BOULDER, COLORADO 80301 AIR COMM CORPORATION 3300 AIRPORT ROAD

250-C20, C20B, C20J, and C-20R/2 ENGINES MODEL 206A, 206B BELL HELICOPTERS

FLIGHT MANUAL SUPPLEMENT CABIN HEATING SYSTEM

206H-200

FAA APPROVED

windshield defroster system in accordance with Air Comm Corporation STC No. SH3887NM. craft has been modified by installation of the FAA approved material, which must be carried The information contained in this document is in the basic Flight Manual, after the rotor-

Manual. or supercedes the basic manual only in the in this supplement, consult the basic Flight Procedures, and Performance Data not contained The information in this document supplements items contained herein. For Limitations,

 $\bigcap Q \vee F_{1} =$

REVISED REVISED FAA APPROVAL 7/10/89 12/18/89 12/24/87

of 24

Log of Pages

SUPPLEMENT FAA APPROVED

MODEL 206A, 206B FLIGHT MANUAL

CABIN HEATING SYSTEM

Эπ	F→	ا چ	70	
FAA APPROVAL APPROVED:	1-24	Pages	Original	
DATE: 1 Day Day Of	0	Rev. N	0	Log
12/24/87 Dave Gross Denver Air Office, No		No.		of Pages
man, craft		Pages		ges
Supervisor Certification	·	Rev. No.		

FAA APPROVAL <u>12/24/87</u>

 \sim of 24

Log of Revisions

FAA APPROVED SUPPLEMENT

MODEL 206A, 206B FLIGHT MANUAL

CABIN HEATING SYSTEM

a black	indicated by	Revisions are vertical line.	Note: I
Mo.4172 1744 1833	1 & 5 4, 5, 6 & 7 4	12/18/89 9/5/91	5443
Afosta	Original Issue 3, 4, 5 & 6 1, 7, 10, and 11 thru 24	12/5/88 7/10/89	2
FAA Appl	Pgs Revised	Rev Date	No.
	Log of Revisions	Log of	

FAA APPROVED 12/24/87

3 of 24

FAA APPROVED SUPPLEMENT 206B

MODEL 206A, 206B FLIGHT MANUAL

CABIN HEATING SYSTEM

INTRODUCTION

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

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. The ejectors are located under the front seats. The warm air is ducted forward and aft through swivel outlets, which are located in the seat box structure. The outlet flow can be individually adjusted by rotation of the swivel outlet (optional - two fwd outlets).

of the heater system. This valve is used to at the option of the operator. The defroster washing the internal parts of the engine. drain cleaning solution overboard when A drain valve is also incorporated as a part and heater may be used simultaneously. are not required but may remain installed system. The system consists of an ON-OFF valve, located in the center console, and REVISED REVISED FAA APPROVED windshield. The original defroster blowers ejectors, located in each defroster eyebrow. The ejectors pump warm air across the The system features an optional defroster pilot's seat, and the heater control is located on the front of the seat box. The heater control valve is mounted under the 09/05/91 12/24/87 12/05/88 4 of 24

FAA APPROVED SUPPLEMENT

MODEL 206A, 206B FLIGHT MANUAL

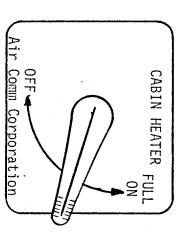
CABIN HEATING SYSTEM

adjustable from OFF to FULL ON, and may and "defroster" valves are infinitely by engine pressure). engine access door, is automatic (closed be set at the discretion of the operator. The valve, which is located inside the LH Both the "heater"

SECTION 1

OPERATING LIMITATIONS

MARKINGS PLACARDS



front side of RH seat support box. Applicable ť 206A and 206B. Located on

REVISED REVISED FAA APPROVED REVISED 09/5/91 12/18/89 12/5/88 12/24/87

> ហ 0 f 24

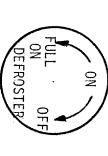
SUPPLEMENT FAA APPROVED

MODEL 206A, 206B FLIGHT MANUAL

CABIN HEATING SYSTEM

SECTION 1 (cont'd) OPERATING LIMITATIONS

MARKINGS PLACARDS



(optional)

Defroster Control Knob. Applicable to 206A and 206B. Located on the

TAKEOFF HOVER LANDING DEFROSTER HEATER AND

Applicable aircraft with C-20 engine. OFF FOR

on instrument panel. Locate

TYPE OF OPERATION

Aircraft with C-20 engine:

operation. pounds gross weight with heater in during take-off, hover and landing. Flight with heater operating is prohibited External cargo loading LIMITED to 3200

FAA APPROVED REVISED REVISED 12/5/88 12/24/87 09/5/91

> σ of 24

CABIN HEATING SYSTEM

SECTION 2

NORMAL PROCEDURES

ENGINE PRESTART CHECK Heater Control - OFF.

BEFORE TAKEOFF

Aircraft with C-20 engine; Heater and Defroster control - OFF. Aircraft with C-20B, C-20J or C-20R/2 engines; Heater and Defroster Control - as desired.

IN FLIGHT OPERATIONS

operations. Note: TOT increases with bleed air heater limitation. Heater and Defroster Control - as desired Observe turbine outlet temperature

DESCENT AND LANDING

Aircraft with C-20 engine; Heater and Defroster Control - OFF.

Defroster Control - as desired. Aircraft with C-20B, C-20J or C-20R/2 engine; Heater &

WARNING

prohibited during take-off, hover and landing for aircraft equipped with C-20 engine. Flight with heater and defroster operating is

SECTION 3

EMERGENCY PROCEDURES

for any of the following emergencies: Operate cabin heater and defroster control to - OFF,

Engine Failure

Engine Overtemperature

Fuel Control and/or Governor Failure

Insufficient Power

SECTION 4

MALFUNCTION PROCEDURES

No change.

REVISED 7/10/89 REVISED 9/5/91 REVISED FAA APPROVED 12/24/87

of 24

MODEL 206A, 206B FLIGHT MANUAL

CABIN HEATING SYSTEM

SECTION 5

PERFORMANCE DATA

Applicable to aircraft with C-20 engine:

Rate of Climb

Enter chart at gross weight and proceed vertically to intersect curve, then move left to obtain R/C decrement.

operating. Supplement R/C chart to obtain R/C with heater Subtract △R/C decrement from Flight Manual or

Hover Ceiling

decrement of 4500 feet. defroster being operated results in a hover ceiling Flight operations with the bleed air heater or

EXAMPLE

If pressure altitude is 2000 feet plus the decrement of 4500 feet equals 6500 feet to be used as the chart entry pressure altitude. The chart is then used the same as previously, to determine Gross Weight and Hovering Ceiling for the current condition.

MODEL 206A, 206B FLIGHT MANUAL

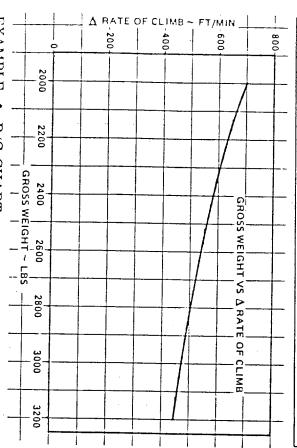
SECTION 5

PERFORMANCE DATA

Applicable to aircraft with C-20 engine:

TAKE-OFF POWER & MAX CONT POWER ALL CONFIGURATIONS **ALL TEMPERATURES** RATE OF CLIMB 100% RPM

ECS R/C = FM OR SUPPLEMENT R/C - AR/C



EXAMPLE: A R/C CHART

and gross weight from Flight Manual or appropriate Determine rate of climb for desired altitude, temperature Supplement Chart.

R/C Chart to obtain R/C with ECS operating. Subtract △R/C decrement from Flight Manual or supplement Enter Chart at gross weight and proceed vertically to intersect curve, then≠move left to obtain △R/C decrement.

FAA APPROVED 12/24/87

9 of 24

MODEL 206A, 206B FLIGHT MANUAL

CABIN HEATING SYSTEM

SECTION

PERFORMANCE DATA

are shown for the standard engine air inlet and for the particle separator induction system. or defroster is operating. Performance decrements optional equipment supplement in accordance with the Applicable to aircraft with C-20B, C-20J or C-20R/2 engines: following data and/or charts when the bleed air heater Reduce the performance data in basic flight manual or

the following conditions: particle separator. EXAMPLE: What gross weight Complete hover performance is presented herein for loss in hover performance could be expected under the snow deflector, which includes losses due to the

Outside air temp = -15° Standard engine inlet IGE Hover

Pressure altitude = 14,000 feet Anti-ice off Takeoff power Standard skid

gear

Using the appropriate IGE chart, enter OAT (-15 $^{\circ}$ C), move vertically to intersect pressure altitude curve to the weight obtained from appropriate hover performance chart in basic flight manual supplement. proceed horizontally to obtain the gross weight loss (or outermost curve, whichever comes first), then

covering the above conditions that at -15°C there is no loss in IGE hover performance from sea level to pressure altîtude curve. outside air temperature is to the left of the There is no loss in hover performance when the 12,000 feet. It can be seen on the chart

11 of 24

SUPPLEMENT FAA APPROVED

MODEL 206A, 206B FLIGHT MANUAL

CABIN HEATING SYSTEM

SECTION 5

PERFORMANCE DATA

Applicable to aircraft with C-20B, C-20J and C-20R/2

BASIC MANUAL OR APPROPRIATE SUPPLEMENT WITH ANTI-ICE ON APPLY ADDITIONAL DECREMENT FROM SKID HEIGHT 2.0 FT. (0.6 METER) **GENERATOR 22.3 AMPS** IN GROUND EFFECT STANDARD INLET WITH STANDARD SKID GEAR DUE TO BLEED AIR HEATER OPERATION HOVER CEILING DECREASE -40° TO 30°C TAKEOFF POWER ANTI-ICE OFF ENGINE RPM 100%

GROSS WEIGHT LOSS IN IGE HOVER PERFORMANCE 300 200 100 b 60 Trop. 116,000 ä **OUTSIDE AIR TEMPERATURE —** 1300 PRESS. ALT. 5 10,90 Ξ င္ပိ 20 206099-16

CABIN HEATING SYSTEM

MODEL 206A, 206B

SUPPLEMENT

FAA APPROVED

FLIGHT MANUAL

SECTION 5

PERFORMANCE DATA

Applicable to aircraft with C-20B, C-207J and C-20R/2 engines:

STANDARD INLET WITH HIGH SKID OR ANY FLOAT GEAR DUE TO BLEED AIR HEATER OPERATION HOVER CEILING DECREASE

WITH ANTI-ICE ON APPLY ADDITIONAL DECREMENT FROM SKID HEIGHT 3.0 FT. (0.9 METER) **GENERATOR 22.3 AMPS** IN GROUND EFFECT -40° TO 30°C TAKEOFF POWER ANTI-ICE OFF ENGINE RPM 100%

APPROPRIATE SUPPLEMENT

GROSS WEIGHT LOSS IN IGE HOVER PERFORMANCE 100/14:000 300 200 40 16.000 OUTSIDE AIR TEMPERATURE 12.00 PRESS. ALT. 10 7000 1 I 10 °°000 ငိ 20 206099-17 600

FAA APPROYED 12/24/87 REVISED 7/10/89

ű of

24

SUPPLEMENT

MODEL 206A, 206B FLIGHT MANUAL

SECTION 5 CABIN HEATING SYSTEM

PERFORMANCE DATA

Applicable to aircraft with C-20B, C-20J and C-20R/2 engines:

OUT OF GROUND EFFECT STANDARD INLET WITH ANY SKID OR FLOAT GEAR DUE TO BLEED AIR HEATER OPERATION HOVER CEILING DECREASE -40° TO 30°C **TAKEOFF POWER**

WITH ANTI-ICE ON APPLY ADDITIONAL DECREMENT FROM SKID HEIGHT 40 FT. (12.2 METERS) **GENERATOR 22.3 AMPS ENGINE RPM 100%** ANTI-ICE OFF

BASIC MANUAL OR APPROPRIATE SUPPLEMENT

GROSS WEIGHT LOSS IN OGE HOVER PERFORMANCE - LBS 200 300 100 12000 16.000 **OUTSIDE AIR TEMPERATURE —** 20 PRESS. 10 8000 7 6000 0 20 206099-18 30

FAA APPROVED

MODEL 206A, 206B,

SUPPLEMENT

FAA APPROVED

FLIGHT MANUAL

CABIN HEATING SYSTEM

SECTION 5

PERFORMANCE DATA

Applicable engines: to aircraft with C-20B, C-20J and C-20R/2

PARTICLE SEPARATOR WITH STANDARD SKID GEAR HOVER CEILING DECREASE
DUE TO BLEED AIR HEATER OPERATION

IN GROUND EFFECT -40° TO 30°C

TAKEOFF POWER

PARTICLE SEPARATOR SUPPLEMENT WITH ANTI-ICE ON APPLY ADDITIONAL DECREMENT FROM SKID HEIGHT 2.0 FT. (0.6 METER) **GENERATOR 22.3 AMPS ENGINE RPM 100% ANTI-ICE OFF**

GROSS WEIGHT LOSS IN IGE HOVER PERFORMANCE - LBS. 200 300 00 14,000-16,000 **OUTSIDE AIR TEMPERATURE** — 12.00

10 To

5

30

ဂိ

206099-19

PRESS. ALT.

二

FAA APPROVED SUPPLEMENT

MODEL 206A, 206B FLIGHT MANUAL

CABIN HEATING SYSTEM

SECTION 5

PERFROMANCE DATA

Applicable to aircraft with C-20B, C-20J and C-20R/2

HOVER CEILING DECREASE
DUE TO BLEED AIR HEATER OPERATION
PARTICLE SEP. WITH HIGH SKID OR ANY FLOAT GEAR
IN GROUND EFFECT
-40° TO 30°C

ANTI-ICE OFF SKID HEIGHT 3.0 FT.(0.9 METER)
WITH ANTI-ICE ON APPLY ADDITIONAL DECREMENT FROM PARTICLE SEPARATOR SUPPLEMENT

GROSS WEIGHT LOSS IN IGE HOVER PERFORMANCE 200 300 100 -40 000-16,000 မ် **OUTSIDE AIR TEMPERATURE —** PRESS. ALT. -10 70.00 2000 ဂိ 20 206099-20

15 of 24

REVISED 7/10/89

FAA APPROVED 12/24/87

MODEL 206A, 206B FLIGHT MANUAL

FAA APPROVED SUPPLEMENT

CABIN HEATING SYSTEM

SECTION 5

PERFORMANCE DATA

Applicable to aircraft with C-20B, C-20J and C-20R/2 engines:

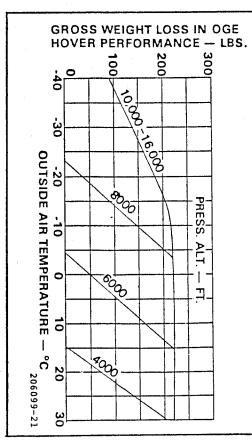
HOVER CEILING DECREASE
DUE TO BLEED AIR HEATER OPERATION
PARTICLE SEPARATOR WITH ANY SKID OR FLOAT GEAR
OUT OF GROUND EFFECT TAKEOFF POWER

-40° TO 30°C

GENERATOR 22.3 AMPS

SKID HEIGHT 40 FT. (12.2 METERS)

WITH ANTI-ICE ON APPLY ADDITIONAL DECREMENT FROM
PARTICLE SEPARATOR SUPPLEMENT



FAA APPROVED 12/24/87 REVISED 7/10/89

SUPPLEMENT

CABIN HEATING SYSTEM MODEL 206A, 206B FLIGHT MANUAL

SECTION 5

PERFORMANCE DATA

Applicable to aircraft with C-20B, C-20J and C-20R/2 engines:

IN GROUND EFFECT SNOW DEFLECTOR WITH STANDARD SKID GEAR HOVER CEILING 0° TO 30°C TAKEOFF POWER

GENERATOR 22.3 AMPS
SKID HEIGHT 2.0 FT. (0.6 METER)
WITH ANTI-ICE ON GROSS WEIGHT IS 245 LBS (111.1 Kg) LESS

PARSSURE ALTITUDE 1000 OAT - °C edge . 10 20 30 *ab -16,000 FT.DEN. ALT Eq. -HOT DAY 今 20 GROSS WEIGHT -POUNDS (X100) - AREA AREA B 28 OAT 30 9

SUPPLEMENT

MODEL 206A, 206B

FLIGHT MANUAL

CABIN HEATING SYSTEM SECTION 5

Applicable to aircraft with C-20B, C-20J & C-20R/2 engines

PERFORMANCE DATA

SNOW DEFLECTOR WITH STANDARD SKID GEAR HOVER CEILING

0° TO -40°C

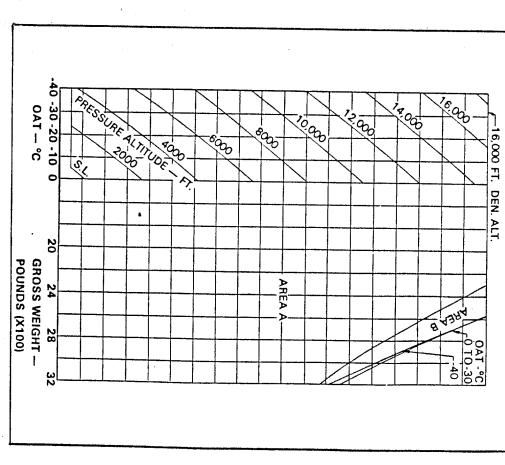
IN GROUND EFFECT

TAKEOFF POWER

GENERATOR 22.3 AMPS

SKID HEIGHT 2.0 FT. (0.6 METER)

WITH ANTI-ICE ON GROSS WEIGHT IS 245 LBS (111.1 Kg) LESS ANTI-ICE OFF ENGINE RPM 100%



FAA APPROVED 12/24/87 REVISED 7/10/89

17 of 24

FAA APPROVED 12/24/87 REVISED 7/10/89

SUPPLEMENT

MODEL 206A, 206B FLIGHT MANUAL

SECTION 5 CABIN HEATING SYSTEM

PERFORMANCE DATA

SECTION 5

Applicable to aircraft with C-20B, C-20J and C-20R/2 engines:

SNOW DEFLECTOR WITH HIGH SKID OR ANY FLOATGEAR IN GROUND EFFECT TAKEOFF POWER **HOVER CEILING** 0° TO 30°C TAKEOFF POWER

GENERATOR 22.3 AMPS SKID HEIGHT 3.0 FT.(0.9 METER) ANTI-ICE OFF SKID HEIGHT 3.0 FT.(0.9 METER)
WITH ANTI-ICE ON GROSS WEIGHT IS 225 LBS (102.1 Kg) LESS

ARESCURE ALTITUDE 1000 2000 000 **6** -16,000 FT. DEN. ALT -HOT DAY <u>^</u> AREA AREA B OAT 20 30

> CABIN HEATING SYSTEM MODEL 206A, 206B FLIGHT MANUAL

THEFT

PERFORMANCE DATA

Applicable to aircraft with C-20B, C-20J and C-20R/2 engines:

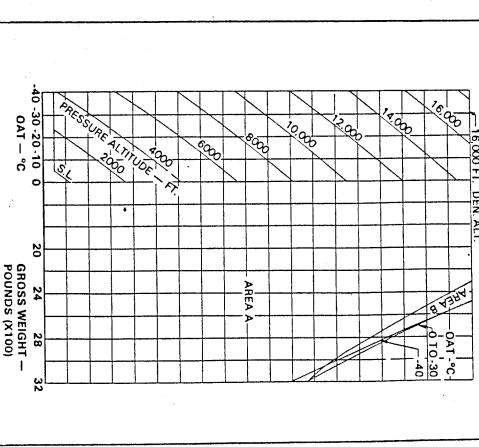
SNOW DEFLECTOR WITH HIGH SKID OR ANY FLOAT GEAR IN GROUND EFFECT HOVER CEILING 0° TO -40°C TAKEOFF POWER

GENERATOR 22.3 AMPS

ANTI-ICE OFF

SKID HEIGHT 3.0 FT.(0.9 METER)

WITH ANTI-ICE ON GROSS WEIGHT IS 225 LBS (102.1 Kg) LESS 16,000 FT. DEN. ALT



REVISED 7/10/89

FAA APPROVED

12/24/87

OAT -

င်္ဂ

GROSS WEIGHT -POUNDS (X100)

10 20 30

20

28

32

19 of 24

FAA APPROVED 12/24/87

REVISED 7/10/89

SUPPLEMENT MAA APPROVED

MODEL 206A, 206B.

CABIN HEATING SYSTEM

SECTION 5

FLIGHT MANUAL

PERFORMANCE DATA

Applicable to aircraft with C-20B, C-20J & C-20R/2 engines:

OUT OF GROUND EFFECT SNOW DEFLECTOR WITH ANY SKID OR FLOAT GEAR HOVER CEILING 0° TO 30°C TAKEOFF POWER

ANTI-ICE OFF

SKID HEIGHT 40 FT. (12.2 METERS) ENGINE RPM 100% WITH ANTI-ICE ON GROSS WEIGHT IS 260 LBS (117.9 Kg) LESS GENERATOR 22.3 AMPS SKID HEIGHT 40 FT. (12.2 METERS)

PRESSURE ALTITUDE T got 10,00 000 OAT - °C - Q भु 10 20 30 -16,000FT. DEN. ALT. -HOT DAY AREA A GROSS WEIGHT — POUNDS (X100) AREA B 28 OAT-°C =20 -30 -10 32

SUPPLEMENT

MODEL 206A, 206B

FLIGHT MANUAL

CABIN HEATING SYSTEM PERFORMANCE DATA

SECTION 5

Applicable to aircraft with C-20B, C-20J & C-20R/2 engines:

HOVER CEILING

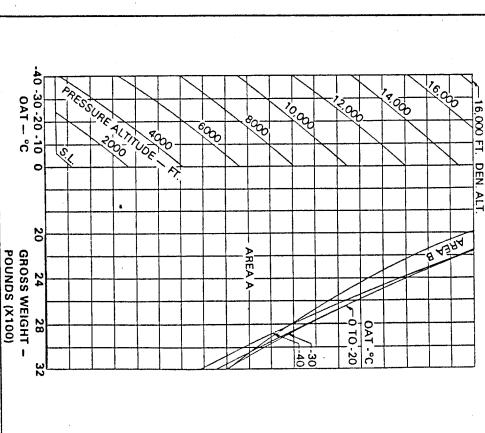
OUT OF GROUND EFFECT SNOW DEFLECTOR WITH ANY SKID OR FLOAT GEAR TAKEOFF POWER

0° TO -40°C

GENERATOR 22.3 AMPS ANTI-ICE OFF

SKID HEIGHT 40 FT. (12.2 METERS) ENGINE RPM 100% WITH ANTI-ICE ON GROSS WEIGHT IS 260 LBS (117.9 Kg) LESS

-16,000 FT. DEN. ALT



REVISED 7/10/89 21 of 24

FAA APPROVED 12/24/87

FAA APPROVED 12/24/87 RFVISED 7/10/89

2/24/8/

23 of 24

MODEL 206A, 206B FLIGHT MANUAL

CABIN HEATING SYSTEM SECTION 5

PERFORMANCE DATA

Applicable to aircraft with C-20B, C-20J and C-20R/2 engines:

RATE OF CLIMB DECREASE
DUE TO BLEED AIR HEATER OPERATION
ANY INLET WITH ANY SKID OR FLOAT GEAR
TAKEOFF POWER

ANTI-ICE OFF V IND 60 MPH (52 KNOTS)

WITH ANTI-ICE ON APPLY ADDITIONAL DECREMENT FROM BASIC MANUAL OR APPROPRIATE SUPPLEMENT.

RATE OF CLIMB LOSS FT./MIN. 600 400 200 2000 0 2200 GROSS WEIGHT — LBS 2400 -10°C TO -40°C 2600 ဝ လ 0 2800 0Α 30°C 3000 OAT 206099-28 3200

SUPPLEMENT

MODEL 206A, 206B FLIGHT MANUAL

FAA APPROVED SUPPLEMENT

CABIN HEATING SYSTEM

SECTION 5

PERFORMANCE DATA

Applicable to aircraft with C-20B, C-20J and C-20R/2 engines:

RATE OF CLIMB DECREASE
DUE TO BLEED AIR HEATER OPERATION
ANY INLET WITH ANY SKID OR FLOAT GEAR
MAXIMIIM CONTINUOUS POWER

MAXIMUM CONTINUOUS POWER
GENERATOR 22.3 AMPS
V IND 60 MPH (52 KNOTS)
WITH ANTI-ICE ON APPLY ADDITIONAL DECREMENT FROM BASIC MANUAL OR APPROPRIATE SUPPLEMENT.

