


REV <b>A</b>	<b>APPLICATION</b>			<b>REVISIONS</b>		
	PRODUCT LINE	REV	DESCRIPTION	DATE	APPROVED	APPROVED
SH <b>1</b>	IDU-III	A	Initial Release per DCN W5045	3/21/06	R. DuRall	D. Woodhurst
DWG. NO. <b>150-045039</b>						

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<b>APPROVALS</b>		<b>DATE</b>		<b>TITLE:</b> <b>SERVICE BULLETIN WSB IDU-III-19</b> <b>(RAM REPLACEMENT)</b>	
DRAWN	Robert DuRall	3/11/06			
CHECKED	Dean Boston	3/11/06			
PRODUCT MANAGER					
ENGINEER	Rober DuRall	3/11/06		SIZE	CAGE CODE
ISSUED	Diana Woodhurst	3/21/06		<b>A</b>	<b>1B7G3</b>
<b>Typed signatures indicate approval. Handwritten signature approval of this document is on file at Wulfsberg Electronics, Prescott, Arizona.</b>		SCALE: NONE		DWG NO. <b>150-045039</b>	
				REV <b>A</b>	
				DO NOT SCALE DRAWING	



**Wulfsberg Electronics**  
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## SERVICE BULLETIN

**EQUIPMENT:** IDU-III

**DATE:** 03-21-06

**INSTRUCTION NUMBER:** WSB IDU-III-19 Revision A

### **EFFECTIVITY**

This service bulletin applies to the following:

LRU P/N	HDWR Mod	SWID
401-045500-[ ]	0101	ALL

### **REASON**

This modification replaces the original RAM. The original RAM does not contain enough memory for EFIS software version 6.0 and above.

### **DESCRIPTION**

Replace 64MB RAM with 128MB RAM for EFIS software version 6.0 and above.

### **COMPLIANCE**

Required for upgrade to EFIS software version 6.0 and above.

### **WARRANTY INFORMATION**

This is a user upgrade option and is not covered under any warranty.

### **APPROVAL**

This modification does not affect the original approval.

### **MANPOWER**

0.5 man-hours per IDU.

### **REFERENCES**

System Installation Instructions, 150-045264 and IDU-III and Mounting Tray Maintenance Manual, 150-045239.

### **MATERIAL INFORMATION**

The parts required to modify this unit in accordance with this Service Bulletin are available from Chelton Flight Systems at (208) 389-9959.

## **PARTS REQUIRED**

<b>ITEM</b>	<b>QTY</b>	<b>U/M</b>	<b>PART NUMBER</b>	<b>DESCRIPTION</b>	<b>REF</b>
1	1	ea	106-742225-128	RAM, 128MB NON-ECC SDRAM	Figure 5
2	2	ea	156-040123-01	WARRANTY SEAL	Figure 1
3	1	ea	308 005-9BJOD	PEN, 0.5", PERMINATE, STAEDTLER	Step 13
4	1	ea	N/A	VALIDATION BOARD, IDU-III, REV 2	
5	1	ea	320-145500-0101	VALIDATION CARD, SMARTMEDIA	
6	1	ea	VARIOUS	KEYBOARD, PS/2 COMPATIBLE	
7	1	ea	VARIOUS	POWER SUPPLY, 0-30VDC	

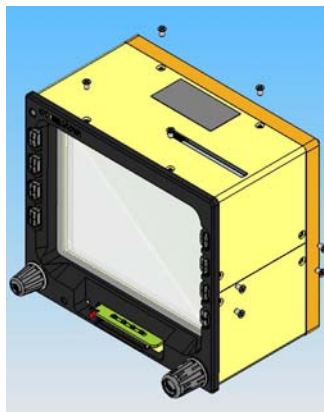
## **MODIFICATION PROCEDURE**

### **CAUTION**

ANY DISASSEMBLY/ASSEMBLY OF THIS UNIT MUST BE DONE AT A STATIC SAFE WORKSTATION. REMOVED MODULES SHOULD BE PLACED IN ANTISTATIC BAGS WHEN NOT INSTALLED IN THE UNIT.

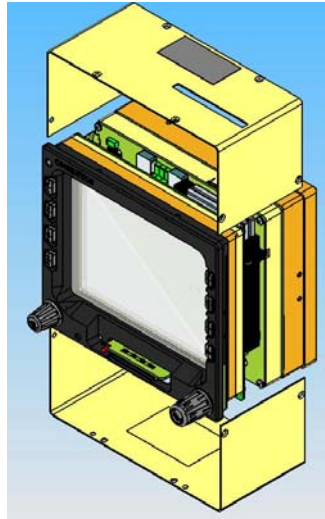
## **IDU MODIFICATION**

1. Remove (2) Warranty seals and (16) 4-40 x 3/16" screws on the IDU from the top and bottom covers as shown in Figure 1.



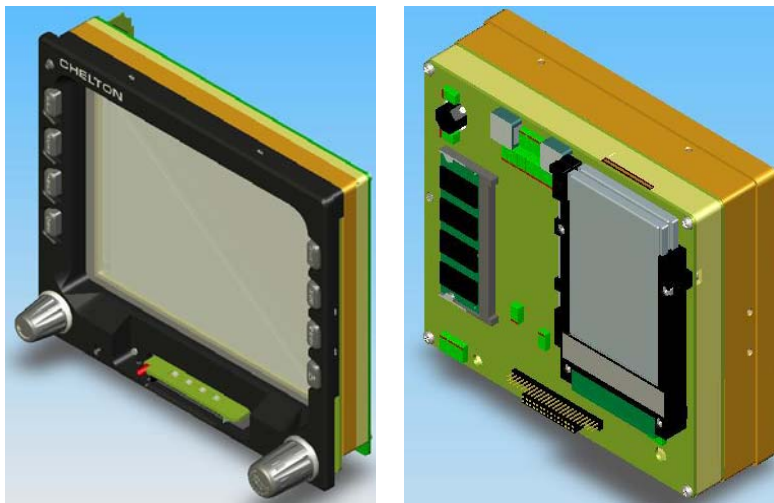
**Figure 1 Cover Screws (x16)**

2. Remove the top and bottom enclosures as shown in Figure 2.



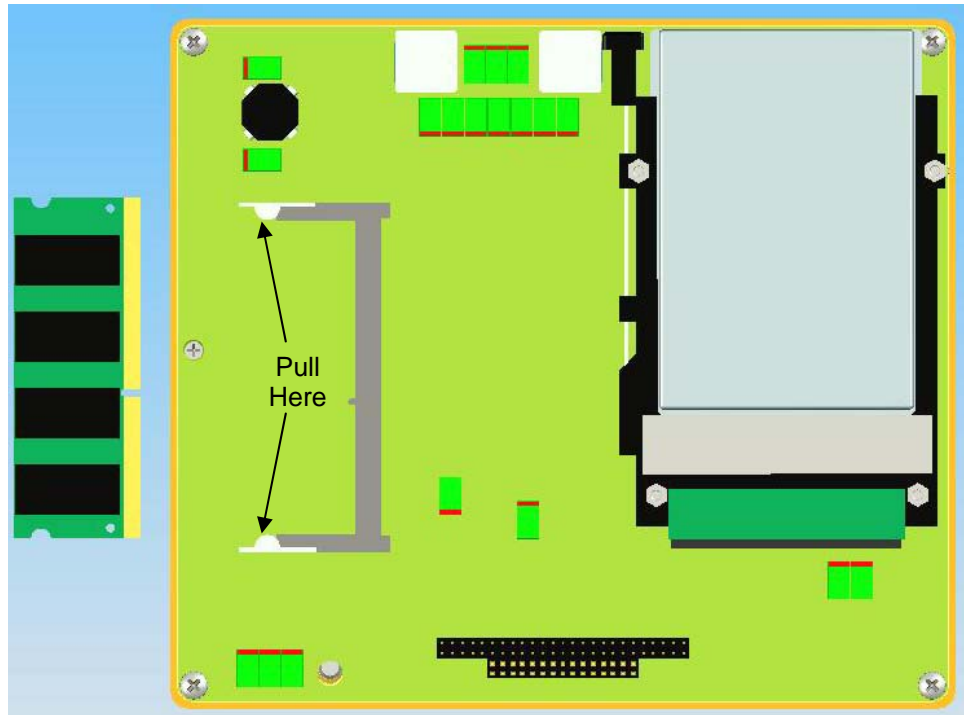
**Figure 2 Top and Bottom Covers**

3. Remove the bezel and display assembly by gently pulling away from the rest of the unit as shown in Figure 3.



**Figure 3 IDU Separated**

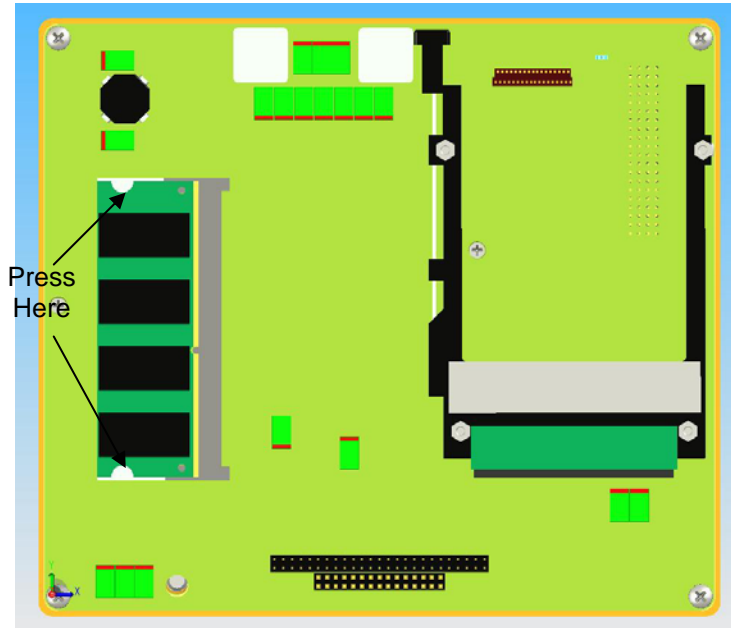
4. Locate and remove the 64MB RAM module from the SO-DIMM connector on the CPU board by gently pulling the locking tabs apart allowing the RAM assembly to rotate away from the CPU board as shown in Figure 4.



**Figure 4 RAM Removal**

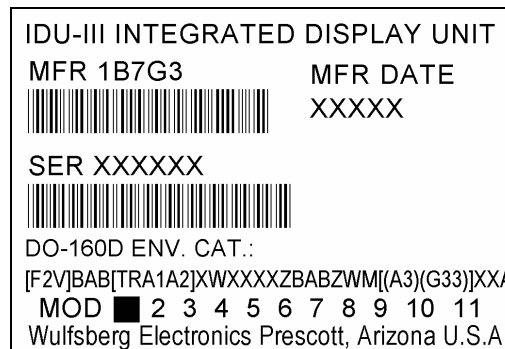
5. Grasp the RAM module and pull away from the CPU board.
6. Install the new 128MB RAM (Item 1) into the SO-DIMM connector ensuring the locator slot on the RAM module mates with the locator ridge on the connector.
7. Push down on the RAM module until the connector locking tabs seat the module into the connector.

8. Ensure the module mates with the connector by gently pressing the locking tabs together as shown in Figure 5.



**Figure 5 RAM Insertion**

9. Assemble the bezel and display assembly removed in step 3 onto the CPU board assembly. Ensure the pins on the bezel and display assembly properly mate to the J3 and J4 connectors on the CPU board.
10. Place the top and bottom enclosures removed in step 2 over the assembly.
11. Apply a light coating of 222 Loctite<sup>®</sup> onto the threads and attach (16) 4-40 x 3/16" screws removed in step 1.
12. Attach (2) Warranty seals (Item 2) onto the sides of the IDU. Ensure one screw on the top and bottom enclosures is completely covered with the seal on each side.
13. Mark out MOD "1" on the IDU-III ID Label using indelible ink (Item 3) as shown in Figure 6.



**Figure 6 ID Label Marking**

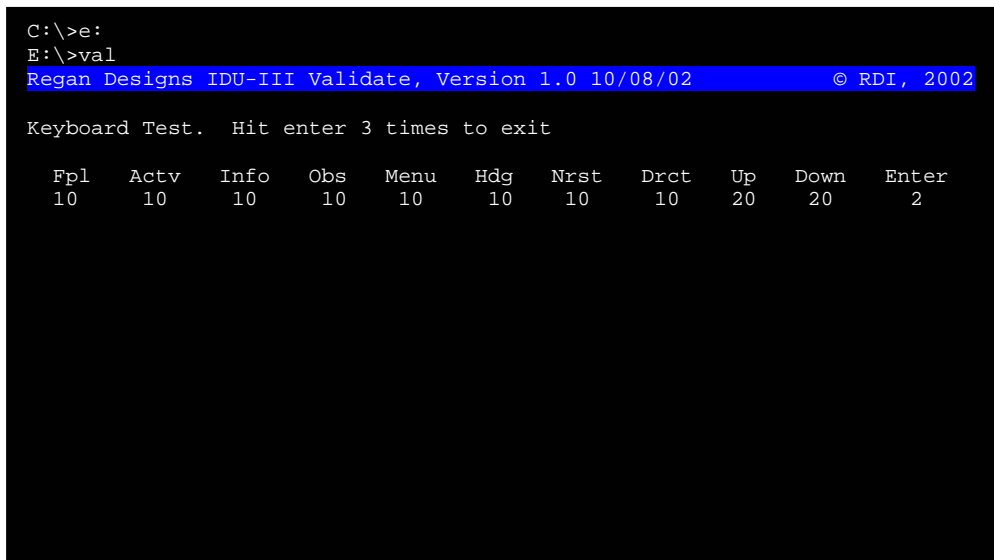
## TESTING PROCEDURE

### SETUP

1. Attach the IDU to the IDU-III Validation Board (Item 4).
2. Insert the SmartMedia card with the validation program “*val.exe*” (Item 5) into the IDU.
3. Connect a keyboard to the test board (Item 6).
4. Set the output of an external power supply to 24VDC +/- 1VDC (Item 7).
5. Turn OFF the power supply (Item 7).
6. Connect the power supply (Item 7) to the test board (Item 4) using the power cable.
7. Turn ON the power supply (Item 7).
8. Verify the IDU displays the Ground Maintenance Menu.
9. Press and hold the <CTRL> then the <C> keys on the keyboard (Item 6).
10. Verify the IDU displays the “C:\” or “D:\” prompt.
11. Type “E:\” then <ENTER> to change to the SmartMedia card.
12. Type “*val.exe*” then <ENTER> to run the test program.

### BEZEL TEST

13. Press each of the 8 bezel keys (FPL, ACTV, INFO, OBS, MENU, HDG, NRST, and  $\rightarrow$ ) a minimum of 10 times and verify that for each activation, the appropriate counter displayed on the IDU is incremented exactly once as shown in Figure 7.



```
C:\>e:  
E:\>val  
Regan Designs IDU-III Validate, Version 1.0 10/08/02 © RDI, 2002  
  
Keyboard Test. Hit enter 3 times to exit  
  
Fpl   Actv   Info   Obs    Menu   Hdg    Nrst   Drct   Up    Down   Enter  
10    10     10     10     10     10     10     10     20    20     2
```

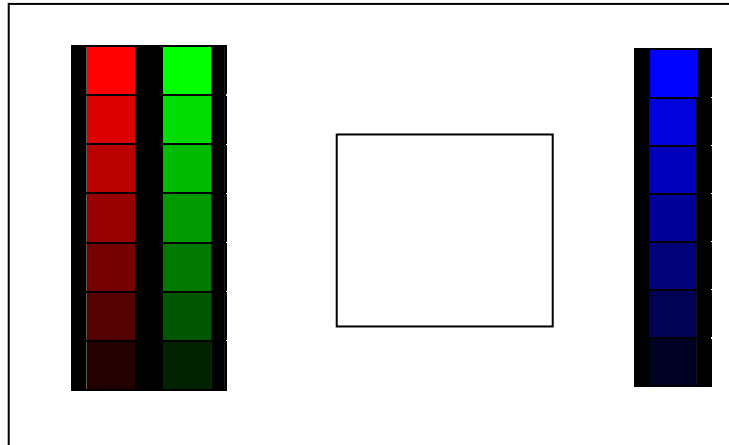
Figure 7 Bezel Test Page

14. Rotate the right-hand encoder knob clockwise at least 16 clicks and verify that the “up” count as displayed on the IDU increments exactly once for each click.
15. Rotate the right-hand encoder knob counter-clockwise at least 16 clicks and verify that the “down” count as displayed on the IDU increments exactly once for each click.
16. Rotate the left-hand encoder knob clockwise and verify that the LCD backlight becomes brighter.
17. Rotate the left-hand encoder knob counter-clockwise and verify that the LCD backlight becomes dimmer.
18. Press and turn the left-hand encoder knob clockwise and verify that the bezel key and encoder knob backlighting becomes brighter.
19. Press and turn the left-hand encoder knob counter-clockwise and verify that the bezel key and encoder knob backlighting becomes dimmer.
20. Press the right-hand encoder knob three times in a row (without turning the knob or activating any other key in between presses) and verify that the “enter” count as displayed on the IDU increments exactly once for each press. The IDU will proceed to the next test step upon the third encoder knob press.

### **Display Test**

21. Verify the fan speed dips momentarily after the completion of Step 20.
22. Inspect the IDU display for a defective screen. A defective screen is one that:
  - a. Contains more than five missing pixels within a 20mm area.
  - b. Contains a bright pixel of any color within 5mm of another bright pixel.
  - c. Contains five or more bright pixels of the same color within a 20mm area.

23. Verify the 1<sup>st</sup> test screen is displayed with the following as shown in Figure 8:
- 3 columns of 7 blocks each contain the primary colors red, green, and blue going from left to right.
  - The top block in each column displays the color at its full intensity.
  - Within each column, the color intensity decreases monotonically from top to bottom where each block has half the intensity of the block above it.



**Figure 8 1<sup>st</sup> Test Screen**

24. Press the right-hand encoder knob to advance to the 2<sup>nd</sup> screen.
25. Verify the 2<sup>nd</sup> screen is completely white.
26. Press the right-hand encoder knob to advance to the 3<sup>rd</sup> screen.
27. Verify the 3<sup>rd</sup> screen is completely black.
28. Press the right-hand encoder knob to advance to the 4<sup>th</sup> screen.
29. Verify the 4<sup>th</sup> screen is completely red.
30. Press the right-hand encoder knob to advance to the 5<sup>th</sup> screen.
31. Verify the 5<sup>th</sup> screen is completely green.
32. Press the right-hand encoder knob to advance to the 6<sup>th</sup> screen.
33. Verify the 5<sup>th</sup> screen is completely blue.
34. Press the right-hand encoder knob to advance to the next test.

## Backlight Test

35. Verify that the screen displays a completely white screen at maximum intensity as shown in Figure 9.



**Figure 9 Backlight Test Screen (Full Intensity)**

36. Ensure the backlight is uniform with no marked bright or dim spots and no gradient from side to side, top to bottom, or bottom to top.
37. Press the right-hand encoder knob and verify that the screen displays a completely white screen at minimum intensity.
38. Ensure the backlight is uniform with no marked bright or dim spots and no gradient from side to side, top to bottom, or bottom to top.
39. Press the right-hand encoder knob to advance to the next test.

## I/O Module Test

40. Pressing the right-hand encoder knob in Step 39 starts the I/O Module test. Verify that a short sound clip is played at a “reasonable” level at the start of the test.

41. Verify that the I/O Module test continues by the display of white dots across the bottom of the screen as shown in Figure 10.



**Figure 10 I/O Module Test (in Progress)**

42. Verify that the test reports that the hardware passed the test and a short sound clip is played at a “reasonable” level at the completion of the test as shown in Figure 11.



**Figure 11 I/O Module Test (Passed)**

43. Press the right-hand encoder knob and verify that the IDU reboots and displays the Ground Maintenance menu.

**NOTE:** Failure to display the Ground Maintenance menu is a failure of the I/O module test.

## Finish

44. Remove power from the IDU (Item 7).
45. Remove the SmartMedia card from the IDU (Item 5).
46. Remove the Validation Board from the IDU (Item 4).
47. Inspect and clean the front bezel, buttons, and encoder knobs with a damp cloth and a mild cleaning solution.
48. Clean the LCD screen with isopropyl alcohol and a clean, soft cloth as necessary.

## **COMPLETION**

Complete this Service Bulletin by documenting that the IDU contains MOD level "1" on the appropriate paperwork and Certification of Airworthiness.