


REV	A	APPLICATION			REVISIONS	
		PRODUCT LINE	REV	DESCRIPTION	DATE	APPROVED
SH	1	IDU-III	A	Initial Release per DCN W3690	06/23/04	V. Wallace D. Cureton
DWG. NO.	150-045610					

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APPROVALS	DATE		
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PRODUCT MANAGER			
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Typed signatures indicate approval. Handwritten signature approval of this document is on file at Wulfsberg Electronics, Prescott, Arizona.		SCALE: NONE	REV A
		DO NOT SCALE DRAWING	



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SERVICE BULLETIN

EQUIPMENT: IDU-III

DATE: June 23, 2004

BULLETIN NUMBER: WSB IDU-III-10 Revision A

EFFECTIVITY

This service bulletin applies to the following:

LRU P/N	HDWR Mod	SWID
401-045500-[]	0101	4.1A or Lower

REASON

Problem Resolutions:

1. Calculate turn radius for flight plans ahead of active flight leg.
2. Allow display and transition to DPs after first waypoint.
3. Increase parallel holding pattern entry to 5 legs.
4. Add support for dynamically calculated legs.
5. Correct holding pattern and procedure turn speed use.
6. Correct holding pattern entry distance to comply with guidance found in AIM.
7. Correct DR indication to flag when actually dead reckoning.
8. Disable position based TAWS functions only when HFOM exceeds appropriate HAL.
9. Modify VNAV system to continuously compute waypoint altitudes, and to base climb altitudes on the higher of the set climb angle or the actual climb angle being achieved by the aircraft.
10. Correct GPS ellipsoid altitude to geodetic altitude.
11. Implement GPS altitude smoothing to increase accuracy and prevent sinusoidal fluctuations in poor signal conditions.
12. Set bank output of Crossbow AHRS to 0 when GROUND mode is detected.
13. Break up NEAREST function to minimize screen freezing.
14. Add direction test to automatic waypoint transition to prevent transition if aircraft heading is not within 90 degrees of desired track.
15. Add Terrain alarm efficiency enhancements.
16. Disable glideslope functionality and GPWS Mode 5 when on Back Course.
17. Inhibit drawing active path with discontinuity or SUPPRESS.
18. Inhibit drawing waypoint symbol at runway end that is start of DP.
19. Compute destination values and ETE based upon route of flight instead of direct path and eliminate bearing display from DEST block.
20. Allow TAWS VSI to be from GPS when barometric is not available.

21. Continuously check proximity of active or DP runway for TAWS automatic inhibiting.
22. Use runways from nearest 3 airports for nearest runway automatic inhibit function.
23. Extend HTAWS FLTA range from 30 seconds to 36 seconds.
24. Set previous altitude when GPWS Mode 4 alarm is NORMAL.
25. Change GPWS Mode 5 glideslope re-arm altitude to 1000 feet.
26. Add alarm envelope for GPWS Mode 2.
27. Increase EFIS cooling caution threshold to 95 degrees C.
28. Change "Level Off" from warning to a normal annunciation and inhibit within approach procedures.
29. Draw route depiction on top of runway to clarify beginning of missed approach procedure.
30. Correct flight plan waypoint selection based upon interface testing with Honeywell KMD540.
31. Correct the appearance of the INFO function.
32. Revise traffic alert logic so that new alerts cause fresh warnings and popups.
33. Remove leading "K" from US ICAO airport identifiers on Com9.

Customer Requested Feature Additions/Changes:

1. Increase the maximum user waypoints to 500.
2. Enable multiple flight plans between same points.
3. Remove heading bug warning.
4. Change the "TABS" button to read "MAINS".
5. Allow DIRECT-TO function to be used for any selected waypoint within an approach procedure.
6. Add 5 minute increments to the countdown timer function.
7. Change "SYNCH" abbreviation to "SYNC".
8. Add OBS SYNC function to quickly align the HSI course pointer with aircraft heading.
9. Add 400NM range to Map page.
10. Add support of V1, V2, Vr and Vref to V-speed bug settings.
11. Add airway flight planning functions.
12. Add ILS, FSS and Enroute Comms (ARTCC) to remote tuning operation.
13. Expand fuel flow display in "SET FUEL" menu to show finer increments and to show individual engines.
14. Enable display of Mach on PFD.
15. Allow independent MFD settings so pilot and copilot can have individual settings for the respective MFDs.
16. Add remote tuning functions to send radio frequency tuning to Honeywell KX155A and KX165A radios.
17. Add lateral acceleration for slip-skid indication.
18. Add support to "lock out" menus of other IDUs when a menu is active.
19. Get frequencies for inserted procedure waypoint objects.

Other Changes:

1. Add “AP Valid Polarity”, “Mach Enabled”, ARINC-429 options, Pitch Limit Indicator option, Remote Tuning option, Slip-Skid option, and “Vmfe” to IDU Limits Version 4.
2. Remove countdown chime from prioritized warnings.
3. Use set speed bug for Glidepath calculations.
4. Allow flight path marker to be displayed immediately upon sensor initialization.
5. Limit recalculation of skyway offsets to legs ahead of aircraft to reduce skyway jitter.
6. Remove VLOI from the FAULTS menu.
7. Break-up matches function to minimize screen freezes.
8. Increase access speed for NEAREST function.
9. Limit runway selections for DP to prevent unauthorized runway selections.
10. Increase rendering range to eliminate visible terrain edges.
11. Add color-keyed airspaces in accordance with AC23.1311.
12. Add map auto declutter settings with terminal fixes and airways not shown.
13. Show obstructions generating an alarm differently from non-alarm obstructions.
14. Initialize demonstrator fuel to full to eliminate “FUEL LOW” flag immediately after starting.
15. Initialize AOA and AIU status in ground demonstrator.
16. Smooth ground demonstrator auto-throttle in level-off region.
17. Add Radar Altimeter invalid warning function.
18. Add ARINC-429 outputs for KFC-325 autopilots interfaced to a Honeywell EFIS-40/50 on Com23 and Com24.
19. Modify scaling of ARINC-429 flight director acquisition.
20. Add EFIS Valid discrete output for IDUs with SCC #0, 2, 3, and 4.
21. Expand VSI range to +/-9999fpm.
22. Allow display of attitude when acceleration data is failed or not present.
23. Display Fast/Slow indication on PFD from ARINC-429 AOA source.
24. Limit Radar Altimeter values to +20 to +2500 feet.
25. Add ARINC-429 AGL altitude and altimeter settings to standard output for support of RVSM ADC's.
26. Add “Descend Now” option to VNAV to immediately descend at the set descent angle.
27. Increase contrast of water colors on Map page.
28. Adjust MFD colors for greater intensity for use as TAWS warning colors.
29. Add terminal fix functionality to flight plan manipulation and nearest functions.
30. Add altitude capture predictor symbology to show where target altitude will be attained.

DESCRIPTION

This modification updates the application software to 5.0A.

COMPLIANCE

Required for all installations.

WARRANTY INFORMATION

Units still in the warranty period may request this modification under the terms of the warranty agreement. Inquiries should be directed to “Customer Support” at the address listed below:

Chelton Flight Systems
1109 Main Street
Suite 560
Boise, Idaho 83702
Phone (208) 389-9959
Fax (208)389-9961

APPROVAL

This modification does not affect the original approval.

MANPOWER

1.0 Man-hours per aircraft.

REFERENCES

System Installation Instructions, 150-045264.

MATERIAL INFORMATION

The parts required to modify an IDU-III in accordance with this Service Bulletin may be obtained as follows.

Item 1 may be purchased from any office supply or other store selling computer and digital camera accessories.

Item 2 and items 8-12 may be ordered from Chelton Flight Systems at (208) 389-9959.

Item 3-5 are located on Item 2.

Items 6 and 7 may be downloaded from Chelton Flight Systems web site at www.cheltonflightsystems.com by selecting the “DOWNLOADS/FlightLogic – Certified” menu item.

PARTS REQUIRED

<u>ITEM</u>	<u>QTY</u>	<u>U/M</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1	2	ea	N/A	SmartMedia Card, 8MB – 64MB
2	1	ea	SB-10 Software	CD-ROM containing Items 3-5
3	1	ea	320-145239-050A	Software Load Module, Update Image 5.0A
4	1	ea	320-145965-050A	Software Load Module, Limits Image 5.0A
5	1	ea	320-145966-0153	IDU Limits Program v1.5.3
6	1	ea	320-145240-XXXX	Navigation Database 5.0 (latest cycle)
7	1	ea	320-145250-XXXX	Obstruction Database (latest cycle)
8	1	ea	150-045261	Instructions for Continued Airworthiness Rev H (Fixed Wing)
9	1	ea	150-045284	Instructions for Continued Airworthiness Rev B (Rotorcraft)
10	1	ea	150-045262	Airplane Flight Manual Supplement Rev C (Fixed Wing)
11	1	ea	150-045709	Rotorcraft Flight Manual Supplement Rev C (Rotorcraft)
12	1	ea	150-045240	Pilot's Operating Handbook Rev F

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.

1. Insert the SB-10 CD-ROM (Item 2) into a computer operating with Windows® 95 or greater and a SmartMedia card reader/writer attached.
2. From the "My Computer" window, open the CD-ROM icon to view the contents of the drive.
3. The CD-ROM contains 3 folders titled:
 - 320-145239-050A (Software Load Module, Update Image 5.0A) (Item 1)
 - 320-145965-050A (Software Load Module, Limits Image 5.0A) (Item 2)
 - 320-145966-0153 (IDU Limits Program v1.5.3) (Item 3)

4. Open the folder 320-145966-0153 (Item 3). Copy the “IDU Limits” program to the folder containing the previous version of the IDU Limits program on the hard drive.

IDU MODIFICATION

CAUTION

THIS SERVICE BULLETIN DESCRIBES THE PROCEDURES FOR UPDATING ONE EFIS SYSTEM ONLY. THE OPERATOR MUST ENSURE THAT ALL DATA HAS BEEN DELETED FROM ANY SMARTMEDIA CARDS USED FOR THIS SERVICE BULLETIN PRIOR TO STARTING THE UPDATE. FAILURE TO DELETE DATA MAY CORRUPT THE UPDATE PROCESS.

APPLICATION SOFTWARE UPDATE (PFD AND MFD)

1. Open the folder 320-145239-050A (Item 1) from the CD-ROM (Item 2).
2. Copy the program “Update.exe” to a blank SmartMedia card (8Mb-64Mb) (Item 1).
3. Extract the SmartMedia card from the reader/writer and access the aircraft.
4. Apply external power to the aircraft.
5. Insert the SmartMedia card in the PFD.
6. Apply power to the IDU and verify the Ground Maintenance menu is displayed.
7. Select item “B” to update the EFIS software.
8. Follow any instructions displayed on screen.

NOTE: Error messages “Limits mismatch” and “Bad command or file name” may be displayed on the unit during the update process. Disregard these messages as the Limits and Navigation database will be updated later in this Service Bulletin.

9. Upon completion of the update, the IDU will perform a scan of both drives, and then display the new Ground Maintenance menu.
10. Reboot the IDU by pressing the right and left encoders in at the same time for about 3 seconds.
11. Rotate the right-hand encoder until the “Update Databases, Limits, and Applications” option is highlighted and press the encoder.
12. Follow any instructions displayed on screen.
13. Upon completion of the update, the IDU will perform a scan of both drives, and then display the Ground Maintenance menu.
14. Remove power from the IDU.

15. Remove the SmartMedia card.

NOTE: Updating the software is the first step in the 5.0 update process. The EFIS will not be completely updated until the Software Update, Limits Update, and Navigation Update have been performed. IDUs may continually reboot until all three updates have been performed.

LIMITS UPDATE (PFD AND MFD)

1. Be sure to update the PFD first. If updating the PFD, proceed to the next step. If updating an MFD, proceed to Step 6.
2. Insert a blank SmartMedia card into the computer reader/writer. When reusing a SmartMedia card, be sure to erase all files and folders from the card before continuing.
3. Open the folder 320-145965-050A (Item 2) from the CD-ROM.
4. Copy the two programs "Upgrade.exe" and "DOS4GW.exe" to the SmartMedia card.
5. Extract the SmartMedia card from the reader/writer and access the aircraft.
6. Apply external power to the aircraft if required.
7. Insert the SmartMedia card with the files from Step 4 in the IDU.
8. Apply power to the IDU and verify the Ground Maintenance menu is displayed.
9. Rotate the right-hand encoder to highlight the "Update Databases, Limits and Applications" option and press in the encoder.
10. Follow any instructions displayed on screen.

NOTE: Do not remove power and extract the card at this time. The update process must be completed before removing power.

11. Upon completion of the update, the IDU will perform a scan of both drives, and then display the Ground Maintenance menu.
12. Remove power from the IDU after the Ground Maintenance menu is displayed.
13. Remove the SmartMedia card.

NOTE: Do not erase the data on the SmartMedia card. A new limits.txt file was written to this card when the PFD was updated, and will be used to update any additional IDUs installed on the aircraft.

NOTE: Updating the software and limits are two of the three steps required to complete the 5.0 update process. The EFIS will not be completely updated until the Software Update, Limits Update, and Navigation Update have been performed. IDUs may continually reboot until all three updates have been performed.

NAVIGATION AND OBSTRUCTION UPDATE (PFD AND MFD)

CAUTION

THE NAVIGATION DATABASE DOWNLOADED FROM THE CHELTON FLIGHT SYSTEMS WEB SITE MUST BE FOR VERSION 5.0A SOFTWARE. THE NAVIGATION DATABASE FOR VERSION 4.1A SOFTWARE WILL CAUSE THE IDU TO CONTINUALLY REBOOT.

1. Access the Chelton Flight Systems Download web site and download the latest version of the Navigation (Item 4) and Obstruction (Item 5) databases to the computer hard drive.
2. Insert a new SmartMedia card or reuse the card from the Software Update section of this Service Bulletin into the computer reader/writer. When reusing a SmartMedia card, be sure to erase all files and folders from the card before continuing.
3. Copy the programs "Navdata.exe" and "Obst.exe" from the computer hard drive to the SmartMedia card from step 2.
4. Extract the card from the reader/writer and access the aircraft.
5. Apply external power to the aircraft if required.
6. Insert the SmartMedia card with the latest version of 5.0 Navigation database (Item 4) and Obstruction database (Item 5) in the PFD.
7. Apply power to the IDU and verify the Ground Maintenance menu is displayed.
8. Rotate the right-hand encoder to highlight the "Update Databases, Limits and Applications" option and press in the encoder.
9. Follow any instructions displayed on the screen.
10. Remove power from the IDU after the Ground Maintenance menu is displayed.
11. Remove the SmartMedia card.

TESTING PROCEDURE

1. Apply power to the EFIS system and verify each IDU completes initialization and testing.
2. Verify the modified IDU displays:

FLIGHTLOGIC * REV 5.0A-10

SOFTWARE OK

on the status page.

*NOTE: * will be either "PFD" or "MFD" depending on the IDU location in the EFIS system.*

3. Press a key and verify IDU begins EFIS operation.

NOTE: If the IDU does not complete initialization and/or self-test, it may be necessary to repeat the modification process to reload the EFIS software, Navigation database, or Obstruction database. If the IDU does not operate properly after two load processes, contact Chelton Flight Systems Technical Support at (208) 389-9959.

MFD MODIFICATION

Repeat the Software Update, Limits Update, and Navigation Update sections of this Service Bulletin for each additional IDU in the aircraft.

LIMITS MODIFICATION (PFD ONLY)

NOTE: The following steps are required if new options are to be used.

1. Insert the SmartMedia card used in the "Limits Update (PFD and MFD)" section of this Service Bulletin into a SmartMedia card reader/writer connected to the computer.
2. Launch the IDU Limits program and open the "limits.txt" file on the SmartMedia card from the IDU Limits program window (See "Ground Maintenance" section of the EFIS Installation Manual for details).
3. Modify the limits as required for the new selections available (Mach Meter display, ARINC-429 receive port speed, EFIS valid polarity, remote Com radio tuning option, digital Slip Indicator option, and Pitch Limit Indicator option).
4. Store the changed limits on the SmartMedia card as "limits.txt".
5. Remove all files on the SmartMedia card except "limits.txt" using the Windows® operating system.
6. Extract the SmartMedia card from the reader/writer and access the aircraft.

7. Apply external power to the aircraft as required.
8. Insert the SmartMedia card in the PFD.
9. Apply power to the EFIS system and verify the PFD displays the Ground Maintenance menu.
10. Rotate the right-hand encoder to highlight the "Update Databases, Limits and Applications" option and press in the encoder.
11. Follow any instructions displayed on screen.
12. Once the IDU returns to the Ground Maintenance menu rotate the right-hand encoder to highlight the "View System Limits (CPU#0 or CPU#1 Only)" option and press in the encoder.
13. View all of the pages in the System Limits to verify that the new limits data is correct.
14. Remove power from EFIS system after the Ground Maintenance menu is displayed.
15. Remove SmartMedia card from PFD.

IDENTIFICATION PROCEDURE

No external marking required.

DOCUMENT UPDATE

1. Remove and replace the Airplane Flight Manual Supplement (Item 10) or Rotorcraft Flight Manual Supplement (Item 11) as required from the aircraft's POH. Destroy the removed version.
2. Write the aircraft make, model, registration number, and serial number on the front page of the FMS.
3. Remove and replace the Instructions for Continued Airworthiness (Item 8 or 9 as required) from the aircraft's log books. Destroy the removed version.
4. Remove and replace the Pilot's Operating Handbook (Item 12). Destroy the removed version.