B737 NG CBT - AUXILIARY POWER UNIT (APU)

COURSE OUTLINES

Copyrights © 2020 by Flyco Training Solutions

TABLE OF CONTENT

Copyrights © 2020 by Flyco Training Solutions

COURSE START

1-The material contained in this training program is based on the information obtained from current state, local and company regulations and it is to be used for training purposes only. At the time of designing this program contained then current information. In the event of conflict between data provided herein and that in publications issued by the authority, the authority shall take precedence.

AUXILIARY POWER UNIT (APU)

2-This chapter deals with the airplane auxiliary power unit. Here is the chapter outline: *

INTRODUCTION

3-The auxiliary power unit (APU) is a self–contained small gas turbine engine located in the tail of the airplane.

4-The APU supplies bleed air that can be used for engine start and air conditioning. It also drives its own generator which provides an auxiliary AC power source.

5-The APU starts and operates up to the airplane maximum certified altitude of 41,000 feet.

6-When the airplane is on the ground, the APU can supply bleed air for both air conditioning packs. During flight, it supplies bleed air for one pack.

7-The APU is able to power both AC transfer buses on the ground and in flight.

8-The APU can supply both electrical power and bleed air at the same time up to 10,000 feet. It can supply bleed air alone up to 17,000 feet. The APU can provide electrical power alone up to 41,000 feet.

9-The APU air inlet is on the right side of the aft fuselage. It operates automatically to route the air to the APU for APU engine operation.

10-APU exhaust gases discharge overboard through an exhaust muffler in the tailcone.

11-Air for APU cooling enters through a cooling air inlet above the APU exhaust outlet. This air circulates through the APU compartment, goes through the oil cooler and exits out the APU exhaust duct.

12-An electronic control unit (ECU) controls and monitors the APU functions. The ECU automatically shuts down the APU, if it senses APU operation that could cause damage.

APU CONTROLS AND INDICATIONS

13-The APU switch is on the overhead panel. It lets you start and stop the APU.

14-The APU indicator panel is also on the overhead panel. It has an APU exhaust gas temperature (EGT) indicator and four indication lights. Note that all four lights are disarmed when the APU switch is in the OFF position.

Copyrights © 2020 by Flyco Training Solutions

15-The Exhaust Gas Temperature indicator displays APU exhaust gas temperature. It remains powered for 5 minutes after shutdown.

16-The APU Maintenance Light illuminates when a maintenance problem exists. However, the APU can still be operated.

17-The APU LOW OIL PRESSURE Light illuminates during APU start and stays on until the oil pressure is within limits. At other times, the light comes on when the oil pressure is low, causing automatic APU shutdown.

18-The APU FAULT light illuminates when the ECU detects a fault and automatically shuts down the APU.

19-The APU OVERSPEED light illuminates when an overspeed condition is detected or an overspeed protection has failed. This also results in an automatic shutdown.

20-If the APU LOW OIL PRESSURE Light or APU FAULT Light or APU OVERSPEED light illuminates when you shut down the APU, it extinguishes after 5 minutes

APU OPERATION

21-The APU starts and operates on AC power. If AC power is not available, then DC power from the battery is used to start the APU. The APU start cycle may take as long as 120 seconds.

APU START

22-There are three preconditions to be satisfied to start and operate the APU: the APU fire switch on the overheat/fire panel must be IN, the APU fire control handle on the APU ground control panel must be IN and the battery switch must be ON.

23-Note that, if AC power is available, moving the aft number 1 fuel boost pump switch to ON, supplies pressurized fuel to the APU, which makes the APU start better.

24-To start the APU, you move the APU switch to the START position and release it. The switch moves to the ON position.

25-With the APU switch to ON, the APU fuel shut-off valve opens.

26-The APU air inlet door starts to open.

27-The low oil pressure light comes on. The light goes out when oil pressure is within limits.

28-When the APU completes the start cycle, the APU GENERATOR OFF BUS light illuminates.

29-APU is now ready to accept a bleed air or electrical load.

30-If the APU GENERATOR OFF BUS light fails to illuminate by the end of the start cycle, a system failure has occurred and the FAULT light illuminates.

Copyrights © 2020 by Flyco Training Solutions

31-During the APU start cycle, it is not necessary to monitor exhaust gas temperature as the indication may fluctuate prior to the normal rise. In the event of exhaust gas temperature exceedance, the APU automatically shuts down.

32-Note that if you start the APU using battery power, the BATTERY DISCHARGE light on the electrical meters comes on for a short time as the APU start uses DC power.

33-It is recommended to operate the APU for two minute before using it as a bleed air source. This stabilization period extends the service life of the APU.

APU Shutdown

34-The APU has three types of shutdowns: normal shutdown, immediate shutdown and protective shutdown.

APU Normal Shutdown

35-To shut down the APU normally, you move the APU switch to the OFF position.

36-With the APU switch in OFF position, the APU generator disconnects. The APU generator off bus light extinguishes.

37-The APU bleed valve closes

38-A 60- second cooling cycle starts.

39-When the APU speed decreases sufficiently, the APU fuel valve closes and fuel flow to the APU stops.

40-The APU air inlet door closes.

41-With the APU air inlet door closed, the APU shutdown is completed.

42-During the shutdown cycle, if the fuel shutoff valve does not close in the required time, the APU FAULT light will come on. In this case, you must immediately shut down the APU.

APU Immediate Shutdown

43-If the APU must be shut down immediately, pull the APU fire switch,

44-Or turn off the battery switch

45-The APU fire control handle in the main wheel well can also be used to shut down the APU immediately.

APU Protective Shutdown

46-Protective shutdown feature prevents damage to the APU or the airplane

47-The ECU controls an automatic protective shutdown of the APU.

48-The protective shutdown indications are provided by the low oil pressure light, the fault light and the overspeed light in

Copyrights © 2020 by Flyco Training Solutions

the flight deck.

APU AUTOMATIC LOAD OVERSHEDDING

49-The APU is protected against electrical overload conditions through automatic load shedding function.

50-In flight, if an overload condition is detected when the APU is the only source of electrical power, all galley buses are automatically shed. If electrical overload still exists, both main buses are shed. If available, both IFE buses are also automatically shed.

51-On the ground, the APU tries to supply full electrical load of the airplane. If an overload condition is detected, the power from the galley buses and then main buses is removed until the load is within limits.

52-You can attempt to restore galley power manually by moving the GALLEY Power Switch to OFF, then back ON

COURSE END

53-End of course.

Copyrights © 2020 by Flyco Training Solutions