

YINGLING AVIATION

INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

FOR

C.A.P. SPECIAL MISSIONS AVIONICS

INSTALLED PER STC. No. SA01216WI

S/N 18282180

REG. NO. N594CP

These instructions for continued airworthiness comply with the requirements of part 23 par. 23.1529 and part 23 Appendix G of the Federal Aviation Regulations

Prepared by: R Gallop Date: Aug 28, 2008
R Gallop

FAA APPROVED _____ Date: 10-14-08

Federal Aviation Administration
Aircraft Certification Office
Wichita, KS 67209

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2.0 Description of the Alteration, continued:

The optional ARNAV RCOM 100 SATCOM consists of optional wiring provisions for a Receiver/Transmitter located in the aft baggage area, an Antenna located on the aircraft empennage, and a PTA-12 Telephone Dialer located in the Copilot's instrument panel. The audio from the optional RCOM 100 transceiver unit is supplied to the audio panels and is controlled at the audio panels through the TEL switch on the audio panels.

The COM 3 FM/UHF switch/annunciator is located in the avionics sub-panel and labeled "COM 3 FM/UHF". Selection of the desired radio allows control of either the TDFM-136 VHF/FM radio or an optional UHF radio at the audio panels on COM 3.

The optional ARTEX ELT System is located aft of the cabin is equipped with a remote switch in the Copilot's instrument panel for testing, status, and operation.

3.0 Control and Operation Information:

Control and operation for the CAP Special Missions Avionics Package is described in the Approved Flight Manual Supplement AFMS18281388.

4.0 Servicing Information:

None.

In the event of a system failure, return the unit to the manufacturer or a properly qualified and certified Cessna/Garmin Approved Avionics Service Organization.

5.0 Maintenance Instructions

5.1 Inspection Intervals

The Equipment mechanical installation and associated wiring must be checked on a yearly basis as part of an annual aircraft inspection for condition and security as required by FAR 43 Appendix D(i)(1-4). The inspection must include a visual inspection of the antennas to ensure they are properly sealed at the antenna bases.

5.3 Testing Requirements, continued:

To properly test the PAX 1 Communication Mods, (refer to: FAA Approved Airplane Flight Manual Supplement for CAP Special Missions Equipment installed in a Cessna 182T/T182T w/NAV III Avionics and Dual Audio, document no. AFMS18281388 located in Appendix B of this document).

To properly test the TDFM-136 VHF/FM, (refer to: Functional Test Procedures – TDFM-136 VHF/FM Airborne Transceiver, document no. FT2701-34201 located in Appendix G of this document).

Specialized test equipment is required to properly test the KGS RG28 Power Converter / 28VDC Aux Power, (refer to: Functional Test Procedures – KGS RG28 Power Converter / 28VDC Aux power, document no. FT18281388-28VDC located in Appendix H of this document). The required testing should be referred to a properly qualified and certified Cessna and/or Garmin approved avionics service organization.

To properly test the COM 3 FM/UHF Audio Switch, (refer to: FAA Approved Airplane Flight Manual Supplement for CAP Special Missions Equipment installed in a Cessna 182T/T182T w/NAV III Avionics and Dual Audio, document no. AFMS18281388 located in Appendix B of this document).

Specialized test equipment is required to properly test the optional ARTEX 406 MHZ ELT w/Navigation Interface, (refer to: Functional Test Procedures – ARTEX 110/406 Emergency Locator Transmitter, document no. FT18281388-20 located in Appendix I of this document). The required testing should be referred to a properly qualified and certified Cessna and/or Garmin approved avionics service organization.

6.0 Troubleshooting Information:

For system troubleshooting, perform a functional test as outlined in Testing Requirements - Section 5.3 of this document. If an equipment malfunction is suspected as a result of any failure in the functional test outlined in Testing Requirements - Section 5.3 of this document, return the unit to the appropriate manufacturer or a properly approved and certified avionics service organization.

7.0 Removal and Replacement Information, continued:

To remove the ARTEX 110/406 ELT, remove the existing access panel from the aft R/H side of the fuselage, use a # 2 Phillips screwdriver to remove the existing access panel from the aft R/H side of the fuselage. Disconnect interface connectors from the front-end of the ELT assy. Turn the 2 thumbscrews on the mounting cap assy. approx. 3 turns until the mounting cap can be freely pulled from the mounting assy. Release the protective top cover assy. and remove the ELT 110/406 from the bottom mounting tray assy. To install the ELT 110/406, reverse the above procedure.

Refer to Master Drawing List MDL2701-34351 for diagrams, access locations and system diagrams.

8.0 Diagrams:

Refer to Master Drawing List MDL2701-34351, Appendix C (WD18218388-14 Rev. D Wiring Diagram w/IPC), and Appendix D (WR 18281388-2 Wire Routing Diagram) of this document for diagrams, access locations and system diagrams.

9.0 Special Inspection Requirements:

None

10.0 Application of Protective Treatments:

None.

11.0 Data Relative to Structural Fasteners:

Refer to Master Drawing List MDL2701-34351 for the appropriate installation drawings. The installation drawings contain all pertinent data relating to proper torque of fasteners.

12.0 Special Tools:

None

Master Document List

Cessna C-182T/T182T Civil Air Patrol

FAA STC No. SA01216W1

Rev. I

Revision Record

Revision	Date	Description	By / Approval
IR	June 10, 2003	Initial Release	By: JAP Approval: WCC
A	Sept. 18, 2003	Updated document to reflect current status of documents and reports	By: JAP Approval: WCC
B	May 27, 2004	Updated document to reflect current status of documents and reports	By: WC Approval: WC
C	July 9, 2004	Added ID2701-25107 Copilot Instrument Panel Instl, Deleted FTR2701-34351, ID2701-25351 was rev A, SA2701-51351 was rev IR, Deleted revision by level sheet	By: S.Sauerwein Approval:
D	March 8, 2005	Added MDL 2701-34351-2 "SPECIAL MISSIONS EQUIPMENT w/ NAV III & Dual Audio"	By: R. Gallop Approval:
E	March 21, 2005	WD18218388-14 was Rev A, AFMS18281388 was Rev IR	By: R. Gallop Approval:
F	April 6, 2005	Added Compliance Report CR18281388, Rev IR	By: R. Gallop Approval:
G	June 27, 2006	WD18281388-14 was rev B, Added ID18281388-10 (IR), Added CP18281388-18A, CR18281388 was Rev IR, Added GTP18281388-16 (IR), Added FT18281388-28VDC, ICA18281388-8 was Rev IR, EL18281388 was Rev A, and AFMS18281388 was Rev A.	By: R. Gallop Approval:
H	March 17, 2007	WD18281388-12 was IR, WD18281388-14 was Rev C, ID2701-23351 was Rev. A, and AFMS 18281388 was Rev B	By: R. Gallop Approval:
I	March 18, 2008	ID2701-34351 was Rev A, CP18281388-18B was CP18281388-18A, CR18281388B was CR18281388A, FT2701-34224 was Rev. IR, FT2701-34201 was Rev IR, FT18281388-20 was Rev IR, FT18281388-4 was Rev. IR, FT18281388-28VDC was Rev. IR, ICA 18281388-8 was Rev. A, EL18281388 was Rev. B, and AFMS18281388 was Rev. C.	By: R. Gallop Approval:
J	Oct. 6, 2008	FT2701-34224 was Rev. A, FT2701-34201 was Rev A, FT18281388-4 was Rev. A, FT18281388-28VDC was Rev. A, ICA 18281388-8 was Rev. B, YA120704SA was IR, and CR18181388B was IR.	By: R. Gallop Approval:

MDL2701-34351-1
SPECIAL MISSIONS EQUIPMENT w/ UPSAT AVIONICS

Drawing Number	Rev	Drawing Title
Wiring Diagrams		
WD2701-34351 *	F	WD – C-182 Special Mission Avionics Pkg
WR2701-34351 *	B	Wire Routing, C-182 CAP Special Mission Pkg
Installation Drawings		
ID2701-34352 *	A	Installation Mission Equipment
ID2701-34351 *	A	Installation, DF Antenna
ID2701-23351 *	A	Installation, Antenna VHF-FM
AD2701-25107 *	IR	Assembly Copilot Instrument Panel
ID2701-24154 *	IR	Installation, KGS Power Converter
ID2701-23182 *	IR	Inst'l, SAR-DF 517 Maint Data Port
ID2701-25351 *	B	Inst'l, Observer Station Components
AD2701-24400 *	IR	Assy, Panel
DD2701-24400 *	IR	Panel
DD2701-25150 *	A	Bezel
ID2701-25107 *	IR	Copilot Instrument Panel Instl
Floor plan Drawings		
FP2701-34351 *	A	Equipment Layout, C-182 Special Missions Options
REPORTS		
MDL2701-34351 *	J	Master Document List, Cessna 182 Civil Air Patrol Special Missions Equipment
CP2701-34351	A	Certification Plan C-182 Special Missions Avionics
ELA2701-34350 *	A	Electrical Load Analysis C-182
FMS2701-34351 *	IR	Flight Manual Supplement C-182 Avionics Special Missions Avionics
FTP2701-34351	B	Flight Test Plan C-182 Special Missions Avionics
GTP2701-34351	A	Ground Test Plan C-182 Avionics Equipment
GTR2701-34351	IR	Ground Test Report C-182 Avionics Equipment
CR2701-34351	IR	Compliance Report C-182 Special Missions Avionics
ICA2701-34351 *	IR	Instructions for Continued Airworthiness C-182 Special Missions Avionics

MDL 2701-34351-2
SPECIAL MISSIONS EQUIPMENT w/ NAV III & Dual Audio

Drawing Number	Rev	Drawing Title
Wiring Diagrams		
WD18281388-12 *	A	W.D.- C-182 ARTEX ELT (optional)
WD18281388-14 *	D	W.D.- C-182 Special Mission Avionics Pkg.
WR18281388-2 *	IR	Wire Routing, C-182 CAP Special Mission Pkg
Installation Drawings		
ID2701-34351 *	B	Installation, DF Antenna
ID2701-23351 *	B	Installation, Antenna VHF-FM
ID2701-34208 *	B	ELT Antenna Installation (optional)
YA18281388-1 *	IR	ELT NAV INTFC & XMTR INSTL (optional)
YA18281388-3 *	IR	ELT NAV Components Rack Assy. RG-28 Power Converter "Relocate"
YA18281388-5 *	IR	R/H Instrument Panel Mod. Provisions for #2 GMA-1347 SAR DF-517 "Relocate" TDFM-136 (FM Rec.) "Relocate" SB Avionics Panel "Renamed SB & relocate panel"
YA18281388-7 *	IR	Mount Assy. Audio Relay
ID18281388-10*	IR	Inst'l-Aux-Pwr-Relay
REPORTS		
CP18281388-18B	IR	Certification Plan C-182 Special Missions Package
FTP18281388-16	A	Flight Test Plan & Test Report - C-182 Special Missions Avionics
CR18281388B	A	Compliance Report CAP Special Missions Equip.
YA120704SA	A	Stress Analysis
GTP18281388-16	IR	Ground Test Plan
FT2701-34224 *	B	Functional Test SAR-DF 517 Direction Finder
FT2701-34201 *	B	Functional Test TDFM-136 VHF/FM Comm Sys
FT 18281388-20 *	A	Functional Test ARTEX 110-406 ELT (optional)
FT 18281388-4 *	B	Functional Test # 2 GMA-1347 Audio Panel
FT18281388-28VDC *	B	Functional Test KGS RG28 Power Converter/28VDC Aux Power
ICA18281388-8 *	C	Instructions for Continued Airworthiness C-182 Special Missions Equipment w/NAV III & Dual Audio
EL18281388 *	C	Electrical Load Analysis
AFMS18281388 *	D	Airplane Flight Manual Supplement C182T w/NAV III Avionics & Dual Audio
MDL2701-34351*	J	Master Drawing List

Note: Documents marked with Asterisk (*) are required for follow-on installations.

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SECTION 1 – GENERAL, continued

DUAL GARMIN GMA-1347 AUDIO PANEL, continued

The Pilot and Copilot (or Rear Left Seat passenger [Seat 3] when enabled) positions shall be able to independently choose which receivers to monitor, COM1, COM2, COM3 (FM or UHF when selected), NAV1, NAV2, TEL, & AUX (DF). The primary (mic selected) COM will automatically be selected along with the corresponding transmitter.

PA, DME, ADF, PLAY, & COM1/2 on both GMA #1 and GMA #2 are disabled. In this installation, pressing the PA, DME, ADF, PLAY, & COM1/2 keys on either GMA #1 or GMA #2 will not light the corresponding annunciator light.

In dual audio panel configuration the **DISPLAY BACKUP** and **SPKR** buttons operate on the pilot side only. The SPKR & red Display Backup switches on **GMA #2** are disabled.

The TEL interface is full duplex and therefore has no transmit priority. Whoever is connected to the phone will transmit whenever they speak and multiple inputs will simply be transmitted simultaneously.

The TEL interface is designed so that in conjunction with ICS Isolation every group in the airplane can either talk on the phone individually or collectively. The easiest way to remember this is:

- If TEL interface is lit (LED on) – The Pilot will hear TEL audio
- If TEL interface is not lit (LED off) – The Pilot will not hear TEL audio (others do)
- If no TEL audio is desired at all, the satellite telephone must be off

The states of these switches are:

TEL audio heard is by:	TEL selected (TEL illuminated)				TEL not selected (TEL not illuminated)			
	No ISO	Pilot ISO	Copilot ISO	Crew ISO	No ISO	Pilot ISO	Copilot ISO	Crew ISO
Pilot	Yes	Yes	Yes	Yes	No	No	No	No
Copilot	Yes	No	No	Yes	No	Yes	Yes	No
Passengers	Yes	No	Yes	No	No	Yes	No	Yes

SECTION 1 – GENERAL, continued

BECKER SAR-DF517 DIRECTION FINDING SYSTEM

The Becker SAR-DF517 direction finding system consists of a Receiver/Antenna located on the aircraft empennage and an indicator/controller located in the Copilot's instrument panel. The System is design to point to the origin of radio signals. The audio from the unit is supplied to the audio panels and is controlled at the audio panels through the AUX switch on the audio panels.

TECHNISONIC TDFM-136 VHF/FM RADIO SYSTEM

The Technisonic TDFM-136 VHF/FM radio is located in the Copilot's instrument panel and is controlled on the Audio Panels as COM 3.

KGS 28-14 POWER CONVERTER / AUX POWER OUTLET

The KGS 24-14VDC power converter / aux power outlet system provides 28VDC & 14VDC to a connector at the PAX 2 seat. The system is activated through a circuit breaker switch in the Avionics Circuit Breaker Panel located in the Copilot Instrument Panel. The 28VDC output of the system is regulated to 5 amps by an in-line fuse located below the co-pilot instrument panel adjacent to the glove box. The 14 VDC output of the system is regulated to 20 amps by a circuit breaker located just aft of the aft cabin wall in the avionics rack area.

ARNAV RCOM 100 SATCOM (optional)

The optional ARNAV RCOM 100 SATCOM consists of a Receiver/Transmitter located in the aft baggage area, an Antenna located on the aircraft empennage, and a PTA-12 Telephone Dialer located in the Copilot's instrument panel. The audio from the unit is supplied to the audio panels and is controlled at the audio panels through the TEL switch on the audio panels.

COM 3 FM/UHF AUDIO SWITCH

The COM 3 FM/UHF switch/annunciator is located in the avionics sub-panel and labeled "COM 3 FM/UHF". Selection of the desired radio allows control of either the TDFM-136 VHF/FM radio or optional UHF radio at the audio panels on COM 3.

Optional ARTEX 110-406 ELT

The ARTEX 110-406 ELT equipment installed consists of the following equipment:

- ARTEX 110-406 MHZ ELT
- ARTEX NAVIGATION INTERFACE

SECTION 2- LIMITATIONS

2.1 DUAL GARMIN GMA-1347 AUDIO PANEL LIMITATIONS

2.1.1 Garmin GMA-1347 Audio Panel User Manual

The manual, or the information contained in the manual listed below (or later applicable revision), must be immediately available to the flight crew.

- G1000 Cessna Nav III Pilot's Guide (Garmin P/N 190-00498-00, Rev. A, or later applicable version)

2.2 BECKER DF SYSTEM LIMITATIONS

2.2.1 Becker SAR DF517 DF System User Manual

The manual, or the information contained in the manual listed below (or later applicable revision), must be immediately available to the flight crew.

- Becker DF System User Manual, Installation and Operation

2.2.2 The Becker SAR DF517 DF is not to be used for primary navigation.

2.3 PAX 1 COMMUNICATIONS MODIFICATION LIMITATIONS

NONE

2.4 TECHNISONIC TDFM-136 VHF/FM RADIO LIMITATIONS

2.4.1 TDFM-136 User Manual

The manual, or the information contained in the manual listed below (or later applicable revision), must be immediately available to the flight crew.

- TDFM-136 Installation and Operation Manual 99RE255 rev D.

2.5 KGS 28-14 POWER CONVERTER / AUX POWER OUTLET LIMITATIONS

2.5.1 The maximum allowable load that can be connected to the AUX POWER OUTLET connector at the PAX 2 seat is 28 VDC @ 5 AMPS & 14 VDC @ 20 amps.

2.6 ARNAV RCOM 100 SATCOM LIMITATIONS

2.6.1 ARNAV RCOM 100 User Manual

The manual, or the information contained in the manual listed below (or later applicable revision), must be immediately available to the flight crew.

- ARNAV Systems, Inc. RCOM-100 Pilot Operations Handbook Part No. 572-8050 revision B.

SECTION 3- EMERGENCY PROCEDURES

3.1 ABNORMAL PROCEDURES

3.1.1 General

Should any of the Special Missions circuit breakers "trip" or "open" in flight, **do not** reset the circuit breaker. If able, turn off the affected system/s.

3.1.2 Electrical Problems

If the aircraft experiences electrical system failure, switch both the MISSION MASTER and the ACC OUTLETS circuit breaker switches to the OFF (down) position.

3.1.3 Optional Artex 110-406 ELT Abnormal

If the ELT begins to transmit while still airborne, turn off the ELT at the ELT switch located in the Copilot's instrument panel. Verify using one of the VHF communications receivers set on 121.5 MHz that the ELT is not transmitting a signal.

NOTE: If the ELT continues to transmit even after switching the unit to OFF, notify Air Traffic Personnel of the malfunction and act accordingly.

3.2 EMERGENCY PROCEDURES

3.2.1 Optional Artex 110-406 ELT Emergency

Before performing a forced landing, especially in remote and mountainous areas, activate the ELT transmitter by positioning the remote switch to the ON position. The annunciator next to the rocker switch should be illuminated.

- a. Immediately after a forced landing where emergency assistance is required, the ELT should be utilized as follows:

NOTE: The ELT remote switch/annunciator subsystem could be inoperative if damaged in a forced landing. If inoperative, the inertia "G" switch will activate automatically. However, to turn the ELT OFF and ON again requires manual switching of the master function selector switch which is located on the ELT unit.

1. Ensure ELT Activation:
2. Position remote switch/annunciator to the ON position even if annunciator light is already on.

SECTION 4- NORMAL PROCEDURES

4.1 DUAL GMA-1347 AUDIO PANEL NORMAL OPERATION

4.1.1 General

The normal operating procedures for the Garmin GMA1347 audio system are included in the G1000 Cessna Nav III Pilot's Guide (Garmin P/N 190-00498-00, Rev. A or later applicable version).

4.2 PAX 1 COMMUNICATIONS MODIFICATION NORMAL OPERATION

4.2.1 Operation

With a standard aviation headset plugged into the PAX 1 Mic and Phone jacks, the PAX 1 transmits and receives only through the aircraft's intercom system. When the Seat 2/3 SWAP switch is activated and the passenger in the PAX 1 position selects TX with the PAX 1 PTT switch, that passenger will transmit on whatever the Copilot has selected on the GMA #2 audio panel.

Note:

The Copilot will have only intercom privileges during the time the Seat 2/3 SWAP switch is activated.

4.3 BECKER SAR DF517 DF SYSTEM NORMAL OPERATION

4.3.1 General

The normal operating procedures for the Becker DF system are included in the User's Guide listed in the Limitations section on page 9.

4.4 TECHNISONIC TDFM-136 VHF/FM RADIO SYSTEM NORMAL OPERATION

4.4.1 General

Detailed operational instructions are listed in the TDFM-136 Users Guide listed in the limitations section of this document.

UNLESS OTHERWISE NOTED

1. ALL WIRES INSTALLED IN ACCORDANCE WITH CESSNA MODEL 182 WIRING DIAGRAM MANUAL CHAPTER 20 STANDARD PRACTICES, OR THE FOLLOWING APPLICABLE AREAS OF AC 43.13-13-1B (WITH CHANGE 1 INCORPORATED).

A) CHAPTER 11 (AIRCRAFT ELECTRICAL SYSTEMS)

1) SECTION 5 (ELECTRICAL WIRE RATING) - ALL

2) SECTION 6 (AIRCRAFT ELECTRICAL WIRING SELECTION) - ALL

3) SECTION 8 (WIRING INSTALLATION INSPECTION REQUIREMENTS) - ALL

4) SECTION 9 (ENVIRONMENTAL PROTECTION AND INSPECTION) - ALL

5) SECTION 10 (SERVICE LOOP HARNESSSES (PLASTIC IE STRIPS)) - ALL

6) SECTION 11 (CLAMPING) - ALL

7) SECTION 12 (WIRE INSULATION AND LACING STRING TIE) - ALL

8) SECTION 13 (SPlicing) - ALL

9) SECTION 14 (TERMINAL REPAIRS) - ALL

10) SECTION 15 (GROUNDING AND BONDING) - ALL

11) SECTION 16 (WIRE MARKING) - ALL

12) SECTION 17 (CONNECTORS) - PAR 11-230 THROUGH 11-235

2. GROUNDS MUST BE LOCATED AS CLOSE TO COMPONENT AS PRACTICAL

3. ALL COAXIAL CABLE MUST BE RG142B/U OR EQUIVALENT

4. ALL SINGLE CONDUCTOR NON-SHIELDED

WIRE MIL 22759/16-XX UNLESS OTHERWISE NOTED

5. ALL MULTIPLE CONDUCTOR SHIELDED WIRE MIL 27500-22TGX14 UNLESS OTHERWISE NOTED

6. ALL SPLICES MIL SPEC MIL-S-81824/I MANUFACTURED BY RAYCHEM

INDICATES NOTE

INDICATES A/C GROUND

INDICATES D/C GROUND

INDICATES SHIELD GROUND

INDICATED SPLICE

INDICATES EXISTING WIRE

INDICATES NEW WIRE

INDICATES COMPONENT TO BE VERIFIED BY INSTALLER

INDICATES WIRE CONTINUED ELSEWHERE IN THIS DRAWING

7. ROUTE WIRING IN ACCORDANCE WITH YINGLING WIRE ROUTING DRAWING WR-2701-34351

8. DELETED

9. SPLICES TO BE 3" OR CLOSER TO CONNECTOR

TERMINATE WIRE AT CONNECTOR BACKSHELL

11. DELETED

12. FOLLOWING INSTALLATION FUNCTIONAL TEST THE EQUIPMENT PER THE FOLLOWING YINGLING AVIATION TEST PROCEDURES:

A.) FT2701-34224 FUNCTIONAL TEST PROCEDURES FOR SAR-DF 517

INSTALLED IN CESSNA 182

B.) FT2701-34201 FUNCTIONAL TEST TDFM VHF/COM SYS

C.) FT2701-34160 FUNCTIONAL TEST KGS POWER CONVERTER

13. ALL WIRES ARE TO BE 22AWG MINIMUM UNLESS OTHERWISE NOTED

14. OPTION A - USE WHEN HONEYWELL KFC-140 IS INSTALLED

OPTION B - USE WHEN OPTIONAL GARMIN GFC-700 IS INSTALLED

D	ADDED NOTE 14 (SHEET 1) ADDED AUDIO INTERFACE FOR OPTIONAL GARMIN GFC-700 AUTOPILOT INSTALLATION (SHEET 6)	CT	
		12/01/06	
C	REVISED TO INCLUDE BREAKPLUG ON AUDIO SELECT SWITCH (PROB/ROB page 7) POSTLIGHTS FOR MISSION BREAKER PANEL (page 9). ADDED MISC NOTES TO FACILITATE INSTALL (note 13, page 1, note, page 5). CORRECTED IMPROPER GROUND LABEL (page 4). ADDED 2KDC AUX POWER SOURCE (page 9)	CT	
		06/29/06	
B	ADDED NOTE 13 (page 1)	CT	
		05/15/06	
A	REVISED TO INCLUDE SECOND GARMIN GMA1347 AUDIO PANEL AND SATELITE TELEPHONE PROVISIONS	CT	
		02/12/05	
(-)	ORIGINAL RELEASE	GD	
		11/15/04	
REV LTR	REVISION	BY	CHK
		DATE	APVD

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Yingling
Aviation

W.D. - C-182 SPECIAL MISSION
AVIONICS PACKAGE

Date: 12/01/2006

Drawn: Chris Trapp

Check: RBG

Approved:

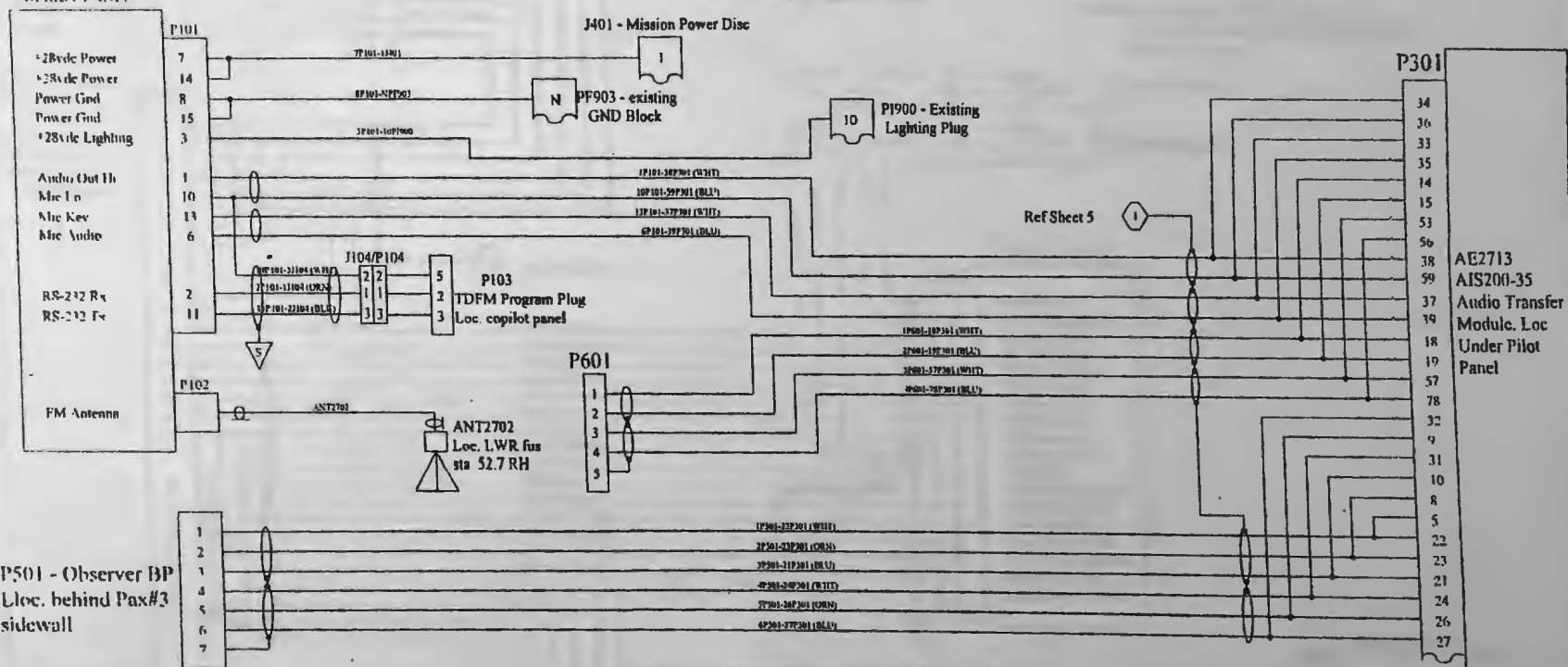
Drawing Number:
WD18218388-14

REV:

D

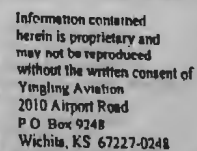
Scale None

Sheet 1 of 10



Yingling
Aviation

REV
D



W.D. - C-182 SPECIAL MISSION
AVIONICS PACKAGE

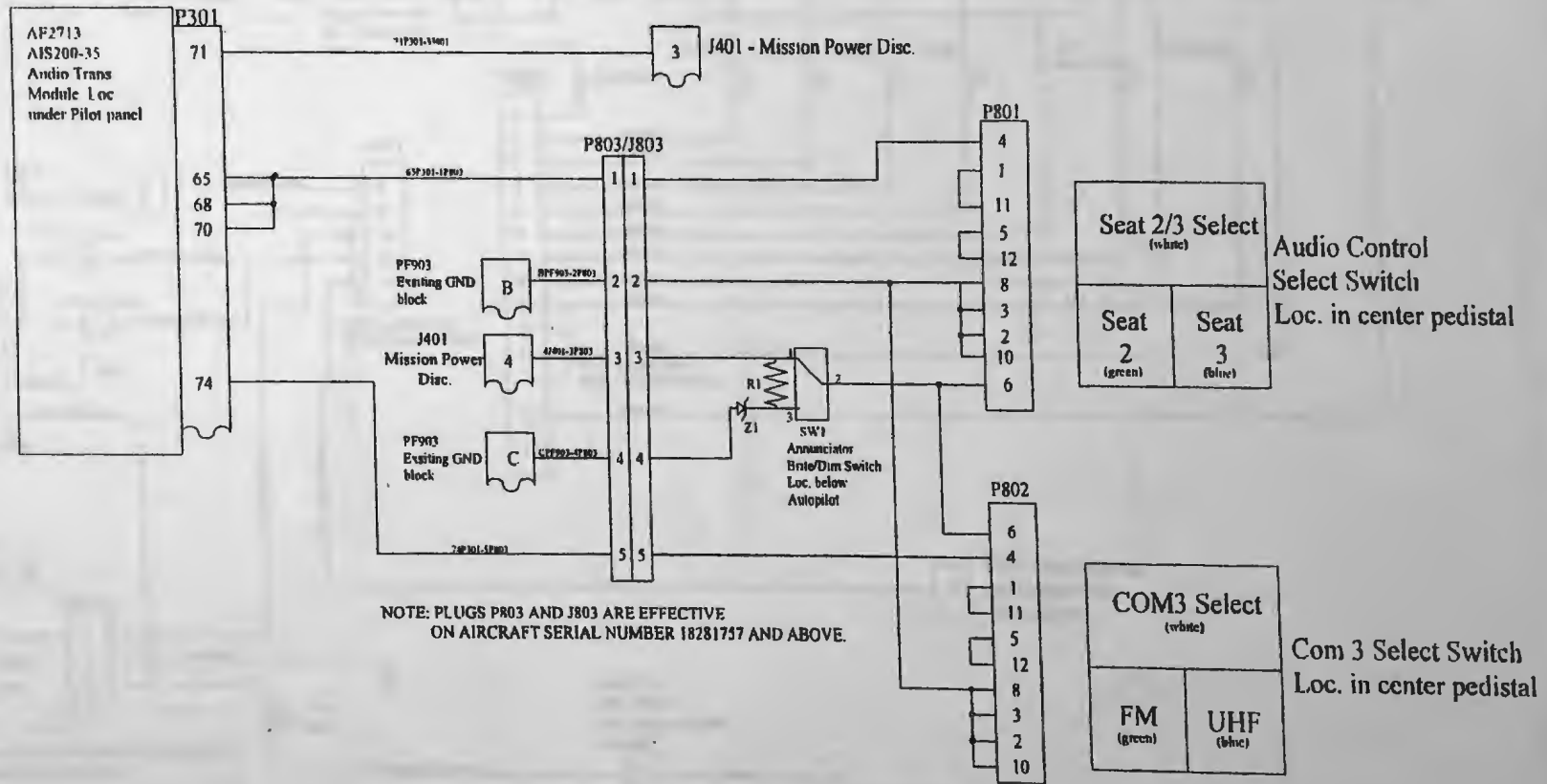
Approved:

Scale Noise

Sheet 5 of 10

D

D



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Wichita, KS 67227-0248



W.D. - C-182 SPECIAL MISSION
AVIONICS PACKAGE

Date: 12/01/2006

Drawn: Chris Trapp

Check: RBG

Approved:

Drawing Number:

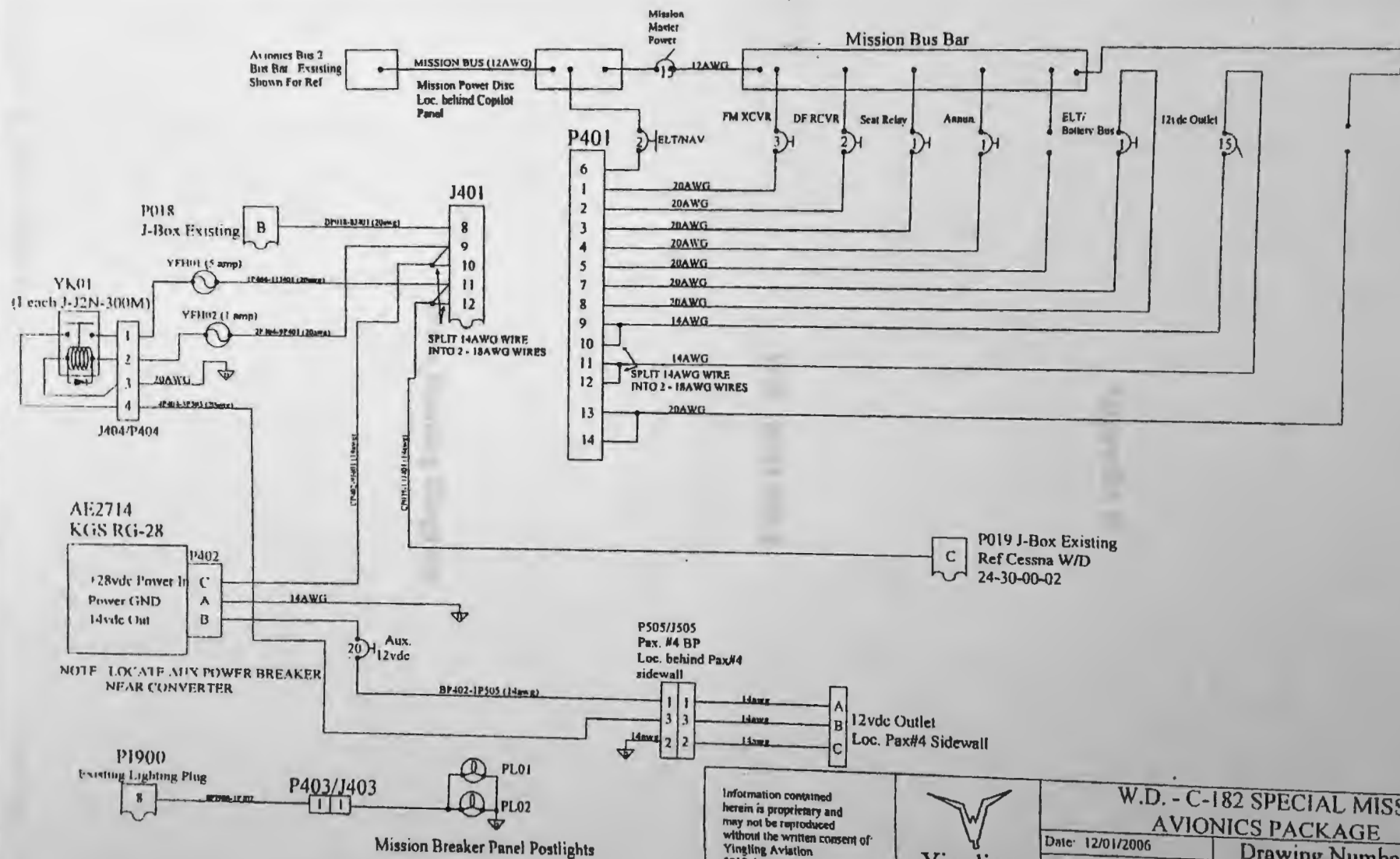
WD18218388-14

REV

D

Scale: None

Sheet 7 of 10



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W.D. - C-182 SPECIAL MISSION AVIONICS PACKAGE

Date: 12/01/2006
Drawn: Chris Trapp
Check: RBG
Approved:

Drawing Number:
WD18218388-14

REV:
D

Scale: None Sheet 9 of 10

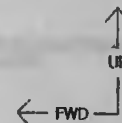
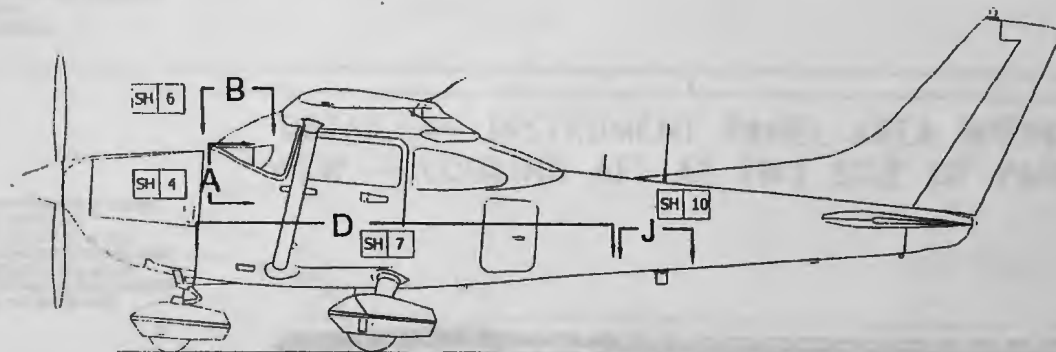
Appendix D

WR 18281388-2

Wire Routing Diagram

FUSELAGE SIDE - VIEW LOOKING RT

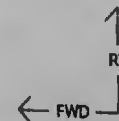
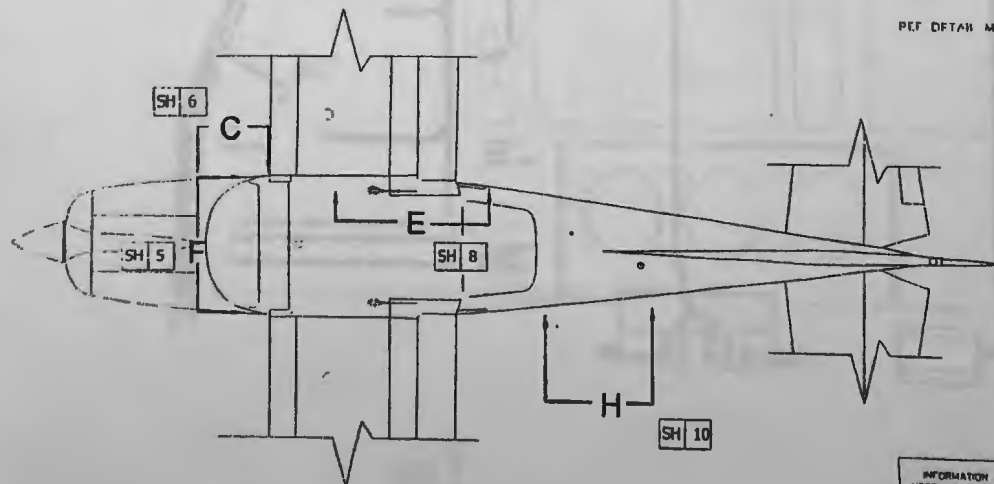
NOTE: SOME DETAIL OMITTED FOR CLARITY



FUSELAGE - VIEW LOOKING DOWN

MUTE REF DETAIL I (NOT SHOWN) FOR WIRE ROUTING IN THE SIDELOOP AREA

REF DETAIL M (NOT SHOWN) FOR WIRE ROUTING AT THE REAR FUSELAGE



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**WIRE ROUTING, C-182
CAP SPECIAL MISSION PK**

DATE	3-19-85
BY	RU
PROJECT	WR182183SR-2

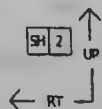
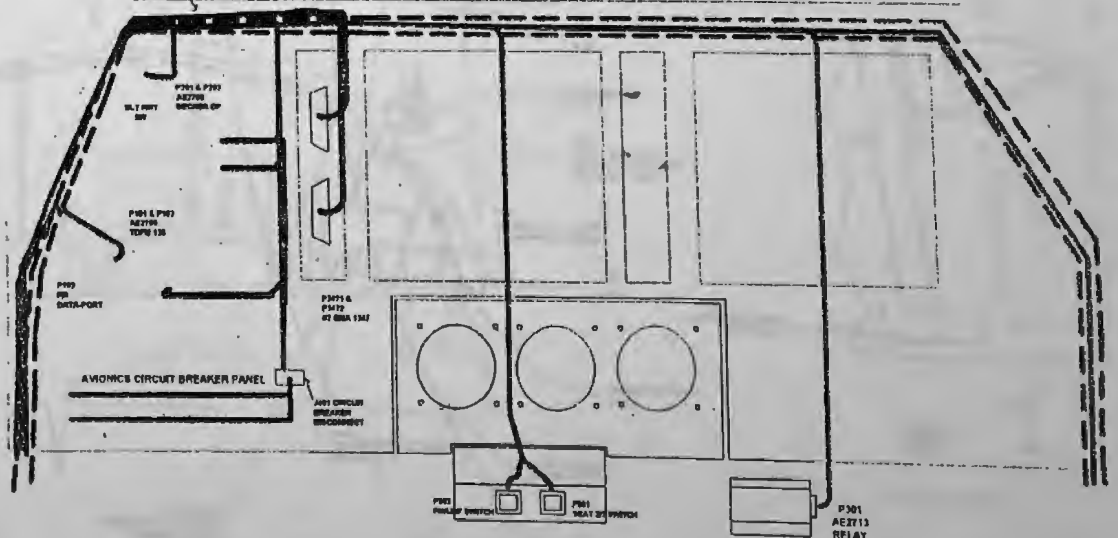
THE FOLLOWING LABELS MUST BE TURNED ON:
 MISS CONN LABELS (214)
 MISSION EQUIP (56)

THE FOLLOWING LABELS MUST BE TURNED OFF:
 AV CONN LABELS (BLUE)
 AVIONICS LABELS (GREEN)
 STGR (53)
 WIRE 2 (RED)

DETAIL A- INSTRUMENT PANEL AREA WIRING VIEW - LOOKING AFT AT FWD SIDE OF PANEL

MAIN HARNESS ATTACHED
 TO BOTTOM OF
 GLARESHIELD ATTACH
 HARNESS TO EXISTING MAIN
 HARNESS, PICK UP ALL
 EXISTING TIE WRAP MOUNTS
 IN THE WIRE'S PATH

NOTE: SOME DETAIL OMITTED FOR
 CLARITY



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**WIRE ROUTING, C-182
 CAP SPECIAL MISSION PKG**

WIRING
 DATE
 BY
 WIRING
 DATE
 BY

WR18218300-7

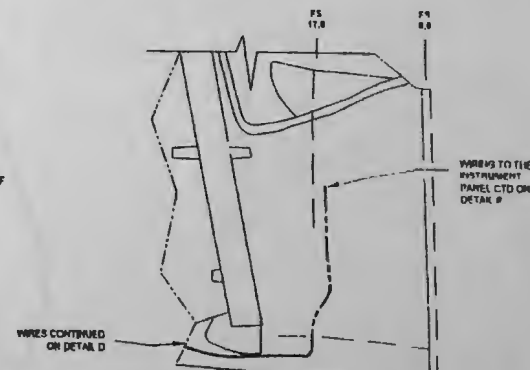
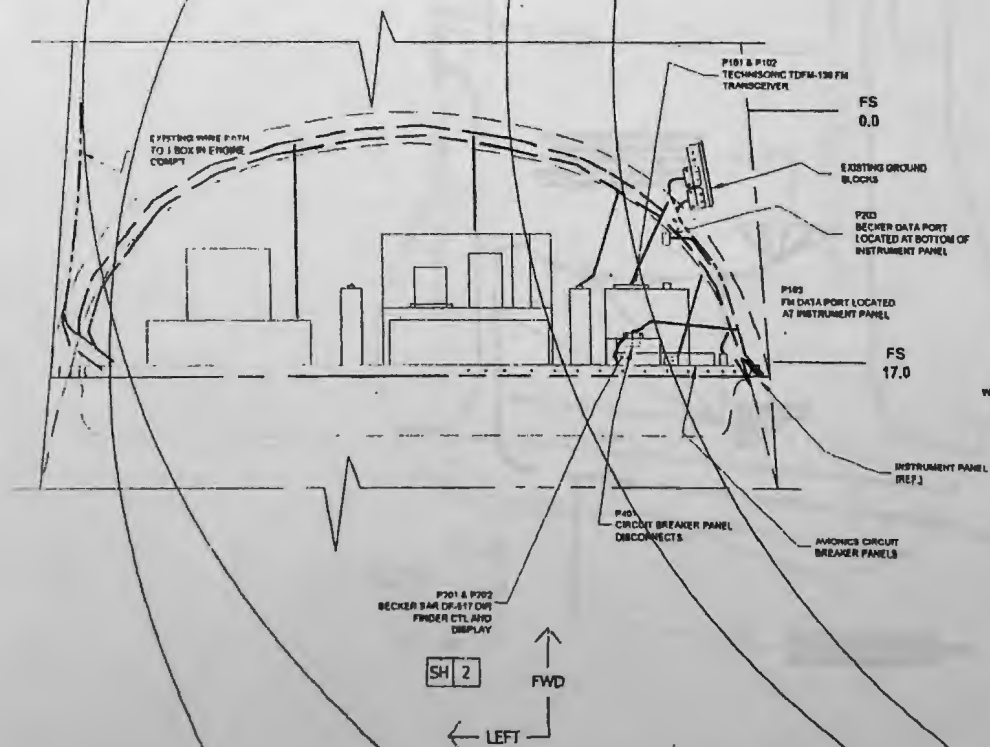
NR

INSTRUMENT PANEL AREA WIRING

NOTE: SOME DETAIL OMITTED FOR CLARITY

DETAIL B- INST PANEL TOP DOWN
VIEW- LOOKING DOWN AT INSTRUMENT PANEL

DETAIL C- STA 17.0 FRAME
VIEW- FACING RT SIDE OF
AIRCRAFT AT STA 17.0



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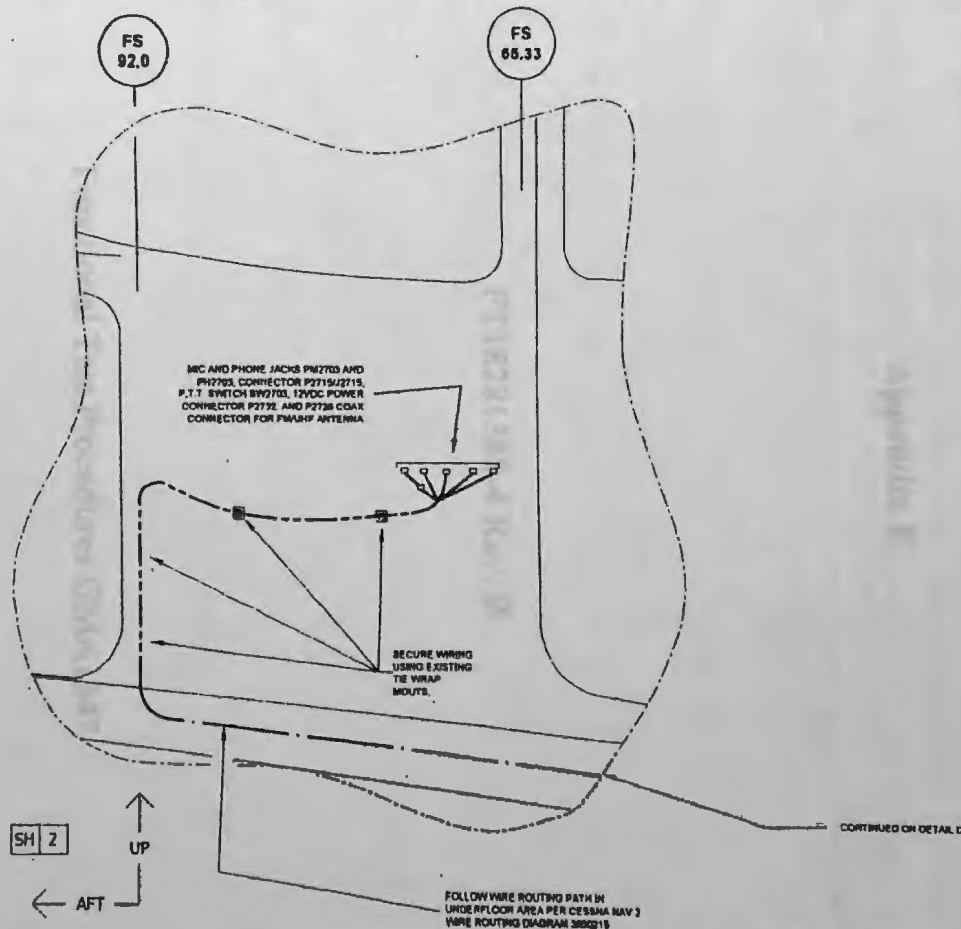


WIRE ROUTING, C-182
CAP SPECIAL MISSION PK

DATE: 9-10-00
BY: NC
REV: 1
PART: WR182183RD-2

DETAIL E- PAX 2 WIRING VIEW - INSIDE LOOKING RIGHT

NOTE: SOME DETAIL OMITTED FOR
CLARITY



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**WIRE ROUTING, C-18
CAP SPECIAL MISSION**

DATE: 2-10-05
BY: [signature]
PAGE: 1
WR10210300-2

			Log. Accounts
			See sheet 100
			See sheet 100
			See sheet 100

Appendix E

FT18281388-4 Rev. B

Functional Test Procedures GMA1347

Revision Record

Revision	Date	Description	By / Approval
IR	Feb. 18, 2005	Initial Release	See sheet one for approvals
A	18 MAR 08	Title pg., removed Cessna Model designation and inserted STC No. SA01216WI; Sect. 2.0, updated Reference Documents.	See sheet one for approvals
B	23 AUG 08	Document re-written and re-formatted for clarity	See sheet one for approvals

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5.5 ARNAV RCOM 100 Satellite Telephone Test	9
6.0 TEST SUMMARY	10
7.0 SIGN OFF SHEET	11

5.0 CHECKOUT PROCEDURES

5.1 Marker Beacon Test

- 5.1.1 Switch on aircraft master power.
- 5.1.2 Move Avionics Master switch to "ON".
- 5.1.3 Locate the HI SENS switch on #1 GMA1347 Faceplate. Press switch to activate the "HI Sensitivity" mode, note that the corresponding "HI SENS" annunciator light is lit.
- 5.1.4 Position the 402 Nav Tester or equivalent in close proximity of Marker Beacon Antenna.
- 5.1.5 Power up tester and configure to transmit the "Outer Marker" 400 Hz modulated signal.
- 5.1.6 The Blue light should illuminate on the Primary Flight Display. Verify that a 400 Hz tone is heard in the speaker & headphones.
- 5.1.7 Configure the 402 Nav Tester or equivalent to transmit the "Middle Marker" 1300 Hz modulated signal.
- 5.1.8 The Amber light should illuminate on the Primary Flight Display. Verify that a 1300 Hz tone is heard in the speaker & headphones.
- 5.1.9 Configure the 402 Nav Tester or equivalent to transmit the "Inner Marker" 3000 Hz modulated signal.
- 5.1.10 The White light should illuminate on the Primary Flight Display. Verify that a 3000 Hz tone is heard in the speaker & headphones.
- 5.1.11 Locate the HI SENS switch on #1 GMA1347 Faceplate. Press switch to activate the "Low Sensitivity" mode. Note that the corresponding "HI SENS" annunciator light is not lit.
- 5.1.12 Repeat steps 5.1.4 – 5.1.10.
- 5.1.13 Repeat steps 5.1.3 – 5.1.12 for the #2 GMA1347.
- 5.1.14 Turn off 402 Nav Tester or equivalent.

5.3 PAX 1 Communication Modifications Test

- 5.3.1 Locate the SEAT 2/3 switch, select SEAT 3 and verify that radio transmissions from the Rear Left Passenger (Seat 3) can be made on Com 1, Com 2, and Com 3 radio as selected on #2 GMA1347.
- 5.3.2 Verify that the Copilot has intercom capability and cannot transmit on the radio selected on #2 GMA1347.
- 5.3.3 Verify the Copilot can receive radio transmissions selected on #2 GMA1347.
- 5.3.4 Verify that the Pilot has Com 1 transmit priority on #1 GMA1347 and will override Com 1 transmissions made on #2 GMA1347.
- 5.3.5 Verify that the Copilot (Seat 3 when selected) has Com 2 transmit priority on #2 GMA1347 and will override Com 2 transmissions made on #1 GMA1347.
- 5.3.6 Verify proper annunciation / back-lighting with both "Bright" and "Dim" modes selected.

5.4 COM 3 FM/UHF Audio Switch Test

- 5.4.1 Locate the FM/UHF switch, select UHF and verify that radio transmissions from Pilot on #1 GMA1347 and Copilot (Seat 3 when selected) on #2 GMA1347 cannot be made on FM, (UHF radio not installed).
- 5.4.2 Verify proper annunciation / back-lighting with both "Bright" and "Dim" modes selected.

5.5 ARNAV RCOM 100 Satellite Telephone test, (if installed)

- 5.5.1 Select TEL on either #1 GMA1347 or #2 GMA1347 and verify the corresponding "TEL" annunciator light is illuminated on both #1 GMA1347 and #2 GMA1347.
- 5.5.2 Enter test telephone number on the Telephone keypad and verify normal telephone communications can be made.
- 5.5.3 Move "Avionics Master" switch to off and remove external power from aircraft.

SIGN-OFF SHEET

TEST ADMINISTRATOR

I CERTIFY THAT I HAVE PERFORMED THE ABOVE TESTS

NAME: _____ DATE: _____

DISCREPANCIES NOTED:

WITNESS

I CERTIFY THAT I WITNESSED THE EXECUTION OF THE
FUNCTIONAL TEST PROCEDURES.

NAME: _____

DATE: _____

NOTE: A COPY OF THIS MUST BE FILED WITH THE DRAWINGS
AND 337 FORM, IF APPLICABLE.

Rev. B

1.0 Purpose

This document provides operational checkout instructions for the Becker SAR-DF 517 4-Band Precision Direction Finder.

2.0 Referenced Documents

MDL2701-34351 Master Document List STC No. SA01216WI

Becker DF System User Manual, Installation and Operation SAR-DF 517
Installation and Operation Manual

3.0 Test Equipment Needed:

None

4.0 Setup and Checkout

4.1 Power on procedure

Note:

When switching on the unit (and only then) the operating mode can be selected by the means of the PAGE rotary switch. There is the choice between the emergency mode with fixed pre-selected emergency frequencies and the training mode. The training mode is characterized by freely selectable training frequencies instead of pre-adjusted emergency frequencies.

Revisions Record

Revision	Date	Description	By / Approved
01	August 11, 2013	Initial Release	By: REG Approved: REG
02	12 March 14	Top IC, bottom IC, and sheet separator and added NYC No. 100-12700, Sect. 2.0, updated Reference Document	By: REG Approved: JN
03	22 April 15	Document re-written and reformatted for clarity.	See sheet one for approvals

Appendix G

FT2701-34201 Rev. B

Functional Test Procedures – TDFM-136

Revision Record

Revision	Date	Description	By / Approval
IR	August 21, 2003	Initial Release	By: RG Approval: RBG
A	18 MAR 08	Title pg, removed Cessna Model designation and inserted STC No. SA01216W1, Sect. 2.0, updated Reference Documents.	By: RBG Approval: JW
B	23 AUG 08	Document re-written and re-formatted for clarity.	See sheet one for approvals

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3.0 TEST EQUIPMENT NEEDED:	6
4.0 SETUP AND CHECKOUT	6
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SIGN-OFF SHEET	10

Note:

Sx = Simplex, Rx = Receive Only, Tx = Transmit Only. If simplex is chosen then the selected frequency will be applied to both Rx and Tx operation.

4.8 Push the Simode key on the TDFM-136 Control Panel to select between Rx/Tx/Tx. Select Sx on the TDFM-136 Control Panel and press enter.

4.9 The Radio mode should be switched in the center display of the frequency window located in the upper right hand display of the TDFM-136. Using the keypad of the TDFM-136 Control Panel enter a frequency of 141.0000 and press ENTER.

Note:

When entering the selected frequency, when an entry is made and the cursor fails to move to the next position in the right line detection is invalid and another selection must be made.

4.10 Repeat steps 4.1 through 4.12 for the second channel and frequency on the TDFM-136 Control Panel.

- 4.4 Adjust MAIN knob on the TDFM-136 Control Panel to mid-range for volume control.
- 4.5 Select 1/CHAN on the TDFM-136 Control Panel. Flashing X should be present in the first character of channel display located in the upper left hand corner of TDFM-136 display. Select MAIN channel should be displayed in second row of text displayed on the TDFM-136 control.
- 4.6 Select channel using the keypad on the TDFM-136 Control Panel. Channel selections are from 001-200. After selection has been made, press the #/ENTER key on the TDFM-136 Control Panel.
- 4.7 Select 7/FREQ key on the TDFM-136 Control Panel to edit frequency. Display should show Edit MAIN Frequency with a flashing S or T or R on the second row of the display.

Note:

Sx = Simplex, Rx = Receive Only, Tx = Transmit Only. If simplex is chosen then the selected frequency will be applied to both Rx and Tx operation.

- 4.8 Push the 3/mode key on the TDFM-136 Control Panel to select between Rx/Sx/Tx. Select Sx on the TDFM-136 Control Panel and press enter.
- 4.9 The flashing cursor should be positioned in the second character of the frequency window located in the upper right hand display of the TDFM-136. Using the keypad on the TDFM-136 Control Panel, enter a frequency of 141.0000 and press ENTER.

Note:

When entering the desired frequency; when an entry is made and the cursor fails to move to the next position to the right, the selection is invalid and another selection must be made.

- 4.10 Repeat steps 4.1.6 through 4.1.9 to enter additional channels and frequency on the TDFM-136 Control Panel.

Revision Record

Revision	Date	Description	By / Approval
01	September 25, 2003	Appendix H Intro Reference	By: RG Approval: RG
02	18 MAR 08	Title pg., removed Cessna Model designation and inserted FAA STC No. SA0121EWH, Sect. 2.0, updated Reference Documents	By: RG Approval: JW
03	23 AUG 08	Document re-written and re-formatted for clarity	See sheet two for approvals

FT18281388-28VDC Rev. B

Functional Test Procedures – KGS RG28

Revision Record

Revision	Date	Description	By / Approval
IR	September 25, 2003	Initial Release	By: RG Approval: RBG
A	18 MAR 08	Title pg., removed Cessna Model designation and inserted FAA STC No. SA01216WI; Sect. 2.0, updated Reference Documents.	By: RG Approval: JW
B	23 AUG 08	Document re-written and re-formatted for clarity	See sheet one for approvals

NOTE:

Prior to the aircraft test verify that Load 1 has a minimum of 4 amp current draw at the 28VDC input pins and a minimum of 10 amp current draw at the 14VDC input pins using a power supply and a calibrated multimeter.

TEST REQUIREMENTS

Connect the aircraft to external power to prevent excessive discharge of the battery. For the purposes of this test, the aircraft engine does not need to be running.

NOTE:

Prior to the start of the test ensure that the A/C MASTER BATT Switch is switched off (down) and that the 28VDC MASTER BATT Switch is pushed in.

1.0 PURPOSE

This document provides operational checkout instructions for the KGS RG28 Power Converter / 28VDC Aux Power system & Mission Breaker Panel Lighting. The system consists of a KGS RG28 Power converter, associated circuit Breakers, and an AUX power receptacle located adjacent to the aft LH seat.

2.0 REFERENCED DOCUMENTS

MDL2701-34351 Master Document List STC No. SA01216WI

3.0 TEST EQUIPMENT NEEDED

A. A locally fabricated load bank capable of providing a minimum of 4 amps continuous load at 28VDC & 10 amps continuous load at 14VDC and capable of connecting to the AUX outlet P2732. For the purposes of this test the device will be referred to as the "LB001".

B. Calibrated Multimeter.

NOTE:

Prior to the aircraft test verify that LB001 has a minimum of 4 amp current draw at the 28VDC input pins and a minimum of 10 amp current draw at the 14VDC input pins using a power supply and a calibrated multimeter.

4.0 TEST REQUIREMENTS

Connect the aircraft to external power to prevent excessive discharge of the battery. For the purposes of this test, the aircraft engine does not need to be running.

NOTE:

Prior to the start of the test ensure that the ACC OUTLET CB Switch is selected off (down) and that the 20 amp 12VDC OUTLETS CB is pushed in.

Revision Record

Revision	Date	Description	By / Approved
IR	Feb. 18, 2005	Initial Release	By: RSG Approved: JW
A	12 MAR 05	Removed Cessna Model designation and inserted ATC No. SA01215W	By: RSG Approved:

Appendix I

FT18281388-20

Functional Test Procedures – ARTEX 110/406

Revision Record

Revision	Date	Description	By / Approval
IR	Feb. 18, 2005	Initial Release	By: RBG Approval: JW
A	18 MAR 08	Removed Cessna Model designation and inserted STC No. SA01216W.	By: RBG Approval:

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4.0 REQUIREMENTS

Aircraft should be stationed inside a metal hangar if possible to minimize the possibility of accidentally alerting the satellite system during testing.

5.0 CHECKOUT PROCEDURES

Note: All functional checks of the EMERGENCY LOCATOR TRANSMITTER SYSTEM shall be executed during the first five (5) minutes of any hour. Before conducting any ELT test, contact the local FAA Control Tower & inform the appropriate authorities of a pending test; thus avoiding any unnecessary alerts or alarms.

Each ELT 110-406/ELT 110-406ED is individually programmed with specific aircraft information that is processed by Search and Rescue Satellites. DO NOT INTERCHANGE ELT's BETWEEN AIRCRAFT

- 5.1 Disconnect both coaxes at the ELT transmitter and connect the portable beacon tester directly to the 406.025 transmitter output per figure 1. (The 121.5 MHz coax is to be left disconnected during the 406 test to minimize local alerts)

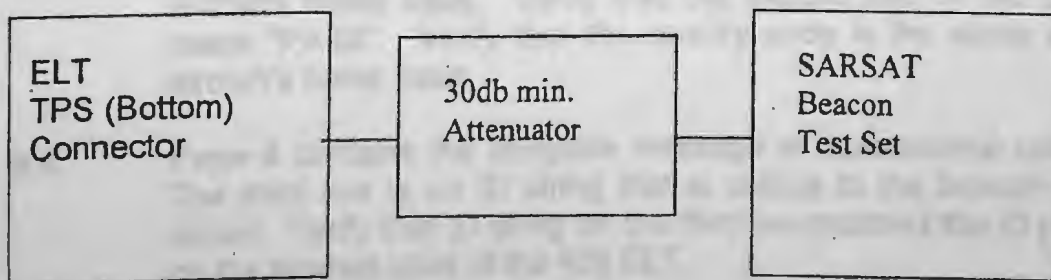


FIGURE 1

- b. If an "S' TEST BAD" or "DATA ERROR" message appears, there is a problem with the ELT (i.e. a programming problem or a problem with the transmitter module) or the battery pack.
- c. If there is not a 406.025 Mhz transmitter burst present, check the 3.0 amp fuse on the circuit board in the battery pack for an open condition. If the fuse is good, there is most likely a problem with the 406.025 MHz module or its interconnections.

5.4 Refer to Appendix A for the Beacon Test Set display contents of each specific page as described in the following steps.

5.5 **Page 1** is the main menu screen. Press "V" for view to see received message or scroll using "up" and "down" arrow keys to view other messages. Use "left" and "right" arrow keys to scroll between pages.

5.6 **Page 2** contains the Date and Time that the message was received. Also included is an indication of whether the message was received properly. Verify that the third or bottom line reads "S' TEST OK."

5.7 **Page 3** is a frequency and country code page. The frequency must read between 406.030 and 406.020 MHz to pass. The programmed country code must be the same country as the aircraft's home base. Verify that the second line of the display reads "PASS". Verify that the country code is the same as the aircraft's home base.

5.8 **Page 4** contains the complete message in Hexadecimal notation. The third line is an ID string that is unique to the beacon being tested. Verify that ID string on the third line matches the ID printed on the product label of the 406 ELT.

Note: For ELT's installed with an ELT/NAV Interface where the interface is used to encode the 24 bit aircraft address, the ELT will be automatically re-programmed by the interface and will need to be re-labeled with the new 15 digit hex ID string.

- 5.21 Monitor the received audio from the communications receiver. Verify reception of the characteristic repeating downward tone sweep of an ELT in operation.
- 5.22 Move the transmitter located control switch from the "ON" position to the "OFF"(ARMED) position.
- 5.23 Verify that the red LED on the Remote Control Switch Panel goes out and the ELT tone is removed from the Comm audio.
- 5.24 Move the switch on the Remote Control Switch Panel from "ARM" to "ON" until three sweeps of the ELT tone are heard. Immediately move the switch to "ARM".
- 5.25 Verify that the LED on the Remote Control Switch Panel flashes during the test and remains on continuously for approximately one second after the switch is returned to "ARM" position then extinguishes.
- 5.26 Turn off aircraft power.
- 5.27 Switch the cockpit mounted control switch to "ON" for approximately 2 - 3 seconds then return to "ARM". Verify that the LED on the Remote Control Switch Panel flashes and remains on continuously for approximately one second after the switch is returned to "ARM" position. This verifies the LED is powered from the aircraft hot buss.

After all testing is complete, turn off all systems. List any abnormal readings or operations observed during the test.

Appendix A

BEACON TEST SET DISPLAYS

Appendix A

BEACON TEST SET DISPLAYS

PAGE 6 (VIEW MODE)

↑	↓	←	→	F	L	Q	EP
Mesg #1				STD LOC			
Homing: 121.5 MHz							
BCH: 19A1D7 VALID							

VERIFY HOMING FREQUENCY

PAGE 7 (VIEW MODE)

↑	↓	←	→	F	L	Q	EP
Mesg #1				Other info:			
Long Mesg.							

VERIFY LONG MESSAGE

PAGE 8 (VIEW MODE)

↑	↓	←	→	F	L	Q	EP
Mesg #1				Other info:			
Lat : 45N23.4							
Long: 122W15.1							

VERIFY LATITUDE AND LONGI-
 TUDE OF 45DEGREES 23.4 MIN-
 UTES NORTH, 122 DEGREES 15.1
 MINUTES WEST

PAGE 9 (MENU OPTIONS)

SARSAT BEACON TESTER		
Recv	View	Quit
Erase	Setup	Output

PRESS "Q" TO RETURN TO
 MAIN SCREEN PAGE