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INSTRUCTIONS

for

CONTINUED AIRWORTHINESS

for

HONEYWELL MARK XXII ENHANCED GROUND PROXIMITY WARNING SYSTEM (EGPWS)

4123401-00000-1

4123401-00000-2

4123401-00000-3

4123401-00000-4

STC: SR01474NY

FOR

BELL HELICOPTER TEXTRON MODEL 412EP HELICOPTERS

Report Number 4123401-RMM01

**Revision E
September 30, 2010**



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11/01/05	A	Reformatted Document	All	-	-
		Section 1.3, System Description	7		
		Revised system description to include PRIMUS 440/660/880			
		Figures 1-1 thru 1-3: Replaced figures	8, 9		
		Section 3.0, Inspection Requirements: Revised to incorporate BHTI Part A and Part B inspection requirements	10		
		Section 3.1, 100 Hour / Annual Inspection Requirements: Revised to 100 Hour Part A / 300 Hour Part B / Annual Inspection requirements	10		
		Section 4, Removal and Installation: Reorganized section	11		
		Figures 4-4 thru 4-6: Replaced figures	19, 21, 26		
		Added:	23		
		Section 4.17, Removal – Relay (M83536/6-025M) and Rail (M12883/53-001)			
		Section 4.18, Installation – Relay (M83536/6-025M) and Rail (M12883/53-001)			
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		Section 4.23, Removal – Terminal Blocks (M81714/60-22-05 and M81714/60-20-02) and Rail (M81714/67-05)			
		Section 4.24, Installation – Terminal Blocks (M81714/60-22-05 and M81714/60-20-02) and Rail (M81714/67-05)			
		Section 5.1, General Notes and References	27		
		Added PRIMUS 880/660/440 manual A09-3944-001			
		Section 5.3.3, Low Altitude and Terrain Inhibit Discrettes	28		
		Added Step 6			
		Section 6, Electrical Diagrams	38 – 40		
		Deleted Figure 6-1 Sheet 4, revised sheets 1 thru 3			
		Section 7, Parts List: Added section	41 – 44		
		Added Appendix C, Inspection Record	50 – 51		
12/21/06	B	Corrected references to model 412 to 412EP	7, 27	-	-
		Section 1.3, System Description: Revised bullets 6 and 7	7		
		Corrected references to Bell Helicopter 412 Maintenance Manual to 412/412EP Maintenance Manual	10, 11		
		Figure 4-1, EGPW Computer Installation: Revised computer P/N	12		
		Figure 6-1, Wiring Diagram: Revised sheets 1 and 2	38, 39		
		Table 7-2, Parts Breakdown, 4123401-01000-1 Mark XXII EGPWS Computer Kit Installation: Revised EGPWS P/N	42		
		Corrected references to model 412 to 412EP	7, 27		

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08/21/09	C	Reformatted Log of Revisions, Table of Contents, List of Tables, List of Figures; corrected document formatting errors, revised figure and table titles Deleted incorrect callouts from Figure 6-1	All 40 – 42	C. Rowe 09/03/09	R.Lazaroff 09/04/09
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9/30/10	E	Revised Figure 6-1, sheets 1 thru 3 per drawing 4123401E2000 revision G Revised diode P/N 1N4005 qty in Table 7-4, per drawing 4123401E2000 revision G	38 – 40 43	<i>[Signature]</i> 04 October 2010	<i>[Signature]</i> 10-4-10

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1.0 INTRODUCTION

1.1 SCOPE

This document provides maintenance/inspection requirements and procedures for assuring the Continued Airworthiness of the Aeronautical Accessories, Inc. installation of the Honeywell Mark XXII Enhanced Ground Proximity Warning System (EGPWS) in the Bell Helicopter Textron, Inc. (BHTI) Model 412EP helicopter.

The Instructions set forth in this manual, as supplemented or modified by Alert Service Bulletins (ASB) or other directions issued by the Aeronautical Accessories, Inc., and Airworthiness Directives (AD) issued by the appropriate airworthiness authority, shall be strictly followed.

1.2 GENERAL

The Honeywell Mark XXII Enhanced Ground Proximity Warning System (EGPWS) is intended to help prevent accidents caused by controlled flight into terrain (CFIT). The system enhances the flight crew's situation awareness by providing aural alerts, visual annunciations and display of the terrain in the vicinity of the helicopter. Maintenance must be performed by qualified personnel in accordance with these instructions and FAA Advisory Circular AC 43.13-1B/2A as applicable.

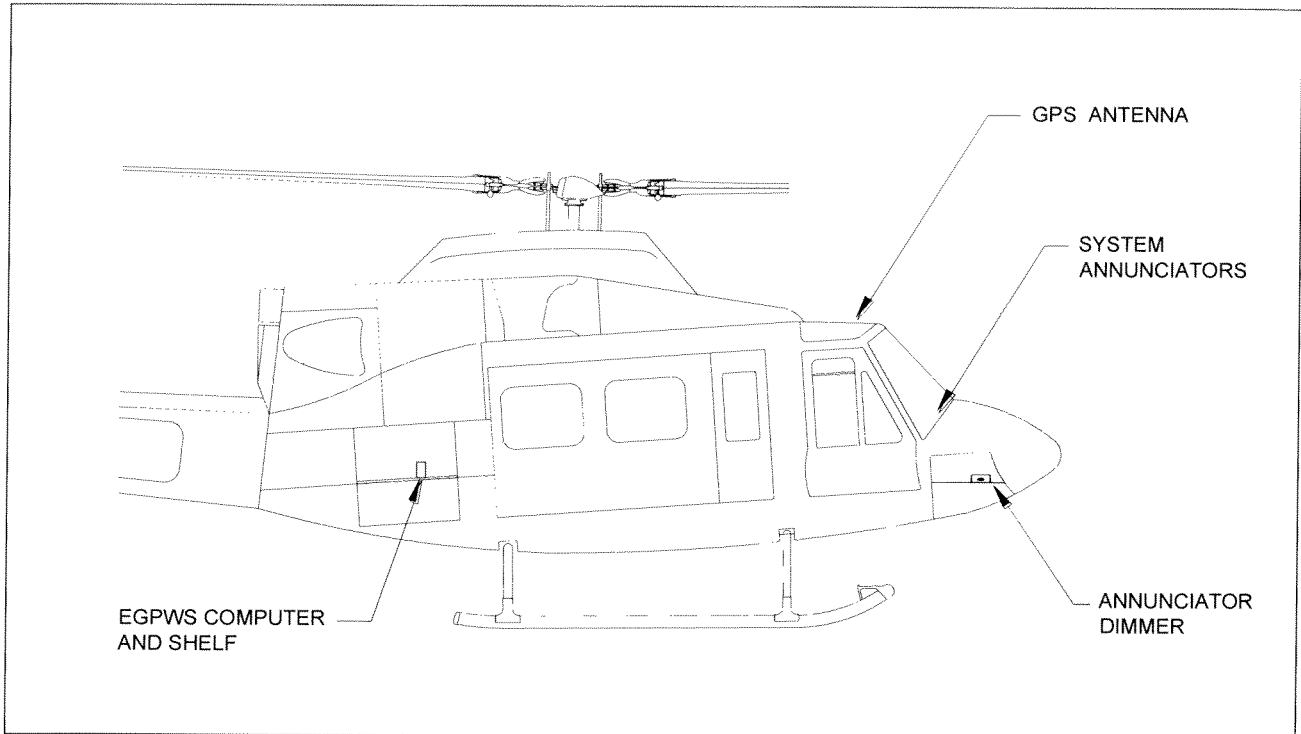
1.3 SYSTEM DESCRIPTION

The Mk XXII EGPWS System as installed in the Bell 412EP consists of the following components:

- One (1) Enhanced Ground Proximity Warning Computer (EGPWC)
- One (1) equipment shelf at Sta. 194 (right hand side) for EGPWC mounting
- One (1) GPS Antenna
- One (1) Annunciator Dimmer on the lower nose equipment shelf
- One (1) Relay Assembly on the lower nose equipment shelf
- Three (3) Terminal Block modules on the lower nose equipment shelf
- One (1) Relay Block on the lower nose equipment shelf (PRIMUS 440/660/880)
- One (1) Circuit Breaker in the overhead circuit breaker panel
- Ten (10) Annunciators in the Instrument panel (five (5) on each side) KMD 550/850 installed; twelve (12) Annunciators in the Instrument Panel (six (6) on each side) with PRIMUS 440/660/880 installed.
- One (1) EGPWS test switch in the Pilot's Instrument Panel

1.4 EGPWS COMPONENT LOCATIONS

Locations of the major EGPWS components are shown in Figures 1-1, 1-2, and 1-3.



2.0 AIRWORTHINESS LIMITATIONS

There are no Airworthiness Limitations associated with this STC.

3.0 INSPECTION REQUIREMENTS

In accordance with Bell Helicopter Textron Model 412/412EP Maintenance Manual BHT-412-MM-2, Chapter 5-1, aircraft may be inspected under either Part A Scheduled inspections or Part B Scheduled inspections; as approved by governing civil aviation authority.

3.1 100 HOUR PART A / 300 HOUR PART B / ANNUAL INSPECTION REQUIREMENTS

The requirements for 100-Hour Part A / 300-Hour Part B / Annual Inspections are identified in Table 3-1.

TABLE 3-1. 100 HOUR PART A / 300 HOUR PART B AND ANNUAL INSPECTION REQUIREMENTS

	INSPECTION, TASK DESCRIPTION	MECHANIC'S INITIALS	INSPECTOR'S INITIALS
1.	Review the aircraft records for reported discrepancies and / or deferred maintenance items.		
2.	Inspect, troubleshoot, and correct discrepancies, if applicable.		
3.	Ensure that all applicable airworthiness directives, service bulletins, service letters and advisory letters have been complied with.		
4.	Replace all life limited components that have reached their published operating limit. NOTE There are no life limited components.		
5.	Overhaul all components that have reached their published overhaul period. NOTE There are no component overhauls required.		
6.	Inspect each component installation for physical damage and security of attachment.		
7.	Inspect wiring to each component for chafing and physical damage.		
8.	Inspect for corrosion at each component installation location.		

4.0 REMOVAL AND INSTALLATION

4.1 GENERAL

1. Disconnect battery and or ground power before maintenance.
2. Use standard torque values for all fasteners. Refer to AC43.13-1B, BHTI Standard Practices Manual and Bell Helicopter 412/412EP Maintenance Manual BHT-412-MM for detailed information.

4.2 REMOVAL – EGPWS COMPUTER AND MOUNTING TRAY

Refer to Figure 4-1.

1. Gain access to the EGPWS Computer and Mounting Tray.
2. Disconnect GPS coaxial cable from EGPWS Computer.
3. Disconnect the two (2) Wiring Harnesses from the EGPWS Computer.
4. Loosen hold-down latch that secures EGPWS Computer in Mounting Tray (rotate hold-down knob counter-clockwise) and swing knob and threaded rod down out of the way.
5. Lift EGPWS Computer free of Mounting Tray and remove from helicopter.
6. To remove Mounting Tray from Equipment Shelf, remove the four (4) screws and washers that secure tray to shelf. Retain screws and washers for reinstallation.
7. Remove Mounting Tray from helicopter.

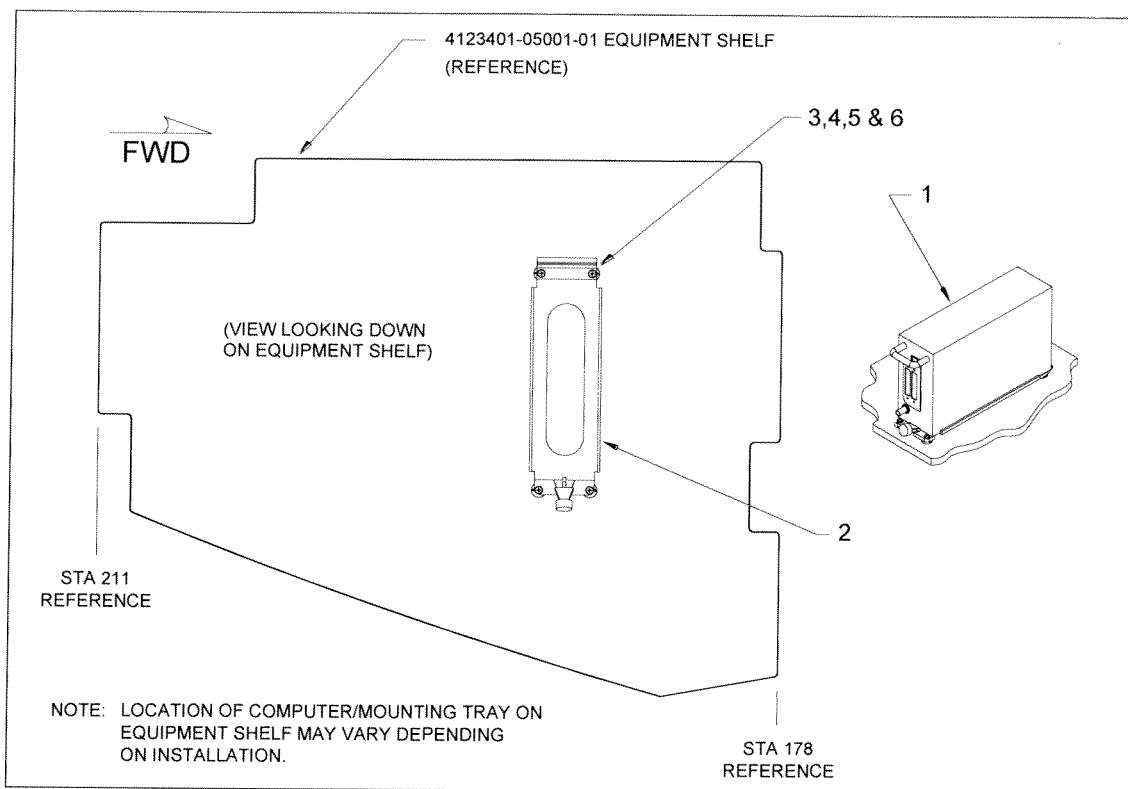
4.3 INSTALLATION – EGPWS COMPUTER AND MOUNTING TRAY

Refer to Figure 4-1.

1. Position Mounting Tray on Equipment Shelf in appropriate location and install four (4) screws and washers to secure tray to shelf.
2. Position EGPWS Computer in Mounting Tray appropriately oriented.
3. Swing hold-down latch up into position and tighten finger tight (rotate clockwise). Safety as appropriate.
4. Connect the two (2) Wiring Harnesses to the EGPWS Computer.
5. Connect the GPS coaxial cable to the EGPWS Computer.
6. Close up access to Aft Right-hand Equipment Shelf in helicopter.

4.3.1 SYSTEM CHECKOUT

Perform system checkout in accordance with paragraphs 5.3.4, 5.3.5 and 5.3.6.



Item	Nomenclature	Part Number	Qty
1	Computer, EGPW	965-1595-024 (Honeywell) Alt: 965-1590-010 (Honeywell)	1
2	Tray, EGPW Computer Mounting	405-0383-001 (Honeywell)	1
3	Screw	MS35206-216	4
4	Washer	NAS1149DN616J	4
5	Insert	404SE632-08-2 (Delron)	4
6	Sealant	6398 (Magnolia)	AR

FIGURE 4-1. EGPW COMPUTER INSTALLATION

4.4 REMOVAL – RIGHT-HAND AFT EQUIPMENT SHELF

Refer to Figure 4-2.

1. Gain access to Right-Hand Aft Equipment Shelf.
2. Disconnect and label all wiring harnesses and cables from equipment mounted on shelf.
3. Remove all equipment from shelf. Retain screws and washers for reinstallation.
4. Remove the ten (10) bolts and washers that secure the shelf to its mounting angles. Retain screws and washers for reinstallation.
5. Remove shelf from helicopter.
6. Remove the Inboard Angle, Inboard Forward Angle, and Outboard Forward Angle by loosening and removing the screws and washers securing them to the helicopter structure. Retain screws and washers for reinstallation.
7. Remove the Aft Zee Angle by loosening and removing the five (5) screws and nuts and ten (10) washers securing it to the helicopter structure. Retain screws, nuts and washers for reinstallation.
8. Remove the Contour Angle by drilling out the 26 rivets securing it to the helicopter structure.

4.5 INSTALLATION – RIGHT-HAND AFT EQUIPMENT SHELF

Refer to Figure 4-2.

1. Install the Contour Angle by positioning angle as shown in Figure 4-2 (Sheet 2), Section A-A and riveting to helicopter structure. If installing new angle, match drill angle to existing structure after positioning angle to provide firm support to shelf.
2. Install Aft Zee Angle by positioning angle as shown in Figure 4-2 (Sheet 2), Section D-D, and installing five (5) screws and nuts and ten (10) washers.
3. Install Inboard Angle, Inboard Forward Angle, and Outboard Forward Angle by installing and tightening screws and washers using hardware retained from removal.
4. Install Right-hand Aft Equipment Shelf by appropriately positioning shelf on angles and install and tighten the ten (10) bolts and washers using hardware retained from removal. If a new shelf is being installed, position shelf and mark drill shelf using the nutplates on angles as guides. Remove shelf, complete drilling operation on shelf and install ten (10) Thru-bolt plugs and sleeves. Replace shelf in helicopter and install and tighten the ten (10) bolts and washers using hardware retained from removal.

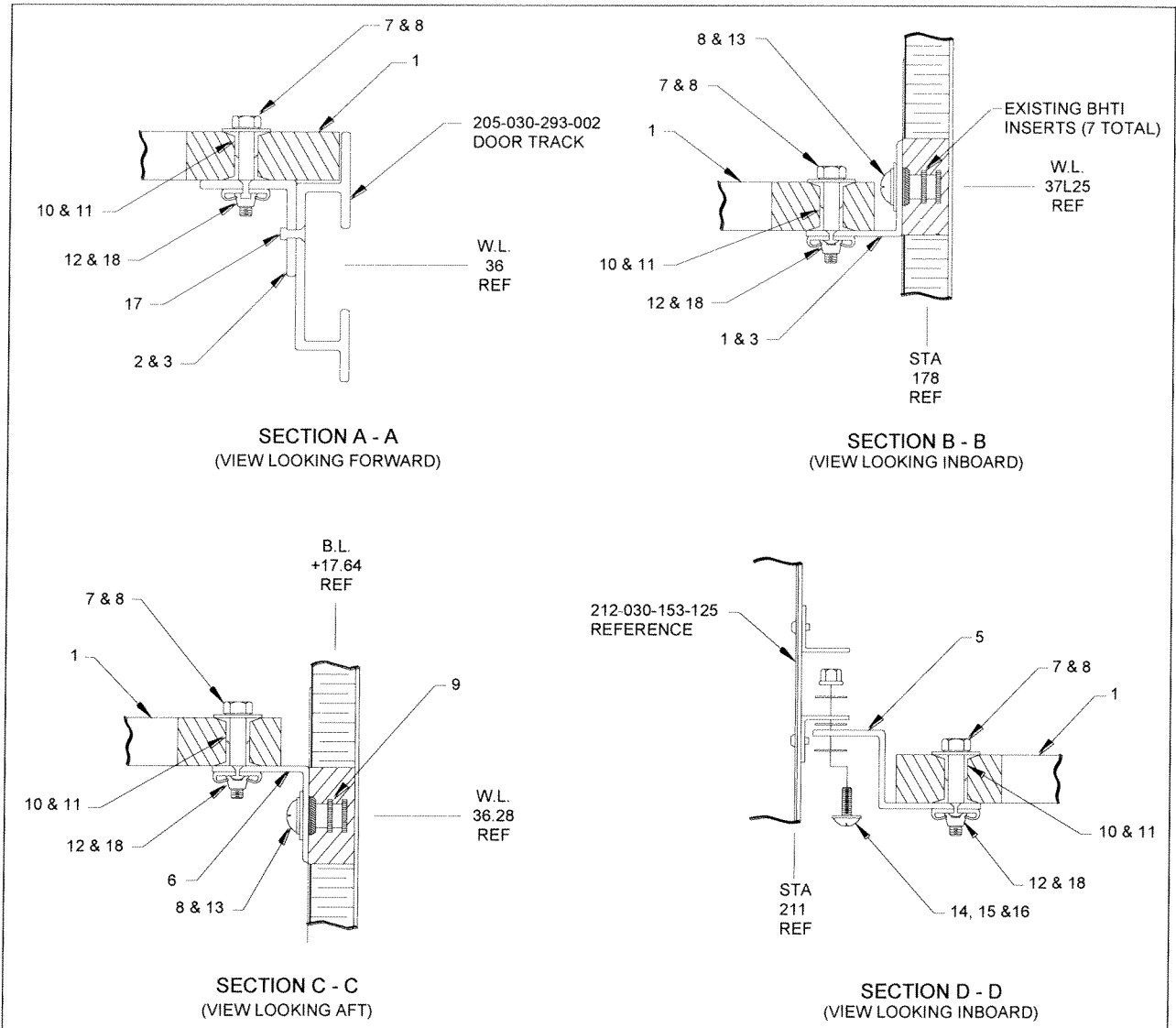


FIGURE 4-2 (SHEET 2 OF 3). AFT EQUIPMENT SHELF INSTALLATION

Item	Nomenclature	Part Number	Qty
1	Shelf, Aft Equipment	4123401-05001-1	1
2	Angle, Forward Inboard	4123401-05001-5	1
3	Angle, Forward Outboard	4123401-05001-6	1
4	Angle, Contour	4123401-05001-2	1
5	Angle, Aft Zee	4123401-05001-4	1
6	Angle, Inboard	4123401-05001-3	1
7	Bolt	AN3-10A	10
8	Washer	NAS1149D0332J	25
9	Insert	404SE1032-08-2	8
10	Plug, Thru-bolt	AP106D302-53	10
11	Sleeve, Thru-bolt	AS106D30-1	10
12	Nutplate	MS21059L3	10
13	Screw	MS27039-1-07	15
14	Screw	MS27039-0805	5
15	Nut	MS21042L08	5
16	Washer	NAS1149DN816J	10
17	Rivet	MS20426AD4-6	26
18	Rivet	MS20426AD3-4	20

FIGURE 4-2 (SHEET 3 OF 3). AFT EQUIPMENT SHELF INSTALLATION

4.6 REMOVAL – CIRCUIT BREAKER INSTALLATION

Refer to Figure 4-3.

1. Loosen fasteners in overhead circuit breaker panel allowing access to circuit breakers.
2. Label and disconnect wires from EGPWS circuit breaker.
3. Loosen and remove nut from EGPWS circuit breaker on cockpit side of panel.
4. Remove circuit breaker.

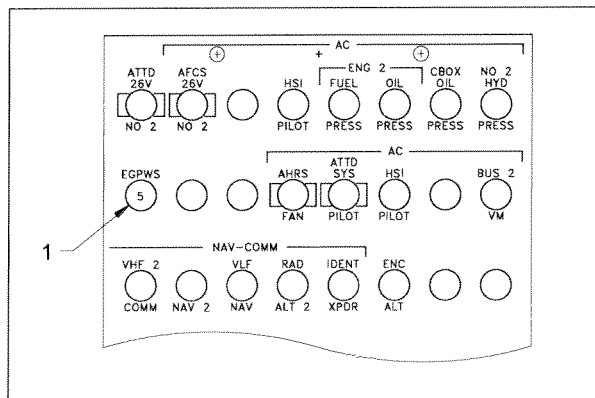
4.7 INSTALLATION – CIRCUIT BREAKER INSTALLATION

Refer to Figure 4-3.

1. Insert circuit breaker from back side of circuit breaker panel.
2. Install and tighten nut.
3. Reconnect wires to circuit breaker.
4. Reposition overhead circuit breaker panel and tighten fasteners.

4.7.1 CHECKOUT – CIRCUIT BREAKER INSTALLATION

Perform checkout by pushing circuit breaker in and verifying system operation.



Item	Nomenclature	Part Number	Qty
1	Circuit Breaker, 5 Amp	MS26574-5	1

FIGURE 4-3. CIRCUIT BREAKER INSTALLATION

4.8 REMOVAL – ANTENNA, KA 92 GPS

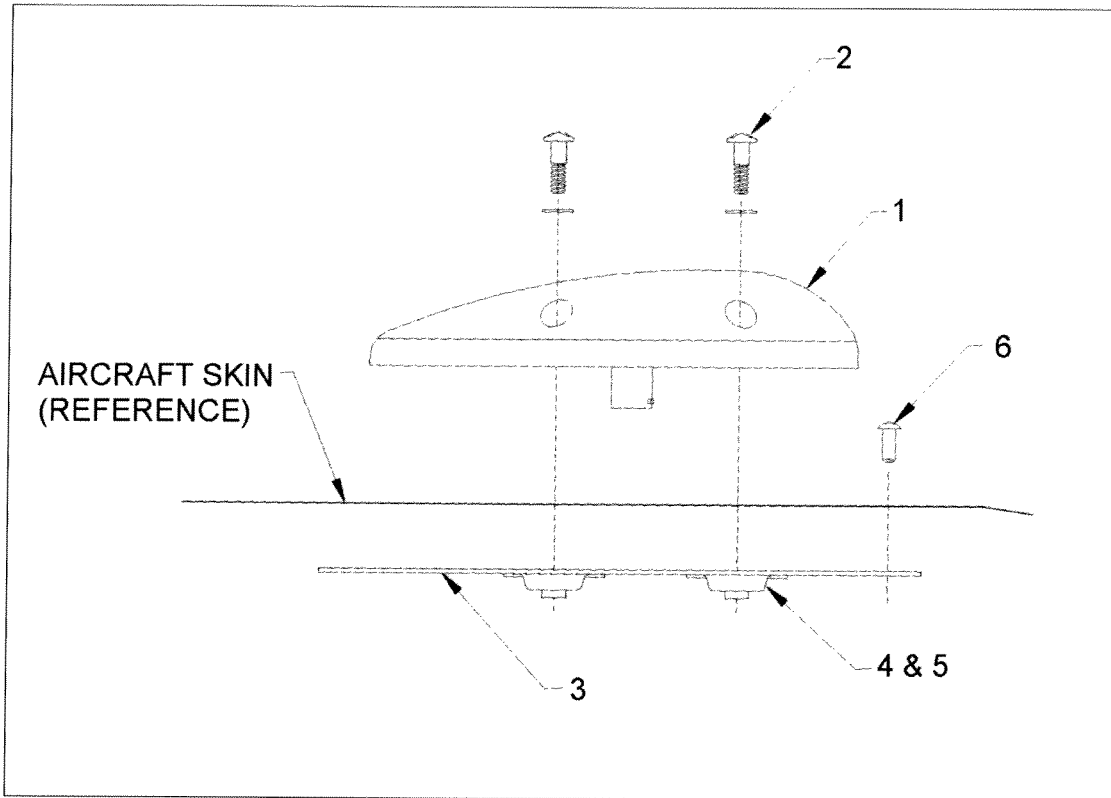
Refer to Figure 4-4.

1. Gain access to antenna inside the cockpit.
2. Disconnect antenna lead from antenna.
3. Carefully remove sealant from around the antenna and from the four (4) attaching screw heads.
4. Remove the four (4) screws and washers that attach antenna.
5. Remove antenna from helicopter.
6. If doubler on interior side of skin must be removed, drill out the fourteen (14) rivets attaching it to the skin.

4.9 INSTALLATION – ANTENNA, KA 92 GPS

Refer to Figure 4-4.

1. If doubler was removed, reinstall doubler by appropriately positioning doubler on interior of helicopter skin and installing fourteen (14) rivets.
2. Appropriately position antenna on helicopter with narrow end of antenna pointing aft.
3. Install and tighten four (4) screws and washers retained from antenna removal.
4. Seal screw heads and around antenna with Proseal CS3204 sealant.
5. Reconnect antenna lead on interior of cockpit.
6. Replace interior items previously removed for access.



Item	Nomenclature	Part Number	Qty
1	Antenna, GPS, KA 92	071-01553-0200 (Bendix-King)	1
2	Screw & Washer	Part of 050-03318-0000 Install Kit (Bendix-King)	4
3	Doubler	4123401-04001-1	1
4	Nutplate	MS21059L08	4
5	Rivet	NAS1097AD3-3	8
6	Rivet	MS20470AD4-4	14
NOT SHOWN	Sealant	CS3204, Part A & B (Proseal)	

FIGURE 4-4. KA 92 GPS ANTENNA INSTALLATION

4.10 REMOVAL – ANNUNCIATORS

Refer to Figure 4-5.

1. Gain access behind instrument panel.
2. Grasp the annunciator lens (with fingernails) and pull straight out. Swing the lens down allowing access to the two screws deep inside the annunciator (one at top and one at bottom).
3. Loosen the two screws by turning counter-clockwise until the pawls are rotated out of the slot in the mounting sleeve.
4. Pull the mounting sleeve off the annunciator body.
5. Remove the annunciator body from the front of the instrument panel.

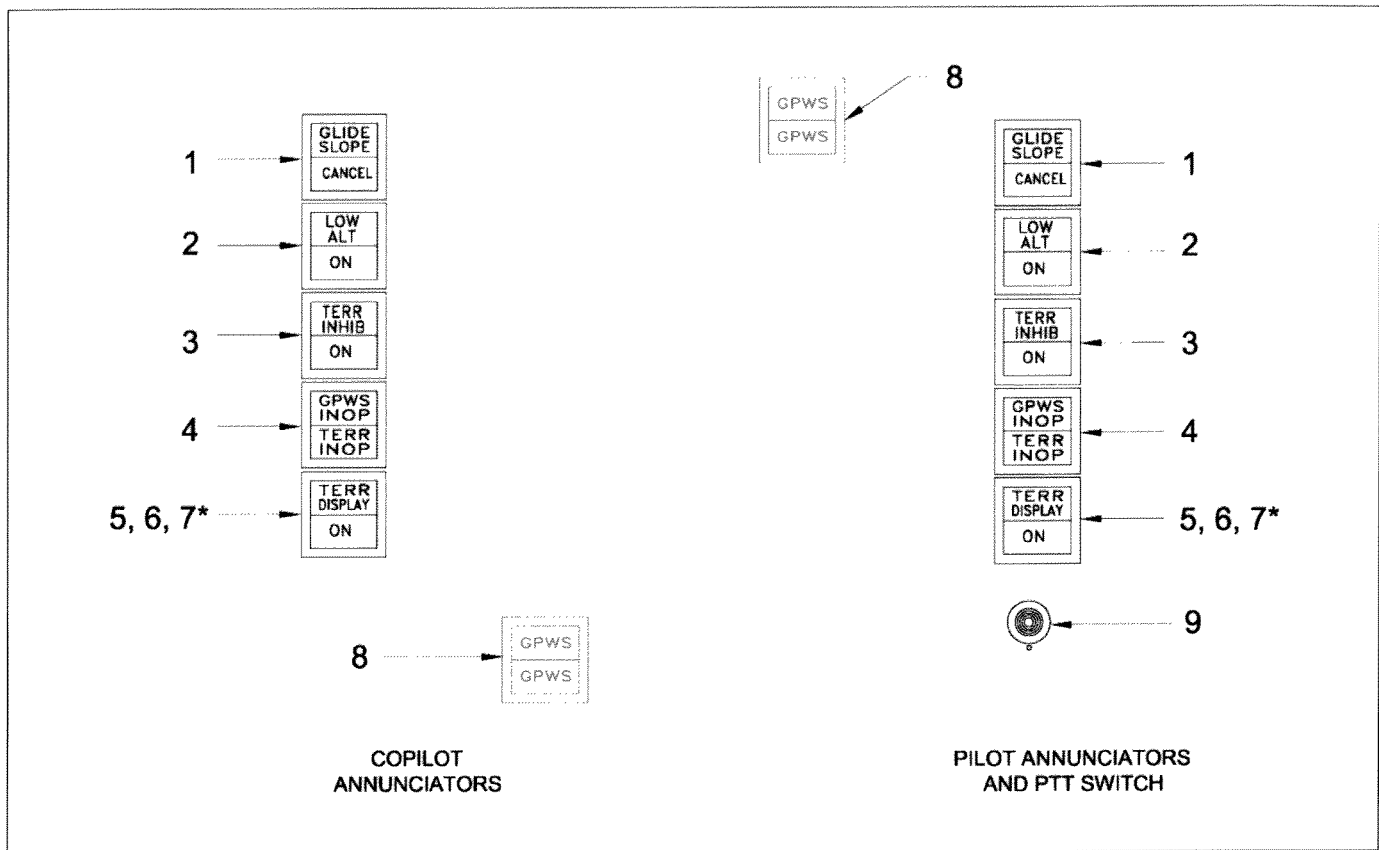
4.11 INSTALLATION – ANNUNCIATORS

Refer to Figure 4-5.

1. Insert the annunciator body into the instrument panel mounting hole with the side of the body marked TOP up.
2. Slide the mounting sleeve over the annunciator body with the side of the sleeve marked TOP up until the annunciator body pawls are visible in the sleeve slots.
3. Tighten the two screws in the annunciator body by turning clockwise ensuring that the pawls are rotated into the slots in the mounting sleeve. Torque screws to 16 ± 4 inch-oz,
4. Swing annunciator lens up, insert into annunciator body and push in to snap into place.

4.12 ANNUNCIATOR BULB REPLACEMENT

1. Grasp the annunciator lens (with fingernails) and pull straight out. Swing the lens down allowing access to the lamps inserted in the back of the lens.
2. Remove burned-out lamps and replace with new 6839 lamps.
3. Swing lens up and re-insert into annunciator body. Push in to snap into place.



Item	Nomenclature	Part Number	Qty -1	Qty -2
1	Annunciator, GLIDESLOPE/CANCEL	4123401-02005-2 (Eaton P/N 58210A2B0C3F4L12N2(GA),P11,17 GLIDE,SLOPE/CANCEL)	2	2
2	Annunciator, Low Alt/On	4123401-02003-2 (Eaton P/N 58210A2B0C3F4L12N2(GG),P11,19 LOW,ALT/ON)	2	2
3	Annunciator, TERR INHIB/ON	4123401-02004-2 (Eaton P/N 58210A2B0C3F4L12N2(GG),P11,19 TERR,INHIB/ON)	2	2
4	Annunciator, GPWS INOP/TERR INOP	4123401-02001-1 (Eaton P/N 58210A0B0C3F4L5N2(AA),P11,17 GPWS,INOP/TERR,INOP)	2	2
5*	Switch	58210A1B0C3F4L12N2(GG), P11, 19TERR,DISPLAY/ON		2
6*	Plug-In Mounting Sleeve	582-RE5-223		2
7*	Contact	M39029/22-192		18
8	Annunciator, GPWS/GPWS	4123401-02002-1 (Eaton P/N 58210A0B0C3F4L5N2(RA),P11,16 GPWS/GPWS)	2	2
9	Switch, Press-To-Test, Momentary	MPA-103C	1	1

* PRIMUS 440/660/880 installation only.

FIGURE 4-5. EGPWS ANNUNCIATORS

AERONAUTICAL ACCESSORIES, INC.

4.13 REMOVAL – ANNUNCIATOR DIMMER

Refer to Figure 4-6.

1. Gain access to Annunciator Dimmer.
2. Disconnect wiring harness from dimmer.
3. Loosen and remove four (4) screws and washers that attach dimmer to nose shelf. Retain hardware for reinstallation.
4. Remove dimmer from helicopter.

4.14 INSTALLATION – ANNUNCIATOR DIMMER

Refer to Figure 4-6.

1. Appropriately position dimmer on equipment shelf.
2. Install and tighten four (4) screws and washers retained from removal.
3. Reconnect wiring harness to dimmer.

4.15 REMOVAL – RELAY ASSEMBLY (026-22005-01)

Refer to Figure 4-6.

1. Gain access to Relay Assembly.
2. Disconnect wiring harness from Relay Assembly.
3. Loosen and remove two (2) screws and washers that attach Relay Assembly to nose shelf. Retain hardware for reinstallation.
4. Remove Relay Assembly from helicopter.

4.16 INSTALLATION – RELAY ASSEMBLY (026-22005-01)

Refer to Figure 4-6.

1. Appropriately position Relay Assembly on equipment shelf.
2. Install and tighten two (2) screws and washers retained from removal.
3. Reconnect wiring harness to Relay Assembly.

4.17 REMOVAL – RELAY (M83536/6-025M) AND RAIL (M12883/53-001)

Refer to Figure 4-6.

1. Gain access to Relay.
2. Disconnect wiring harness from Relay.
3. Loosen and remove two (2) screws and washers that attach Relay and Rail to nose shelf. Retain hardware for reinstallation.
4. Remove Relay and Rail from helicopter.

4.18 INSTALLATION – RELAY (M83536/6-025M) AND RAIL (M12883/53-001)

Refer to Figure 4-6.

1. Appropriately position Relay and Rail on equipment shelf.
2. Install and tighten two (2) screws and washers retained from removal.
3. Reconnect wiring harness to Relay.

4.19 REMOVAL – TERMINAL BLOCK MOUNTING RAIL

Refer to Figure 4-6.

1. Gain access to Terminal Mounting Rail.
2. Remove terminal blocks from Terminal Block Mounting Rail.
3. Loosen and remove two (2) screws and washers that attach Terminal Block Mounting Rail to nose shelf. Retain hardware for reinstallation.
4. Remove Terminal Block Mounting Rail from helicopter.

4.20 INSTALLATION – TERMINAL MOUNTING BLOCK

Refer to Figure 4-6.

1. Appropriately position Terminal Block Mounting Rail on equipment shelf.
2. Install and tighten two (2) screws and washers retained from removal.
3. Reinstall terminal blocks that were previously removed.

4.21 REMOVAL – GROUND BLOCK

Refer to Figure 4-6.

1. Gain access to Right-Hand Aft Equipment Shelf.
2. Disconnect wiring harness from Ground Block.
3. Loosen and remove two (2) screws, nuts and washers. Retain hardware for reinstallation.
4. Remove Ground Block from helicopter.

4.22 INSTALLATION – GROUND BLOCK

Refer to Figure 4-6.

1. Ensure that the Ground Block mounting surface is clean.
2. Position Ground Block on bulkhead and install and tighten two (2) screws, nuts and washers retained from previous removal.
3. Reconnect wiring harness to Ground Block.
4. Close up access to Right-Hand Aft Equipment Shelf.

4.23 REMOVAL – TERMINAL BLOCKS (M81714/60-22-05 AND M81714/60-20-02) AND RAIL (M81714/67-05)

Refer to Figure 4-6.

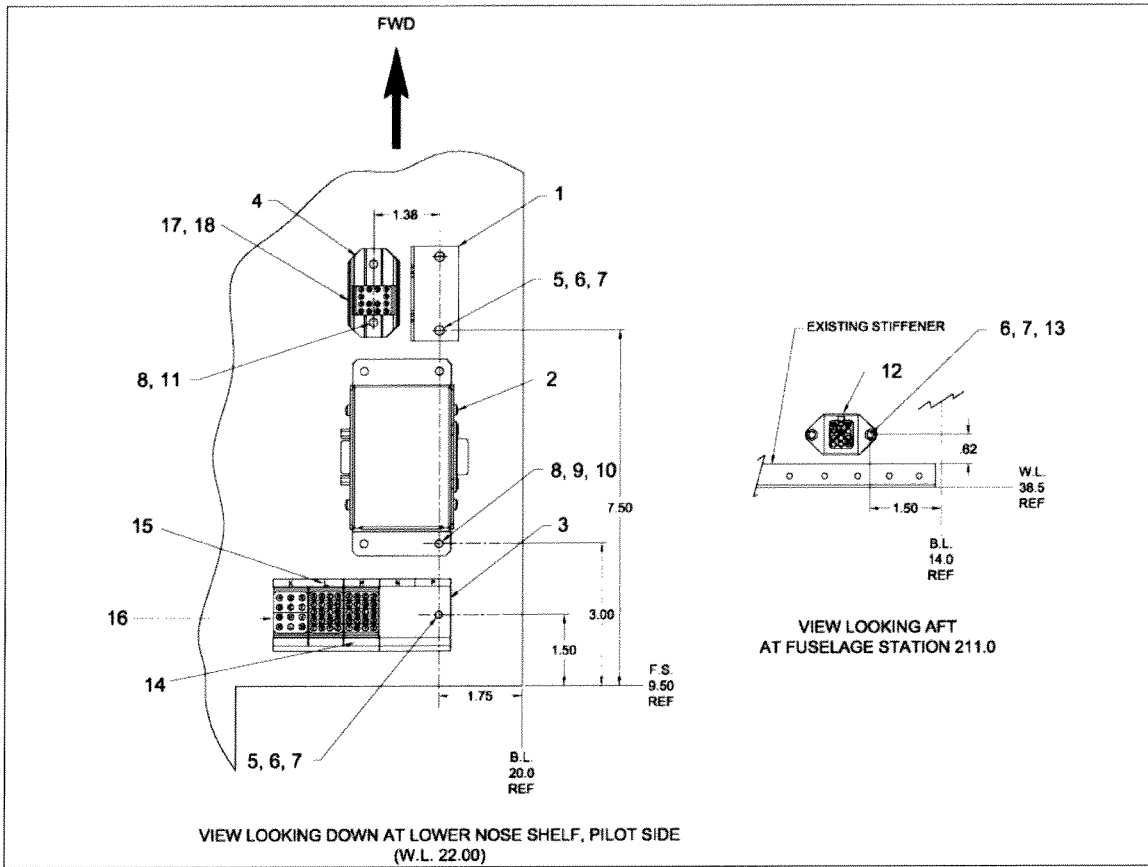
1. Gain access to Terminal Blocks and Rail.
2. Disconnect wiring harnesses from Terminal Blocks.
3. Remove Terminal Blocks from Rail. Retain Terminal Blocks.
4. Loosen and remove two (2) screws and washers and insert that attach Rail to nose shelf. Retain hardware for reinstallation.
5. Remove Rail from helicopter.

4.24 INSTALLATION – TERMINAL BLOCKS (M81714/60-22-05 AND M81714/60-20-02) AND RAIL (M81714/67-05)

Refer to Figure 4-6.

1. Appropriately position Rail on equipment shelf.
2. Install insert and tighten two (2) screws and washers retained from removal.
3. Reinstall Terminal Blocks to Rail.
4. Reconnect wiring harnesses to Terminal Blocks.

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Item	Nomenclature	Part Number	Qty -1	Qty -2
1	Relay Assembly	026-22005-01	1	1
2	Annunciator Dimmer Switch	017-22000-01	1	1
3	Rail	M81714/67-05	1	1
4	Rail	M12883/53-001		1
5	Insert	80-005-2-8	4	4
6	Screw	MS27039-1-08	6	6
7	Washer	NAS1149D0332J	6	6
8	Insert	80-005-1-8	4	6
9	Screw	MS27039-0808	4	4
10	Washer	NAS1149DN816J	4	4
11	Screw	MS24694-S3		2
12	Ground Block	M81714/63-20F	1	1
13	Nut	MS21042L3	2	2
14, 15	Terminal Block	M81714/60-22-05		2
16	Terminal Block	M81714/60-20-02		1
17	Relay	M83536/6-025M		1
18	Socket	M12883-52-002		1

FIGURE 4-6. ELECTRICAL INSTALLATION

5.0 TEST AND TROUBLESHOOTING

5.1 GENERAL NOTES AND REFERENCES

This section is intended to supplement Honeywell Maintenance Instructions and identify configuration and tests, which are specific to the Bell 412EP installation.

Refer to the following documents for additional information such as description and operation, fault isolation and database maintenance:

- Honeywell Mark XXII Line Maintenance Manual 060-4314-011
- Honeywell Mark XXII EGPWS Installation Manual 060-04314-0255
- As applicable:
 - KMD 550/850 Multi-Function Display System Installation Manual 006-10608-0001
 - PRIMUS 880/660/440 System Description and Installation Manual A09-3944-001

5.2 REQUIRED TEST EQUIPMENT

In addition to common electrician and mechanic hand tools, the following items are required for system configuration and test:

- A laptop computer with Windows© 3.1 or higher and terminal emulator software such as WinVIEWS©.
- Pitot Static test set
- ILS ramp test set

5.3 SYSTEMS CHECKOUT (ENGINES NOT RUNNING)

5.3.1 SYSTEM POWER VERIFICATION

1. Connect ground power to the helicopter and apply power.
2. Verify that 28V dc is present on P1, Pin 40 and 60 of the EGPWS Computer, P22-1, Pin 3 of the Annunciator Dimmer Supply, and P22-2, Pin 3 of the Relay Assembly.
3. Pull the EGPWS 28V DC circuit breaker.
4. Verify that 28V DC is no longer present on P1, Pin 40 and 60, P22-1, Pin 3 and P22-2, Pin 3.
5. Disconnect external power and connect all EGPWS components. Set the EGPWS and all associated avionics circuit breakers.

5.3.2 COCKPIT AUDIO

1. Ensure all systems turned on.
2. Connect headsets at the pilot's and copilot's position.
3. Key the pilot's ICS and speak into the microphone while initiating the Self-Test function. EGPWS advisories should be clearly heard at both crew positions
4. Key the copilot's ICS and speak into the microphone while initiating the Self-Test function again. EGPWS advisories should be clearly heard at both crew positions

5.3.3 LOW ALTITUDE AND TERRAIN INHIBIT DISCRETES

1. Ensure all systems turned on.
2. Depress the pilot's LOW ALT switch/annunciator and verify that the pilot's and copilot's ON segments illuminate. Depress the pilot's LOW ALT switch again and verify that the ON segments go out.
3. Depress the copilot's LOW ALT switch/annunciator and verify that the pilot's and copilot's ON segments illuminate. Depress the copilot's LOW ALT switch again and verify that the ON segments go out.
4. Depress the pilot's TERR INHIB switch/annunciator and verify that the pilot's and copilot's ON segments illuminate. Depress the pilot's TERR INHIB switch again and verify that both ON segments go out.
5. Depress the copilot's TERR INHIB switch/annunciator and verify that the pilot's and copilot's ON segments illuminate. Depress the copilot's TERR INHIB switch again and verify that both ON segments go out.
6. If PRIMUS 440/660/880 installed:
 - a. Depress the pilot's TERR DISPLAY switch/annunciator and verify that the pilot's and copilot's ON segments illuminate. Depress the pilot's TERR DISPLAY switch again and verify that the ON segments go out.
 - b. Depress the copilot's TERR DISPLAY switch/annunciator and verify that the pilot's and copilot's ON segments illuminate. Depress the copilot's TERR DISPLAY switch again and verify that the ON segments go out.

5.3.4 SELF-TEST LEVEL 1 GO/NO GO TEST

1. Position the aircraft in an area that permits adequate reception of GPS satellite transmissions.
2. Ensure all systems turned on.
3. Ensure that the TERR INOP annunciators are extinguished and that the LOW ALT switches are not engaged.
4. Press the EGPWS PTT button and verify the following sequence.
5. The amber GPWS INOP and TERR INOP annunciators will turn on momentarily
6. Both green LOW ALT ON annunciators illuminate momentarily
7. Both amber GPWS annunciators illuminate.
8. The "GLIDESLOPE" audible message is heard in both headsets
9. Both amber GPWS annunciators turn off.
10. Both amber GLIDE SLOPE CANCEL annunciators illuminate momentarily.
11. Both red GPWS annunciators illuminate.
12. The "PULL UP" audible message is heard in both headsets
13. The terrain Display Self-Test pattern is displayed.
14. The "WARNING TERRAIN" audible message is heard on both headsets.
15. Both red GPWS annunciators turn off.
16. The terrain display Self-Test pattern turns off after several sweeps of the terrain display.

5.3.5 SELF-TEST LEVEL 2 CURRENT FAULTS

1. Initiate Self-Test level 1 by pressing the EGPWS PTT button for less than 2 seconds.
2. Once the Self-Test Level 1 audio starts press the EGPWS PTT button again, for less than 2 seconds.
3. Verify that the following voices messages are heard in both headsets: "CURRENT FAULTS", "NO FAULTS", "PRESS TO CONTINUE".

NOTE

If faults exist, they will be announced as EGPWS Internal Faults or as External Faults. The aural message will provide a description of the fault. If a fault is announced, it should be corrected prior to proceeding with the remainder of this ground test procedure

5.3.6 SELF-TEST LEVEL 3 EGPWS CONFIGURATION

1. Initiate Self-Test Level 1 by pressing the EGPWS PTT button for less than 2 seconds.
2. Once the Self-Test Level 1 audio starts press the EGPWS PTT button again, for less than 2 seconds. This initiates Level 2.
3. Immediately after the Self-Test Level 2 "PRESS TO CONTINUE" message is heard, depress the EGPWS PTT switch. (This will initiate Level 3.)
4. Verify that the following messages are heard in both headsets. Record all unspecified details.

NOTE

"X's" listed below represent numbers, letters, the word "point" or no annunciation. Any of these annunciations are acceptable where "X" is listed below. (e.g. the serial number could be announced as "SERIAL NUMBER 316").

- 5. SYSTEM CONFIGURATION
PART NUMBER 965-1595-xxx
Alt: 965-1590-xxx
- 6. MOD STATUS X
- 7. SERIAL NUMBER XXXX
- 8. APPLICATION SOFTWARE VERSION XXXX
- 9. TERRAIN DATABASE VERSION X
- 10. ENVELOPE MOD DATABASE VERSION XX
- 11. BOOT CODE VERSION XXXX
- 12. AIRCRAFT TYPE 141
- 13. TORQUE 011
- 14. AIR DATA TYPE 001
- 15. RADIO ALTITUDE TYPE 003
- 16. NAVIGATION INPUT TYPE 004
- 17. ATTITUDE INPUT TYPE 128
- 18. MAGNETIC HEADING TYPE 002
- 19. POSITION INPUT TYPE 002
- 20. CALLOUTS OPTION 128
- 21. AUDIO MENU 128
- 22. VOLUME SELECT 000
- 23. TERRAIN DISPLAY 000
- 24. I/O DISCRETE TYPE 129
- 25. AUTOROTATION THRESHOLD 012
- 26. SMART CALLOUT SELECTED, BANK ANGLE, OBSTACLE AWARE
ENABLED, PEAKS MODE ENABLED

5.3.7 SIGNAL INPUT TESTS – RADIO ALTITUDE AND DECISION HEIGHT

Wiring for the radio altitude and decision height interface is checked by operating the self test function of the radio altimeter.

NOTE

Accurate ground calibration of the Radio Altimeter is important for the Tail Strike warning function to operate properly. The Radio Altimeter should read 0 feet when the main landing gear is just touching the ground. If the Radio Altimeter reads more than ± 3 feet when on the ground calibrate the Radio Altimeter per the Radio Altimeter installation manual.

1. On the PC, select the CVT Item "RawRA1".
2. Activate the Radio Altimeter Self-Test function and verify that the displayed altitude on the Radio Altimeter indicator is the same as the Observed Value on the PC under "RawRA1".
3. Set the Decision Height Bug to 75 feet. Activate the Radio Altimeter Self-test function. Verify that the CVT Item DHDsc Observed Value is 0.
4. While still maintaining Self-test increase the Decision Height Bug to 125 feet. Verify that the CVT Item DHDsc Observed Value is 1.
5. Verify that the CVT Item ARA1Val Observed Value is 1.
6. Pull the Radio Altimeter circuit breaker. Verify that the CVT Item ARA1Val Observed Value is 0.

5.3.8 SIGNAL INPUT TESTS – AIR DATA COMPUTER

Wiring for the Air Data Computer interface is checked by varying the inputs to the Air Data Computer via the test set for the Air Data System.

CAUTION

Be very careful when using the Air Data Test Set. Flight instruments and other expensive equipment can easily be damaged by improper adjustment of the tester.

1. Set the pilot's altimeter to a pressure setting of 29.92 in-Hg. Observe the altitude reading on the pilot's barometric altimeter. Verify that the CVT Item RawBAlt1 Observed Value is within ± 300 feet of the pilot's indication. Record the RawBAlt1 value.
2. Adjust the Air Data Test Set for a 1000-FPM rate of climb. Verify that the Baro Altitude Rate, CVT Item RawBaroRt1, Observed Value is 1000 ± 200 -FPM.
3. Verify the Computed Airspeed by setting the Air Data Test Set to 120 ± 5 knots. The CVT Item RawCAS1 Observed Value should be 120 ± 5 knots.

4. Verify that the Static Air Temperature (SAT) CVT Item RawSAT1 Observed Value is with $\pm 5^{\circ}\text{C}$ of the outside air temperature.

5.3.9 SIGNAL INPUT TESTS – NAVIGATION (ILS)

This test verifies the Instrument Landing System connections to the EGPWS input.

1. Activate the NAV 1 Navigation unit. Select an ILS frequency. Verify that the CVT Item ILSTuned1 Observed Value is 1.
2. Tune the navigation unit to a VOR frequency. Verify that the CVT Item ILSTuned1 Observed Value is 0.
3. Provide a Glideslope “1 dot down” signal from the Ramp Test Set. Verify that the CVT Item RawGS1 Observed Value is between +0.057 and +0.117.
4. Change the Glideslope signal to “2 dots up”. Verify that the CVT Item RawGS1 Observed Value is between -0.145 and -0.205.

5.3.10 SIGNAL INPUT TESTS – POSITION SOURCE

Verify the following data check of the GPS input (wiring/signal) to the EGPWS.

NOTE

Position indications are provided in the form of W x° y.x' or N x° y.z'. The EGPWS stores position as \pm x.xxx $^{\circ}$. For reference, in the EGPWS CVT Item, West and South equal “-” and North and East equal “+”. To convert the X $^{\circ}$ y.z' to x.xxx $^{\circ}$ divide the y.z' by 60 and add it to the leading x. For example, Mt. Pleasant (N40 $^{\circ}$ 06.47'; W79 $^{\circ}$ 32.93') is equivalent to the EGPWS value N40.108 $^{\circ}$; W79.55 $^{\circ}$.

1. Verify that the CVT Item GPSLatitude1 Observed Value is within $\pm 0.008^{\circ}$ of the present position latitude.
2. Verify that the CVT Item GPSLongitude1 Observed Value is within $\pm 0.008^{\circ}$ of the present position longitude.
3. Set the pilot's barometric altimeter to the local barometric pressure. Verify that the CVT Item RawGAlt1 Observed Value is within ± 500 feet of the altitude read on the pilot's altimeter.
4. Verify that the CVT Item RawHFOM1 is less than 0.3nm.
5. Verify that the CVT Item RawVFOM1 is less than 150 feet.

5.3.11 SIGNAL INPUT TESTS – ATTITUDE

Wiring for the Attitude system interface is checked by varying the inputs of the Attitude system and comparing the CVT Item readout to the ADI.

NOTE

When reading CVT Item Observed Values positive roll values correspond to a bank right condition and positive pitch values correspond to a nose-up condition.

1. Remove the copilot's AHRS from its mounting rack and level the AHRS to 0°. The roll attitude, as read on the Copilot's attitude indicator display, should read 0°.
2. Verify that the CVT Item RawRoll1 Observed Value is within 1° of zero.
3. Tilt the AHRS to simulate a 15° Right Bank. Verify that the CVT Item RawRoll1 Observed Value is between +14° and +16°.
4. Tilt the AHRS to simulate a 10°-Left Bank. Verify that the CVT Item RawRoll1 Observed Value is between -9° and -11°.
5. Level the AHRS to 0°. Verify that the CVT Item RawPitch1 Observed Value is within ± 1° of zero.
6. Tilt the AHRS to simulate a 15° Nose Up attitude. Verify that the CVT Item RawPitch1 Observed Value is between +14° and +16°.
7. Tilt the AHRS to simulate a 10° Nose Down attitude. Verify that the CVT Item RawPitch1 Observed Value is between -9° and -11°.

5.3.12 SIGNAL INPUT TESTS – MAGNETIC HEADING

Comparing the CVT Item readout to the magnetic heading on the HSI checks wiring to the Magnetic Heading system.

NOTE

In the following tests the CVT Item for Magnetic Heading is displayed as ± 180°. If the aircraft heading is 350°, the CVT Item will read -10°. If the aircraft heading is 240°, the CVT Item will read -120°. If the aircraft heading is 155 ° the CVT Item will read 155°.

1. Activate the compass system and ensure that the valid flag is out of view. Observe the copilot's heading as displayed HSI. Verify that the CVT Item RawIMHD1 is within ± 3° of the heading on HSI.

5.3.13 SIGNAL INPUT TESTS – GLIDESLOPE CANCEL

The momentary Glideslope Cancel Discrete Input (J1-15) is checked by changing the state of the Glideslope select switch(es) and verifying that the CVT Item Observed Value matches the Expected Value.

1. Press and hold the pilot's GLIDE SLOPE switch. Verify that the CVT Item GSCan Observed Value is 1.
2. Release the pilot's GLIDE SLOPE switch. Verify that the CVT Item GSCan Observed Value is 0.
3. Press and hold the copilot's GLIDE SLOPE switch. Verify that the CVT Item GSCan Observed Value is 1.
4. Release the copilot's GLIDE SLOPE switch. Verify that the CVT Item GSCan Observed Value is 0.

5.3.14 SIGNAL INPUT TESTS – LOW ALTITUDE MODE

Pressing the LOW ALT Switch can activate this discrete input. Discrete Input (J1-14 = Gnd) is checked by changing the state of the discrete and verifying that the CVT Item Observed Value matches the Expected Value.

1. Press the pilot's LOW ALT switch. Verify that the CVT Item TacticalSel Observed Value is 1.
2. Press the copilot's LOW ALT switch. Verify that the CVT Item TacticalSel Observed Value is 0.

5.3.15 SIGNAL INPUT TESTS – TERRAIN INHIBIT MODE

This discrete input can be activated by pressing the TERR INHIBIT Switch. Discrete Input (J1-12 = Gnd) is checked by changing the state of the discrete and verifying that the CVT Item Observed Value matches the Expected Value.

1. Press the pilot's TERR INHIB switch. Verify that the CVT Item TerrDis Observed Value is True.
2. Press the copilot's TERR INHIB switch. Verify that the CVT Item TerrDis Observed Value is False.
3. Press the pilot's TERR INHIB switch again. Verify that the CVT Item TerrDis Observed Value is True.
4. Press the copilot's TERR INHIB switch. Verify that the CVT Item TerrDis Observed Value is False.

5.3.16 SIGNAL INPUT TESTS – DISPLAY RANGE SELECTION

Proper Terrain Display range selection is checked by selecting Terrain on the display, cycling through all possible range settings, and verifying the range displayed on the display matches the CVT Item on the PC. Verify each of the following Range selections.

- | | |
|------------------------|---------------------------------|
| 1. Display Range 2.5nm | CVT Item DispRngOut1 Value 2.5 |
| 2. Display Range 5nm | CVT Item DispRngOut1 Value 5 |
| 3. Display Range 10nm | CVT Item DispRngOut1 Value 10 |
| 4. Display Range 20nm | CVT Item DispRngOut1 Value 20 |
| 5. Display Range 40nm | CVT Item DispRngOut1 Value 40 |
| 6. Display Range 80nm | CVT Item DispRngOut1 Value 80 |
| 7. Display Range 160nm | CVT Item DispRngOut1 Value 160 |
| 8. Display Range 320nm | CVT Item DispRngOut1 Value 320. |

5.4 SYSTEMS CHECKOUT (ENGINES RUNNING)**5.4.1 ENGINE TORQUE****CAUTION**

Engine Torque is measured with the engines running and thus the rotor head turning. Position the aircraft in a safe area and remove all other test equipment other than the WinVIEWS terminal or laptop computer. It is recommended that these be placed inside the passenger compartment.

1. Verify that the CVT Item RawTorque1 Observed Value is within $\pm 5\%$ of the #1 engine torque displayed on the torque indicator.
2. Verify that the CVT Item RawTorque2 Observed Value is within $\pm 5\%$ of the #2 engine torque displayed on the torque indicator.

5.4.2 COCKPIT AUDIO – AURAL WARNINGS

1. Increase the rotor rpm to 90%. Decrease the rotor rpm until the RPM warning tone is heard by the pilot and copilot. This tone will be used as a qualitative reference when monitoring the EGPWS aural advisory signals in the next step.
2. Initiate the EGPWS Self-Test Level 1 by depressing the EGPWS PTT button, for less than 2 seconds. EGPWS aural caution/warning advisories should be heard at both crew positions. The tones should be approximately 6db lower than the tones heard in previous step.

5.5 SYSTEM CONFIGURATION

5.5.1 Appendix A contains procedures for configuring the EGPWS.

5.5.2 Appendix B contains procedures for preparing and loading a command file.

6.0 ELECTRICAL DIAGRAMS

Instructions for Continued Airworthiness
HONEYWELL MARK XXII EGPWS

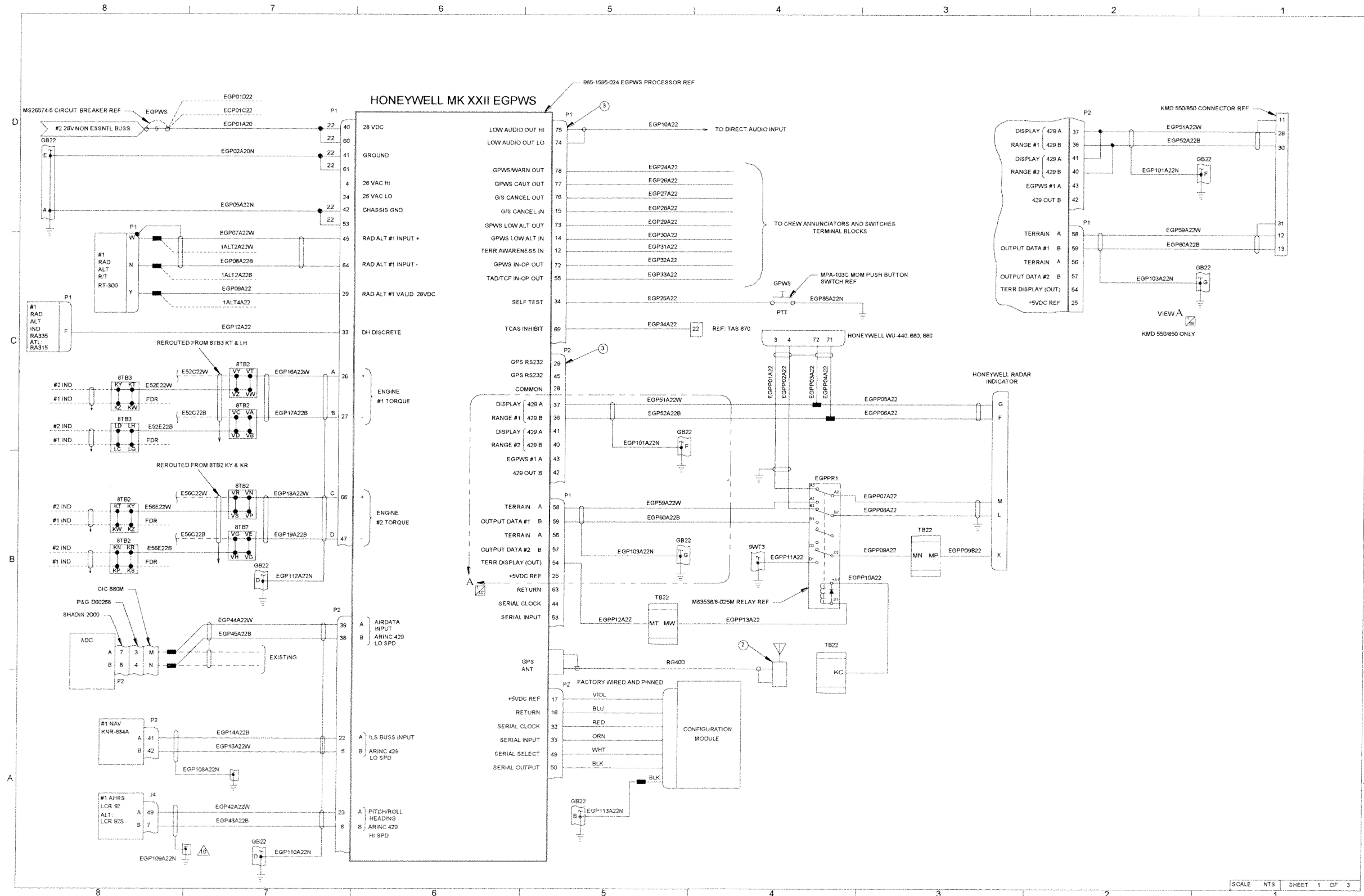


FIGURE 6-1 (SHEET 1 OF 3). WIRING DIAGRAM

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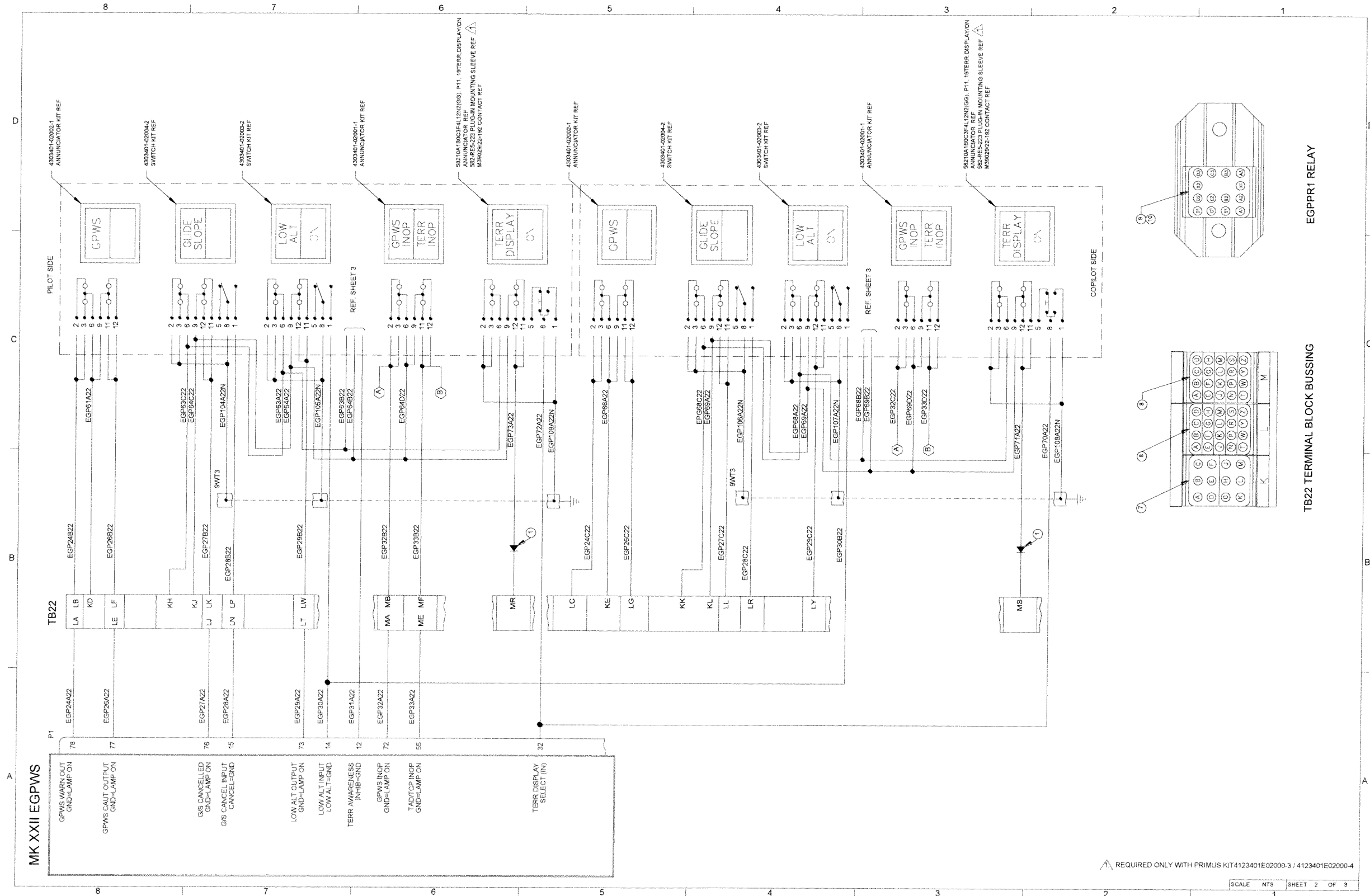


FIGURE 6-1 (SHEET 2 OF 3). WIRING DIAGRAM

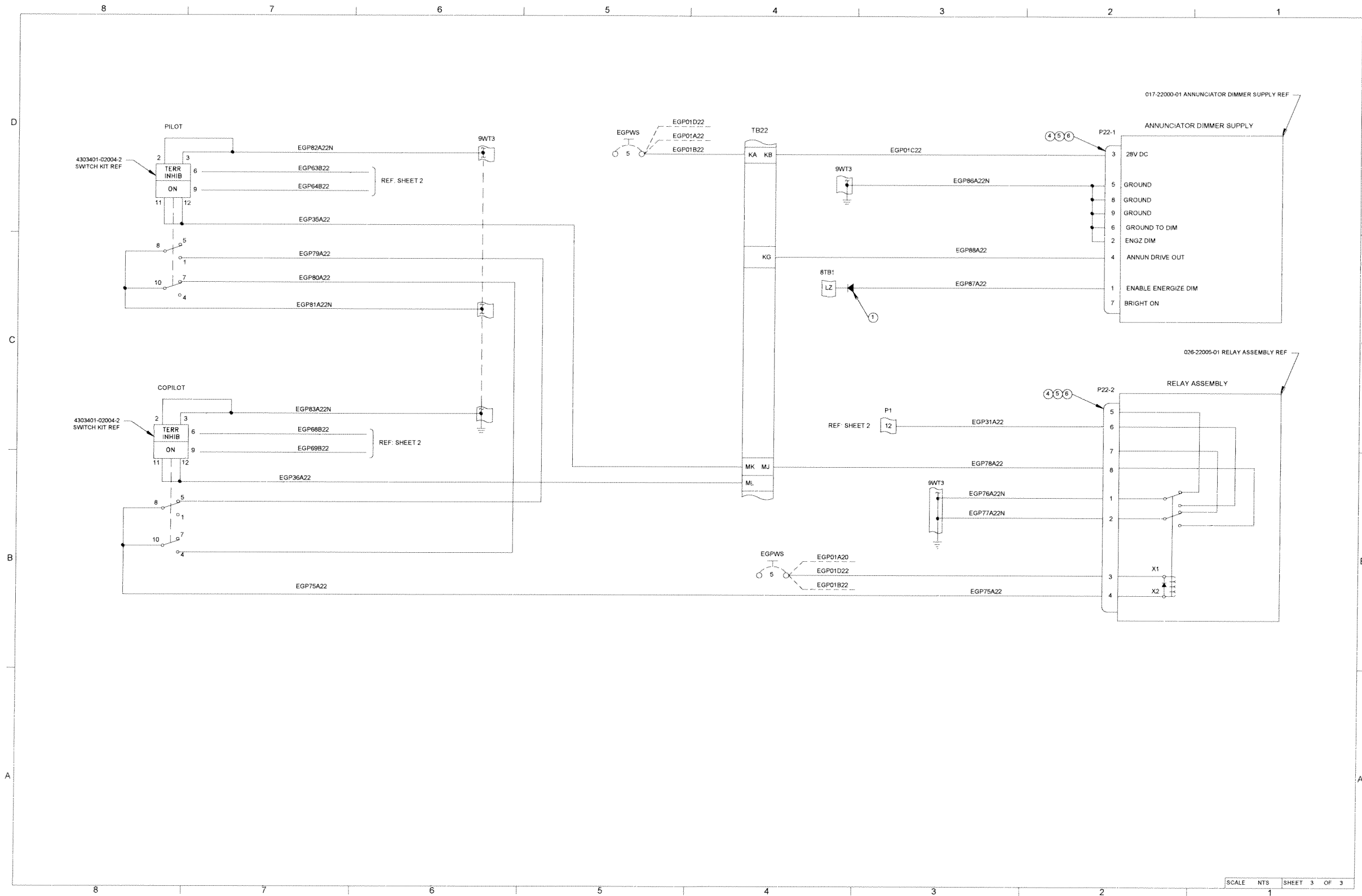


FIGURE 6-1 (SHEET 3 OF 3). WIRING DIAGRAM

7.0 PARTS LIST

7.1 Tables 7-1 thru 7-6 contain Parts Breakdown data for the Mark XXII EGPWS. The column Availability Code (AV Code) specifies the procurement status for each part. The codes to identify if a part is procurable, procedure details to get an assembly or local manufacture code are as follows:

AV Code	Details
0	Nonprocurable part
1	Procurable part
2	Procure as detail parts only
3	Procurable as Next Higher Assembly
4	Local manufacture. Contact AAI Product Support Engineering (PSE)
5	Part replacement requires a fixture or special equipment. Contact AAI PSE
6	Non-stock procurable part

**TABLE 7-1. PARTS BREAKDOWN, HONEYWELL MARK XXII EGPWS KIT,
4123401-00000-1 WITH KMD 550/850 // 4123401-00000-2 WITH KMD 550/850 (PROVISIONS KIT) //
4123401-00000-3 WITH PRIMUS 440/660/880 // 4123401-00000-4 WITH PRIMUS 440/660/880 (PROVISIONS KIT)**

Qty -1	Qty -2	Qty -3	Qty -4	Part Number	Description	AV Code
1		1		4123401-01000-1	Mark XXII EGPWS Computer Installation Kit	1
	1		1	4123401-01000-2	Mark XXII EGPWS Computer Installation Kit	1
1	1			4123401-02000-1	Mark XXII EGPWS Electrical Installation w/KMD 550/850	1
		1	1	4123401-02000-2	Mark XXII EGPWS Electrical Installation w/PRIMUS 440/660/880	1
1				4123401E02000-1	Electrical Installation Kit w/KMD 550/850	1
	1			4123401E02000-2	Electrical Installation Kit w/KMD 550/850	1
		1		4123401E02000-3	Electrical Installation Kit w/PRIMUS 440/660/880	1
			1	4123401E02000-4	Electrical Installation Kit w/PRIMUS 440/660/880	1
1		1		4123401-04000-1	GPS Antenna Installation Kit	1
	1		1	4123401-04000-2	GPS Antenna Installation Kit	1
1	1	1	1	4123401-05000-1	R/H Aft Equipment Shelf Installation Kit	1
2	2	2	2	099-050-121	Adhesive (Magnobond 6398 A&B)	1

**TABLE 7-2. PARTS BREAKDOWN,
MARK XXII EGPWS COMPUTER INSTALLATION KIT
4123401-01000-1 W/KMD 550/850 // 4123401-01000-2 W/PRIMUS 440/660/880**

Qty -1	Qty -2	Part Number	Description	AV Code
1	1	965-1595-024	EGPWC (Alt: 965-1590-010)	1
4		404SE632-08-2	Insert	1
2		NAS1149DN616J	Washer	1
4		MS35206-216	Screw	1

**TABLE 7-3. PARTS BREAKDOWN,
HONEYWELL MARK XXII EGPWS ELECTRICAL INSTALLATION,
4123401-02000-1 W/KMD 550/850 // 4123401-02000-2 W/PRIMUS 440/660/880**

Qty -1	Qty -2	Part Number	Description	AV Code
1	1	017-22000-01	Annunciator Dimmer Switch	1
2	2	4303401-02001-1	Annunciator Kit (GPWS, INOP/TERR, INOP)	1
2	2	4303401-02002-1	Annunciator Kit (GPWS/GPWS)	1
2	2	4303401-02003-2	Switch Kit (LOW,ALT/ON)	1
2	2	4303401-02004-2	Switch Kit (TERR,INHIB/ON)	1
2	2	4303401-02005-2	Switch Kit (GLIDE,SLOPE/CANCEL)	1
1	1	026-22005-01	Relay Assembly	1
4	6	80-005-1-8	Insert	1
4	4	80-005-2-8	Insert	1
1	1	M81714/63-20F	Ground Block	1
1	1	M81714/67-05	Rail	1
1	1	MPA-103C	Momentary Push Button Switch	1
2	2	MS21042L3	Nut	1
1	1	MS26574-5	5-Amp Circuit Breaker	1
4	4	MS27039-0808	Screw	1
6	6	MS27039-1-08	Screw	1
6	6	NAS1149D0332J	Washer	1
6	6	NAS1149DN816J	Washer	1
	2	58210A1B0C3F4L12N(CG)P11, 19TERR,DISPLAY/ON	Switch	1
	2	582-RE5-223	Plug-In Mounting Sleeve	1
	18	M39029/22-192	Contact	1
	1	M12883/53-001	Rail	1
	2	MS24694-S3	Screw	1

**TABLE 7-4. PARTS BREAKDOWN, ELECTRICAL INSTALLATION KIT,
4123401E02000-1 // 4123401E02000-2 WITH KMD 550/850
4123401E02000-3 // 4123401E02000-4 WITH PRIMUS 440/660/880**

Qty -1	Qty -2	Qty -3	Qty -4	Part Number	Description	AV Code
3	3	3	3	1N4005	Diode	1
1	1	1	1	225554-6	Connector, 90° TNC	1
1				755-7013-005	Install Kit	1
2	2	2	2	D20419-18	Screw Clip	1
2	2	2	2	DE24657	Backshell	1
2	2	2	2	DEMA9S	Connector, D Sub	1
1	1	1	1	M81714/60-20-02	Terminal Block	1
2	2	2	2	M81714/60-22-05	Terminal Block	1
1	1	1	1	M83536/6-025M	Relay, 4DPT	1
	1	1	1	M12883/52-002	Socket, 4DPT	1

**TABLE 7-5. PARTS BREAKDOWN,
4123401-04000-1 / 4123401-04000-2 GPS ANTENNA INSTALLATION KIT**

Qty -1	Qty -2	Part Number	Description	AV Code
1	1	4123401-04001-1	Doubler	1
1		050-03318-0000	Install Kit KA 92	1
1		071-01553-0200	KA 92 GPS Antenna	1
14	14	MS20470AD4-4	Rivet	1
4	4	MS21059L08	Nut Plate	1
8	8	NAS1097AD3-3	Rivet	1

**TABLE 7-6. PARTS BREAKDOWN,
4123401-05000-1 R/H AFT EQUIPMENT SHELF INSTALLATION KIT**

Qty	Part Number	Description	AV Code
1	4123401-05001-1	Equipment Shelf	1
1	4123401-05001-2	Contour Angle	1
1	4123401-05001-3	Inboard Angle	1
1	4123401-05001-4	Aft Zee Angle	1
1	4123401-05001-5	Forward Inboard Angle	1
1	4123401-05001-6	Forward Outboard Angle	1
8	404SE1032-08-2	Insert	1
10	80-011-P10D1-0	Thru-Bolt Plug	1
10	80-011-S10D08-0	Thru-Bolt Sleeve	1
10	AN3-10A	Bolt	1
20	MS20426AD3-4	Rivet	1
26	MS20426AD4-6	Rivet	1
5	MS21042L08	Nut	1
10	MS21059L3	Nut Plate	1
5	MS27039-0805	Screw	1
15	MS27039-1-07	Screw	1
25	NAS1149D0332J	Washer	1
10	NAS1149DN816J	Washer	1

APPENDIX A – EGPWS SYSTEM CONFIGURATION

APPENDIX A – EGPWS SYSTEM CONFIGURATION

System ID Configuration

Each category provides information relative to aircraft interfaces or EGPWS functional options required or used for EGPWS operation.

This programming is accomplished using a programming software tool available from Honeywell (WinVIEWS) or generating a data text string and transferring this data (in either case) via the EGPW Computer (EGPWC) RS-232C interface to the configuration module. Once programmed, the configuration is available and read by any installed EGPWC on power up.

The following table lists the configuration ID numbers used in the EGPWS installation in the 412EP.

Category		ID Number	
1	Aircraft / Mode Type Select	141	Bell 412 w/ DC torque type 11
2	Air Data Input Select	1	ARINC 429
3	Position Input Select	2	Internal GPS
4	Altitude Callouts	128	
5	Audio Menu Select	128	
6	Terrain Display Select	0	KC Picture Bus (KMD 550/850)
7	Group 1 Options Select	31	
8	Radio Altitude Input Select	3	Analog (RT 300)
9	Navigation Input Select	4	ARINC 429 LOC/GS/TTL
10	Attitude Input Select	128	ARINC 429 – LCR 92
11	Heading Input Select	2	ARINC 429 – LCR 92
12	Windshear Input Select	0	Not available on helicopters
13	I / O Discrete Select	129	
14	Audio Output Level	0	Normal
15	Autorotation Threshold	12	6 %

The EGPWC reads the aircraft configuration from the Configuration Module, which is installed in the EGPWC connector. The Configuration Module must have the aircraft specific configuration ID string written to it before the EGPWS is operational.

For programming the Configuration Module, the following procedure is used:

1. Verify EGPWC interface to P2 connector (including Configuration Module) and RS-232 interface to PC.
2. Power EGPWC and PC and start WinVIEWS.

APPENDIX A – EGPWS SYSTEM CONFIGURATION

3. With WinVIEWS active in the Terminal Mode, configuration sub-mode commands are available for programming purpose. Type “CFG” at the Terminal Mode prompt (>). At this point, the CFG> prompt is displayed and the program and EGPWC are ready for entering the program command and data string. Type “HELP” or “?” to display a list of the Terminal Mode commands and their description. “CUW” is the preface command for entering the ID string.
4. Using the Category ID's listed above, create a command string with the following structure:

CUW 0/15 141 1 2 128 128 0 31 3 4 128 2 0 129 0 12/

CUW<space>0 is the command and version number. CUW writes the category ID's defined by version 0 definition (0 is the only version currently available) to the Configuration Module via the EGPWC without a CRC (checksum) value attached (this is generated by the EGPWC when the data is transmitted).

- /15 indicates the beginning of the data string (/) with 15 being the number of categories to follow.

- <space><Cat 1 ID#><space><Cat 2 ID #>...<Cat 14 ID#>/ each Cat ID#.

The ending slash (/) indicates the end of the data string.

Note

If 15 ID's do not follow “/15”, the error message “*Invalid Parameter. Not enough ID's. Configuration update failed, please try again.*” will be given. The value entered for each category must be an available ID for the associated category or a similar error message will be given. If the number of categories provided is less than 15 (e.g., “/8 # ... #/” with eight ID's defined), then the remaining categories (9 through 15) will be set to 0.

APPENDIX A – EGPWS SYSTEM CONFIGURATION

After completing the data string as defined above, pressing ENTER the cursor will flash waiting for an answer “Y” or “N”. Pressing the Y (or y) key confirms the data and sends the data to the EGPWC to write to the Configuration Module.

Note

Using Kermit or a similar terminal emulator pressing ENTER results in a question: “**Confirm this data reflects configuration to be programmed (Y/N)**”. Pressing the Y (or y) key confirms the data and sends the data to the EGPWC to write to the Configuration Module.

Following the writing to the Configuration Module the EGPWC is automatically rebooted in order for the new configuration to take affect.

Note

If when the ENTER key is pressed the question response is not given (cursor just moves to the next line), pressing any character key should provide the proper response.

Pressing the N key results in the message “**Command aborted – No configuration module change has been made**”. If necessary, revise the data to correct or change as necessary and continue as above. The backspace key can be used to make corrections.

5. Following the successful writing to the Configuration Module (no error messages) and EGPWC reboot, pressing **Control Z (Ctrl-Z)** restarts the WinVIEWS Terminal Mode communication.
6. There are a couple ways to now confirm the Configuration Module programming with the following being the preferred. As above, type “CFG” to restart the Configuration sub-mode. At the CFG> prompt, type “**CMR<Enter>**”. Each category and its associated ID is read from the Configuration Module and listed on the PC screen. Alternately, when not in the Configuration sub-mode, the command “**PS<Enter>**” (Present Status) will display EGPWC and configuration data.
7. Configuration Module programming is complete. If the “CFG >” prompt is still present type “**Exit<Enter>**” to exit the Configuration sub-mode.

Additional information on WinVIEWS and system configuration may be found in the Honeywell MK XXII installation manual.

APPENDIX B – COMMAND FILE

The command file is a simple text file that should include each CVT Item used in this test procedure. The command file that includes the CTV items for this test procedure is found on the following page. The file must be a 'Text Only' type of file, such as those created in the Microsoft Windows Note Pad program. It should have a filename extension of .CMD. Once this file is loaded, WinVIEWS can automatically display the current value of each parameter listed in the file.

1. Connect the PC to the EGPWS via the RS-232 cable as defined in Appendix A.
2. On the PC, start Windows 3.1, or higher.
3. Start the WinVIEWS program.
4. Under the File Menu select the "Load Command File" option and load the appropriate Command File.
5. Use F6 to select Data Display Mode. Each CVT Item listed in the Command File will be continuously updated at a rate of greater than once per second. The values shown for the CVT Items listed will be the test values.

**Instructions for Continued Airworthiness
HONEYWELL MARK XXII EGPWS
APPENDIX B – COMMAND FILE**

The format for the WinVIEWS command file is:

1. ASCII Text Only; no spaces
 2. A CVT Item as specified in the test procedure
 3. Each CVT Item Name is followed by a <return> or <enter>
- V returns value item (each CVT item must include a V)
F returns flag item (F is optional and may be included for troubleshooting)
Do not enter the CVT description in the command file

Command File Text		CVT Description
RawRA1	VF	Value of Raw Radio Altitude
ARA1Val	V	Value of Radio Altitude Valid
DHDsc	V	Value of Decision Height input
RawBAIt1	VF	Value of Barometric Altitude
RawBaroRt1	VF	Value of Barometric Rate (vertical speed)
RawCAS1	VF	Value of Calibrated Airspeed
RawSAT1	VF	Value of Static Air Temperature
ILSTuned1	V	Value of Tuned to Loc input
RawGS1	V	Value of Glideslope deviation
GPSLatitude1	VF	Value of GPS Latitude
GPSLongitude1	VF	Value of GPS Longitude
RawGAlt1	VF	Value of GPS Altitude
RawVFOM1	VF	Value of GPS vertical figure of merit
RawHFOM1	VF	Value of GPS horizontal figure of merit
RawRoll1	VF	Value of Roll Attitude input
RawPitch1	VF	Value of Pitch Attitude input
RawMHd1	VF	Value of Magnetic Heading input
GSCan	V	Value of Glideslope Cancel discrete input
TacticalSel	V	Value of Low Altitude discrete input
TerrDis	V	Value of Terrain Inhibit discrete input
DispRngOut1	v	Value of selected range on display
RawTorque1	VF	Value of raw torque input for engine #1
RawTorque2	VF	Value of raw torque input for engine #2

Inspection Record

APPENDIX C – INSPECTION RECORD

Inspection Record

Work Order Number: _____
Registration Number: _____
Serial Number: _____
Total Time: _____
Date: _____

Inspect in accordance with Section 3.1.

- 1. Review the aircraft records for reported discrepancies and / or deferred maintenance items. _____
- 2. Inspect, troubleshoot, and correct discrepancies, if applicable. _____
- 3. Ensure that all applicable airworthiness directives, service bulletins, service letters and advisory letters have been complied with. _____
- 4. Replace all life limited components that have reached their published operating limit. _____

NOTE

There are no life limited components.

- 5. Overhaul all components that have reached their published overhaul period. _____

NOTE

There are no component overhauls required.

- 6. Inspect each component installation for physical damage and security of attachment. _____
- 7. Inspect wiring to each component for chafing and physical damage. _____
- 8. Inspect for corrosion at each component installation location. _____

Signature _____ A & P No. _____

Signature _____ Inspector _____