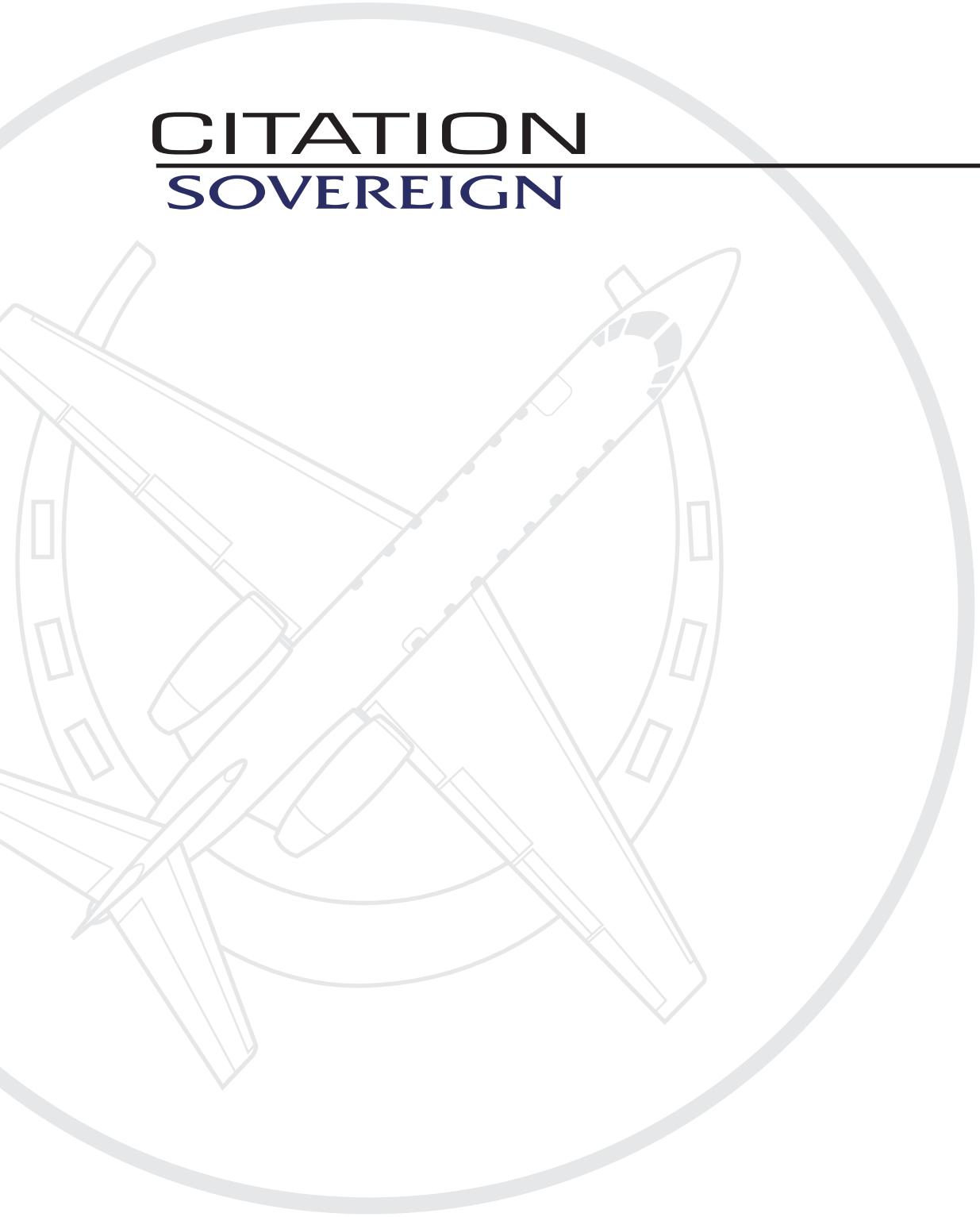
CITATION
SOVEREIGN



# Specification & Description

August 2011 Revision E
Units 680-0324 to TBD

Cessna
A Textron Company

CITATION
SOVEREIGN

# SPECIFICATION AND DESCRIPTION

## UNITS 680-0324 TO TBD

## AUGUST 2011

## REVISION E

Citation Marketing
Cessna Aircraft Company
P.O. Box 7706
Wichita, Kansas 67277-7706

August 2011, Revision E

## INTRODUCTION

This Specification and Description is published for the purpose of providing general information for the evaluation of the design, performance, and equipment of the Cessna Citation Sovereign, Units 680-0324 to TBD. This document supersedes all previous Specification and Description documents and describes only the Cessna Citation Sovereign Model 680, its powerplants and equipment.

Due to the time span between the date of this Specification and Description and the scheduled delivery date of the Aircraft, Cessna reserves the right to revise the "Specification" whenever occasioned by product improvements, government regulations or other good cause as long as such revisions do not result in a material reduction in performance.

In the event of any conflict or discrepancy between this document and the terms and conditions of the purchase agreement to which it is incorporated, the terms and conditions of the purchase agreement govern.

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**WARNING:** This product contains Halon 1211, Halon 1301, and also R-134A. Furthermore, the product was manufactured with CFC-12 and 1-1-1 Trichloroethane, substances which harm public health and environment by destroying ozone in the upper atmosphere.

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**Cessna Citation Sovereign Specification and Description**

MANUFACTURER CESSNA AIRCRAFT COMPANY

MODEL 680

# 1. GENERAL DESCRIPTION

The Cessna Citation Sovereign is a low-wing aircraft with retractable tricycle landing gear and a cruciform tail. A pressurized cabin accommodates a crew of two plus eight to twelve passengers (nine is standard). Two Pratt & Whitney Canada (P&WC) PW306C FADEC controlled turbofan engines are pylon-mounted on the rear fuselage. Fuel stored in the wings offers generous range for missions typical of this class aircraft. Space for baggage is provided in the tailcone with additional storage space available in the cabin.

Multiple structural load paths and system redundancies have been built into the aluminum airframe. Metal bonding techniques have been used in many areas for added strength and reduced weight. Certain parts with non-critical loads such as the nose radome and fairings are made of composite materials to save weight. The airframe design incorporates anti-corrosion applications and lightning protection.

Cessna offers a third-party training package for pilots and mechanics, and various manufacturers' warranties as described in this book. Cessna's worldwide network of authorized service centers provides a complete source for all servicing needs.

## 1.1 Certification

The Model 680 is certified to the requirements of U.S. 14 CFR Part 25, Transport Category, including day, night, VFR, IFR, and flight into known icing conditions. Category II approval is available as an option. The Sovereign is compliant with all RVSM certification requirements. (Note: specific approval is required for operation within RVSM airspace; Cessna offers a no charge service to assist with this process.) An interior configuration of ten or more passengers is not available for 14 CFR Part 135 operations.

The Purchaser is responsible for obtaining aircraft operating approval from the relevant civil aviation authority. International certification requirements may include modifications and/or additional equipment; such costs are the responsibility of the Purchaser.

## 1.2 Approximate Dimensions

Overall Height . . . . . 20 ft 4 in (6.20 m)
Overall Length . . . . . 63 ft 6 in (19.35 m)
Overall Width . . . . . 63 ft 4 in (19.30 m)

**Wing**

Span (does not include tip lights) . . . . . 63 ft 2 in (19.25 m)
Area . . . . . 515.9 ft$^2$ (47.93 m$^2$)
Sweepback (leading edge) . . . . . 16.3 degrees
Sweepback (at 25% chord) . . . . . 12.7 degrees

**Horizontal Tail**

Span (overall) . . . . . 27 ft 7 in (8.41 m)
Area . . . . . 138.5 ft$^2$ (12.87 m$^2$)
Sweepback (at 25% chord) . . . . . 22.6 degrees

**Vertical Tail**

Height . . . . . 10 ft 11 in (3.33 m)
Area . . . . . 95.3 ft$^2$ (8.85 m$^2$)
Sweep (at 25% chord) . . . . . 38.3 degrees

**Cabin Interior**

Height (maximum over aisle) . . . . . 68 in (1.73 m)
Width (trim to trim) . . . . . 66 in (1.68 m)
Length (forward pressure bulkhead to aft pressure bulkhead) . . . . . 30 ft 9 in (9.37 m)

**Landing Gear**

Tread (main to main) . . . . . 10 ft 0 in (3.05 m)
Wheelbase (nose to main) . . . . . 27 ft 10 in (8.49 m)

## 1. GENERAL DESCRIPTION (Continued)

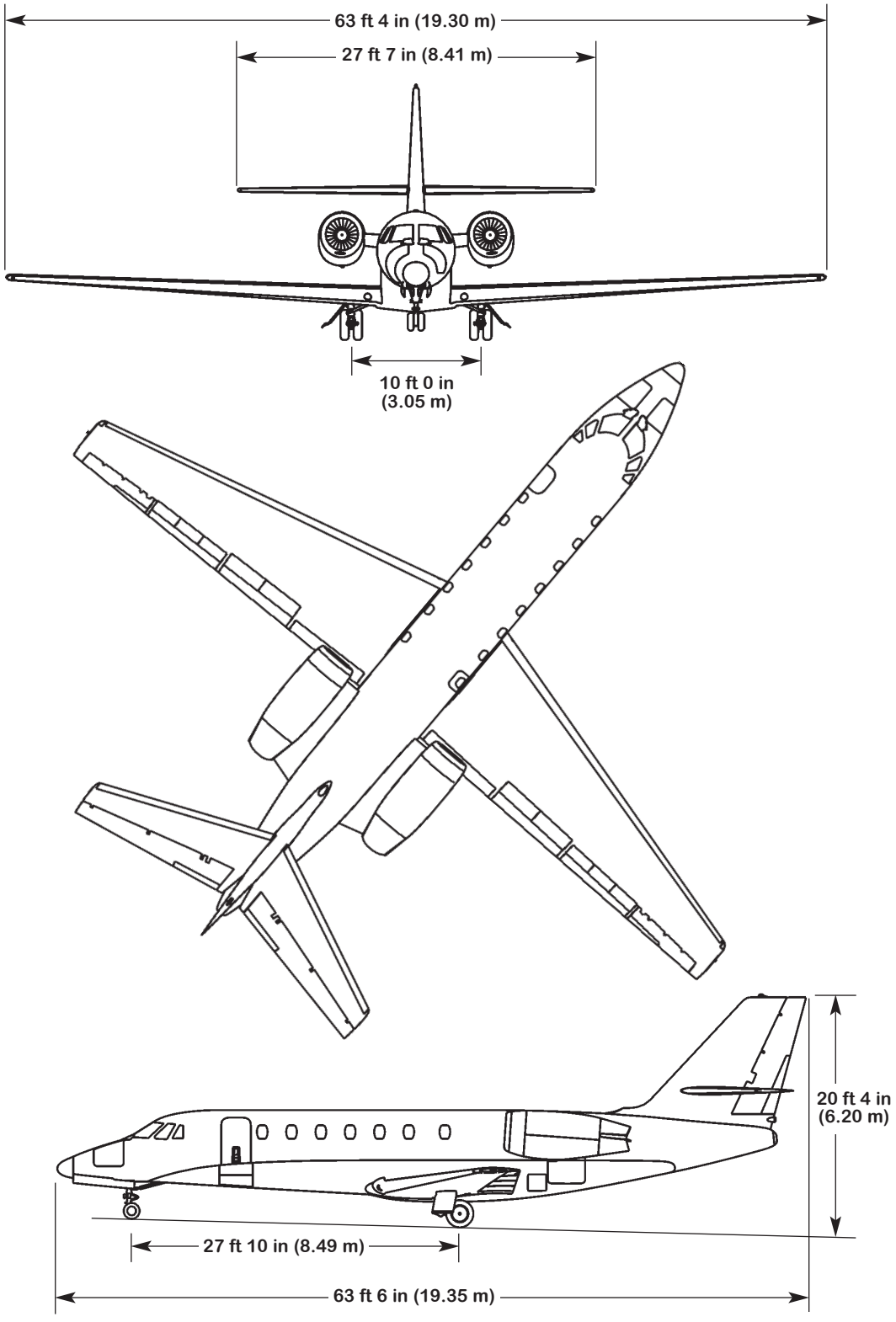



FIGURE I — CITATION SOVEREIGN EXTERIOR DIMENSIONS

## 1. GENERAL DESCRIPTION (Continued)

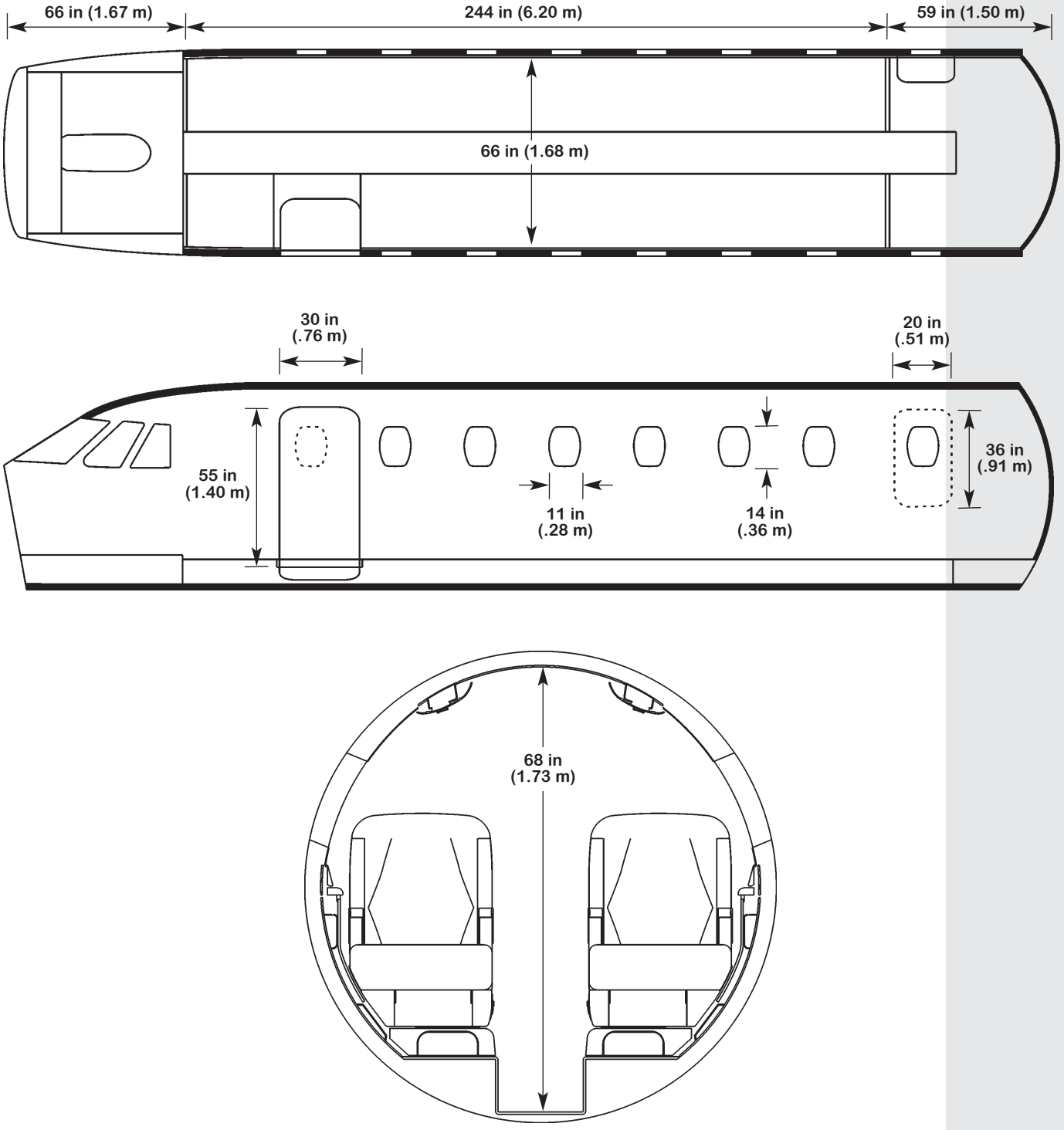



FIGURE II — CITATION SOVEREIGN INTERIOR DIMENSIONS

## 1. GENERAL DESCRIPTION (Continued)

### 1.3 Design Weights and Capacities

Maximum Ramp Weight . . . . . 30,550 lb (13,857 kg)
Maximum Take Off Weight . . . . . 30,300 lb (13,744 kg)
Maximum Landing Weight . . . . . 27,100 lb (12,292 kg)
Maximum Zero Fuel Weight . . . . . 20,800 lb (9,434 kg)
Standard Empty Weight * . . . . . 17,460 lb (7,920 kg)
Useful Load . . . . . 12,430 lb (5,638 kg)
Fuel Capacity (useable) at 6.70 lb/gal . . . . . 11,223 lb (5,090 kg)

* Standard empty weight includes unusable fuel, full oil, standard interior, and standard avionics.

## 2. PERFORMANCE

All performance data is based on a standard aircraft configuration, operating in International Standard Atmosphere (ISA) conditions with zero wind. Takeoff and landing field lengths are based on a level, hard surface, dry runway. Actual performance will vary with individual airplanes and other factors such as environmental conditions, aircraft configuration, and operational/ATC procedures.

Takeoff Runway Length . . . . . 3,640 ft (1,109 m)
(Maximum Takeoff Weight, Sea Level, ISA,
Balanced Field Length per FAR 25, 15° Flaps)

Climb Performance . . . . . 23 min to 43,000 ft (13,106 m)
(Maximum Takeoff Weight, from Sea Level, ISA)

Maximum Altitude . . . . . 47,000 ft (14,326 m)

Maximum Cruise Speed (± 3%) . . . . . 458 KTAS (848 km/hr or 527 mph)
(Mid-Cruise Weight, 35,000 ft (10,668 m), ISA)

NBAA IFR Range (200 nm alternate) (± 4%) . . . . . 2,847 nm (5,272 km or 3,276 mi)
(Maximum Takeoff Weight, Full Fuel, Optimal Climb
and Descent, Maximum Cruise Thrust at 47,000 feet)

Landing Runway Length . . . . . 2,650 ft (808 m)
(Maximum Landing Weight, Sea Level, ISA, per FAR 25)

Certificated Noise Levels
Flyover . . . . . 71.8 EPNdB
Lateral . . . . . 87.5 EPNdB
Approach . . . . . 91.3 EPNdB

## 3. STRUCTURAL DESIGN CRITERIA

The Citation Sovereign airframe is conventional in design, incorporating aluminum alloys, steel and other materials as appropriate. Engineering principles using multiple load paths, low stress levels and small panel size are incorporated in the primary structure.

Limit Speeds

$V_{MO}$ 8,000 ft (2,438 m) to 29,833 ft (9,093 m) . . . . . 305 KIAS (565 km/hr, 351 mph)

$M_{MO}$ 29,833 ft (9,093 m) and above . . . . . Mach 0.80

Flap Extension Speeds

$V_{FE}$ 0° to 7° Extension . . . . . 250 KIAS (463 km/hr, 288 mph)

$V_{FE}$ 7° to 15° Extension . . . . . 200 KIAS (370 km/hr, 230 mph)

$V_{FE}$ 15° to 35° Extension . . . . . 175 KIAS (324 km/hr, 201 mph)

Landing Gear Operating and Extended Speeds

$V_{LO}$ . . . . . 210 KIAS (389 km/hr, 242 mph)

$V_{LE}$ . . . . . 210 KIAS (389 km/hr, 242 mph)

## 4. FUSELAGE

The fuselage has a constant circular cross section and is attached to the wing without any cutouts for the spar. A dropped aisle from just behind the cockpit through the lavatory provides stand-up access throughout the cabin.

The keyed cabin door is located on the forward left-hand side of the fuselage. It is hinged at the bottom and has six locking cams. The aircraft is certified with a single, passive pressurization seal. In addition, an acoustic seal inflates with service air when the door is closed and the left throttle is out of cutoff. An integrated handrail extends with the door when open to assist entering and exiting via the four-step airstair. A plug-type emergency exit is located in the lavatory on the right-hand side of the cabin.

The glass windshields are designed to meet bird resistance requirements of 14 CFR Part 25. Openable side windows are provided on both sides of the cockpit. Reinforced frame structures surround the main door opening, emergency exit, and windshields providing structural continuity.

The nose section houses the avionics bay and other equipment such as nose wheel steering accumulator, landing gear pneumatic blow-down bottle, emergency braking bottle, and one of two baggage fire suppression bottles. Behind the composite radome is the high-resolution weather radar antenna and processor.

A large, class C heated baggage compartment in the tailcone includes two optical smoke detectors and is accessed from the left side beneath the engine pylon through a door with integrated steps. A baggage fire extinguishing system, utilizing Halon, provides a high discharge bottle (HDB) in the tailcone and a metered discharge bottle (MDB) in the nose. The high discharge bottle is shared with the APU such that its use for either system will shut down both. The MDB automatically provides a slow, continuous flow of agent into the baggage compartment following use of the HDB.

The equipment bay in the tailcone houses the major components of the hydraulic, environmental, electrical distribution, engine and baggage fire extinguishing systems, and some avionics. External access to the equipment bay is provided through a door on the lower right-hand side of the tailcone. An area work light is provided. Additional equipment may also be accessed through removable panels inside the baggage compartment. The APU is located in and accessed through service doors in the aft part of the tailcone.

## 5. WING

The Citation Sovereign utilizes an advanced, moderately swept wing selected for its low aerodynamic drag and favorable approach and landing characteristics.

A three-spar design gives the wing both structural integrity and high internal volume for its integral fuel tanks. It is designed to be damage tolerant and incorporates bonding and riveting techniques with doublers to provide increased skin thickness in highly loaded areas. A shallow drop in the center wing section permits attachment of the fuselage without interruption of the cabin cross-section. Composite fairings blend the wing and fuselage for minimum drag.

Electrically driven aluminum fowler flaps, arranged in three sections on each wing, and hydraulically driven spoilers, five sections per wing, are utilized for lift, drag, and roll control. Conventional ailerons are installed near the wing tips. The wing leading edges are anti-iced using engine bleed air. The wing tips include navigation and anti-collision strobe lights and static wicks.

## 6. EMPENNAGE

For pitch and yaw, the empennage incorporates the appropriate control surfaces and systems, including mach trim, rudder bias, and a single yaw damper. The horizontal stabilizer is designed with no dihedral and is trimable by an electrically driven actuator. The elevators each have anti-float tabs that are interconnected to the horizontal stabilizer. Engine bleed air protects the leading edge of the horizontal stabilizer from ice. A single rudder on the vertical stabilizer controls yaw with a servo type trim tab. A red flashing beacon is mounted on the top.

## 7. LANDING GEAR

The main and nose landing gear each use dual wheel assemblies. The landing gear retraction system is electrically controlled and hydraulically actuated. Each main gear is a trailing link type and retracts inboard into the wing and belly fairing. The nose gear automatically centers while retracting forward into the nose and, when retracted, is enclosed by doors. Extension or retraction takes about eight seconds and all V-speeds associated with the gear equal 210 knots. Single chined tires are used on the nose gear for water and slush deflection. Squat switches on all three gear assemblies provide input to the squat switch logic that affects many systems. Two emergency gear extension methods are provided: a pneumatic blow-down system (independent bottle in nose) and manual gear release handles.

Multi-disc carbon brakes are installed independently on all four main gear wheels and are hydraulically actuated. Toe pedal pressure is transmitted via cables to the brake metering valve which regulates main hydraulic system pressure in proportion to pilot input. The metering valve also applies the brakes automatically during gear retraction to stop wheel spin.

Normal braking power is supplied by the main hydraulic system with back-up provided by a pneumatic system. A separate electrically driven hydraulic pump may be used on the ground only for maintenance and to set the parking brake when the engines are not running. A digital antiskid system provides individual wheel skid protection at any speed, and includes touchdown protection, a feature that prevents braking until the wheels are rotating. The brake back-up system uses a dedicated nitrogen bottle in the nose and if used, does not provide antiskid protection.

Nose wheel steering is controlled through the rudder pedals and through a handwheel on the pilot's side ledge. The two systems are mechanically linked and are connected to the hydraulically powered rack and pinion steering system on the nose gear. The rudder pedals allow steering up to 7 degrees either side of center and the handwheel allows up to 81 degrees. Combined, the nose wheel may be turned up to 85 degrees on either side. A back-up NWS accumulator operates automatically if main hydraulic pressure is lost. All ground handling requires that the nose gear scissor connector be disconnected to allow full castering and to prevent damage.

## 8. POWERPLANTS

Two Pratt & Whitney Canada PW306C turbofan engines are installed, one on each side of the rear fuselage. This engine is a 4.4 to one, high bypass ratio, twin spool design with a damage resistant wide chord fan. Behind the fan, four axial and one centrifugal compressor stages lead to a high efficiency, low emission, through-flow combustor and five turbine stages. Two stage variable inlet guide vanes and bleed-off valves are controlled by the Full Authority Digital Electronic Controls (FADEC) to optimize compressor performance and engine operability. A forced exhaust mixer improves fuel burn and reduces noise. Maximum static takeoff thrust at sea level is flat rated to 5,770 pounds (25.66 kN) up to 87°F (ISA+15.5°C). Advanced alloys and cooling technologies allow for 6,000 hours between overhauls.

Engine start is accomplished electrically through a starter-generator powered by any of the following sources: the aircraft's two batteries, the auxiliary power unit, the other running engine, or a ground power unit. Both low- and high-pressure engine bleed air is extracted for anti-ice and environmental requirements. Fan air is tapped for pre-cooling of bleed air. A continuous loop fire detection system monitors the nacelle area to detect and warn if a fire occurs. A two-shot fire extinguishing system is provided.

Dual FADECs provide automation and efficiency in engine management. Detents in the throttle quadrant (takeoff, maximum continuous, high speed cruise) permit optimal power settings based on ambient conditions for each phase of flight. The system also provides engine protection, synchronization, and diagnostic capability.

Hydraulically actuated, target-type thrust reversers are attached to each engine. Deployment takes about one second. The effect of the thrust reversers on runway performance is accounted for under some conditions.

### Auxiliary Power Unit (APU)

A Honeywell RE100[CS] auxiliary power unit is installed in the tailcone to provide supplemental environmental air and electrical power to the aircraft both on the ground and in flight. Its generator is identical to the ones used on the engines, but limited in amperage. It may be started at up to 20,000 feet and operated up to 30,000 feet. Fuel burn for the APU is about 110 to 125 pph.

The APU is not approved for unattended use. However, its electronic control unit monitors all parameters and will automatically shut down the APU if operating limits are exceeded. If fire is detected, the extinguisher (shared with the baggage compartment) will automatically discharge after eight seconds, if not activated sooner by the crew.

## 9. SYSTEMS

### 9.1 Flight Controls

The Sovereign's flight controls consist of dual control wheel columns and adjustable brake and rudder pedals. Unpowered pushrod and cable systems are used to actuate the rudder, elevators, and ailerons. In addition, a handwheel is provided on the pilot's side ledge to control the hydraulically powered rack and pinion nose wheel steering system. The handwheel provides 81° of nose wheel deflection either side of center versus 7° for the rudder pedals. Stainless steel cables are used in all primary and secondary systems.

The one-piece, trimable, horizontal stabilizer has right and left pilot-actuated elevators. Dual independent cable systems are routed from each pilot's controls to the respective elevator with a mechanical disconnect handle on the pedestal. Stick shakers on each pilot's control column plus an aural tone provide stall warning in addition to instrument indications.

The single rudder is connected to the rudder pedals by a cable system that is split through the non-containment zone. A single yaw damper is included to augment lateral stability throughout the flight envelope. A two-chamber rudder bias system is incorporated for automatic control enhancement during engine-out conditions. The bias system is connected to the rudder through a variable leverage actuator that automatically adjusts for airspeed, providing the greatest leverage below 125 knots.

There are five hydraulically actuated spoiler panels on each wing. The middle three panels modulate in conjunction with the ailerons to augment roll control. All five function as speed brakes in flight and after landing. The aileron surfaces are operated by the pilot's yoke while the roll spoilers are hydraulically actuated and are operated by the copilot's yoke. The two otherwise independent systems are interconnected in the cockpit by a mechanical disconnect system. Within the cable linkage

## 9. SYSTEMS (Continued)

to the ailerons, a ratio changer provides airspeed-dependent variable mechanical advantage to the pilots for moving the control surfaces at different airspeeds. At high airspeeds the force to move the yoke is reduced by approximately 30 percent.

All trim is electrically controlled. The rudder trim knob and the split aileron trim switches (both on the pedestal) activate motors to change the base position of their respective servo tabs. Split elevator trim switches on each yoke affect the electrically driven primary stabilizer trim actuator to change the angle of incidence of the horizontal stabilizer to any point between negative 6.9 and positive 1.2 degrees. A secondary electric actuator serves as back-up and is controlled by a guarded split switch on the pedestal. When the horizontal stabilizer moves, the interconnected anti-float tabs on each elevator also move to complement aerodynamic forces. A mach trim system is installed and is effective between 0.76 and 0.80 mach but is not required for dispatch. An integral control lock is provided for the ailerons, elevators and rudder.

Aluminum fowler flaps are arranged in three sections per wing and are controlled through a lever with detents on the pedestal. Asymmetric protection and soft-start are incorporated in the design with one electric motor driving the flaps to one of four positions: up, 7°, 15°, and 35°. Between 15° and 35° a signal is sent to the stabilizer trim actuator to automatically adjust to prevent pitch changes.

### 9.2 Fuel System

Two integral fuel tanks, one in each wing, provide approximately 11,223 pounds (5,090 kg) of usable fuel. System operation is fully automatic with each engine receiving fuel from its respective wing tank. Crossfeed capability is provided and, when selected, enables both engines to receive fuel from a single tank. Tank to tank transfer is not possible.

Electric boost pumps located in the wing roots supply fuel during engine start, APU start, crossfeed, and as needed to supply the required fuel pressure. For each engine a two-stage engine driven pump provides fuel at low and high pressure. Low pressure fuel flows to the fuel/oil heat exchanger and the fuel filter. High pressure fuel is sent back to the primary and scavenge motive flow pumps in the wing tanks and to the hydromechanical metering unit (HMU). The HMU delivers fuel to the engine and to the variable guide vanes actuator and is fully controlled by the FADECs according to pilot demand and ambient conditions. The fuel/oil heat exchangers eliminate the need for an anti-ice additive.

Fuel levels are monitored by an active probe system. Refueling is accomplished through over wing filler ports with locking caps or through the single point refueling / defueling system, which does not require electrical power. Maximum fuel through the single point system is 1,600 gallons or 10,720 pounds (4,862 kg). To fill to maximum capacity, the over wing filler ports must be used.

### 9.3 Hydraulic System

A closed-center, constant pressure 3,000 psi (206.8 bar) hydraulic system operates the landing gear, brakes, nose wheel steering, spoilers, and thrust reversers. Hydraulic pressure is supplied by two engine driven pressure compensating pumps, one located on each engine. Either pump can supply enough flow to operate the system. An electrically powered pump located in the fairing behind the wing performs certain maintenance functions and is available only on the ground to set the brakes for parking. Ground connections to service the system are located on the right side below the engine.

### 9.4 Electrical System

The Sovereign's electrical system incorporates European compliant, split bus architecture with a bus tie, designed so that essential equipment operation will not be interrupted in the event of a single power source or distribution system failure.

Two 28 volt DC, 300 ampere, engine-driven starter/generators supply primary electrical power. A third, identical starter/generator is driven by the APU for supplemental power (up to 30,000 feet) but is limited to 275 amperes. Generator control units provide static regulation, overvoltage, feeder fault, and ground fault protection for each generator. Each engine also drives an alternator to support a dedicated AC system for electrical anti-icing of the windshield. Power for the dual channel FADECs is provided by aircraft power during initial engine start, then by engine driven permanent magnet alternators for normal operations.

Two 24 volt, 44 amp-hour, nickel-cadmium batteries are mounted inside access panels on each side of the fuselage just behind the wings to supply power for starting and emergency requirements. Power for all engine and

## 9. SYSTEMS (Continued)

APU starts are either provided by or assisted by the batteries to minimize the burden on the generators. A receptacle above the right side battery allows connection of an external power unit. Battery voltage, amperage, and temperature monitoring and battery disconnect systems are provided.

One 1,200 watt static inverter supplies 110 volt AC power for the needs of the cabin including 6 outlets: one in the cockpit, one in the lavatory, and four in the cabin.

Exterior lighting consists of one red flashing beacon, two anti-collision strobes, two wing inspection lights, navigation lights, two taxi lights (located on the nose gear), and two landing/recognition lights (located at the wing roots).

### 9.5 Pressurization and Environmental System

The pressurization and air conditioning systems utilize engine or APU bleed air through a single air cycle machine (ACM) to pressurize and air condition the cabin and defog the cabin and cockpit side windows. Ram air for cabin ventilation is available when the pressurization system is not in use. Pressurization is controlled by two outflow valves located in the aft pressure bulkhead. The pressurization controller automatically schedules cabin altitude and rate of change. Ozone converters are included in the bleed air system. The system provides a 7,230 foot (2,204 m) cabin altitude at 47,000 feet (14,326 m) (9.3 psi or 0.64 bar nominal maximum working pressure). Sea level cabin altitude can be maintained to 25,230 feet (7,690 m).

Bleed air is conditioned as it passes through the ACM and is distributed to the cabin and cockpit via overhead air ducts and outlets, under floor ducts, and sideledge air ducts. Two thermostats and a dual-zone temperature controller automatically maintain the cabin and cockpit temperatures separately. The cabin temperature is controlled from the VIP seat location.

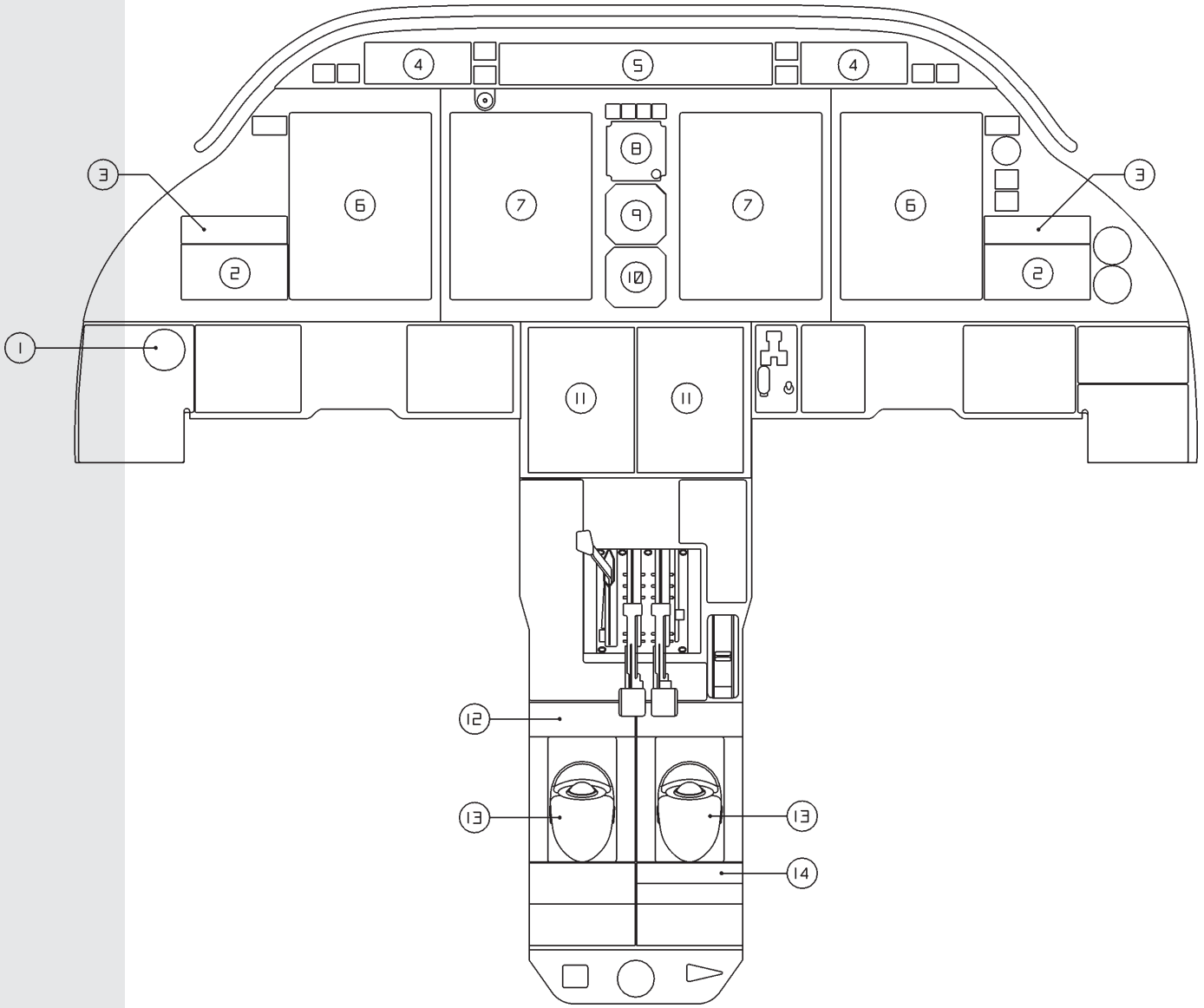
### 9.6 Oxygen System

A 76.0 cubic foot (2.15 $m^3$) oxygen bottle, located in the belly fairing, is provided with a high pressure gauge and bottle-mounted pressure regulator. A second 76.0 cubic foot oxygen bottle is available as an option. Pressure demand masks are provided for the crew while automatic dropout, constant-flow oxygen masks are provided at each passenger seat and the lavatory. Oxygen flow to the cabin is controlled by a sequencing regulator valve for optimal passenger usage.

### 9.7 Ice and Rain Protection

Engine bleed air is used for anti-ice protection of the engine inlets and the leading edges of the wing and horizontal stabilizer. Bleed air plumbing is monitored for leaks using eutectic salt sensing lines. The pitot tubes and static ports (mains and standby), and both angle of attack probes are electrically anti-iced using main or emergency DC power. The repellant-coated glass windshields are also electrically heated, however, power for the windshields is provided by dedicated AC alternators, one on each engine, and is on whenever the engines are running. A windshield ice detection light is mounted on the glareshield and two wing inspection lights are mounted on the fuselage to assist in detection of ice buildup during night flights. The two-speed blower fan mounted in the nose avionics bay for avionics cooling is available to assist with rain removal from the windshields during taxi operations.

## 10. FLIGHT COMPARTMENT, AVIONICS AND INSTRUMENTATION




1. Oxygen Pressure Indicator
2. Digital Audio Control Panel
3. PFD / MFD Reversion Control
4. PFD / MFD Source Control
5. Flight Guidance Control Panel
6. Primary Flight Display (PFD)
7. Multi-Functional Display (MFD) and Engine Indicating and Crew Alerting System (EICAS)
8. Standby Flight Display (SFD)
9. Standby Electronic Horizontal Situation Indicator (EHSI)
10. Standby Engine Indicator (SEI)
11. Multi-Function Control Display Unit (MCDU)
12. Weather Radar Controller
13. Cursor Control Device (CCD)
14. Cockpit Voice Recorder (CVR)

**FIGURE III — CITATION SOVEREIGN INSTRUMENT PANEL AND PEDESTAL LAYOUT**

# 10. FLIGHT COMPARTMENT, AVIONICS AND INSTRUMENTATION (Continued)

## 10.1 General

Described below is the Citation Sovereign standard avionics suite as referred to in Section 17, Limited Warranties.

- Four Modular Avionics Units (MAU) - Honeywell, Two MAU-950s, Two MAU-951s
- Four 8 x 10 inch Flat Panel Liquid Crystal Display Units - Honeywell DU-1080s Designated As:
  - Two Primary Flight Displays (PFD)
  - One Multi-Function Display (MFD)
  - One Engine Indication and Crew Alerting System (EICAS)
- Dual Air Data Modules (ADM) - Honeywell AZ-200
- Dual Attitude Heading Reference Systems (AHRS) - Collins AHC-3000
- Dual Angle of Attack Sensors (AOA)
- Dual Automatic Flight Control Systems (AFCS) with Three Axis Autopilot and Flight Director - Honeywell
- Flight Guidance Controller Panel (GP) - Honeywell GP-400
- Dual Multi-Functional Control Display Units (MCDU) with Integrated Flight Management Systems (FMS) and Global Positioning System (GPS) Receivers - Honeywell MC-850
- Dual Aural Warning / Tone Generation Systems
- Dual EFIS Clocks with Elapse Timers
- Dual Remote Mounted Modular Radio Cabinets - Honeywell MRC-855 Including the Following LRUs:
  - Dual VHF Communication Transceivers
  - Dual Mode S Diversity Transponders - Honeywell XS-857A
  - Dual Navigation Receivers (VOR/Localizer/Glideslope/Marker Beacon)
  - Dual Distance Measuring Equipment (DME) Receivers
  - Single Automatic Direction Finder (ADF)
- Dual Digital Audio Panels - Honeywell AV-850A
- Dual Cursor Control Devices (CCD) - Honeywell CCD-950
- Color Weather Radar With Turbulence Detection - Honeywell Primus 880
- Traffic Collision Avoidance System (TCAS) - ACSS TCAS 2000
- Enhanced Ground Proximity Warning System (EGPWS, Class A) - Honeywell
- Single Radio Altimeter - Honeywell AA-300
- Standby Instruments With Dedicated Air Data Computer, Magnetometer, and Battery Including:
  - Electronic Standby Instrument System (ESIS) - L-3 Communications GH-3000 (referred to as Standby Flight Display - SFD)
  - Electronic Horizontal Situation Indicator (EHSI) - L-3 Communications EHSI-3000
  - Electronic Standby Engine Indicators (SEI) - Ametek
- Aircraft Diagnostics Maintenance System
- Fault Recording and Ground Maintenance Access and Downloading
- Cockpit Voice Recorder (CVR) - L-3 Communications FA2100
- Three Frequency Emergency Locator Transmitter (ELT) - Artex C406-N

## 10.2 Flight Compartment

Two crew stations are provided with dual controls including control columns with stick shakers, adjustable rudder pedals, and brakes. A handwheel for the nose wheel steering is provided on the pilot's side ledge.

Rheostats control all cockpit lighting systems. Panel lights and electroluminescent (EL) lights provide illumination and blue-white background lighting for all cockpit instruments and switches. Floodlights and individually controlled left and right map lights are located in the overhead panel. Indirect supplemental LED lighting under the glareshield also functions as the emergency lighting for the panel. A day/night switch allows bright/dim control of the panel, EL, and flood lighting. Monorail sunvisors are standard. One AC outlet is provided in the cockpit for crew use. Circuit breakers for the avionics and most systems are located on the cockpit sidewalls beside each pilot seat.

The emergency oxygen system provides two quick-donning, pressure demand masks with microphones for each crewmember.

The crew seats are fully adjustable including lumbar support and include a five-point restraint system with two inertia reel shoulder harnesses each. Crew seat leather and dual stowable armrests are standard. A total of eight air outlets are strategically placed for air circulation in the cockpit. Dual cupholders are installed in each sideledge, and map and pencil storage pockets reside just below each side console. For navigation chart storage, dual chart cases are provided behind each crew seat. Additional chart storage is available in the closet behind the pilot's seat.

## 10. FLIGHT COMPARTMENT, AVIONICS AND INSTRUMENTATION (Continued)

### 10.3 Avionics

The Honeywell Primus EPIC system is a highly integrated display, flight guidance, navigation, and communication system with its primary data presented on four 8 x 10 inch (20 x 25 cm) full color flat-panel liquid crystal display units (DUs). The two outboard displays are primary flight displays (PFD) and the two inboard function as a multi-function display (MFD) and an engine indicating and crew alerting system (EICAS).

The backbone of the system is a series of four modular avionics units (MAUs). Each unit is host to various field replaceable circuit cards or modules that perform specific functions. Two MAUs reside in the nose and two in the tailcone. All systems are networked through internal and external high-speed bi-directional buses. Nearly all aircraft systems are integrated through the MAUs for processing, coordinating, monitoring, and display.

Some of the major subsystems include:

- Four Electronic Flight Information System (EFIS) Display Units (PFDs, MFD, EICAS);
- Dual Modular Radio Cabinets (MRC) Containing Communication, Navigation, and Surveillance Radios;
- Dual Channel Automatic Flight Control System (AFCS);
- Situational Awareness Sensors, i.e. Weather, Traffic, and Terrain

#### A. Electronic Flight Information System (EFIS)

The EFIS system on the Citation Sovereign presents to the pilots all the essential information required for flight. Navigation, communication, and the condition of the aircraft are all monitored and displayed on the four display units. The DUs have integral symbol generators and cooling fans, and are interchangeable. Each are directly interfaced to the MAUs.

Two attitude heading reference system (AHRS) computers are installed to supply attitude, heading, and flight dynamics information to the flight control and display system. Solid-state sensors and a magnetic flux gate provide highly accurate and reliable data.

A total of three heated pitot sources and six heated static sources feed data to the two main air data modules (ADM) and a backup air data computer (ADC). All three computers are integrated into the pitot-static system to calculate and correct raw static and dynamic air pressures from the ram and static sources. Cross plumbing minimizes yaw errors in the static pressure signals.

Dual reversionary controllers are provided to allow dimming and to meet the manual reversion needs of the DUs, AHRS, and ADMs.

Primary Flight Displays (PFD)

The Sovereign's PFDs present to the pilots the fundamental flight information for location and attitude in space. Additional information provides improved situational awareness and safety. The primary sources of input for display on the PFDs are the AHRS, ADMs, and the various navigation and situation receivers, all of which are processed through the MAUs.

The attitude sphere is shown in the upper half with respect to an aircraft symbol, and incorporates a single cue or cross pointer flight director command bar presentation. To the left of the attitude is the airspeed tape and digits with the ability to show V-speeds, flap speeds, Mach speed, and overspeed and stall speed warnings. An angle of attack indicator (AOA) may be shown full time or only when the flaps and gear are down. Within specific parameters a windshear warning will flash near the center of the attitude display. The marker beacon, glideslope, and slip-skid indicators are each shown in this area. Although traffic is shown on the multi-function display, a resolution advisory (RA) will generate "avoidance" and "fly-to" target symbology on the PFD in lieu of the flight director command bars.

To the right are altimeter and vertical speed indications. The altimeter setting may be shown in inches or hectopascals and the altitude may be shown in meters in addition to feet if desired. A vertical navigation (VNAV) target and bug will appear when activated beside the altitude tape. A low altitude awareness feature triggered by the radio altimeter will cause the lower portion of the tape to be shaded brown when radio altitude is less than 550 feet. Other terrain avoidance warnings appear as triggered by the EGPWS such as "below glideslope." Both the altitude and airspeed tapes feature trend vector thermometers that forecast respective values six seconds ahead.

The lower half of the PFD displays heading, navigation, and certain weather data. The heading is displayed as a full compass rose or a partial compass arc. Traditional

## 10. FLIGHT COMPARTMENT, AVIONICS AND INSTRUMENTATION (Continued)

bearing pointers and course indicators are shown on the compass rose format. For greater situational awareness, the FMS map and weather displays may be overlaid on a 90 degree arc format. The active lateral navigation information is displayed on and beside the rose, arc or map and includes bearings, identifiers, time and distance to waypoint or DME station, and groundspeed. The current wind speed and vector are shown as well as weather radar status. A digital clock and elapse timer are shown on the left and controlled through the PFD display controller and the multi-function control display unit (MCDU). Autopilot/flight director and FMS annunciations and modes are also displayed on the PFD.

Left and right PFD display controllers provide the principle pilot interface with the respective PFD. Several buttons allow selection of navigation sources for the different course deviation indicators and the format for the navigation display: full compass or arc mode. The WX/TERR button permits weather radar video or terrain video to be superimposed on the arc mode. The ET button operates the elapse timer. Two knobs (each dual concentric) are used to select approach minimums and altimeter settings.

Multi-Function Display (MFD)

The MFD shows navigation, communication, traffic, terrain, and weather information for each flight. Various colored lines and symbols show airports, navaids, waypoints, and track lines to provide either a north-up, or heading-up picture of the lateral navigational situation at multiple scales. Vertical navigation may also be selected for display.

Four menu categories reside at the top of the MFD: CHECKLIST, TCAS, MAP, and PLAN. Selection and control of menu items is accomplished through two cursor control devices (CCD) in the pedestal. Selection of 'MAP' view shows the flight plan in a 120° arc with the heading up and a centrally-fixed aircraft symbol. Selection of the 'PLAN' view shows true north up and the aircraft symbol in motion as oriented by its heading. Weather radar graphics or terrain information from the EGPWS (exclusive of each other) may be selected through the MAP menu. Selection of 'CHECKLIST' opens several options at the bottom center of the display including normal, abnormal, and emergency checklists. 'TCAS' will show the traffic options and may be displayed on both the MAP and PLAN views.

A portion of the lower half of the display contains full-time information. The full-time data is always in view and includes navigation and communication frequencies, transponder setting, temperatures, speeds, a timer, current waypoint identifier with ETE, and the current mode of the TCAS and weather radar. The central maintenance computer is also accessed through the MFD. The CCD is used to interact with these functions.

Engine Indicating and Crew Alerting System (EICAS)

The Sovereign's EICAS display is divided into four sections: engine instruments, aircraft systems, radio tuning, and crew alerting system annunciations.

The engine instrument area shows engine, oil, and fuel parameters in various combinations of vertical tapes and digits. In some cases, pilots have the option to show digits full time or only in the event of exceedances. Ram air temperature, FADEC and igniter status, and thrust reverser indications appear in this area also. All displays are intuitively color coded to represent normal and abnormal conditions.

The aircraft systems section shows status and values for the electrical and hydraulic systems. All three trim axis positions and the flaps, speed brakes, and spoiler positions are shown in a visually synoptic presentation, including digits for the flaps and horizontal stabilizer angles. The communication, navigation, and transponder functions are shown at the bottom of the EICAS display and are controlled via the cursor control device in the same way as for the MFD.

Crew alerts are processed by the modular avionics units (MAUs) and displayed in colored text in the lower left section of the EICAS. Up to 12 messages may be displayed at a time with access to additional messages by scrolling. Explicit rules are employed to govern the color, order, flashing, and scrolling of all messages. Special logic and timing of messages and the combining of redundant messages are performed by the MAUs to minimize workload and distractions, and to provide pilots with the most relevant information for the flight regime and condition.

A dual aural warning function (AWF), part of the MAUs, prioritizes any alert conditions between EGPWS, TCAS, and EICAS systems to command pilot attention as required. Left and right red Master Warning and amber Master Caution switchlights are also activated according to MAU logic.

## 10. FLIGHT COMPARTMENT, AVIONICS AND INSTRUMENTATION (Continued)

### B. Cursor Control Device (CCD)

The Sovereign features two cursor control devices (CCD) mounted aft of the throttle quadrant. The CCDs are the primary means of pilot interface with the EFIS by allowing a cursor to be moved about on the EICAS and MFD to select and change such things as MFD menus and radio frequencies.

Each CCD is ergonomically designed for the hand to rest and allow the fingers to manipulate the trackball to move the cursor on the display units. Each pilot may place their own cursor (pilot-blue, copilot-green) on the MFD or the EICAS by pressing one of the three display selection keys immediately ahead of the trackball. The PFDs may also be selected (by the respective pilot only) for changing HSI display range, however, the cursor itself will not be visible. 'Enter' buttons on each side are used to make selections and are both identical in function. Two concentric knobs are used to change the digits or range of the selected function. A dedicated TCAS button brings the TCAS menu into view.

### C. Multi-functional Control Display Units (MCDU)

Forward of the throttle quadrant are two MCDUs, providing all FMS functions, a means to change various avionics settings, and a second radio tuning method. The crew operates the units through use of keys and dual concentric knobs. The two units are synchronized to coordinate data entry from one to the other. The bottom line on the screen is a scratchpad for initial entry until the data is selected.

Navigation, Surveillance

The navigation radios incorporate all the common functions including VOR, ILS/localizer, glideslope, marker beacon, ADF, DME, and GPS. Each DME module is capable of tracking four channels at the same time. The ADF has two selectable bandwidths; a narrow band mode to reduce noise during navigation and a wide band mode to improve clarity when listening to voice signals. The two transponders are Mode-S and utilize two antennae each for diversity function. Enhanced surveillance capability is available as an option. The two GPS receiver modules are located in two of the MAUs.

Communication

The VHF communication radios provide 25 or 8.33 kHz spacing. In addition to radio tuning, the radio pages provide the means for setting 12 NAV and 12 COM frequencies into memory. All radios and transponders are physically located in two modular radio cabinets (MRC) in the tailcone.

Flight Management System (FMS)

The FMS functions are accessed from the Flight Plan page on the MCDU. Plans may be created, stored, accessed and activated as needed. The active flight plan will automatically tune the navigation radios enroute. Precision guidance from the FMSs meets the operational requirements of oceanic/remote, NAT MNPS, RNP10, RNP5/BRNAV and RNP1.0/PRNAV. The navigation database requires periodic updates via subscription and may be uploaded to the aircraft via the connectors on the aft pedestal. Cessna provides an interface kit for use with a Purchaser-supplied laptop computer to accomplish the updates. The Honeywell FMS annual subscription fee is the responsibility of the Purchaser and may be activated during delivery.

Several features are presented on the Avionics Setup page: elapse and flight timers, EGPWS settings, display settings for various EFIS functions such as the flight director command bars and the AOA indicator, test functions, and V-speeds.

### D. Automatic Flight Control System (AFCS)

Automatic flight control is provided in the Sovereign by a dual autopilot system (AP) including actuators, one electric servo per axis, a yaw damper (not required for dispatch), and a guidance panel (GP) in the center-top of the instrument panel. The system is designed with dual channel architecture to provide "fail-operational / fail-passive" capability, meaning, the failure of one channel causes automatic reversion to the other channel without any loss of functionality.

The main pilot interface to the AFCS is through the guidance panel. Pushbutton engagement of the autopilot is near the center of the panel, as well as coupling to the desired PFD. When engaged, basic modes are maintained by the autopilot. Alternatively, the flight director (FD) may be activated to show command bars on the respective PFD in the selected mode. The AP and FD may be coupled to provide automatic flight control. Lateral and vertical modes are selected on the GP beside the heading and altitude select knobs. Two course select knobs are also located on the GP for use

## 10. FLIGHT COMPARTMENT, AVIONICS AND INSTRUMENTATION (Continued)

in the navigation modes. Two pitch wheels, one in the center of the GP and one on the pedestal, allow pilot input for pitch angle, the airspeed bug, and to select vertical speed rate. In addition to normal modes of operation, the AFCS provides touch control steering (TCS) via switches on each yoke, stall protection, and an emergency descent mode.

### E. Audio Control Panels, Headsets and Speakers

Dual Honeywell AV-850A digital audio amplifiers provide transmitter selection from microphone inputs and direct audio outputs for all receivers to either the speaker or headphones at each crew station. Also included are a navigation station identification filter, marker beacon muting, separate headphone and speaker volume control, automatic receiver audio selection, cabin address, and voice activated interphone.

Two Telex Airman 850 headphones with boom microphones are provided. Dual Telex hand microphones latch on each control column and two cockpit speakers are mounted overhead. Cockpit speaker mute switches are located on the far left and right of the tilt panel. Speakers are also provided in the cabin and vanity area.

### F. Weather Avoidance Radar

The Honeywell Primus 880 weather radar is a four-color weather and turbulence detection sensor consisting of an integrated receiver/transmitter/12-inch antenna unit with an independent controller mounted on the pedestal. The system provides 10,000 watts of transmitter power, 120 degree scan angle, ±15 degrees tilt, and turbulence detection to 50 nm. The system also includes several additional features: Altitude compensated tilt which automatically adjusts the tilt angle with changes in altitude; Target alert notifies the pilots of hazardous targets outside the selected range; Sector scan narrows the scan range and increases the scan rate; and ground mapping for depicting terrain features.

### G. Traffic Collision Alert System (TCAS)

The TCAS 2000 by ACSS consists of a TCAS II system that provides simultaneous tracking of up to 50 intruder aircraft. A maximum of 32 aircraft targets may be displayed along with their relative altitudes and positions at ranges up to and potentially beyond 40 nm. Traffic alerts and resolution advisories, with audio and EFIS display warnings, are generated for the targets with the highest threat level. TCAS 2000 meets or exceeds all current regulatory requirements (European ACAS II and Change 7). (Note: This system is installed to provide collision avoidance information and will not necessarily display aircraft within the monitoring area that do not pose a threat.)

### H. Terrain Avoidance Warning System (TAWS)

The Honeywell Enhanced Ground Proximity Warning module (EGPWS) is a Class A TAWS that helps prevent accidents caused by controlled flight into terrain (CFIT) or severe windshear. The system provides basic ground proximity warning, windshear detection and alerting, and terrain awareness alerting and warning. The system displays proximate terrain information in color on the MFD and gives both audible and visual warnings. The terrain database includes charted manmade obstacles in North America and some obstacles in other parts of the world. The EGPWS installation on the Citation Sovereign will meet and/or exceed 14 CFR Part 91, 14 CFR Part 135, and JAR-OPS 1 requirements.

### I. Radio Altimeter

The Honeywell AA-300 Radio Altimeter system provides height above the terrain from 2,500 feet (762 m) to touchdown. This information is integrated with functions in the EFIS, TCAS II, and EGPWS and is presented on the PFDs.

### J. Backup And Emergency Instruments

Standby instruments are installed in the center of the instrument panel and are normally powered by the aircraft's main DC power. In the event power is interrupted, the standby battery in the nose compartment provides up to 3 hours additional duration. A panel switch controls operation and testing.

Four standby annunciators are located at the top of the center panel and are included on the emergency bus: low fuel, stabilizer no takeoff, generator off, and oil pressure low.

The secondary flight display (SFD) receives data from the standby air data computer and normally shows attitude, air data, slip/skid, and menu items. The SFD also backs up the EHSI and may show heading and navigation information.

## 10. FLIGHT COMPARTMENT, AVIONICS AND INSTRUMENTATION (Continued)

The electronic horizontal situation indicator (EHSI) uses a dedicated magnetometer and signals from the navigation radios and FMS to present heading, range, navigation, and course deviation data in an HSI format. A standby slave switch on the panel may be used to select directional gyro mode when necessary.

Standby engine indications (SEI) include N1, N2 and ITT for each engine and are displayed in digits on the standby engine indicator at the bottom of the center panel. Exceedances cause the respective digits to flash.

The cockpit voice recorder (CVR) has four high quality and two standard quality channels, loop-recorded for 30 minutes and 2 hours respectively from the pilot and copilot's audio communications and the area microphone (just above the EICAS) to a crash-survivable solid-state flash memory unit in the tailcone. The CVR is equipped with a six year lithium battery and an underwater locator beacon. The control head is located on the pedestal.

A three-frequency emergency locator transmitter (ELT) is mounted overhead in the aft baggage compartment and, if activated, transmits the standard emergency signal on 121.5 and 243 MHz plus aircraft specific encoded data on the COSPAS-SARSAT satellite frequency of 406.025 MHz. The ELT houses its own six-year lithium battery pack and meets or exceeds all FAA and JAA certification requirements. The transmitter will activate automatically or manually via a remote control panel located in the cockpit aft of the copilot’s circuit breaker panel.

### K. Cessna Aircraft Recording System (AReS)

The Citation Sovereign incorporates full time data storage through a Cessna Aircraft Recording System (AReS). AReS records useful data during the previous 25+ flight hours in non volatile memory for advanced troubleshooting and analysis by systems specialists from the Cessna Service and Support network.

*Purchaser agrees that Cessna has a perpetual license to use all information contained in the Aircraft recording and/or diagnostic system for any reason, including maintenance and accident investigation. Purchaser expressly provides Cessna with licensed permission to download, use, and/or read such information at any time. Purchaser further agrees this perpetual license runs with and is automatically transferred with the title to the Aircraft and is binding on any and all subsequent purchasers of the Aircraft.*

### L. Other Cockpit Instrumentation

Additional cockpit instrumentation includes the following:

- External lighting switch panel including landing, taxi, recognition, and anti-collision
- Rotary test knob for functional testing of 10 different systems
- An event marker button on the left side panel sends a five-minute engine and FADEC trace to the engine diagnostic system for future maintenance download and analysis
- A flight time meter

# 11. INTERIOR

## 11.1 Cabin

The Citation Sovereign is sized to offer passenger comfort and flexibility for a variety of interior arrangements. A full range of fabrics, leathers, carpets, laminates, selected wood veneers and metal finishes are available to custom configure the interior furnishings to meet a wide variety of customer tastes. Certified burn-resistant materials are used throughout the cockpit and cabin. Bagged soundproofing and insulation are consistent with this category of aircraft, its operating speeds, and environment.

The flight compartment (discussed in section 10.2) is separated from the cabin by dividers. The cabin is approximately 25 feet 3 inches (7.70 m) long and extends from the flight compartment dividers to the aft pressure bulkhead. The constant section of the cabin provides a continuous width of 66 inches (1.68 m) measured softgoods to softgoods. A dropped aisle with indirect lighting extends aft from the cockpit divider to the aft wall of the lavatory and provides a cabin height of 68 inches (1.73 m) measured softgoods to softgoods.

Cabin-length indirect LED lighting is provided overhead in the Passenger Service Units (PSU) with variable adjustment settings. Entrance and emergency exit lights are also provided. Fifteen elliptical windows with pleated electric window shades allow generous natural lighting throughout the cabin and lavatory.

The standard aircraft features a right hand refreshment center (31 inches wide) with two hot beverage tanks, large ice drawer, large trash receptacle, numerous storage areas, glassware capability and provisions for ample catering. A left hand coat closet forward of the cabin entry door accommodates navigation charts, flight manuals, and coat and briefcase storage as well as a fire extinguisher.

The cabin supports a variety of seating configurations. The standard arrangement accommodates nine passengers in a double-club with a single forward side facing seat just aft of the refreshment center. The eight pedestal seats track forward and aft 7 inches (.18 m) and laterally 4 inches (.10 m) on the seat base with 360 degree swiveling capability. These seats recline to an infinite number of positions including full berthing. All passenger seats are equipped with seat belts, an inertia reel shoulder harness, and an overwater life vest stored in the seat base shroud.

Individual air outlets and reading lights are provided in the PSU above each passenger seat and over the vanity. The customer may designate a VIP seat to incorporate all indi-

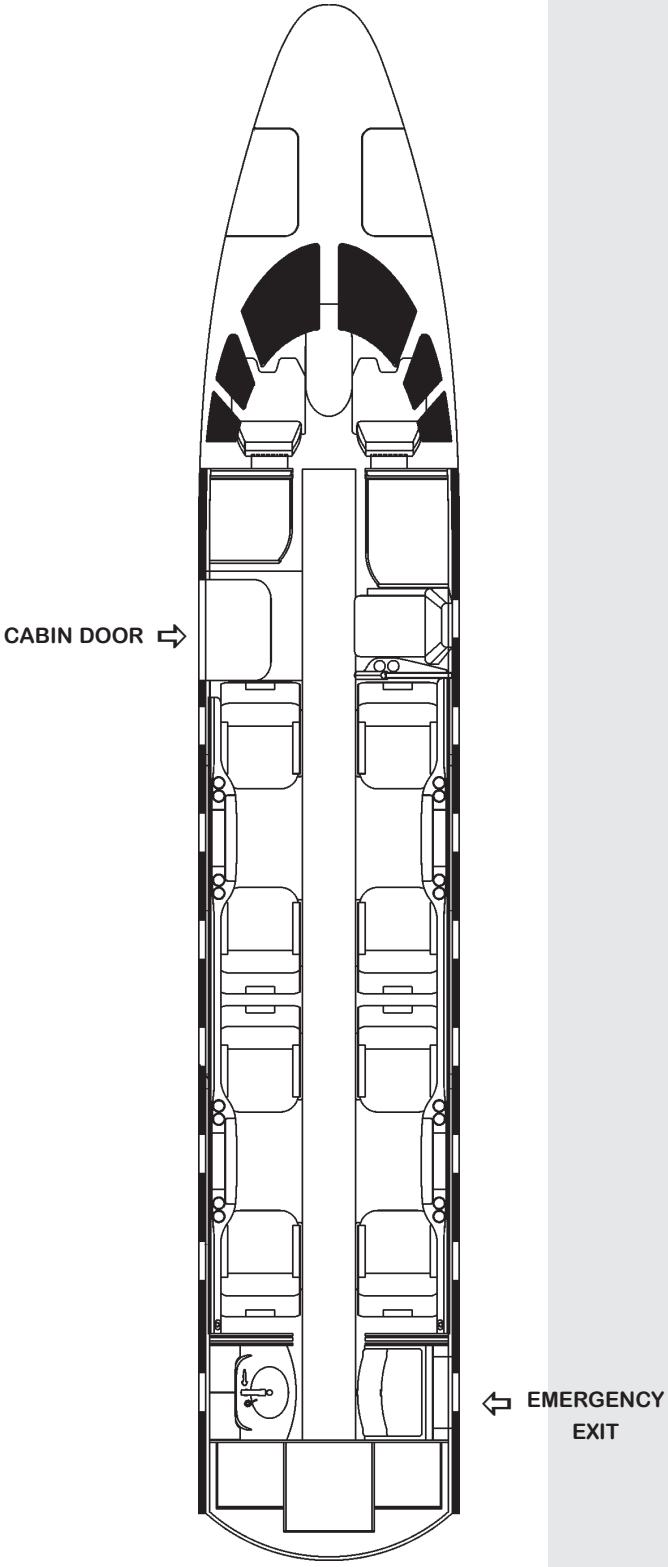



FIGURE IV — CITATION SOVEREIGN STANDARD FLOORPLAN

## 11. INTERIOR (Continued)

rect lighting and cabin temperature controls. Two cupholders are built into the side ledge next to each seat. A single insertable ashtray is provided. Four executive tables fold out from between each facing pair of seats and are illuminated by direct reading lights. Six individual 110 volt AC outlets (5 amp max per outlet) (four in the cabin, one each in the cockpit and lavatory) are installed to operate laptop computers, etc. Dropout, constant-flow oxygen masks are installed over the aisle for emergency use.

The aft lavatory has an externally serviceable flushing toilet (non-belted) and is separated from the cabin by sliding divider doors. It includes a vanity sink with temperature controlled water and numerous storage compartments. Within the lavatory a large centerline closet accommodates several hanging clothes bags, coats, briefcases and additional storage for passenger amenities.

### 11.2 Baggage Compartments

The Sovereign has forward and aft baggage storage closets in the cabin to accommodate passengers' carry-on luggage and coats. The following limits apply:

- Forward coat closet - 140 lb (63.5 kg), 8 $ft^3$ (0.23 $m^3$)
- Aft bulkhead closet - 275 lb (124.7 kg), 27 $ft^3$ (0.76 $m^3$)
- Combined total - 415 lb (188.2 kg), 35 $ft^3$ (0.99 $m^3$)

In addition, a heated baggage compartment with a coat rod is located in the tailcone subject to the following limits:

- 1,000 lbs (453 kg), 100 $ft^3$ (2.83 $m^3$) total
- Floor loading limit - 150 lb (68.0 kg) per $ft^2$
- Coat rod - 50 lb (22.7 kg), part of the total limit

The compartment is located on the left hand side and is accessible through a lockable door with an integral step. A toggle switch is recessed into the door frame to control the baggage compartment lights. If inadvertently left on, the lights will turn off automatically when the door closes.

## 12. EXTERIOR

Distinctive exterior styling featuring polyurethane paint in a variety of colors is provided.

## 13. ADDITIONAL EQUIPMENT

- Two Telex Airman 850 Headsets
- FMS Interface Kit
- Pitot Covers
- Static Discharge Wick Covers
- Engine Inlet and Exhaust Covers
- Thrust Reverser Stow Locks
- Emergency Door Ground-Locking Pin
- Center Aisle Carpet Assembly
- Interior Cleaning Kit
- Six Umbrellas
- Cargo Net
- Jack Pad Adapters
- Main Landing Gear Jacking Adapters

## 14. EMERGENCY EQUIPMENT

- Fire Extinguisher in Cockpit and Cabin
- Individual Overwater Life Vests
- Crew and Passenger Oxygen
- Emergency Exit Lights
- Emergency Lighting Battery Packs
- First Aid Kit
- Flashlight (two D-cells)
- Water Barrier

## 15. DOCUMENTATION AND TECHNICAL PUBLICATIONS

- U.S. Standard Airworthiness Certificate FAA8100-2, Export Certificate of Airworthiness FAA8130-4, or Special Airworthiness Certificate FAA8130-7 as appropriate
- Weight and Balance Data Sheets
- Flight Manual
- Equipment List
- Weight and Balance Report
- Pilot's Operating Manual
- Abbreviated Procedures Checklist
- Interior Components Operations Manual
- Log Books (Aircraft and Engines)
- Avionics Wiring Booklet *
- Maintenance Manual (Airframe) *
- Illustrated Parts Catalog (Airframe) *
- Wiring Diagram Manual (Airframe) *
- Weight and Balance Manual *
- Interior Maintenance Manual *
- Component Maintenance Manual *
- Structural Repair Manual *
- Nondestructive Testing Manual *
- Illustrated Tool and Equipment Manual *

## 15. DOCUMENTATION AND TECHNICAL PUBLICATIONS (Continued)

- Maintenance Manual (Engine) **
- Illustrated Parts Catalog (Engine) **
- Service Bulletins and Service Letters (Engine) **
- Maintenance Manual (APU) ***
- Illustrated Parts Catalog (APU) ***
- Service Bulletins and Service Letters (APU) ***
- Passenger Information Cards
- Additional Miscellaneous Information Concerning Engine and Airframe Support

Cessna will provide Service Bulletins, Service Letters and manual revisions for documents published by Cessna for five years beginning from the start date of airframe warranty.

* These publications are provided on CD-ROM or DVD.
** These publications / revisions are provided directly from Pratt & Whitney Canada.
*** These publications / revisions are provided directly from Honeywell.

## 16. COMPUTERIZED MAINTENANCE RECORD SERVICE

Cessna will provide an online computerized maintenance record service for one full year from the date of delivery of a Citation Sovereign to the Purchaser.

This service will provide management and operations personnel with the reports necessary for the efficient control of maintenance activities. The service provides an accurate and simple method of keeping up with aircraft components, inspections, service bulletins and airworthiness directives while providing permanent aircraft records of maintenance performed.

Reports, available on demand, show the current status, upcoming scheduled maintenance activity and the history of the aircraft maintenance activity in an online format which is printable locally. Semi-annual reports concerning projected annual maintenance requirements, component removal history and fleet-wide component reliability are provided as part of the service.

Services are provided though a secure internet site requiring a computer with internet connectivity. A local printer is required to print paper versions of the online reports and documentation. If receiving these services through the internet is not feasible for an operation, a paper based service delivered through the U.S. mail is available at an additional fee.

## 17. LIMITED WARRANTIES

The standard Citation Sovereign Aircraft Limited Warranty which covers the aircraft, other than Pratt & Whitney Canada (P&WC) engines and associated engine accessories and the Honeywell auxiliary power unit (APU) and associated APU accessories which are separately warranted, is set forth below. Cessna specifically excludes vendor subscription services and the availability of vendor service providers for Optional, and Customer Requested Equipment (CRQ) from Cessna's Limited Aircraft Warranty. Following Cessna's Limited Warranty, the engine and engine accessory warranty of P&WC and the APU and APU accessory warranty of Honeywell is set forth. All warranties are incorporated by reference and made part of the Purchase Agreement. All warranties are administered by Cessna's Citation Warranty Department.

### 17.1 Cessna Citation Sovereign Limited Warranty (Limited Warranty)

Cessna Aircraft Company (Cessna) expressly warrants each new Citation Sovereign Aircraft (exclusive of engines and engine accessories supplied by P&WC and APU and APU accessories supplied by Honeywell which are covered by their separate warranty), including factory-installed avionics and other factory-installed optional equipment to be free from defects in material and workmanship under normal use and service for the following periods after delivery:

(a) Five years or 5,000 operating hours, whichever occurs first, for Aircraft components manufactured by Cessna;

(b) Five years or 5,000 operating hours, whichever occurs first, for Honeywell standard avionics;

(c) Two years for all other Standard Avionics;

(d) One year for all Optional Avioinics;

(e) One year for Actuators, ACMs, Brakes, GCUs, Oleos, Starter Generators, Valves, Windshields, and Vendor items including engine accessories supplied by Cessna unless otherwise stated in the Optional Equipment and Selection Guide;

(f) One year for Customer (CRQs), Interior Components, Interior Furnishings, and Paint;

## 17. LIMITED WARRANTIES (Continued)

Any remaining term of this Limited Warranty is automatically transferred to subsequent purchasers of the aircraft.

Cessna's obligation under this Limited Warranty is limited to repairing or replacing, in Cessna's sole discretion, any part or parts which: (1) within the applicable warranty period and 120 days of failure, (2) are returned at the owner's expense to the facility, where the replacement part is procured, whether through Cessna Service Parts & Programs or a Cessna-owned Citation service facility or a Citation service facility authorized by Cessna to perform service on the aircraft (collectively "Support Facility"), (3) are accompanied by a completed claim form containing the following information: aircraft model, aircraft serial number, customer number, failed part number and serial number if applicable, failure date, sales order number, purchased part number and serial number if applicable, failure codes, and action codes, and (4) are found by Cessna or its designee to be defective. Replacement parts must be procured through a Support Facility and are only warranted for the remainder of the applicable original aircraft warranty period. A new warranty period is not established for replacement parts. The repair or replacement of defective parts under this Limited Warranty will be made by any Cessna-owned Citation service facility or a Citation service facility authorized by Cessna to perform service on the aircraft without charge for parts and/or labor for removal, installation, and/or repair. All expedited freight transportation expenses, import duties, customs brokerage fees, sales taxes and use taxes, if any, on such warranty repairs or replacement parts are the warranty recipient's sole responsibility. (Location of Cessna-owned and Cessna-authorized Citation service facilities will be furnished by Cessna upon request.)

This Limited Warranty applies to only items detailed herein which have been used, maintained, and operated in accordance with Cessna and other applicable manuals, bulletins, and other written instructions. However, this Limited Warranty does not apply to items that have been subjected to misuse, abuse, negligence, accident, or neglect; to items that have been installed, repaired, or altered by repair facilities not authorized by Cessna; or to items that, in the sole judgment of Cessna, have been installed, repaired, or altered by other than Cessna-owned service facilities contrary to applicable manuals, bulletins, and/or other written instructions provided by Cessna so that the performance, stability, or reliability of such items are adversely affected. Limited Warranty does not apply to normal maintenance services (such as engine adjustments, cleaning, control rigging, brake and other mechanical adjustments, and maintenance inspections); or to the replacement of service items (such as brake linings, lights, filters, de-ice boots, hoses, belts, tires, and rubber-like items); or to normal deterioration of appurtenances (such as paint, cabinetry, and upholstery), corrosion or structural components due to wear, exposure, and neglect.

**WITH THE EXCEPTION OF THE WARRANTY OF TITLE AND TO THE EXTENT ALLOWED BY APPLICABLE LAW, THIS LIMITED WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, IN FACT OR BY LAW, APPLICABLE TO THE AIRCRAFT. CESSNA SPECIFICALLY DISCLAIMS AND EXCLUDES ALL OTHER WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THE AFOREMENTIONED REMEDIES OF REPAIR OR REPLACEMENT ARE THE ONLY REMEDIES UNDER THIS LIMITED WARRANTY. CESSNA EXPRESSLY AND SPECIFICALLY DISCLAIMS ALL OTHER REMEDIES, OBLIGATIONS, AND LIABILITIES, INCLUDING, BUT NOT LIMITED TO, LOSS OF AIRCRAFT USE, LOSS OF TIME, INCONVENIENCE, COMMERCIAL LOSS, LOSS OF PROFITS, LOSS OF GOODWILL, AND ANY AND ALL OTHER CONSEQUENTIAL AND INCIDENTAL DAMAGES. CESSNA NEITHER ASSUMES NOR AUTHORIZES ANYONE ELSE TO ASSUME ON ITS BEHALF ANY FURTHER OBLIGATIONS OR LIABILITIES PERTAINING TO THE AIRCRAFT NOT CONTAINED IN THIS LIMITED WARRANTY. THIS LIMITED WARRANTY SHALL BE CONSTRUED UNDER THE LAWS OF THE STATE OF KANSAS AND ANY DISPUTES AND/OR CLAIMS ARISING THEREFROM SHALL BE EXCLUSIVELY RESOLVED IN THE STATE AND/OR FEDERAL COURTS LOCATED IN WICHITA, KANSAS. THE PARTIES HERETO CONSENT TO PERSONAL JURISDICTION IN THE FORUM CHOSEN.**

### 17.2 New Engine Warranty

The following is an outline of the Pratt & Whitney Canada (P&WC), warranty for new PW306C engines.

P&WC warrants that at the time of delivery all parts of a new engine comply with the relevant specification and

## 17. LIMITED WARRANTIES (Continued)

are free from defects in material and/or manufacturing workmanship.

This warranty shall take effect immediately upon delivery of the engine to the original operator, either installed in an aircraft or delivered as a spare, and shall remain in force until the expiration of 3,000 engine operating hours (EOH) or Five (5) years, whichever occurs first. Notice of warranty defect must be provided to P&WC within 30 days of the occurrence, and P&WC reserves the right to refuse any warranty claim received more than 180 days after the removal from operation of any engine or engine part.

### Application

This warranty is applicable only to engines operated on non-military aircraft used for commercial, corporate, or private transportation service.

### Coverage

P&WC will repair or replace any parts found to be defective due to a defect in material and/or manufacturing workmanship (including resultant damage to the engine) within 3,000 EOH or 5 years, whichever occurs first. P&WC will pay reasonable engine removal and reinstallation costs and reasonable transportation costs (excluding insurance, duties, customs brokerage charges and taxes) to and from a facility designated by P&WC, Warranty Administration.

### Extended Coverage

After expiration of new engine warranty, P&WC will provide commercial support to assist an operator in the event of extensive damage to an engine resulting from a chargeable defect. This maximum event cost will be based on total engine hours and cycles run since new, or since last overhaul, adjusted for engine age, as well as environmental and operating conditions. P&WC reserves the right to cancel or change this extended coverage at any time.

### Operator's Responsibility

The operator is responsible for operating and maintaining the engine in accordance with P&WC's written instructions. Any warranty work performed on the engines must be carried out at a facility designated by P&WC, Warranty Administration. P&WC shall not be responsible for defects or damages resulting from improper use, improper maintenance, normal wear, accident or foreign object damage (FOD).

### Limitations

Other terms and conditions apply to the warranty and extended engine service policy outlined above. A complete copy of the warranty for new engines and extended engine service policy will be available from P&WC, Warranty Administration. In no event shall P&WC be responsible for incidental or consequential damages.

For complete information on how this warranty may apply and for more complete warranty details, please write to:

Manager, Warranty Administration (01RD4)
Pratt & Whitney Canada
1000 Marie Victorin
Longueuil, QC J4G 1A1
Canada

### 17.3 Summary of Honeywell APU Warranty

The following is an outline of the Honeywell warranty for the new RE100[CS] APU.

Each RE100[CS] APU sold for installation as original equipment on new aircraft will, at the time of delivery to the aircraft operator, be free from defects in material and workmanship and shall conform to the applicable specifications. Warranty shall expire after five (5) years or 2,500 APU operating hours, whichever occurs first.

The above APU warranty is provided as a general description only. Specific terms and conditions are available through Honeywell (Garrett Division) or Cessna.

For complete information on how this warranty may apply and for more complete warranty details, please write to:

Honeywell Engines
Post Office Box 29003
Phoenix, Arizona 85038-9003

## 18. CITATION SOVEREIGN CREW TRAINING AGREEMENT

Training for one (1) Citation Sovereign crew will be furnished to First Retail Purchaser (hereinafter called the "Purchaser"), subject to the following:

1. A crew shall consist of up to two (2) licensed pilots with current private or commercial instrument and multi-engine ratings and a minimum of 1,500 hours total airplane pilot time and up to two (2) mechanics with A&P licenses or equivalent experience.
2. Training shall be conducted by Cessna or by its designated training organization.
   a. A simulator shall be utilized which is FAA certified to provide training for the CE-680 FAA type rating.
   b. In lieu of a model specific simulator, training may be provided in the most appropriate type simulator available capable of accomplishing the FAA type rating, with differences training provided.
   c. Additional training as requested by the Purchaser, shall be conducted in the Purchaser's aircraft.
   d. Location of training to be Wichita, Kansas, or Farnborough, United Kingdom* unless mutually agreed otherwise. The organization conducting the training is hereinafter called the "Trainer."

      * A European Price Differential charge will apply to all training received at the Farnborough, United Kingdom facility.
3. Training furnished shall consist of the following:
   a. Flight training to flight proficiency in accordance with Trainer's standards aimed toward type certification of two (2) Captains under applicable Federal Air Regulations not to exceed five (5) total hours for the two (2) pilots.
   b. Flight simulation training to simulator proficiency in accordance with Trainer's standards but not to exceed fifty (50) total hours for both pilots.
   c. Ground School training for each pilot and theoretical classroom instruction for each mechanic in accordance with Trainer's standards.
4. Purchaser shall be responsible for:
   a. Transportation of crew to and from training site and for living expenses during training.
   b. Providing an interpreter during the course of training for any of Purchaser's crew not conversant with the English language.
   c. Payment to Trainer for additional simulator or flight training beyond that required to attain proficiency in accordance with Trainer's standards for the course in which the pilot is enrolled.
   d. All aircraft required for flight training as well as all landing fees, fuel costs, aircraft maintenance and insurance and all other direct costs of operation, including applicable taxes required in connection with the operation of said aircraft during such flight training.
   e. Payment to Trainer for a European Price Differential in the event training is conducted at Trainer's Farnborough facility.
   f. Extra charges, if any, for scheduling pilots in separate training classes.
   g. Reimbursing to Seller the retail rate for training in the event of training before actual sale/delivery, if sale/delivery is cancelled.
   h. Due to TSA regulations, all current United States citizens must present a current United States passport before training will be able to commence.
5. Seller or Trainer shall schedule all training, furnish Purchaser schedules of training and endeavor to schedule training at a convenient time for Purchaser. A cancellation fee of Two Hundred Dollars ($200) will be paid by Purchaser if crew fails to appear for scheduled training, except for reasons beyond its reasonable control, unless Purchaser gives Seller written notice of cancellation received at Wichita, Kansas, at least seven (7) days prior to scheduled training. In the event of such cancellation Seller shall reschedule training for the next available class.
6. Neither Seller nor Trainer shall be responsible for the competency of Purchaser's crew during and after training. Trainer will make the same efforts to qualify Purchaser's crew as it makes in training of other Citation Sovereign crews; however, Seller and Trainer cannot guarantee Purchaser's crew shall qualify for any license, certificate or rating.
7. Neither Seller nor Trainer shall be responsible for any delay in providing training due to causes beyond its or their reasonable control.
8. All Training furnished to Purchaser under the Agreement will be scheduled to commence no earlier than three (3) months prior to delivery and will be completed within twelve (12) months after delivery of the Aircraft unless mutually agreed otherwise.

Signature of the Purchaser to the Purchase Agreement to which this Training Agreement is attached as a part of the Specification and Description shall constitute acceptance by Purchaser of the foregoing terms and conditions relative to training to be furnished by Seller. Purchaser agrees that Seller can provide Purchaser's name and address to the training organization for the purpose of coordinating training.

Citation Marketing Cessna Aircraft Company, P.O. Box 7706, Wichita, Kansas 67277-7706, Telefax 316-517-6640