To use the Failures, you must use VOICE CONTROL and the AUSTRALIAN FO voice set.

The FAILURES option must be set to ON via the CONFIG -SETUP PAGE on the FS2Crew SECONDARY PANEL.

You may use either SOP 1, 2 or 3.

Requirements:

- FS2Crew PMDG 737 NGXu Edition (Available at: https://www.fs2crew.com/)

The following "NON-NORMAL" procedures from the Boeing 737NG Quick Reference Handbook (QRH) are modelled:

- Aborted Engine Starts
- APU Fault
- APU Fire
- Bleed Trip Off
- Cabin Altitude Warning or Rapid Depressurization
- Cargo Fire
- Drive

- EEC Alternate Mode
- Emergency Descent
- Engine Failure or Shutdown
- Engine Fire or Severe Damage
- Engine In Flight Start
- Evacuation
- Hydraulic Pump Overheat
- Loss of Hyd System A
- Loss of Hyd System B
- Off Schedule Descent
- One Engine Inoperative Landing
- Partial or All Gear Up Landing
- Probe Heat
- Reverser
- Standby Power Off
- Tailstrike
- TR Unit
- Transfer Bus Off
- Window Overheat

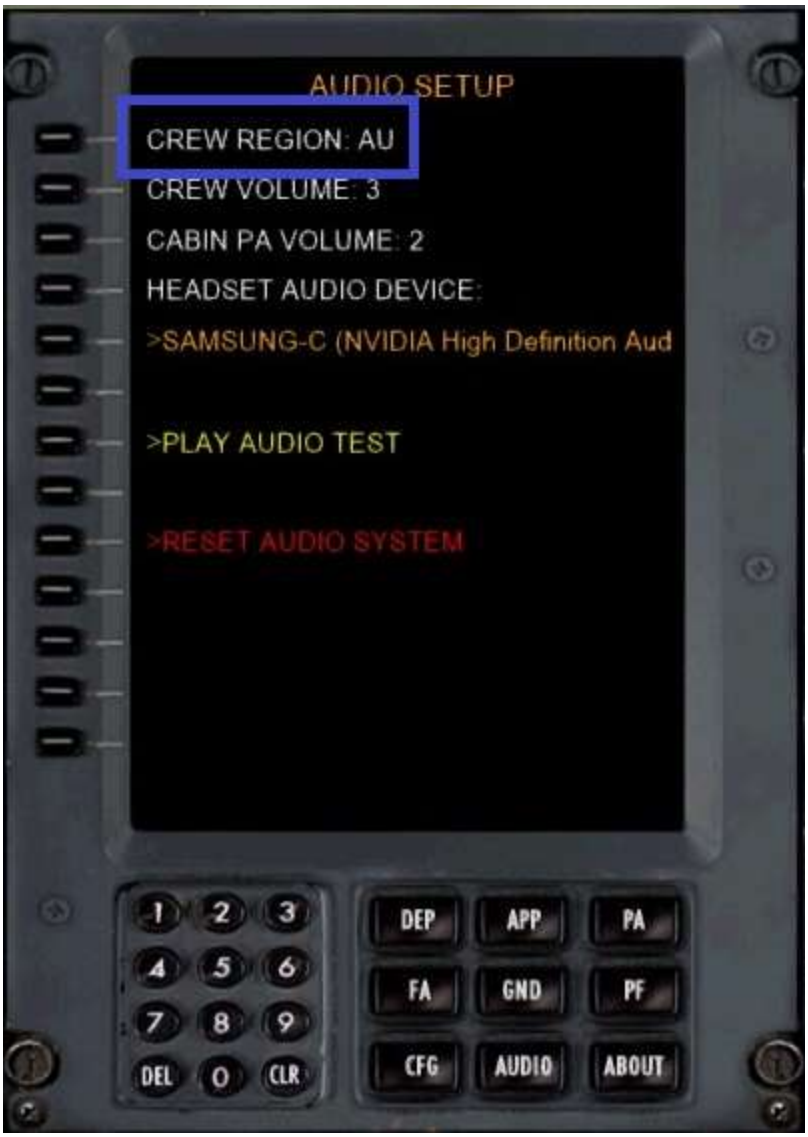
Running the Failures:

IMPORTANT:

1. DO NOT ATTEMPT TO RUN MULTIPLE FAILURES AT THE SAME TIME!

2. FS2Crew does not model every possible failure in the NGX. Some failures could not be modeled due to limitations with the current SDK

Note 1:
To use Failures, Failures must be enabled and you must use the Australian (AU) voice set.



Note 2:

* **ABORTED ENGINE STARTS** and **APU** related failures can be initiated while parked at the gate or prior to **Taxi** Mode

* All other failures will only be active during the **Taxi**, **Takeoff**, **Climb**, **Cruise**, **Descent**, and **Landing** phases of the flight.

Note 3:

* Open the PMDG 737 NGX CDU and **select your failure** (according to the list of failures featured in the "New Non-Normal Procedures List" in the Product Overview section)

* You may choose to select an "**Instant**", "**Random**" or "**Service Based**" failure
(note: Provided the failure you choose is available in the FS2Crew Failures List at the top of the manual)

Important:

* When the FO announces that a non-normal has occurred (i.e.,: a Window Overheat condition), the trigger for his call is the illumination of the associated warning light in the cockpit

* Remember: FS2Crew does NOT read the FMC to determine which failure is active

Note 4:

* While it's not necessary, it's recommended that you print out the **PMDG NGX QRH** manual or at least have it available

* In most cases, the First Officer will read the checklist and perform all steps and actions as directed by the checklist

* Essentially, the QRH checklists (except for the Memory Items) are "Read-and-Do"

* The Quick Reference Handbook (QRH) PDF Manual is located here:

Microsoft Flight Simulator X\PMDG\PMDG 737 NGX\Flight Manuals\PMDG-NGX-QRH.pdf

Note 5:

* You can clear most of the Programmed NGX failures via the NGX menu.
(note: not all failures can be cleared - this is particular to the NGX and not an FS2 Crew issue)

Conventions:

Reminder: In FS2Crew YOU are the Captain/Pilot Flying. The computer is the First Officer/Pilot Monitoring

CAPTAIN/PILOT FLYING (YOU):

1. RED TEXT = means that this is YOUR area of responsibility as the Captain/Pilot Flying

2. CA = CAPTAIN (YOU) definition: **CA** is assumed prior to taking the runway and once the aircraft vacates the runway after landing

3. PF = PILOT FLYING (YOU) definition: **PF** is assumed as soon as the aircraft takes the runway and whilst it is airborne

4. [A] **=** Action - this icon means that a physical task must be carried out by YOU (the physical task you need to perform will be explained in Black text following the [A] icon)

5. [S] **=** Speech - this icon means that you must SAY the words featured in **Red** text following the [S] icon

6. Highlighted text below is an example of what you will experience during a procedure - linear explanations are included in points **a** to **e**:

PF [S] **THRUST LEVER NUMBER # -> ** [A] Place your hand on the specific Thrust Lever now

a) PF - means YOU

b) [S] **-** you must SAY the words, example: **Thrust Lever Number**

c) # **-** whenever you see this **#** you must substitute it for either number **1** or **2** and include it in the speech. eg: Thrust Lever Number **1**

d) -> **-** this icon indicates you have another task to perform

e) [A] - you must Place your hand on the specific Thrust Lever now

note: All the above conventions apply throughout FS2Crew Non-Normal procedures

FIRST OFFICER/PILOT MONITORING (COMPUTER):

1. BLUE TEXT = First Officer/Pilot Monitoring responsibility

2. FO = FIRST OFFICER (COMPUTER) - definition: **FO** is assumed prior to taking the runway and once the aircraft vacates the runway after landing

3. PM = PILOT MONITORING (COMPUTER) - definition: **PM** is assumed as soon as the aircraft takes the runway and whilst it is airborne

4. [A] **=** Action - this means that a particular physical action will be carried out by the **FO/PM**

5. [S] **=** Speech - this means that the **FO/PM** will say the words featured in **Blue** text following the [S] icon (same procedure as Captain/Pilot Flying)

6. Note: refer to the example in Point 6 (a to e) above - these conventions also apply to the **FO/PM**

ADDITIONAL INFORMATION:

1. Reference: PMDG QRH. Section - 8.14

- Refers to the PMDG Quick Reference Handbook (QRH) which contains the actual Non-Normal Checklists used by the FO/PM. In this instance it refers to "Section 8.14 of the QRH"
- We recommend you have a copy (hard or cyber) of the PMDG QRH ready before you proceed with the failures modelled in FS2Crew 737 NGXu.

2. APU -> APU SEVERE

- This indicates a specific failure item and its location in the PMDG NGX Failures Menu/Sub-Menu. This will assist you in accessing & initiating the correct failure relative to the procedure
- Refer to Page 82 of the PMDG NGX Introduction Manual for more details on accessing the failures Menu
- It is imperative that you choose the correct failure and its corresponding checklist to ensure trouble-free operation of the failures modelled in FS2Crew.

3. Note: Pay special attention to any highlighted text!

4. If you need more time to complete an action, you can:

- Pause the checklist -> use the command **HOLD THE CHECKLIST** or
- Resume the checklist -> use the command **RESUME THE CHECKLIST**

5. If you need to reset Master Caution, use the command: **RESET MASTER CAUTION**

6. It is **HIGHLY RECOMMENDED** that you leave the FS2Crew GREEN **TEXT BAR** open at all times as this displays what the speech recognition system 'hears' when running failures. You need to ensure the correct 'trigger phrases' are detected. (Example: Sometimes, 'check' can be heard as 'checked', or 'close' can be heard as 'closed')

7. These Procedures may disagree with your Airline SOP's, your training, what you've viewed on airline video's or in some other medium

8. Generally speaking, the simulation is not geared to handle multiple failures in one flight. Only run one failure per flight

9. You may notice that, in some situations, the FO is slow to put the APU on the bus after the APU has started. The reason for the delay is because many of the FO's actions are based on timing, and at higher altitudes the APU takes longer to start than at lower altitudes.

FEATURED FAILURES:

ABORTED ENGINE START

Reference: PMDG QRH. Section - 7.1

PMDG Failure Name in FMC: **ENGINE -> ENG 1/2 EGT EXCEEDANCE, OIL PRESSURE, OIL TEMPERATURE**

Note 1: The **FO** will NOT announce this failure due to SDK limitations

Note 2: For the Checklist to run you must command the **FO** to start the Engines

Procedure:

1. CA [S] Announce the reason for aborting the Engine Start. (ie: Use the name of the failure you programmed). Generally you should announce the condition before the limit is reached

2. CA [S] **ABORTED ENGINE START MEMORY ITEMS**

3. CA [S] **ENGINE START LEVER CUTOFF ->** [A] move the Engine Start Lever to Cutoff (if it's not already off)

4. FO [S] Wait for **FO** to announce **Memory Items Complete**

5. CA [S] **ABORTED ENGINE START CHECKLIST**

6. FO [S] Will Complete the checklist

APU FAULT

Reference: PMDG QRH. Section - 7.11

PMDG Failure Name in FMC: **APU -> APU SEVERE**

Condition: An APU Malfunction occurs

Procedure:

1. PM [S] **MASTER CAUTION - APU**

2. PF [S] **CHECK**

3. PM [A] will extinguish the Master Caution Button

4. PF [S] **CONFIRM THE FAILURE** or **IDENTIFY**

5. PM [S] **APU FAULT**

6. PF [S] **CONFIRMED**

7. PF [S] **APU FAULT CHECKLIST**

8. PM [S] Will complete the checklist

APU FIRE

Reference: PMDG QRH. Section - 8.1

PMDG Failure Name in FMC: **FIRE -> APU FIRE**

Condition: Fire is Detected in the APU

Procedure:

1. PM [S] **FIRE**

2. PF [S] **CHECK**

3. PF [S] **CONFIRM THE FAILURE** or **IDENTIFY**

4. PM [S] **APU FIRE**

5. PF [S] **CONFIRMED**

6. PF [S] **APU FIRE MEMORY ITEMS**

7. PM [S] **APU FIRE SWITCH**

8. PF [S] **CONFIRM**

9. PM [S] **Pull, Rotate and Hold ->** [A] **the APU Fire Switch**

10. PM [A] set **APU Fire Switch to OFF -> [S] Memory Items Complete**

11. PF [S] **APU FIRE CHECKLIST**

12. PM [S] Will complete the checklist

BLEED TRIP OFF

Reference: PMDG QRH. Section - 2.6

PMDG Failure Name in FMC: **PNEUMATIC -> 1/2 BLEED OVER TEMP, ENG 1/2 BLEED OVER PRESS**

Condition: An Engine Bleed Overheat or Over Pressure occurs

Procedure:

1. PM [S] **MASTER CAUTION - AIR CONDITIONING**

2. PF [S] **CHECK**

3. PM [A] will extinguish the Master Caution Button

4. PF [S] **CONFIRM THE FAILURE** or **IDENTIFY**

5. PM [S] **BLEED TRIP OFF**

6. PF [S] **CONFIRMED**

7. PF [S] **BLEED TRIP OFF CHECKLIST**

8. PM [S] Will complete the checklist

CABIN ALTITUDE WARNING OR RAPID DEPRESSURIZATION

Reference: PMDG QRH. Section - 2.1

PMDG Failure Name in FMC: **PRESSURIZATION -> PRESSURE HULL INTEGRITY**

Note 1: Trigger this failure above 14,000 feet

Note 2: The Cabin Altitude warning horn is your prompt to call for the memory items

Condition: One or more of these occur: The Cabin Altitude/config warning horn sounds

Procedure:

1. PM [S] **MASTER CAUTION - AIR CONDITIONING**

2. PF [S] **CHECK**

3. PF [S] **CABIN ALTITUDE WARNING OR RAPID DEPRESSURIZATION MEMORY ITEMS**

PF Memory Items:

- Don oxygen masks and set regulators to 100%

PM Memory Items:

- Don Oxygen Mask and set regulators to 100%
- Establish Crew Communication
- Pressurization Mode Selector MAN
- Outlflow Valve hold in CLOSE

4. PF [S] **CABIN ALTITUDE WARNING OR RAPID DEPRESSURIZATION CHECKLIST**

5. PM [S] Will complete the checklist

CARGO FIRE

Reference: PMDG QRH. Section - 8.14

PMDG Failure Name in FMC: **FIRE -> FWD CARGO FIRE, AFT CARGO FIRE**

Note: Point 4 below - **(FWD/AFT)** refers to whether it is a "FWD = Forward" or "AFT = Rear" Cargo Hold Fire. The **PM** will identify it accordingly

Condition: Fire detected in either the FWD or AFT Cargo Hold

Procedure:

1. PM [S] **FIRE**

2. PF [S] **CHECK**

3. PF [S] **CONFIRM THE FAILURE** or **IDENTIFY**

4. PM [S] **CARGO FIRE AFT/FWD HOLD**

6. PF [S] **CONFIRMED**

7. PF [S] **CARGO FIRE CHECKLIST**

8. PM [S] Will start the checklist

9. PM [S] **CARGO FIRE ARM SWITCH (FWD/AFT) ->** [A] **HOLD.... CONFIRM... PUSH, VERIFY ARMED**

10. PF [S] **CONFIRM AFT / CONFIRM FORWARD**

11. PM [S] Will complete the checklist

12. PF [S] If on the ground, inform ground personnel NOT to open any cargo door until all passengers and crew have exited the plane and fire fighting equipment is nearby.
(You should enable 'soft mute' if making this dialogue to prevent FS2Crew from triggering unintentional voice commands)

DRIVE

Reference: PMDG QRH. Section - 6.2

PMDG Failure Name in FMC: **ELECTRICAL -> GEN 1/2 DRIVE DISC**

Condition: A Generator Drive Malfunctions

Note: FS2Crew Mode must be greater than or equal to BEFORE TAXI.

Procedure:

1. PM [S] **MASTER CAUTION - ELECTRICAL**

2. PF [S] **CHECK**

3. PM [A] will extinguish the Master Caution Button

4. PF [S] **CONFIRM THE FAILURE** or **IDENTIFY**

5. PM [S] **DRIVE**

6. PF [S] **CONFIRMED**

7. PF [S] **DRIVE CHECKLIST**

8. PM [S] Will start the checklist

9. PM [S] **GENERATOR DRIVE DISCONNECT SWITCH #.... ->** [A] **CONFIRM.... HOLD IN THE DISCONNECT POSITION MOMENTARILY**

10. PF [S] **CONFIRM NUMBER #**

11. PM [S] Will complete the checklist

EEC ALTERNATE MODE

Reference: PMDG QRH. Section - 7.13

PMDG Failure Name in FMC: **ENG -> EEC 1/2**

Condition: An EEC Operates in the Alternate Control Mode

Procedure:

1. PM [S] **MASTER CAUTION - ENGINE**

2. PF [S] **CHECK**

3. PM [A] will extinguish the Master Caution Button

4. PF [S] **CONFIRM THE FAILURE** or **IDENTIFY**

5. PM [S] **EEC ALTERNATE MODE**

6. PF [S] **CONFIRMED**

7. PF [S] **EEC ALTERNATE MODE CHECKLIST**

8. PM [S] **AUTO-THROTTLE DISENGAGE** (If Engaged)

9. PF [S] **AUTO-THROTTLE DISENGAGED -> [A]** Disconnect the Auto-Throttle now

10. PM [S] **THRUST LEVERS (BOTH)... RETARD TO THE MID POSITION**

11. PF [S] **THRUST LEVERS RETARD TO MID POSITION -> [A]** Move the Thrust Levers to Mid position now

12. PM [S] **ENGAGE AUTO-THROTTLE**

13. PF [S] **AUTO-THROTTLE ENGAGED -> [A]** Re-engage Auto-Throttle now

EMERGENCY DESCENT

Reference: PMDG QRH. Section - 0.1

PMDG Failure Name in FMC: **PRESSURIZATION -> PRESSURE HULL INTEGRITY**

Condition: Cabin Altitude cannot be controlled when the airplane is above 14,000ft or a rapid descent is required

Procedure:

Note: Generally before running the **Emergency Descen**t items, you would have already run the **CABIN ALTITUDE WARNING OR RAPID DEPRESSURIZATION** memory items and checklist

1. PF [S] **EMERGENCY DESCENT MEMORY ITEMS**

PF Memory Items:

- Descend to 10,000 feet or MSA/MORA
- Thrust Levers Reduce (Only after PM sets Start Switches to CONT)
- Speedbrake Flight Detent
- Set Target Speed MMO/VMO

PM Memory Items:

- Passenger signs ON
- Engine Start Switches CONT

2. PF [S] **EMERGENCY DESCENT CHECKLIST**

3. PM [S] Will complete the checklist

ENGINE FAILURE OR SHUTDOWN

Reference: PMDG QRH. Section - 7.14

PMDG Failure Name in FMC: **ENGINE-> ENG 1/2 V1 or VR CUT, SEVERE DAMAGE**

Note: The PMDG NGX 'Engine Flameout' failure cannot be used to trigger this scenario
(ie: in the NGX, the engine always re-lights by itself almost instantly when using engine Flame Out)

Condition: An Engine Failure or Flame Out has occurred. An **ENG FAIL** alert shows or another checklist directs an Engine Shutdown

Procedure:

During Takeoff:

1. FO [S] Will announce the failure

2. PF [S] If on the runway, call **CONTINUE** or **REJECT REJECT**

3. PF [S] Above 400 feet: **SELECT HEADING SELECT**

4. PF [S] **CONFIRM THE FAILURE**

5. PM [S] **ENGINE FAILURE NUMBER #**

6. PF [S] **CONFIRMED**

Note: The **FO** will not extinguish any nuisance Master Caution warnings in this scenario when you say **CONFIRMED**

Note: You can use the command **RESET MASTER CAUTION** to clear the Master Caution

7. PF [S] If VNAV not armed for departure, at 800 to 1500 ft: **SET FLAPS UP SPEED**

8. PF [S] Call for flap retraction as required (clean the aircraft up on schedule)

9. PF [A] Disconnect the auto throttle now if it's still engaged: **AUTO-THROTTLE DISENGAGED**

10. PF [S] If VNAV not armed for departure and when at flaps up and clean speed: **SELECT LEVEL CHANGE**

11. PF [S] **SET MAXIMUM CONTINUOUS THRUST**

12. PF [S] Optional: **SELECT COMMAND A**

13. Skip to Step 1 below

---

1. PF [S] **ENGINE FAILURE OR SHUTDOWN CHECKLIST**

2. PM [S] **AUTO-THROTTLE DISENGAGE** (If Engaged)

3. PF [A] **AUTO-THROTTLE DISENGAGED** Disengage the Auto-Throttle now

4. PM [S] **THRUST LEVER NUMBER # CONFIRM CLOSE**

5. PF [S] **THRUST LEVER NUMBER # ->** [A] Place your hand on the specific Thrust Lever now

6. PM [S] **CONFIRM NUMBER #**

7. PF [A] **CLOSE** move the Thrust Lever to Retard position now

Note: Prior to closing the associated throttle, you may need to press **E + 1** or **E + 2** (**FSX 'ENGINE SELECT' COMMAND**) so you can select the throttle to be closed. If you don't select the throttle, your joystick will move both throttles.

If airborne:

- PM [S] **ENGINE START LEVER NUMBER # CONFIRM CUTOFF ->** [A] Will now place his hand on the Start Lever

- PF [S] **CONFIRM NUMBER #**

- PM [S] **CUTOFF ->** [A] Will now move the Start Switch to Cutoff and complete the remainder of the checklist

If on the ground:

- FO [S] **ENGINE START LEVER NUMBER # CONFIRM CUTOFF**

- CA [S] **ENGINE START LEVER NUMBER # ->** [A] Place your hand on the specific Start Lever now

- **FO** [S] **CONFIRM NUMBER #**

- **CA** [S] **CUTOFF ->** [A] Move the Start Switch to Cutoff and complete the remainder of the checklist

Extra Notes:

1. If you need to return to the airport after takeoff, run the '**APPROACH BRIEFING**' and '**DESCENT CHECKLIST**' prior to landing

2. PF [S] If required, call for the **AFTER TAKEOFF** checklist once the non-normal checklist is completed

3. **PF** [S] Consider running the **ENGINE IN FLIGHT START** checklist.

4. PF [S] If the engine cannot be restarted: run the **ONE ENGINE INOPERATIVE LANDING CHECKLIST FLAPS 15** or **ONE ENGINE INOPERATIVE CHECKLIST FLAPS 30**

ENGINE FIRE OR ENGINE SEVERE DAMAGE OR SEPARATION

Reference: PMDG QRH. Section - 8.2

PMDG Failure Name in FMC: **ENGINE-> FIRE -> ENG 1/2 FIRE, SEVERE DAMAGE**

Condition: One or more of these occur: Engine Fire Warning, Airframe Vibrations with unusual Engine Indications, Engine Separation

Procedure:

1. PM [S] Will announce the failure or simply call **FIRE**

2. PF [S] If on the runway, call **CONTINUE** or **REJECT REJECT**

3. PF [S] **SELECT HEADING SELECT** (Above 400 feet)

4. PF [S] **CONFIRM THE FAILURE** or **IDENTIFY**

5. PM [S] **ENGINE FIRE NUMBER #**

6. PF [S] **CONFIRMED**

Note 1: The **FO** will not extinguish any nuisance Master Caution warnings in this scenario when you say **CONFIRMED**

Note 2: You can use the command **RESET MASTER CAUTION** to clear the Master Caution

7. PF [S] **ENGINE FIRE OR ENGINE SEVERE DAMAGE OR SEPARATION MEMORY ITEMS**

8. PF [S] **AUTO-THROTTLE DISENGAGED -> [A]** Disengage the Auto-Throttle now

9. PF [S] **THRUST LEVER NUMBER # -> [A]** Place your hand on the specific Thrust Lever now

10. PM [S] **CONFIRM NUMBER #**

11. PF [S] **CLOSE -> [A]** move the Thrust Lever to Retard position now

Note: Prior to closing the associated throttle, you may need to press **E + 1** or **E + 2** (**FSX 'ENGINE SELECT' COMMAND**) so you can select the throttle to be closed. If you don't select the throttle, your joystick will move both throttles.

If Airborne (Start Levers are Pilot Monitoring domain):

- **PM** [S] **ENGINE START LEVER NUMBER # -> [A]** will place his hand on the Start Lever

- **PF** [S] **CONFIRM NUMBER #**

- **PM** [S] **CUTOFF -> [A]** will move the Start Switch to Cutoff and completes the remainder of the checklist

If on the Ground (Start Levers are Captain's domain):

- **CA** [S] **ENGINE START LEVER NUMBER # -> [A]** Place your hand on the specific Start Lever now

- **FO** [S] **CONFIRM NUMBER #**

- **CA** [S] **CUTOFF -> [A]** Move the Start Switch to Cutoff and complete the remainder of the checklist

12. PM [S] **ENGINE FIRE SWITCH NUMBER # -> [A]** Will place his hand on the associated Engine Fire Switch

13. PF [S] **CONFIRM NUMBER #**

14. PM [S] **PULL -> [A]** Will pull the Engine Fire Switch

15. PF [S] If VNAV not armed for departure, at 800 to 1500 ft: **SET FLAPS UP SPEED**

16. PF [S] Call for flap retraction as required (clean the aircraft up on schedule)

17. PF [A] Disconnect the auto throttle now if it's still engaged

18. PF [A] If VNAV not armed for departure and when at flaps up and clean speed, disengage the autothrottle and: **SELECT LEVEL CHANGE**

19. PF [S] **SET MAXIMUM CONTINUOUS THRUST**

20. PF [S] If desired **SELECT COMMAND A**

21. PF [S] **ENGINE FIRE OR ENGINE SEVERE DAMAGE OR SEPARATION CHECKLIST**

22. PF [S] If required call **AFTER TAKEOFF CHECKLIST**

23. PF [A] Decide on your course of action. (ie: inform ATC/Cabin Crew/Company, etc)

24. PF [S] **ONE ENGINE INOPERATIVE LANDING CHECKLIST** if airborne

25. PF [S] **EVACUATION** if on the ground

Important:

For the PM to announce the failure the following condition must be met:

1. The FS2 Crew mode must be in "Takeoff" mode, or the aircraft must be airborne at an altitude greater than 400 feet with the selected FS2Crew mode greater than "Takeoff"

Additional Notes:

1. The PM cannot balance the fuel due to simulation limitations. You will need to do that manually

2. If you need to return the airport after takeoff, you will need to put FS2Crew into "Descent Mode". To do that, run the Descent or Approach Checklist

ENGINE IN FLIGHT START

Reference: PMDG QRH. Section - 7.18

PMDG Failure Name in FMC: **N/A**

Note: Typically, you would utilize this immediately after an Engine Failure

Condition: An Engine Failure or Flame Out has occurred. Attempting an Engine Re-Start

Procedure:

1. PF [S] **ENGINE IN FLIGHT START CHECKLIST FOR ENGINE ONE** or **ENGINE IN FLIGHT START CHECKLIST FOR ENGINE TWO**

2. PF [A] Disconnect the Auto-Throttle now if it's still engaged

3. PM [S] **THRUST LEVER # CONFIRM CLOSE**

4. PF [S] **THRUST LEVER NUMBER #** Place your hand on the specific thrust lever

5. PM [S] **CONFIRM NUMBER #**

6. PF [S] **CLOSE ->** [A] Move the Thrust Lever to Retard position now

Note: Prior to closing the associated throttle, you may need to press **E + 1** or **E + 2** (**FSX 'ENGINE SELECT' COMMAND**) so you can select the throttle to be closed. If you don't select the throttle, your joystick will move both throttles.

7. PM [S] ENGINE START LEVER # CONFIRM CUTOFF-> [A] Will put his hand on the specific Start Lever

8. PF [S] **CONFIRM NUMBER #**

9. PM [A] Will move the Start Lever to Cutoff (note: the Start Lever is the responsibility of the **FO/PM** while airborne)

10. PF [S] Decide to employ either a "**Windmill Start**" or a "**Cross Bleed Start**"

WINDMILL START:

Procedure:

PF [S] **START ENGINE ONE WINDMILL START** or **START ENGINE TWO WINDMILL START** as needed

PM [A] Will move the associated Start Switch to FLT

CROSS BLEED START:

Procedure:

PF [S] **START ENGINE ONE CROSS BLEED START** or **START ENGINE TWO CROSS BLEED START** as needed

PM [A] Turns off the respective Pack and sets the Engine Start Switch to GRD. (note: A minimum of 30 PSI is needed for Engine Start. Initiate a Cross-Bleed start to increase the Duct Pressure)

12. When N2 is at or above 11%:

PF [S] **ENGINE START LEVER ONE IDLE DETENT** or **ENGINE START LEVER TWO IDLE DETENT**

PM [A] Will move the associated Start Lever to Idle Detent

PM [A] Start Switch to OFF. (Windmill Start) If the start is successful and the engine is running normally [S] will complete the checklist

If the engine fails to restart after the Start Switch was moved to FLT (or GND) and the Start Lever was moved to Idle:

PF [S] **NO LIGHT OFF**

Note: If you don't make the "NO LIGHT OFF" calll within 30 seconds after the Start Lever was moved to Idle, the FO will assume the engine has started normally.

The start lever needs to be closed to secure the engine:

PM [S] **ENGINE START LEVER NUMBER # CONFIRM CUTOFF ->** [A] Will put his hand on the specific Start Lever

PF [S] **CONFIRM NUMBER #**

PM [S] **CUTOFF ->** [A] Will move the Start Switch to Cutoff and complete the remainder of the checklist

PF [A] Decide on your course of action. (ie: inform ATC/Cabin Crew/Company, etc)

PF [S] **ONE ENGINE INOPERATIVE CHECKLIST FLAPS 15** or **ONE ENG INOPERATIVE CHECKLIST FLAPS 30**

EVACUATION

Reference: PMDG QRH Back Cover 2

Note: DO NOT LOWER THE SPEED BRAKE BEFORE CALLING FOR THE EVACUATION CHECKLIST OR THE FO WILL PERFORM HIS "AFTER LANDING" FLOW!

Condition: Evacuation is required

Procedure:

1. CA [S] EVACUATION CHECKLIST

The checklist is "read and do". The following [A] are performed by the **CA** when called for by the checklist

a) [A] Parking Brake Set

b) [A] Speedbrake Lever Down

c) If time allows, verify that the Flaps are at 40 before moving the Engine Start Levers to Cutoff

d) [A] Engine Start Levers Cutoff

e) [S] Make PA: **EVACUATE EVACUATE EVACUATE** (This will trigger all Cabin Doors to open)

f) [S] Advise the Tower

The following items are performed by the **FO** when called for during the checklist (as they fall within his area of responsibility):

a) [A] Flaps 40

b) [A] Outflow Valve Switch fully Open to depressurize the plane

c) [A] Engine and APU Fre Switches (all), override and pull

d) [A] If an engine or APU Fire warning occurs, illuminated Fire Switch: rotate to the stop and hold for 1 second

HYDRAULIC PUMP OVERHEAT

Reference: PMDG QRH. Section - 13.1

PMDG Failure Name in FMC: **HYDRAULICS -> EMDP A/B OVERHEAT**

Condition: Hydraulic Pump Temperature is high

Procedure:

1. PM [S] **MASTER CAUTION - HYDRAULICS**

2. PF [S] **CHECK**

3. PM [A] will extinguish the Master Caution Button

4**. PF** [S] **CONFIRM THE FAILURE** or **IDENTIFY**

5. PM [S] **EMDP PUMP OVERHEAT**

6. PF [S] **CONFIRMED**

7. PF [S] **HYDRAULIC PUMP OVERHEAT CHECKLIST**

8. PM [S] Will complete the checklist

LOSS OF SYSTEM A

Reference: PMDG QRH. Section - 13.2

PMDG Failure Name in FMC: **HYDRAULICS -> EMDP A HYD FAIL and EDP 1 HYD FAIL**

Note: **Both failures** must be programmed in the FMC

Condition: Hydraulic A System Pressure is low

Note: Checklist Mode must be greater than or equal to BEFORE TAXI

Procedure:

1. PM [S] **MASTER CAUTION - HYDRAULICS**

2. PF [S] **CHECK**

3. PM [A] will extinguish the Master Caution Button

4. PF [S] **CONFIRM THE FAILURE** or **IDENTIFY**

5. PM [S] will read all illuminated lights on the overhead

6. PF [A] based on what the PM says, call for the appropriate checklist

7. PF [S] **LOSS OF SYSTEM A CHECKLIST**

8. PM [S] **SYSTEM A FLT CONTROL SWITCH -> [A] ... CONFIRM... STANDBY RUDDER**

9. PF [S] **CONFIRM**

10. PM [S] Will complete the checklist

Extra Notes:

1. If System A is lost, you will need to manually extend the landing gear during the approach

2. Speak the command [S] **MANUAL GEAR EXTENSION** when you wish to lower the gear

3. The PMDG 737 NGX **does not currently model** the Alternate Gear Extension system, so the FO cannot drop the gear when commanded

4. You will need to carry out a belly landing. (It is hoped that PMDG will model the Alternate Gear Extension in their next update)

5. If the gear cannot be lowered, see Point 6 below

6. PF [S] **PARTIAL OR ALL GEAR UP LANDING CHECKLIST**

LOSS OF SYSTEM B

Reference: PMDG QRH. Section - 13.6

PMDG Failure Name in FMC: **HYDRAULICS -> EMDP B HYD FAIL and EDP 2 HYD FAIL**

Note: **Both failures** must be programmed in the FMC

Condition: Hydraulic B System Pressure is low

Note: Checklist Mode must be greater than or equal to BEFORE TAXI

Procedure:

1. PM [S] **MASTER CAUTION - HYDRAULICS**

2. PF [S] **CHECK**

3. PM [A] will extinguish the Master Caution Button

4. PF [S] **CONFIRM THE FAILURE** or **IDENTIFY**

5. PM [S] will read all illuminated lights on the overhead

6. PF [A] based on what the PM says, call for the appropriate checklist

7. PF [S] **LOSS OF SYSTEM B CHECKLIST**

8. PM [S] **SYSTEM B FLT CONTROL SWITCH -> [A] ... CONFIRM... STBY RUDDER**

9. PF [S] **CONFIRM**

10. PM [S] Completes checklist

11. PF [S] **Important:** Conduct your "**Approach Brief**" for a **Flaps 15 Landing** and **Manual Braking** (Autobrake not available)

12. PM [A] Will lower flaps when commanded using Alternate Flap Extension

Important: Flap extension order is Flaps 1 > Flaps 5 > Flaps 15 Do NOT use Flaps 2

OFF SCHEDULE DESCENT

Reference: PMDG QRH. Section - 2.10

Condition: A descent is started before reaching the planned cruise altitude set in the FLT ALT indicator

Note: Due to SDK limitation, the **PM** is unable to announce when the 'OFF SCHED DESCENT' light illuminates

Procedure:

1. **PF** [S] **OFF SCHEDULE DESCENT CHECKLIST** (if continuing to the destination airport) or

2. **PF** [S] **OFF SCHEDULE DESCENT CHECKLIST RETURNING TO DEPARTURE AIRPORT** (if returning to the departure airport)

3. **PM** [S] Will complete the checklist.

ONE ENGINE INOPERATIVE LANDING

Reference: PMDG QRH. Section - 7.29

Condition: Landing must be made with One Engine Inoperative.

Note: If you do not brief for a Flaps 15 landing via the Briefing Panel, the **PM** will not set the GPWS FLAP INHIBIT SWITCH to INHIBIT as per his deferred items list

Note: In Step 2, the PM is asking you if you want to use Flaps 15 or Flaps 30 for landing. It is a question. You must respond by saying either "FLAPS 15" or "FLAPS 30".

Procedure:

1. **PF** [S] **ONE ENGINE INOPERATIVE LANDING CHECKLIST**

2. **PM** [S] **FLAPS 15 OR LANDING WITH FLAPS 30?**

3. **PF** [S] **FLAPS 15** or **FLAPS 30**

4. PM [S] Will complete the checklist.

5. PF [S] Brief for a Flaps 15 Landing if required via the FS2Crew Briefing Panel

PARTIAL OR ALL GEAR UP LANDING

Reference: PMDG QRH. Section - 14.18

Condition: Partial or all Gear Up Landing

Note: **PM** will complete deferred items prior to the landing flare

Note: Speak "DOWN DETENT" for the speedbrake challenge in the Landing Checklist

Procedure:

1. PF [S] PARTIAL OR ALL GEAR UP LANDING CHECKLIST

2. PM [S] Will complete the checklist

PROBE HEAT

Reference: PMDG QRH. Section - 3.3

PMDG Failure Name in FMC: **ICE PROTECTION -> AVAILABLE PITOT HEAT AND VANE ITEMS**

Note: Choose the specific Pitot or Vane failure in the NGX Menu and the **PM** will recognize it via the illumination light on the overhead panel - referred to as "XX" in Point 4

Condition: One or more Probe Heats have failed

Note: Checklist Mode must be greater than or equal to BEFORE TAKEOFF

Procedure:

1. PM [S] **MASTER CAUTION - ANTI-ICE**

2. PF [S] **CHECK**

3. PM [A] will extinguish the Master Caution Button

4. PF [S] **CONFIRM THE FAILURE** or **IDENTIFY**

5. PM [S] **PROBE HEAT (Specify)**

6. PF [S] **CONFIRMED**

7. PF [S] **PROBE HEAT CHECKLIST**

8. PM [S] Will complete the checklist

REVERSER

Reference: PMDG QRH. Section - 7.33

PMDG Failure Name in FMC: **ENGINE -> REVERSER 1/2**

Condition: A fault occurs in the Thrust Reverser System

Note: The aircraft must be airborne for the **PM** to announce the failure

Procedure:

1. PM [S] **MASTER CAUTION - ENGINE**

2. PF [S] **CHECK**

3. PM [A] will extinguish the Master Caution Button

4. PF [S] **CONFIRM THE FAILURE** or **IDENTIFY**

5. PM [S] **REVERSER**

6. PF [S] **CONFIRMED**

7. PF [S] **REVERSER CHECKLIST**

8. PM [S] Will complete the checklist

STANDBY POWER OFF

Reference: PMDG QRH. Section - 6.14

PMDG Failure Name in FMC: **ELECTRICAL -> AC STBY BUS FAIL, DC STBY BUS FAIL, DC BAT BUS FAIL**

Condition: One or more of these Busses are not Energized: AC Standby Bus, DC Standby Bus, Battery Bus

Procedure:

1. PM [S] **MASTER CAUTION - ELECTRICAL** (if AC STBY or DC STBY only). if DC BAT BUS , the Master Caution panel will be inop, but the **PM** will announce that the [S] **STANDBY POWER OFF LIGHT HAS ILLUMINATED**

2. PF [S] **CHECK**

3. PM [A] will extinguish the Master Caution Button

4. PF [S] **CONFIRM THE FAILURE** or **IDENTIFY**

5. PM [S] will read all illuminated lights on the overhead

6. PF [A] based on what the FO says, call for the appropriate checklist

7. PF [S] **STANDBY POWER OFF CHECKLIST**

8. PM [S] Will complete the checklist

TAILSTRIKE ON TAKEOFF

Reference: PMDG QRH. Section - 15.6

PMDG Failure Name in FMC: **N/A**

Condition: The Tail hits the runway

Note: The **PM** will NOT announce the condition because FS2Crew cannot determine if a tail strike has occurred due to limitations with FSX

Procedure:

1. PF [S] **TAIL STRIKE ON TAKEOFF CHECKLIST**

2. PM [S] Will complete the checklist

TR UNIT

Reference: PMDG QRH. Section - 6.14

PMDG Failure Name in FMC: **ELECTRICAL -> TRU 1/2/3 FAIL**

Condition: One or more Transformer Rectifiers have failed

Procedure:

1. PM [S] **MASTER CAUTION - ELECTRICAL**

2. PF [S] **CHECK**

3. PM [A] will extinguish the Master Caution Button

4. PF [S] **CONFIRM THE FAILURE** or **IDENTIFY**

5. PM [S] **TR UNIT**

6. PF [S] **CONFIRMED**

7. PF [S] **TR UNIT CHECKLIST**

8. PM [S] Will complete the checklist

TRANSFER BUS OFF

Reference: PMDG QRH. Section - 6.15

PMDG Failure Name in FMC: **ELECTRICAL -> AC XFER BUS 1/2 FAIL**

Condition: The Transfer Bus is not Energized

Procedure:

1. PM [S] **MASTER CAUTION - ELECTRICAL**

2. PF [S] **CHECK**

3. **PM** [A] will extinguish the Master Caution Button

4. **PF** [S] **CONFIRM THE FAILURE** or **IDENTIFY**

5. **PM** [S] will read all illuminated lights on the overhead

6. **PF** [A] based on what the FO says, call for the appropriate checklist

7. **PF** [S] **TRANSFER BUS OFF CHECKLIST**

8. **PM** [S] Will complete the checklist

WINDOW OVERHEAT

Reference: PMDG QRH. Section - 3.6

PMDG Failure Name in FMC: **ICE PROTECTION -> L/R SIDE WINDOW OVHEAT, L/R FRONT WINDOW OVHEAT**

Condition: A Window Overheat occurs

Procedure:

1. **PM** [S] **MASTER CAUTION - ANTI ICE**

2. **PF** [S] **CHECK**

3. **PM** [A] will extinguish the Master Caution Button

3. **PF** [S] **CONFIRM THE FAILURE** or **IDENTIFY**

4. **PM** [S] **WINDOW OVERHEAT**

5. **PF** [S] **CONFIRMED**

6. **PF** [S] **WINDOW OVERHEAT CHECKLIST**

7. **PM** [S] Will complete the checklist

-MANUAL END-