BOEING 747-8JA

- *Aircraft is maintained in accordance to the Boeing Maintenance Manual - Chapter 10*
- *Aircraft is empty, no interior : ready for conversion*
- *Aircraft Range : About 29:00 hours*
- *Aircraft is available for inspection in Basel, Switzerland*

BOEING 747-800 BBJ LONG RANGE V-VIP AIRCRAFT DATA

Aircraft Type: BOEING 747-8JA BBJ Green
Registration Number:
Serial Number:
Line Number:

First Flight: May 30, 2012
Delivery Flight: July 9, 2012
In-Service at Date: Ferry flight to Basel in December 28, 2012
Total Flight Hours: 29
Total Flight Cycles: 16

Maximum Taxi Weight: 449,056 Kilograms
Maximum Takeoff Weight: 447,695 Kilograms
Maximum Landing Weight: 312,071 Kilograms
Maximum Gross Weight: 449,056 Kilograms
Zero Fuel Weight: 291,205 Kilograms
Operating Empty Weight: 239,270 Kilograms
Interior Allowance: 45,350 Kilograms

Fuel Capacity: 240,470 L. / 186 685 Kg / 63.030 US Gal.
Range (100 Pax): 8,875 Nm / 16 435 Km

Installed Engines type: 4 x General Electric GENX-2B67
Installed APU type: Pratt Whitney (PWC) PW901C

BOEING 747-800 BBJ LONG RANGE V-VIP AIRCRAFT DATA

Cabin space available SQ FEET / M² with overhead space utilization: 5 179 Ft² / 481.1 m²

Wingspan: 68.4 M / 224 Ft 6 in
Length: 76.3 M / 250 Ft 2 in
Height: 19.4 M / 63 Ft 6 in
Cargo Volume: 6 940 Cu Ft / 196.5 m3

BOEING 747-800 BBJ LONG RANGE V-VIP AIRCRAFT SYSTEMS

The following systems are installed (non exhaustive) :

- Air data inertial reference system (ADIRS)
- Standby attitude and direction
- Instrument landing system (ILS)
- Radio altimeter (RA) system
- Global navigation satellite system (GNSS) landing system (GLS)
- Weather radar (WXR) system
- Traffic alert and collision avoidance system (TCAS)
- Enhanced ground proximity warning system (EGPWS)
- VOR/marker beacon system
- Air traffic control (ATC) system
- Distance measuring equipment (DME) system
- Automatic direction finder (ADF) system
- Global positioning system (GPS)
- Flight management computing system (FMCS)

BOEING 747-800 BBJ LONG RANGE V-VIP AIRCRAFT SYSTEMS

34-10 FLIGHT ENVIRONMENT DATA

Systems to collect and process flight environment data are integrated into the ADIRS.

34-20 ATTITUDE AND DIRECTION

The following attitude and direction systems are installed:

- Air data inertial reference system (ADIRS)
- Electronic flight instrument system (EFIS)
- Standby attitude and direction system

BOEING 747-800 BBJ LONG RANGE V-VIP AIRCRAFT SYSTEMS

34-21 INERTIAL REFERENCE SYSTEM

Three ADIRS are installed (left, right and center) that provide air data and inertial reference information to the flight compartment instruments and other systems.

The system supports compliance with reduced vertical separation minimum (RVSM).

The ADIRS consists of the following:

- Three ARINC 738A air data inertial reference units (ADIRU)
- A pitot-static system
- Two dual-element aspirated total air temperature (TAT) sensors
- Two angle-of-attack sensors

The pitot-static system includes four pitot-static probes, two alternate static ports, and seven air data modules (ADM).

Two aspirated TAT probes are installed.

Aspiration neutralizes the effect of solar heating and enables accurate temperature measurement while the airplane is on the ground.

Two AOA sensors are installed that provide local angle-of-attack data to the ADIRUs.

BOEING 747-800 BBJ LONG RANGE V-VIP AIRCRAFT SYSTEMS

34-21 INERTIAL REFERENCE SYSTEM

The pitot-static, TAT, and AOA sensors have anti-ice protection.

The following air data parameters are displayed on the integrated display system (IDS):

- Barometric altitude
- Computed airspeed
- Mach number
- Total air temperature
- Static air temperature

Each pilot can select either the right or left ADIRU to supply data for the instruments from a switch on each main instrument panel .

In the event of loss of air data from one ADIRU, the pilot can switch to the other ADIRU.

The center ADIRU can be substituted for an inoperative ADIRU from a switch on the overhead panel

The alert system provides the pilots with aural and visual awareness of actual airplane altitude compared to a selected altitude.

BOEING 747-800 BBJ LONG RANGE V-VIP AIRCRAFT SYSTEMS

34-22 ELECTRONIC FLIGHT INSTRUMENT SYSTEM

An electronic flight instrument system (EFIS) is integrated into the IDS.

34-23 STANDBY ATTITUDE AND DIRECTION

The standby attitude and direction system contains a direct-reading magnetic compass and an integrated standby flight display (ISFD) that
provides the following indications:

- Airplane attitude
- Airspeed
- Altitude
- Heading
- ILS localizer and glideslope deviation

BOEING 747-800 BBJ LONG RANGE V-VIP AIRCRAFT SYSTEMS

34-30 LANDING AND TAXIING AIDS

The following landing and taxiing aids are installed:

- Three multi-mode receivers (MMR)
- An instrument landing system (the ILS is integrated into the MMR)
- A marker beacon system (refer to section 34-51)
- Three radio altimeter systems
- A GNSS landing system (the GLS is integrated into the MMR)

Three ARINC 755 MMRs are installed. The MMRs contain the ILS, GLS, and GPS functions.
The FMCS analyzes incoming signals and determines which landing aid to use for the approach and landing.

BOEING 747-800 BBJ LONG RANGE V-VIP AIRCRAFT SYSTEMS

34-31 INSTRUMENT LANDING SYSTEMS (ILS)

An instrument landing system (ILS) is installed that gives lateral and vertical position data necessary to guide the airplane onto the runway for approach and landing.
The ILS uses signals from a glideslope ground station and a localizer ground station.
The ILS is integrated into the MMR.

Three ARINC 755 MMRs are installed. The MMRs contain the ILS, GLS, and GPS functions.
The FMCS analyzes incoming signals and determines which landing aid to use for the approach and landing.

34-32 MARKER BEACON SYSTEM

Refer to section 34-51 for further information.

BOEING 747-800 BBJ LONG RANGE V-VIP AIRCRAFT SYSTEMS

34-33 RADIO ALTIMETER SYSTEM

Three ARINC 707-6 radio altimeter (RA) systems are installed. The system gives height above the ground up to 2,500 feet.
The system is used for the takeoff and landing phases of flight.

34-37 GLOBAL NAVIGATION SATELLITE LANDING SYSTEM

A GLS is installed. GLS is a satellite landing system that uses GPS and a ground based local area augmentation system (LAAS) to provide data to the FMC for precision approaches similar to ILS.
The GLS gives lateral and vertical position data to the autopilot system necessary to guide the airplane onto the runway for approach and landing.
The GLS also interfaces with the display units, EGPWS, ISFD, AMU and DMU.
The GLS is integrated into the MMR.

BOEING 747-800 BBJ LONG RANGE V-VIP AIRCRAFT SYSTEMS

34-40 INDEPENDENT POSITION DETERMINING

The following independent position determining systems are installed:

- A dual WXR system with predictive wind shear capability
- A traffic alert and collision avoidance system
- An enhanced ground proximity warning system

34-43 WEATHER RADAR SYSTEM

A dual ARINC 708A weather radar (WXR) system with predictive wind shear (PWS) capability is installed. The WXR system displays significant weather in front of the airplane during flight.

The system detects hazardous wind shear events and provides visual and aural alerts to the flight crew about these events when the airplane is below 1,200 feet above ground level.

The WXR includes multiscan functionality.

The system includes two WXR transceivers, one control panel, and one antenna. Only one WXR transceiver operates when selected by a switch on the control panel.

BOEING 747-800 BBJ LONG RANGE V-VIP AIRCRAFT SYSTEMS

34-45 TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM

An ARINC 735 Change 7.1–compliant traffic alert and collision avoidance system (TCAS) is installed. The TCAS shows the flight crew potential conflicts with other airplanes if the other airplane has either an air traffic control radar beacon system (ATCRBS) or a Mode S transponder.
The TCAS also shows vertical maneuvers recommended to avoid a collision.

34-46 ENHANCED GROUND PROXIMITY WARNING SYSTEM

An ARINC 762 enhanced ground proximity warning system (EGPWS) is installed which alerts or warns the flight crew of unsafe terrain clearance.
It also gives a warning when the airplane is in wind shear conditions (reactive wind shear). Alerts and warnings have aural and visual indications.
These indications continue until the pilots correct the condition that started the warning or alert unless the feature is inhibited.
A peaks and obstacle feature is provided that allows terrain to be displayed during all phases of flight and provides visual and audio warning
when the system identifies a conflict with a man-made object in the EGPWS database.

BOEING 747-800 BBJ LONG RANGE V-VIP AIRCRAFT SYSTEMS

34-46 ENHANCED GROUND PROXIMITY WARNING SYSTEM

A runway awareness and advisory system (RAAS) is installed. This system provides runway situational awareness by comparing the airplane position in the GPS to the runway location stored in the EGPWS data base. A runway override switch is installed in the flight compartment.

The EGPWS RAAS configuration database (RCD) personal computer multi-channel interface adapter (PCMCIA) database card contains operator provided RAAS aural callouts and visual alerts as specified in the option referenced above.

RAAS airborne aural annunciations are suppressed between 450 feet and 550 feet above runway elevation to allow normal EGPWS 500-foot altitude callouts.

RAAS aural callouts and visual alerts are always at a lower priority as compared to non-RAAS EGPWS callouts and alerts (if the two are triggered simultaneously).

BOEING 747-800 BBJ LONG RANGE V-VIP AIRCRAFT SYSTEMS

34-46 ENHANCED GROUND PROXIMITY WARNING SYSTEM

The EGPWS provides altitude callouts at 2500, 1000, 500, 400, 300, 200, 100, 50, 40, 30, 20, and 10 feet, “approaching minimums” and “minimums.”

Numeric callouts do not include the word “feet.” Approaching minimums callouts are made at decision height + 80 feet or minimum descent altitude (MDA) + 80 feet. Minimums callouts are made at decision height or MDA.

A 500 Smart callout feature is not provided.

Bank angle callouts are made when the airplane reaches roll angles of 35, 40 and 45 degrees at and above 130 feet radio altitude (RA). Below 130 feet RA an additional callout is made varying linearly from a 10 degree roll angle at 30 feet RA to a 35 degree roll angle at 130 feet RA.

The callout is repeated two times at each of the designated roll angles.

BOEING 747-800 BBJ LONG RANGE V-VIP AIRCRAFT SYSTEMS

34-50 DEPENDENT POSITION DETERMINING

The following dependent position determining systems are installed:

- Two VOR/marker beacon navigation systems
- Two Change 7–compliant ATC transponder systems
- Two DME systems
- One GPS

34-51 VOR/MARKER BEACON NAVIGATION SYSTEM

A dual ARINC 711-1 VOR/marker beacon navigation system is installed. The VOR is a navigation aid that determines absolute bearing with respect to a ground station. The marker beacon system shows the flight crew when the airplane passes over specific points along airways or an instrument landing path.

BOEING 747-800 BBJ LONG RANGE V-VIP AIRCRAFT SYSTEMS

34-53 AIR TRAFFIC CONTROL TRANSPONDER SYSTEM

Two ARINC 718A Change 7–compliant ATC/Mode S systems with elementary surveillance (ELS), enhanced surveillance (EHS), and extended squitter (ES) functionality are installed. The air traffic control (ATC) system responds to interrogations from ATC ground stations and TCAS signals from other airplanes. Only one ATC system operates as selected by a switch on the control panel.

34-55 DISTANCE MEASURING EQUIPMENT

Two ARINC 709 frequency-scanning distance measuring equipment (DME) systems are installed. The DME system gives slant range (line of sight) distance between the airplane and a ground station.

34-57 AUTOMATIC DIRECTION FINDER SYSTEM

Two ARINC 712 automatic direction finder (ADF) systems are installed. The ADF system receives radio signals from a ground station and supplies bearing in formats on the navigation displays and audio to the flight compartment. The ADF receivers are tuned through the MCDUs.

BOEING 747-800 BBJ LONG RANGE V-VIP AIRCRAFT SYSTEMS

34-58 GLOBAL POSITIONING SYSTEM

Three ARINC 755 GPSs are installed. GPS is a satellite-based radio navigation system. The system supplies highly accurate, worldwide navigation capability. The GPS navigation data supplied to the airplane includes 3D position, velocity, track data, time, and other information. Airplane subsystems use the data for navigation, guidance, and performance computations. The GPS is integrated into the MMR.

34-60 FLIGHT MANAGEMENT COMPUTING SYSTEM

TA flight management computing system (FMCS) is installed that provides vertical and lateral guidance for all phases of flight and provides navigation information to the flight crew.
The FMCS allows the entry of all data that supports the flight planning, performance management, navigation, and guidance functions including initial present position for the air data inertial reference unit (ADIRU).
Three multipurpose control display units (MCDU) are installed in positions accessible to the flight crew. Two are installed forward of the throttles in the forward electronics panel and one aft of the throttles in the aft electronics panel.

BOEING 747-800 BBJ LONG RANGE V-VIP AIRCRAFT SYSTEMS

34-60 FLIGHT MANAGEMENT COMPUTING SYSTEM

The two forward MCDUs provide data display and entry capabilities required to support the FMC functions. The two forward MCDUs also provide a standby navigation function in the event of a dual FMC failure and a backup EFIS/EICAS mode in the event of a dual EFIS control panel failure or a display select control panel failure.

The forward MCDUs provide thrust mode selections for takeoff, go-around, maximum continuous thrust, and cruise thrust. They also provide means for selection of either of two derated thrust levels for takeoff and climb. The two takeoff derates are selectable by maintenance action using the MCDU to set each of the takeoff derates to a value between the maximum takeoff thrust and the maximum certified derate in 1% increments.

The allowable ranges for fixed takeoff thrust derate percentage is between 0% and 30%.

BOEING 747-800 BBJ LONG RANGE V-VIP AIRCRAFT SYSTEMS

34-60 FLIGHT MANAGEMENT COMPUTING SYSTEM

Derated thrust for takeoff and climb also can be selected using the assumed-temperature method.
The aft MCDU displays data and entry capabilities for the ACMS and CMS functions.
The aft MCDU also provides FMCS backup functions in the event of a dual FMC failure.
The FMCS provides an automatic MCDU transition from the takeoff reference page to the appropriate VNAV climb page upon flap retraction.
A Boeing-supplied navigation database is loaded into the FMCS. The navigation database contains geographic location data for navigation aids (NAVAIDS are limited to VORTAC, VOR, and DME), airport reference points (ARP) for selected airports, and runway threshold points for selected runways.

BOEING 747-800 BBJ LONG RANGE V-VIP AIRCRAFT SYSTEMS

34-60 FLIGHT MANAGEMENT COMPUTING SYSTEM

The FMCS functions include the following:

- Computes flight performance data and guidance command
- Constructs a lateral and vertical flight plan imposed by air traffic control
- Provides flight path performance predictions
- Computes a best estimate of airplane position
- Provides guidance for operating within the defined vertical and lateral flight plan
- Provides output data to drive the map and plan modes on the navigational displays
- Performs thrust management functions

BOEING 747-800 BBJ LONG RANGE V-VIP AIRCRAFT SYSTEMS

34-60 FLIGHT MANAGEMENT COMPUTING SYSTEM

• Performs AOC, FANS-1, and FANS-2 data link functions including the following:
- Air traffic services data link (ATS DL)
- Airline operational communications data link (AOC DL)
- Required time of arrival (RTA)
- Enhanced FANS functionality
• Printer interface with FANS
• Provides flight crew alertness monitoring
• Runway distance and offset position shift are in units of feet
• Required navigational performance (RNP)
- Oceanic/Remote = 4.0 nmi
- En Route Domestic = 2.0 nmi
- Terminal Area = 1.0 nmi
- Takeoff = 1.0 nmi
- Approach = 0.3 nmi

BOEING 747-800 BBJ LONG RANGE V-VIP AIRCRAFT SYSTEMS

34-60 FLIGHT MANAGEMENT COMPUTING SYSTEM

The flight management computer (FMC) computes and transmits to each engine electronic engine control (EEC) limited authority trim to equalize the N1 setting.
The FMCS checks for pilot activity by monitoring various discrete inputs for change.
Partial provisions are installed to support future incorporation of non directional beacon ADF approaches. These provisions include system wiring, circuit breakers, structural provisions for ADF antennas, and space provisions for ADF receivers.
The airplane is equipped to support required navigational performance (RNP) operation.
RNP is a navigation capability that improves the airplane's area navigation (RNAV) and enables pilots to fly stable and precise 3Dl paths without ground-based navigational aids from takeoff to landing including missed approaches.


← EXIT →