BLACKBOX SIMULATION QUICK START GUIDE AND FLIGHT TUTORIAL BRITTEN-NORMAN BN2T TURBINE ISLANDER AND DEFENDER

BN2T ISLANDER
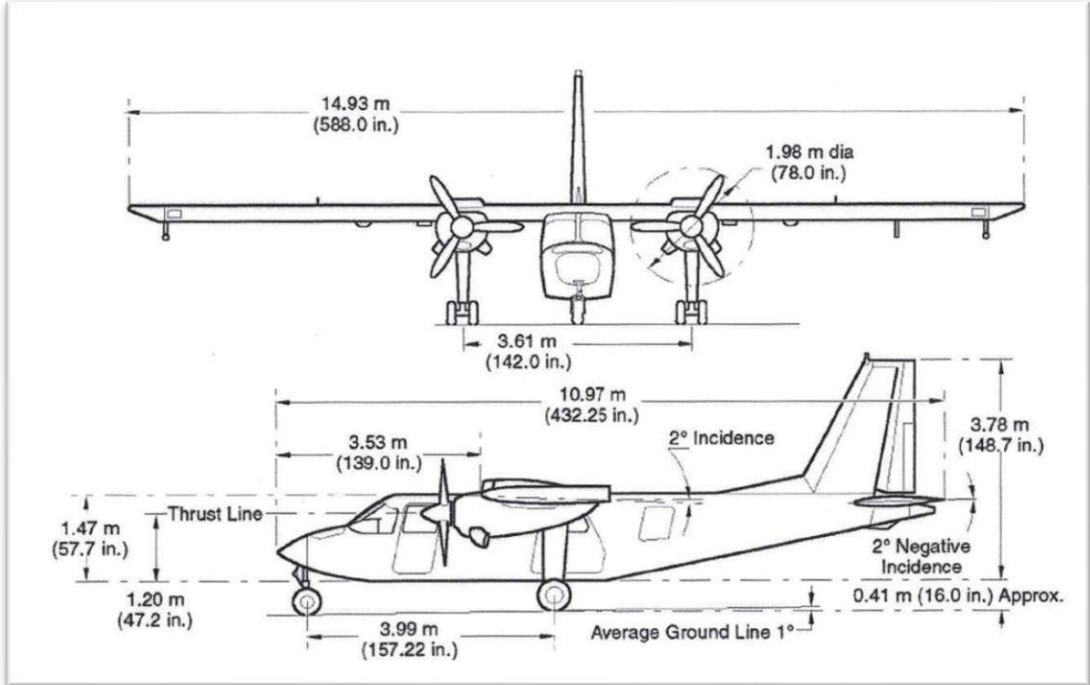

BN2T-42 DEFENDER

BLACKBOX SIMULATION QUICK START GUIDE AND FLIGHT TUTORIAL

We are confident that your BLACKBOX SIMULATION Britten-Norman BN2T Islander will give you every satisfaction, but should you require any assistance from the developer on the operation of your BLACKBOX product we are always at your service via the MSFS Forum and email.
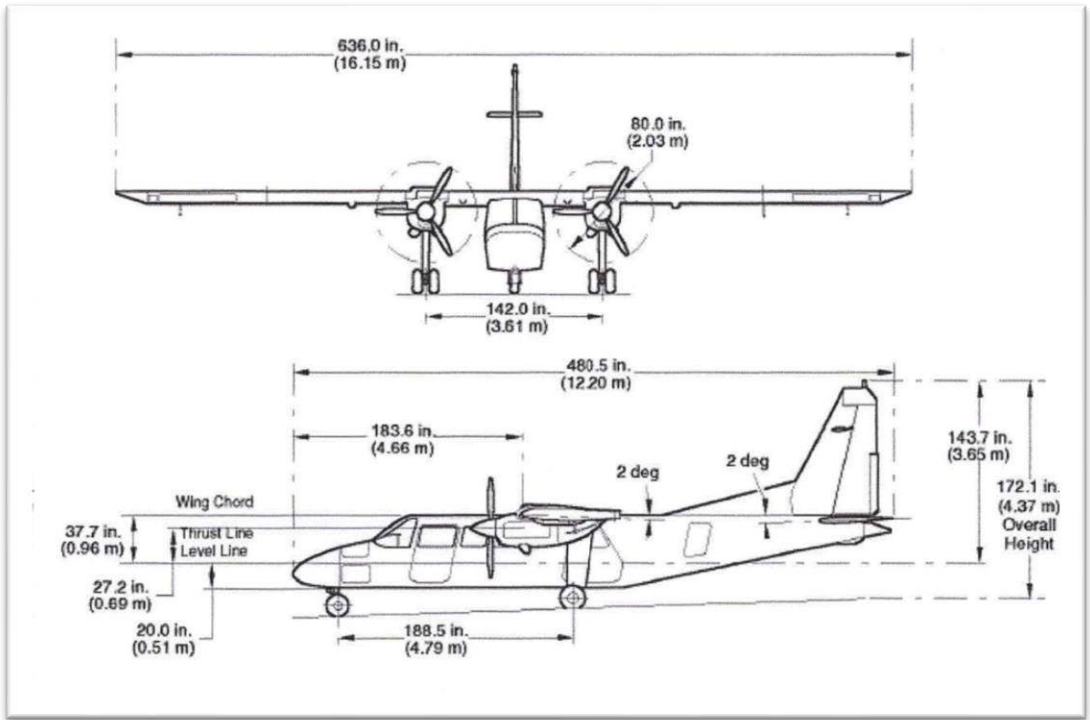

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INTRODUCTION

BN2T ISLANDER

BN2T-4S DEFENDER

INTRODUCTION

In this tutorial, we will show you how to get the absolute best out of your Britten-Norman aircraft. Yes, of course, you can jump in, hit the power, and fly around the islands but with this study level aircraft, we hope we can show you how to manage things in a proper and professional manner and enjoy your Islander & Defender to the maximum degree possible within the MSFS Environment.

We will walk you through the preparations and checklists used by professional pilots of the Islander & Defender: start-up procedures, pre-flight checks, and the various issues you may face.

So, sit back, relax, and learn the basic information required for your first flight in the Britten-Norman Islander & Defender. You can find similar information but in a much deeper technical format in the Britten Norman Pilots Operating Handbook available online. Here though, we start with the basic things you need to enjoy your Islander & Defender flying experience.

BBS ISLANDER & DEFENDER PANELS

You have three different panel layouts depending on the variant you chose to fly. They are very similar but do have some minor differences, mainly in instrument positions and a less modern Bendix WX radar in the civilian models.

BN2T-4S DEFENDER MAIN PANEL

INDEX

1	Central Warning Panel (CWP)
2	CWP Dim / Bright and Test Switches
3	Flap position indicator / Up / TO / FULL
4	Trim position Indicators
5	Aircraft Tail Number Reminder
6	GARMIN GI 275 ADI (Attitude Direction Indicator)
7	Engine Torque Indicators
8	Airspeed Indicator
9	Altimeter
10	Turbine Gas Temperature Gauges
11	Garmin GTN750 (requires PMS50 free or premium)
12	Collins Colour Weather Radar

13	Stall Warning lamp and test button
14	GARMIN GI 275 HSI (Horozontal Situation Indicator)
15	Propellor RPM Indicators
16	RMI (Radio Magnetic Indicator)
17	Turn and Bank Indicator
18	Vertical Speed indicator
19	Gas producer / Engine RPM
20	GARMIN GMC 500 AFCS (Automatic Flight Control System)
21	Radio Altimeter
22	VOR2
23	Vacuum Suction Gauges and fault indicators
24	Fuel Flow Indicators
25	Comm 2 Radio
26	Nav 2 Radio
27	Audio Switching Panel
28	Outside Air Temperature
29	Anti Ice Ammeter
30	Batt / Gen Ammeter
31	Batt / Gen Voltmeter
32	Engine Oil temperature and pressure gauges
33	Transponder Radio
34	ADF Radio
35	Ice Protection Panel
36	Engine Control Panel and Starter switch
37	Electrical control panel
38	Hobbs (Engine Hours) Meters
39	Throttle Levers
40	Propellor control levers
41	Main Circuit Breaker Panel
42	Aircraft Lighting Panel
43	Elevator trim Wheel
44	Pilots Yoke Show Hide Controller
45	Co-Pilots Yoke Show Hide Controller

The pms50 Garmin GTN750 (11) being an externally sourced GPS System, has its own user manuals and guides. Whether you choose to use the Freely Available version or the fully featured premium. The manuals are available directly from PMS Website Here https://pms50.com/fs2020/gtn750/documentation.pdf

The pms50 Garmin GTN750 Suite is available for free here → https://pms50.com/msfs/

BN2T-4S OVERHEAD CONTROL PANEL
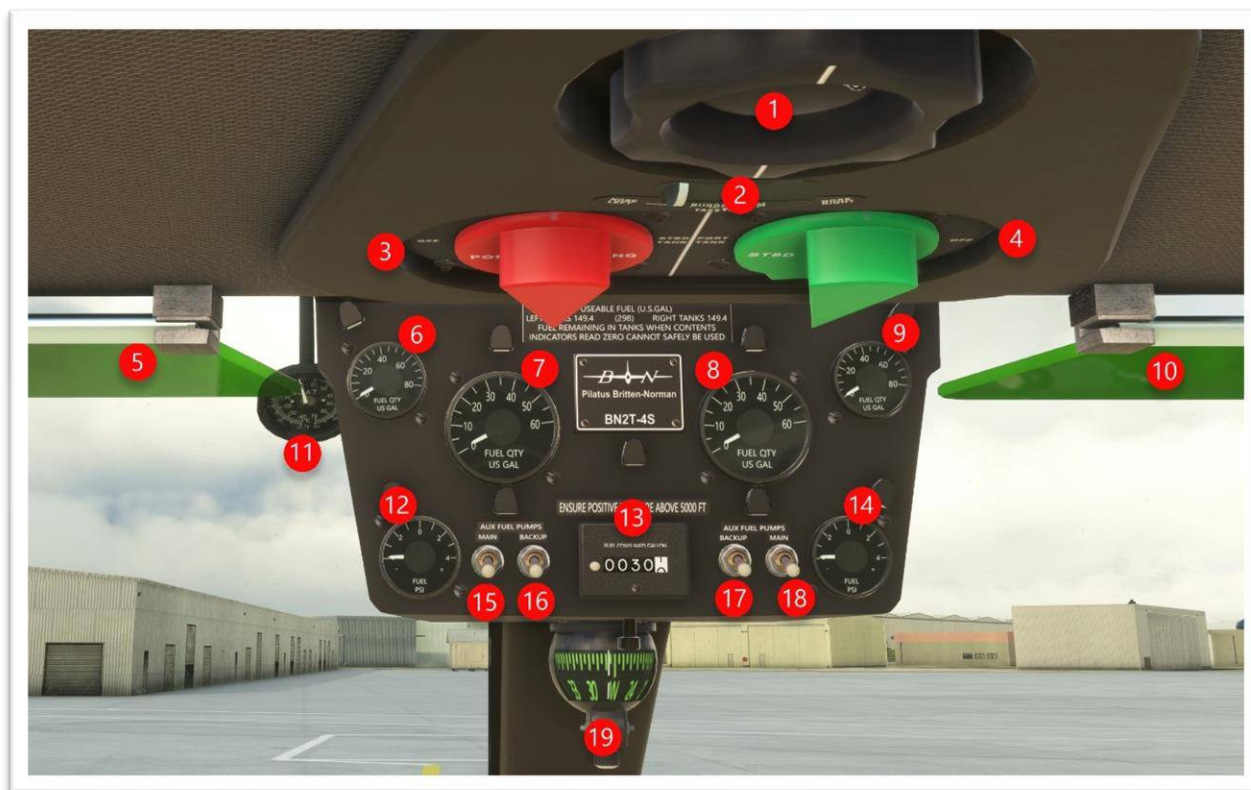
INDEX

1	**Rudder trim Wheel**
2	Rudder Trim Position indicator-
3	Port Fuel Cock
4	Starboard Fuel Cock
5	Port Adjustable Sun visor
6	Port Tip Tank Fuel Quantity
7	Port Main Tank Fuel Quantity
8	Starboard Main Tank Fuel Quantity
9	Starboard Tip Tank Fuel Quantity
10	Starboard Adjustable Sun visor
11	Outside Air temperature Gauge
12	Port Fuel Pressure
13	Fuel Totaliser (Fuel used)
14	Starboard Fuel Pressure
15	Port Main Fuel Pump
16	Port Backup Fuel Pump
17	Starboard Backup Fuel Pump
18	Starboard Main Fuel Pump
19	Wet compass

BN2T-4S PEDESTAL & CIRCRUIT BREAKERS

1	Parking brake Handle
2	Flaps Selection Switch
3	Battery Bus Circuit Breakers

Garmin Flight Instruments

Your BN2T is fitted with Garmin Gi 275 ADI and HSI. The instruments have 3 modes, each selectable by turning the outer Selection knobs on each gauge (8 & 17)
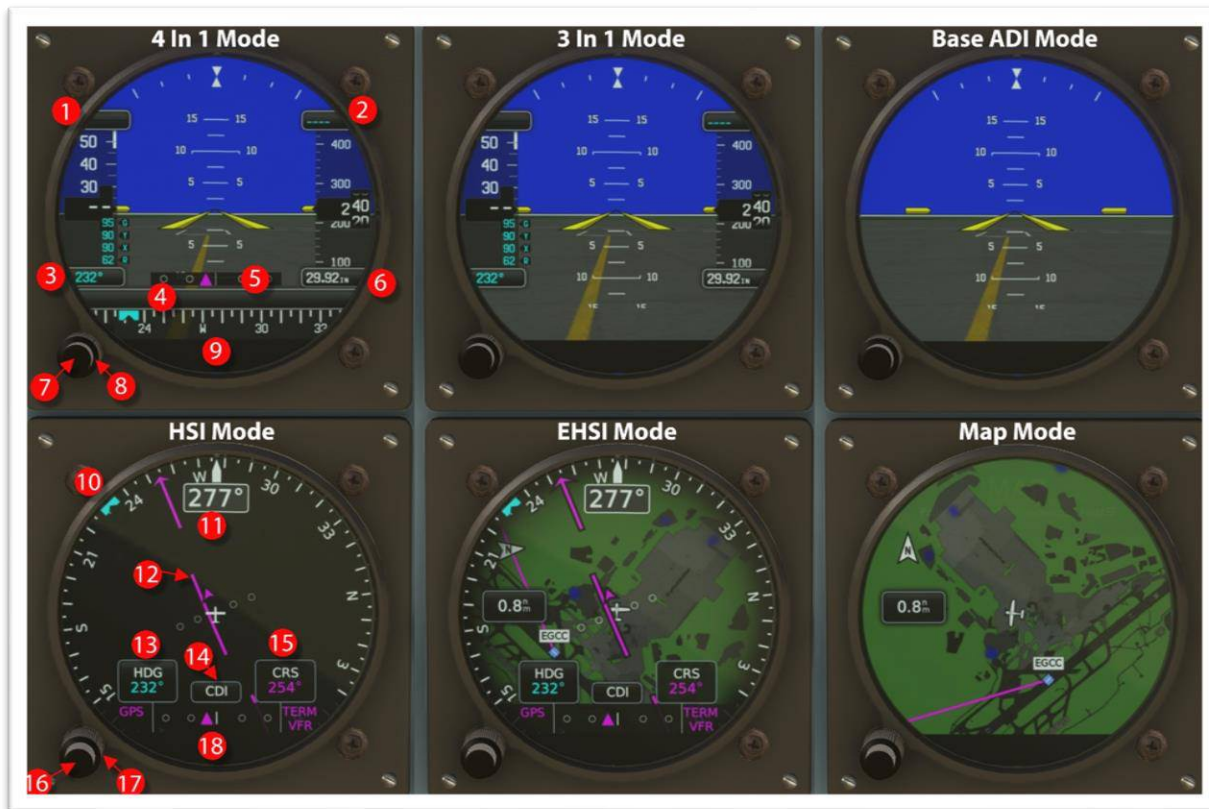
1	Selected Airspeed
2	Selected Altimeter
3	Selected Heading
4	Autopilot Annunciator Strip
5	Course Deviation Indicator
6	Barometric pressure Setting
7	PFD Inner Selection Knob
8	PFD Outer Selection Knob
9	Gyro Compass Direction
10	Digital Compass Rose
11	Current Heading
12	Heading Pointer
13	Selected heading
14	CDI / VLOC Indicator / Selector
15	Selected Course
16	HSI Inner Selection Knob
17	HIS Outer Selection Knob
18	Course Deviation Indicator

Garmin Flight Instruments

Right Click and Hold either INNER Selection knobs (7 & 16) to bring up the instruments Menu and Sub menus. Here you will find many options to enable you to customise each instrument as you like it. The Return buttons (1 & 2) Will exit the menu system and return to the main gauge display. NOTE The instruments should remain in EXTERNAL GPS mode as they rely on the GTN750 for Navigation.


Autopilot screen (PFD)

Clicking on the Autopilot Annunciator Strip (4) will bring up the PFD Autopilot screen, this mirrors the functions of the GARMIN GMC 500 AFCS allowing you to set AP functions direct from the PFD.   The Return button (1) takes you back to the main PFD and the Nose Up / Nose Down buttons (2) will adjust the Vertical speed when that mode is selected. It has the same function as the adjustment wheel (10) on the main GMC500 AFCS controller overleaf. All functions of GMC500 are available via this PFD Page.

GARMIN GMC500 AFCS Controller
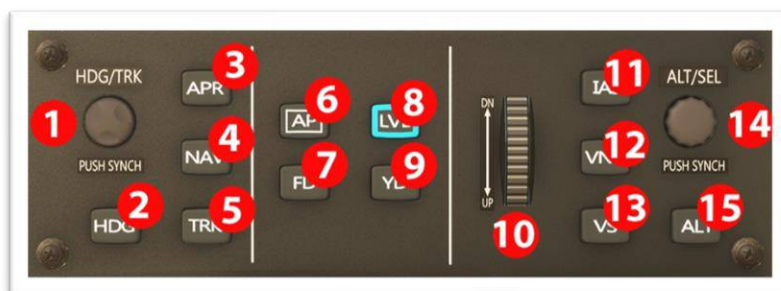
1	HDG / TRK Adjustment knob
2	Heading Mode Selector
3	Approach Mode Selector (only available if ILS Tuned and in range)
4	Nav Mode Selector
5	Track Mode Selector (INOP)
6	Autopilot Master
7	Flight Director master
8	Wings Level Selector
9	Yaw Damper Selector
10	Vertical adjustment wheel (Mode dependant - Vertical speed / Airspeed)
11	Indicated Air Speed Selector (Aircraft will climb or descend at a predefined airspeed)
12	Vnav Selector (INOP)
13	Vertical Speed Selector (Aircraft will climb or descend at predefined Vertical speed)
14	Altitude Mode Selector

All functions and parameters of the GMC500 are available via the PFD Annunciator pad and PFD menus.

For example, by clicking in the selected altitude windows on the PFD (2) this will activate the window for adjustment via the Inner Adjustment Knob (5) Rotating the knob will adjust the parameter in the window directly. A Second click in the same window will open the manual entry menu for that particular function. The image shows the ALTITUDE Entry window but all 4 are very similar. Just enter the parameter required and hit the Back Button.

PREPARING FOR FLIGHT GENERALLY

In MSFS: You can start a flight from anywhere, but for this tutorial, we will take you on a short hop across Southern Ireland with a start on the ramp at Cork EICK. We will be flying Up country to Shannon EINN on the West Coast.
The Mission file will contain all the parameters required for your first flight, including Fuel, Flightplan and Payload.

If you would like to plan your own flight, select the Islander or Defender of your choice. Make sure you have adequate fuel for your flight. Make sure your CoG (Centre of gravity) Is within the limits by adjusting passenger seating positions, baggage weight, and locations. The fuel load has a very minor effect on CoG as the tanks are set close to the balance point. One point of note is that the (wingtip) Tanks tanks (port and starboard) are usually filled to 100 % regardless of Main tank Quantity and are then transferred to the main tanks during flight.

From the MSFS main start screen select the "Activities" option. Scroll all the way to the right until you see "Custom Content" inside which you will find this Tutorial.

Click on the image to load the Tutorial Flight. This will prepare the Simulator and your Defender for the short across Ireland. Welcome to Cork Airport, and of course… It's raining.

PREPARING FOR FLIGHT USING TUTORIAL

You can zoom in and adjust the map screen but as this is a predefined tutorial, you cannot change the fuel, time, loadout or weather, and the route is fixed.
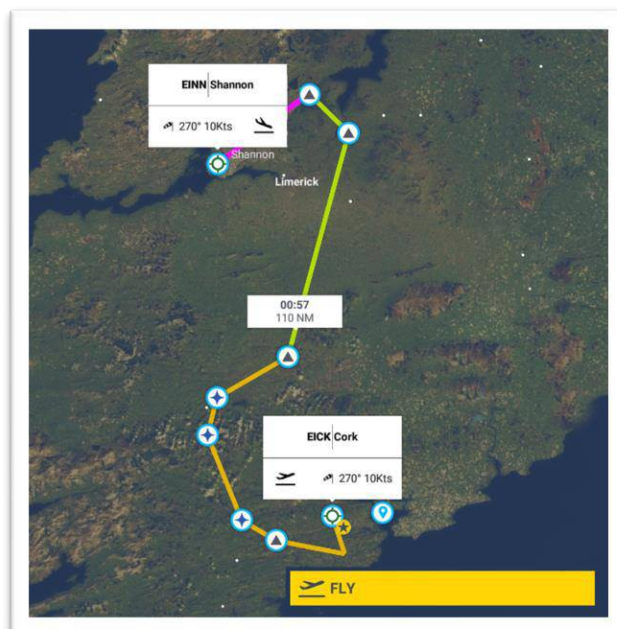
The flightplan covers the SID out of Cork and the STAR into an ILS 24 Approach into Shannon. And a Brief flight of Approx 75 Miles.

Press the yellow "FLY NOW" button to initialise the flight. You will start at the parking area at the North of the airport, and the GARDA Liveried Defender will be on the ramp in "cold and dark" state with all the safety covers and propeller tie downs attached. In the following pages, we will show you how to get the aircraft systems live, start the engines, check them for proper operation and go through your checklists ready for the short flight to Shannon.

MSFS/BBS SPECIFIC PRE-START CHECKS

Let's start by requesting ground power, then we don't flatten the batteries while we go through the checklists and procedures. Turn on the Battery (1) And Both Inverters (4) then via ATC Menu you can tune Cork ground 121.850, and request a ground power unit. Once connected you need to switch on the External supply (2) and the Beacon Lamp (3) You may also switch on some Cockpit lighting, we suggest the Red Cockpit Lights at the opposite end of the lighting switch panel.


Your Blackbox Islanders & Defenders have a few options for displaying the various pieces of ground equipment when on the ramp. And you can select optional underwing Stores / Cameras But first select an outside View (You can do this simply by pressing the END Key)

From here select the BBS OPTIONS Panel (1) from the top menu bar as seen below. This will open the main BBS Aircraft Configuration panel as seen on the next page.


PLEASE NOTE: Unless configured correctly the Aircraft may not work as desired. For example you will Not be able to start the engines with the covers / or Ties in place. You will Not be able to Taxi with the Chocks under the wheels and if you leave the Pitot cover on You will have No Airspeed or altitude data

BBS AIRCRAFT CONFIGURATION PANEL
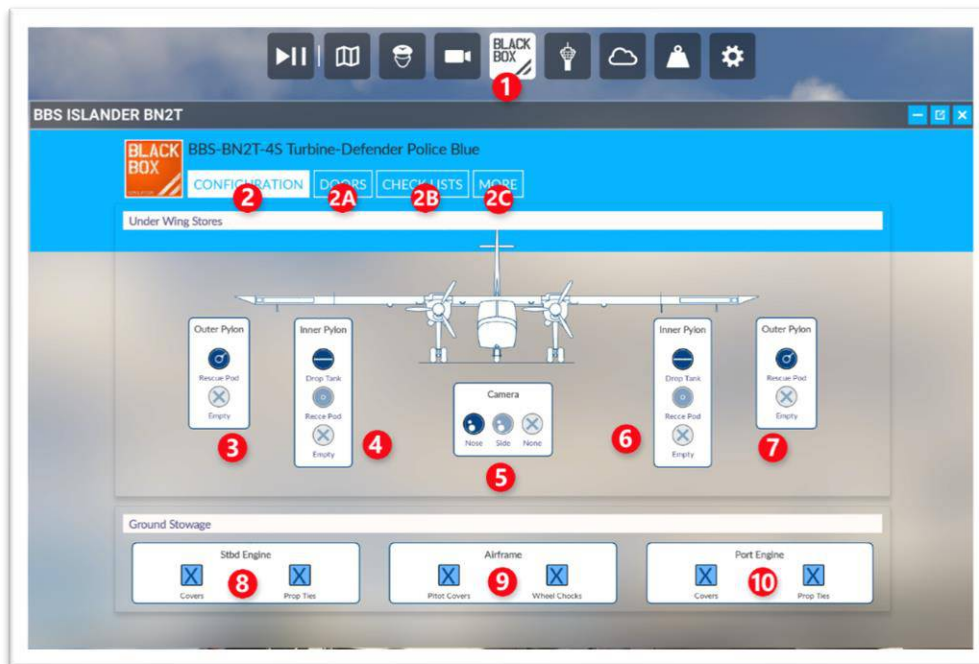
This Utility / panel (1) can be used to select the 4 Pages (2 2A 2B and 2C) to access various pages. Underwing stores (3., 4, 6, 7) and cameras (5) Also the "picketing" features such as remove before flight items, covers and Wheel chocks (8, 9 and 10)

Drop Tanks are useable for additional fuel. All doors can also be opened / closed via Doors Page (2A) and the door interlock can be activated from here as well as from the pilot's door handle inside the aircraft.
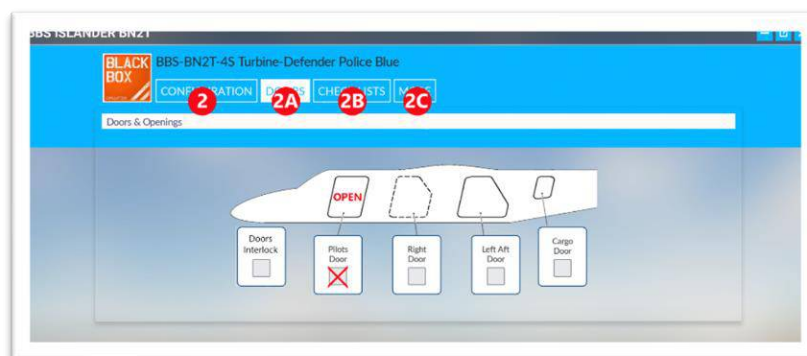
Finally you have the Checklists page (2B) This will, or course open the checklists page so we will refer to these on the next pages as we proceed to the flight.

The "MORE" Page (2C) will take you to our website where links to full real-world Manuals and other downloads are available. So remove the engine covers and prop ties when you are ready to start, Open the checklists page, and we can continue.

PRE-START CHECKLIST

CheckLists

Preflight Checks

BEFORE ENGINE START

Battery	ON
Inverters	ON
Pilots Door Interlock	Prior to locking, Select left engine starter switch to ON (Igniters and Fuel OFF) and check for audible warning
Doors	Closed and locked
Parking Brake	ON
Rudder, Aileron and Elevator trim tabs	Full movement, return to T.O
Fuel cocks	Full and free movement, select tanks
Fuel contents indicators	Check
Aux/Back-up fuel pumps	ON in turn, ensure fuel pressure increases, OFF
OAT indicator	Check
Central Annunciator Panel	Press to test
Altimeters	Set and cross check
Timepeice	Check and set
External supply switch	ON
Cabin Heater	As required
Compasses	Check
Engine and flight instruments	Check
Circuit breakers	In
Flight controls	Full and free movement
Flaps	Operate to each position, Check visually against indicators. Ensure flaps move only onto next datum position when selected
Radios	As required
Power levers	IDLE
Condition levers	FUEL OFF FEATHER
Power plant anti-ice switches	OFF
Igniter switchers	ON START or ON CONT for adverse runway conditions
Generator switches	OFF

See notes on next page for actions and requirements per checklist stage.

PRE-START CHECKLIST

Firstly switch on the Battery (1), and both Inverters (2 & 3) then (With fuel & ignitors (4) OFF) momentarily activate the Left Engine Starter (5a). (Clicking on the red cover will expose the switch, then drag the switch to the left to activate the starter) This will test the pilot's door interlock and sound a warning to show it is operating correctly. The switch will Auto return to centre.

Next, ensure all doors are closed and Locked using the BBS Utility Menu, also remove Pitot and Engine covers etc. Check parking brake is ON and test the TRIMS for free movement and return to T/O positions.

Check free movement of fuel cocks (1 & 2) and return to Flight position (Usually left switch to left tank, right switch to right tank) Check Fuel contents (3, 4, 5, 6)

PRE-START CHECKLIST

Switch on Main and backup Fuel pumps (8,9,11,12) in turn and check fuel pressure gauges (7 & 13) for increase. Return all pumps to OFF Position. As an additional option you can reset the fuel totalizer (10) to zero. Finally check OAT Gauge (14) and note Outside Air temperature.

Press test on central warning panel, ensure all annunciators illuminate. Set Altimeters and cross check (press "B" Key or adjust Baro knobs manually) Check and set Timepiece. Switch ON The external power switch (1) (If not already connected)

Select cabin heater as required, check compasses, check engine and flight instruments for any anomalies. Check all circuit breakers are IN and check flight controls for free and full movement (Yoke and Rudder pedals)

Operate flaps to each position in turn through Stowed (1), Takeoff (2), and full (3) and check visually against indicators. 2 X Lamps should illuminate when in transit settling on one lamp when in position. Green "stowed" Indicator should Dim or Extinguish after 10 Seconds.

Set radios as required. In this section we will be setting up the radios. You will first need to tune to Clearance. You can at this stage select the Ai "Flight Assistant" to operate your radios or of course operate them manually yourself.

Open the ATC Menu from the top bar and Tune Clearance on 121.850 from the radio popup window (It may already be tuned) . Next request IFR Clearance and note the Takeoff runway and initial climb Altitude. Takeoff Runway 16, and initial climb to whatever is stated. They will also give you the departure frequency 132.15 and a Squawk code.

PRE-START CHECKLIST

Power levers to IDLE (1), Condition (Prop) levers to FUEL OFF/ FEATHER (2), Anti Ice switches (3) to OFF and Igniters (4) to Start (or use Auto position in adverse weather) Generators (5 & 6) both OFF and External Power Switch (7) To ON.

NOTE: During ALL engine starts, the External Power switch (7) must be ON at all times. If starting from external batteries, then the external power connection must be made Before switching the Isolating switch on to protect the aircraft circuits from a surge. After starting, the switch must be returned to the OFF/DOWN Position.

It is recommended that the generators are not selected to ON Position until any external supply has been disconnected as this may cause damage to the external supply or the generators themselves.

A wet start to the days flying

STARTING THE ENGINES

Moving on to the engine start checklist we will walk though step by step. Remember, the External Supply Switch must be ON in all start conditions.

First switch on the Main Fuel pump for the Left Engine (1) Flip up the starter switch guard (2) and drag the switch to the LEFT (3) to operate the Engine starter. It will automatically return to centre when the engine spools up, but you can disengage the starter by clicking the switch again.

As the gas producer (N1 RPM) speed increases through 15% - 18%, Move the corresponding Prop lever out of Feather and to the Min RPM position. This should initiate fuel flow and start; you will hear the combustion begin and see the propeller start to turn by around 25%-30%.

Engine Checks	
ENGINE START	
External supply switch MUST be selected ON even for battery start	
Fuel Pump	Switch on respective Left main fuel pump
Starter switch	Press switch towards the engine to be started
Prop lever	As N1 speed accelerates through 12 to 15%, move to MIN RPM. If prop is not rotating at 25% N1 terminate start and investigate
Starter switch	At 58% de-energise switch
START Light	If remaining lit when starter is de-energised, stop engines and investigate
Oil pressure	Positive indication when 60% N1 is reached
Start complete	When Stabalised N1 speed of 60-65% is reached, the prop has unfeathered and has stablised at 59-69% N2

Depending on conditions, the starting cycle for each engine takes approximately 15 to 45 seconds

To assist in starting the other engine when using the internal battery, the generator on the operating engine may be switched ON, but an N1 speed of 70% or greater must be set

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AFTER START CHECKLIST

CHECKS AFTER STARTING

External supply switch	OFF
Generators	ON

If the BATT BUS warning light remains on, the Generator relays have failed to latch, Generator switches OFF/ON until extinguished

Central Annunciator Panel	All red and amber lights off
Igniter switches	OFF (unless ON CONT selection is made for adverse runway conditions)
Vacuum	5.2 inHg (warning lights extinguished)
Ammeter selector switch	BATTERY
Ammeter	Normal indication
Radios and avionics	ON as required
Marker lamps	Test
Autopilot	Test
Engine instruments	Normal indication
Flight instruments	Normal indication
Cabin heater controls	As required
Power plant anti-ice	Cycle and OFF
Airframe de-ace system	Cycle and OFF (if fitted)

Switch the external supply switch OFF and both generators ON. If BATTERY BUS Annunciator does not extinguish (1) then re-cycle the generator switches. All other Red or Amber annunciators should now be OFF. Tell ATC You are done with power.

Switch off the Igniters (1 & 2) (Unless set to auto for adverse weather) and check Vacuum gauge (3) for positive pressure.

AFTER START CHECKLIST

Select Battery position on the ammeter knob (1) and check ammeter (2) for normal indication (Charging)

Switch on Radios and Avionics as required (if not already active) Note Each device has its own power Switch, there is No overall Avionics switch.

 Switch on Nav lights (2) AND Test Autopilot by cycling AP Button (1) you should see the Flight Director bars move.

The next page will show a full description of normal engine instrument indications and what to expect as normal for the flight instruments.

Finally Set your Cabin heater as required (Obviously INOP for the simulator) and cycle the Anti Icing systems for the Engines, Props and Airframe. Set Anti Icing Off unless required.

ENGINE INSTRUMENTS
Normal Engine indications at IDLE

Torque at Idle = 0 – 1 Ft Lbs

TGT = approx. 700 Degrees (green)

Prop RPM = 850 RPM

Gas Producer (N1) = approx. 60%

Fuel Flow = approx. 110 Lb Per Hour

Oil Temperature = approx. 40 degrees

Oil pressure = approx. 1000 PSI

PRE-TAXI CHECKLIST

So before taxying out to the runway we need to make sure the engines and systems are performing as they should, we will do the run-up tests and check the Prop governors before setting out to the runway.

BEFORE TAXI CHECKS

GOVERNOR CHECKS

Prop lever (as required)	MAX RPM
Power lever (as required)	Set N1 to 85%
Overspeed protection test switch	Press Governer test and observe a decrease in Prop RPM and release.
Prop levers (both)	MAX RPM
Power levers (both)	Advance to 100% prop speed (approx 400 lb' ft torque)
Prop levers (both)	Retard levers to MIN RPM gate. Prop speed should reduce to 80% with a corresponding increase in indicated torque
Prop levers (both)	Return to MAX RPM and check prop speed increases to 100% and the original torque setting is regained.
Power levers (both)	IDLE
Voltmeter	Nominal busbar voltage (27.74v)
Ammeter	Each generator is carrying an approximate equal load (within 20 Amps)

Set the prop levers one by one to Max RPM (2030) and set corresponding power lever to attain 85% N1. When you switch the Governor test switch the Prop RPM should decrease slightly. Next more both Prop levers to MAX RPM and Then bring power levers to approx. 80% To achieve 400 Lb Ft or Torque. Retarding the prop lever to the Minimum now should reduce Prop RPM to approx. 80%, Approx 1300 RPM with Torque increasing. Returning the Prop levers to MAX RPM should increase Props RPM back to Max 2030 RPM with Torque returning to the original 400. Checks complete ...

Return prop levers to Max RPM (Fully back) and Power levers to Idle. Finally check your Battery Voltage ... it should read approx. 28 Volts and check Both generators have Approx. equal 20 Amp Load.

PRE-TAXI CHECKS

When we received our IFR Clearance the ATC Gave us information that we can now enter into the AP System in preparation for departure. We were given an initial Altitude with a departure on Runway 23R so let's set up the Desired parameters in the AP. Click twice in the Altitude window of our PFD and Enter The preselected Altitude into the system. Click on Enter to finalise the action. The runway heading for initial departure is 162 Degrees so using the same method as you did with the ALT set this in the heading Window. Finally in the ASI Window. We will be setting 90Kts for the best climb speed after takeoff.

Now open the Autopilot controller by clicking on the Autopilot Annunciator strip in the PFD. Activate the Flight Director (1) Heading Hold (2) and IAS (3) do NOT select AP Master at this time. Then Press Back to return to PFD.

Contact Clearance and request Taxi IFR. Once clearance is received and with prop levers remaining in MIN RPM Position Release the brakes and give a little power to get moving. Test your brakes are working and then reduce power to IDLE for taxi. If you have a tiller set up on your controller you can use this for nose wheel steering, otherwise simply use a little rudder input. If the speed increases too much apply the brakes a little until it slows down enough. Follow the ATC Instructions (Or select TAXI RIBBON) From the Flight Assistance menu.

PRE TAKE OFF CHECKS

Continue Taxiing and check flight instruments, PFD, EHSI and GPS Should follow movement during taxi & turns. Proceed to Hold at Runway 16, It is a very short Taxi route. When you arrive at the Holding point apply Parking brake and continue with Pre takeoff Checklist. Some items apply only if carrying passengers.

BEFORE TAKEOFF	
LIGHTING - PASSENGER NOTICES	ON
Emergency evacuation procedure	Briefed
All crew seat belts	Fastened
Pilot Seats	Secure
Doors and DV panel	Closed
Aileron trim tab	Set to T.O
Elevator trim tab	Set to T.O
Rudder trim tab	Set to T.O
Prop levers	Forward (MAX RPM)
Power plant anti-icing	OFF
Flaps	Set to T.O
Fuel	Check: contents, selection, fuel flow, transfer pumps circuit breakers in
Engine instruments	Check
Central Annunciator Panel	All red and amber lights off
Flight instruments	Check
Pito/Stall warn heat	As required
Autopilot	Disengaged
Controls	Free and full movement: Nose wheel steering engaged
Electrics	Check Ammeter and Voltmeter
Cabin heater	As required

Ensure all doors closed and locked select Flaps for takeoff and trim to a nose up of approx. 10% – 12% (1) Rudder trim (2) maybe set as desired and switch on Strobe lights if fitted


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TAKE OFF CHECKS

Increase Prop levers to MAX RPM and set Flaps for TO Position, White lamp should remain lit. Check fuel contents and Fuel Flow. Transfer pump circuit breakers are IN. Scan engine instruments for anomalies, check Temps and pressures. Check Central Warning panel ensure there are NO Red or Amber Warnings. Check flight instruments active and working. Pitot and Stall warning Heat On if required. Ensure Autopilot Disengaged. Not showing AP In PFD annunciator strip. Check ammeter and volt meters. And Cabin Heater as required. Check for free and full movement of the Yoke and Pedals

Now contact the tower on 119.30 and request takeoff clearance. Once cleared move onto the runway Threshold and have a scan of the instruments to check all your temperatures and pressures (T's and P's) Are within limits again before taking off..

On the right side of the main panel there is a Collins WX Radar, activate this by first pressing the standby button. This will power the unit up. Next press the TEST Button and the radar will scan though the test display on the screen. When the test is complete you can now press WX and select a suitable range from the right side.

TAKEOFF AND INITIAL CLIMB

Once you receive your takeoff clearance, increase power levers to Max and release the brakes. Hold the aircraft on the centreline and watch the airspeed indicator. There are three markers to watch on the speed tape (1) … these are R (4) (Rotate speed) and then Y (3) (Best Climb Speed) and finally G (2) (Glide speed)
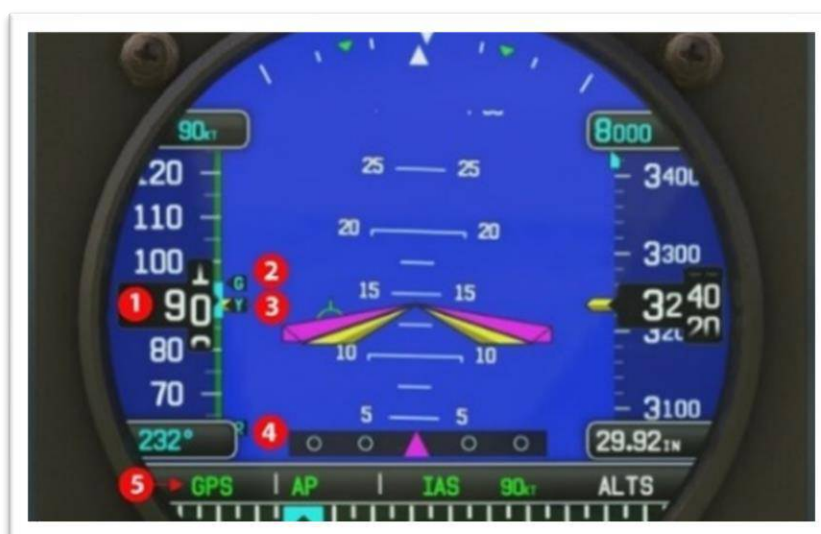
TAKEOFF AND INITIAL CLIMB

As you reach the Rotate speed (R) (4) pull gently on the Yoke to initiate takeoff... Hold the nose attitude by hand at around 10 Degrees until your above 500 feet. Select Flaps UP and If you are planning on using the Autopilot, Select **AP MASTER** now via the Annunciator strip or the main Autopilot controller and enter 90KTS into the ASI Window. If flying manually, Hold the attitude to maintain. 90 Kts where the Y (3) (Best climb speed) Should be aligned on the speed tape Datum (1). A more comfortable climb can be had at 100 – 110 Kts, you may enter this into the ASI Window or hold Manually using Pitch.

The Autopilot annunciator strip (5) will always tell you which modes are active. In the pic it shows you are in GPS MODE (as opposed to VLOC Mode) AP – Autopilot is engaged, IAS – indicated Air speed mode is active and 90Kts is the selected climb speed. Finally **ALTS** in White signifies that ALT mode is selected and Armed. It will turn green once the predefined altitude is acquired.

Once you are stable in the climb on runway heading, open the Autopilot again and select NAV mode, this will arm Nav mode so that when you intercept the Magenta flight plan, the Autopilot will begin to follow the flight plan. Use heading adjust if necessary, to ensure the aircraft is flying towards the magenta Flight Plan Line. Alternatively of course, You may manually fly to the GPS track by hand and manually follow the course. Also, as we used ASI Climb mode as an example there is no reason why you can't use vsi Mode for the climb, just select VS and set 1000 fpm Nose up.

Return your Rudder trim to neutral and continue your climb to whatever is assigned. Reducing power to 100% N1 on the Gas Producer Gauge, the Torque should be approx. 800 Ft Lbs with TGT coming down to the green area and fuel flow at approx. 200 PPH Per Engine. Prop RPM should remain at Max 2030 RPM in the climb.
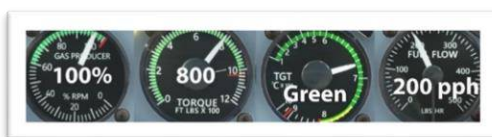
On reaching your assigned cruise altitude you will need to adjust power for economical cruise. Power can be reduced to as low as 70% N1 if required. And prop rpm can be reduced to a minimum 1600 RPM. This will bring your ASI down to around 124 Kts. And your Fuel Flow should be approx. 110 PPH Per Engine. You can loiter at these speeds as long as you stay within the envelope and limits on the various engine instruments. Or of course you can continue at around 150 Kts.
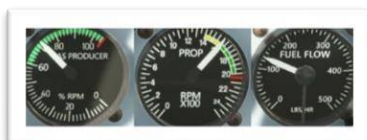
In the Cruise

Garda, Papa 254 Climbing above the Irish Weather.

So as we climb out from Cork, ATC May give us a new Altitude. If we are already climbing, we can simply enter this new Altitude into the Altitude preselect Window and the AP Will continue until it is reached. When we are in level flight however, there various methods of flight level change when using the AFCS (Autopilot)

Changing Flight Levels

There are two methods we can use in the AFCS for a climb (or descent) The first would be Selected Air Speed. If we select 130 Kts in the ASI Window for example, then the aircraft will climb at 130 Kts as soon as we hit the IAS Button (1) You can adjust the climb Rate by increasing or decreasing power, The Aircraft will continue to hold 130 Kts. The aircraft will climb at the optimum rate for the selected Airspeed so If you wish to climb Faster simply enter a lower speed and for a gentler climb, use a higher speed. Our selected IAS of 130 at 100% power and Max Prop RPM will give a climb of Approx. 750 FPM in a climb…

The other method would be to use VS Mode… We will cover this on the next page.

Changing Flight Levels (VS Mode)

For VS mode we would select the VS Button (2) and using the Nose Up / Nose Down Buttons (3) we can enter a vertical speed Up (or down) to 1000 FPM (4) Be aware though the aircraft will climb regardless of power setting so watch the airspeed for dropping off to dangerously low speed.

For an emergency descent you can set 150 knots in the ASI Window and drop the power levers right back to Approx. 60% This should give you a descent rate of Up To 3000 FPM or more, it's a real roller coaster ride!

Emergency Descent!

Descent, Approach and Landing

Between KURUM and GILOG Waypoints you will be handed over to Shannon approach and soon you will receive descent instruction. Descend using either of the described methods. **IMPORTANT NOTE:** Always remember to adjust power when reaching your assigned altitude to a normal cruise or approach speed prevent Slowing to dangerous speeds!

We will be arriving on the **KURU2D (STAR)** and guided towards an ILS approach on runway 24, the ILS Frequency 110.95, should already be stored in the GNS750 standby slot. It's quite a complex **STAR** as initially puts you on Runway heading without activating the approach. This is because it will fly a Loop back via the SHA Entry point after the first pass. Between KURUM and GILOG Waypoints you will be handed to Approach and soon be given descent clearance. Follow the instructions via your preferred descent method. Its probably better to use a gentler descent at this stage so try and attain 1000 FPM. You can select nose down 1000 FPM or IAS approx. 130 Kts

As you come around the loop towards SHA11.0 Waypoint (1) you GPS Should be displaying the Looping Approach (2) As you enter this leg you need to Swap the ILS Frequency from Standy to Active (3) This will now allow you to select APP mode in the AFCS (5) The LOC Annunciator will show it is armed (White) Reduce power to 70% N1 with Torque Approx. 400 Ft Lb. This should give you 120 Kts. At TOD (4) (Top of descent) You should be instructed to descent to 3000 Ft. When the LOC Is acquired, the Annunciator will turn green (6) and GS (7) (Glide slope) will be Armed (White) Switch your attention to the HSI Now as it should have changed from GPS mode (Magenta) to LOC1 Mode (8) (Green) and you will need to set the CRS to that of the runway, In this case 235 Degrees. This achieved via the same methods as on PFD. Compass Hdg (10)

1	Waypoint SHA11.0
2	Looping STAR
3	Standby – Active Swap button
4	TOD (Top of descent)
5	AFCS App Mode Button
6	Localiser Armed (White)
7	Glide Slope Armed (White)
8	VOR Mode (Green) Previously Magenta GPS
9	CRS Selection window
10	Actual Course

Approach and Landing

Keep your Airspeed around 120 Kts until as the GS Is acquired (GREEN) Deploy Flaps to Middle Position. When you settle into a controlled Descent on the Glide slope you can adjust power to maintain 90-95 Kts with Approx 65% N1 and 200 Ft Lb of TQ. As you pass 500 Feet, you should be visual with the runway (1) lower the flaps to FULL and adjust power to maintain a stable 70-75 knots (2) Disconnect the Autopilot now. The AFCS Annunciator should now be blank (3) and fly the remaining few feet manually keeping on the Localizer and Glideslope (4) Fly to the runway gently and Flare to bleed off the remaining airspeed for a touchdown at approx. 60 Kts. You must hold the centreline with rudder pedals while applying the brakes.

Bring the aircraft to Taxi speed (10-20 Kts) and contact ground for directions to the Gate. Raise the flaps, turn off the Strobes and follow the Taxi arrows or the map to find your parking spot. Follow the Marshall and apply parking brake when stopped. Shut down the engines by pulling the Prop levers back through the gate to Fuel off/Feather. Fuel pumps off (If used) Remaining lighting OFF, Inverters Off. Generators Off, External power as required. Go to the BBS Utility menu and Chock wheels. Cover the Pitot Tube and finally Fit Prop ties and Engine covers.

Congratulations Captain, and welcome to Shannon