



US Department of Transportation
Federal Aviation Administration

MAJOR REPAIR AND ALTERATION
(Airframe, Powerplant, Propeller, or Appliance)

Form Approved
OMB No. 2120-0020
2/28/2011

Electronic Tracking Number

For FAA Use Only

INSTRUCTIONS: Print or type all entries. See Title 14 CFR §43.9, Part 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. §44701). Failure to report can result in a civil penalty for each such violation. (49 U.S.C. §46301(a))

1. Aircraft	Nationality and Registration Mark N414JT	Serial No. 414-0840
	Make Cessna 414	Model 414

2. Owner	Name (As shown on registration certificate) Joseph T. Alfred	Address (As shown on registration certificate) Address 207 Northbay Circle
		City Paqosa Springs State CO
		Zip 81147 Country USA

3. For FAA Use Only

The technical data identified herein has been found to comply with the applicable airworthiness requirements and is hereby approved for use only on the above described aircraft, subject to conformity inspection by a person authorized in CFR title 14, Part 43, section 43.7.
 Approving Inspector: *[Signature]* Date: 3-7-2021
 Denver FSDO, NM-03

4. Type		5. Unit Identification			
Repair	Alteration	Unit	Make	Model	Serial No.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	AIRFRAME	_____	(As described in Item 1 above)	_____
<input type="checkbox"/>	<input type="checkbox"/>	POWERPLANT			
<input type="checkbox"/>	<input type="checkbox"/>	PROPELLER			
<input type="checkbox"/>	<input type="checkbox"/>	APPLIANCE	Type		
			Manufacturer		

6. Conformity Statement

A. Agency's Name and Address		B. Kind of Agency		C. Certificate No.	
Name	Avtronics Inc	<input type="checkbox"/>	U. S. Certificated Mechanic	<input type="checkbox"/>	Manufacturer
Address	513C Condor Dr	<input type="checkbox"/>	Foreign Certificated Mechanic	<input checked="" type="checkbox"/>	Certificated Repair Station
City	Paqosa Springs State CO	<input type="checkbox"/>	Certificated Maintenance Organization	3AXR823B	
Zip	81147 Country USA				

D. I certify that the repair and/or alteration made to the unit(s) identified in item 5 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

Extended range fuel per 14 CFR Part 43 App. B <input type="checkbox"/>	Signature/Date of Authorized Individual <i>J.C. Alfred</i> Co-inspector Repairman 3617004 3-08-2021
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7. Approval for Return to Service

Pursuant to the authority given persons specified below, the unit identified in item 5 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is Approved Rejected

BY	FAA Fit. Standards Inspector	Manufacturer	Maintenance Organization	Persons Approved by Canadian Department of Transport
	FAA Designee	X Repair Station	Inspection Authorization	Other (Specify)

Certificate or Designation No. 3AXR823B	Signature/Date of Authorized Individual <i>J.C. Alfred</i> Co INSPECTOR Repairman 3617004 3-15-2021
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NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. Description of Work Accomplished

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

N414JT

3-15-2021

Nationality and Registration Mark

Date

Removed unrepairable EDO NSD 360 HSI system and King KN72 Nav Converter from Co-Pilot position.

Per STC SA10822SC Installed Aspen EFD 1000 display and Aspen RSM.

This unit installed as a supplemental instrument. All required Flight instruments remain on Pilot side.

Variations to STC as follows. EFD installed in Co-Pilot instrument panel. This is not a required instrument or required crew position.

There are no connections to required pilot side instruments or indicators. There is no connection to Autopilot, Transponder, or ADS-B systems.

Only connections are to Installed Garmin #1 and #2 GNS 530/430 GPS/ Nav units for GPS and Nav inputs only.

EFD 1000 is installed in OEM provided Co-Pilot Panel at station 114.00 in place of removed EDO NSD 360 HSI.

RSM p/n 910-00003-23 installed on lower aft belly aft of cabin pressure bulkhead at station 303.1

EFD 1000 protected by a 7.5 amp circuit breaker on Avionics buss labeled "ASPEN". RSM is powered from the EFD 1000

All work done in accordance with the following:

Aspen EFD1000 Installation Manual document 900-00003-001 Revision CK

Cessna model 414 service manual

AC 43:13-2B applicable sections of chapters 1,2,3

Electrical load checked less than 80% continuous.

Revised weight and balance and equipment lists.

FAA approved Flight Manual Supplement dated 3-03-2021 Approved by Richard F. Hosper

Principal Avionics Inspector Denver FSDO NM03

ICA's

Aspen Avionics EFD1000 Instructions for Continued Airworthiness Aspen Document # 900-00012-001 Revision AE pages 1-33 Attached

-----END-----

Additional Sheets Are Attached

ASPEN AVIONICS

**EFD1000 and EFD500
Instructions
for
Continued Airworthiness**

AIRCRAFT MAKE: CESSNA N414JTAIRCRAFT MODEL: 414AIRCRAFT SERIAL NUMBER: 414-0840

Modification of an aircraft under the EFD1000 AML Supplemental Type Certificate obligates the aircraft operator to include the maintenance information provided by this document in the operator's ICA, Aircraft Maintenance Manual and operator's Aircraft Scheduled Maintenance Program.

Aspen Document # 900-00012-001 Revision AE

ICA - RECORD OF REVISION

Revision	Description of Change	ECO
ICA Revision IR through Revision AC	See ECO record	See ECO record
AD	Extend internal battery and external battery (EBB-58) replacement interval to 2200 hours or 4 years (Section 11)	6169
AE	Removed redundant information in the Introductory Information section. Added instructions for 910-00001-009, -010, -021, -023 and -027 EFD systems.	6194

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1 Introductory Information

These Instructions for Continued Airworthiness (ICA) provides instructions necessary for authorized personnel to inspect and maintain the EFD500 and EFD1000 system installed by the EFD1000 AML-STC.

This document must be printed and included with the aircraft Instructions for Continued Airworthiness, and arranged for easy and practical use.

Description of the Appliances and its Systems and Installations:

The Aspen Avionics EFD1000 and EFD500 systems are multi-purpose displays. The EFD1000 contains an internal Air Data and Heading Reference System (ADAHRS) that is used to provide attitude, heading and air data for the display. The EFD500 is a variant of the EFD1000 and does not contain the internal ADAHRS.

For additional information, refer to Section 3 of the EFD1000 and EFD500 SW v2.X Installation Manual, 900-00003-001 Rev CF or later. For additional information on the EFD1000 E5 see Section 3 of the EFD1000 E5 Flight Display Installation Manual, 900-00041-001 Rev () or later.

The following data may be necessary for maintenance or preventive maintenance:

Replacement Parts:	See Section 1 of the EFD1000 and EFD500 SW v2.X Installation Manual, document 900-00003-001 Rev CF or later (or for the EFD1000 E5, 900-00041-001 Rev () or later) for Aspen replacement parts. <i>For the APS4A Altitude Preselect System, contact:</i> Avionik Straubing Entwicklungs GmbH Flugplatzstr. 5 Atting D-94348 Germany www.avionik.de
Software Version Compatibility	Class III aircraft (typ. >6000 lbs. Maximum Gross Takeoff Weight (MGTOW), see AC 23.1309-1X) require a PFD containing RTCA DO-178B Level B software. Verify the software level on the EFD Data tag before installation. See Section 5.2, "ICA Software Compatibility" of the EFD1000 and EFD500 SW v2.X Installation Manual, document 900-00003-001 Rev CF or later.
Operating Instructions:	See the EFD1000 Aircraft Flight Manual Supplement (AFMS), document 900-00008-001 or the EFD1000 E5 Aircraft Flight Manual Supplement (AFMS), document 900-00038-001.
Wire Routing Locations:	See attachment to this document (part of the permanent aircraft records).
Wiring Diagrams:	See attachment to this document (part of the permanent aircraft records).
Special Tools	For bonding checks, use a milliohm meter such as an Extech 380460 Portable Precision Milliohm Meter or equivalent. It may be required to align the EA100 Adapter to the autopilot computer using a KTS-150 Test Set, a KTS-158 Test Set, a KTS-154 Test Set or equivalent and following the autopilot manufacturer's procedure for aligning the gyro (KI-256) to the autopilot computer (these Test Sets are normally available at autopilot-qualified Bendix-King dealers). The EA100 Alignment Tool (acquired through the dealer ramp Section of the Aspen.com web site, see Tech Note 2010-10) will be used to manipulate the gyro pitch and roll signals and the autopilot Test Set will be used to measure the autopilot demodulated gyro voltages. In the case of the KFC225 the Remote Terminal Interface

	(normally available at autopilot-qualified Bendix-King dealers) will be required in place of the test sets. See Appendix E of the EFD1000 and EFD500 SW v2.X Installation Manual, document 900-00003-001 Rev CF or later or Appendix E of the EFD1000 E5 Dual Electronic Flight Instrument (EFI) Install Manual, 900-00041-001 Rev () or later for detailed information.
	It may be required to receive a WiFi signal from the CG100. A wireless-enabled device such as a laptop computer, iPad, iPhone or Android device will be suitable for this purpose.
Consumables	Loctite® 242® Threadlocker or equiv Dow Corning 738, MIL-A-46146 or equiv Pro-Seal PS 870B-1/2, MIL-PRF-81733D or equiv

2 System Description and Information about the Interface of the EFD1000/500 System with the Aircraft

The EFD1000 PFD, EFD1000 EBD, and EFD1000 E5 system is comprised of the Electronic Flight Display (EFD), Remote Sensor Module (RSM), Configuration Module (CM) and optional Analog Converter Unit (ACU or ACU2). Optionally one or two MFD displays of either the EFD500 or EFD1000 may be installed with an accompanied PFD system. An optional EA100 Adapter (autopilot attitude adapter) may be installed.

The EFD1000 PFD, EBD and E5 system provides display of attitude, airspeed, altitude, direction of flight, vertical speed, turn rate, and turn quality. The system may optionally provide display of navigation information through interfaces to GPS Receivers and/or VHF Navigation Receivers.

When interfaced with a compatible autopilot, the EFD1000 system provides heading and course datum information to the autopilot, which enables the autopilot to follow the Course and Heading values set by the pilot on the EFD1000.

If optional MFD displays are installed they can present terrain, traffic, weather, and WX-500 Stormscope data to the flight crew. The EFD1000 MFD can be used as backup instruments to the PFD supporting reversionary capabilities. The EFD500 presents MFD data, but cannot be used for backup or reversion.

The optional EA100 supplies pitch and roll stabilization signals to the autopilot. The article has no direct pilot controls.

The Avionik Straubing TSO'd APS4A is integrated with the EFD1000 and provides Altitude Preselect capability. The APS4A is not applicable to the EFD1000 E5.

The CG100 Gateway allows mobile devices to interface to other avionics through an EFD1000 MFD or EFD500 MFD.

NOTE: Other modifications to the aircraft could affect the EFD1000 PFD and MFD magnetic sensors. The EFD1000 PFD and MFD heading performance should be checked after other modifications. See Section 10.5.4, heading accuracy test in the EFD1000 and 500 SW 2.X Installation Manual, document 900-00003-001 revision CF or later.

3 Description of How the EFD1000 System Operates and is Controlled, Including Special Procedures and Limitations

The EFD1000 system is controlled by a switch marked “EFD1000 PFD” or “PFD”, “ASPEN” (for EBD system), “EFD” (for E5 system) and, (if installed) “EFD1000 MFD”. The system is ready to be operated when the initialization screen disappears, and the EFD1000 attitude and heading display is shown. See the EFD1000 Aircraft Flight Manual Supplement (AFMS), document 900-00008-001 or EFD1000 E5 Aircraft Flight Manual Supplement (AFMS), document 900-00038-001 regarding which appliances are installed, how the EFD1000 system operates, and is controlled, and special procedures and limitations.

A 30-minute Emergency Battery is required for EBD installations and may be required in some EFD1000 MFD installation configurations if it is being used as any required secondary instruments.

See the attachment to this document (part of permanent aircraft records) for detailed interface information.

3.1 Maintaining Security Safeguards with the Aspen Connected Panel

The Aspen Connected Gateway is an appliance not required by 14 CFR Part 23 that permits bi-directional communication of data between wireless devices and the EFD1000 MFD. Security of the communication link to the EFD1000 MFD is important and appropriate for these instructions. Generally, the system automatically controls the security aspects of the communication link, however the operator has responsibility to assure adequate security when it comes to the human interaction.

3.1.1 Physical Security

The Connected Gateway System can be linked to several wireless devices at the same time. Only devices that are within range of the Wi-Fi signal can be linked. Therefore the devices that can be linked while in flight are limited to the devices in the aircraft. Physical security does not require maintenance or assurance for continued airworthiness. This is an operator consideration.

3.1.2 Operational Security

When the aircraft is in operation, only those systems used for Connected Gateway should be linked. Keep the password confidential. The operator should assure that only authorized devices have access to the Connected Gateway. Operational security does not require maintenance or assurance for continued airworthiness. This is an operator consideration. The password for the Connected Gateway Wi-Fi for a particular aircraft should be safeguarded and only supplied to those who are trusted. If an unexpected device is connected and a flight plan is sent, the choice is simply to reject the flight plan.

3.1.3 Security Safeguards Monitoring

If there are attempts to violate security rules while in flight, as shown by an unexpected candidate flight plan, reject the flight plan and turn off Aspen GTWY by the switch. Do not

operate it until the security breach is addressed. Security safeguards monitoring does not require maintenance or assurance for continued airworthiness. This is an operator consideration.

3.1.4 Management Procedures

Measures should be established to prevent malicious introduction of unauthorized modifications to the wireless device, including the operating system, the hosted applications and the databases or data links. This might include maintaining a separate wireless device that is exclusively for aircraft use and limiting the number of applications loaded to those that are known to be non-malicious. Management procedures do not require maintenance or assurance for continued airworthiness. This is an operator consideration.

3.1.5 Maintenance Procedures for Maintaining Security Safeguards

With the EFD1000 or EFD500 MFD and the CG100 operating, display the CG100 status by going to the MFD Gateway page. Verify that Device: LINK STATUS CG100: is reported as LINKED. Use a wireless enabled device to search for the SSID of the installed Gateway. By default, the SSID is ASPENCG100. Verify that access requires a password. This also checks the functionality of the CG100 Gateway software and hardware.

4 System Operation and Procedures for System Testing During Ground Running

Refer to the EFD1000 AFMS, document 900-00008-001 or EFD1000 E5 AFMS, document 900-00038-001 for instructions on system operation. For System Testing refer to Section 10, Appendix E (EA100), Appendix F (A/P Source Select), Appendix G (APS4A) and Appendix H (CG100) of the EFD1000 and EFD500 SW v2.X Installation Manual, 900-00003-001 Rev BY or later. For the EFD1000 E5 refer to Section 10 and Appendix E (EA100) of the EFD1000 E5 Dual Electronic Flight Instrument (EFI) Install Manual, 900-00041-001 Rev () or later.

NOTE: Appendix H of document 900-00008-001 directs the user to another supporting document (900-000023-001, see "System Checkout") information for the CG100. This is because the primary document for the STC is document 900-00003-001, and information regarding support documentation will be in this document.

To check the functionality of the CG100 Gateway software and hardware, see Section 3.1.5.

5 Servicing and Scheduling Information

The EFD, RSM, ACU, ACU2, CM, EA100, APS4A, CG100, and EBB58 have no field serviceable components. Return defective units to Aspen Avionics or an authorized dealer. No equipment is required for servicing.

Recommended times for cleaning, inspecting, testing lubricating and adjusting each component of the EFD1000 System. See the Periodic Maintenance and Calibration Section.	
EA100	Verify the operation of the internal autopilot disconnect relay annually (See Section 11)
Internal battery	Inspection every twelve months (See Section 11)
EBB58 Emergency Backup Battery	Inspection every twelve months (See Section 11)
A/P Source Select switch	Verify operation annually (See Section 11)
All other components	Refer to Section 12 for inspection requirements.

6 Overhaul Period

None required.

7 Commercial Parts

There are no commercial parts in the installed EFD1000/500 system.

8 Special Tools

For bonding checks, use a milliohm meter such as an Extech 380460 Portable Precision Milliohm Meter or equivalent.

It may be required to align the EA100 Adapter to the autopilot computer using a KTS-150 Test Set, a KTS-158 Test Set, a KTS-154 Test Set or equivalent and following the autopilot manufacturer's procedure for aligning the gyro (KI-256) to the autopilot computer. The EA100 Alignment Tool will be used to manipulate the gyro pitch and roll signals and the autopilot Test Set will be used to measure the autopilot demodulated gyro voltages. In the case of the KFC225 the Remote Terminal Interface will be required in place of the test sets.

9 Airworthiness Limitations

There are no Airworthiness limitations associated with the installation of this appliance. The Airworthiness Limitations Section is FAA approved and specifies maintenance required under 14 CFR § 43.16 and § 91.403 unless an alternate program has been FAA approved.

10 Distribution of Revisions

Notification of changes to this ICA will be sent to all owners on record. The changed document will then be available in the Dealer Ramp section at www.aspenavionics.com. Paper copies are available on request, contact Aspen Avionics at www.aspenavionics.com.

11 Periodic Maintenance and Calibration and Storage Limitations

All maintenance is considered "ON CONDITION" unless otherwise noted in this ICA. The EFD Internal battery and the Emergency Backup Battery must be replaced in the interval identified below. There are no other storage limitations.

EBB58 Emergency Backup Battery (use with EFD P/N 910-00001-002, -012, -007, and -017)

The EBB58 Emergency Backup Battery when installed must be visually inspected and tested as described below once every 12 months and biannually (every 6 months) after 3 years (from date of installation) to ensure it meets the minimum 30-minute requirement for powering the EFD1000 MFD and EBD under all foreseeable conditions. The EBB58 must be replaced every 4 years (from the date of installation) or 2200 flight hours (from the time of installation) (whichever occurs first), or if it fails the following visual or operational tests.

Remove the EBB from the tray and visually inspect for the following:

- Leakage from the battery especially around the metal seams
- Evidence of water contamination
- Evidence of corrosion

If any of the above issues are noted return the EBB58 to Aspen Avionics for repair.

Re-install the battery and check the battery capacity as follows: (this test must be run at room temperature approximately 25° C)

- Turn on the EFD1000 MFD or EBD
- Press MENU Key
- Select POWER SETTINGS, Main Menu page
- Press the BATTERY line select key

BAT LEVEL IN --.-- will be displayed for a short period of time as battery capacity is being measured. This could take up to 10 minutes if the ambient temperature is below 0° C.



BAT LEVEL
IN 0:13

Once the capacity is measured ON BAT XX% REM will be displayed.



ON BAT
85% REM

The "ON BAT" indication must read a minimum of 80% to continue. If the battery capacity is below 80% then the battery should be charged by returning the MFD or EBD to aircraft power. The EBB will charge as long as the display is turned on and aircraft power is supplied.

With the battery displaying greater than 80% charge set a timer for one (1) hour. After the one hour time has elapsed the MFD or EBD must still be operating on battery. If the EBB will not supply the minimum 1 hour operating time or fails to charge above 80% return the battery to Aspen Avionics for repair.

Instructions for battery replacement are contained in Section 12.

Following the battery endurance test and while operating on battery power, switch the “EBB EMER DISC” switch to “DISC”; verify the display powers OFF. Return the “EBB EMER DISC” switch to “NORM”; verify the display powers ON and is on battery power.

Switch the MFD or EBD back to aircraft power and recharge the EBB to 80% or greater prior to release to service.

EFD Internal Battery (EFD P/N 910-00001-001, -003, -004, -009, -010, -011, -013 -021, -023, -027 and 900-00101-001)

The internal back-up battery in the EFD must be tested once every 12 months and biannually (every 6 months) after 3 years (from date of installation) to ensure it operates properly. Each EFD with an internal battery must have the battery replaced every 4 years or 2200 hours, or if it fails the following operational test.

This test must be run at room temperature approximately 25° C.

- Turn on the EFD1000 or EFD500
- Press MENU Key
- Select POWER SETTINGS page from the Main Menu
- Press the BATTERY line select key

BAT LEVEL IN --.-- will be displayed for a short period of time as battery capacity is being measured. This could take up to 10 minutes if the ambient temperature is below 0° C.



Once the capacity is measured ON BAT XX% REM will be displayed.



The “ON BAT” indication must read a minimum of 80% to continue. If the battery capacity is below 80% then the battery should be charged by returning the EFD to aircraft power. The battery will charge as long as the MFD is turned on and aircraft power is supplied.

With the battery displaying greater than 80% charge set a timer for 30 minutes (40 minutes for the E5, -009, -010, -021 and -027 EFD). After the 30 minute (40 min for E5, -009, -010, -021 and -027 EFD) time has elapsed the EFD must still be operating on battery. If the internal battery will not supply the minimum 30 minutes (40 min for E5, -009, -010, -021 and -027 EFD) operating time or fails to charge above 80%, replace the battery and return the failed battery to Aspen Avionics.

Instructions for battery replacement are contained in Section 14. Contact customer service at Aspen Avionics or an authorized Aspen Avionics Dealer for a replacement battery.

Switch the EFD back to aircraft power and recharge the internal battery to 80% or greater prior to release to service.

EA100 Autopilot Disconnect (if the EA100 is installed)

The ability of an EA100 to disconnect the autopilot must be tested annually. The test is accomplished in the following manner:

Turn on the PFD, or EBD, or E5 and all MFD systems. Verify the "A/P AHRS FAIL" light extinguishes. Engage the autopilot and then pull the "A/P AHRS" circuit breaker. If the autopilot disengages immediately and the A/P AHRS light simultaneously illuminates, then the test was successful. Restore the circuit breaker. If the autopilot fails to disengage then arrange for repair of the EA100 or associated wiring.

A/P Source Select (if Installed)

The switch must be tested annually. The test is accomplished in the following manner:

Turn on the PFD and all MFD systems. Engage the autopilot and verify the PFD heading bug will steer the HDG mode of the autopilot. Disconnect the autopilot. Press the MFD "REV" button and then momentarily push the A/P Source Select switch to the MFD REV position. Engage the autopilot and verify the reverted MFD heading bug will steer the HDG mode of the autopilot.

EFD Display Backlight

The EFD display backlight has a median expected life of 50,000 operating hours. Replacement of the lamp is on-condition as it may last longer or shorter than 50,000 hours. It is up to the operator to determine whether the backlighting has become too dim for its intended use.

ACU, ACU2, RSM, APS4A, CM, CG100

The ACU, ACU2, RSM, APS4A, CG100 and the Configuration Module require no periodic maintenance or calibration.

11.1 Inspection Checklist

FAR 43.15, Additional performance rules for inspections, Para. (c)(1) Annual and 100-hour inspections, requires "Each person performing an annual or 100-hour inspection shall use a checklist while performing the inspection. "Depending on the options and thus the associated complexity, it may be advantageous to prepare a checklist to be used when performing an Annual or 100-hour inspection. For all installations, the information will be found in Sections 11 and 12 of this document. Those items marked "If Installed" means that the inspection should only be conducted if the equipment is installed in the aircraft. Refer to the EFD1000 Aircraft Flight Manual Supplement, document 900-00008-001 or EFD1000 E5 Aircraft Flight manual Supplement, document 900-00038-001 for this aircraft to determine the equipment installed.

Section 11 Checklist

1. Check the EBB58 battery (if installed) in accordance with Section 11 of this document.
2. Check the EFD internal battery in accordance with Section 11 of this document.
Note that each EFD has a battery.
3. Check the EA100 Autopilot disconnect switch (if installed) in accordance with Section 11 of this document.
4. Check the A/P Source Select switch (if installed) in accordance with Section 11 of this document.
5. Verify Security Safeguards in accordance with Section 3.1.5 of this document.

12 Unit and Wiring Inspection

All units, brackets, installation hardware and wiring of the EFD1000 system should be checked as defined below during annual inspection. Items found to be defective should be repaired or replaced prior to returning the aircraft to service. The performance of this inspection should not create the need for additional protective treatment (Alodine, paint, etc) of surfaces within the aircraft.

EFD Inspection

The EFD(s) should be inspected for damage and their operation should be verified using documents identified in Section 1 of these ICA's. The EFD wiring, pneumatic tubing, and quick disconnects should be checked for integrity, damage, chafing, or excessive wear. The EFD braided bonding strap should be checked for proper termination at the EFD and aircraft grounding point to maintain HIRF and Lightning compliance.

Verify ≤ 3 milliohms from EFD ground stud to airframe ground. The installation of the EFD should be inspected for corrosion on the EFD and the structure it is mounted on. The fasteners should be inspected for tightness and general condition.

ACU/ACU2 Inspection - if Installed

The ACU should be inspected for damage and its operation should be verified using documents identified in Section 1 of these ICA's. ACU wiring should be checked for damage, chafing, or excessive wear. Verify ACU chassis bonding from the face of the unit (connector side) to airframe ground is ≤ 3 milliohms to maintain HIRF and Lightning compliance. The installation of the ACU should be inspected for corrosion on the ACU and the structure it is mounted on. The fasteners should be inspected for tightness and general condition.

RSM Inspection

The RSM(s) should be visually inspected for damage and wear on the lightning strip. RSM wiring should be checked for damage, chafing, or excessive wear. Verify RSM doubler plate bonding from the ground stud to airframe ground is ≤ 3 milliohms to maintain HIRF and Lightning compliance. The RSM installation and doubler should be inspected for corrosion on the RSM, the RSM shim (optional), the fuselage skin, and the doubler. The installation should be inspected for cracks in the fuselage, and loose or damaged fasteners.

Configuration Module Inspection

The Configuration Module(s) should be checked for damage. The Configuration Module wiring should be checked for damage, chafing, or excessive wear.

EA100 Inspection - if installed

The EA100 should be inspected for damage and its operation should be verified using documents identified in Section 1 of this document. The EA100 wiring should be checked for damage, chafing, or excessive wear. Verify EA100 chassis bonding from the face of the unit (connector side) to airframe ground is ≤ 3 milliohms to maintain HIRF and Lightning compliance. The installation should be inspected for corrosion on the EA100 and the structure it is mounted on. The fasteners should be inspected for tightness and general condition.

EBB58 Inspection –if installed

The EBB58 Emergency Backup Battery should be inspected for damage to the battery and mounting tray. Battery operation should be verified using Section 9 of this ICA. Verify ≤ 3 milliohms from mounting tray to airframe ground. The wiring should be checked for damage, chafing, or excessive wear.

APS4A Inspection- If installed

The APS4A should be inspected for damage and its operation should be verified using documents identified in Section 4 of this document. The APS4A wiring should be checked for damage, chafing, or excessive wear. Verify APS4A chassis bonding from one of the cover retaining cap screws to airframe ground is ≤ 3 milliohms to maintain HIRF and Lightning compliance. The installation should be inspected for corrosion on the APS4A and the structure it is mounted on. The fasteners should be inspected for tightness and general condition.

CG100 Inspection- if installed

The CG100 should be inspected for damage and its operation should be verified using documents identified in Section 4 of this document. The CG100 wiring should be checked for damage, chafing, or excessive wear. Verify CG100 chassis bonding from face of the unit (connector side) to airframe ground is ≤ 3 milliohms to maintain HIRF and Lightning compliance. The installation should be inspected for corrosion on the CG100 and the structure it is mounted on. The fasteners should be inspected for tightness and general condition.

12.1 Inspection Checklist

FAR 43.15, additional performance rules for inspections, Para. (c)(1) Annual and 100-hour inspections, requires "Each person performing an annual or 100-hour inspection shall use a checklist while performing the inspection." Depending on the options and thus the associated complexity, it may be advantageous to prepare a checklist to be used when performing an Annual or 100-hour inspection. For all installations, the information will be found in Sections 11 and 12 of this document. Those items marked "If Installed" means that the inspection should only be conducted if the equipment is installed in the aircraft. Refer to the EFD1000 Aircraft Flight Manual Supplement, document 900-00008-001 for this aircraft to determine the equipment installed.

Section 12 Checklist

1. Inspect the EFD(s) for damage and their operation in accordance with Section 12 of this document.
2. Inspect the ACU or ACU2 (if installed) for damage and its operation in accordance with Section 12 of this document.
3. Inspect the RSMs for damage and wear in accordance with Section 12 of this document.
4. Inspect the Configuration Module(s) for damage in accordance with Section 12 of this document.
5. Inspect the EA100 (if installed) for damage and its operation in accordance with Section 12 of this document.
6. Inspect the EBB58 (if installed) for damage in accordance with Section 12 of this document.
7. Inspect the APS4A (if installed) for damage and its operation in accordance with Section 12 of this document.
8. Inspect the CG100 (if installed) for damage and its operation in accordance with Section 12 of this document.

13 Troubleshooting

NOTE:

For more information about recognizing malfunctions, see the checkout procedure Sections 10 and 11 in the EFD1000 and EFD500 SW v2.X Installation Manual, 900-00003-001 Rev CF or later or EFD1000 E5 Dual Electronic Flight Instrument (EFI) Install Manual, 900-00041-001 Rev () or later.

EFD1000 Startup Page Faults (SW v2.0 and above)

Malfunction & How to Recognize the Malfunction	Cause	Remedy
IOP initialization failure	a) Fail b) System reboots after IOP test	a) Replace EFD b) Replace EFD
ARINC initialization failure	a) Fail	a) Replace EFD
RS232 initialization failure	a) Fail	a) Replace EFD
Config Module initialization failure	a) Fail b) Wrong CM version c) System reboots after Config Module Test d) displays "Initializing" for more than 20 seconds	a) Check Config Module wiring. Replace Config Module. b) Install correct SW version CM. c) v2.0 or v2.1 display installed with a v2.2 CM. Install correct CM or EFD. d) Config Module unplugged or mis-wired.
RSM initialization failure	a) Fail (x)	a) Check RSM to PFD wiring for shorts or opens. Repair or replace RSM. Repair or replace PFD.
IMU initialization failure	a) Fail	a) Replace EFD
ADC initialization failure	a) Fail	a) Replace EFD
ADAHRS initialization failure	a) Fail b) "Initializing" for more than 3 minutes c) "Initializing" for more than 3 minutes with a RSM Fail above.	a) Replace EFD b) Remove Pitot and Static line from back of EFD and reboot. If problem still exists then replace the EFD. If problem clears then repair Pitot or Static obstruction/kink. c) Repair RSM wiring or replace RSM.

EFD1000 General Faults (SW v2.0 and above)

Malfunction & How to Recognize the Malfunction	Cause	Remedy
Display does not power on (Note: there can be up to a 20 second delay from the application of power to a visible display)	a) EFD missing A/C power b) EFD may have been improperly shut down c) EFD missing A/C ground d) EFD is defective	a) Check EFD circuit breaker, EFD on/off switch on panel, wiring, and A/C battery voltage > 11.5 volts. b) Switch unit off using "REV" button or "SHUT DOWN" command from Main Menu page 6. c) Check wiring to EFD d) Repair or replace EFD
Display does not power off (Note: EFD will switch to battery if airspeed is greater than 30kts.)	a) Airspeed is above 30kts b) EFD may have been switched to internal battery c) EFD may have been improperly shut down d) EFD is defective	a) Normal operation b) Switch unit off using "REV" button or "SHUT DOWN" command from Main Menu page 6. c) Hold "REV" button for 20 seconds or unplug EFD internal battery for 3 seconds d) Repair or replace EFD
Display flashes on/off, black/white or blue/white repetitively	a) Configuration Module unplugged or miswired b) RSM or CM wiring short c) Configuration module defective d) EFD defective	a) Check CM plug and wiring from EFD to CM b) Verify RSM pin 6 or CM pin 1 is not shorted to aircraft ground or another pin. c) Repair or replace CM d) Repair or replace EFD
"CONFIG MODULE LINK FAIL" message (SW v1.X)	a) Configuration Module unplugged or mis-wired b) Configuration module defective c) PFD defective	a) Check CM plug and wiring from PFD to CM b) Repair or replace CM c) Repair or replace PFD
"INITIALIZING" message for more than 60 seconds (SW v1.X)	a) RSM to PFD communication lost b) RSM failed c) PFD failed	a) Check RSM to PFD wiring for shorts or opens. b) Repair or replace RSM c) Repair or replace PFD
"RSM LINK FAIL" message (SW v1.X)	a) RSM to PFD communication lost b) RSM failed c) PFD failed	a) Check RSM to PFD wiring for shorts or opens. b) Repair or replace RSM c) Repair or replace PFD
"WRONG CONFIG MODULE" message (SW v1.X)	a) PFD is at one software level and config module is at a different software level	a) Convert config module per appropriate service bulletin.

Malfunction & How to Recognize the Malfunction	Cause	Remedy
<p>ALTIMETER, AIRSPEED, VSI FAIL (RED-X)</p>	<p>a) Air data sensor has not had sufficient warm-up time. b) Pitot/static lines reversed c) Air data sensor failed</p>	<p>a) Allow up to 20 minutes at temps below -20°C for flags to clear b) Connect pitot line to "P" port and static line to "S" port on EFD c) Repair or replace EFD</p>
<p>ATTITUDE FAIL or DIRECTION FAIL (RED-X) (Note: Attitude flags could take up to 3 minutes to clear at temps below -20 °C)</p>	<p>a) AHRS sensor has not completed initialization. b) RSM failed/data missing. c) Pitot and/or Static lines crossed, unplugged, or blocked. d) EFD is defective</p>	<p>a) Allow up to 3 minutes for AHRS to initialize. b) Check RSM to EFD wiring. Repair or replace RSM. c) Correct pitot/static plumbing issue. d) Repair or replace EFD.</p>
<p>ATTITUDE FAIL and DIRECTION FAIL associated with "CHECK PITOT HEAT" message</p>	<p>a) In Flight, Normal if pitot blockage due to ice or other. b) On Ground, Normal if GPS reception is marginal and GPS GS ramps above 50Kts intermittently.</p>	<p>a) Use pitot heat or check pitot system for blockage. b) No further action required unless message is due to faulty GPS system, then repair GPS system.</p>
<p>DEGRADED MODE (sw 2.10 and later) - GPS groundspeed is above 50kts and airspeed is below 30kts</p>	<p>a) In Flight, Normal if pitot blockage due to ice or other.</p>	<p>a) Use pitot heat or check pitot system for blockage.</p>
	<p>b) On Ground, Normal if GPS reception is marginal and GPS GS ramps above 50Kts intermittently.</p>	<p>b) No further action required unless message is due to faulty GPS system, then repair GPS system.</p>
<p>CROSS CHECK ATTITUDE message (yellow) (also see sluggish AHRS performance troubleshooting)</p>	<p>a) If it occurred on system start. b) Normal after abrupt maneuvers on ground or in air</p>	<p>a) RESET AHRS b) RESET AHRS</p>

Malfunction & How to Recognize the Malfunction	Cause	Remedy
Red Slash through Navigation Sensor (i.e., GPS1, NAV2)	a) GPS or VLOC receiver turned off. b) GPS does not have a valid "TO" waypoint and position c) GPS or VLOC receiver failed d) ACU not powered e) Wiring fault between sensor and ACU or EFD f) ACU to EFD wiring fault. g) ACU is defective. h) EFD is defective.	a) Turn on GPS or VLOC receiver b) Allow GPS to acquire a position and enter a flight plan or Direct To c) See GPS/VLOC manufacturer's instructions for troubleshooting d) Check ACU circuit breaker e) Check wiring between GPS/VLOC and ACU or EFD f) Check ACU circuit breaker, check ACU to EFD A429 wiring and ACU to sensor wiring g) Repair or replace ACU h) Repair or replace EFD
GPS1 or GPS2 selection not available on Display (GNS430/GNS530/GNS480 only)	a) GPS receiver turned off b) GPS does not have a valid "TO" waypoint and position c) GNS CDI is selected to VLOC. d) GPS to EFD A429 wiring issue. e) GPS defective. f) EFD defective.	a) Turn on GPS and initialize b) Allow GPS to acquire a position and enter a flight plan or Direct To c) Verify the GNS CDI is selected to GPS. d) Check A429 wiring for shorts, opens or crossed A and B lines. e) Repair or replace GPS f) Repair or replace EFD
Autopilot or analog NAV/GPS inoperative	a) ACU chassis not grounded b) ACU not powered c) ACU to sensor wiring d) ACU to EFD wiring e) ACU fault f) EFD fault	a) Ground ACU chassis to airframe ground b) Check ACU circuit breaker and power/grounds c) Check ACU to sensor wiring d) Check ACU to EFD A429 wiring e) Repair or replace ACU f) Repair or replace EFD

Malfunction & How to Recognize the Malfunction	Cause	Remedy
<p>"ERRONEOUS CALIBRATION VALUES" message during RSM Cal (SW v2.0 and later) or</p> <p>Excessive Heading errors in one quadrant, or errors that are higher than actual in some quadrants and lower than actual in other quadrants.</p>	<p>a) RSM is tilted more than allowed per Section 6 of this manual</p> <p>b) Poor RSM calibration</p> <p>c) RSM calibrated too close to buildings or ferrous objects</p> <p>d) Ferrous hardware used to mount RSM</p> <p>e) Airframe or external magnetic interference</p>	<p>a) Shim RSM to within limits defined in Section 6 of this manual</p> <p>b) Re-run RSM calibration at constant rate turns on flat ground.</p> <p>c) Re-run RSM calibration away from buildings and other ferrous objects</p> <p>d) Only non-ferrous screws, nuts, washers may be used on RSM</p> <p>e) Check for magnetized areas on airframe close to RSM. Verify no ferrous hardware is near RSM. Degauss magnetized area(s)</p>
<p>Sluggish or Poor AHRS (ADI) performance</p> <p>Poor AHRS performance in steep bank turns</p> <p>Sluggish compass card</p> <p>(Note: may or may not be associated with "Cross Check Attitude" message)</p>	<p>a) RSM magnetic interference</p> <p>b) RSM has become magnetized.</p> <p>c) "Pitch Attitude Trim" or "Panel Tilt Pitch Compensation" adjustment made without performing a subsequent RSM Calibration.</p> <p>d) Pitot and/or Static line connections at EFD blocked, kinked, or unplugged.</p> <p>e) Normal after abrupt maneuvers.</p>	<p>a) Survey RSM location using handheld compass per Section 6.9.1. Verify there are no cabin speakers within 3ft of RSM. Degauss any areas found to be magnetized or remove magnetism by other methods.</p> <p>b) With power removed from EFD1000 system degauss RSM and general area using degausser.</p> <p>c) Perform an RSM Calibration per Section 10.5.2</p> <p>d) Check pitot/static connections and plumbing for blockage. Check IAS and ALT sensor per Section 10.</p> <p>e) Perform AHRS Reset</p>
<p>Excessive Heading Lead / Lag during or after turns (>7°)</p>	<p>Magnetic Interference</p>	<p>Verify that all steps have been accomplished to remove magnetic interference (see section 6.9.4), then contact an Aspen Field Service Engineer</p>

Malfunction & How to Recognize the Malfunction	Cause	Remedy
Autopilot has lateral offset in GPSS or APPR mode (HDG Bug may also be out of center)	a) Autopilot roll "null" centering out of adjustment	a) Follow the autopilot manufacturer's guidelines for adjusting roll "null" centering
Century II/III autopilot performance poor in all modes	a) Value of R1 set incorrectly	a) Follow the autopilot manufacturer's instructions for checking NAV intercept angle. Larger value for R1 will raise angle and smaller value of R1 will lower intercept angle. See Tech Note 2009-06.
OAT Display dashed	a) Wiring fault between EFD and RSM b) RSM is defective	a) Check wiring b) Repair or replace RSM
WIND vector, velocity, and direction display dashed (Note: wind readout will dash when velocity is < 10 kts)	a) Groundspeed < 20kts b) No GPS ground track c) Airspeed failed	a) Normal operation b) GPS not computing GTK c) See AIRSPEED FAIL troubleshooting procedure
OBS mode inoperative on GPS	a) GPS A429 IN bus configured wrong b) ARINC 429 "A" and "B" lines reversed	a) See Figure 9.27 for GPS configuration notes b) Correct wiring error to GPS A429 IN bus
"CROSS LINK FAILURE" message	a) PFD or MFD not powered up b) PFD or MFD inter-system bus wiring fault c) PFD or MFD is defective	a) Power up all EFD displays b) Check wiring per diagrams in Section 9 c) Repair or Replace defective EFD
"DATABASE FAILURE" message	a) Data Card (microSD) is not inserted in MFD display. b) Wrong Data Card inserted. c) Data Card is bad d) MFD card slot is defective	a) Insert Data Card in display b) Insert correct Data Card See Section 1 for authorized database part numbers c) Replace data card with new d) Repair or replace MFD display
"Database Init" message	a) Database is missing or files are missing from card	a) Insert functional database card

Malfunction & How to Recognize the Malfunction	Cause	Remedy
"TERRAIN FAIL" message	a) Data Card not inserted b) Data Card failed c) Heading fail d) GPS position fail e) Altitude fail	a) Insert valid MFD Database b) Insert valid MFD Database c) Verify EFD1000 MFD Direction Indicator is valid and repair if needed. EFD500 MFD intercommunication bus to PFD may have failed or is not configured. d) Verify GPS has good position data e) Verify EFD1000 Altitude is valid. EFD500 MFD intercommunication bus to PFD may have failed or is not configured.
"TFC FAIL" message	a) Traffic sensor is configured but not valid.	a) Verify traffic processor is turned on and is operational.
Dedicated Traffic Display page messages	See AFMS or pilots guide	
Dedicated WX500 Display page messages	See AFMS or pilots guide	
Dedicated Weather Display page messages	See AFMS or pilots guide	
"RSM GPS" message	a) Message is on MFD and a -002 or -003 RSM is installed. b) New RSM installation. c) Wiring issue between EFD and RSM. d) RSM GPS engine has failed.	a) Set RSM GPS Enable to DISABLE in installation menu. b) New RSM installations may need to acquire an almanac and could require up to 15 minutes to clear. c) Check RSM pins 1 and 2 for continuity to EFD. d) Replace RSM.

System Troubleshooting –continued

Fault	Cause	Corrective Action
EA100		
A/P AHRS FAIL lamp is never illuminated when the EA100 circuit breaker is engaged and the circuit is closed and energized (press to test fails)	a) Probable lamp failure. The A/P AHRS FAIL lamp power source is the autopilot circuit.	a) Verify the autopilot circuit breaker is not tripped. b) Check wiring for the lamp and autopilot circuit breaker. If OK, replace the A/P AHRS FAIL lamp.
A/P AHRS FAIL lamp is illuminated whenever the EA100 circuit breaker is engaged and the circuit is closed and energized.	a) EA100 is not functioning.	a) Verify the EFD1000 IP ADDR/SUBNET MASK/PORT is set correctly (see “Configuration” in Appendix E of this manual). b) Verify the EFD1000 has software version 2.2.2 or later. c) Verify the A/P AHRS circuit breaker is not tripped. Check the wiring to the EA100. If OK, replace the EA100. d) Normal operation if EA100 Alignment Tool is in use. Use “Engage Relay” to close relay contact and turn off light.
Autopilot has lateral offset in GPSS or APPR mode (HDG Bug may also be out of center)	a) Autopilot roll “null” centering out of adjustment.	a) Follow the autopilot manufacturer’s guidelines for adjusting roll “null” centering.
APS4A		
Altitude Preselect function is inoperative when the autopilot altitude hold function is correct.	a) Failure of the APS4A, or b) Failure of the EFD1000 ground assert to the APS4A when the altitude alerter reaches the selected altitude.	a) Verify the APS4A circuit breaker is not tripped. b) Check wiring and the presence of the ground assert when the altitude alerter reaches the selected altitude. Use ground elevation for the altitude alerter selection.
Altitude Preselect function is inoperative when the autopilot altitude hold function is not correct.	a) Failure of the autopilot.	a) Refer to autopilot troubleshooting procedures.

Fault	Cause	Corrective Action
CG100		
The SSID "AspenCG100" not broadcast	a) CG100 not powered on b) CG100 antenna disconnected c) CG100 is defective	a) Repair wiring/switch/circuit breaker. b) Verify antenna is connected or coax is ok if using remote antenna. c) Before replacing the CG100 check to see if the LEDs are lit under the SD card cover. If the LEDs are not lit then the CG100 has malfunctioned. Replace CG100.
The wireless device does not link to the CG100.	Wrong password	If the correct password cannot be located, the CG100 must be returned to Aspen for repair.
MFD will not communicate with CG100 <ul style="list-style-type: none"> • "Not Linked" message on MFD Gateway Page • GTWY Version Number reports UNKNOWN 	a) CG100 IP Address wrong b) MFD IP Address wrong c) Ethernet wiring bad	a) Use the "Aspen Flight Connect App" to set IP Address b) Set MFD IP Address to 192.168.28.12 for MFD1000 or 192.168.28.10 for MFD500 c) Check Ethernet wiring
GPS will not communicate with CG100 <ul style="list-style-type: none"> • GPS1 or GPS2 "Not Available" message on MFD Gateway Page 	a) GPS turned off or not beyond Test Page b) Wrong MFD RS232 Ports configured for GPS Type 4/5 c) RS232 wiring issue between MFD and GPS	a) Turn on GPS and press "OK" twice b) Verify the MFD has GPS TYPE 4 or 5 set on the proper RS232 ports. c) Check GPS to MFD wiring.

14 Removal and Replacement

This section provides instructions for removal and replacement of LRUs that have been previously installed in the aircraft. No special tools are required for the removal and replacement of any system LRUs. If an LRU is found to be defective it should be removed and returned to Aspen Avionics for repair or replacement.

Fastener Identification and Discard Recommendations:

The fasteners for the components identified below are identified in the EFD1000 and EFD500 SW v2.X Installation Manual, 900-00003-001 Rev BY or later and EFD1000 E5 Dual Electronic Flight Instrument (EFI) Install Manual 900-00041-001 Rev () or later. If the fasteners are deformed in any way they should be replaced.

EFD Removal

Verify power is off. Carefully insert a flat blade screwdriver into the locking mechanism on the top center of the EFD. While gently prying pull back the top of the EFD and extract from bracket. Remove nut securing braided ground strap to EFD. Remove pitot and static quick connectors (EFD1000 only) by pulling back outer spring loaded locking sleeve while unplugging connectors. To remove 44 pin D-sub connector unscrew both jackscrews fully and pull connector straight back.

EFD Replacement

Verify power is off. Install 44 pin D-sub connector and tighten jackscrews until connector is fully seated. Install pitot and static lines (EFD1000 only) to back of EFD by firmly pressing the fitting until fully seated (pitot and static quick connectors are keyed and cannot be crossed). Gently pull on connector to ensure proper connection. Connect braided bonding strap to EFD with nut. Insert bottom of EFD into bracket and pivot top forward until it locks into place on bracket.

Using section 10.6 of 900-00003-001 Rev BY or later (or 900-00041-001 Rev () or later, E5 only), verify all system interfaces are functional. Verify proper bonding per Section 10.1.2 (10.2 for E5). Perform a System Leak Test (Section 10.6.3, EFD1000 systems only) and Sonalert or Audio Test (Section 10.6.11, PFD and EBD only).

EFD Battery Replacement

EFD battery replacement must only be performed by a properly certified individual or facility.

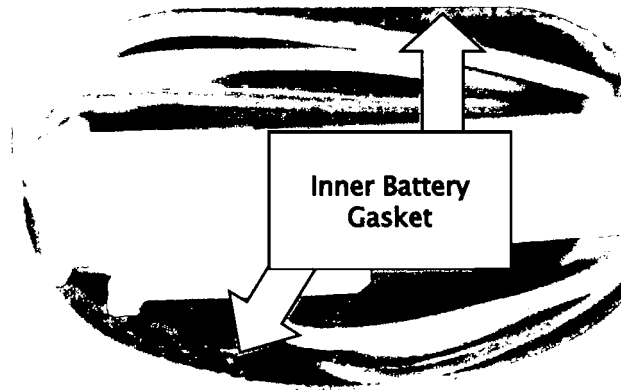
There are three types of replacement batteries:

- Battery Assy 413-00001-001 is specifically for the EFD1000 A-05-110-00 Rev A and the 910-00001-001 Rev ().
- Internal Battery Pack 409-00003-001 is for internal battery EFDs P/N 910-00001-001 Rev A and later and P/N 910-00001-002, -003, -004, -007, -011, -012, and -013.
- Internal Battery Pack 409-00003-002 is for all EFD1000 E5 PMA'd EFDs and P/N 910-00001-009, -010, -021, -023, and -027.

Remove the EFD from the aircraft panel as described above. Remove the two screws (one on each end) securing the oval-shaped battery cover plate to the rear of the EFD.

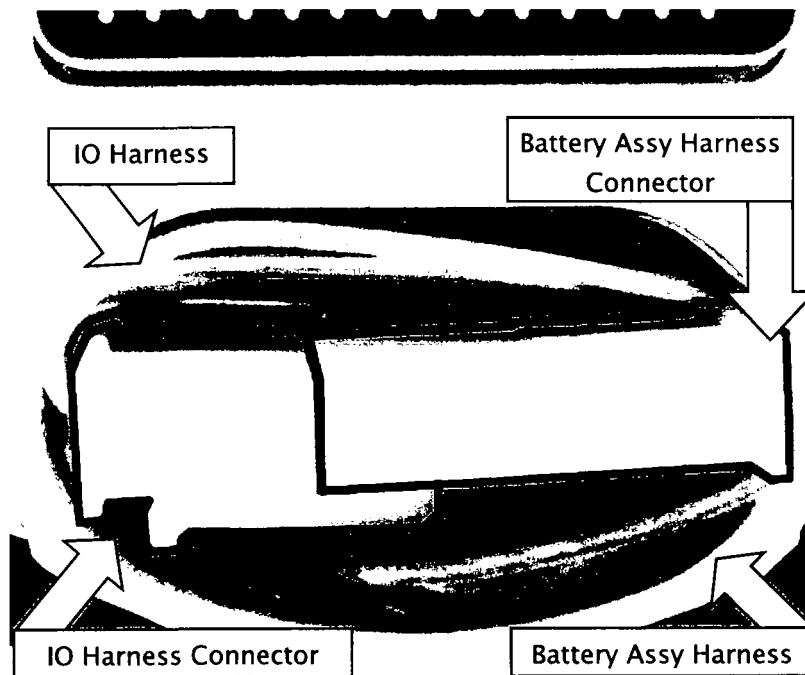
Use caution when removing the battery:

The Inner Battery Gasket (if installed) may extend partially into the battery cavity as shown in the image below. Carefully remove the battery to not disturb the gasket. *If damaged, the Inner Battery Gasket cannot be replaced in the field and the unit must be returned to the factory.*

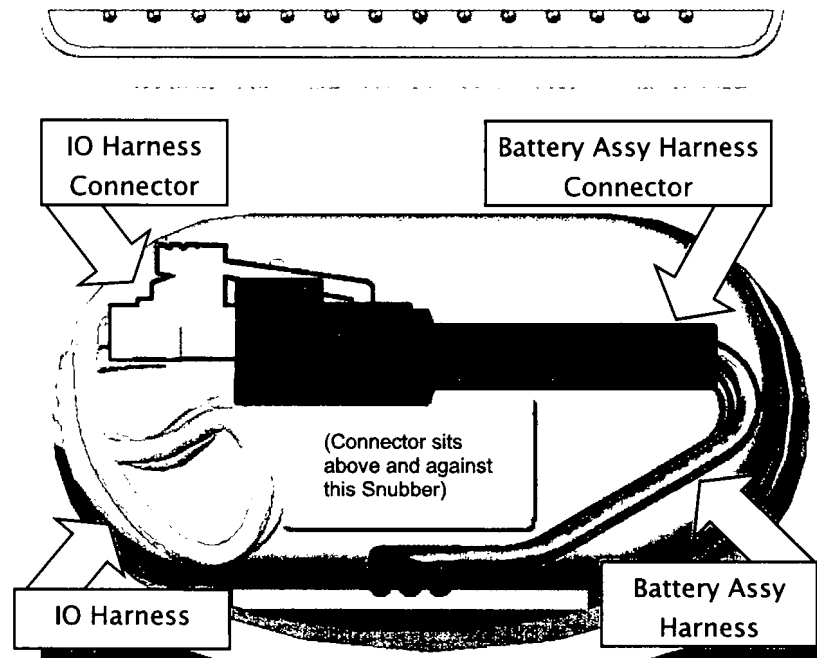


Unplug the battery connector from the IO Harness connector. Remove the old battery and install the new battery in the EFD. Then plug in the battery connector to the IO Battery Harness connector.

See the images below for connector placement and wire routing for each Battery type. To prevent pinching/shorting of wires, the wires must be routed as shown.



409-00003-00x Internal Battery Pack Connector & Wire Positioning



413-00001-001 Battery Assy Connector & Wire Positioning

Clean the threads of the two screws used to secure the battery cover. Place a small amount of Loctite® 242 on the threads of the cover screws, then position the cover plate, install the cover screws and torque to 12 in-lbs. Reinstall into panel as instructed in the EFD Replacement section above and then test the EFD.

ACU/ACU2 Removal

Verify power is off. Remove ACU by unscrewing the jackscrews of all D-sub connectors. Gently remove the connectors by pulling straight out. Remove the six (6) 6-32 mounting screws securing the ACU to the aircraft and remove unit from aircraft.

ACU/ACU2 Replacement

Verify power is off. Install ACU in mounting location and install six (6) 6-32 mounting screws through holes in ACU mounting tabs. Tighten to 12 in-lbs. Install all D-sub connectors securing each with the two jackscrews per connector.

Verify proper bonding per Section 10.1.2, then perform post installation tests in Sections 10.6.6, 10.6.7, 10.6.9, 10.6.10 of the EFD1000 and EFD500 SW v2.X Installation Manual 900-00003-001 Rev CF or later. For the E5, verify bonding per Section 10.2 and perform post install tests in Sections 10.6.5 thru 10.6.10 of the EFD1000 E5 Dual Electronic Flight Instrument (EFI) Install Manual 900-00041-001 Rev () or later.

CAUTION: *The RSM is very sensitive to local magnetic fields. Do not use a magnetic tipped screw driver when removing and replacing the RSM.*

RSM Removal

Verify power is off. It will be necessary to gain access to the underside of the RSM mounting location in order to unplug the RSM connector. Unscrew RSM electrical connector from inside and undo shield ground wire from ground stud. Remove sealant from around base of RSM and on mounting screws. Remove four (4) 8-32 non-ferrous mounting screws from RSM and remove RSM from aircraft taking care to guide 24 inch "pigtail" connector out through ½ inch hole in aircraft skin.

RSM Replacement

Verify power is off. Replace the O-ring on the RSM. Contact Aspen Avionics for replacement O-ring (256-00001-001). Verify RSM shim is installed between aircraft skin and RSM if required. Feed circular connector down through ½ inch hole in aircraft skin and mount RSM (vent hole faces aft) with four (4) 8-32 non-ferrous screws. Tighten to 12-15 in-lbs. It is critical that the screws be non-ferrous to prevent the introduction of compass errors. Connect the circular electrical connector and cable tie harness to prevent chaffing and interference. Connect shield ground wire to ground stud. For RSM locations that are external or in a wet environment seal around base and on top of four mounting screws of the RSM using one of the following non-corrosive sealants:

Non-pressure vessel mounting	Dow Corning 738, MIL-A-46146 or equiv.
Pressure vessel mounting	Pro-Seal PS 870B-1/2, MIL-PRF-81733D, or equiv.

Verify proper bonding per Section 10.1.2, and perform RSM Calibration per Section 10.5 of the EFD1000 and EFD500 SW v2.X Installation Manual, 900-00003-001 Rev CF or later. Also check OAT operation per Section 10.6.4 and check RSM GPS operation per Section 10.6.6. For the E5 verify bonding per Section 10.2 and perform RSM Calibration per Section 10.5 of the EFD1000 E5 Dual Electronic Flight Instrument (EFI) Install Manual 900-00041-001 Rev () or later.

CM Removal

Verify power is off. Cut the two (2) cable ties affixing the CM to the PFD wiring harness. Unplug the Molex connector by pressing down on the locking tab and gently pulling the connector from the module.

CM Replacement

Verify power is off. Plug the Molex connector into the module until it clicks. Cable tie the module to the PFD wiring harness.

Perform the Installation Menu Unit Configuration per section 10.4.5 of the EFD1000 Installation Manual, 900-00003-001 Rev CF or later (or 900-00041-001 Rev () or later, for E5).

Perform RSM Calibration per Section 10.5 of the EFD1000 and EFD500 SW v2.X Installation Manual, 900-00003-001 Rev CF or later (or 900-00041-001 Rev () or later, for E5).

To display the angle of attack (AOA) indicator (if enabled), perform the AOA Calibration Instructions in the EFD1000 and EFD500 SW v2.X Installation Manual, 900-00003-001 Rev CF or later.

EA100 Removal

Verify power is off. Remove the EA100 by unscrewing the jackscrews of both D-sub connectors. Gently remove the connectors by pulling straight out. Remove the six (6) 6-32 mounting screws securing the EA100 to the aircraft and remove unit from aircraft.

EA100 Replacement

Verify power is off. Install EA100 in mounting location and install six (6) 8-32 mounting screws through holes in EA100 mounting tabs. Tighten to 12 in-lbs. Install both D-sub connectors, securing each with the two jackscrews per connector.

Verify EA100 bonding per the Mechanical Installation section and perform post installation tests in the EFD1000 and EFD500 SW v2.X Installation Manual 900-00003-001 Rev CF or later (or 900-00041-001 Rev () or later, for E5), Appendix E.

If the EA100 being installed is a replacement then configure it using the EA100 Alignment Tool and set the values to those recorded on the configuration table in the permanent aircraft records.

EBB58 Removal

Verify power is off. Unscrew two jackscrews that secure the D-sub connector to the battery and then unplug the connector. Spread battery tray hold down clips outward to release battery and slide battery out of tray.

EBB58 Replacement

Verify power is off. Slide battery into tray until hold down clips lock into place. Install D-sub connector and secure with both jackscrews.

NOTE: If the spring clip(s) are sprung so the pins do not fully seat, the mounting bracket must be replaced.

Turn on the EFD1000 MFD or EBD and switch unit to battery. Verify charge of 80% or greater. If battery is below 80% then charge battery to above 80% by switching EFD back to aircraft power. EBB58 battery will recharge as long as EFD is powered up on aircraft power.

EBB58 Tray Removal

Verify power is off. Remove the battery. Remove the four screws securing the tray to the airframe.

EBB58 Tray Replacement

Replace the four screws securing the tray to the airframe. Tighten to 12 in-lbs. Verify proper bonding per Section 10.1.2 of the EFD1000 Installation Manual, 900-00003-001 Rev CE or earlier.

APS4A Removal

Verify power is off. Remove the APS4A by unscrewing the jackscrews of the D-sub connector. Gently remove the connector by pulling straight out. Remove the four mounting screws securing the APS4A to the aircraft and remove unit from aircraft.

APS4A Replacement

Verify power is off. Install APS4A in its mounting location and install four 6-32 mounting screws through holes in APS4A mounting tabs. Tighten to 12 in-lbs. Install the D-sub connector, securing with two jackscrews per connector.

Verify APS4A bonding per the Mechanical Installation section and perform post installation tests in accordance with Appendix G - EFD1000 Installation Manual, 900-00003-001 Rev CF or later.

CG100 Removal

Verify power is off. Remove the CG100 by unscrewing the jackscrews of the D-sub connectors. Gently remove the connectors by pulling straight out. Remove the six mounting screws securing the CG100 to the aircraft and remove unit from aircraft.

CG100 Replacement

Verify power is off. Install CG100 in its mounting location and install six 6-32 mounting screws through holes in CG100 mounting tabs. Tighten to 12 in-lbs. Install the D-sub connectors, securing with two jackscrews per connector. Note - it may be necessary to remove the antenna from the old CG100 and install it on to the SMA connector of the replacement CG100.

Verify CG100 bonding per the Mechanical Installation section and perform post installation tests in accordance with Appendix H - EFD1000 Installation Manual, 900-00003-001 Rev CF or later.

NOTE: Appendix H of document 900-00008-001 directs the user to another supporting document (900-000023-001, see "CG100 Installation, and "System Checkout") information for the CG100. This is because the primary document for the STC is document 900-00003-001, and information regarding support documentation will be in this document.

15 Wiring and Component Location Data

INSTRUCTIONS:

NOTE: The wire routing information placed here by the installer must be detailed enough to enable maintenance personnel to troubleshoot, repair, and service the electrical system. These diagrams must also include a method of determining connector type (if other than the connectors supplied by Aspen Avionics in the Installation Kits), wire type, and wire size. The system wiring diagrams are descriptive data of the systems used on the aircraft, and are part of the ICA.

- a) Draw in the locations of the EFD1000 system, including the EFD(s) (PFD, EBD, E5, MFD), RSM, optional ACU/ACU2, EBB58, EA100, CG100 and autopilot locations (Figures 1 and 2).
- b) Draw in the circuit breaker and switch locations on instrument panel (Figure 3).
- c) Draw in the EFD to RSM cable routing, including wire type and wire size.
- d) Draw in the ACU to EFD and ACU to autopilot cable routing, including wire type and wire size.
- e) Draw in the optional EA100 to EFD and EA100 to autopilot cable routing, including wire type and wire size.
- f) Draw in the optional CG100 to MFD cable routing.
- g) Draw in the optional CG100 USB port locations.
- h) Show the location of access panels for inspection and servicing the EFD1000 system, including diagrams of the access plates and any information necessary to gain access when access plates are not provided.

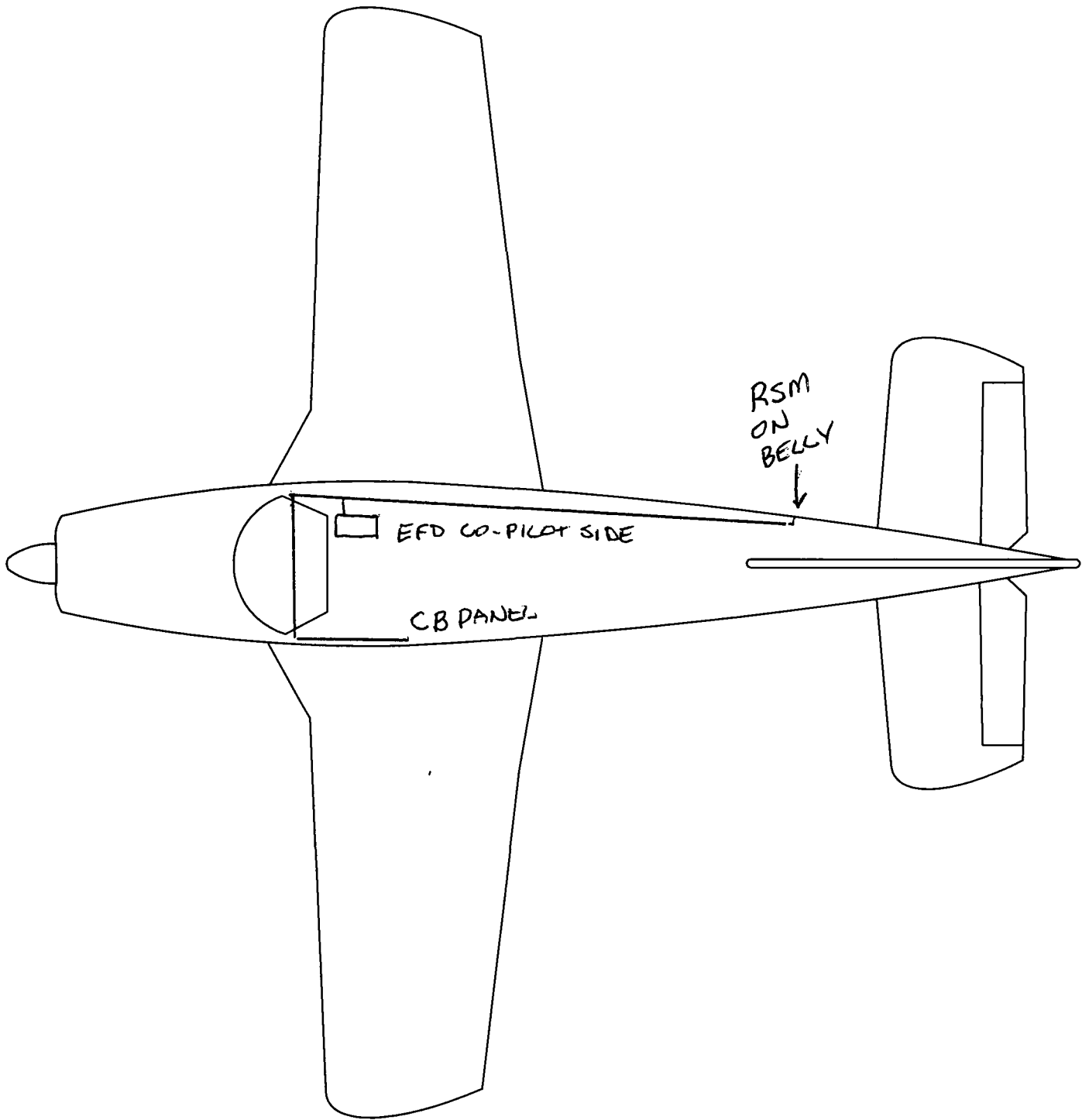


Figure 1 - EFD1000 Components and cable routing (top view)

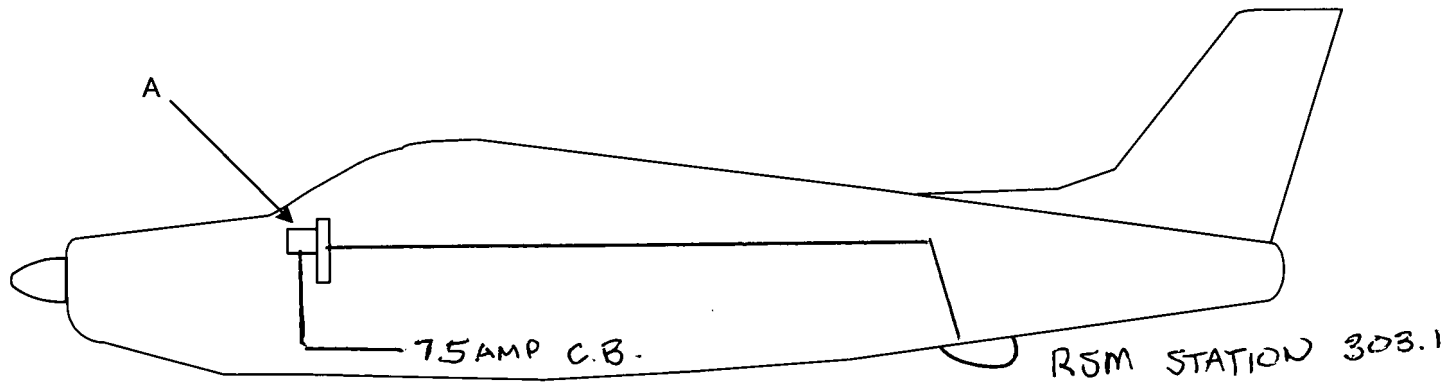


Figure 2 - EFD1000 Components and cable routing (side view)

LRU Definitions

- | | |
|---------------------------------------|--|
| A. EFD (CM is wired within 6" of EFD) | G. EBB58 - optional equipment |
| B. RSM (PFD, EBD, or E5) | H. Autopilot computer location -optional equipment |
| C. ACU/2 #1 - optional equipment | J. EWR50 location - optional equipment |
| D. ACU/2 #2 - optional equipment | K. EA100 location - optional equipment |
| E. MFD#1 and MFD#2 -optional | L. APS4A location - optional equipment |
| F. RSM (MFD) - optional | M. CG100 - optional equipment |

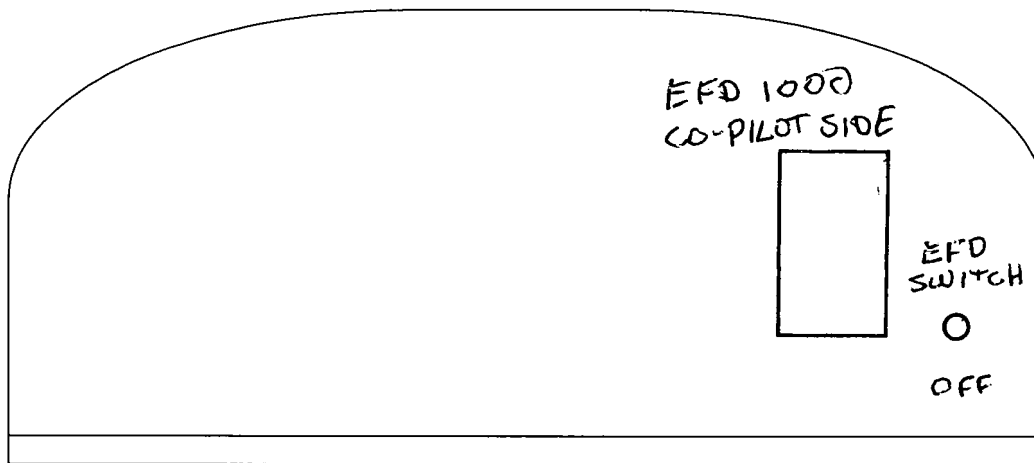


Figure 3 - Circuit Breaker and Switch Locations

Circuit Breaker and Switch Definitions

- a) PFD/MFD/EBD/E5 circuit breakers
- b) PFD/MFD/EBD/E5 switch(s)
- c) ACU circuit breaker(s) - optional
- d) A/P AHRS circuit breaker -w/opt. EA100
- e) EBB58 Emergency Disconnect Switch
- f) A/P AHRS FAIL light - w/ opt. EA100
- g) PRESEL/(ARMED) switch - optional
- h) A/P Source switch - optional
- i) GTWY circuit breaker - optional
- j) ASPEN GTWY switch - optional

INSERT WIRING DIAGRAMS AFTER THIS PAGE

(The drawings must include detailed information on the interface of the EFD1000 system suitable for system troubleshooting)

Wire Types in this Manual

- SINGLE UNSHIELDED
MIL-W-22759
- SINGLE SHIELDED 22 AWG
MIL-W-27500
- TWISTED SHIELDED PAIR 22 AWG
MIL-W-27500
- TINNED COPPER OVERBRAID
DABURN P/N 2350-X
- HIRF/LIGHTNING OVER BRAID OR
DOUBLE SHIELDED WIRE

All wires in this manual are 22-AWG unless otherwise noted.

Connect ground lugs to airframe ground with as short a conductor as possible.

Connect to airframe ground with as short a conductor as possible.

Note wires cross and ~~align~~ in numerical order

Each EFD must use its own individual switch for redundancy. Label accordingly. PFD may be labeled "PFD" in a PFD only installation. "ASPEN" label is for EBD installations only.

Sonalert or Audio Out is required on PFD Pro with SVT enabled, otherwise it is optional. Connection of both Sonalert and Audio not allowed. MFD(s), PFD Pilot, and VFR PFD are no connect. Audio is PFD sw 2.10 and later.

Audio must be adjusted such that the audio level is similar to other audio/warnings heard by the flight crew through adjustment pots on audio panel or setting of audio level in PFD config menu or by use of trimming resistors.

PFD RSM and MFD RSM wiring must be isolated/separate from each other. Also PFD RSM wiring must be isolated/separate from EBB58 wiring. See Section 6.5.3.

VFR PFD only – place placard near the PFD stating "No Vertical Deviation on PFD"

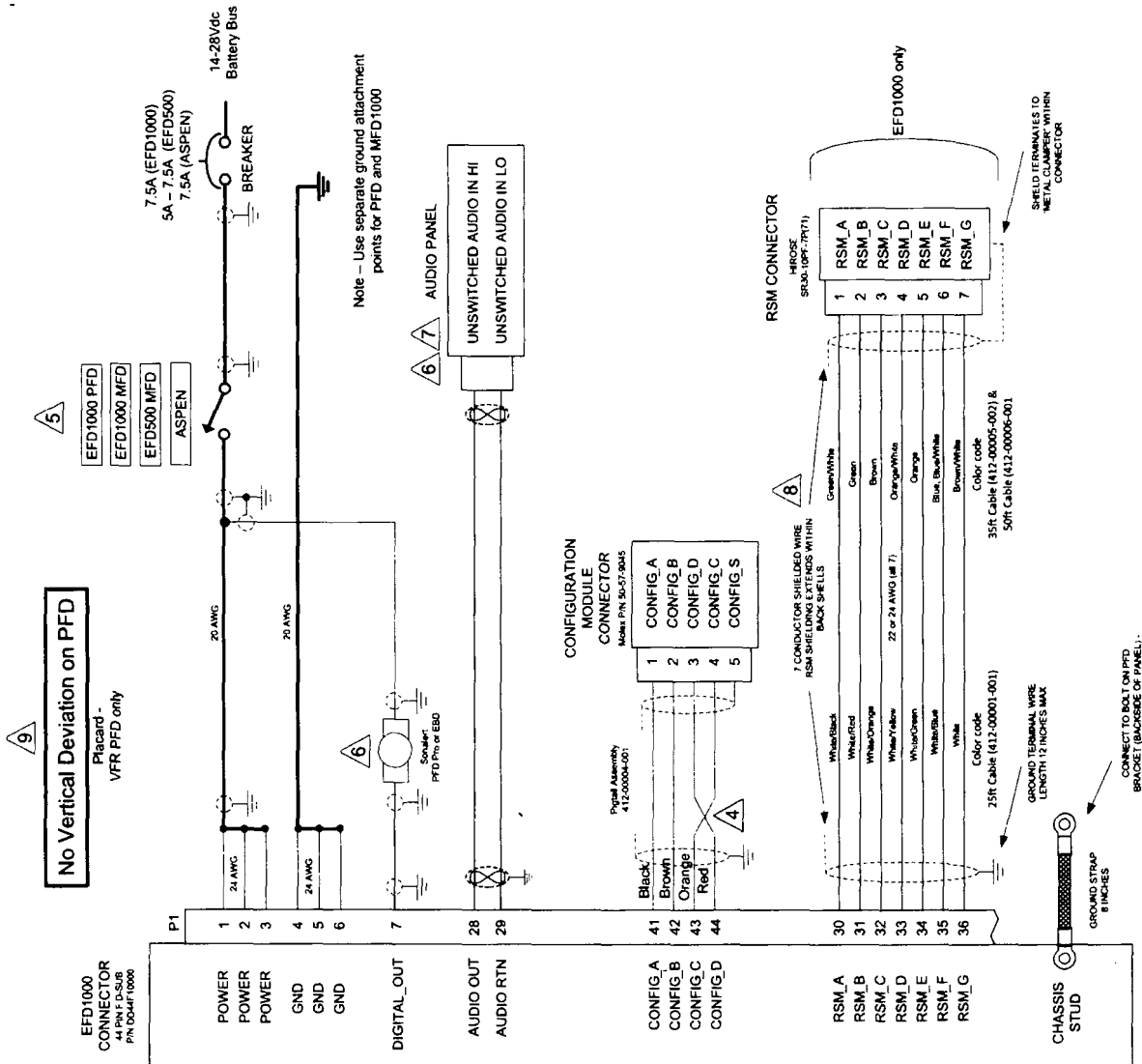
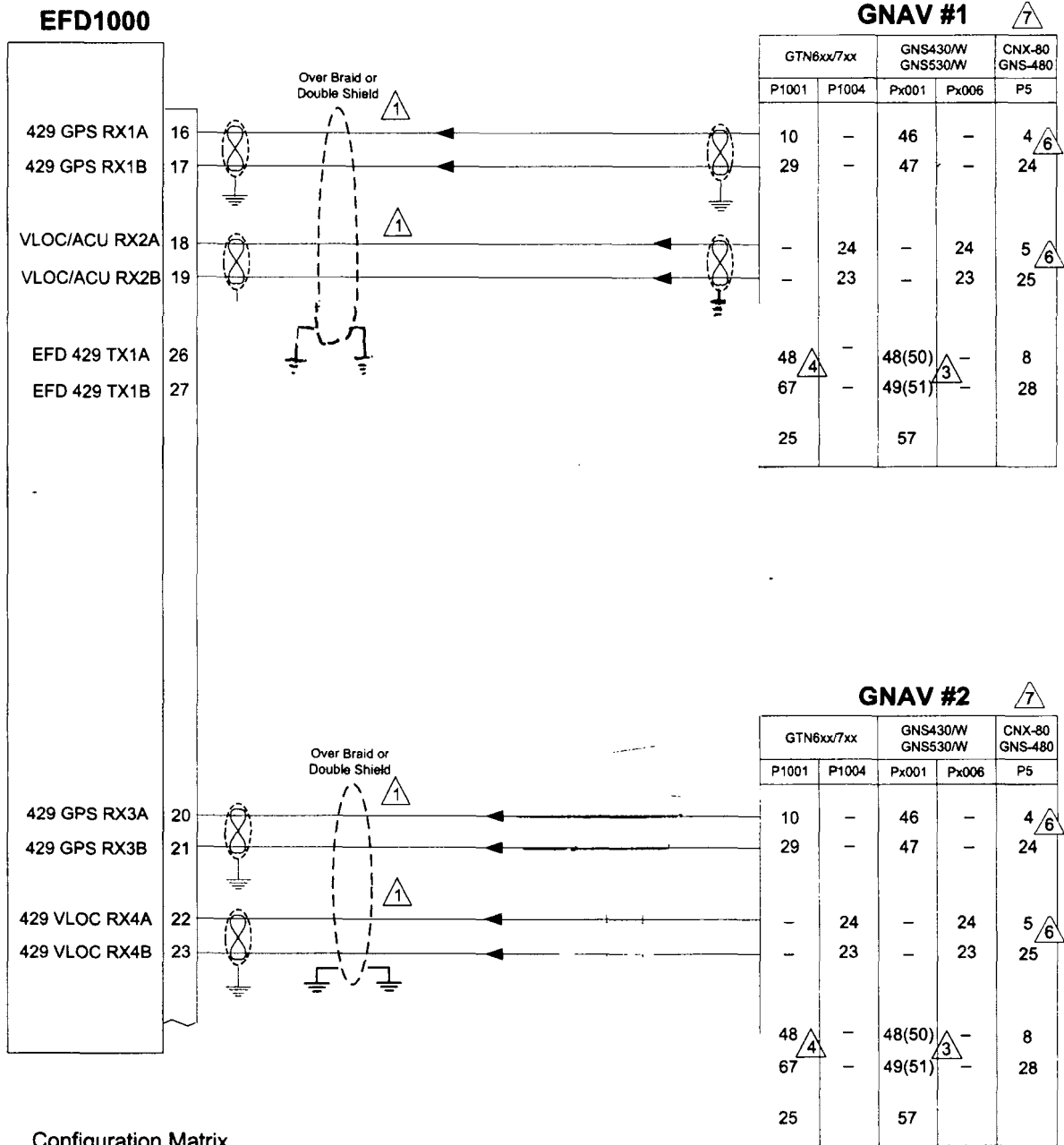


Figure 9-1: EFD1000/500 Main Connections





- ^{△1} Over shield or over braid required on this wire bundle to comply with HIRF & Lightning. Extend within back shell. Ground at both ends.
- ^{△2} See Figure 9-27 for GNS and GTN configuration.
- ^{△3} Use pins 48 & 49 or 50 & 51 not both.
- ^{△4} If 429 IN 1 is in use see manufacturers installation instructions and wire to another unused 429 IN Port.
- ^{△5} See Figure 9-24, 9-25, 9-26 for Back-Up NAV recommendations.
- ^{△6} Pins 4 & 24 may be swapped with pins 5 & 25 if configured accordingly.
- ^{△7} Requires GNS-480 SW v2.3. See Figure 9-27 for GNS-480 configuration.
- ^{△8} Refer to manufacturers' documentation to verify the integration data and for information regarding checkout procedures. This drawing, as it pertains to the non-Aspen equipment, is for reference only.

Figure 9-9: PRO/VFR/EBD Adv Dual Digital without Autopilot Interface



To exit the Installation Menu at any time press the MENU button. All data will be saved as displayed. The system will reboot and "INITIALIZING" will appear on the display for approximately 40 seconds.

Select the appropriate section from the following pages that applies to your system or systems. The EFD1000 PFD, EFD1000 MFD, and the EFD500 MFD have identical page layouts and configuration options. The EFD500 MFD pages are unique in that some configuration options are grayed out because they refer to a depopulated ADAHRS function.

- Section 10.4.6 -EFD1000 PFD and MFD (print twice for dual EFD1000 systems)
- Section 10.4.7 -EFD500 MFD

Record aircraft information at the beginning of the section and record the configuration in each table as shown below.

Make a copy of the appropriate section with the information recorded for inclusion into Aspen Avionics document #900-00012-001, Instructions for Continued Airworthiness.

Use section 10.4.8- Configuration Definitions, to assist with configuration "Options" selection.

EXAMPLE:

Record Aircraft and Equipment Data

Installation Date:	
Aircraft Model:	EFD1000 S/N:
Aircraft Type:	RSM S/N:
Aircraft S/N:	ACU S/N:
	CM S/N:

EXAMPLE:

Record installation as configured and wired

INSTALLATION MENU PAGE 9 - ACU CONFIG		SW v1.0
Feature	Options	Actual Setting
ACU HSI TYPE	0,1 (0=KI525A, 1=NSD360)	
ACU FD TYPE	0,1,3,4 (0=NONE,1=KI256, 3=G550)	
ACU DATUM	NORMAL, REVERSED	
FD PITCH OFFSET ADJ	-10.0 to +10.0 (degrees)	
FD ROLL OFFSET ADJ	-10.0 to +10.0 (degrees)	
Notes:		

10.4.6 EFD1000 Installation Menu Configuration

Use this form for the EFD1000 PFD and EFD1000 MFD and EFD1000 EBD

INSTALLATION MENU Configuration - EFD1000

Installation Date: <i>3-15-2021</i>	
Aircraft Model: <i>C414</i>	EFD1000 S/N: <i>9712495</i>
Aircraft Type: <i>PISTON TWIN</i>	RSM S/N: <i>35064</i>
Aircraft S/N: <i>414-0840</i>	ACU S/N: <i>N/A</i>
	CM S/N: <i>N/A</i>



10.4.6.2 Installation Menu Page - IAS CONFIG B

Set Speed Bands per Aircraft Flight Manual. Note- Vne is set on previous page.

OVERSPEED ALERT-A setting of DISABLE is the only valid configuration allowed under the STC at this time.

INSTALLATION MENU PAGE - IAS CONFIG B		SW v2.3 and above
Feature	Options	Actual Setting
OVERSPEED ALERT	DISABLE, ENABLE	DISABLE
Vno	0 to 450	205
Vfe	0 to 450	147
Vs	0 to 450	85
Vso	0 to 450	71
Notes:	VNE	236

10.4.6.3 Installation Menu Page - IAS CONFIG C

Set Speed Markers per Aircraft Flight Manual.

INSTALLATION MENU PAGE - IAS CONFIG C		SW v2.0 and above
Feature	Options	Actual Setting
Vyse	0 to 450	120
Vmc	0 to 450	74
Triangle	0 to 450 VXSE	105
Not Used		
Not Used		
Notes:		

10.4.6.4 Installation Menu Page - IAS CONFIG D

NOTE: These selections are rotorcraft only and are grayed out.

Does not apply to EFD1000

10.4.6.5 Installation Menu Page – IAS CONFIG E

This menu is used to select the color of the airspeed tape speed bands so that they can exactly match the existing airspeed indicator.

SPD Band 2 – Maximum structural cruising speed (Vno) to the never exceed speed (Vne). Yellow is the default for piston engine aircraft. Set as required to match existing IAS indicator.

SPD Band 3 – No flap stall speed (Vs) to the maximum structural cruising speed (Vno). Green is the default for piston engine aircraft. Set as required to match existing IAS indicator.

SPD Band 4 – Full flap stall speed (Vso) to the maximum flap extend speed (Vfe). White is the default for piston engine aircraft. Set as required to match existing IAS indicator.

Note: “CLEAR” will render a tape marking (Speed Band) with no color, which will replicate certain Vmo/Mmo mechanical airspeed indicators such as ones with a black background with white tick marks and numbers.

INSTALLATION MENU PAGE – IAS CONFIG E		SW v2.3 and above
Feature	Options	Actual Setting
SPD Band 2	YELLOW, CLEAR	YELLOW
SPD Band 3	GREEN, WHITE, CLEAR	GREEN
SPD Band 4	WHITE, CLEAR	WHITE
Not Used		
Not Used		
Notes:		

10.4.6.6 Installation Menu Page – IAS CONFIG F

IAS UNITS – Set per Aircraft Flight Manual.

TAPES – Configure based on Flowchart in Figure 10-4.

VSPD EDIT – Set based on “Operator Configuration Checklist” of Appendix C or to owner/operator preference.

INSTALLATION MENU PAGE – IAS CONFIG F		SW v2.0 and above
Feature	Options	Actual Setting
IAS UNITS	kts, mph	KTS
TAPES	UNLOCKED, LOCK OFF, LOCK ON	UNLOCKED
VSPD EDIT	UNLOCKED, LOCKED	UNLOCKED
Not Used		
Not Used		
Notes:		

10.4.6.7 Installation Menu Page – IAS CONFIG G (SW v2.2 and above)

IAS DISPLAY - DISABLE will remove the airspeed bug from the tape, the upper left window, and the left knob. The window will continue identify the units (KTS or MPH) displayed on the airspeed tape.

ALT DISPLAY - DISABLE will remove the altitude bug from the tape, the upper right window, and the right knob. It also removes the MIN field.

BARO DISPLAY - When disabled will remove the BARO setting from the right knob and the BARO display from the center Databar. The Disable setting will also remove the baro-corrected altitude label from the A429 and RS-232 busses.

VSI DISPLAY (added sw 2.2.3) - Always On means the tape will always be displayed. Always Off means the tape is always turned off. AUTO means the tape will declutter when the vertical speed is between +/-100fpm. ALWAYS ON or AUTO are the only settings permitted under this STC.

CAUTION: Setting **BARO DISPLAY** to **DISABLE** may only be used when the **TAPES** are Locked Off and it is a stand-alone PFD. PFD/MFD Installations must be set to **ENABLE**.

INSTALLATION MENU PAGE – IAS CONFIG G		SW v2.2 and above
Feature	Options	Actual Setting
IAS DISPLAY	DISABLE, ENABLE	ENABLE
ALT DISPLAY	DISABLE, ENABLE	ENABLE
BARO DISPLAY	DISABLE1, ENABLE 1 (read Caution above)	ENABLE
VSI DISPLAY	ALWAYS ON, ALWAYS OFF, AUTO*	AUTO
Not Used		
Notes: * ALWAYS ON or AUTO are the only permitted settings under this AML-STC		

10.4.6.8 Installation Menu Page – NAV SETUP A

The following menu will be used to configure the EFD1000 system for the installed GPS, NAV and autopilot interfaces. The installation wiring diagrams in Section 9 have a Configuration Matrix table that will be used to set ID#1 and ID#2.

INSTALLATION MENU PAGE – NAV SETUP A		SW v2.3 and above
Feature	Options	Actual Setting
GPS/NAV #1	NONE,A,B,C,D,E,F,G,H,I,J,K,L,M,P,Q,R,S	A
GPS/NAV #2	NONE,A,B,C,D,E,F,G,H,I,J,K,L,M	A
Not Used		
Not Used		
Not Used		
If no GPS or NAV's are installed but the ACU is installed, then use Config 1S-2NONE		

10.4.6.16 Installation Menu Page - MISC CONFIG A

RSM Orientation- TOP (A-05-111-00, -001, -011, -021, -002, -012, and -022 RSM), BOTTOM (-003, -013 and -023 RSM)

RSM GPS Enable - ENABLE⁽¹⁾ if A-05-111-00, -001, -011, or -021 RSM and RSM has view of satellites. Set to INTERCOM if MFD1000⁽¹⁾ using a -002 or -003 RSM or -001 RSM is internal with no view of satellites. Set to DISABLE if a PFD is using a -002 or -003 RSM or has no view of satellites. INTERCOM setting was added in software v2.3 and later.

RAD ALT CONFIG -Set to NONE unless Radio Altimeter is installed, then set to correct type per table in Section 8.

RSM GPS USAGE - EMER ONLY is the only permitted setting under the STC.

WIND DISPLAY (added SW v2.2.3) - ENABLE >= 30KIAS is default setting. DISABLE removes the wind vector/speed/direction from databar. Maybe set per operator preference.

Caution: Use of the MODE 2 selection affects the certification of the EFD1000 system and is prohibited.

INSTALLATION MENU PAGE - MISC CONFIG A		SW 2.3 and above
Feature	Options	Actual Setting
RSM Orientation	TOP, BOTTOM (Inverted orientation)	BOTTOM
RSM GPS Enable	DISABLE, ENABLE ⁽¹⁾ , INTERCOM	DISABLE
RSM GPS USAGE	EMER ONLY/ MODE 2 (read Caution above)	N/A
RAD ALT CONFIG	NONE, TYPE 1, TYPE 2, TYPE 3, TYPE 4, TYPE 5, TYPE 6, TYPE 7	NONE
WIND DISPLAY	DISABLE, ENABLE >= 30KIAS, ENABLE >= 40KIAS, ENABLE >= 50KIAS, ENABLE >= 60KIAS, ENABLE >= 70KIAS, ENABLE >= 80KIAS, ENABLE >= 90KIAS	ENABLE > 30KTS
Notes: The standard EFD1000 MFD RSM (-002, -012, -021) does not include a GPS.		
⁽¹⁾ ENABLE is required if connection is to a v2.10 EFD1000 MFD that is being used as standby Attitude.		

10.4.6.17 Installation Menu Page - MISC CONFIG B

The following menu will be used to set the aircraft electrical system voltage. EFD Battery Config - set to INTERNAL. The Panel Tilt Pitch Adj is aligned for tilted instrument panels and the Panel Roll Adj is adjusted to compensate for slightly misaligned EFD mounting in the instrument panel. See Section 10.4.8 for instructions on setting the Panel Tilt Pitch Adj, Panel Roll Adj, and Attitude Ref Symbol adjustments.

INSTALLATION MENU PAGE - MISC CONFIG B		SW 2.0 and above
Feature	Options	Actual Setting
ELEC SYSTEM	14 VOLT, 28 VOLT	28 V
EFD BATTERY CFG:	INTERNAL, REMOTE	INTERNAL
ATTITUDE REF SYMBOL ADJ:	-5.0 to +5.0 degrees	
PANEL TILT PITCH ADJ	-10.0 to +20.0 degrees	
PANEL ROLL ADJ	-2.0 to +2.0 degrees	

- 3) Using the reading from a calibrated temperature gauge located in the immediate vicinity of the RSM, compare it to the OAT reading on the PFD.
- 4) If the OAT reading on the PFD is high by up to 8 degrees it can be adjusted by entering -1 to -8 in the OAT BIAS field.

SV ALERT CONFIG - There are 5 options but only two are permitted under the STC. Set to Option 1 if the aircraft does not have a TAWS installed, set to Option 3 if it does have a TAWS installed. FPM is Flight Path Marker.

- 1= Alert Tone, Alert Annunciations, FPM Alert Colors, and Terrain Coloring are configured
- 2= Only Alert Annunciations, FPM Alert Colors, and Terrain Coloring are configured
- 3= Only FPM Alert Colors, and Terrain Coloring are configured
- 4= Only Terrain Coloring is configured
- 5= None of the Above

DISPLAY FPM - There are 3 settings and the "PFD/MFD" setting is recommended.

- DISABLE = FPM is not displayed
- PFD ONLY= FPM is displayed on the PFD, not on the MFD
- PFD/MFD= FPM is displayed on both the PFD and MFD

AIRCRAFT REF SYMBOL - Option 1 is recommended.

- 1= Ref Symbol Type 1



- 2= Ref Symbol Type 2



- 3= Ref Symbol Type 3



INSTALLATION MENU PAGE - MISC CONFIG D		SW v2.4 and above
Feature	Options	Actual Setting
OAT SOURCE	NONE, RSM, PROBE, INTERCOM	RSM
OAT BIAS	0 to -8 degrees	Ø
SV ALERT CONFIG	1,2,3,4,5	1
DISPLAY FPM	DISABLE, PFD ONLY, PFD/MFD	PFD ONLY
AIRCRAFT REF SYMBOL	1,2,3	1
Notes:		

10.4.6.20 Installation Menu Page - MISC CONFIG E

MAG DIP DETECTION - Must be set to ENABLE on both the PFD and MFD1000 when the EFD1000 MFD is used as backup Attitude. Otherwise set to Disable on both. When set to Enable the PFD and MFD have an additional detection layer of low horizontal magnetic field strength. Should it drop below a set threshold a message "ATT FAIL

EFD1000 Operator Configuration Checklist

Aircraft Type: CESSNA 414 Aircraft S/N: 414-0840

Aircraft Tail Number: N414JT

Owner/Operator: JOSEPH T. ALFRED

I request that the following settings be configured into my EFD1000 PFD as described below. These airspeeds must match the requirements for the aircraft above and must match the values in the Aircraft Flight Manual (AFM), Pilot Operating Handbook (POH), or other legal form of documentation (e.g., Placard).

Vne (or Vmo) 236
 Vno 205
 Vfe 147
 Vs 85
 Vso 71
 Vyse 120 Multi engine only
 Vmc 74 Multi engine only
 \triangleleft 164 Initial flap extension speed

I also would like my V-Speed Textual Markers set as per below: (Note - these may be edited by the pilot unless LOCKED). Insert a zero "0" in any field you wish not to appear on display.

Va 160
 Vbg _____
 Vref _____
 Vr 91
 Vx 85
 Vy 112
 Vlo 143 retractable gear only
 Vle 143 retractable gear only

I would like my Airspeed Textual Markers above: LOCKED / UNLOCKED (circle one)

I would like:

Voice alerts through the unswitched input to the audio panel / Sonalert Audio (circle one)

Joseph T. Alfred Owner / Operator Date 3-15-2021



US Department of Transportation
Federal Aviation Administration

MAJOR REPAIR AND ALTERATION (Airframe, Powerplant, Propeller, or Appliance)

Form Approved
OMB No. 2120-0020
2/28/2011

Electronic Tracking Number

For FAA Use Only

INSTRUCTIONS: Print or type all entries. See Title 14 CFR §43.9, Part 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. §44701). Failure to report can result in a civil penalty for each such violation. (49 U.S.C. §46301(a))

1. Aircraft	Nationality and Registration Mark N414JT	Serial No. 414-0840	
	Make CESSNA	Model 414	Series 400
2. Owner	Name (As shown on registration certificate) Joseph T. Alfred		Address (As shown on registration certificate) Address 207 North Bay Circle
			City Paqosa Springs State CO
			Zip 81147 Country USA

3. For FAA Use Only

4. Type		5. Unit Identification			
Repair	Alteration	Unit	Make	Model	Serial No.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	AIRFRAME	_____	(As described in Item 1 above)	_____
<input type="checkbox"/>	<input type="checkbox"/>	POWERPLANT			
<input type="checkbox"/>	<input type="checkbox"/>	PROPELLER			
<input type="checkbox"/>	<input type="checkbox"/>	APPLIANCE	Type		
			Manufacturer		

6. Conformity Statement

A. Agency's Name and Address		B. Kind of Agency	
Name Avtronics Inc		U. S. Certificated Mechanic	
Address 513C Condor Dr		Manufacturer	
City Paqosa Springs State CO		Foreign Certificated Mechanic	
Zip 81147 Country USA		C. Certificate No.	
		<input checked="" type="checkbox"/> Certificated Repair Station	
		<input type="checkbox"/> Certificated Maintenance Organization	
		3AXR823B	

D. I certify that the repair and/or alteration made to the unit(s) identified in item 5 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

Extended range fuel per 14 CFR Part 43 App. B <input type="checkbox"/>	Signature/Date of Authorized Individual <i>J.C. Alfred</i> Repairman 3617004 6-4-2020
--	---

7. Approval for Return to Service

Pursuant to the authority given persons specified below, the unit identified in item 5 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is Approved Rejected

BY	FAA Fit. Standards Inspector	Manufacturer	Maintenance Organization	Persons Approved by Canadian Department of Transport
	FAA Designee	<input checked="" type="checkbox"/> Repair Station	Inspection Authorization	Other (Specify)

Certificate or Designation No. 3AXR823B	Signature/Date of Authorized Individual <i>J.C. Alfred</i> CO Inspector 6-4-2020
---	--

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. Description of Work Accomplished

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

N414JT

June 4, 2020

Nationality and Registration Mark

Date

PER STC SA01714W INSTALLED GARMIN GTX 330ES TRANSPONDER WITH ADS-B OUT
IN # 2 POSITION

This unit replaces previously installed King KT73 transponder and is installed in same OEM radio rack position
at station 110.50

this unit is interfaced with the following previously installed equipment:

Garmin GNS 430W for GPS position
Garmin GDL88 for UAT interface
Sperry EA-801 encoding altimeter for gray code altitude information
Panel mounter 1-2 switch to select between transponder 1 or 2 standby functions.

All work done in accordance with the following:

Garmin 330ES STC Install manual # 190-00734-10 rev 14
Cessna 414 service manual
AC 43.13 1B Ppgs. 11-85 11-174 11-186 11-210 and AC 43.13 2B Ppg 202,203,208

Garmin GTX 330ES #2 GPS protected by 5 amp circuit breaker on Avionics buss labeled "XPDR 2".

Transponder / encoder #2 system checked I/A/W FAR part 43 appendix F satisfactory
C/W FAR 91:413

Electrical load checked less than 80% continuous

Revised weight and balance and equipment lists.

Approved Flight Manual Supplement for Garmin GTX33X p/n 190-00734-15 Rev 4
added to aircraft flight manual.

ICA's

Garmin Instructions for continued airworthiness p/n 190-00734-11 rev 7 pages 4-1 thru 4-7 attached.

END

Additional Sheets Are Attached

4 INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

4.1	Applicability	4-2
4.2	Airworthiness Limitations	4-2
4.3	Servicing Information	4-3
4.3.1	On Condition Servicing	4-3
4.3.2	Special Tools	4-3
4.4	Maintenance Intervals	4-4
4.5	Visual Inspection	4-5
4.6	Electrical Bonding Test	4-7
4.7	Additional Instructions	4-7

This section provides Instructions for Continued Airworthiness for the GTX 33X and GTX 3X5 with ADS-B installation. This section satisfies the requirements for continued airworthiness as defined by 14 CFR Part 23.1529 and Part 23 appendix G. Information in this section is required to maintain the continued airworthiness of the GTX 33X and GTX 3X5 as installed under this AML STC.



4.1 Applicability

This document applies to all aircraft equipped with GTX 33X and GTX 3X5 units with ADS-B per STC SA01714WI.

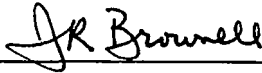
Modification of an aircraft by this STC obligates the aircraft operator to include the maintenance information provided by this document in the operator's Aircraft Maintenance Manual and the operator's Aircraft Scheduled Maintenance Program.

4.2 Airworthiness Limitations

There are no new (or additional) airworthiness limitations associated with this equipment and/or installation..

The Airworthiness Limitations section is FAA approved and specifies maintenance required under §§43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved.

FAA APPROVED



JR Brownell
ODA STC Unit Administrator
ODA-240087-CE

9-9-2019

Date



4.3 Servicing Information

GTX 33X and GTX 3X5 LRU maintenance is “on condition” only. Component-level overhaul is not required for the GTX 33X and GTX 3X5 with ADS-B installation.

4.3.1 On Condition Servicing

On Condition replacement and/or servicing should occur when an item exhibits conditions, symptoms, and/or abnormalities as defined in Section 5 of this manual. Replacement and/or servicing should be made only after the technician troubleshoots the system by using the guidance in this manual along with common avionics maintenance practices.

4.3.2 Special Tools

The following tools are needed to perform maintenance tasks.

- Calibrated milliohm meter with an accuracy of ± 0.1 milliohm or better
- Calibrated transponder ramp tester
- Calibrated Pitot/static ramp tester
- GTX 3X5 Install Tool (remote units only)
- 50 Ω 5 watt antenna load



4.4 Maintenance Intervals

Table 4-1 shows systems and components, installed by this STC, which must undergo tests or checks at specific intervals. The inspections based on calendar elapsed time have specifically stated intervals.

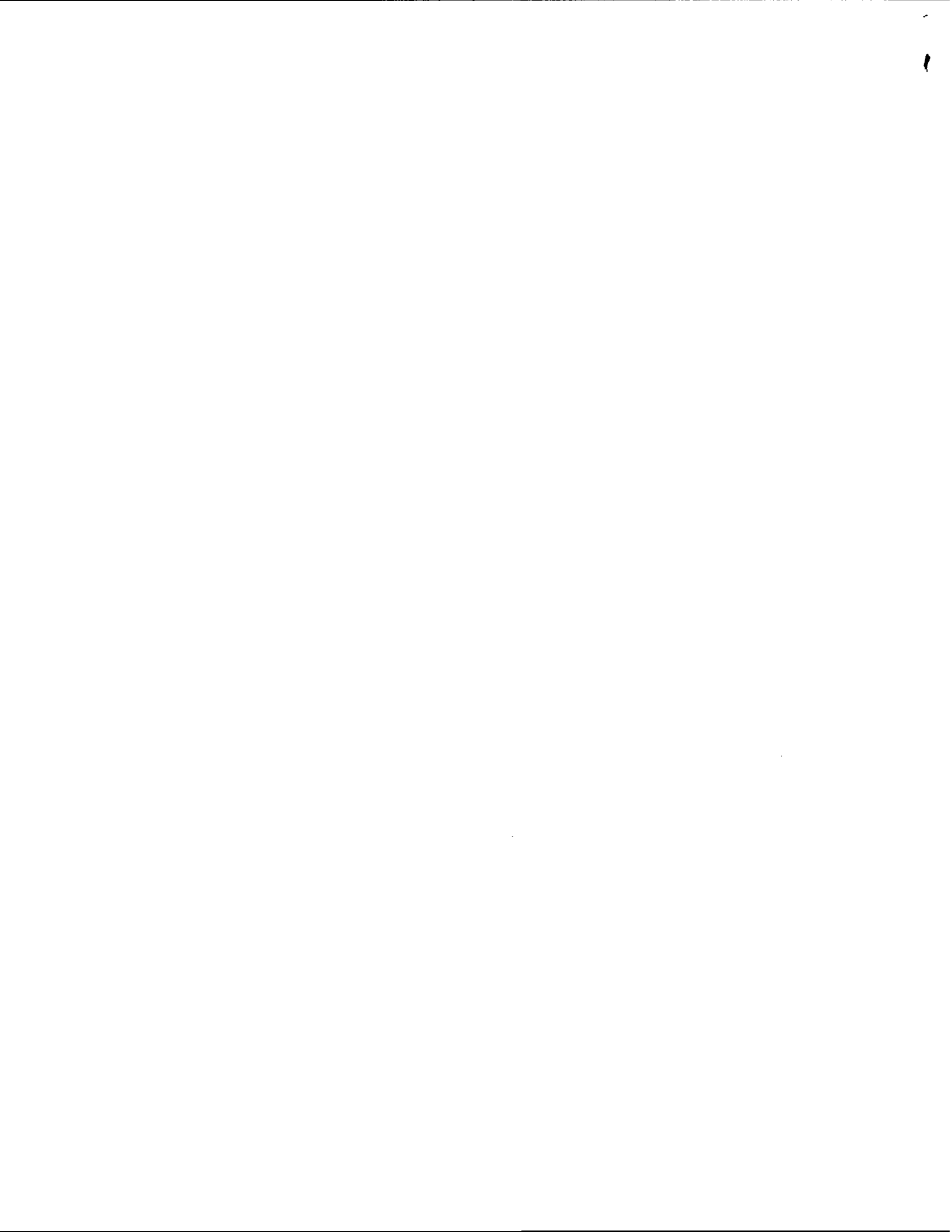


NOTE

The maintenance intervals listed in the table below must be adhered to for each installed GTX.

Table 4-1 Maintenance Intervals

Item	Description/Procedure	Section	Interval
Equipment Removal and Reinstallation	Removal and reinstallation of GTX LRUs.	6	On Condition
Cleaning	The GTX 330 and GTX 335/335D/345/345D display and bezel may be cleaned periodically. Cleaning is accomplished using a soft cotton cloth dampened with clean water. DO NOT use any chemical cleaning agents. Avoid scratching the surface of the display.	N/A	On Condition
Antenna Visual Inspection	Removal and replacement.	4.5	On Condition
Lightning Strike - Actual or Suspected	Inspect the coaxial cable connections, GTX bonding hardware (including bonding straps and tape), antenna, and surrounding areas.	4.5	On Condition
	The GTX 33/330 and GTX 3X5 receiver sensitivity must be tested and shown to comply with Title 14 CFR Part 43 Appendix F.	4.	On Condition
Testing	The GTX 33/330 and GTX 3X5 must be tested and shown to comply with Title 14 CFR Part 91.227.	8.7	Replacement of GPS Position source(s).
Equipment Visual Inspection	A visual inspection of the equipment installed by this STC must be performed.	4.5	12 Calendar Months
Testing	The GTX 33/330 and GTX 3X5 must be tested and shown to comply with Title 14 CFR Part 91.411, 91.413, and Part 43 Appendix E and F.	4.	Refer to Title 14 CFR Part 91.411, 91.413, and Part 43 Appendix E and F.
Electrical Bonding Test	An electrical bonding test must be performed on equipment installed by this STC.	4.6	10 Years or 2000 hours



4.5 Visual Inspection

Perform a visual inspection in accordance with requirements in this section. Check for corrosion, damage, or other defects for each of the installed items. Replace any damaged parts as required. Inspection may require the temporary removal of a unit or units to gain access to connectors. Follow guidance in Section 6 for equipment removal and replacement. Refer to Appendix A of this manual for equipment locations. Refer to the specific Aircraft Maintenance Manual for instructions on removing any access panels.

GTX 330/330D/335/335D/345/345D Visual Inspection

During normal aircraft inspections not to exceed 12 calendar month intervals, conduct a visual inspection of the GTX 330/330D/335/335D/345/345D installation in the following locations.

Instrument Panel

1. Inspect all GTX 330/330D/335/335D/345/345D keys for legibility of labels and markings.
2. Inspect GTX 330/330D/335/335D/345/345D units for security of attachment.
3. Inspect mounting rack and hardware for integrity.
 - a. Verify the racks, fasteners, and support structure are in good condition and securely fastened.
 - b. Inspect for signs of corrosion.
 - c. For composite aircraft, inspect any aluminum foil tape used to ground the GTX and verify that it is not torn, damaged, or showing signs of corrosion. If any of these occur then the tape must be replaced. Refer to Appendix B for details.
4. Inspect any bonding straps for corrosion, loose connections, or signs of damage. Refer to Appendix B for details.
5. Inspect the condition of the wiring harnesses and coaxial cables.
 - a. Inspect all instrument panel wiring and coax for chafing, damage, proper routing of wire bundles and security of attachment in accordance with AC 43.13-1B, chapter 11, section 8, paragraph 11-96. Pay particular attention to possible areas of chafing.
 - b. Verify that the harness shows no signs of cracking, chafing, abrasion, melting, or any other form of damage.
 - c. Inspect the GTX 330/330D/335/335D/345/345D connectors for corrosion or other defects. Check the integrity of the shield block ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment.



GTX 33/33D/335R/335DR/345R/345DR Visual Inspection

During normal aircraft inspections not to exceed 12 calendar month intervals, conduct a visual inspection of the GTX 33/33D/335R/335DR/345R/345DR installation in the following locations.

Remote Mount Rack

1. Inspect GTX 33/33D/335R/335DR/345R/345DR units for security of attachment.
2. Inspect mounting rack and hardware for integrity.
 - a. Verify the racks, fasteners, and support structure are in good condition and are securely fastened.
 - b. Inspect for signs of corrosion.
 - c. For composite aircraft, inspect any aluminum foil tape used to ground the GTX and verify that it is not torn, damaged, or showing signs of corrosion. If any of these occur then the tape must be replaced. Refer to Appendix B for details.
3. Inspect any bonding straps for corrosion, loose connections, or signs of damage. Refer to Appendix B for details.
4. Inspect the condition of the wiring harnesses and coaxial cables.
 - a. Verify that all wiring and cables are securely fastened.
 - b. Verify that the harness shows no signs of cracking, chaffing, abrasion, melting, or any other form of damage.
 - c. Inspect the GTX 33/33D/335R/335DR/345R/345DR connectors for corrosion or other defects. Check the integrity of the shield block ground attachments to the harness connector assembly as well as the integrity of the individual shields and their attachment.

Antenna Visual Inspection

During normal aircraft inspections not to exceed 12 calendar month intervals, conduct a visual inspection of the transponder antennas for the following.

1. Erosion, cracks, dents, or broken antenna. If these conditions are present, antenna must be replaced. Refer to antenna manufacturer's replacement instructions for details.
2. If the attachment is not secure, re-work the installation and complete electrical bonding test specified in Section 4.6.
3. Condition of base seals. In the event the antenna seal shows sign of damage or decomposition, re-seal and complete the electrical bonding test specified in Section 4.6.

Post Lightning Strike Inspection

A post lightning strike inspection must be performed for a suspected or actual lightning strike to antennas or any temperature sensor connected to the GTX unit. Inspect antenna or sensor and surrounding installation to verify that structural damage has not occurred around the areas where lightning may have attached. If there is visible sign of damage to the antenna or sensor, then it should be replaced.

Inspect the antenna coax connection to GTX unit, grounding hardware, bonding straps or tape, and surrounding areas of the remotely mounted GTX to verify damage has not occurred. Repair any damaged areas and components, then complete the electrical bonding test specified in Section 4.6.



4.6 Electrical Bonding Test

1. Disconnect the antenna coaxial cable from the GTX 33X or GTX 3X5.
2. Disconnect all connectors from the GTX 33X or GTX 3X5.
3. Measure the DC resistance between each of the following test points and the aircraft ground reference as defined in Table B-1 and verify the resistance is less than or equal to the appropriate periodic test resistance value.
 - Top metal case of GTX 330/330D/335/335D/345/345D #1 (if installed)
 - Top metal case of GTX 330/330D/335/335D/345/345D #2 (if installed)
 - GTX 33/33D/335R/335DR/345R/345DR #1 chassis (if installed)
 - GTX 33/33D/335R/335DR/345R/345DR #2 chassis (if installed)
4. If the resistance is more than the periodic test resistance value in Table B-1, the bond must be improved enough to meet the reconditioned resistance value.

4.7 Additional Instructions

Electrical load information for the GTX is provided in Section 2.6.



US Department
of Transportation
Federal Aviation
Administration

MAJOR REPAIR AND ALTERATION (Airframe, Powerplant, Propeller, or Appliance)

Form Approved
OMB No. 2120-0020

For FAA Use Only

Office Identification
WP-15 SAS

INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. 1421). Failure to report can result in a civil penalty not to exceed \$1,000 for each violation (Section 901 of Federal Aviation Act of 1958).

1. Aircraft	Make <p style="text-align: center;">CESSNA</p>	Model <p style="text-align: center;">414</p>
	Serial No. <p style="text-align: center;">414-0840</p>	Nationality and Registration Mark <p style="text-align: center;">N414JT</p>
2. Owner	Name (As shown on registration certificate) <p style="text-align: center;">ALFRED, JOSEPH T.</p>	Address (As shown on registration certificate) <p style="text-align: center;">40 SKYWOOD WAY WOODSIDE, CA. 94062</p>

3. For FAA Use Only

The data identified herein complies with the applicable Airworthiness Requirements and is approved only for the above described aircraft, subject to conformity inspection by a person authorized in FAR 43.7.

08-16-2001
Date

Robert J. Carnathan
Robert J. Carnathan FAA Inspector

4. Unit Identification				5. Type	
Unit	Make	Model	Serial No.	Repair	Alteration
AIRFRAME	~~~~~ (As described in Item 1 above) ~~~~~				X
POWERPLANT					
PROPELLER					
APPLIANCE	Type				
	Manufacturer				

6. Conformity Statement

A. Agency's Name and Address	B. Kind of Agency	C. Certificate No.
AVTRONIC'S 815 SKYWAY SAN CARLOS, CA. 94070	<input type="checkbox"/> U.S. Certificated Mechanic.	AY3R388LRADIO CLASS I&II LTD RADIO CLASS III LTD INST I,II,III;ACC III SPEC SERV ALT SYS;ALT REP
	<input type="checkbox"/> Foreign Certificated Mechanic	
	<input checked="" type="checkbox"/> Certified Repair Station	
	<input type="checkbox"/> Manufacturer	

D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

Date <p style="text-align: center;"><i>3-18-2002</i></p>	Signature of Authorized Individual <p style="text-align: center;"><i>J.G. Arguel</i></p>
---	---

7. Approval for Return To Service

Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is APPROVED REJECTED

BY	FAA Fit. Standards Inspector		Manufacturer	Inspection Authorization	Other (Specify)
	FAA Designee	X	Repair Station	Person Approved by Transport Canada Airworthiness Group	
Date of Approval or Rejection <p style="text-align: center;"><i>3-18-2002</i></p>			Certificate or Designation No. <p style="text-align: center;">AY3R388L</p>	Signature of Authorized Individual <p style="text-align: center;"><i>J.G. Arguel</i></p>	

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. Description of Work Accomplished

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

CESSNA 414, N414JT, S/N 414-0840

Installed Garmin Nav Talk Pilot System.

All work done in accordance with Garmin Nav Talk Aircraft Provisions Kit, Installation manual P/N 190-00189-02, Revision B, dated May 2000, Dual-Polarization Aircell Antenna Installation Manual, P/N 190-00189-12, Rev. A, dated May 2000, and A/C 43:13 2A, Chapters 2 and 3.

The Garmin Nav Talk Pilot has been previously installed in a Mooney Model M20J, per Supplemental Type Certificate # SA00879WI.

Telephone antenna installed on lower belly access panel at Station 93.5.

Engineering data regarding antenna installation for pressured aircraft as prepared by GS Engineering, Inc. and titled "Review and Analysis of Aircell Antenna Installation for Cessna 414 is attached.

GPS antenna is mounted to the upper rear upholstery ring on the co-pilot window inside the cabin. This antenna provides GPS position location to telephone handset and interfaces with no other aircraft equipment.

Telephone handset mounted on right side cabin divider.

Telephone system protected by CB labeled "Telephone".

The Garmin Nav Talk System requires no routine maintenance or servicing. Should the unit fail to operate correctly, return to OEM or an appropriately rated Repair Station.

Electrical load checked and determined to be less than 80% continuous.

The Aircraft Weight and Balance and Equipment list have been revised.

-----END-----

X Additional Sheets are Attached

RECEIVED

APR 17 2000

A2

U.S. Department of Transportation Federal Aviation Administration

FAA AFW FSDO

MAJOR REPAIR AND ALTERATION
(Airframe, Powerplant, Propeller, or Appliance)

Form Approved OMB No. 2120-0020

For FAA Use Only

Office Identification *NEO*
AFW FSDO

INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. 1421). Failure to report can result in a civil penalty not to exceed \$1,000 for each such violation (Section 901 Federal Aviation Act of 1958).

1. Aircraft	Make	CESSNA	Model	414
	Serial No.	414-0840	Nationality and Registration Mark	N414JT
2. Owner	Name (As shown on registration certificate)	Address (As shown on registration certificate)		
	JOSEPH T. ALFRED	40 SKYWOOD WAY WOODSIDE, CA 94062		

3. For FAA Use Only

4. Unit Identification				5. Type		
Unit	Make	Model	Serial No.	Repair	Alteration	
AIRFRAME	(As described in item 1 above)					X
POWERPLANT	Teledyne Continental Motors	TSIO-520-NB	L-266554-R		X	
PROPELLER						
APPLIANCE	Type					
	Manufacturer					

6. Conformity Statement

A. Agency's Name and Address	B. Kind of Agency	C. Certificate No.
RAM Aircraft Corporation P. O. Box 5219 Waco, Texas 76708	<input type="checkbox"/> U. S. Certificated Mechanic	Airframe Class III Powerplant Class I CRS VA1R551K
	<input type="checkbox"/> Foreign Certificated Mechanic	
	<input checked="" type="checkbox"/> Certificated Repair Station	
	<input type="checkbox"/> Manufacturer	

D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

Date	Signature of Authorized Individual
March 20, 2000	Gary L. Lynn <i>Gary L. Lynn</i>

7. Approval for Return To Service

Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is [X]APPROVED []REJECTED

BY	FAA Fit. Standards Inspector	X	Manufacturer	Inspection Authorization	OTHER (Specify)
	FAA Designee		Repair Station	Person Approved by Transport Canada Airworthiness Group	
Date of Approval or Rejection	Certificate or Designation No.	Signature of Authorized Individual			
March 20, 2000	VA1R551K	Gary L. Lynn <i>Gary L. Lynn</i>			

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. Description of Work Accomplished

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

CESSNA 414-0840 N414JT
DATED 3/20/00 AIRCRAFT HOUR METER: 5002.4

Engine modified for all operation power rating to 335 HP at 41" MAP and 2700 RPM I/A/W RAM Report No. 91-65 dated 4/30/91. Modified in accordance with STC SE4327SW, Rev. 4. Customer furnished with RAM Overhaul Manual Supplement, Operators Manual Supplement and Parts Manual Supplement. See specified operating limitations in Aircraft Flight Manual or Supplemental Flight Manual.

Engine cylinders modified per Dwg. 1158, Rev. AJ dated 3/3/99 I/A/W STC SE3631SW.

Engine crankcase modified per Dwg. 1157, Rev. AD dated 6/1/99 I/A/W STC SE3630SW.

Engine modified by installation of modified fuel injector nozzles in accordance with General Aviation Modifications "Data List" Rev. 002 dated 2/13/97 and Installation Procedure No. IP-97-002 Rev. 2 dated 2/6/97 I/A/W STC SE09289SC.

Installed Floscan Fuel Flow transducer per Dwg. 1083, Rev. K dated 1/07/00 in accordance with STC SE5726SW.

Installed Slick pressurized magnetos p/n 6320 per Dwg. 1036, Rev. W dated 10/3/96 I/A/W STC SE4651SW.

Installed spring loaded induction hose clamps per Dwg. 1171, Rev. A dated 1/10/90 I/A/W STCSE3632SW.

Negligible weight and balance change.

Customer furnished with FAA approved Overhaul and Parts Manual Supplements for all alterations.

Pertinent details of the above installations are on file under Work Order No. 4369.

-----END-----

Additional Sheets Are Attached

AD

U.S. Department of Transportation Federal Aviation Administration RECEIVED DEC 27 1999 FAA AFW FSDO	MAJOR REPAIR AND ALTERATION (Airframe, Powerplant, Propeller, or Appliance)	Form Approved OMB No. 2120-0020 <hr/> For FAA Use Only <hr/> Office Identification <i>AFW FSDO</i>
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INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. 1421). Failure to report can result in a civil penalty not to exceed \$1,000 for each such violation (Section 901 Federal Aviation Act of 1958).

1. Aircraft	Make Cessna	Model 414
	Serial No. 414-0840	Nationality and Registration Mark N33PM
2. Owner	Name (As shown on registration certificate) Alfred Joseph T	Address (As shown on registration certificate) 40 Skywood Way Woodside, CA 94062

3. For FAA Use Only

4. Unit Identification				5. Type	
Unit	Make	Model	Serial No.	Repair	Alteration
AIRFRAME	<i>(As described in item 1 above)</i>				X
POWERPLANT	Teledyne Continental Motors	TSIO-520-NB	L-276721-R		X
PROPELLER					
APPLIANCE	Type				
	Manufacturer				

6. Conformity Statement

A. Agency's Name and Address	B. Kind of Agency	C. Certificate No.
RAM Aircraft Corporation P. O. Box 5219 Waco, Texas 76708	<input type="checkbox"/> U. S. Certificated Mechanic	AIRFRAME CLASS III POWERPLANT CLASS I VA1R551K
	<input type="checkbox"/> Foreign Certificated Mechanic	
	<input checked="" type="checkbox"/> Certificated Repair Station	
	<input type="checkbox"/> Manufacturer	

D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

Date December 20, 1999	Signature of Authorized Individual Darryl P. Banas <i>Darryl P. Banas</i>
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7. Approval for Return To Service

Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is APPROVED REJECTED

BY	FAA Fit. Standards Inspector		Manufacturer	Inspection Authorization	OTHER (Specify)
	FAA Designee	X	Repair Station	Person Approved by Transport Canada Airworthiness Group	

Date of Approval or Rejection December 20, 1999	Certificate or Designation No. CRS VA1R551K	Signature of Authorized Individual Darryl P. Banas <i>Darryl P. Banas</i>
---	---	---

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. Description of Work Accomplished

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

Cessna 414-0840 N414JT

Dated 12/20/99 Airframe Total Time: 4985.2

Exhaust slip joints modified to slip joint configuration per Dwg. 1001, Rev. S, dated 10/8/97 I/AW STC SA4331SW.

Negligible weight and balance change.

Pertinent details of the above installation are on file under work order no. 4264.

---END---

Additional Sheets Are Attached

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MAJOR REPAIR AND ALTERATION (Airframe, Powerplant, Propeller, or Appliance)

Form Approved OMB No. 2120-0020 For FAA Use Only Office Identification

JAN 28 2000

FAA FORM 337

INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. 1421). Failure to report can result in a civil penalty not to exceed \$1,000 for each such violation (Section 901 Federal Aviation Act of 1958).

1. Aircraft: Make Cessna, Model 414, Serial No. 414-0840, Nationality and Registration Mark N414JT. 2. Owner: Name Joseph T. Alfred, Address 40 Skywood Way Woodside, CA 94062.

3. For FAA Use Only

4. Unit Identification

5. Type

Table with columns: Unit, Make, Model, Serial No., Repair, Alteration. Rows include AIRFRAME, POWERPLANT (Teledyne Continental Motors, TS10-520-NB, 244892), and APPLIANCE.

6. Conformity Statement

A. Agency's Name and Address: RAM Aircraft Corporation, PO Box 5219, Waco, TX 76708. B. Kind of Agency: U.S. Certificated Mechanic, Foreign Certificated Mechanic, X Certificated Repair Station, Manufacturer. C. Certificate No.

D I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

Date: December 3, 1999. Signature of Authorized Individual: Darryl P. Banas.

7. Approval for Return To Service

Pursuant to the authority given persons specified below the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is [X] APPROVED [] REJECTED

BY: FAA Fit. Standards Inspector, Manufacturer, Inspection Authorization, Other (Specify). FAA Designee, X Repair Station, Person Approved by Transport Canada Airworthiness Group. Date of Approval or Rejection: December 3, 1999. Certificate or Designation No: CRS VA1R551K. Signature of Authorized Individual: Darryl P. Banas.

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. Description of Work Accomplished

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

Removed six (6) TCM fuel nozzles P/N 632748 - 14D and installed General Aviation Modifications, Inc. turboGAMIjectors Kit No. G774D S/N 6504 STC No. SE09289SC PMA No. PQ82LSW per turboGAMIjector Installation Procedure No. IP-97-002 (rev 002) dated February 6, 1997. No change in weight and balance. //////////////////////////////////////
////////////////////////////////////// END //

Additional Sheets Are Attached

RECEIVED

DEC 13 1999

A2



MAJOR REPAIR AND ALTERATION (Airframe, Powerplant, Propeller, or Appliance) FAA AFW FSDO

Form Approved OMB No. 2120-0020 For FAA Use Only Office Identification AFW FSDO NRC

INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. 1421) Failure to report can result in a civil penalty not to exceed \$1,000 for each such violation (Section 901 Federal Aviation Act of 1958).

1. Aircraft: Make Cessna, Model 414, Serial No. 414-0840, Nationality and Registration Mark N414JT
2. Owner: Name Joseph T. Alfred, Address 40 Skywood Way Woodside, CA 94062

3. For FAA Use Only

4. Unit Identification

5. Type

Table with columns: Unit, Make, Model, Serial No., Repair, Alteration. Rows include AIRFRAME, POWERPLANT (Teledyne Continental Motors, TS10-520-NB, 276721, X), and APPLIANCE.

6. Conformity Statement

A. Agency's Name and Address: RAM Aircraft Corporation, PO Box 5219, Waco, TX 76708
B. Kind of Agency: U.S. Certificated Mechanic, Foreign Certificated Mechanic, X Certificated Repair Station, Manufacturer
C. Certificate No.: Airframe Class III, Powerplant Class I, CRS VA1R551K

D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

Date: December 3, 1999
Signature of Authorized Individual: Darryl P. Banas

7. Approval for Return To Service

Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is APPROVED REJECTED

BY: FAA Fit. Standards Inspector, Manufacturer, Inspection Authorization, Other (Specify)
Date of Approval or Rejection: December 3, 1999
Certificate or Designation No: CRS VA1R551K
Signature of Authorized Individual: Darryl P. Banas

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. Description of Work Accomplished

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

Removed six (6) TCM fuel nozzles P/N 632748 -/4D and installed General Aviation Modifications, Inc. turboGAMIjectors Kit No. GT14D S/N 6503 STC No. SE09289SC PMA No. PQ82LSW per turboGAMIjector Installation Procedure No. IP-97-002 (rev 002) dated February 6, 1997. No change in weight and balance. //

END //

Additional Sheets Are Attached

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION—FEDERAL AVIATION ADMINISTRATION

STANDARD AIRWORTHINESS CERTIFICATE

1 NATIONALITY AND REGISTRATION MARKS N414JT	2 MANUFACTURER AND MODEL CESSNA 414	3 AIRCRAFT SERIAL NUMBER 414-0840	4 CATEGORY NORMAL
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5 AUTHORITY AND BASIS FOR ISSUANCE

This airworthiness certificate is issued pursuant to the Federal Aviation Act of 1958 and certifies that, as of the date of issuance, the aircraft to which issued has been inspected and found to conform to the type certificate therefor, to be in condition for safe operation, and has been shown to meet the requirements of the applicable comprehensive and detailed airworthiness code as provided by Annex 8 to the Convention on International Civil Aviation, except as noted herein

Exceptions

NONE

6 TERMS AND CONDITIONS

Unless sooner surrendered, suspended, revoked, or a termination date is otherwise established by the Administrator, this airworthiness certificate is effective as long as the maintenance, preventative maintenance, and alterations are performed in accordance with Parts 21, 43, and 91 of the Federal Aviation Regulations, as appropriate, and the aircraft is registered in the United States

DATE OF ISSUANCE (R) 5/12/76	FAA REPRESENTATIVE THOMAS R. STUNDA <i>Thomas R. Stunda</i>	DESIGNATION NUMBER NM-FSDO-09
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Any alteration, reproduction, or misuse of this certificate may be punishable by a fine not exceeding \$1,000, or imprisonment not exceeding 3 years, or both THIS CERTIFICATE MUST BE DISPLAYED IN THE AIRCRAFT IN ACCORDANCE WITH APPLICABLE FEDERAL AVIATION REGULATIONS

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US Department of Transportation
Federal Aviation Administration

MAJOR REPAIR AND ALTERATION (Airframe, Powerplant, Propeller, or Appliance)

Form Approved
OMB No. 2120-0020

For FAA Use Only

Office Identification
WUP-FSDO-15

INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. 1421). Failure to report can result in a civil penalty not to exceed \$1,000 for each violation (Section 901 of Federal Aviation Act of 1958).

1. Aircraft	Make <p style="text-align: center;">CESSNA</p>	Model <p style="text-align: center;">414</p>
	Serial No. <p style="text-align: center;">414-0840</p>	Nationality and Registration Mark <p style="text-align: center;">N414JT</p>
2. Owner	Name (As shown on registration certificate) <p style="text-align: center;">ALFRED, JOSEPH T.</p>	Address (As shown on registration certificate) <p style="text-align: center;">40 SKYWOOD WAY WOODSIDE, CA. 94062</p>

3. For FAA Use Only

The data/alteration identified herein complies with the applicable Airworthiness Requirements and is approved only for the above described aircraft, subject to conformity inspection by a person authorized in FAR 43.7.

Date: 4/20/98 Signature of FAA Inspector:

Unit	Make	Model	Serial No.	5. Type	
				Repair	Alteration
AIRFRAME	~~~~~ (As described in Item 1 above) ~~~~~				X
POWERPLANT					
PROPELLER					
APPLIANCE	Type				
	Manufacturer				

6. Conformity Statement

A. Agency's Name and Address <p style="text-align: center;">AVTRONIC'S 701 SKYWAY SAN CARLOS, CA. 94070</p>	B. Kind of Agency <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td><input type="checkbox"/> U.S. Certificated Mechanic</td></tr> <tr><td><input type="checkbox"/> Foreign Certificated Mechanic</td></tr> <tr><td><input checked="" type="checkbox"/> Certified Repair Station</td></tr> <tr><td><input type="checkbox"/> Manufacturer</td></tr> </table>	<input type="checkbox"/> U.S. Certificated Mechanic	<input type="checkbox"/> Foreign Certificated Mechanic	<input checked="" type="checkbox"/> Certified Repair Station	<input type="checkbox"/> Manufacturer	C. Certificate No. <p style="text-align: center;">AY3R388LRADIO CLASS I&II LTD RADIO CLASS III LTD INST I,II,III;ACC III SPEC SERV ALT SYS;ALT REP</p>
<input type="checkbox"/> U.S. Certificated Mechanic						
<input type="checkbox"/> Foreign Certificated Mechanic						
<input checked="" type="checkbox"/> Certified Repair Station						
<input type="checkbox"/> Manufacturer						

D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

Date <p style="text-align: center;">:04-13-98</p>	Signature of Authorized Individual
--	--

7. Approval for Return To Service

Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is APPROVED REJECTED

BY	FAA Flt. Standards Inspector		Manufacturer	Inspection Authorization	Other (Specify)
	FAA Designee	X	Repair Station	Person Approved by Transport Canada Airworthiness Group	
Date of Approval or Rejection <p style="text-align: center;">4-21-98</p>		Certificate or Designation No. <p style="text-align: center;">AY3R388L</p>		Signature of Authorized Individual 	

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. Description of Work Accomplished

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

CESSNA 414, N414JT, S/N 414-840

Installed Terra, by Trimble, Radar Altimeter System consisting of TRA3000 Radar Altimeter Unit and TRI 40 Digital Indicator.

System installed I/A/W Terra by Trimble Installation Manual 1910-3000-01, Revision M, dated December 16, 1996, and AC: 43:13, 2A, Chapters 2 and 3.

This unit PMA approved for installation in Mooney Model M20 J, M, and R aircraft.


Unit powered through circuit breaker labeled "Radio Alt" on avionics buss..

The aircraft weight and balance, and the equipment list were amended.

An electrical load analysis was performed and determined that the total load does not exceed 80% of the total rated alternator capacity.

END

Additional Sheets are Attached

 US Department of Transportation Federal Aviation Administration	MAJOR REPAIR AND ALTERATION (Airframe, Powerplant, Propeller, or Appliance)	Form Approved OMB No. 2120-0020
		For FAA Use Only
		Office Identification <i>WIP-FSDO-15</i>

INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. 1421). Failure to report can result in a civil penalty not to exceed \$1,000 for each violation (Section 901 of Federal Aviation Act of 1958).

1. Aircraft	Make CESSNA	Model 414
	Serial No. 414-0840	Nationality and Registration Mark N33PM
2. Owner	Name (As shown on registration certificate) ALFRED, JOSEPH T.	Address (As shown on registration certificate) 40 SKYWOOD WAY WOODSIDE, CA. 94062

3. For FAA Use Only

The data/alteration identified herein complies with the applicable Airworthiness Requirements and is approved only for the above described aircraft, subject to conformity inspection by a person authorized in FAR 43.7.

10/21/97
Date

James M. T...
Signature of FAA Inspector

Unit	Make	Model	Serial No.	Repair	Alteration
AIRFRAME	----- (As described in Item 1 above) -----				X
POWERPLANT					
PROPELLER					
APPLIANCE	Type				
	Manufacturer				

6. Conformity Statement

A. Agency's Name and Address AVTRONICS, INC. 701 SKYWAY SAN CARLOS, CA. 94070	B. Kind of Agency <input type="checkbox"/> U.S. Certificated Mechanic <input type="checkbox"/> Foreign Certificated Mechanic <input checked="" type="checkbox"/> Certified Repair Station <input type="checkbox"/> Manufacturer	C. Certificate No. AY3R388L
---	---	---------------------------------------

D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

Date 07-28-97	Signature of Authorized Individual <i>J.C. ...</i>
-------------------------	---

7. Approval for Return To Service

Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is APPROVED REJECTED

BY	FAA Fit. Standards Inspector		Manufacturer	Inspection Authorization	Other (Specify)
	FAA Designee	X	Repair Station	Person Approved by Transport Canada Airworthiness Group	
Date of Approval or Rejection 12-22-97			Certificate or Designation No. AY3R388L	Signature of Authorized Individual <i>J.C. ...</i>	

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. Description of Work Accomplished

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

CESSNA 414 N33PM S/N 414-840

Removed previously installed Argus 5000 Moving Map and replaced with Argus 7000 Moving Map.

All wiring and operations function identical between the Model 5000 and Model 7000, with the only difference being the size of the larger Model 7000 screen, and 43.13-1A and 43.13-2A. Aircraft test flown in accordance with FAR 91.407B. Electrical load checked and determined to be less than 80% continuous.

The Aircraft Weight and Balance and Equipment list have been revised.

-----END-----

Additional Sheets are Attached



MAJOR REPAIR AND ALTERATION (Airframe, Powerplant, Propeller, or Appliance)

Form Approved
OMB No. 2120-0020
For FAA Use Only
Office Identification
WP-FSDO-15

INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. 1421). Failure to report can result in a civil penalty not to exceed \$1,000 for each violation (Section 901 of Federal Aviation Act of 1958).

1. Aircraft	Make <p style="text-align: center;">CESSNA</p>	Model <p style="text-align: center;">414</p>
	Serial No. <p style="text-align: center;">414-0840</p>	Nationality and Registration Mark <p style="text-align: center;">N33PM</p>
2. Owner	Name (As shown on registration certificate) <p style="text-align: center;">ALFRED, JOSEPH T.</p>	Address (As shown on registration certificate) <p style="text-align: center;">40 SKYWOOD WAY WOODSIDE, CA. 94062</p>

3. For FAA Use Only
The data/alteration identified herein complies with the applicable Airworthiness Requirements and is approved only for the above described aircraft, subject to conformity inspection by a person authorized in FAR 43.7.
4-4-97

4. Unit Identification				5. Type	
Unit	Make	Model	Serial No.	Repair	Alteration
AIRFRAME	~~~~~ (As described in Item 1 above) ~~~~~				X
POWERPLANT					
PROPELLER					
APPLIANCE	Type				
	Manufacturer				

6. Conformity Statement

A. Agency's Name and Address	B. Kind of Agency	C. Certificate No.
AVTRONICS, INC. 701 SKYWAY SAN CARLOS, CA. 94070	<input type="checkbox"/> U.S. Certificated Mechanic	AY3R388L
	<input type="checkbox"/> Foreign Certificated Mechanic	
	<input checked="" type="checkbox"/> Certified Repair Station	
	<input type="checkbox"/> Manufacturer	

D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

Date <p style="text-align: center;">03-26-97</p>	Signature of Authorized Individual
---	--

7. Approval for Return To Service

Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is APPROVED REJECTED

BY	FAA Fit. Standards Inspector		Manufacturer	Inspection Authorization	Other (Specify)
	FAA Designee	X	Repair Station	Person Approved by Transport Canada Airworthiness Group	
Date of Approval or Rejection <p style="text-align: center;">10-22-97</p>			Certificate or Designation No. <p style="text-align: center;">AY3R388L</p>	Signature of Authorized Individual 	

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. Description of Work Accomplished

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

CESSNA 414 N33PM S/N 414-840

Installed Bendix/King KLN-90B GPS Receiver, KA-91 Antenna, Cooling Fan and Mid-Continent Instrument TSO'ed MD 41-338 GPS Annunciation Control Unit.

The Bendix/King KLN 90B system was interfaced to the Collins 331-A6R HSI and the Cessna 400B AP/FD System.

Equipment installed in accordance with Bendix/King installation manual 006-10521-0002 Revision 2 dated February 1995, Mid-Continent MD-41-338 manual 7016074 Revision 3 dated Jan 24, 1996, AC43.13-1A Chapter 11, AC 43-13-2A Chapters 2 and 3 and AC #20-138 paragraphs 8b and 8c.

The KLN-90B system conformity specifications meet the requirements of TSO C-129 class A-1 and has been previously installed in a Mooney M-20J and approved for IFR use per Supplemental Type Certificate # SA00241WI-D.

Avtronics Inc. FAA approved Flight Manual Supplement provided for operation of Bendix-King KLN-90B GPS as installed in a Cessna 414, N33PM, SN 414-840, dated 4-4-97. This supplement must be included in FAA approved Aircraft Flight Manual for this approval to be effective.

Electrical load checked and determined to be less than 80% continuous.

The Aircraft Weight and Balance and Equipment list have been revised.

—END—

Additional Sheets are Attached



MAJOR REPAIR AND ALTERATION (Airframe, Powerplant, Propeller, or Appliance)

Form Approved
OMB No. 2120-0020
For FAA Use Only
Office Identification
WV-FSDO-15

INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. 1421). Failure to report can result in a civil penalty not to exceed \$1,000 for each violation (Section 901 of Federal Aviation Act of 1958).

1. Aircraft	Make <p style="text-align: center;">CESSNA</p>	Model <p style="text-align: center;">414</p>
	Serial No. <p style="text-align: center;">414-0840</p>	Nationality and Registration Mark <p style="text-align: center;">N33PM</p>
2. Owner	Name (As shown on registration certificate) <p style="text-align: center;">ALFRED, JOSEPH T.</p>	Address (As shown on registration certificate) <p style="text-align: center;">40 SKYWOOD WAY WOODSIDE, CA. 94062</p>

3. For FAA Use Only

This repair/alteration identified herein complies with the applicable Airworthiness Requirements and is approved only for the above described aircraft, subject to conformity inspection by a person authorized in FAR 43.7.

12/21/07 *James M. Taro*

		Date	4. Unit Identification of FAA Inspector		5. Type	
Unit	Make	Model	Serial No.	Repair	Alteration	
AIRFRAME	~~~~~ (As described in Item 1 above) ~~~~~					X
POWERPLANT						
PROPELLER						
APPLIANCE	Type					
	Manufacturer					

6. Conformity Statement

A. Agency's Name and Address	B. Kind of Agency	C. Certificate No.
AVTRONICS, INC. 701 SKYWAY SAN CARLOS, CA. 94070	<input type="checkbox"/> U.S. Certificated Mechanic	AY3R388L
	<input type="checkbox"/> Foreign Certificated Mechanic	
	<input checked="" type="checkbox"/> Certified Repair Station	
	<input type="checkbox"/> Manufacturer	

D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

Date <p style="text-align: center;">07-28-97</p>	Signature of Authorized Individual
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7. Approval for Return To Service

Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is APPROVED REJECTED

BY	FAA Fit. Standards Inspector		Manufacturer	Inspection Authorization	Other (Specify)
	FAA Designee	X	Repair Station	Person Approved by Transport Canada Airworthiness Group	
Date of Approval or Rejection <p style="text-align: center;">10-22-97</p>		Certificate or Designation No. <p style="text-align: center;">AY3R388L</p>		Signature of Authorized Individual 	

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. Description of Work Accomplished

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

CESSNA 414 N33PM S/N 414-840

Added Cessna 400B Integrated Flight Control System (i.e. Flight Director Indications) to Existing Cessna 400B Autopilot installation as follows:

Removed C-531 Cessna 400B Autopilot Control Head

Installed C-530 Cessna 400B IFCS Autopilot Control Head

Installed S-550 Cessna 400B IFCS Mode Selector

Installed Pitch sync and GA switch in yoke

Installed Collins FD-108 Flight Director Horizon

Installed Collins 332D-11 Vertical Gyro

Installed Interface network for Collins Flight Director

Collins FD-108 Flight Director indicator used in place of Cessna 400B Flight Director indicator due to superior gyro design and single cue presentation.

System operation is identical to Cessna 400B IFCS instructions included in Cessna model 414 Pilot Operation Handbook Section 9 Supplement 23.

All work and wiring done in accordance with Cessna Model 414 Service manual, Cessna 400B Navomatic 400B - 400B IFCS manual and Collins FD-108 maintenance manual with installation data. Collins FD-108 installation manual includes installation data for Collins 332D-11 Vertical Gyro. C-530 installed in Control Pedestal in place of C-531. S-550 and Collins FD-108 installed in pilots instrument panel. Collins 332D-11 installed in nose avionics bay, and 43.13-1A and 43.13-2A - Aircraft test flown in accordance with FAR 91.407B

Nose baggage placard revised to show reduced baggage limit due to installed equipment.

Electrical load checked and determined to be less than 80% continuous.

The Aircraft Weight and Balance and Equipment list have been revised.

END

Additional Sheets are Attached

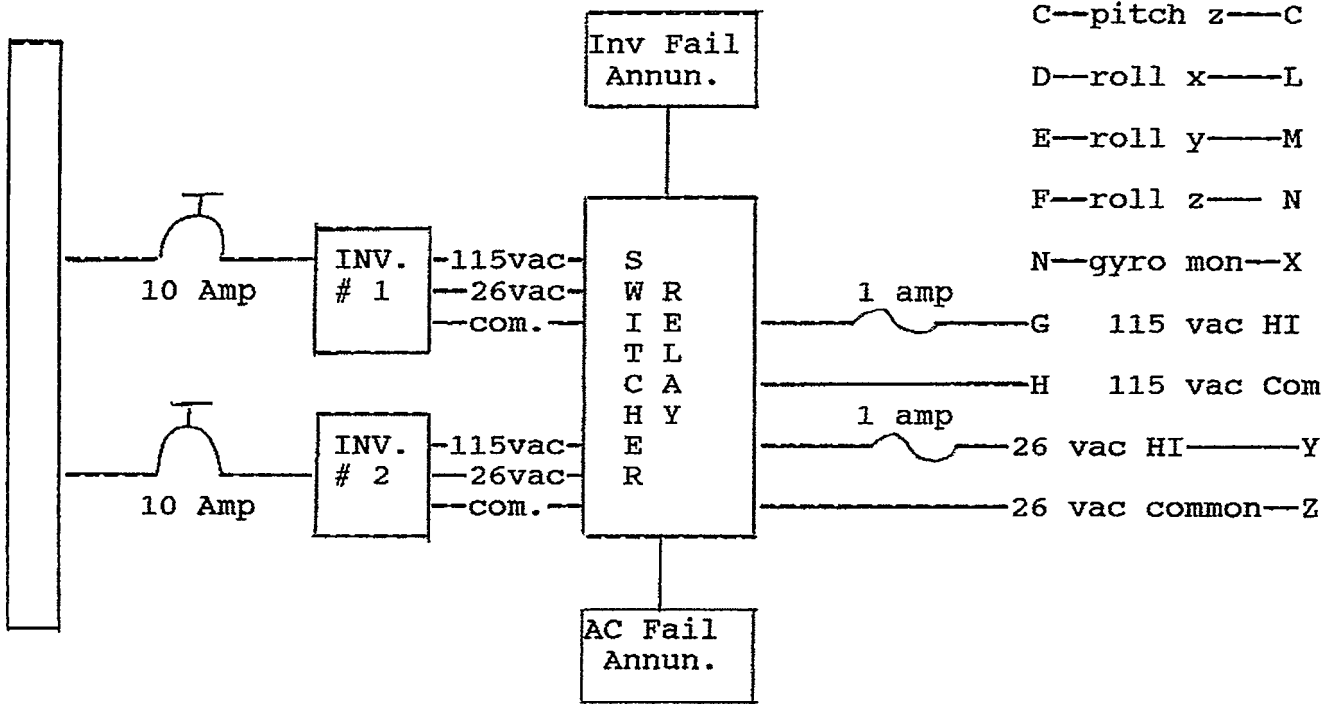
Additional Sheet for Form 337

Aircraft Cessna Model 414

Serial No. 414-0840 Nationality and Registration N33PM

Power connections and gyro interface for FD-108 Indicator

AVIONICS CIRCUIT INVERTER INVERTER FUSES VERT FD-108
 BUSS BREAKER BREAKER SWITCHING GYRO INDICATOR



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US Department of Transportation
Federal Aviation Administration

MAJOR REPAIR AND ALTERATION (Airframe, Powerplant, Propeller, or Appliance)

Form Approved
OMB No. 2120-0020

For FAA Use Only
Office Identification
WP-F800-15

INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. 1421). Failure to report can result in a civil penalty not to exceed \$1,000 for each violation (Section 901 of Federal Aviation Act of 1958).

1. Aircraft	Make <p style="text-align: center;">CESSNA</p>	Model <p style="text-align: center;">414</p>
	Serial No. <p style="text-align: center;">414-0840</p>	Nationality and Registration Mark <p style="text-align: center;">N414JT</p>
2. Owner	Name (As shown on registration certificate) <p style="text-align: center;">ALFRED, JOSEPH T.</p>	Address (As shown on registration certificate) <p style="text-align: center;">40 SKYWOOD WAY WOODSIDE, CA. 94062</p>

3. For FAA Use Only

4. Unit Identification

5. Type

Unit	Make	Model	Serial No.	Repair	Alteration
AIRFRAME	~~~~~ (As described in Item 1 above) ~~~~~				X
POWERPLANT					
PROPELLER					
APPLIANCE	Type				
	Manufacturer				

6. Conformity Statement

A. Agency's Name and Address	B. Kind of Agency	C. Certificate No.
AVTRONIC'S 701 SKYWAY SAN CARLOS, CA. 94070	<input type="checkbox"/> U.S. Certificated Mechanic	AY3R388LRADIO CLASS I&II LTD RADIO CLASS III LTD INST I,II,III;ACC III SPEC SERV ALT SYS;ALT REP
	<input type="checkbox"/> Foreign Certificated Mechanic	
	<input checked="" type="checkbox"/> Certified Repair Station	
	<input type="checkbox"/> Manufacturer	

D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

Date <p style="text-align: center;">12-17-97</p>	Signature of Authorized Individual
---	--

7. Approval for Return To Service

Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is APPROVED REJECTED

BY	FAA Fit. Standards Inspector		Manufacturer	Inspection Authorization	Other (Specify)
	FAA Designee	X	Repair Station	Person Approved by Transport Canada Airworthiness Group	
Date of Approval or Rejection <p style="text-align: center;">12-17-97</p>		Certificate or Designation No. <p style="text-align: center;">AY3R388L</p>		Signature of Authorized Individual 	

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. Description of Work Accomplished

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

CESSNA 414 N414JT S/N 414-840

Removed Cessna installed visors and replaced with Rosen products Cessna 400 series aircraft monorail sun visor system per STC SA265ONM.

Installation performed in accordance with FAA Approved Rosen drawing list RC 400-00DL, Revision A, dated August 1984.

Weight and Balance change negligible.

~~END~~

Additional Sheets are Attached

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. Description of Work Accomplished

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

CESSNA 414 N33PM S/N 414-840

The following changes made in installed avionics:

Removed King KN-65A DME System

Removed Collins IND-351 VOR/ILS Indicator

Removed clock

Installed Collins DME-40 R/T unit

Installed Collins 331A-6R HSI with DME Readout

Installed AIM 424-2D RMI / Slaved Directional Gyro System

Installed Davtron 811 Clock

Installed King KNI-520 ILS/VOR Indicator

Installed Flite-Tronics PC-15BC Inverter No. 1

Installed Flite-Tronics PC-100 Inverter No. 2

Installed King KN-72 Nav Converter

Installed King KDA-692 ADF RMI adapter

Installed ARC B-24 RMI Converter

Installed Collins GLS-350 Glide Slope Receiver No. 2

Installed radio junction box on nose avionics shelf

All work done in accordance with Cessna 414 Service Manual, Collins DME 40 installation instructions, Collins 331-A6R installation drawings, AIM 400 Series installation drawings and instructions, Davtron instructions and Davtron installation drawing in 414 Manual (offered by Cessna as optional equipment), King KNI-520 Installation drawing, Flite-Tronics installation instructions and drawings, King KN-72 installation manual, King KDA-692 installation manual, ARC B-24 installation manual, Collins GLS-350 Installation Manual, and AC-43:13 1A chapter 11 and AC-43:13 2A chapters 2 and 3.

All remote equipment installed on Avionics shelf in nose compartment provided by Cessna. Nose baggage placard revised to show reduced baggage limit due to installed equipment.

Indicators installed in pilots instrument panel.


Aircraft flown in accordance with FAR 91.407B

Electrical load checked and determined to be less than 80% continuous.

The Aircraft Weight and Balance and Equipment list have been revised.

—END—

Additional Sheets are Attached

 U.S. Department of Transportation Federal Aviation Administration		MAJOR REPAIR AND ALTERATION (Airframe, Powerplant, Propeller, or Appliance)		Form Approved OMB No. 2120-0020	
				For FAA Use Only	
				Office Identification <i>ASW-FSDO 15</i>	
INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. 1421). Failure to report can result in a civil penalty not to exceed \$1,000 for each such violation (Section 901 Federal Aviation Act of 1958).					
1. Aircraft	Make	Cessna	Model	414	
	Serial No.	414-0840	Nationality and Registration Mark	N-33PM	
2. Owner	Name (As shown on registration certificate)		Address (As shown on registration certificate)		
	Winchell Robert M		Rt. 1 Box 263 Gull Bay Sand Springs, OK 74063		
3. For FAA Use Only: The alteration/data identified herein complies with the applicable airworthiness requirements and is approved only for the above described aircraft subject to conformity inspection by a person authorized in FAR 43, section 43.7. <i>Robert M Winchell</i> DATE 2/12/93 FAA INSPECTOR-SW-FSDO, OK					
4. Unit Identification				5. Type	
Unit	Make	Model	Serial No.	Repair	Alteration
AIRFRAME	(As described in item 1 above)				XX
POWERPLANT	MGR			AS	
	01	APS		A1	
	02	RECEIVED		A2	
	03	FEB 4 1993		A3	
	04	FAA		A4	
PROPELLER	Type	SW-FSDO-ORG		A5	
	Manufacturer	C1	C2	A6	
APPLIANCE	Type	C3	AUTO	A7	
	Manufacturer			A8	
6. Conformity Statement					
A. Agency's Name and Address		B. Kind of Agency		C. Certificate No.	
Autopilots Central, Inc. P.O. Box 582108 Tulsa, OK 74158		H-9 <input type="checkbox"/> U.S. Certificated Mechanic <input type="checkbox"/> Foreign Certificated Mechanic <input checked="" type="checkbox"/> Certificated Repair Station <input type="checkbox"/> Manufacturer		RS CM2R747K I 3 R 1, 2, 3, L.S.S.	
D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.					
Date		Signature of Authorized Individual			
2-1-93		<i>James A. Strange</i>			
7. Approval for Return To Service					
Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is <input checked="" type="checkbox"/> APPROVED <input type="checkbox"/> REJECTED					
BY	FAA Flt. Standards Inspector	Manufacturer	Inspection Authorization	Other (Specify)	
	FAA Designee	<input checked="" type="checkbox"/> Repair Station	Person Approved by Transport Canada Airworthiness Group		
Date of Approval or Rejection		Certificate or Designation No.	Signature of Authorized Individual		
2-12-93		RS CM2R747K	<i>James A. Strange</i>		

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

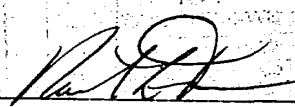
8. Description of Work Accomplished

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

Cessna 414, N33PM, Serial No. 414-0840; -


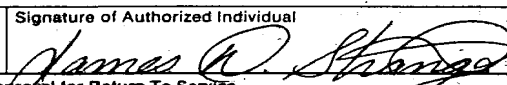
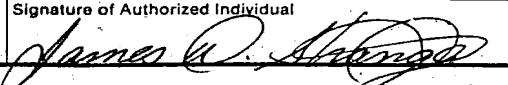
ARNAV FMS 5000 Loran IFR Certification:

Reference ARNAV FMS 5000 Loran system as shown on aircraft paperwork dated 2-1-93, interconnected with BVR Model 277200-101 indicator. Installation in accordance per ARNAV Supplementary installation manual number 570-1036, revision 0, dated March 1992. The installation conforms to AC 43.13-1A and AC 43.13-2A; AC 20-121A para 7, subpara B - 1, 2, 3, 4, 5, 6, 7, 8, 9, 10; para 8; subpara A, B, C, D, E, F, G, H, I, J, and K. Proper ground operation of the Loran system was conformed through completion of the system checkout, section 7.0 of the install manual. The system was found to meet or exceed all specifications of this section. A flight check was made to insure the accuracy requirements of AC 20-121A were met during flight. Aircraft log book entry made references this form 337. This system, as presently installed, is approved for "Enroute and Terminal" modes of operation. FAA Approved Airplane Flight Manual Supplement dated 2-12-93 is included in aircraft records.

Signature: 

Robert L. Ferguson 2097646

Additional Sheets Are Attached

 MAJOR REPAIR AND ALTERATION (Airframe, Powerplant, Propeller, or Appliance)		Form Approved OMB No. 2120-0020 For FAA Use Only	
US Department of Transportation Federal Aviation Administration		Office Identification ASW FSDO 15	
INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. 1421). Failure to report can result in a civil penalty not to exceed \$1,000 for each such violation (Section 901 Federal Aviation Act of 1958).			
1. Aircraft	Make Cessna	Model 414	Nationality and Registration Mark N-33PM
	Serial No. 414-0840		
2. Owner	Name (As shown on registration certificate) Winchell, Robert M		Address (As shown on registration certificate) Rt. 1 Box 263 Gull Bay Sand Springs, OK 74063
	3. For FAA Use Only		
4. Unit Identification			
Unit	Make	Model	AS Type
AIRFRAME	(As described in item 1 above)		APR
			REPAIR
			ALTERATION
			XX
POWERPLANT			SW-FSDO-OKC
			G2
			AUTO
PROPELLER			
APPLIANCE	Type		
	Manufacturer		
5. Conformity Statement			
A. Agency's Name and Address		B. Kind of Agency	C. Certificate No.
Autopilots Central, Inc. P.O. Box 582108 Tulsa, OK 74158		U.S. Certificated Mechanic	RS CM2R747K
		Foreign Certificated Mechanic	I 3
		X Certificated Repair Station	R 1, 2, 3, L.S.S.
		Manufacturer	
D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.			
Date	Signature of Authorized Individual		
February 1, 1993			
7. Approval for Return To Service			
Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is <input checked="" type="checkbox"/> APPROVED <input type="checkbox"/> REJECTED			
BY	FAA Fit Standards Inspector	Manufacturer	Inspection Authorization
	FAA Designee	X Repair Station	Person Approved by Transport Canada Airworthiness Group
Date of Approval or Rejection	Certificate or Designation No.	Signature of Authorized Individual	
February 1, 1993	RS CM2R747K		

NOTICE


Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

B. Description of Work Accomplished

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

N33PM; Serial No. 414-0840; *****
Converted existing ARNAV R-50V Installation to ARNAV FMS 5000 System. Conversion consists of: Receiver Conversion at RNAV factory, replacement of existing antenna and preamp with P/N: 452-0139 Antenna with built-in preamp in the same location. System utilizes a dedicated CDI, BVR Model 277200-101 and is annunciated with an aerospace optics remote annunciator P/N 99-230-6E1-1351⁶ consisting of 3 amber segments labeled **ALERT**, **VFR**, and **APR**. System is coupled to aircraft's autopilot through a Nav/Loran switch and is annunciated with a blue light labeled "Autopilot Loran Coupled". System is relay switched automatically out of loran coupling when ILS frequency is selected for primary navigation. System was ground and flight tested and does not interfere with any other installed equipment. Placard installed in plain view of pilot which states "Loran C Not Approved For IFR Operations". Weight and balance and electrical load not affected by this change. -----END-----

Additional Sheets Are Attached

 US Department of Transportation Federal Aviation Administration		MAJOR REPAIR AND ALTERATION (Airframe, Powerplant, Propeller, or Appliance)		Form Approved OMB No. 2120-0020 For FAA Use Only Office Identification HS/FSD/OKC	
INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. 1421). Failure to report can result in a civil penalty not to exceed \$1,000 for each such violation (Section 901 Federal Aviation Act of 1958).					
1. Aircraft	Make Cessna		Model 414		
	Serial No. 414-0840		Nationality and Registration Mark N-33PM		
2. Owner	Name (As shown on registration certificate) Winchell Robert M.		Address (As shown on registration certificate) Rt. 1 Box 263 Gull Bay Sand Springs, OK 74063		
	3. For FAA Use Only				
4. Unit Identification					
Unit	Make	Model	Serial No.	Repair	Alteration
AIRFRAME	(As described in Item 1 above)				XX
POWERPLANT					
PROPELLER					
APPLIANCE	Type				
	Manufacturer				
5. Type					
6. Conformity Statement					
A. Agency's Name and Address			B. Kind of Agency		
Autopilots Central, Inc. P.O. Box 582108 Tulsa, OK 74158			U.S. Certificated Mechanic.		
			Foreign Certificated Mechanic		
			X Certificated Repair Station		
			Manufacturer		
			AUG Certificate No. RS CM2R747K		
			I 3		
			R 1, 2, 3, L.S.S.		
D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.					
Date December 31, 1992		Signature of Authorized Individual <i>James R. Stange</i>			
7. Approval for Return To Service					
Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is <input checked="" type="checkbox"/> APPROVED <input type="checkbox"/> REJECTED					
BY	FAA Fit. Standards Inspector	Manufacturer	Inspection Authorization	Other (Specify)	
	FAA Designee	X Repair Station	Person Approved by Transport Canada Airworthiness Group		
Date of Approval or Rejection December 31, 1992		Certificate or Designation No. RS CM2R747K	Signature of Authorized Individual <i>James R. Stange</i>		

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.


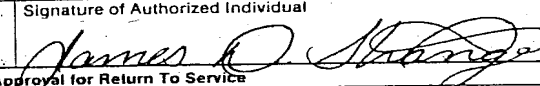
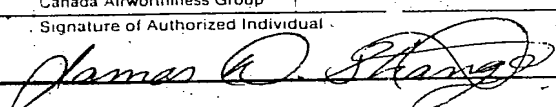
8. Description of Work Accomplished

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

N-33PM, Serial No. 414-0840; Installed ARNAV Model 453-0510, Altitude Encoder Interface, S/N: 100308. Unit was installed I/A/W ARNAV Installation Manual, Document #ENG-2049, dated August 1, 1991. Unit was mounted behind glovebox, R/H side of instrument panel. *****
Installation done I/A/W AC 43.13-1A page 175, para 424; page 176, para 428, 429; page 179, para 442; page 180, para 443; page 181, para 444; page 186, para 446; page 187, para 447, 448, 449; page 188, para 450; page 188-1, para 451; page 196, para 478; page 203, para 514, 515, 516; page 205, para 518, 518-1, 519; page 257, para 662. AC 43.13-2A page 1, para 1, 2; page 2, para 4, 6, 7, 9, 10; page 5, para 21, 22; page 6, para 24; page 9, para 27. *****
All information pertinent to this installation is on file at this repair station. Weight change negligible. *****

END

Additional Sheets Are Attached

 US Department of Transportation Federal Aviation Administration		MAJOR REPAIR AND ALTERATION (Airframe, Powerplant, Propeller, or Appliance)		Form Approved OMB No. 2120-0020 For FAA Use Only	
				Office Identification ASW FSD 15	
INSTRUCTIONS: Print or type all entries. See FAR 43.5; FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. 1421). Failure to report can result in a civil penalty not to exceed \$1,000 for each such violation (Section 901 Federal Aviation Act of 1958).					
1. Aircraft	Make	Cessna	Model	414	
	Serial No.	414-0840	Nationality and Registration Mark	N-33PM	
2. Owner	Name (As shown on registration certificate)		Address (As shown on registration certificate)		
	Winchell, Robert M.		Rt. 1 Box 263 Gull Bay Sand Springs, OK 74063		
3. For FAA Use Only					
4. Unit Identification					5. Type
Unit	Make	Model	Serial No.	Repair	Alteration
AIRFRAME	(As described in Item 1 above)				
				OS	MGR
				01	APS
POWERPLANT				02	RECEIVED
				03	
PROPELLER				04	OCT 10 1991
				05	FAA
APPLIANCE	Type			06	SM-FEITO-ORC
	Manufacturer			07	C2
				08	AUTO
6. Conformity Statement					
A. Agency's Name and Address		B. Kind of Agency		C. Certificate No.	
Autopilots Central, Inc. P.O. Box 582108 Tulsa, OK 74158		<input type="checkbox"/> U.S. Certificated Mechanic <input type="checkbox"/> Foreign Certificated Mechanic <input checked="" type="checkbox"/> Certificated Repair Station <input type="checkbox"/> Manufacturer		RS CM2R747K I 3 R 1, 2, 3, L.S.S.	
D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.					
Date		Signature of Authorized Individual			
October 8, 1991					
7. Approval for Return To Service					
Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is <input checked="" type="checkbox"/> APPROVED <input type="checkbox"/> REJECTED					
BY	FAA Flt. Standards Inspector	Manufacturer	Inspection Authorization	Other (Specify)	
	FAA Designee	X Repair Station	Person Approved by Transport Canada Airworthiness Group		
Date of Approval or Rejection		Certificate or Designation No.	Signature of Authorized Individual		
October 8, 1991		RS CM2R747K			

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.


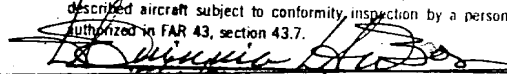
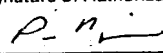
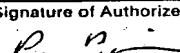
8. Description of Work Accomplished

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

33PM, Serial No. 414-0840; Removed Collins IND-650 ADF Indicator, ARNAV Remote Meter Base, and ARNAV R-40 Loran C System. Installed Argus 5000 Moving Map Display in instrument hole directly left of pilot's control yoke. Installed ARNAV R-50V Loran C Receiver below existing radar display in R/H radio stack. Installed Loran antenna on belly of aircraft at Flt. Sta. 218.0", on centerline. Installed Troll FN-100B Cooling Fan directly to back of loran receiver rack. Loran controls placarded "Loran C Not Approved For IFR." Loran C installed in accordance with AC 20-121a appendix 1, section 3, para A, B, C, D, E, and F. Installation done in accordance with AC 43.13-1A page 175, para 424; page 176, para 428, 429; page 179, para 442; page 180, para 443; page 181, para 444; page 186, para 446; page 187, para 447, 448, 449; page 188, para 450; page 188-1, para 451; page 196, para 478; page 203, para 514, 515, 516; page 205, para 518, 518-1, 519; page 243, para 656; page 253, para 659; page 257, par 662. AC 43.13-2A page 1, para 1, 2; page 2, para 4, 6, 7, 9, 10, 12; page 5, para 21, 22, 23; page 9, para 27. All pertinent information concerning this installation is on file at this repair station.

 END

Additional Sheets Are Attached

 US Department of Transportation Federal Aviation Administration		MAJOR REPAIR AND ALTERATION (Airframe, Powerplant, Propeller, or Appliance)		Form Approved OMB No. 2120-0020 For FAA Use Only Office Identification ASW FSDO 15	
INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. 1421). Failure to report can result in a civil penalty not to exceed \$1,000 for each such violation (Section 901 Federal Aviation Act of 1958).					
1. Aircraft		Make Cessna Serial No. 414-0840		Model 414 Nationality and Registration Mark N33PM	
2. Owner		Name (As shown on registration certificate) Winchell, Robert M.		Address (As shown on registration certificate) Rt. 1, Box 263 Gull Bay Sand Springs, OK 74063	
3. For FAA Use Only The information/data identified herein complies with the applicable airworthiness requirements and is approved only for the above described aircraft subject to conformity inspection by a person authorized in FAR 43, section 43.7. 					
4. Unit Identification DATE: 7/16/91 FAA INSPECTOR: ASW-FSDO, OKC					
Unit	Make	Model	Serial No.	Repair	Alteration
AIRFRAME	(As described in item 1 above)				XX
POWERPLANT					
PROPELLER					
APPLIANCE	Type				
	Manufacturer				
6. Conformity Statement A. Agency's Name and Address Autopilots Central, Inc. P.O. Box 582108 Tulsa, OK 74158					
			B. Kind of Agency <input type="checkbox"/> U.S. Certificated Mechanic <input type="checkbox"/> Foreign Certificated Mechanic <input checked="" type="checkbox"/> Certificated Repair Station <input type="checkbox"/> Manufacturer		C. Certificate No. RS CM2R747K I 3 R 1, 2, 3, L.S.S.
D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.					
Date		Signature of Authorized Individual			
July 16, 1991				Per Bjune	
7. Approval for Return To Service Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is <input checked="" type="checkbox"/> APPROVED <input type="checkbox"/> REJECTED					
BY	FAA Flight Standards Inspector	Manufacturer	Inspection Authorization		
	FAA Designee	Repair Station	Person Approved by Transport Canada Airworthiness Group		
Date of Approval or Rejection		Certificate or Designation No.	Signature of Authorized Individual		
July 16, 1991		RS CM2R747K			Per Bjune

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.


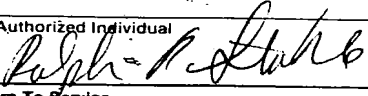
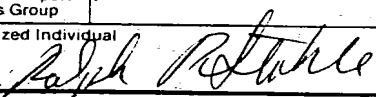
8. Description of Work Accomplished

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

Reference FAA Form 337 this aircraft dated March 21, 1989. Removed from Cessna 414, N-33PM, Collins IND 650 ADF Indicator, Century IC722 Slaving Amp. Installed Century 1D755 Slaving Amp, AID Static Inverter and ARGUS 5000 Moving Map Display. The ARGUS 5000 Moving Map Display was mounted in space provided by removal of ADF Indicator. Unit was interfaced to Century 1D755 Slaving Amp for heading information, interfaced to Collins 650A ADF Receiver for ADF information and to ARNAV 40 Loran for loran information. The ARGUS 5000 is approved for use in fixed wing aircraft both normal & utility categories by TSO-C113. Installation of the Eventide Avionics ARGUS 5000 Moving Map Display with software program version 02.00 was completed I/A/W Eventide Avionics installation drawings, file 5172, revision E, dated March 10, 1988 and ARGUS 5000 install manual P/N 5003, Revision 02.00 dated April 10, 1989 and Supplemental Type Certificate SA 560 NE dated March 10, 1988 amended May 3, 1989. The display at the ARGUS 5000 on first turn on states unit is "Approved for VFR only," except for the ADF function. A placard was installed stating "IFR NDB approaches approved in ADF only mode." FAA approved Flight Manual Supplement dated 7/16/91 provided. All other work done I/A/W AC 43.13-1A and 2A. Weight and balance has been revised.

END

Additional Sheets Are Attached

 US Department of Transportation Federal Aviation Administration		MAJOR REPAIR AND ALTERATION (Airframe, Powerplant, Propeller, or Appliance)		Form Approved OMB No. 2120-0020 For FAA Use Only		
INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. 1421). Failure to report can result in a civil penalty not to exceed \$1,000 for each such violation (Section 901 Federal Aviation Act of 1958).						
1. Aircraft Make: <u>Cessna</u> Serial No.: <u>414-0840</u>		Model: <u>414-</u> Nationality and Registration Mark: <u>N33PM</u>				
2. Owner Name (As shown on registration certificate): <u>Winchell Robert M.</u>		Address (As shown on registration certificate): <u>Rt #1 Box 263 Gull Bay Sand Springs, OK 74063</u>				
3. For FAA Use Only						
4. Unit Identification						
Unit	Make	Model	Serial No.	5. Type		
				Repair	Alteration	
AIRFRAME	(As described in Item 1 above)				XX	
POWERPLANT	OS	MGR	AS			
	01	APS	A1			
	02	RECEIVED	A2			
PROPELLER	03		A3			
	04	JUN 28 1991	A4			
APPLIANCE	Type	FAA	A5			
	Manufacturer	SW-FSDO-OKC	A6			
		C1	C2	A7		
		C3	AUTO	A8		
6. Conformity Statement						
A. Agency's Name and Address <u>Ralph P. Stahle</u> <u>7850 Oakridge Dr</u> <u>Broken Arrow, OK 74014</u>		B. Kind of Agency <input checked="" type="checkbox"/> U.S. Certificated Mechanic <input type="checkbox"/> Foreign Certificated Mechanic <input type="checkbox"/> Certificated Repair Station <input type="checkbox"/> Manufacturer		C. Certificate No. <u>1667231</u>		
D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.						
Date <u>6-24-91</u>		Signature of Authorized Individual 				
7. Approval for Return To Service						
Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is <input checked="" type="checkbox"/> APPROVED <input type="checkbox"/> REJECTED						
BY	FAA Fit Standards Inspector	Manufacturer	<input checked="" type="checkbox"/> Inspection Authorization	Other (Specify)		
	FAA Designee	Repair Station	Person Approved by Transport Canada Airworthiness Group			
Date of Approval or Rejection <u>6-24-91</u>		Certificate or Designation No. <u>1667231</u>		Signature of Authorized Individual 		

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. Description of Work Accomplished

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

N33PM, S/N 414-0840; Installed Insight Instrument Corporation Graphic Engine Monitor (G.E.M.) System Model 603. Gage units S/N's 005569 and 005570. System installed I/A/W manufacturer's instructions STC #SA157NE, weight and balance revised and FAA approved supplement added to the airplane flight manual.

END

Additional Sheets Are Attached

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION				Form Approved Budget Bureau No. 04-R060.1	
MAJOR REPAIR AND ALTERATION (Airframe, Powerplant, Propeller, or Appliance)				FOR FAA USE ONLY	
				OFFICE IDENTIFICATION	
INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof), for instructions and disposition of this form.					
1. AIRCRAFT	MAKE	Cessna	MODEL	414	
	SERIAL NO.	414-0840	NATIONALITY AND REGISTRATION MARK	N33PM	
2. OWNER	NAME (As shown on registration certificate)		ADDRESS (As shown on registration certificate)		
	Winchell, Robert M.		Rt. 1, Box 263 Gull Bay Sand Springs, OK. 74063		
3. FOR FAA USE ONLY					
4. UNIT IDENTIFICATION					
UNIT	MAKE	MODEL	SERIAL NO.	5. TYPE	
AIRFRAME	***** (As described in item 1 above) *****			REPAIR	ALTERATION
POWERPLANT					XX
PROPELLER					
APPLIANCE	TYPE				
	MANUFACTURER				
6. CONFORMITY STATEMENT					
A. AGENCY'S NAME AND ADDRESS		B. KIND OF AGENCY		C. CERTIFICATE NO.	
Autopilots Central, Inc. P.O. Box 582108 Tulsa, Oklahoma 74158		U.S. CERTIFICATED MECHANIC		RS-212-5	
		FOREIGN CERTIFICATED MECHANIC		L-I	
		XX CERTIFICATED REPAIR STATION		R 1, 2, L.S.S.	
		MANUFACTURER			
D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.					
DATE		SIGNATURE OF AUTHORIZED INDIVIDUAL			
August 6, 1987		<i>James G. Maddux</i>			
7. APPROVAL FOR RETURN TO SERVICE					
Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is <input checked="" type="checkbox"/> APPROVED <input type="checkbox"/> REJECTED					
BY	FAA FLT. STANDARDS INSPECTOR	MANUFACTURER	INSPECTION AUTHORIZATION		
	FAA DESIGNEE	XX REPAIR STATION	CANADIAN DEPARTMENT OF TRANSPORT INSPECTOR OF AIRCRAFT		
DATE OF APPROVAL OR REJECTION		CERTIFICATE OR DESIGNATION NO.	SIGNATURE OF AUTHORIZED INDIVIDUAL		
August 6, 1987		RS-212-5	<i>James G. Maddux</i>		

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

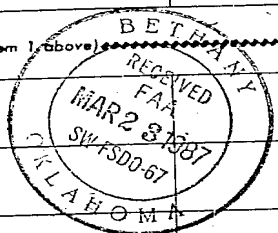
8. DESCRIPTION OF WORK ACCOMPLISHED (If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

Removed Narco ELT 10 and replaced with ARNAV ELS-10 Emergency Locator Transmitter System. Installation done in accordance with manufacturer's installation drawings and accepted practices contained in AC 43.13-1A and 2. Log book entry made to reflect above change. Change in weight and balance is negligible.

END

ADDITIONAL SHEETS ARE ATTACHED

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION				Form Approved Budget Bureau No. 04-R060.1	
MAJOR REPAIR AND ALTERATION (Airframe, Powerplant, Propeller, or Appliance)				FOR FAA USE ONLY	
INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form.				OFFICE IDENTIFICATION	
1. AIRCRAFT	MAKE	Cessna		MODEL	414
	SERIAL NO.	414-0840		NATIONALITY AND REGISTRATION MARK	N33PM
2. OWNER	NAME (As shown on registration certificate)			ADDRESS (As shown on registration certificate)	
	Winchell, Robert M.			Rt. 1, Box 263 Gull Bay Sand Springs, OK. 74063	
3. FOR FAA USE ONLY					
4. UNIT IDENTIFICATION					5. TYPE
UNIT	MAKE	MODEL	SERIAL NO.	REPAIR	ALTERATION
AIRFRAME	***** (As described in item 1, above) *****				
POWERPLANT					
PROPELLER					
APPLIANCE	TYPE				XX
	MANUFACTURER				
6. CONFORMITY STATEMENT					
A. AGENCY'S NAME AND ADDRESS			B. KIND OF AGENCY		C. CERTIFICATE NO.
Autopilots Central, Inc. P.O. Box 582108 Tulsa, Oklahoma 74158			U.S. CERTIFICATED MECHANIC		RS-212-5 L-1 R 1, 2, L.S.S.
			FOREIGN CERTIFICATED MECHANIC		
			<input checked="" type="checkbox"/> CERTIFICATED REPAIR STATION		
			MANUFACTURER		
D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attached, its hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.					
DATE	SIGNATURE OF AUTHORIZED INDIVIDUAL				
20 MAR 87	<i>R. H. Deary</i>				
7. APPROVAL FOR RETURN TO SERVICE					
Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is <input checked="" type="checkbox"/> APPROVED <input type="checkbox"/> REJECTED					
BY	FAA FLT. STANDARDS INSPECTOR	MANUFACTURER	INSPECTION AUTHORIZATION		OTHER (Specify)
	FAA DESIGNEE	<input checked="" type="checkbox"/> REPAIR STATION	CANADIAN DEPARTMENT OF TRANSPORT INSPECTOR OF AIRCRAFT		
DATE OF APPROVAL OR REJECTION	CERTIFICATE OR DESIGNATION NO.		SIGNATURE OF AUTHORIZED INDIVIDUAL		
20 MAR 87	RS-212-5		<i>R. H. Deary</i>		



NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. DESCRIPTION OF WORK ACCOMPLISHED (If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

Recertified existing installation of ARNAV Loran C Model R-40 due to the addition of Remote Data Base unit. Installed software revision V410C. Installation complies with AC 43.13-1A & -2, AC 20-121 and STC #SA3639SW. Aircraft instrument panel was placarded to read, "Loran-C not approved for IFR approaches". FAA Approved Airplane Flight Manual Supplement dated July 31, 1986 was provided in addition to the R-40 Operator's Manual dated June 1985 or later.

-END-

ADDITIONAL SHEETS ARE ATTACHED

FAA

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

MAJOR REPAIR AND ALTERATION
(Airframe, Powerplant, Propeller, or Appliance)

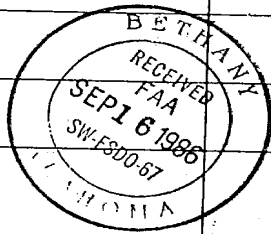
Form Approved
Budget Bureau No. 04-R060.1
FOR FAA USE ONLY
OFFICE IDENTIFICATION

INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form.

1. AIRCRAFT	MAKE Cessna	MODEL 414
	SERIAL NO. 414-0840	NATIONALITY AND REGISTRATION MARK N33PM
2. OWNER	NAME (As shown on registration certificate) Winchell, Robert M.	ADDRESS (As shown on registration certificate) Rt 1, Box 263 Gull Bay Sand Springs, OK. 74063

3. FOR FAA USE ONLY

4. UNIT IDENTIFICATION				5. TYPE	
UNIT	MAKE	MODEL	SERIAL NO.	REPAIR	ALTERATION
AIRFRAME	***** (As described in item 1 above) *****				
POWERPLANT					
PROPELLER					
APPLIANCE	TYPE				
	MANUFACTURER				XX



6. CONFORMITY STATEMENT		
A. AGENCY'S NAME AND ADDRESS	B. KIND OF AGENCY	C. CERTIFICATE NO.
Autopilots Central, Inc. P.O. Box 582108 Tulsa, Oklahoma 74158	<input type="checkbox"/> U.S. CERTIFICATED MECHANIC	RS-212-5 L-1 R 1, 2, L.S.S.
	<input type="checkbox"/> FOREIGN CERTIFICATED MECHANIC	
	<input checked="" type="checkbox"/> CERTIFICATED REPAIR STATION	
	<input type="checkbox"/> MANUFACTURER	

D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

DATE September 9, 1986	SIGNATURE OF AUTHORIZED INDIVIDUAL <i>R. H. Drury</i>
---------------------------	--

7. APPROVAL FOR RETURN TO SERVICE

Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is APPROVED REJECTED

BY	FAA FLT. STANDARDS INSPECTOR	MANUFACTURER	INSPECTION AUTHORIZATION	OTHER (Specify)
	FAA DESIGNEE	<input checked="" type="checkbox"/> REPAIR STATION	CANADIAN DEPARTMENT OF TRANSPORT INSPECTOR OF AIRCRAFT	
DATE OF APPROVAL OR REJECTION September 9, 1986	CERTIFICATE OR DESIGNATION NO. RS-212-5	SIGNATURE OF AUTHORIZED INDIVIDUAL <i>R. H. Drury</i>		

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. DESCRIPTION OF WORK ACCOMPLISHED (If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

Installed David Clark Isocom in accordance with manufacturers installation drawings and accepted practices contained in AC 43.13-1A & -2. All wiring and circuit protective devices are of an approved type. Log book entry made to reflect above change. Change in weight and balance is negligible.

-----END-----

ADDITIONAL SHEETS ARE ATTACHED

*JEATH
GAS
AZ
FAA*

DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION				Form Approved Budget Bureau No. 04-R060.	
MAJOR REPAIR AND ALTERATION (Airframe, Powerplant, Propeller, or Appliance)				FOR FAA USE ONLY	
				OFFICE IDENTIFICATION	
INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form.					
1. AIRCRAFT	MAKE	Cessna	MODEL	414	
	SERIAL NO.	414-0840	NATIONALITY AND REGISTRATION MARK	N33PM	
2. OWNER	NAME (As shown on registration certificate)		ADDRESS (As shown on registration certificate)		
	Winchell, Robert M.		Rt. 1, Box 263 Gulf Bay Sand Springs, OK. 74063		
3. FOR FAA USE ONLY					
4. UNIT IDENTIFICATION				5. TYPE	
UNIT	MAKE	MODEL	SERIAL NO.	REPAIR	ALTERATION
AIRFRAME	***** (As described in item 1 above) *****				
POWERPLANT					
PROPELLER					
APPLIANCE	TYPE				
	MANUFACTURER				XX
6. CONFORMITY STATEMENT					
A. AGENCY'S NAME AND ADDRESS		B. KIND OF AGENCY		C. CERTIFICATE NO.	
Autopilots Central, Inc. P.O. Box 582108 Tulsa, Oklahoma 74158		U.S. CERTIFICATED MECHANIC		RS-212-5	
		FOREIGN CERTIFICATED MECHANIC		L-I	
		<input checked="" type="checkbox"/> CERTIFICATED REPAIR STATION.		R 1, 2, L.S.S.	
		MANUFACTURER			
D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.					
DATE		SIGNATURE OF AUTHORIZED INDIVIDUAL			
27 June, 1986		<i>Robert M. Winchell</i>			
7. APPROVAL FOR RETURN TO SERVICE					
Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is <input checked="" type="checkbox"/> APPROVED <input type="checkbox"/> REJECTED					
BY	FAA FLT. STANDARDS INSPECTOR	MANUFACTURER	INSPECTION AUTHORIZATION		OTHER (Specify)
	FAA DESIGNEE	<input checked="" type="checkbox"/> REPAIR STATION	CANADIAN DEPARTMENT OF TRANSPORT INSPECTOR OF AIRCRAFT		
DATE OF APPROVAL OR REJECTION		CERTIFICATE OR DESIGNATION NO.	SIGNATURE OF AUTHORIZED INDIVIDUAL		
27 June, 1986		RS-212-5	<i>Robert M. Winchell</i>		

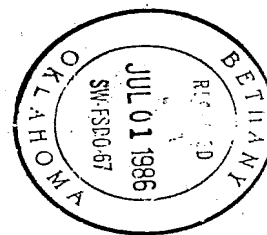
NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8 DESCRIPTION OF WORK ACCOMPLISHED (If more space is required attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

Installed ARNAV Remote Data Base coupled to existing ARNAV R-40 Loran C System using manufacturers installation data and accepted practices contained in AC 43.13-1A & 2. All wiring and circuit protective devices are of an approved type. Weight and balance recomputed and log book entries made. Aircraft panel placarded "Loran System to be used for VFR only."

-----END-----



ADDITIONAL SHEETS ARE ATTACHED

Poss

DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION			Form Approved Budget Bureau No. 04-R060.1		
MAJOR REPAIR AND ALTERATION (Airframe, Powerplant, Propeller, or Appliance)			FOR FAA USE ONLY		
			OFFICE IDENTIFICATION		
INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form.					
1. AIRCRAFT	MAKE	Cessna	MODEL	414	
	SERIAL NO.	414-0840	NATIONALITY AND REGISTRATION MARK	N33PM	
2. OWNER	NAME (As shown on registration certificate)		ADDRESS (As shown on registration certificate)		
	Winchell, Robert M.		Rt. 1, Box 263 Gull Bay Sand Springs, Ok. 74063		
3. FOR FAA USE ONLY: Information/data identified herein complies with the applicable airworthiness requirements and is approved only for the above described aircraft subject to conformity inspection by a person authorized in FAR 43, section 43.7. <i>6-25-85 B. Rosenfeld</i> DATE: 6-25-85 FAA INSPECTOR-SW-FSDO-57					
4. UNIT IDENTIFICATION				5. TYPE	
UNIT	MAKE	MODEL	SERIAL NO.	REPAIR	ALTERATION
AIRFRAME	***** (As described in item 1 above) *****				
POWERPLANT					
PROPELLER					
APPLIANCE	TYPE				
	MANUFACTURER				
6. CONFORMITY STATEMENT					
A. AGENCY'S NAME AND ADDRESS		B. KIND OF AGENCY		C. CERTIFICATE NO.	
Autopilots Central, Inc. P.O. Box 582108 Tulsa, Oklahoma 74158		<input type="checkbox"/> U.S. CERTIFICATED MECHANIC <input type="checkbox"/> FOREIGN CERTIFICATED MECHANIC <input checked="" type="checkbox"/> CERTIFICATED REPAIR STATION <input type="checkbox"/> MANUFACTURER		RS-212-5 L-I R 1, 2, L.S.S	
D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.					
DATE		SIGNATURE OF AUTHORIZED INDIVIDUAL			
6-25-85		<i>B. Rosenfeld</i>			
7. APPROVAL FOR RETURN TO SERVICE					
Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is <input checked="" type="checkbox"/> APPROVED <input type="checkbox"/> REJECTED					
BY	<input type="checkbox"/> FAA FLT. STANDARDS INSPECTOR	MANUFACTURER	INSPECTION AUTHORIZATION		OTHER (Specify)
	<input type="checkbox"/> FAA DESIGNEE	<input checked="" type="checkbox"/> REPAIR STATION	CANADIAN DEPARTMENT OF TRANSPORTATION INSPECTOR OF AIRCRAFT		
DATE OF APPROVAL OR REJECTION		CERTIFICATE OR DESIGNATION NO.	SIGNATURE OF AUTHORIZED INDIVIDUAL		
6-25-85		RS-212-5	<i>B. Rosenfeld</i>		

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. DESCRIPTION OF WORK ACCOMPLISHED (If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

Reference to 337 in aircraft logs dated 3-21-85, on Cessna 414, N33PM.

The manufacturer certifies that the R-40 Loran C equipment meets the design and accuracy requirements contained in AC90-45A, App. "A". The recommended ground checks have been performed per manufacturers instructions and the system meets the requirements for accuracy and is approved for IFR enroute and terminal operations only.

An FAA Approved Flight Manual Supplement covering procedure and performance of the R-40 is incorporated with the existing Flight Manual for this aircraft.

Installation made in accordance with FAR 23.1301, 23.1309, 23.1321, 23.1327, 23.1351, 23.1357, 23.1361, 23.1365, 23.1431; AC43.13-1 para. 121, 123, 124, 237-243, 244-254, 255-257, 272-277, 340, 343, 346, 390-397, 432, 448, 449, 451; AC43.13-2 para. 21-23, 27, 31, 33, Fig. 2.1, 2.2

Aircraft Flight Test performed and approved 6/25/85

E. B. Jossensub
Principal Avionics Inspector
SW FSDO 67

-----END-----

ADDITIONAL SHEETS ARE ATTACHED

Poss

FAA

DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION MAJOR REPAIR AND ALTERATION (Airframe, Powerplant, Propeller, or Appliance)				Form Approved Budget Bureau No. 04-R060.1 FOR FAA USE ONLY OFFICE IDENTIFICATION Sw. FS D0-67	
INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form.					
1. AIRCRAFT	MAKE Cessna		MODEL 414		
	SERIAL NO. 414-0840		NATIONALITY AND REGISTRATION MARK N-33PM		
2. OWNER	NAME (As shown on registration certificate) Winchell, Robert M.		ADDRESS (As shown on registration certificate) Rt. 1, Box 263 Gull Bay Sand Springs, OK. 74063		
	3. FOR FAA USE ONLY				
4. UNIT IDENTIFICATION					
UNIT	MAKE	MODEL	SERIAL NO.	REPAIR	ALTERATION
AIRFRAME	***** (As described in item 1 above) *****				
POWERPLANT					
PROPELLER					
APPLIANCE	TYPE				
	MANUFACTURER				
6. CONFORMITY STATEMENT					
A. AGENCY'S NAME AND ADDRESS			B. KIND OF AGENCY		C. CERTIFICATE NO.
Autopilots Central, Inc. P.O. Box 582108 Tulsa, Oklahoma 74158			U.S. CERTIFICATED MECHANIC		RS-212-5
			FOREIGN CERTIFICATED MECHANIC		L-I
			X CERTIFICATED REPAIR STATION		R 1, 2, L.S.S.
			MANUFACTURER		
D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.					
DATE 5-23-85		SIGNATURE OF AUTHORIZED INDIVIDUAL <i>Larry D. Phillips ACP 2093184</i>			
7. APPROVAL FOR RETURN TO SERVICE					
Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is <input checked="" type="checkbox"/> APPROVED <input type="checkbox"/> REJECTED					
BY	FAA FLT. STANDARDS INSPECTOR	MANUFACTURER	INSPECTION AUTHORIZATION		OTHER (Specify)
	FAA DESIGNEE	X REPAIR STATION	CANADIAN DEPARTMENT OF TRANSPORT INSPECTOR OF AIRCRAFT		
DATE OF APPROVAL OR REJECTION 5-23-85		CERTIFICATE OR DESIGNATION NO. RS-212-5	SIGNATURE OF AUTHORIZED INDIVIDUAL <i>Larry D. Phillips ACP 2093184</i>		

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. DESCRIPTION OF WORK ACCOMPLISHED (If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

Installed 3M WX-10A Stormscope System following manufacturers instructions and wiring prints. Completed system operationally checked and found not to interfere with normal aircraft systems operation. Additional current of 1 amp maximum continuous does not cause total electrical demand to exceed 80% of alternator output. Updated weight and balance included in aircraft records.

END

ADDITIONAL SHEETS ARE ATTACHED

DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION				Form Approved Budget Bureau No. 04-R060.1	
MAJOR REPAIR AND ALTERATION (Airframe, Powerplant, Propeller, or Appliance)				FOR FAA USE ONLY	
INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form.				OFFICE IDENTIFICATION SW-FSD0-67	
1. AIRCRAFT	MAKE	Cessna	MODEL	414	
	SERIAL NO.	414-0840	NATIONALITY AND REGISTRATION MARK	N 33 PM	
2. OWNER	NAME (As shown on registration certificate)		ADDRESS (As shown on registration certificate)		
	Robert M. Winchell		Rt 1 Box 263 Gull Bay Sand Springs, Okla. 74063		
3. FOR FAA USE ONLY					
4. UNIT IDENTIFICATION				5. TYPE	
UNIT	MAKE	MODEL	SERIAL NO.	REPAIR	ALTERATION
AIRFRAME	***** (As described in item 1 above) *****				X
POWERPLANT					
PROPELLER					
APPLIANCE	TYPE				
	MANUFACTURER				
6. CONFORMITY STATEMENT					
A. AGENCY'S NAME AND ADDRESS		B. KIND OF AGENCY		C. CERTIFICATE NO.	
Sandy J. Ulrich P.O. Box 287 Abque Airport Sand Springs, Okla. 74063		<input checked="" type="checkbox"/> U.S. CERTIFICATED MECHANIC <input type="checkbox"/> FOREIGN CERTIFICATED MECHANIC <input type="checkbox"/> CERTIFICATED REPAIR STATION <input type="checkbox"/> MANUFACTURER		AP 2209901 IA	
D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.					
DATE		SIGNATURE OF AUTHORIZED INDIVIDUAL			
29 April 85		Sandy J. Ulrich			
7. APPROVAL FOR RETURN TO SERVICE					
Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is <input checked="" type="checkbox"/> APPROVED <input type="checkbox"/> REJECTED					
BY	FAA FLT. STANDARDS INSPECTOR	MANUFACTURER	<input checked="" type="checkbox"/>	INSPECTION AUTHORIZATION	OTHER (Specify)
	FAA DESIGNEE	REPAIR STATION		CANADIAN DEPARTMENT OF TRANSPORT INSPECTOR OF AIRCRAFT	
DATE OF APPROVAL OR REJECTION		CERTIFICATE OR DESIGNATION NO.		SIGNATURE OF AUTHORIZED INDIVIDUAL	
29 April 1985		2209901 IA		Sandy J. Ulrich	

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. DESCRIPTION OF WORK ACCOMPLISHED (If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

Installed Symbolic Displays Inc. Fuel Flow
Indicating System Model CFS-2000 STC-28125W
per the manufactures instructions.

— End —

ADDITIONAL SHEETS ARE ATTACHED.

Pass

DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION		Form Approved Budget Bureau No. 04-R060.1	
MAJOR REPAIR AND ALTERATION (Airframe, Powerplant, Propeller, or Appliance)		FOR FAA USE ONLY	
INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form.		OFFICE IDENTIFICATION SW-FSDO-67	
1. AIRCRAFT		MAKE Cessna	MODEL 414
		SERIAL NO. 414-0840	NATIONALITY AND REGISTRATION MARK N33PM
2. OWNER		ADDRESS (As shown on registration certificate)	
		Rt. 1, Box 263 Gull Bay Sand Springs, Ok. 74063	
3. FOR FAA USE ONLY			
4. UNIT IDENTIFICATION			
UNIT	MAKE	MODEL	SERIAL NO.
AIRFRAME	***** (As described in item 1 above) *****		
POWERPLANT			
PROPELLER			
APPLIANCE	TYP		
	MANUFACTURER		
5. TYPE			
	REPAIR	ALTERATION	
		X	
6. CONFORMITY STATEMENT			
A. AGENCY'S NAME AND ADDRESS		B. KIND OF AGENCY	
Autopilots Central, Inc. P.O. Box 582108 Tulsa, Oklahoma 74158		U.S. CERTIFICATED MECHANIC	
		FOREIGN CERTIFICATED MECHANIC	
		X CERTIFICATED REPAIR STATION	
		MANUFACTURER	
		C. CERTIFICATE NO.	
		RS-212-5 L-I R 1, 2, L.S.S.	
D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.			
DATE 3-21-85		SIGNATURE OF AUTHORIZED INDIVIDUAL <i>Larry D. Phillips A+P 3093184</i>	
7. APPROVAL FOR RETURN TO SERVICE			
Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is <input checked="" type="checkbox"/> APPROVED <input type="checkbox"/> REJECTED			
BY	FAA RT. STANDARDS INSPECTOR	MANUFACTURER	INSPECTION AUTHORIZATION
	FAA DESIGNEE	X REPAIR STATION	CANADIAN DEPARTMENT OF TRANSPORT INSPECTOR OF AIRCRAFT
OTHER (Specify)			
DATE OF APPROVAL OR REJECTION 3-21-85	CERTIFICATE OR DESIGNATION NO. RS-212-5	SIGNATURE OF AUTHORIZED INDIVIDUAL <i>Larry D. Phillips A+P 3093184</i>	

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. DESCRIPTION OF WORK ACCOMPLISHED (If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

Removed Aerosonic 8 Day Clock and installed Astrotech Quartz Chronometer. Removed ARC G502-A Directional Gyro and Collins Ind 351 Indicator. Installed Slaved NSD 360, Edo-Aire Yaw Damper System STC SA3335SW-D, and ARNAV Loran C Receiver System STC SA2051NM. Installations performed following manufacturers installation manuals; AC43.13-1A Chapter 11 sections 2,3, and 7; and AC43.13-2 Chapters 2 and 3. Slaved NSD 360 and Loran C Receiver incorporated into existing autopilot system following manufacturers wiring prints. Installation of Loran C also follows Advisory Circular No. 20-121: (1) Loran C installation does not interfere with the normal operation of other equipment installed in aircraft, (2) structural mounting is sufficient for restraint of equipment subjected to emergency landing loads for this aircraft, (3) Navigation Annunciator installed adjacent to display, (4) Placard installed stating: "Loran C not approved for IFR". Also installed BVR Inc. Independent Course Deviation Meter for Loran. FAA approved Airplane Flight Manual Supplement for Yaw Damper System and updated weight and balance included in aircraft records. Electrical load analysis determined available power is adequate in accordance with AC43.13-2 chapter 2, paragraph 27a.

END

ADDITIONAL SHEETS ARE ATTACHED

AAC 7-80 OFE

DEPARTMENT OF TRANSPORTATION
 FEDERAL AVIATION ADMINISTRATION

Form Approved
 Budget Bureau No. 04-R060.1
 FOR FAA USE ONLY
 OFFICE IDENTIFICATION

MAJOR REPAIR AND ALTERATION
 (Airframe, Powerplant, Propeller, or Appliance)

INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form.

1. AIRCRAFT	MAKE Cessna	MODEL 414
	SERIAL NO. 414-0840	NATIONALITY AND REGISTRATION MARK N33PM
2. OWNER	NAME (As shown on registration certificate) Air Ambulance, Inc.	ADDRESS (As shown on registration certificate) 795 Skyway San Carlos, CA 94070

3. FOR FAA USE ONLY

4. UNIT IDENTIFICATION

UNIT	MAKE	MODEL	SERIAL NO.	5. TYPE	
				REPAIR	ALTERATION
AIRFRAME	***** (As described in item 1 above) *****				X
POWERPLANT					
PROPELLER					
APPLIANCE	TYPE				
	MANUFACTURER				

6. CONFORMITY STATEMENT

A. AGENCY'S NAME AND ADDRESS Federal Avionics 228 Lagoon Drive Honolulu, Hawaii 96819	B. KIND OF AGENCY	C. CERTIFICATE NO. 661-18
	<input type="checkbox"/> U.S. CERTIFICATED MECHANIC	
	<input type="checkbox"/> FOREIGN CERTIFICATED MECHANIC	
	<input checked="" type="checkbox"/> CERTIFICATED REPAIR STATION	
	MANUFACTURER	

D I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

DATE 6-28-82	SIGNATURE OF AUTHORIZED INDIVIDUAL <i>[Signature]</i>
-----------------	--

7. APPROVAL FOR RETURN TO SERVICE

Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is APPROVED REJECTED

BY	FAA FLT. STANDARDS INSPECTOR	MANUFACTURER	INSPECTION AUTHORIZATION	OTHER (Specify)
	FAA DESIGNEE	<input checked="" type="checkbox"/> REPAIR STATION	CANADIAN DEPARTMENT OF TRANSPORT INSPECTOR OF AIRCRAFT	
DATE OF APPROVAL OR REJECTION 6-29-82	CERTIFICATE OR DESIGNATION NO. 661-18	SIGNATURE OF AUTHORIZED INDIVIDUAL <i>[Signature]</i>		

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. DESCRIPTION OF WORK ACCOMPLISHED (If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

OKLAHOMA CITY
 OKLAHOMA

JUN 30 15 26 82

	<u>Weight in Pounds</u>	<u>Station in Reference to Leading Edge of Passenger Door</u>
Installed the following:		
(1) Motorola MITREK FM Radio	10.5	15.5" aft
(1) Flight-Tronics Voltage Converter Model PC-12A	4.1	27.0" aft
(1) Antenna CI-200	0.5	37.0" aft
(1) Encoder	0.5	22.0" forward
(1) Decoder	0.5	14.5" forward
(1) Speaker	1.0	15.0" forward
(1) Wiring Harness and Associated Hardware	2.0	6.0" forward

This installation resulted in an increase in empty weight of 19.1 pounds and an increase in power requirement of 4.0 amps.

Installation was made with materials provided by the manufacturer or aircraft quality materials purchased elsewhere where required. Units were installed in a manner consistent with manufacturer's specifications and in accordance with FAA Advisory Circular 43.13-2A Chapter 2, paragraph 27 and 43.13-1A Chapters 11 and 15.

JUL 14 2 24 PM '82
 OKLAHOMA CITY
 OKLAHOMA
 FAA
 AIRCRAFT REGISTRY

ADDITIONAL SHEETS ARE ATTACHED

DEPARTMENT OF TRANSPORTATION
 FEDERAL AVIATION ADMINISTRATION

MAJOR REPAIR AND ALTERATION
 (Airframe, Powerplant, Propeller, or Appliance)

Form Approved
 Budget Bureau No. 04-R060.1

FOR FAA USE ONLY
 OFFICE IDENTIFICATION

INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (Supplement No. 1 to 43.9-1) (thereof) for instructions and disposition of this form.

1. AIRCRAFT	MAKE CESSNA	MODEL 414
	SERIAL NO. 414-0840	NATIONALITY AND REGISTRATION MARK N33PM
2. OWNER	NAME (As shown on registration certificate) Air Trans 80	ADDRESS (As shown on registration certificate) 795 Skyway San Carlos Calif. 94070

3. FOR FAA USE ONLY

NO PERSON SHALL OPERATE THIS AIRCRAFT AS ALTERED HEREIN, TO AN OVER OR OUT C.G. CONDITION, UNLESS IT HAS WITH IT AN APPROPRIATE AND CURRENT SPECIAL AIRWORTHINESS PERMIT ISSUED UNDER THE PROVISION OF F.A.R. PART 21.

4. UNIT IDENTIFICATION				5. TYPE	
UNIT	MAKE	MODEL	SERIAL NO.	REPAIR	ALTERATION
AIRFRAME	***** (As described in item 1 above) *****				X
POWERPLANT					
PROPELLER					
APPLIANCE	TYPE				
	MANUFACTURER				

6. CONFORMITY STATEMENT

A. AGENCY'S NAME AND ADDRESS Ray Coates Hangar 2C Oakland Airport 94614	<input checked="" type="checkbox"/>	B. KIND OF AGENCY U.S. CERTIFICATED MECHANIC	C. CERTIFICATE NO. IA462740326
	<input type="checkbox"/>	FOREIGN CERTIFICATED MECHANIC	
	<input type="checkbox"/>	CERTIFICATED REPAIR STATION	
	<input type="checkbox"/>	MANUFACTURER	

D I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

DATE: February 6, 1981	SIGNATURE OF AUTHORIZED INDIVIDUAL RAY COATES <i>Ray Coates</i>
---------------------------	---

7. APPROVAL FOR RETURN TO SERVICE

Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is APPROVED REJECTED

BY	FAA/FLY STANDARDS INSPECTOR	MANUFACTURER	<input checked="" type="checkbox"/>	INSPECTION AUTHORIZATION	OTHER (Specify)
	FAA DESIGNEE	REPAIR STATION	<input type="checkbox"/>	CANADIAN DEPARTMENT OF TRANSPORT INSPECTOR OF AIRCRAFT	
DATE OF APPROVAL OR REJECTION Feb. 6, 1981	CERTIFICATE OR DESIGNATION NO. IA462740326	SIGNATURE OF AUTHORIZED INDIVIDUAL Ray Coates <i>Ray Coates</i>			

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. DESCRIPTION OF WORK ACCOMPLISHED (If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

Installed temporary fuel system resting on plywood supports resting on existing aircraft structure.

Tanks are constructed from .090 50-52 H34 Aluminum, welded at all seams, internal baffles are installed and welded in place.

Tanks are pressure and leak tested.

Tanks are secured to seat tracks with approved tie down. All tanks are vented to the atmosphere, as outlined in F.A.R. AC43-13-1A.

Ferry system is plumbed into existing aircraft system as shown in attachment #1.

Fuel management is outline in attachment 1.

Temporary weight and balance as per attachment 2.

-----END-----

ADDITIONAL SHEETS ARE ATTACHED

C-414

Ferry system operation.

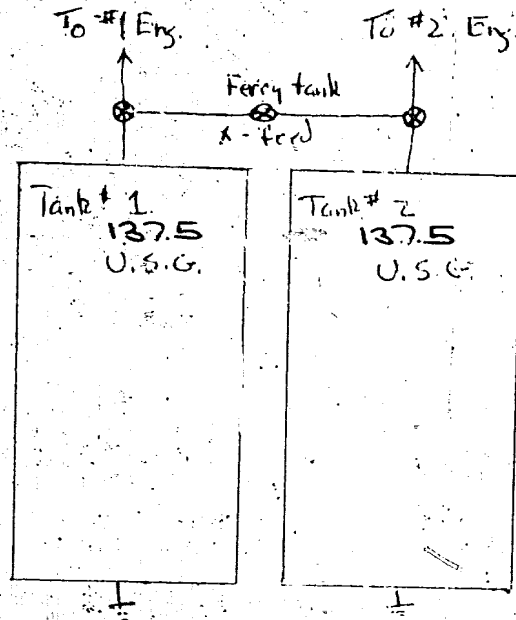
CS40

Ferry System

- 1) Ferry tank valves on
- 2) Ferry tank aux. pumps on
- 3) A/C Tank selectors off
- 4) Ferry tank aux. pumps off

A/C

- 1) A/C Tank selectors on
- 2) A/C aux. pumps on
- 3) Ferry tank valves off
- 4) A/C aux. pumps off



FAA AIRCRAFT REGISTRY
CAMERA NO. 5

DATE: 2-21-84

[Redacted]

TEMPORARY WEIGHT & BALANCE (SAMPLE)

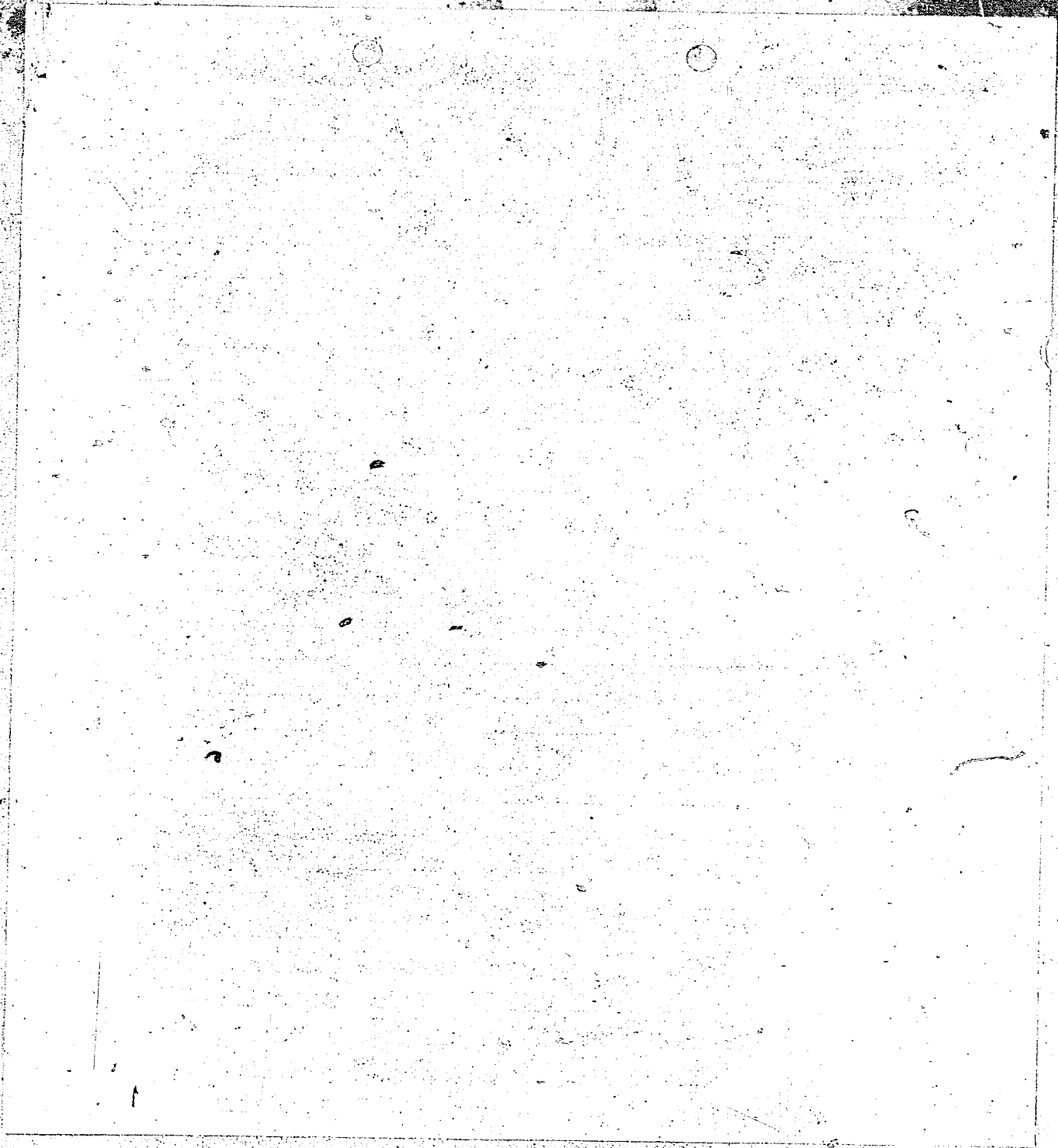
MODEL 414 REGISTRATION N33PM SERIAL # 0840

	Weight	Arm	Moment
Pilot	340	137	46580
Av/Comm equip	15	250	3750
Baggage cockpit	60	137	8220
NOSE	350	71	17750
Ferry Fuel System	100	183	18300
A/C Fuel 100 gals	600	152	91200
63 gals	378	164	61992
20 gals	180	175	21000
Ferry Fuel 275 gals	1650	183	301950
gals			
gals			
Other			
Removed 3 + 4 SEAT	- 55	175	- 9625
5 + 6 SEAT	- 50	218	- 10900
Subtotals	<u>3408</u>		<u>550217</u>
Licensed Empty Weight	<u>4766</u>		<u>754491</u>
Totals	<u>8174</u>	<u>159.6</u>	<u>1304708</u>

Weight & Balance (Takeoff)		Fuel (US gals)		Performance (estimates)	
CG Range	150.9 TO 159.7	Approved	Capacity	Fuel Burn	22.5 gph
Normal GW	6350	A/C	183	Avg TAS	176 kts
Approved	Sample	Ferry	275	Power	65 ^{ISA} _{TEMP} %
Temp GW	8250	Total	458	Altitude	5/10,000 ft
% Norm GW	130		129	Range	15.5 hrs ²⁷²⁸ nm

FAA AIRCRAFT REGISTRY
CAMERA NO. 5

DATE: 2-21-84



DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION APPLICATION FOR AIRWORTHINESS CERTIFICATE		INSTRUCTIONS—Print or type. Do not write in shaded areas; these are for FAA use only. Submit original only to an authorized FAA Representative. If additional space is required, use an attachment. For special flight permits complete Section II and VI or VII as applicable.						
I. AIRCRAFT DESCRIPTION	1. REGISTRATION MARK N37780 33PM	2. AIRCRAFT BUILDER'S NAME (make) Cessna	3. AIRCRAFT MODEL DESIGNATION 414	4. YR. MFG. 1976	FAA CODES 2075908			
	5. AIRCRAFT SERIAL NO. 414-0840	6. ENGINE BUILDER'S NAME (make) Continental	7. ENGINE MODEL DESIGNATION TS10-520-N	17040				
	8. NUMBER OF ENGINES Two	9. PROPELLER BUILDER'S NAME (make) McCaughey	10. PROPELLER MODEL DESIGNATION 3AF32C93/82NC-5.5	11. AIRCRAFT IS IMPORT				
	APPLICATION IS HEREBY MADE FOR: (Check applicable items)							
II. CERTIFICATION REQUESTED	A. <input checked="" type="checkbox"/> STANDARD AIRWORTHINESS CERT. (Indicate category) <input checked="" type="checkbox"/> NORMAL <input type="checkbox"/> UTILITY <input type="checkbox"/> ACROBATIC <input type="checkbox"/> TRANSPORT <input type="checkbox"/> GLIDER <input type="checkbox"/> BALLOON							
	B. SPECIAL AIRWORTHINESS CERTIFICATE (Check appropriate items)							
	2	LIMITED	1	CLASS I				
	5	PROVISIONAL (Indicate class)	2	CLASS II				
	3	RESTRICTED (Indicate operation(s) to be conducted)	1	AGRICULTURE & PEST CONTROL	2	AERIAL SURVEYING	3	AERIAL ADVERTISING
			4	FOREST (Wild life conservation)	5	PATROLLING	6	WEATHER CONTROL
	0	OTHER (Specify)						
	4	EXPERIMENTAL (Indicate operation(s) to be conducted)	1	RESEARCH AND DEVELOPMENT	2	AMATEUR BUILT	3	EXHIBITION
			4	RACING	5	CREW TRAINING	6	MKT. SURVEY
	0	TO SHOW COMPLIANCE WITH FAR						
8	SPECIAL FLIGHT PERMIT (Indicate operation to be conducted then complete Section VI or VII as applicable on reverse side)	1	FERRY FLIGHT FOR REPAIRS, ALTERATIONS, MAINTENANCE OR STORAGE					
		2	EVACUATE FROM AREA OF IMPENDING DANGER					
		3	OPERATION IN EXCESS OF MAX. CERTIFICATED TAKE-OFF WEIGHT					
		4	DELIVERING OR EXPORT	5	PRODUCTION FLIGHT TESTING			
C. <input checked="" type="checkbox"/> 6 MULTIPLE AIRWORTHINESS CERTIFICATE (Check appropriate Restricted Operation and Standard or Limited as applicable above)								
III. OWNER'S CERTIFICATION	A. REGISTERED OWNER (As shown on Certificate of Aircraft Registration) IF DEALER, CHECK HERE <input checked="" type="checkbox"/>							
	NAME Cessna Aircraft Company		ADDRESS West K-42 Highway, P. O. Box 1977 Wichita, Kansas 67201					
	B. AIRCRAFT CERTIFICATION BASIS (Check applicable blocks and complete items as indicated)							
	<input checked="" type="checkbox"/>	AIRCRAFT SPECIFICATION OR TYPE CERTIFICATION DATA SHEET (Give No. and Revision No.) A7CE Rev. 18	<input checked="" type="checkbox"/>	AIRWORTHINESS DIRECTIVES (Check if all applicable and give latest AD No.) Issue 76-13-12				
		AIRCRAFT LISTING (Give page No(s)) NA		SUPPLEMENTAL TYPE CERTIFICATE (List number of FARs/STC incorporated) NA				
C. AIRCRAFT OPERATION AND MAINTENANCE RECORDS								
<input checked="" type="checkbox"/>	CHECK IF RECORDS IN COMPLIANCE WITH FAR 91.173	TOTAL AIRFRAME HOURS— 4.1 HOURS	<input checked="" type="checkbox"/>	EXPERIMENTAL ONLY—Enter hours flown since last certificate issued or renewed NA				
D. CERTIFICATION—I hereby certify that I am the owner (or his agent) of the aircraft described above; that the aircraft is registered with the Federal Aviation Administration in accordance with Section 501 of the Federal Aviation Act of 1958, and applicable Federal Aviation Regulations, and that the aircraft has been inspected and is airworthy and eligible for the airworthiness certificate requested.								
DATE OF APPLICATION 8-12-76		NAME AND TITLE (Print or type) A. D. Schmidt, Quality Control Manager		SIGNATURE <i>A. D. Schmidt</i>				
IV. INSPECTION AGENCY VERIFICATION	A. THE AIRCRAFT DESCRIBED ABOVE HAS BEEN INSPECTED AND FOUND AIRWORTHY BY: (Complete this section only if FAR 21.183 (d) applies)							
	<input checked="" type="checkbox"/>	FAR PART 121 OR 127 CERTIFICATE HOLDER (Give Certificate No.)	<input checked="" type="checkbox"/>	CERTIFICATED MECHANIC (Give Certificate No.)	<input type="checkbox"/>	CERTIFICATED REPAIR STATION (Give Certificate No.)		
	<input checked="" type="checkbox"/>	AIRCRAFT MANUFACTURER (Give Name of Firm)						
DATE		TITLE		SIGNATURE				
V. FAA REPRESENTATIVE CERTIFICATION	(Check ALL applicable blocks) I find that the aircraft described in Section I or VII meets the requirements for: <input checked="" type="checkbox"/> The certification requested, or <input type="checkbox"/> Amendment or modification of the certification requested. Inspection for a special flight permit under Section VII was conducted by: <input type="checkbox"/> FAA Inspector; <input checked="" type="checkbox"/> FAA Inspector/Authorized Representative; <input type="checkbox"/> FAR 65, <input type="checkbox"/> FAR 121 or 127, or <input type="checkbox"/> FAR 145.							
	DATE 8-12-76	DISTRICT OFFICE CE EMDO 3-0-43	DESIGNATED REPRESENTATIVE AND NO. OF COPIES By <i>Raymond M. Rowden</i> Raymond M. Rowden	FAA INSPECTOR'S SIGNATURE				

228 10 pages

VI. PRODUCTION FLIGHT TESTING	A. MANUFACTURER		
	NAME		ADDRESS
	B. PRODUCTION BASIS (Check applicable item)		
	<input type="checkbox"/> PRODUCTION CERTIFICATE (Give production certificate number) <input type="checkbox"/> TYPE CERTIFICATE ONLY <input type="checkbox"/> APPROVED PRODUCTION INSPECTION SYSTEM		
	C. GIVE QUANTITY OF CERTIFICATES REQUIRED FOR OPERATING NEEDS:		
	DATE OF APPLICATION	NAME AND TITLE (Print or type)	SIGNATURE
VII. SPECIAL FLIGHT PERMIT PURPOSES OTHER THAN PRODUCTION FLIGHT TEST	A. DESCRIPTION OF AIRCRAFT		
	REGISTERED OWNER		ADDRESS
	BUILDER (Make)		MODEL
	SERIAL NUMBER		REGISTRATION MARK
	B. DESCRIPTION OF FLIGHT		
	FROM		TO
	VIA	DEPARTURE DATE	DURATION
	C. CREW REQUIRED TO OPERATE THE AIRCRAFT AND ITS EQUIPMENT		
	<input type="checkbox"/> PILOT <input type="checkbox"/> CO-PILOT <input type="checkbox"/> NAVIGATOR <input type="checkbox"/> OTHER (Specify)		
	D. THE AIRCRAFT DOES NOT MEET THE APPLICABLE AIRWORTHINESS REQUIREMENTS AS FOLLOWS:		
E. THE FOLLOWING RESTRICTIONS ARE CONSIDERED NECESSARY FOR SAFE OPERATION (Use attachment if necessary):			
F. CERTIFICATION —I hereby certify that I am the registered owner (or his agent) of the aircraft described above; that the aircraft is registered with the Federal Aviation Administration in accordance with Section 301 of the Federal Aviation Act of 1938, and applicable Federal Aviation Regulations; and that the aircraft has been inspected and is airworthy for the flight described.			
DATE	NAME AND TITLE (Print or type)	SIGNATURE	
VIII. AIRWORTHINESS DOCUMENTATION (FAA use only)	<input checked="" type="checkbox"/> A. Operating Limitations and Markings in Compliance with FAR 91.31 as Applicable	<input checked="" type="checkbox"/> G. Statement of Conformity, FAA Form 317 (Attach when required)	
	<input type="checkbox"/> B. Current Operating Limitations Attached	<input type="checkbox"/> H. Foreign Airworthiness Certification for Import Aircraft (Attach when required)	
	<input type="checkbox"/> C. Data, Drawings, Photographs, etc. (Attach when required)	<input type="checkbox"/> I. Previous Airworthiness Certificate Issued in Accordance with FAR _____ CAR _____ (Original attached)	
	<input type="checkbox"/> D. Current Weight and Balance Information Available in Aircraft	<input type="checkbox"/> J. Current Airworthiness Certificate Issued in Accordance with FAR 21.183a per 21.273 (Copy attached)	
	<input type="checkbox"/> E. Major Repair and Alteration FAA 337 (Attach when required)		
	<input checked="" type="checkbox"/> F. This Inspection Recorded in Aircraft Records		

FAA AIRCRAFT REGISTRY
 CAMERA NO. 5A DATE: 2-21-84

UNITED STATES OF AMERICA
 DEPARTMENT OF TRANSPORTATION - FEDERAL AVIATION ADMINISTRATION
STANDARD AIRWORTHINESS CERTIFICATE

1. NATIONALITY AND REGISTRATION MARKS N3778C	2. MANUFACTURER AND MODEL Cessna 414	3. AIRCRAFT SERIAL NUMBER 414-0840	4. CATEGORY Normal
5. AUTHORITY AND BASIS FOR ISSUANCE This airworthiness certificate is issued pursuant to the Federal Aviation Act of 1958 and certifies that, as of the date of issuance, the aircraft to which issued has been inspected and found to conform to the type certificate therefor, to be in condition for safe operation, and has been shown to meet the requirements of the applicable comprehensive and detailed airworthiness code as provided by Annex 8 to the Convention on International Civil Aviation, except as noted herein. Exceptions: None			
6. TERMS AND CONDITIONS Unless sooner surrendered, suspended, revoked, or a termination date is otherwise established by the Administrator, this airworthiness certificate is effective as long as the aircraft is maintained, and alterations are performed in accordance with Parts 21, 43, and 91 of the Federal Aviation Regulations, as appropriate, and the aircraft is registered in the United States. Delegation Option (Manufacturer)			
DATE OF ISSUANCE 8-12-76	FAA REPRESENTATIVE <i>[Signature]</i>	DESIGNATION NUMBER BOA CE-3	

FAA Form 8100-2 (7-67) FORMERLY FAA FORM 1362

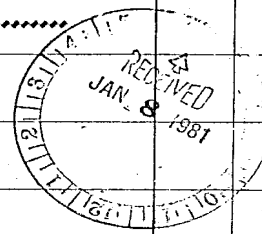
SPD-107-D-271-931

FAA AIRCRAFT REGISTRY
CAMERA NO. 5

DATE: 2-21-84

17301475

DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION				Form Approved Budget Bureau No. 04-R060.1	
MAJOR REPAIR AND ALTERATION (Airframe, Powerplant, Propeller, or Appliance)				FOR FAA USE ONLY	
INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-i (or subsequent revision thereof) for instructions and disposition of this form.				OFFICE IDENTIFICATION WE GADO 2	
1. AIRCRAFT	MAKE	CESSNA	MODEL	414	
	SERIAL NO.	4140840	NATIONALITY AND REGISTRATION MARK	N33PM	
2. OWNER	NAME (As shown on registration certificate)		ADDRESS (As shown on registration certificate)		
	AIR AMBULANCE INC.		795 Skyway San Carlos, CA 94070		
3. FOR FAA USE ONLY					
4. UNIT IDENTIFICATION					
UNIT	MAKE	MODEL	SERIAL NO.	5. TYPE	
AIRFRAME	***** (As described in item 1 above) *****			REPAIR	ALTERATION
POWERPLANT					X
PROPELLER					
APPLIANCE	TYPE				
	MANUFACTURER				
6. CONFORMITY STATEMENT					
A. AGENCY'S NAME AND ADDRESS		B. KIND OF AGENCY		C. CERTIFICATE NO.	
J. T. Alfred 795 Skyway San Carlos, CA 94070		<input checked="" type="checkbox"/> U.S. CERTIFICATED MECHANIC <input type="checkbox"/> FOREIGN CERTIFICATED MECHANIC <input type="checkbox"/> CERTIFICATED REPAIR STATION <input type="checkbox"/> MANUFACTURER		A&P 2015910	
D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.					
DATE: November 4, 1980		SIGNATURE OF AUTHORIZED INDIVIDUAL <i>J. T. Alfred</i>			
7. APPROVAL FOR RETURN TO SERVICE					
Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is <input type="checkbox"/> APPROVED <input type="checkbox"/> REJECTED					
BY	FAA FLT. STANDARDS INSPECTOR	MANUFACTURER	<input checked="" type="checkbox"/>	INSPECTION AUTHORIZATION	OTHER (Specify)
	FAA DESIGNEE	REPAIR STATION		CANADIAN DEPARTMENT OF TRANSPORT INSPECTOR OF AIRCRAFT	
DATE OF APPROVAL OR REJECTION 11-10-'80		CERTIFICATE OR DESIGNATION NO. 1922213		SIGNATURE OF AUTHORIZED INDIVIDUAL <i>William M. Lewis</i>	



NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

B. DESCRIPTION OF WORK ACCOMPLISHED (If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

Fabricated adapter fixture for Cessna 414 and 402 aircraft to allow carrying stretcher and oxygen bottle aboard aircraft in connection with patient transport.

Fixture fabricated from 4130 steel with details provided in attached drawing.

All work done in accordance with FAR 43:13 2 Chapter 12 "Litter, Berth, and Cargo Tiedown Device Installations." Unit static tested in accordance with paragraph 206 of Chapter 12 and Chapter 1 of FAR 43:13 2 "Structural Data". Calculations listed below.

Weight of welded fixture and "M" oxygen bottle	111 pounds
Weight of stretcher and patient (patient 170# per FAR's)	202 pounds
Weight of total assembly	313 pounds

LOAD TESTING OF TOTAL ASSEMBLY

Direction of applied force	Assembly Weight		Required Load Factor		Required Load
Side	313	X	1.5	=	470 lbs.
Up	313	X	3.0	=	939 lbs.
Down	313	X	6.6	=	2,066 lbs.
Forward	313	X	9.0	=	2,817 lbs.

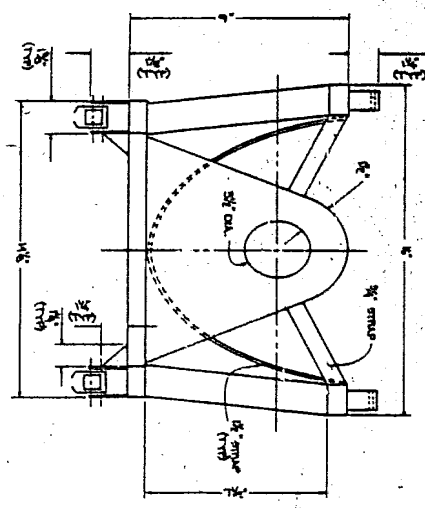
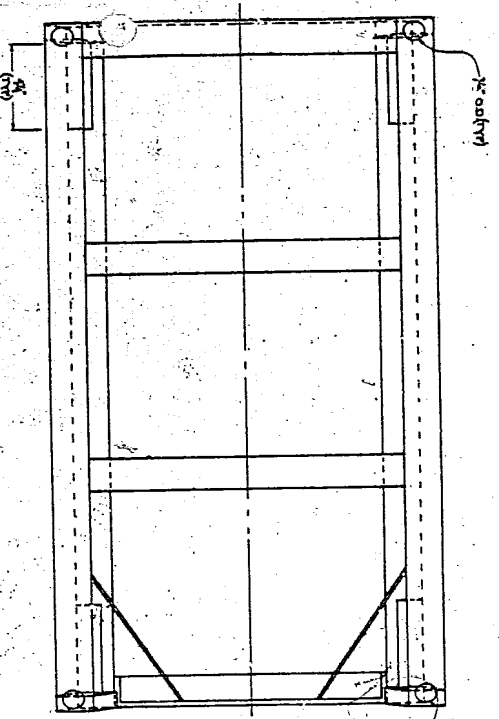
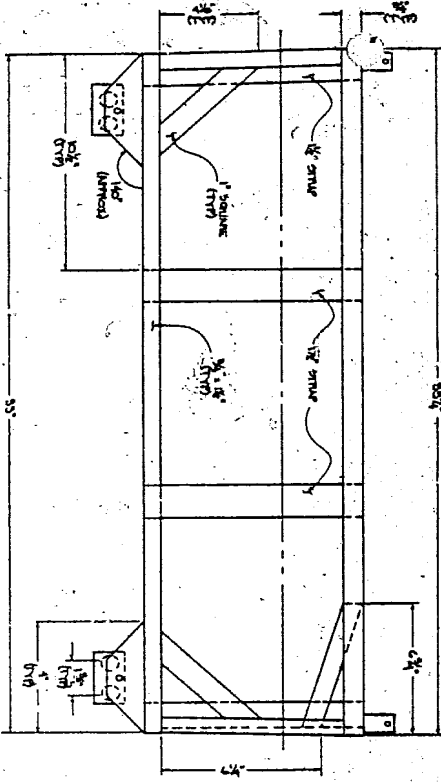
LOAD TESTING OF STRETCHER MOUNT. (i.e. Requires weight of stretcher and patient only)

Side	202	X	1.5	=	303 lbs.
Up	202	X	3.0	=	606 lbs.
Down	202	X	6.6	=	1,333 lbs.
Forward	202	X	9.0	=	1,818 lbs.

All static load tests were performed using a hydraulic ram and calibrated load cell in accordance with Chapter 1 "Structural Data" paragraph 3. Testing was supervised by M. M. Cook, Principal Maintenance Inspector WE GADO-2-SJC.

-----END-----

ADDITIONAL SHEETS ARE ATTACHED



AIR AMBULANCE INC.
 AIRCRAFT STRETCHER ADAPTER/MOUNT
BILL OF MATERIALS:
 ALL SQUARE/RECTANGULAR TUBING 4130 STEEL
 ALL FLAT STOCK AND STRAPS 106 4130 STEEL
 ALL ROUND TUBING .083 WALL 4130 STEEL
 ROLLER/SUPPORT ASSEMBLIES CESSNA
 AIRCRAFT CO. PARTS: ROLLER C4244-1
 SUPPORT 511207-1

FAA AIRCRAFT REGISTRY
CAMERA NO. SN DATE:

2-21-84

[Redacted]

DEC 4 1979 *slit*

DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION				Form Approved Budget Bureau No. 04-RO60.1	
MAJOR REPAIR AND ALTERATION (Airframe, Powerplant, Propeller, or Appliance)				FOR FAA USE ONLY	
				OFFICE IDENTIFICATION GAD	
				1-4-14	
INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form.					
1. AIRCRAFT	MAKE	Cessna		MODEL	441
	SERIAL NO.	4110840		NATIONALITY AND REGISTRATION MARK	N33PM
2. OWNER	NAME (As shown on registration certificate)			ADDRESS (As shown on registration certificate)	
	Vee Neal Inc.			R.D. 1 Box 397 Latrobe, Pa. 15650	
3. FOR FAA USE ONLY					
4. UNIT IDENTIFICATION					5. TYPE
UNIT	MAKE	MODEL	SERIAL NO.	REPAIR	ALTERATION
AIRFRAME	***** (As described in item 1 above) *****				X
POWERPLANT					
PROPELLER					
APPLIANCE	TYPE				
	MANUFACTURER				
6. CONFORMITY STATEMENT					
A. AGENCY'S NAME AND ADDRESS			B. KIND OF AGENCY		C. CERTIFICATE NO.
Charles V. Frey R.D. 1 Box 397 Latrobe, Pa. 15650			<input checked="" type="checkbox"/> U.S. CERTIFICATED MECHANIC <input type="checkbox"/> FOREIGN CERTIFICATED MECHANIC <input type="checkbox"/> CERTIFICATED REPAIR STATION <input type="checkbox"/> MANUFACTURER		A & P # 2011812
D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.					
DATE 12/1/79			SIGNATURE OF AUTHORIZED INDIVIDUAL <i>Charles V. Frey</i>		
7. APPROVAL FOR RETURN TO SERVICE					
Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is <input checked="" type="checkbox"/> APPROVED <input type="checkbox"/> REJECTED.					
BY	FAA FLT. STANDARDS INSPECTOR	MANUFACTURER	<input checked="" type="checkbox"/>	INSPECTION AUTHORIZATION	
	FAA DESIGNEE	REPAIR STATION		CANADIAN DEPARTMENT OF TRANSPORT INSPECTOR OF AIRCRAFT	
DATE OF APPROVAL OR REJECTION 12/1/79		CERTIFICATE OR DESIGNATION NO. 2011812IA		SIGNATURE OF AUTHORIZED INDIVIDUAL <i>Charles V. Frey</i>	

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. DESCRIPTION OF WORK ACCOMPLISHED (If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

Removed existing Leigh Systems ELT and installed a new Narco ELT 10. Unit installed to existing mounting bracket and utilizes existing external antenna. Above installation conforms to techniques & practices in accordance with AC 43.13-1 and 2. ELT operational checked for interference with other radios and electronic equipment & found OK. Weight and balance revised.

END

ADDITIONAL SHEETS ARE ATTACHED



DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION MAJOR REPAIR AND ALTERATION (Airframe, Powerplant, Propeller, or Appliance)		Form Approved Budget Bureau No. 04-R060.1 FOR FAA USE ONLY OFFICE IDENTIFICATION GL-GADO-7 Columbus, Ohio			
INSTRUCTIONS: Print or type all entries. See FAR 43.9, FAR 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form.					
1. AIRCRAFT	MAKE <u>Cessna</u> SERIAL NO. <u>414-0840</u>	MODEL <u>414</u> NATIONALITY AND REGISTRATION MARK <u>N 3778C 33PM</u>			
2. OWNER	NAME (As shown on registration certificate) <u>Fliteways, Inc.</u>	ADDRESS (As shown on registration certificate) <u>P.O. Box 397</u> <u>Dayton, Ohio 45459</u>			
3. FOR FAA USE ONLY					
4. UNIT IDENTIFICATION					
UNIT	MAKE	MODEL	SERIAL NO.	5. TYPE	
				REPAIR	ALTERATION
AIRFRAME	***** (As described in item 1 above) *****				XXX
POWERPLANT					
PROPELLER					
APPLIANCE	TYPE				
	MANUFACTURER				
6. CONFORMITY STATEMENT					
A. AGENCY'S NAME AND ADDRESS			B. KIND OF AGENCY		C. CERTIFICATE NO.
ALK... SYSTEMS, INC. 4593 East 17th Avenue P. O. Box 19824 Columbus, Ohio 43219			U.S. CERTIFICATED MECHANIC		CO7-13
			FOREIGN CERTIFICATED MECHANIC		
			<input checked="" type="checkbox"/> CERTIFICATED REPAIR STATION		
			MANUFACTURER		
D. I certify that the repair and/or alteration made to the unit(s) identified in item 4 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.					
DATE			SIGNATURE OF AUTHORIZED INDIVIDUAL		
April 22, 1977			 David R. Boroff		
7. APPROVAL FOR RETURN TO SERVICE					
Pursuant to the authority given persons specified below, the unit identified in item 4 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is <input checked="" type="checkbox"/> APPROVED <input type="checkbox"/> REJECTED					
BY	FAA FLT. STANDARDS INSPECTOR	MANUFACTURER	INSPECTION AUTHORIZATION		
	FAA DESIGNEE	<input checked="" type="checkbox"/> REPAIR STATION	CANADIAN DEPARTMENT OF TRANSPORT INSPECTOR OF AIRCRAFT OTHER (Specify)		
DATE OF APPROVAL OR REJECTION		CERTIFICATE OR DESIGNATION NO.		SIGNATURE OF AUTHORIZED INDIVIDUAL	
April 22, 1977		CO7-13		 David R. Boroff	

NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

8. DESCRIPTION OF WORK ACCOMPLISHED (If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)
1. Removed Cessna #C661014-101 altimeter from the pilots panel.
 2. Installed the following avionics equipment in the center instrument panel: two Collins VHF-251 COMM R/T's, two Collins VFR-351 NAV receivers, one Collins TDR-950 transponder, one Collins AMR-350 audio/marker panel, one Collins RCR-650 ADF receiver and one Bendix IN-152 radar indicator.
 3. Installed the following avionics equipment in the pilots instrument panel: two Collins IND-351 VOR/LOC indicators, one Collins IND-650 indicator, one King KI-266 DME indicator and one Aerosonic 101435-01211 reporting altimeter.
 4. Installed the following avionics equipment in the nose radio bay: one Collins GLS-350 glideslope receiver, two King KA-39 power converters, one King KN-65 DME R/T and one King KA-43 DME adapter.
 5. Installed Bendix ART-161 radar antenna R/T and one King KA-22 glideslope antenna in the radome.
 6. Installed one CCC VC10-126 COMM blade antenna on the upper fuselage.
 7. Installed one CCC VC10-126 COMM antenna, one Collins ANT-650 ADF loop antenna, one Dorne & Margolin DMN43-1 marker antenna, one Dorne & Margolin DMN170-2 transponder antenna and one Dorne & Margolin DMN170-2 DME antenna on belly.
 8. Installed two CCC VT10-50-5 NAV blade antenna on the vertical stabilizer.
 9. All work performed in accordance with FAA A.C. 43.13-2.
 10. All wiring performed in accordance with FAA A.C. 43.13-1A, Chapter 11. Total electrical load does not exceed 80% of generator capacity.
 11. Equipment check out performed in accordance with FAR 23.1301 and FAR 23.1431.
 12. Altitude encoding system fully checked in accordance with FAA A.C. 43-6, Appendix 1.
 13. Weight and Balance:

New Empty Weight:	4792.3	lbs.
New EWCG:	157.9	in.
New Moment:	757082.8	in. lbs.
New Useful Load:	1557.7	lbs.

THE END

ADDITIONAL SHEETS ARE ATTACHED