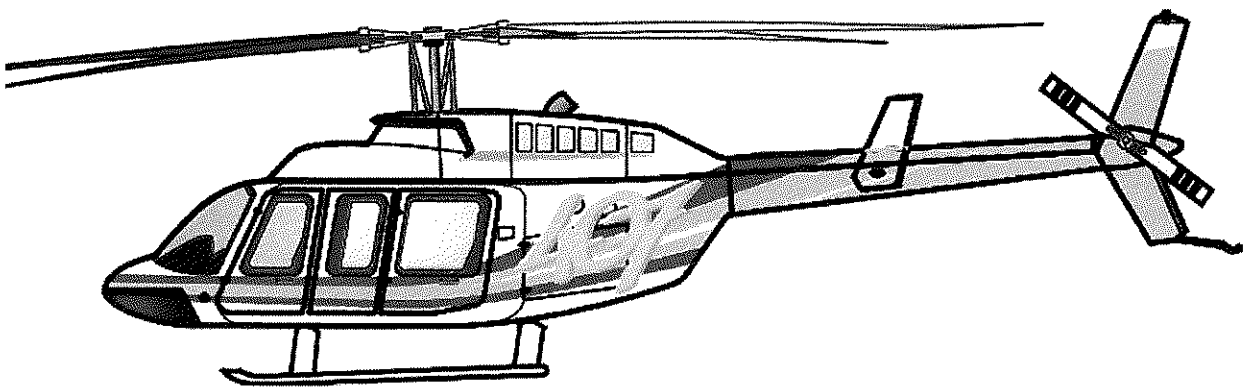
AIR COMM CORPORATION
3330 AIRPORT ROAD
BOULDER, CO. 80301

DOCUMENTS FOR THE INSTALLATION OF THE BELL MODEL 407 OEM CABIN HEATING SYSTEM



Revision 0

31 October 2011

RECORD OF REVISION

REVISION NUMBER	ISSUE DATE	DATE INSERTED	BY	REVISION NUMBER	ISSUE DATE	DATE INSERTED	BY

LIST OF EFFECTIVE PAGES

LIST OF REVISIONS Revision 0 (Original Issue) 18 January 2012

LIST OF EFFECTIVE PAGES

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CHAPTER 0
INTRODUCTION

This document contains information which is required for the installation and operation of the Air Comm Corporation's heating system installed in the Bell 407 series helicopter. After completion of the installation of the heating system, Weight & Balance Information, Flight Manual Supplement, and Supplemental Type Certificate must be removed from this document and placed with the appropriate existing aircraft documents.

1. SCOPE

   The scope of this document encompasses the general procedures and reference documentation necessary to install the Air Comm Corporation heating system in the Bell 407 series helicopter.

2. PURPOSE

   The purpose of this document is to provide the aircraft mechanic in the field the necessary information and documentation to install the heating system.

3. ARRANGEMENT

   This document is arranged by chapters, which are broken down into paragraphs and sub-paragraphs. All of the chapters and paragraphs are listed in the front of this document in the Table of Contents, and are further identified by their individual page number.

4. APPLICABILITY

   This document is applicable to Bell Helicopter models 407 that are equipped with the Air Comm Corporation kit number 407H-200 & 407H-202 heater system.

CHAPTER 1
GENERAL INSTALLATION PROCEDURE & REFERENCE DOCUMENT

1. GENERAL INSTALLATION PROCEDURE

   This section is intended to supplement information contained on installation drawings. All details and notes contained on drawings should be reviewed carefully. Instructions for installation are provided on the installation drawing where appropriate and are not repeated in this document.

   The system components and associated hardware are packaged separately. Prior to beginning installation, it is recommended that hardware be inventoried and placed in separate (labeled) boxes to prevent mixing.

2. KIT INSTALLATION SOFTWARE CONFIGURATION PROCEDURE FOR HEATER OVERTMP CAUTION MESSAGE

   The software loader card must have the correct software version before loading any files into the G1000H system. Loading the files from a previous software version loader card will prevent the system from operating correctly. Verify the software part number on the MFD **AUX – SYSTEM STATUS** page matches the software part number listed in the "ldr_part_nmbr.txt" file on the loader card.

NOTE

SanDisk SD card is recommended for loading software. Use of other brand cards is not recommended as the display units might not recognize it properly.

CAUTION

DO NOT ALLOW POWER TO BE REMOVED FROM THE G1000H SYSTEM WHEN LOADING SOFTWARE. Power loss during a software upgrade may cause a LRU to become corrupted and unresponsive requiring replacement.

1. Ensure the **PFD** and **MFD** circuit breakers are open. All other circuit breakers and switches are in normal operating conditions. Connect the GPU to the external power receptacle, and energize.

2. Remove Supplemental Database Cards from the lower SD card slot of all displays before loading software into any unit. Not removing the cards may corrupt them during a software upload.

3. Insert the software loader card into the top SD card slot of the PFD.

4. Push and hold the "**ENT**" key simultaneously on both the MFD and PFD, while closing the **PFD** and **MFD** circuit breakers to power the display units on in configuration mode.

5. Release the "**ENT**" key on the PFD and MFD, after the PFD and MFD display "**INITIALIZING SYSTEM**."

6. Press the "**NO**" softkey on the PFD at "**DO YOU WANT TO UPDATE SYSTEM FILES?**" prompt.

7. Verify that both display units display "**SYSTEM STATUS**" page in configuration mode.

8. On the PFD, use the FMS knobs to select the "**SYSTEM UPLOAD**" page under the "**SYSTEM**" group.

9. Push the FMS knob to activate the cursor, rotate the inner FMS knob to select the "**Options**" group and push the "**ENT**" key.

10. Rotate the FMS knobs to highlight the **Bell - Heater Overtemp Detection Kit Installation Option** in the **ITEM** menu to configure the G1000H system.

11. With the **Bell - Heater Overtemp Detection Kit Installation Option** highlighted, Push the "**ENT**" key.

12. Push "**CLR ALL**" softkey, and then push "**CHK ALL**" softkey to select all the applicable configuration option files to be loaded for the selected kit option.

13. Push "**LOAD**" softkey to begin loading configuration files for the selected kit option.

14. After successful kit option configuration files upload, a "**COMPLETE OK**" window is displayed. Push the "**ENT**" key to acknowledge.

15. Open the **PFD** and **MFD** circuit breakers.

16. Reinsert the Supplemental Database Cards back into the lower SD card slot of the PFD and MFD. Ensure that cards removed from all displays are inserted back into the PFD and the MFD.

17. Close the **PFD** and **MFD** circuit breakers to return the display units to the normal mode.

18. Follow the Air Comm STC functional test procedure to verify **HEATER OVERTMP** caution message is active and displayed correctly on the PFD's CAS window.

19. De-energize the GDU power.

3. REFERENCE DOCUMENT

The approval basis of the system covered by this document is Supplemental Type Certificate SR00221DE.

CHAPTER 2
WEIGHT & BALANCE INFORMATION

This page must be removed and placed with the appropriate existing aircraft documents.

Weight breakdown – Bell 407 series heating system:
Dwg. 407H-200 & 407H-202

Weight & Balance

Item	Wt (lbs)	Arm (in)	M (in-lb.)
Standard Heater / Defroster System 407H-200			
407H-200 Heater / Defroster	14.90	69.87	1,041.10
407H-500 Engine Bleed System (if not previously installed)	3.80	153.0	581.40
Total – Heater / Defroster (with Bleed system installed)	18.70	86.76	1,622.50
407H-988 Optional Chin Bubble Defroster	.60	22.0	13.20
Total – Heater / Defroster Bleed system & Chin bubble defroster	19.30	84.75	1,635.70
Arctic Heater / Defroster System 407H-202			
407H-202 Heater Defroster	16.20	69.96	1,133.30
407H-500 Engine Bleed System (if not previously installed)	3.80	153.0	581.40
Total – Heater / Defroster (with Bleed system installed)	20.00	85.74	1,714.70
407H-988 Optional Chin Bubble Defroster	.60	22.0	13.20
Total – Heater / Defroster	20.60	83.88	1,727.90

CHAPTER 3
FLIGHT MANUAL SUPPLEMENT

1. FLIGHT MANUAL SUPPLEMENT

   The following document must be removed and placed with the appropriate existing aircraft documents.

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FAA APPROVED
ROTORCRAFT FLIGHT MANUAL SUPPLEMENT
FOR THE
BELL HELICOPTER
MODEL 407
WHEN EQUIPPED WITH THE
OEM BLEED AIR CABIN HEATING SYSTEM

REGISTRATION #_____ SERIAL #_____

The information contained in this supplement is FAA approved material and must be attached to the FAA approved Bell 407 Rotorcraft Flight Manual when the rotorcraft has been modified by the installation of the Air Comm Corporation Bleed Air Cabin Heating System in accordance with

STC No. SR00221DE

The information contained herein supplements or supersedes the information in the basic Rotorcraft Flight Manual only in the items listed herein. For Limitations, Procedures, and Performance information not contained in this supplement, consult the basic Rotorcraft Flight Manual.

FAA Approved : **Date:** Dec 22, 2011

Hien Tong for

for **Manager, Flight Test Branch, ANM-160L**
Federal Aviation Administration
Los Angeles Aircraft Certification Office
Transport Airplane Directorate

Original Approval Date: March 29, 1996

Air Comm Corporation
3330 Airport Rd
Boulder, CO 80301
Document Number 407H-1

Supplement to the Bell Helicopter RFM for
Models B-407
when modified with the
Bleed Air Cabin Heating System
STC Number SR00221DE

LOG OF PAGES

Rev. No.	Page No.	Date	Description of Change	FAA Approved
1	2, 9	3/17/97		
2		12/22/11	Reformatted all pages	Hien Tong for Mgr, Flt Test Br, ANM-160L FAA, Los Angeles ACO Transport Airplane Directorate 12-22-2011 Date
	1		Added "PFD"	
	3		Updated Instl. P/Ns on Fig 1	
	7		Added Fig for G1000H Avionics	

SYSTEM DESCRIPTION

The cabin heating system is a bleed air type which consists of bleed air plumbing, a heater control valve, and four heater ejectors as shown figure 1.

When the heater control valve is opened the bleed air flows from the engine compressor through the bleed lines to the ejectors, where it is mixed with cabin air and exhausted to both the front and rear passengers. Two of the ejectors are located under the front seats and two are located on the sides of the rear aft facing seats. For the front ejectors the warm air is ducted forward and through swivel outlets, which are located in the seat box structure. The aft ejectors are mounted on the sides of the aft cabin seat structure and warm air is ducted through the enclosures to the rear cabin area. The outlet flow can be individually adjusted by rotation of the swivel outlets or by rotating a flow control knob on the rear ejectors (opt-fwd and aft flow control outlets).

An electrically operated firewall-mounted shut-off valve is included. The ON-OFF switch is mounted on the overhead console. The valve will automatically close if there is a loss of electrical power to the valve.

Temperature sensors are installed as a part of the heater system, In the case of an over-temperature condition, the sensors will close, resulting in the illumination of an amber "heater over temp" light on the annunciator panel or PFD, if equipped, and automatic closure of the firewall shut-off valve. The heater ON-OFF switch must be set to OFF in order to reset the firewall shut-off valve and overtemp light. The heater control valve is mounted under the pilot's seat, and the heater control is located on the front of the seat box.

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SYSTEM DESCRIPTION, CONT'D

The system also features a defroster system. The system consists of an ON-OFF valve, located in the center console, and ejectors, located in each defroster diffuser. The ejectors pump warm air across the windshield. The original defroster blowers are not required but may remain installed at the option of the operator. The defroster and heater may be used simultaneously. Both the "heater" and "defroster" valves are infinitely adjustable from OFF to FULL ON and may be set at the discretion of the operator.

A drain valve is also incorporated as a part of the heater system. This valve is used to drain cleaning solution overboard when washing the internal parts of the engine. The valve, which is located inside the RH engine access door, is automatic (closed by engine pressure).

An optional Chin Bubble defroster system may also be installed. This system shares bleed air with the defroster, thus when the defroster is on, the chin bubble defroster is operating.

An optional Hi-Output (Arctic) heater system may be installed. This system provides 70% more performance the standard heater.

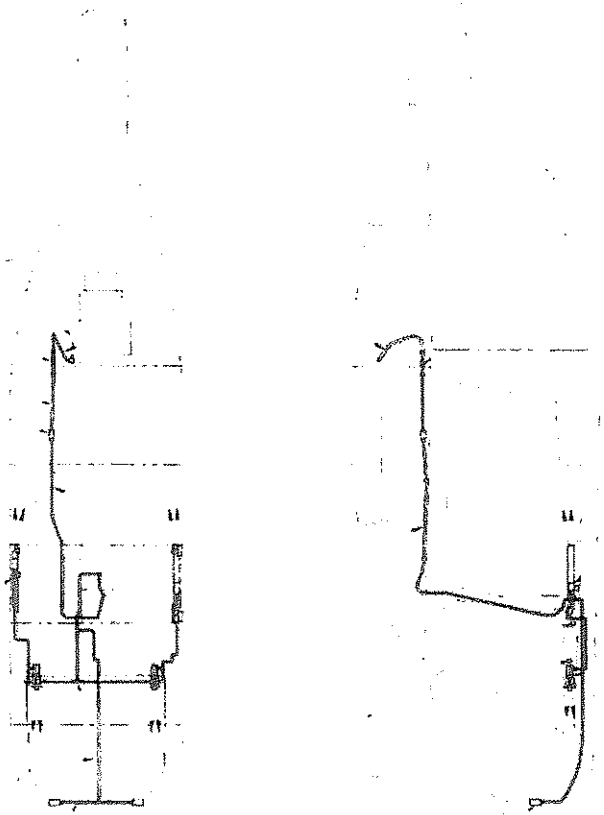

Figure 1. O.E.M. Heater Installation

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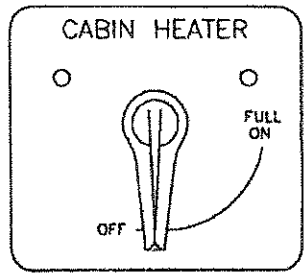
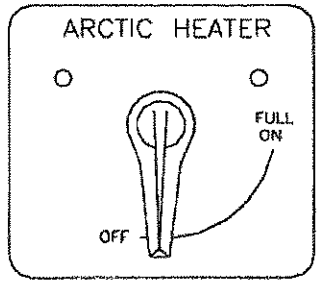
PLACARDS AND MARKINGS

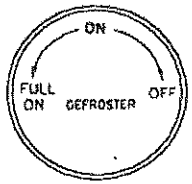


Located on the front side of the RH seat support box.

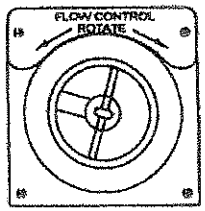


Located on the front side of the RH seat support box
(Optional Hi-Output heater)

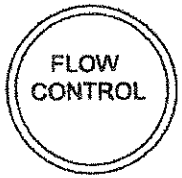
PLACARDS AND MARKINGS (cont'd)



Located on the Defroster Control Knob.



Located adjacent to the two forward air outlets.
(optional flow control feature)



Located on the control knob at aft heater outlets
(optional flow control feature)

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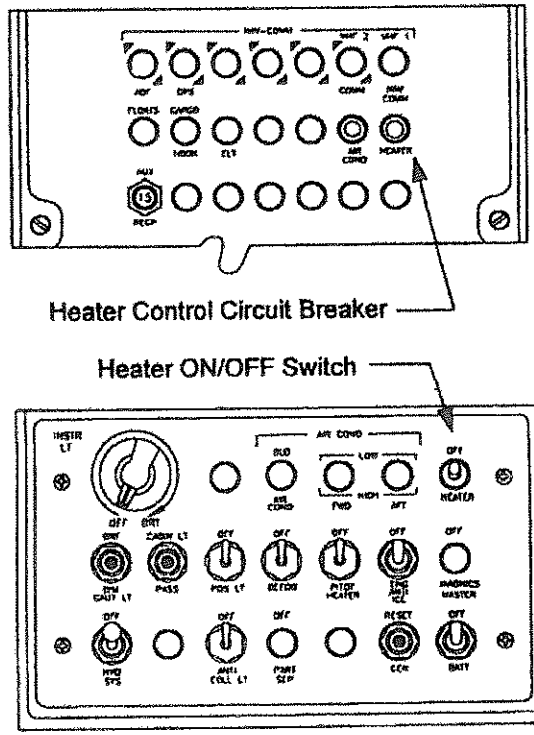
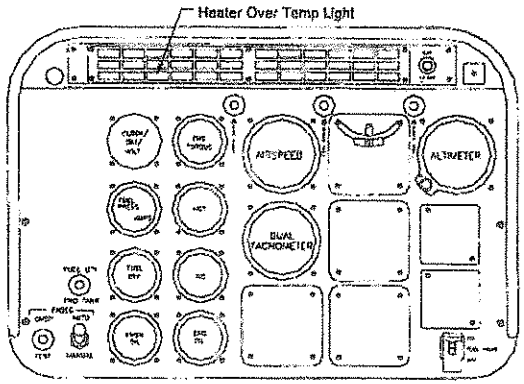
PLACARDS AND MARKINGS (cont'd)

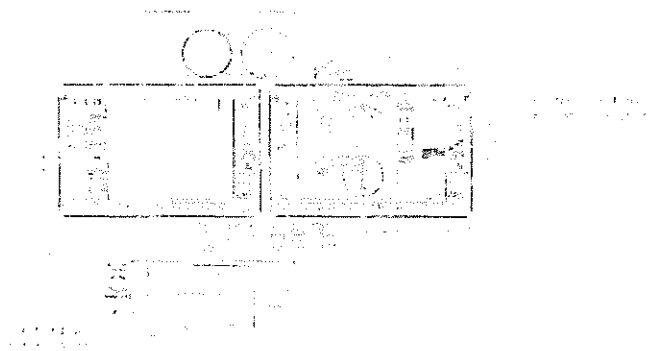


Located in overhead switch panel

Heater OVER TEMP Warning Light



Instrument Panel, Standard 407



Instrument Panel Configuration if Garmin G1000H Avionics System is installed

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Document Number 407H-1

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SECTION 1 - LIMITATIONS

1. Limitations

    1.1 Heater and Defroster Control shall be OFF during engine startup and shutdown.

SECTION 2 - NORMAL PROCEDURES

ENGINE PRESTART CHECK

Heater switch – OFF
Cabin heater valve – As desired
Defroster Control Knob – As desired

BEFORE TAKEOFF

Heater switch – As desired
Cabin heater valve – As desired
Defroster Control knob – As desired

IN FLIGHT OPERATIONS

Heater switch – As desired
Cabin heater valve – As desired
Defroster Control knob – As desired

DESCENT AND LANDINGS

Heater switch – As desired
Cabin heater valve – As desired
Defroster Control knob – As desired

SECTION 3 - EMERGENCY PROCEDURES

Heater Switch – OFF
for any of the following emergencies:

Engine failure
Engine over-temperature
Onboard Fire

SECTION 4 - MALFUNCTION PROCEDURES

Indications:
Heater Over Temp light – Illuminated

Procedures:
Heater Switch – OFF

SECTION 5 - PERFORMANCE

For operations involving Heater / Defroster only:
Refer to the basic Flight Manual FM-1 for take-off, hover and landing data.
Subtract 55 fpm from the basic FM for Heater on R/C performance.

For operations involving Heater / Defroster and the particle separator:
Refer to Particle Separator Supplement FMS-3 for applicable performance data.

CHAPTER 4
SUPPLEMENTAL TYPE CERTIFICATE

1. SUPPLEMENTAL TYPE CERTIFICATE

   The following document must be removed and placed with the appropriate existing aircraft documents.

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United States of America

Department of Transportation—Federal Aviation Administration

Supplemental Type Certificate

Number SR00221DE

This certificate, issued to **Air Comm Corporation**

certifies that the change in the type design for the following product with the limitations and conditions therefor as specified hereon meets the airworthiness requirements of Part 27 *of the* Federal Aviation *Regulations.*

Original Product—Type Certificate Number: H2SW
Make: Bell Helicopter Textron, Inc.
Model: 407

Description of the Type Design Change:
Installation of an bleed air cabin heating system in accordance with Air Comm Corp. Master Drawing List DL-407H, Rev. A, dated February 14, 1996, or later FAA approved revision.

Limitations and Conditions:
1. Installation of STC SR00220DE is required.
2. FAA Approved Rotorcraft Flight Manual Supplement 407H-1, dated March 29, 1996 or later FAA approved revision is required for the 407H-200 and 407H-202 installation configurations.
3. FAA Approved Rotorcraft Flight Manual Supplement 407H-2, dated March 29, 1996 or later FAA approved revision is required for the 407H-201 and 407H-203 installation configurations.
4. Approval of this change in type design applies to the above model rotorcraft only. This approval should not be extended to aircraft of this model on which other previously approved modifications are incorporated unless it is determined that the interrelationship between this change and any of those other previously approved modifications, including changes in type design, will introduce no adverse effect upon the airworthiness of that rotorcraft.
5. A copy of this certificate must be maintained as part of the permanent records for the modified rotorcraft.

This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked, or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.

Date of application: July 8, 1995

Date of issuance: March 29, 1996

Date reissued:

Date amended: May 30, 1996

By direction of the Administrator

RONALD F. MAY *(Signature)* Manager
Denver Aircraft Certification Office
Northwest Mountain Region, Denver, Colorado
(Title)

Any alteration of this certificate is punishable by a fine of not exceeding $1,000, or imprisonment not exceeding 3 years, or both.

This certificate may be transferred in accordance with FAR 21.47.

FAA Form 8110-2(10-68)