Transport Canada Approved Flight Manual Supplement
For

FOUND FBA-2C1/2C2 BUSH HAWK EQUIPPED WITH SINGLE GARMIN GNS-430 # 2 VHF-AM COMM / VOR-ILS / GPS RECEIVER

Section 1 General is Unapproved and provided for information only.
Sections 2 to 5 inclusive of this document comprise the approved Flight Manual Supplement. Compliance with Section 2 "Limitations" is mandatory.

The information and data contained in this document supersedes or supplements that contained in the basic Approved Flight Manual for the Found FBA-2C1/2C2 only in the areas listed herein. For Limitations, Procedures, and Performance information not contained in this Supplement, consult the airplane markings and placards and/or basic Airplane Flight Manual or other Approved applicable Flight Manual Supplements.

This document must be attached to and become part of the Approved Flight Manual whenever the single GARMIN GNS-430 is installed in accordance with Found Modification designated Mod-1167.

Approved: 

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LOG OF REVISIONS

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SECTION 1
GENERAL

INTRODUCTION

The general information in Section 1, of the AFM, is applicable with the addition of the following;

The GNS-430 System is a fully integrated, panel mounted instrument, which contains a VHF AM Communications Transceiver, a VOR/ILS receiver, and a Global Positioning System (GPS) Navigation Computer.

The system consists of a GPS antenna, GPS Receiver, VHF VOR/LOC/GS antenna, VOR/ILS receiver, VHF COMM antenna and a VHF AM Communications Transceiver.

The primary function of the VHF Communications portion of the equipment is to facilitate communication with ground stations including ATC Control.

The primary function of the VOR/ILS Receiver portion of the equipment is to receive and demodulate Localizer and Glide Slope signals.

The primary function of the GPS portion of the equipment is to acquire signals from the GPS System Satellites, recover orbital data. Make range and Doppler measurements, and process this information in real-time to obtain the users position, velocity and time.

The GNS-430 is connected electrically to the Pilot’s CDI situated on the bottom right corner of the Flight Instrument Panel. Displays of receiver status in the form of Navigation flags, lateral and vertical deviation steering bars, Omni Bearing Select (OBS), a Heading Bug and a slaved compass card are functions displayed within the Course Deviation Indicator.

Provided that the Garmin GNS-430's GPS Receiver is receiving adequate useable signals, it has been demonstrated capable of and has been shown to meet the accuracy specifications for;

VFR/IFR enroute, terminal and non precision Instrument approach (GPS, Loran-C, VOR, VOR-DME, TACAN , NDB, NDB-DME, RNAV) operation within the North American Airspace System in accordance with FAA Advisory Circular designated AC20-138.

North Atlantic Minimum Navigation Performance Specification (MNPS) Airspace in accordance with AC 91-49 and AC 120-33.

The system meets RNP5 airspace (BRNAV) requirements of AC 90-96 and in accordance with AC 20-138, and JAA AMJ 20X2 Leaflet 2 Revision 1, provided it is receiving useable navigation information from the GPS receiver.

Navigation is accomplished using the WGS-84 (NAD-83) coordinate reference datum. Navigation data is based upon use of only the Global Positioning System (GPS) operated by the United States of America.

NOTE

In some areas outside the Canada and the United States, datums other than WGS-84 or NAD-83 may be used. If the GNS-430 is authorized for use by the appropriate airworthiness authority, the required geodetic datum must be set in the GNS-430 prior to its use for navigation.

CIRCUIT BREAKERS

COMM 1	5 ampere
NAV 2/GPS 2	5 ampere
NAV 2 IND	1 ampere

SECTION 2
LIMITATIONS

GENERAL LIMITATIONS

The limitations in Section 2, of the AFM, are applicable with the addition of the following;

2.1 The Garmin GNS-430 Pilot's Guide, P/N 190-00140-00, Rev A dated October 1998, or later applicable revision, must be immediately available to the Flight Crew whenever navigation is predicated on the use of the system.

2.2 The software status in the Operators Manual must match that displayed on the equipment.

2.3 The GNS-430 must utilize the following or later Transport Canada Approved software versions;

SUB SYSTEM	SOFTWARE VERSION
Main	4.00
GPS	2.00
COMM	1.22
VOR/LOC	1.25
G/S	2.00

The Main software version is displayed on the GNS 430 self test page immediately after equipment activation. The remaining system software versions can be verified on the AUX group sub page 2, "SOFTWARE DATA BASE VER".

2.4 All data on the self test page must be verified prior to use.

2.5 Fuel management parameters are advisory only.

GENERAL IFR LIMITATIONS

2.6 The GNS-430 is approved for en route, terminal and non precision approach operations and ILS precision approach operations.

2.7 IFR en route and terminal navigation is prohibited unless the pilot verifies the currency of the data base or verifies waypoints for accuracy with reference to current publications.

2.8 The aircraft must have other approved navigation equipment appropriate to the route (en route and terminal) of flight installed and operating.

2.9 The GNS-430 must not be used for navigation guidance during periods when the POSITION UNCERTAIN message is displayed on the GNS-430 Display.

IFR APPROACH LIMITATIONS

2.10 Instrument approaches must be accomplished in accordance with instrument approach procedures that are retrieved from the GNS-430 data base. The unit must incorporate the current update cycle. The pilot must verify approach waypoints for accuracy by reference to current publications.

2.11 Pilot defined non-published approaches must be flown in Visual Meteorological Conditions (VMC) only.

2.12 Instrument Approaches utilizing the GPS receiver must be conducted in the approach mode and Receiver Autonomous Integrity Monitoring (RAIM) must be available at the final approach fix.

2.13 Accomplishment of ILS, LOC, LOC-BC, LDA SDF, MLS or any other type of approach not approved for GPS overlay is prohibited.

2.14 Use of the GNS-430 VOR/ILS receiver to fly approaches not approved for GPS require VOR/ILS navigation data to be present on the external indicator.

VNAV LIMITATIONS

2.15 VNAV information may be utilized for advisory information only. Use of VNAV information for Instrument Approach Procedures does not guarantee step-down fix altitude protection, or arrival at approach minimums in normal position to land.

SECTION 3
EMERGENCY PROCEDURES

No Change. The emergency procedures in Section 3 of the AFM are applicable.

SECTION 4
NORMAL PROCEDURES

The Normal Procedures in Section 4, of the AFM, are applicable with the addition of the following;

ABNORMAL PROCEDURES

4.1 If the Garmin GNS-430 navigation information is not available or invalid, utilize remaining operational navigation equipment as required.

4.2 If "RAIM POSITION WARNING" message is displayed the system will flag and no longer provide GPS based navigation guidance. The crew should revert to the GNS-430 VOR/ILS receiver or alternate means of navigation other than the GNS 430's GPS receiver.

4.3 If "RAIM IS NOT AVAILABLE" message is displayed in the en route, terminal, or initial approach phase of flight, continue to navigate using the GPS equipment or revert to an alternate means of navigation other than the GNS's GPS receiver appropriate to the route and phase of flight.

When continuing to use GPS navigation, position must be verified every 15 minutes using the GNS-430's VOR/ILS receiver or an alternate IFR-approved navigation system.

4.4 If "RAIM IS NOT AVAILABLE" message is displayed while on the final approach segment, terminate the IFR approach and execute the missed approach as required.

NOTE

GPS Based navigation will continue for up to 5 minutes with approach CDI sensitivity (.03 nautical mile). After 5 minutes the system will FLAG and no longer provide course guidance with approach sensitivity.

Missed approach guidance may still be available with 1.0 nautical mile CDI sensitivity by selecting and executing the missed approach.

4.5 If loss of status annunciation occurs while on final approach segment, terminate the IFR approach and execute the missed approach as required.

4.6 In an in-flight emergency, depressing and holding the COMM transfer button for 2 seconds will select the emergency frequency of 121.500 MHZ into the "ACTIVE" frequency window.

4.7 If the GNS-430 "MSG" annunciator illuminates press the GNS-430 MSG key to display the message on the GNS-430 display. Refer to the GARMIN GNS 430 Pilot's Guide, P/N 190-00140-00, Rev A, dated October 1998, or later appropriate revision.

Pilot's actions must be accomplished in response to annunciated messages. Some of the messages described in the Pilot's handbook describe malfunctions or system capability degradation. IFR GPS system operation must be discontinued upon display of such messages.

NORMAL PROCEDURES

DETAILED OPERATING PROCEDURES

4.8 Refer to the Normal Operating Procedures as described in the GARMIN GNS 430 Pilot's Guide, P/N 190-00140-00, Rev A, dated October 1998, or later appropriate revision.

PILOT'S REMOTE DISPLAY

4.9 The GNS-430 Navigation Data will be displayed on the Pilot's CDI. The source of the data is either GPS or VOR/LOC as annunciated on the GNS-430 display directly above the CDI select button.

NOTE

The lateral deviation presented on the CDI is 5.0 nautical miles (NM) full scale in ENROUTE MODE and 1.0 NM full scale in the TERMINAL MODE and 0.30 NM full scale in the APPROACH MODE.

AUTOMATIC LOCALIZER COURSE CAPTURE

4.10 By default, the GNS-430 automatic localizer course capture feature is enabled. This feature provides a method for system navigation data present on the external indicator(s) to be switched automatically from GPS guidance to localizer / glide slope guidance at the point of intercept on a localizer at which GPS derived course deviation equals localizer derived course deviation.

NOTE

If an offset from the final approach course is being flown, it is possible that the automatic switch from GPS course guidance to localizer / glide slope course guidance will not occur.

It is the Pilot's responsibility to ensure correct system navigation data is present on the external indicator before continuing a localizer based approach beyond the final approach fix.

PRE-TAXI CHECKS AND INITIALIZATION

4.11 After initialization select the desired system mode of operation between GPS or VOR/LOC using the CDI Select button situated on the GNS-430 fascia panel and confirm illuminated annunciated status directly above the CDI select button.

APPROACH

4.12 Refer to the GARMIN GNS 430 Pilot's Guide, P/N 190-00140-00, Rev A, dated October 1998, or later appropriate revision.

NOTE

Verification of waypoints for accuracy must be conducted by reference to current publications. Verification may include checking of bearings and distances between waypoints.

SECTION 5
PERFORMANCE

The performance data in Section 5, of the AFM, are applicable.