EMERGENCY CHECKLISTS

Version 240826.01

EMERGENCY PROCEDURES DIRECTORY

Negative Orbit Insertion Abort

2A

1. Confirm Negative Orbit Insertion status with Mission Commander and Mission Director

2. Identify trajectory point for return:
   A. Before Negative Return:
      a. Perform Return To Launch Site (RTLS) abort

   B. Post Negative Return:
      a. If TAL window open:
         • Perform Transoceanic Abort Landing (TAL)

      b. If TAL window closed:
         • Perform Abort Once Around (AOA)

3. Initiate abort procedures as indicated

Low Orbit Insertion Abort

2B

1. Confirm Abort To Orbit (ATO) status with Mission Commander and Mission Director

2. Evaluate orbital insertion status:
   A. Lower stable orbit possible:
      As directed by Mission Control:
      a. Reconfigure for possible additional OMS burn

      or

      b. continue operations

   B. Lower stable orbit not possible:
      a. Perform Abort Once Around (AOA) as directed by Mission Control

3. Initiate abort procedures as indicated

In-Orbit Abort

2C

1. Confirm Abort status with Mission Commander and Mission Director

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

Return to Launch Site Abort

2D

1. Confirm Return to Launch Site Abort (RTLS) status with Mission Commander and Mission Director

2. Determine abort landing procedure options based on abort status:
   a. KSC, East Coast Abort Landing location
   b. Water landing
   c. High altitude bailout

3. Initiate abort procedures as indicated

APU Underspeed

3

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 SHUTDOWN …….. ENABLE**

4. **APU System Power Cycle**
   - a. APU MAIN POWER …….. OFF
   - b. APU MAIN POWER …….. ON

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 %**
   - b. 1 …….. Check
   - c. 2 …….. Check
   - d. 3 …….. Check

9. **APU SPEED SELECT 1 …… HIGH**
   - a. APU SPEED % 1 …… Check
   - b. APU SPEED SELECT 1 …… NORMAL

10. **APU SPEED SELECT 2 …….. HIGH**
    - a. APU SPEED % 2 …….. Check
    - b. APU SPEED SELECT 2 …….. NORMAL

11. **APU SPEED SELECT 3 …….. HIGH**
    - a. APU SPEED % 3 …….. Check
    - b. APU SPEED SELECT 3 …….. NORMAL

12. **APU / HYDRAULICS**
    - a. 1 …….. RUN
    - b. 2 …….. RUN
    - c. 3 …….. RUN

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

14. **APU SHUTDOWN …….. INHIBIT**

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

16. **Re-assess system**

APU Overspeed

4

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

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

3. **APU SHUTDOWN …….. ENABLE**

4. **APU System Power Cycle**
   - a. APU MAIN POWER …….. OFF
   - b. APU MAIN POWER …….. ON

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**
   - a. APU SPEED % 1 …… Check

10. **APU SPEED SELECT 2 …….. NORMAL**
    - a. APU SPEED % 2 …….. Check

11. **APU SPEED SELECT 3 …….. NORMAL**
    - a. APU SPEED % 3 …….. Check

12. **APU / HYDRAULICS**
    - a. 1 …….. RUN
    - b. 2 …….. RUN
    - c. 3 …….. RUN

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

14. **APU SHUTDOWN …….. INHIBIT**

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

16. **Re-assess system**

APU Temperature

5

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

2. **APU EGT**
   - a. 1 …… Check
   - b. 2 …… Check
   - c. 3 …… Check

3. **APU SHUTDOWN …….. ENABLE**

4. **APU System Power Cycle**
   - a. APU MAIN POWER …….. OFF
   - b. APU MAIN POWER …….. ON

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

6. **APU MASTER VLV…….. CLOSE**

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

8. **APU 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 MASTER VLV …….. OPEN**

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

12. **APU SHUTDOWN …….. INHIBIT**

13. **APU EGT**
    - a. 1 …….. Check
    - b. 2 …….. Check
    - c. 3 …….. Check

14. **Re-assess system**

Hydraulic Pressure

6

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

2. **Hydraulic Pressure**
   - **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. **Hydraulic Pressure**
   - **a. 1 …….. Check**
   - **b. 2 …….. Check**
   - **c. 3 …….. Check**

7. **APU / HYDRAULICS**
   - **a. 1 …….. RUN**
   - **b. 2 …….. RUN**
   - **c. 3 …….. 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. **Hydraulic Pressure**
    - **a. 1 …….. Check**
    - **b. 2 …….. Check**
    - **c. 3 …….. Check**

11. **Re-assess system**

OMS Engine

7A

1. Mission Control confirms alarm and proceeds with isolation of malfunctioning system
2. FLT CNTRL PWR ..... ENABLE
3. ENGINE DAP ..... MANUAL
4. N_2 CNTRL VLV LEFT
   a. 1 ..... CLOSE
   b. 2 ..... CLOSE
5. N_2 CNTRL VLV RIGHT
   c. 1 ..... CLOSE
   d. 2 ..... CLOSE
6. Re-assess system
7. N_2 CNTRL VLV LEFT
   a. 1 ..... OPEN
   b. 2 ..... OPEN
8. N_2 CNTRL VLV RIGHT
   a. 1 ..... OPEN
   b. 2 ..... OPEN
9. ENGINE DAP ..... AUTO
10. FLT CNTRL PWR ..... INHIBIT
11. Re-assess system

AC Voltage

7B

1. Mission Control confirms alarm and proceeds with isolation of malfunctioning system
2. AC BUS SNSR ..... MONITOR
3. AC BUS
   a. 1 ..... OFF
   b. 2 ..... OFF
   c. 3 ..... OFF
4. INVERTER
   a. 1 ..... OFF
   b. 2 ..... OFF
   c. 3 ..... OFF
5. Re-assess system
6. INVERTER
   a. 1 ..... ON
   b. 2 ..... ON
   c. 3 ..... ON
7. AC BUS
   a. 1 ..... ON
   b. 2 ..... ON
   c. 3 ..... ON
8. AC BUS SNSR ..... AUTO
9. Re-assess system

Forward RCS

8A

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. **Re-assess system**

4. **FWD RCS He TANK ISOL**
   a. **A …….. OPEN**
   b. **B …….. OPEN**

5. **Re-assess system**

Aft RCS

8B

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

2. **AFT RCS LEFT He TANK ISOL**
   a. **A …….. CLOSE**
   b. **B …….. CLOSE**

3. **AFT RCS RIGHT He TANK ISOL**
   a. **A …….. CLOSE**
   b. **B …….. CLOSE**

4. **Re-assess system**

5. **AFT RCS LEFT He TANK ISOL**
   a. **A …….. OPEN**
   b. **B …….. OPEN**

6. **AFT RCS RIGHT He TANK ISOL**
   a. **A …….. OPEN**
   b. **B …….. OPEN**

7. **Re-assess system**

Main Engines

9A

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

2. Identify Main Engine Operational Status
   a. Left Engine ..... Check
   b. Center Engine ..... Check
   c. Right Engine ..... Check

3. Perform Manual Shutdown of Main Engine Power for Non-operating Engine identified in step 2

   MAIN ENGINE POWER
   a. LEFT ..... OFF
   b. CENTER ..... OFF
   c. RIGHT ..... OFF

4. Perform Manual Initialization of Main Engine Power for Non-operating Engine identified in step 2

   MAIN ENGINE POWER
   a. LEFT ..... ENABLE
   b. CENTER ..... ENABLE
   c. RIGHT ..... ENABLE

5. Re-assess system

6. Evaluate Status of Orbital Insertion
   c. Positive Orbit Insertion ..... Mission GO
   d. Negative Orbit Insertion ..... Go to Abort Checklist

Solid Rocket Booster

9B

1. Mission Control confirms alarm

2. Identify SRB Operational Status
   a. Left SRB ..... Check
   b. Right SRB ..... Check

3. Evaluate Status of Orbital Insertion
   a. Positive Orbit Insertion ..... Mission GO
   b. Negative Orbit Insertion ..... Mission Abort

4. If Mission Go status
   a. Monitor SRB operational status until SRB SEP

5. If Mission Abort status
   a. Perform Emergency SRB Jettison
   b. Execute RTLS Abort checklist

Malfunction during Payload Bay Door OPEN Procedure

10

Mission Control confirms alarm during Payload Bay Open Procedure

A. If alarm is on Payload Bay Door

1. **PAYLOAD BAY DOOR ..... CLOSE**
2. **PAYLOAD BAY POWER ..... OFF**
3. **PAYLOAD BAY POWER ..... ON**
4. **PAYLOAD BAY DOOR ..... OPEN**
5. **Re-assess system**

B. If alarm is on Radiators

1. **RADIATORS ..... STOW**
2. **PAYLOAD BAY POWER ..... OFF**
3. **PAYLOAD BAY POWER ..... ON**
4. **RADIATORS ..... DEPLOY**
5. **Re-assess system**

C. If alarm is on Ku Band Antenna

1. **Ku ANTENNA ..... STOW**
2. **PAYLOAD BAY POWER ..... OFF**
3. **PAYLOAD BAY POWER ..... ON**
4. **Ku ANTENNA ..... DEPLOY**
5. **Re-assess system**

Malfunction during Payload Bay Door CLOSE Procedure

11

Mission Control confirms alarm during Payload Bay CLOSE Procedure

A. If alarm is on Payload Bay Door

1. **PAYLOAD BAY DOOR ..... OPEN**
2. **PAYLOAD BAY POWER ..... OFF**
3. **PAYLOAD BAY POWER ..... ON**
4. **PAYLOAD BAY DOOR ..... CLOSE**
5. **Re-assess system**

B. If alarm is on Radiators

1. **RADIATORS ..... DEPLOY**
2. **PAYLOAD BAY POWER ..... OFF**
3. **PAYLOAD BAY POWER ..... ON**
4. **RADIATORS ..... STOW**
5. **Re-assess system**

C. If alarm is on Ku Band Antenna

1. **Ku ANTENNA ..... DEPLOY**
2. **PAYLOAD BAY POWER ..... OFF**
3. **PAYLOAD BAY POWER ..... ON**
4. **Ku ANTENNA ..... STOW**
5. **Re-assess system**

Smoke or Fire in Cabin

12A

1. Mission Control confirms alarm and determines location
2. Visual inspection for smoke or fire
3. Cabin Temp ..... Check
4. O2 SYS ..... CLOSE
5. CABIN FIRE SUPPRESSION
   a. FLIGHT DECK ..... ACTIVATE
   b. MID DECK ..... ACTIVATE
   c. LOWER DECK ..... ACTIVATE
6. Cabin Temp ..... Check
7. CABIN FIRE SUPPRESSION
   a. FLIGHT DECK ..... SAFE
   b. MID DECK ..... SAFE
   c. LOWER DECK ..... SAFE
8. O2 SYS ..... OPEN
9. Land as soon as practical

Smoke or Fire in AV Bay

12B

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

Smoke or Fire in Payload Bay

13A

1. **Mission Control confirms alarm and determines location**

2. **Payload Bay**
   a. **Forward Temp …… Check**
   b. **Aft Temp …… Check**

3. **PAYLOAD BAY FIRE SUPPRESSION**
   a. **FWD ……. ACTIVATE**
   b. **AFT ……. ACTIVATE**

4. **Payload Bay**
   a. **Forward Temp …… Check**
   b. **Aft Temp …… Check**

5. **PAYLOAD BAY FIRE SUPPRESSION**
   a. **FWD ……. SAFE**
   b. **AFT ……. SAFE**

6. **Land as soon as practical**

Smoke or Fire in Space Lab

13B

1. **Mission Control confirms alarm and determines location**

2. **Space Lab**
   c. **Forward Temp …… Check**
   d. **Aft Temp …… Check**

3. **SPACE LAB FIRE SUPPRESSION**
   c. **FWD ……. ACTIVATE**
   d. **AFT ……. ACTIVATE**

4. **Space Lab**
   c. **Forward Temp …… Check**
   d. **Aft Temp …… Check**

5. **SPACE LAB FIRE SUPPRESSION**
   c. **FWD ……. SAFE**
   d. **AFT ……. SAFE**

6. **Land as soon as practical**