



**SUPPLEMENTAL TYPE CERTIFICATE NUMBER SA11103SC
INSTALLATION OF SAFETY SYSTEMS FOR
BEECHCRAFT KING AIR 200 SERIES AIRPLANES**

**FAA APPROVED
AIRPLANE FLIGHT MANUAL SUPPLEMENT**

Airplane Serial No: _____

This supplement must be attached to the appropriate FAA Approved Airplane Flight Manual when the aircraft is modified in accordance with STC SA11103SC. The information contained herein supplements or supersedes the basic Airplane Flight Manual only in those areas listed herein. For limitations, procedures and performance information not contained in this supplement, consult the basic Beechcraft 200 Series Airplane Flight Manual, as applicable.

FAA APPROVED

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Dated: October 16, 2012

REFERENCE ONLY

AIRPLANE FLIGHT MANUAL SUPPLEMENT
FOR KING AIR 200 SERIES AIRPLANES WITH
CENTEX AEROSPACE SAFETY SYSTEMS CONVERSION

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INTRODUCTION

This supplement should be read carefully by the owner and the operator in order to become familiar with the operation of the airplane having now been modified by the installation of the CenTex Aerospace Safety Systems conversion. The new systems increase the level of operational safety by providing safety functions that were not previously available. Below is a list of the new systems and associated functions.

- Over-speed warning system – aural alert when V_{MO}/M_{MO} exceeded.
- Takeoff trim warning system – aural alert when elevator trim is not set properly for takeoff.
- Stall warning system ice mode – aural alert when stall is imminent due to ice accumulation on wings.
- Engine fire extinguisher system – extinguish fire in engine compartment.
- Emergency cabin lighting system – illumination of cabin during emergency situations
- Escape path markings – show pathway along the cabin floor to main door and emergency exit.

The terminology used in this supplement matches the terminology used in the basic AFM and POH. This includes the definitions of warnings, cautions, and notes. Also, you will find the format of limitations, procedures, and checklists herein match the AFM and POH format for B200 series airplanes.

End

COMPATIBLE MODIFICATIONS

It is up to the installer to determine whether any other STC-approved modifications are compatible with the CenTex Aerospace Safety Systems conversion.

End

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LIST OF EFFECTIVE PAGES

The list of effective pages shown below contains all current pages, with effective revision number or date. This list should be used to verify this supplement contains all of the applicable and required pages. When inserting revised pages into this supplement the List of Effective Pages should be updated, as well, to the corresponding new list.

Title Page	September 2012
1-1 thru 1-4	September 2012
2-1 thru 2-6	September 2012
3-1 thru 3-2	September 2012
3A-1 thru 3A-2	September 2012
4-1 thru 4-6	September 2012
5-1 thru 5-2	September 2012
6-1 thru 6-2	September 2012
7-1 thru 7-8	September 2012
8-1 thru 8-2	September 2012

LOG OF REVISIONS

Initial ReleaseOctober 16, 2012

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REFERENCE ONLY

The limitations shown in this section are approved by the Federal Aviation Administration and must be observed while operating Beechcraft King Air 200 series airplanes that have been modified by the CenTex Aerospace Safety Systems STC.

It is noted that not all of the information presented in this Supplement is changed from the basic Airplane Flight Manual or Pilot Operating Handbook information. This was done to aid the pilot in the retention of the changed limitations by presenting together changed and unchanged limitations that are relational. The changed information or value is identified either by a note or by simple underline.

AIRSPEED LIMITATIONS

SPEED	KCAS	KIAS	REMARKS
Maneuvering Speed, V_A	NC	NC	Do not make full or abrupt control movements above this speed.
Maximum Flap Extension/ Extended Speed, V_{FE} Approach Position – 40% Full Down Position – 100%	NC NC	NC NC	Do not extend flaps or operate with flaps in prescribed position above these speeds.
Maximum Landing Gear Operating Speed, V_{LO} Extension Retraction	NC NC	NC NC	Do not exceed or retract landing gear above the speeds given.
Maximum Landing Gear Extended Speed, V_{LE}	NC	NC	Do not exceed this speed with landing gear extended.
Air Minimum Control Speed V_{MCA}			This is the lowest airspeed at which the airplane is directionally controllable when one engine suddenly becomes inoperative and the other engine is at takeoff power. (See definition in Section I of the basic AFM or POH)
Hartzell Propellers.....	NC	NC	
McCaughey Propellers.....	NC	NC	
¹ STC SA2698NM...Flaps Up...	NC	NC	
Flaps Approach...	NC	NC	
² STC SA02130SE...Flaps Up	NC	NC	
Flaps Approach...	NC	NC	
Maximum Operating Speed V_{MO} M_{MO}	NC	NC <u>0.58 Mach</u> ³	Do not exceed this airspeed or Mach number in any operation.

NC-No change to original airspeed limitation. See basic AFM / POH.

1 Hartzell HC-D4N-3A/D9383K prop installed per Raisbeck Engineering STC SA2698NM-S.

2 Hartzell HC-E4N-3A/NC9208K prop installed per BLR Hartzell STC SA02130SE.

3 Except King Air 200T, 200CT, A200CT, B200T, and B200CT where M_{MO} is unchanged.

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POWER PLANT LIMITATIONS

Engine Model(s)PT6A-41 or PT6A-42 or PT6A-52 or PT6A-61

Engine Operating Limits:

Takeoff & Max Continuous Power	850 SHP	2230 FT-LBS	2000 RPM
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ICING LIMITATIONS

The limitations and information presented in this subsection have been changed from the basic Airplane Flight Manual and Pilot Operation Handbook. The changes are considered by the FAA to be essential in ensuring the safe operation of the airplane in icing conditions.

Minimum Ambient Temperature for Operation of Deicing Boots-40°C

Minimum Airspeed for Sustained Icing Flight 140 Knots

Sustained flight in icing conditions with flaps extended is prohibited except for approach and landing.

ENGINE ANTI-ICE shall be ON for operations in ambient temperatures of +5°C or below when flight free of visible moisture cannot be assured.

ENGINE ANTI-ICE shall be OFF for all takeoff and flight operations in ambient temperatures above + 15°C.

Takeoff is prohibited with any frost, ice, snow, or slush adhering to the wings, horizontal stabilizer, control surfaces, propeller blades, or engine inlet.

In icing conditions the airplane must be operated and its ice protection system used as described in the operating procedures section of this AFM Supplement. Where specific operational speeds and performance information have been established for such conditions, this information must be used.

WARNING

Severe icing may result from environment conditions outside of those for which the airplane is certificated. Flight in freezing rain, freezing drizzle, or mixed icing conditions (supercooled liquid water and ice crystals) may result in ice build-up on protected surfaces exceeding the capacity of the ice protection system, or may result in ice forming aft of the protected surfaces. This ice may not be shed using the ice protection systems, and may seriously degrade the performance and controllability of the airplane and an unsafe situation will likely result. It is the responsibility of the pilot to identify severe icing conditions and to exit such condition to ensure safe flight operations.

1. Severe icing conditions that exceed those for which the airplane is certificated shall be determined by the following visual cues. If one or more of these visual cues exists, immediately request priority handling from Air Traffic Control to facilitate a route or an altitude change to exit the icing conditions.
 - Extensive ice accumulation on the airframe and windshield in areas not observed to collect ice during light or moderate icing conditions.
 - Accumulation of ice on the upper surface of the wing, aft of the protected area (i.e., leading-edge boot).
 - Accumulation of ice on the engine nacelles and propeller spinners farther aft than observed during light or moderate icing conditions.
2. DO NOT USE THE AUTOPILOT in severe icing conditions or whenever:
 - Visual cues specified above exist.
 - Unusual aileron trim settings are required.
 - Autopilot trim warnings occur.

Note: an unsafe condition exists when the autopilot is engaged and the airplane handling characteristics are degrading due to ice accumulating on the airplane. The pilot will not be aware of this unsafe condition, which requires an immediate exit from icing conditions, if he/she is not manually flying the airplane.
3. All icing detection lights must be operative prior to flight into known or forecast icing conditions at night.

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SECTION 3 EMERGENCY PROCEDURES

CABIN EMERGENCY LIGHTING ACTIVATION

An emergency lighting system has been added to provide lighting in key areas of the passenger cabin in case there is an emergency situation, such as a loss of electrical power or when an evacuation of the aircraft is required. To manually activate the system, place the control switch located on the copilot instrument panel in the ON position. The emergency cabin flood lamps will illuminate the cabin areas near the emergency exit and door. Also, the system will automatically activate the emergency cabin flood lamps whenever the control switch is in the ARM position, and the aircraft experiences a horizontal deceleration of 2g's, or more.

EMERGENCY ESCAPE PATH

Photoluminescent markings have been installed on the cabin floor outlining the aisle and the location of the emergency exit door and cabin door. Under conditions of reduced visibility, such as a cabin filled with smoke, occupants can follow this marked escape path to the exit from the aircraft.

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SECTION 3
ABNORMAL PROCEDURES

No Changes
See basic Airplane Flight Manual / Pilot Operating Handbook

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PROCEDURES BY FLIGHT PHASE

NOTE

Refer to all applicable Supplements for flight phase procedures for optional equipment installed in the airplane. The procedures listed below are required for airplanes modified by the installation of the CenTex Aerospace Safety Systems STC.

PREFLIGHT INSPECTION

CABIN/COCKPIT

Add the following steps while Battery Switch is OFF.

- 1. Emergency Lighting Cabin Switch ON
- 2. Emerg Cabin Lt Control Switch ARM
- 3. Emergency Cabin Flood Lamps CHECK (illuminated)

Add the following step when Battery Switch is ON

- 4. Emergency Cabin Flood Lamps CHECK (not illuminated)

BEFORE ENGINE STARTING

Add the following steps after the Battery Switch is ON.

- 1. Left Power Lever ADVANCE TO AT LEAST 80% POSITION
- 2. Autofeather Switch ARM
- 3. Elevator Trim Warning System TEST
- 4. Elevator Trim Control SET FOR TAKEOFF
- 5. Autofeather Switch OFF
- 6. Left and Right Power Levers IDLE
- 7. Over-speed Aural Warning TEST

BEFORE TAKEOFF (RUNUP)

Add the following steps after the Surface Deice System check.

- 1. Stall Warning Ice Mode Annunciator ILLUMINATED
- 2. Stall Warning TEST
- 3. Stall Warning Ice Mode Annunciator PRESS (to select Normal Mode)

NOTE

The stall warning system must be in the Normal Mode during takeoff and initial climb-out. If a takeoff is conducting with the stall warning system in the Ice Mode, a misleading stall warning following lift-off will likely occur.

Add the following.

ENROUTE CLIMB

ICING CONDITIONS

- 1. Engine Anti-Ice CONFIRM ON
L & R ENG ANTI-ICE annunciators ILLUMINATED
- 2. Stall Warning Heat CONFIRM ON
- 3. Left and Right Fuel Vent Heat CONFIRM ON
- 4. Left and Right Pitot Heat CONFIRM ON
- 5. Windshield Anti-Ice CONFIRM NORMAL OR HI

At first sign of ice accretion on aircraft.

- 6. Surface Deice Switch SINGLE AND RELEASE (repeat as required)
- 7. Stall Warning Ice Mode Annunciator ILLUMINATED
- 8. Climb Power SET MAX CONT POWER (to expedite climb)
- 9. Airspeed 140 KNOTS MINIMUM AIRSPEED

CRUISE

Add the following.

ICING CONDITIONS

At first sign of ice accretion on aircraft.

- 1. Surface Deice Switch SINGLE AND RELEASE
- 2. Stall Warning Ice Mode Annunciator ILLUMINATED

Add the following.

OUTSIDE OF ICING CONDITIONS AND WINGS FREE OF ICE

- 1. Stall Warning Ice Mode Annunciator PRESS (to select Normal Mode)
- 2. Stall Warning Ice Mode Annunciator EXTINGUISHED

REFERENCE ONLY

BEFORE LANDING

Add the following steps:

If wings are free of ice:

1. Stall Warning Ice Mode Switch PRESS (to select Normal Mode)

If residual ice remains on wing boots:

2. Surface DeiceCYCLE
3. Stall Warning Ice Mode Annunciator ILLUMINATED
4. Approach Speed and Landing DistanceINCREASE

Increase Approach Speed by 15 knots and Landing Distance by 25%.

SHUT DOWN AND SECURING

1. Emerg Cabin Lt Switch OFF

Add the following step when exiting the cabin.

2. Emergency Cabin Light Power Switch OFF

OTHER PROCEDURES

ICING FLIGHT

Refer to Section 2 Limitations of this Supplement for limitations relating to icing flight. See the BEFORE TAKEOFF (RUNUP) and CRUISE checklists in this section for normal ground and in-flight procedures pertaining to flight in icing conditions.

At first sign of ice accretion on aircraft:

- Surface Deice Switch SINGLE AND RELEASE

TAKEOFF TRIM WARNING TEST

A warning system has been added that provides a constant tone aural alert in the cockpit when the elevator trim tab is not set within the acceptable range for takeoff and engine power is increased above approximately 80% N₁. The system should be tested for proper operation before the first flight of each day while conducting the BEFORE ENGINE STARTING procedure. To perform this test the trim warning system must first be activated by placing the Autofeather switch to ARM. Then the left power lever must be advanced past the 80% N₁ position. The system should now be tested by adjusting the elevator trim tab to a position outside of the takeoff range marked on the tab position indicator in both the nose up and the nose down directions. The aural alert should sound just as the tab position indicator moves outside of the takeoff range. The aural alert should be silent when the tab position is inside of the takeoff range.

When the power levers are advanced to initiate a takeoff and the aural alert sounds, immediately reduce power to idle and abort the takeoff. Do not takeoff when the elevator trim tab position is not set within the takeoff range.

OVER-SPEED WARNING TEST

A warning system has been added to the aircraft that provides a pulsing tone aural alert in the cockpit when the airspeed is greater than V_{MO} or the Mach number is greater than M_{MO} . When the alert is heard the pilot must take immediate action to reduce airspeed below the maximum operating limit. The system should be tested while conducting the BEFORE ENGINE STARTING procedure by simply selecting the TEST position on the OVERSPEED WARNING TEST switch. A loud pulsing tone should sound if the system is functioning properly.

STALL WARNING SYSTEM OPERATION

An ICE MODE feature has been added to the stall warning system. The ice mode is automatically activated when the Surface Deice system is selected by the pilot. Illumination of the STALL WARNING ICE MODE annunciator indicates the stall warning system is operating in the ice mode. After exiting icing conditions and when the aircraft is free of ice, transfer the stall warning system to the normal mode by pressing and releasing the STALL WARNING ICE MODE annunciator.

CABIN EMERGENCY LIGHTING SYSTEM OPERATION

An emergency lighting system has been added to provide supplemental lighting in the passenger cabin around the emergency exit door and cabin door. Two switches – a cabin switch located in the ceiling and a control switch located in the copilot instrument panel – control operation of the system.

When entering the cabin during the preflight inspection the charge level of the emergency lighting system battery should be verified. To do this, place the cabin switch to ON with the aircraft battery switch OFF. The emergency cabin flood lamps should illuminate. If the lamps do not illuminate, the emergency lighting system battery has been discharged or there is a malfunction in the system.

Before taxiing, place the cabin switch to ON and the control switch to ARMED. This is the switch configuration for normal taxiing and flight operations.

When shutting down and exiting the airplane, place both the control switch and the cabin switch to OFF.

It is acceptable to utilize the flood lamps to illuminate the cabin whenever needed, such as for boarding or to charge the photoluminescent escape path markings. Limit the time the flood lamps are being powered by the emergency lighting system battery to no more than 20 minutes to ensure the battery will have remaining capacity in case of an emergency.

CHARGING EMERGENCY ESCAPE PATH MARKINGS

Photoluminescent markings have been installed on the cabin floor outlining the aisle and the paths to the emergency exit door and cabin door. The markings must be charged during preflight operations by illuminating the cabin with either or a combination of sunlight through the cabin windows, the cabin lights, or the emergency cabin flood lamps when any part of that flight will be conducted in darkness. The table below lists the minimum charging time to ensure the markings will perform as intended throughout the respective flight.

Required Charging of Emergency Escape Path Markings

Charging Time	Duration of Acceptable Luminance
5 minutes	1.5 hours
10 minutes	2.5 hours
20 minutes	4 hours
30 minutes	5 hours

SECTION 5
PERFORMANCE

No Changes

See basic Airplane Flight Manual / Pilot Operating Handbook

REFERENCE ONLY

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SECTION 6
WEIGHT AND BALANCE

No Changes
See basic Airplane Flight Manual / Pilot Operating Handbook

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INTRODUCTION

New safety systems are installed under the Safety Systems conversion. These systems provide safety functions that are required for airplanes certificated in the Commuter category. Also, the stall warning system has been modified and will now provide accurate and reliable warning when the airplane is operated in icing conditions. The result is a King Air 200 series airplane that operates at a higher level of safety.

Below is a list of the added functions:

- Takeoff Trim Warning
- Over-Speed Warning
- Engine Fire Extinguisher
- Stall Warning Ice Mode
- Emergency Cabin Lighting
- Escape Path Markings

This section describes the functionality of these systems and the pertinent design details. It is imperative that the pilot be knowledgeable of this information so he/she can fully utilize these new features and thereby realize the added safety they provide. For information on systems other than those described in this section see the applicable King Air 200 series basic AFM or Pilot Operating Handbook.

TAKEOFF TRIM WARNING

The Safety Systems conversion adds a takeoff trim warning system. The system detects if the elevator trim tab has not been properly set before takeoff and sounds a warning when the pilot initiates a takeoff. The pilot should respond to the warning by immediately aborting the takeoff run.

The trim warning system utilizes the existing elevator tab position indicator to determine tab position. A micro switch actuated by the tab position indicator activates the warning horn when the tab position is outside of the approved range for takeoff. The horn emits a constant, mid-frequency tone. It is located beneath the lower edge of the pilot's instrument panel next to the console. The micro switch is mounted to the console beneath the elevator trim wheel.

Power to the elevator trim warning system comes through the Autofeather system switch when it is in the ARMED position. Power must also pass through the weight-on-wheels switch and the 90% N_1 switch associated with the left engine power lever. The system becomes fully operational once the Autofeather system is ARMED and the left power lever is advanced to the 90% N_1 , or higher, position. The takeoff trim warning system is deactivated through the weight-on-wheels switch after liftoff so no misleading warnings occur during flight.

The warning system should be tested before the first flight of each day, as specified in Section 4 Normal Procedures.

OVER-SPEED WARNING

The Safety Systems conversion adds an over-speed warning system. The aural warning automatically alerts the pilot whenever airspeed is greater than V_{MO} or Mach number is greater than M_{MO} . This system provides a backup to the function provided by the maximum allowable airspeed pointer on the pilot and copilot airspeed indicators. The pilot should respond to a warning by immediately taking the necessary action to reduce airspeed.

The system consists of a pressure sensing switch, an aural warning device, and a test switch. The pressure switch is connected to the pitot and static system lines feeding the pilot's airspeed indicator. The pressure switch activates the aural warning whenever V_{MO} or M_{MO} is exceeded. The warning is a pulsing, high-frequency tone. The aural warning device is located beneath the glareshield in front of the pilot. Power to the system is fed from the main electrical bus through a five (5) amp circuit breaker labeled O/S WARN located in the Warning section of the copilot circuit breaker panel. The pressure sensing switch is mounted inside the aft end of the console. The pressure lines are routed through the console and upward behind the pilot's instrument panel where they connect to the pitot-static system lines.

The system should be tested when conducting the BEFORE ENGINE STARTING procedure by selecting TEST on the OVERSPEED WARN TEST switch (See FIGURE 7-1).

FIGURE 7-1
OVERSPEED WARNING TEST SWITCH

**EMERGENCY ESCAPE PATH MARKINGS**

The Halo 250 conversion adds photoluminescent markings that highlight the escape path along the floor to the emergency exit door and cabin door. Charging can be accomplished with sunlight or with the interior lights or with the emergency flood lamps. See Section 4 Normal Procedures for the charging time.

ENGINE FIRE EXTINGUISHER

The Safety Systems conversion requires installation of the optional engine fire extinguisher system. Information regarding this system is contained in the basic Airplane Flight Manual or Pilot Operating Handbook.

STALL WARNING ICE MODE

The King Air 200 series stall warning system does not have the capability to adjust for the effect that icing has on stall speed. Ice accretion causes the wing to stall at a lower angle-of-attack and can result in a 15% to 20% increase in stall speed. The Safety Systems conversion adds additional capability so a reliable and accurate stall warning is available in icing conditions. This new stall warning functionality is called the "ice mode".

The stall warning system will activate the warning horn when the output of the lift transducer reaches a preset voltage. The system has three different voltage settings, one for each flap position; which enables it to provide accurate warning at each flap setting. The Halo 250 conversion adds components to the stall warning system that allow three different preset voltages to become active when it is in the ice mode. These voltage settings are uniquely selected so that the effect of ice on the wings is considered. With wing flaps up, the stall warning activates at approximately 20 knots higher airspeed in the ice mode.

The initial sound of the stall warning horn in the ice mode is a 1-Hertz pulsing tone. If angle-of-attack increases further, the duration of the pulsing increases until the tone becomes continuous. The pilot should respond to the initial warning by pitching the aircraft nose down until the warning ceases, leveling the wings to orient lift vector for recovery, and adding power to assist in the recovery. The pilot's failure to respond to a stall warning can result in a stall and subsequent loss of control of the airplane.

Switching to the ice mode occurs automatically when the pilot selects either SINGLE or MANUAL on the Surface Deice switch. The STALL WARNING ICE MODE annunciator, which is located in the glareshield in front of the pilot, will illuminate whenever the ice mode is active (See FIGURE 7-2). The ice mode will stay active until it is manually deactivated by the pilot pressing the illuminated annunciator. This should be done when the airplane is outside of icing conditions and is free of ice. Pressing the annunciator when it is extinguished has no effect. Note the stall warning heat must be operating when flying in icing conditions to keep the lift transducer free of ice.

When testing the stall warning system, the mode in operation when the test is performed is the mode that is tested. A constant tone will be heard if the system is functioning properly. The new system components are located inside the aft end of the console.

FIGURE 7-2
STALL WARNING ICE MODE ANNUNCIATOR**CABIN EMERGENCY LIGHTING**

The Safety Systems conversion adds a cabin emergency lighting system. It provides supplemental lighting in the cabin around the emergency exit door and cabin door. The system has two LED flood lamps located in the cabin ceiling that are powered by a dedicated battery pack, which is installed under the floor just forward of the cabin door.

The system automatically turns on the flood lamps in the event of a 2-g, or greater, deceleration or a loss of power on the main electrical bus. This keeps the cabin from becoming unlighted during such critical events. Additionally, the lamps can be used for lighting the cabin when boarding or to charge the photoluminescent escape path markings.

Two switches operate the system and provide required functionality. A cabin switch located next to the aft flood lamp connects the battery pack to the system (See FIGURE 7-3). A control switch located in the copilot instrument panel arms automatic operation or provides manual operation of the flood lamps from the cockpit (See FIGURE 7-4). Power to charge the battery pack is fed from the main electrical bus through a five (5) amp circuit breaker labeled EMERG CABIN LT in the copilot circuit breaker panel. The battery pack and relays are located beneath the cabin floor at approximately Fuselage Station 270.

Two amber indicator lights located in the copilot instrument panel above the control switch (See FIGURE 7-5) warn the pilot when the system switches are not set as required for taxi and takeoff operations. The amber indicator lights will be extinguished when the cockpit control switch is ARMED and the cabin switch is ON. Note these are the normal positions for taxi and flight operations.

When exiting the airplane both the control switch and the cabin switch should be placed in the OFF position. If left on, a timer prevents the battery from becoming totally discharged by disconnecting the battery pack from the system after 10 minutes. Selecting OFF on the cabin switch reconnects the battery pack and resets the timer. Note recharging of the battery occurs automatically whenever the airplane battery switch is ON and the main electrical bus is powered by either the generators or an external power source.

The level of charge of the emergency lighting system battery should be checked before the first flight of each day as described in Section 4 NORMAL PROCEDURES. If the lamps do not illuminate when performing this procedure, the battery is discharged or a malfunction has occurred. Also, the battery pack should be inspected at each maintenance Phase inspection for general condition and the time-in-service for the batteries. The batteries must be replaced after 36 calendar months from the time they were installed.

FIGURE 7-3
EMERGENCY CABIN LIGHTING SYSTEM
CABIN SWITCH & FLOOD LAMP



FIGURE 7-4
EMERGENCY CABIN LIGHTING SYSTEM
COCKPIT CONTROL SWITCH



FIGURE 7-5
EMERGENCY CABIN LIGHTING
SYSTEM WARNING LIGHTS



REFERENCE ONLY

SECTION 8
HANDLING, SERVICING, & MAINTENANCE

No Changes except as shown below.
See basic Airplane Flight Manual / Pilot Operating Handbook

CABIN EMERGENCY LIGHTING SYSTEM

The battery pack that powers the cabin emergency lighting system must be replaced every 36 calendar months.

End

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