

ANC23FA008

OPERATIONAL FACTORS/HUMAN PERFORMANCE

Attachment 12

Guardian C-90 Standard Operating Procedures Manual [Excerpts]

November 11, 2023



**C90 Standard Operations
Procedures**

This Manual is current
through Revision – 3

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Guardian Flight

King Air BE-90 Standard Operating Procedures

Flight Deck Discipline

Sterile cockpit:

- 1) Guardian Flight defines “critical phase of flight” as any time the engines are running on the ground, the aircraft is moving on the ground, take-off, landing and flight below 10,000 feet excluding cruise.
- 2) Guardian Flight shall not require, nor may any flight crewmember perform any duties during a critical phase of flight except those duties required for the safe operation of the aircraft.
- 3) No flight crewmember may engage in, nor may any PIC permit, any activity during a critical phase of flight which could distract any flight crewmember from the performance of his or her duties or which could interfere in any way with the proper conduct of those duties.
- 4) It is the responsibility of the PIC to brief medical team members on the definition of a sterile cockpit and the associated procedures if they appear to be unfamiliar with this policy.

Maintaining outside vigilance:

- 1) It is the PIC's responsibility to maintain outside vigilance anytime the aircraft's engines are running.
- 2) It is the PIC's responsibility to maintain outside vigilance anytime the aircraft is operating in VMC flight conditions regardless of the type of flight plan the PIC is operating under.

Use of music players:

- 1) Shall not be used during any critical phase of flight.
- 2) Shall not be used at a volume that would interfere with ATC communications.

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King Air BE-90 Standard Operating Procedures

Checklist Philosophy

Use of a company provided checklist is mandatory for every flight. The pilot will accomplish the steps required at each stage of flight following a flow check and then the pilot will use the checklist to verify that all steps have been properly accomplished. The pilot may deviate from the checklist in the interest of safety or to meet the demands of an abnormal situation and/or emergency; however caution must be exercised. The checklist is not all-inclusive and it does not address all aspects of flying the aircraft. The pilot is responsible for knowing the use of the different aircraft systems and how they interact.

When a PIC and SIC crew is being utilized the “Do-Verify” method will be used. In an emergency situation the “Challenge-Do-Verify” method should be used.

Emergency situation checklist philosophy:

- 1) Ground operations:
 - a. The memory items will be completed. With the aircraft stopped, the appropriate checklist will be completed; then advise ATC of your situation.
- 2) Flight operations from the surface to 1500’ AGL:
 - a. Fly the aircraft. Complete the memory items. Fly the aircraft to at least 1500’ AGL prior to starting and completing the appropriate checklist. Declare the emergency or situation to ATC and if appropriate advise:
 - i. Nature of the emergency
 - ii. Souls on board
 - iii. Fuel remaining
 - iv. Intentions
 - v. Request crash/fire/rescue (if applicable).
- 3) Flight operations above 1500’ AGL:
 - a. Fly the aircraft. Complete memory items. Complete the appropriate checklist. Advise ATC of your situation and declare an emergency if applicable.

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In-Flight Diversion

In-flight diversions may happen at any time for a multitude of reasons. It is important to slow down the decision process and be deliberate when a diversion has to be made to ensure that all normal and/or abnormal pre-flight duties pertaining to an arrival airport are completed. If a patient is on-board and an alternate airport is required due to weather conditions, make all attempts to arrange alternates with Dispatch prior to departure. If a patient is on board consult with medical team as to a suitable alternative destination for the patient that is in compliance with the FAR's and GOM.

Procedure for an in-flight diversion without a patient onboard:

- 1) Complete all checklists and/or procedures per the FAR's and AFM
- 2) Confirm fuel on-board
- 3) Ensure aircraft will be within performance limitations
- 4) Flight duty time may be exceeded due to circumstances beyond the pilot's control (i.e. weather, patient condition, ATC delays, etc.), but the Director of Operations must be notified via email within 24 hours
- 5) Inform ATC of your need to divert and that you are now a lifeguard flight, if applicable
- 6) Set NAV's and establish aircraft on course per ATC instructions
- 7) Obtain weather at your diversion destination as soon as practical
- 8) Keep the medical team informed
- 9) Contact Communications with an updated destination and ETA

Procedure for an in-flight diversion with a patient onboard:

- 1) Complete all checklists and/or procedures per the FAR's and AFM;
- 2) Consult with medical team as to a suitable alternative destination for the patient
 - a. Contact ATC and navigate the aircraft as needed to ensure the safety of the flight;
- 3) Confirm fuel on-board;
- 4) Obtain weather at your diversion destination as soon as practical
- 5) Ensure aircraft will be within performance limitations;
- 6) Set NAV's and establish aircraft on course per ATC instructions
- 7) Contact Communications and inform them of the diversion with an ETA
- 8) Update medical team.

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King Air BE-90 Standard Operating Procedures

Normal Operations Flows

Originating:

<u>ORIGINATION (R->L, Each Shift)</u>	
POH, QRH, EFB	Check
Medical O2	≥1200 PSI, Valve A/R
Instrument Emergency Lights	On
Voltmeter	
-Batt	≥23V
Circuit Breakers	In
Copilot Mic Switch	Normal
Cabin O2	As Required
Cabin Temp Mode	Off
Vent Blower	Auto
Bleed Valves	Open
Rudder Boost	On
E-Elevator Trim	On
Flaps	Up
Main EFIS	Off
Condition Levers	Fuel Cutoff
Propeller Levers	Feather
Power Levers	Idle
Elevator Trim	Set to zero
Yaw & Aileron Trim	Note Position
Landing Gear Handle	Down
BCN/NAV lights	On
All other lights	Off
Auto Feather	Off
Pilot Mic Switch	Normal
Eng Anti-Ice	On
All other switches	Off

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King Air BE-90 Standard Operating Procedures

Preflight:

<u>PREFLIGHT (L-R, every flight)</u>	
Parking Brake	Set
Control Locks	Remove
* Fuel System Checks	Complete
Battery Switch	On
Fuel quantity	Check
Hydraulic Fluid Sensor	Push for 5 seconds
Gear Warn	Press to Test
Annunciator Panel	Press to Test
Stall Warning	Press to Test
BUS Ties Switch	Close, Warning Light Off
All Lights	On
Ice Protection	Hot 5 On
Flaps	Down (once per shift)
Exterior Preflight	Check Lights and Ice
Lights except Nav/BCN	Off
Ice Protection	Hot 5 Off
Battery Switch	Off
Exterior Preflight	Complete

Exterior:

<u>EXTERIOR PREFLIGHT (Items required every flight)</u>	
Tie-down & Chocks	Remove
Wing & Nacelle Tanks	Check qty; Caps secure
Engine Oil	Check qty; Caps secure
Nose Gear	Check
Landing Gear	Check

Guardian Flight

King Air BE-90 Standard Operating Procedures

Before Start:

<u>BEFORE ENGINE STARTING</u>	
Parking Brake	Confirm Set
Dispatch	Call & Receive Release
Cabin Door & Net	Secure
Boost Pumps	On
Battery Switch	On
Bus Ties	Man Close
Lights	Nav/Beacon On
Power/Props/Cond	Idle / Forward /Cutoff
Fuel Caps	Secure
Props	Clear

Engine Start¹:

<u>STARTING ENGINE</u>	
Timer	Start
Ignition & Engine Start Switch	Engage
- [IGNITION ON] "Ignition"; N1 increasing "Rotation"; ...	
Oil press rise "Oil pressure"; N1 > 12% "Stable above 12"	
Condition Lever	Low Idle
- "Fuel Flow"; ITT rise < 10 seconds "Light off"	
.. ITT monitor for overtemp;	
Ignition & Engine Start Switch	N1>51%...Off
PROP > 1000 then	High Idle
Generator for Engine Started	Reset, Then On
Loadmeter for Engine Started	< 40% Before Cross-Start
Current Limiter Check	COMPLETE
Repeat on opposite engine	

¹ Engine starts should be alternated; starting with the left engine on the first leg of the day

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King Air BE-90 Standard Operating Procedures

After Start¹:

<u>AFTER ENGINE START</u>	
Check loadmeter, Conditioner	N1% to spec
Transfer Pumps	Auto
Crossfeed	Auto
Inverter	Odd/Even
Electrical System Test	Complete
Avionics Master	On
EFIS Aux Power	On, tap down to test
EFIS - ON	On
Cabin Pressurization	Cruise +1000 or Local +500
Environmentals	A/R
Bleed Air Valves	A/R
Blower	A/R
Check load meter, Conditioner	N1% to Spec
Instrument Emergency Lights	OFF

¹ Alternate Inverters between legs

Before Taxi:

<u>BEFORE TAXI</u>	
Seatbelts	On
ATIS / Clearance	Received
Passenger Briefing	Complete
Flight Instruments / Avionics	Set
Trim, Electric Trim	3 Set & Checked
Flaps	Up & Indicating
XPDR / GPS / ALT	Set
TAWS TEST	Complete
Annunciator Panel	Clear or Considered
Gyro and Pneumatic	Check
Crew	Confirm Ready
Taxi Clearance	Received

¹If aircraft is equipped with TAWS

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Taxi:

<u>TAXI</u>	
Foreflight GPS	Start Recording
Brakes	Check
*Gyros	Check
Flight Controls	Check

The following first flight of the day run-ups should be conducted in a suitable location:

- 1) EFIS System
- 2) Ice Protection A/R
- 3) Elevator Trim
- 4) Autopilot
- 5) Cabin Pressure
- 6) Overspeed Governor and Rudder Boost
- 7) Autofeather and Auto-Igniters

After Engine Start, Before Takeoff:

<u>AFTER ENGINE START, BEFORE TAKEOFF</u>	
EFIS Test	Complete
Ice Protection Checks	A/R
* Elevator Trim checks	Complete
Autopilot checks	Complete
Autopilot	Set for departure
- HDG mode armed, HDG bug aligned with runway	
- Pitch Command bars Up 8 Degrees	
* Cabin Pressure Check	Complete
Trim	3 Set & Checked
Flaps	Up
CBs, Electrics, Annunciators	Scan
Props	Man Feather, Full FWD
TOLD / NEWS / WANT	Review

¹TOLD: Takeoff and Landing Distance

²NEWS: Nav aids, Emergency Plan, Weather, SID

³WANT: Weather, Airfield, Notams, Threats

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Runway Items:

<u>BEFORE TAKEOFF</u>	
Medical Team	Confirm Ready
Auto Feather	Arm
Engine Anti-ice	A/R
Auto Igniters	Arm
Lights	A/R
Ice Protection	All On or 5 ON
Trim	Confirm 3 Set
Flaps	Confirm Up
Engine Gauges and Electrical	Scan
Annunciators	Clear or Considered

¹ 5 on = L Fuel Vent, R Fuel Vent, Stall Warn, L Pitot and R Pitot

Takeoff Call-Outs
"Two Off"
"Two On"
"On the Governors"
"Power Set"
"Airspeed Alive"
"80 knots Crosscheck"
"() knots Rotate"
"No more Usable Runway"
"Positive Rate"
"Gear Up"

After Takeoff or Missed Approach: (Runway Elevation up to 1500' AGL)

<u>AFTER TAKEOFF/ MISSED APPROACH</u>	
Power	Set
Landing Gear	Up
"Positive Rate, No More Usable RWY, Gear Up"	
Landing / Taxi Lights	Off "Lights Off"
Engine Instruments	Monitor "Temps & Torques"
Flaps	Up
Yaw Damper	On

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Cruise Climb: (1500'+ AGL)

<u>CRUISE CLIMB (>1500' AGL)</u>	
Climb Power	Max 695° or ≤ 1315τ (-21) Max 805° or ≤ 1520τ (-135)
Props	2000 RPM (-21) 1900 RPM (-135)
Engine Instruments	Monitor
Pressurization	Check

Cruise:

<u>CRUISE</u>	
Autofeather	Off
Cruise Power	Max 695° or ≤ 1315τ (-21) Max 805° or ≤ 1520τ (-135)
Props	1900 (-21), 16-1900 (-135)
Engine Instruments	Monitor
Pressurization	Check

Descent:

<u>DESCENT</u>	
Pressurization	Set
Weather	Check
Altimeter	Set
Descent Profile/Terrain Brief	Complete
Autofeather	Arm
Lights	A/R
Ice Protection	Set

¹ Recognition lights should be turned on when entering the terminal area or descending through 10,000 feet MSL whichever occurs first

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Aircraft System Checks

Aircraft run-ups should be completed on the first flight¹ of the day and it is recommended that they be conducted at a location where maintenance is available. The run-up flows are as follows:

First flight of the day does not necessitate that the run-ups be completed prior to the first leg of the day.

Fuel System Check:

FUEL SYSTEM CHECK (first flight of day)	
Battery Switch	On
- Firewall Shutoff Valves	Close
Battery Switch	Off
Hot Battery Bus Items	
-Crossfeed	Open, light on, close, light off
-Boost Pump X 2	On (listen for operation)
Battery Switch	On
- Master Warning & Caution	Clear
- Firewall Shutoff Valves	Open
- Annunciator Panel	Low fuel press light off
Crossfeed	Auto
(L)Boost Pump	Off
- Annunciator Panel	Low fuel light blink, crossfeed on
(L)Boost Pump	On
Reset Crossfeed	Closed then auto
Repeat with (R) BP	
Boost Pumps & Crossfeed	Off and close
Transfer Test Switch	Hold to left or right
(L/R)Transfer Pump Switch	Auto
- Annunciator Panel ¹	[L/R] no fuel xfer light blinks
(L/R)Transfer Pump Switch	Off
Repeat with opposite Transfer Pump	

¹ May not blink – successful test shows lights extinguish

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Current Limiter Check (every flight)

CURRENT LIMITER CHECK (every flight)	
After first engine start, Voltmeter	Verify 28V for side not started
After second engine start;...	
...Generator for 1st Engine start	Hold Reset. While holding verify 28V

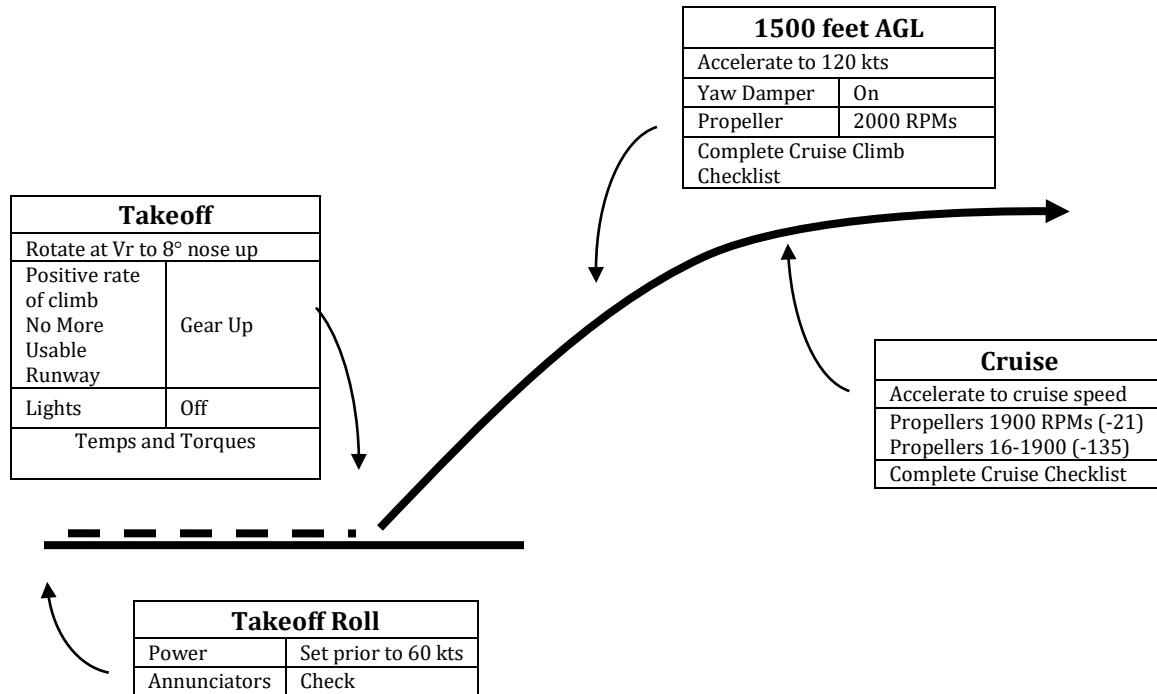
Electrical System Test (every flight)

ELECTRICAL SYSTEM TEST (every flight)	
Inverters	CHECK (105-120V, 380-420 Hz)
GEN Ties	OPEN
- Verify L GEN TIE & R GEN TIE lights on	
Voltmeter - TPL (27V), R&L Gen Bus (28V), Center (>24V)	
GEN Ties	NORMAL
- Verify L GEN TIE and R GEN TIE lights out	
Bus Sense Switch	TEST
- Verify L GEN TIE, GEN TIE, BAT TIE lights on	
Voltmeter - Center (0V), R&L Gen Bus (28V), TPL (27V)	
Bus Sense Switch	RESET
Voltmeter - TPL (27V), R&L Gen Bus (28V), Center (28V)	
- Verify L GEN TIE, R GEN TIE, BAT TIE lights out	
Voltmeter Selector Switch	SELECT TPL
Generator Load	Parallel within 10%

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Normal Takeoff Profile:



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Unusual Attitude Recovery:

- 1) If attitude is orientated above the horizon:
 - a. Power Levers – Max available
 - b. Flight “controls” - Pitch to horizon
 - c. Wings – Level
 - d. Power Levers – As needed to return aircraft to cruise
- 2) If nose is orientated below the horizon:
 - a. Power Levers - Idle
 - b. Wings – Level
 - c. Flight “controls” – Pitch to horizon
 - d. Power Levers – As needed to return aircraft to cruise

Steep Turn:

- 1) Airspeed – Stabilized between 150 kts and 160 kts
 - a. Approximately 700 ft-lbs torque
- 2) Flight director off
- 3) Stabilize aircraft on a reference heading and altitude
- 4) Increase power approximately 100 ft-lbs as aircraft is rolled into 45° bank
- 5) Trim as need to maintain altitude and a 45° ± 5° bank throughout the maneuver
- 6) Begin rolling wings level 20° before target heading
- 7) Reduce power 100 ft-lbs and re-trim for cruise flight
- 8) Criteria
 - a. ± 10 kts
 - b. ± 100 feet
 - c. ± 10° on rollout