isolation of malfunctioning system</u>

2. APU TEMP EGT
   a. 1 *Check*
   b. 2 *Check*
   c. 3 *Check*

3. APU SHTDWN ENABLE

4. APU PWR OFF

5. APU CNTRL POWER
   a. 1 OFF
   b. 2 OFF
   c. 3 OFF

6. APU TK VLV CLOSED

7. APU FUEL TNK VLV
   a. 1 CLOSE
   b. 2 CLOSE
   c. 3 CLOSE

8. APU TEMP EGT
   a. 1 *Check*
   b. 2 *Check*
   c. 3 *Check*

9. APU FUEL TNK VLV
   a. 1 OPEN
   b. 2 OPEN
   c. 3 OPEN

10. APU TK VLV OPEN

11. APU CNTRL POWER
    a. 1 ON
    b. 2 ON
    c. 3 ON

12. APU PWR ON

13. APU SHTDWN INHIBIT

14. APU TEMP EGT
    a. 1 *Check*
    b. 2 *Check*
    c. 3 *Check*

15. Re-assess system

Hydraulic Pressure

1. Mission Control confirms alarm and proceeds with <u>isolation ofmalfunctioning system</u>

2. HYD PRESS
   - a. 1 *Check*
   - b. 2 *Check*
   - c. 3 *Check*

3. HYD MAIN PUMP PRESSURE
   - a. 1 LOW
   - b. 2 LOW
   - c. 3 LOW

4. HYD CIRC PUMP
   - a. 1 OFF
   - b. 2 OFF
   - c. 3 OFF

5. APU / HYDRAULICS
   - a. 1 OFF
   - b. 2 OFF
   - c. 3 OFF

6. HYD PRESS
   - a. 1 *Check*
   - b. 2 *Check*
   - c. 3 *Check*

7. APU / HYDRAULICS
   - a. 1 START/RUN
   - b. 2 START/RUN
   - c. 3 START/RUN

8. HYD CIRC PUMP
   - a. 1 ON
   - b. 2 ON
   - c. 3 ON

9. HYD MAIN PUMP PRESSURE
   - a. 1 NORMAL
   - b. 2 NORMAL
   - c. 3 NORMAL

10. HYD PRESS
    - a. 1 *Check*
    - b. 2 *Check*
    - c. 3 *Check*

11. Re-assess system

OMS Engine

1. Mission Control confirms alarm and proceeds with <u>isolation of malfunctioning system</u>
2. FWD RCS He TANK ISOL
   a. A — CLOSE
   b. B — CLOSE
3. FWD RCS He MANIFOLD ISOL
   a. 1 — CLOSE
   b. 2 — CLOSE
   c. 3 — CLOSE
4. OMS ENGINE VLV
   a. LEFT — OFF
   b. RIGHT — OFF
5. OMS ENGINE
   a. LEFT — OFF
   b. RIGHT — OFF
6. FLT CNTRL PWR — ENABLE
7. ENG DAP — AUTO
8. MAIN ENGINE POWER
   a. LEFT — ON
   b. CNTR — ON
   c. RIGHT — ON
9. *Re-assess system*
10. MAIN ENGINE POWER
    a. LEFT — OFF
    b. CNTR — OFF
    c. RIGHT — OFF
11. ENG DAP — MANUAL
12. FLT CNTRL PWR — INHIBIT
13. OMS ENGINE
    a. LEFT — ARM
    b. RIGHT — ARM
14. OMS ENGINE VLV
    a. LEFT — ON
    b. RIGHT — ON
15. FWD RCS He MANIFOLD ISOL
    a. 1 — OPEN
    b. 2 — OPEN
    c. 3 — OPEN
16. FWD RCS He TANK ISOL
    a. A — OPEN
    b. B — OPEN
17. *Re-assess system*

Emergency Procedures

V2.14

Forward RCS

9A

1. Mission Control confirms alarm and proceeds with <u>isolation of malfunctioning system</u>
2. FWD RCS He TANK ISOL
   a. A — CLOSE
   b. B — CLOSE
3. FWD RCS He MANIFOLD ISOL
   a. 1 — CLOSE
   b. 2 — CLOSE
   c. 3 — CLOSE
4. *Re-assess system*
5. FWD RCS He MANIFOLD ISOL
   a. 1 — OPEN
   b. 2 — OPEN
   c. 3 — OPEN
6. FWD RCS He TANK ISOL
   a. A — OPEN
   b. B — OPEN
7. *Re-assess system*

AC Voltage

9B

1. Mission Control confirms alarm and proceeds with <u>isolation of malfunctioning system</u>
2. AC BUS SNSR — MONITOR
3. INTERNAL SHUTTLE SYSTEM PWR
   a. BAT A — CLOSE
   b. BAT B — CLOSE
4. *Re-assess system*
5. INTERNAL SHUTTLE SYSTEM PWR
   a. BAT A — ENABLE
   b. BAT B — ENABLE
6. AC BUS SNSR — AUTO
7. *Re-assess system*

Emergency Procedures

V2.14

Main Engine

10A

1. Mission Control confirms alarm and proceeds with isolation of malfunctioning system

2. Identify Main Engine Operational Status
   a. Left engine — *Confirm*
   b. Center Engine — *Confirm*
   c. Right Engine — *Confirm*

3. Perform Manual Shutdown of Main Engine Power for Non-operating Engine identified in step 2
   a. Main Engine Power
      i. LEFT — OFF
      ii. CNTR — OFF
      iii. RIGHT — OFF

4. Perform Manual Initialization of Main Engine Power for Non-operating Engine identified in step 2
   a. Main Engine Power
      i. LEFT — ON
      ii. CNTR — ON
      iii. RIGHT — ON

5. Re-assess system

6. Evaluate Statue of Orbital Insertion
   a. Nominal — Mission **Go**
   b. Off-Nominal — Mission **Abort**

Solid Rocket Booster

10B

1. Mission Control confirms alarm

2. Identify SRB Operational Status
   a. Left SRB — *Confirm*
   b. Right SRB — *Confirm*

3. Evaluate Status of Orbital Insertion
   a. Nominal — Mission **Go**
   b. Off-Nominal — Mission **Abort**

Emergency Procedures

V2.14

Payload Bay Door Malfunction (Door is CLOSED and malfunction occurs when OPENING)

11A

1. Mission Control confirms alarm
2. BAY DOOR — CLOSE
3. BAY DOOR LCK — LATCH
4. *Re-assess system*
5. BAY DOOR LCK — RELEASE
6. BAY DOOR — OPEN
7. Initiate Payload Bay Door Open program
8. *Re-assess system*

Payload Bay Door Malfunction (Door is OPEN and malfunction occurs when CLOSING)

11B

1. Mission Control confirms alarm
2. BAY DOOR LCK — RELEASE
3. BAY DOOR — OPEN
4. *Re-assess system*
5. BAY DOOR — CLOSE
6. Initiate Payload Bay Door Close program
7. BAY DOOR LCK — LATCH
8. *Re-assess system*