


REV	APPLICATION			REVISIONS						
	SH	1	A	PRODUCT LINE	REV	DESCRIPTION	DATE	APPROVED	APPROVED	
DWG. NO.	150-045973			IDU-III	A	Initial Release per DCN W3184	11/18/2003	Vern Wallace	Robert DuRall	

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APPROVALS		DATE		TITLE: SERVICE BULLETIN WSB IDU-III-9 (DEPARTURE AND MISSED APPROACH PROCEDURE)	
DRAWN Robert DuRall		11/18/2003			
CHECKED Dean Boston		11/18/2003			
PRODUCT MANAGER Mark McCormack		11/18/2003			
ENGINEER		SIZE	CAGE CODE	DWG NO.	REV
ISSUED Vern Wallace		A	1B7G3	150-045973	A
Typed signatures indicate approval. Handwritten signature approval of this document is on file at Wulfsberg Electronics, Prescott, Arizona.		SCALE: NONE		DO NOT SCALE DRAWING	



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SERVICE BULLETIN

EQUIPMENT: IDU-III

DATE: November 18, 2003

BULLETIN NUMBER: WSB IDU-III-9 Revision A

EFFECTIVITY

This service bulletin applies to the following:

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

REASON

Equipment can give hazardously misleading guidance into non-protected areas in certain departure and missed approach procedures. This bulletin describes how to recognize the hazardous condition and procedures for continued safe operation.

DESCRIPTION

This bulletin describes how to recognize when misleading guidance into non-protected areas is being displayed and describes procedures for continued safe operation.

COMPLIANCE

Mandatory

CANCELLATION

This service bulletin is cancelled upon updating of software to version 5.0A.

WARRANTY INFORMATION

This modification is an enhancement and is not covered under warranty.

APPROVAL

This modification does not affect the original approval.

MANPOWER

Not Applicable.

REFERENCES

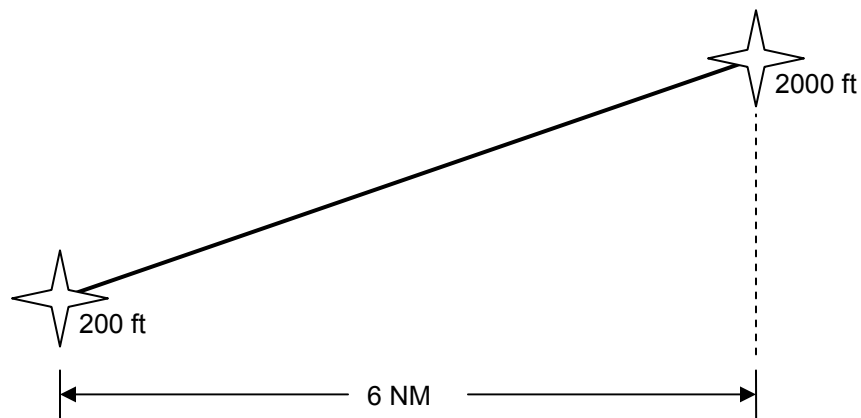
MATERIAL INFORMATION

None

BACKGROUND

The Chelton equipment is designed to provide guidance for altitude legs (ARINC424 leg types CA, VA and FA). Altitude legs begin at a certain altitude/location and climb in a specified direction until terminating at a specified altitude. The length of an altitude leg is dependent upon the climb performance of the aircraft.

In the current software, altitude leg length is pre-computed based upon database start and end altitudes and a climb rate of 300 feet per nautical mile. The software then places a phantom fix (waypoint symbol without a name) at the calculated end of climb point that is used for navigation guidance. This methodology does not take into account the aircraft's actual climb performance. The diagram below shows how altitude leg length is computed in the current software:



$$\text{Leg Length} = (2000\text{ft} - 200\text{ft}) / 300\text{ft per NM} = 6\text{NM}$$

This methodology is safe under most circumstances because 300 feet per nautical mile exceeds the standard TERPS climb rate of 200 feet per nautical mile. However, under certain circumstances, this methodology can result in hazardously misleading guidance into non-protected areas. These circumstances are described below:

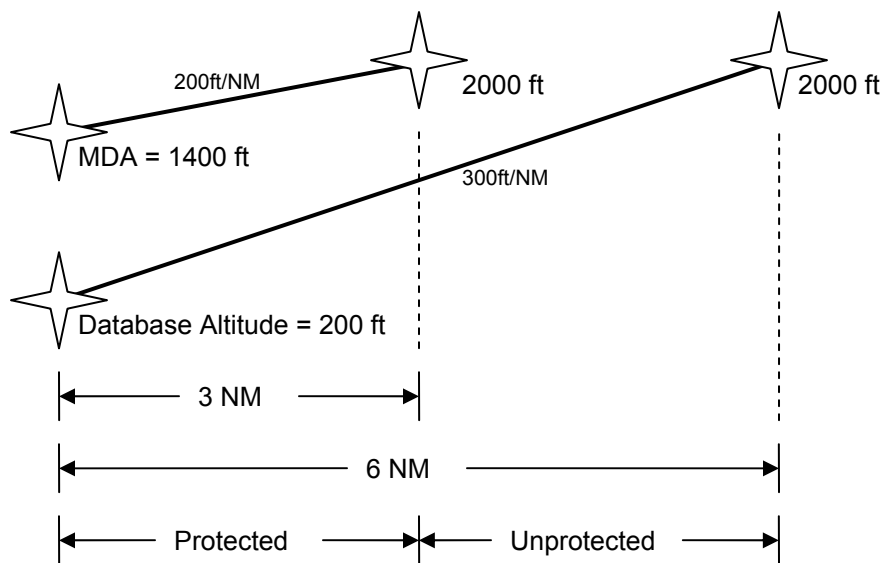
Departure Procedures with a Required Climb Rate Greater than 300 Feet per NM:

Standard instrument departure procedures provide protection based upon a TERPS climb rate of 200 feet per nautical mile. The current methodology is safe under this

circumstance due to its use of a climb rate (300 feet per nautical mile) that exceeds the standard TERPS climb rate. However, some departure procedures contain a required aircraft climb rate. Where the required aircraft climb rate exceeds 300 feet per nautical mile, the current methodology will give hazardously misleading guidance into non-protected areas on altitude legs. Accordingly, this guidance should not be used on any departure procedure with an altitude leg that requires a climb rate greater than 300 feet per nautical mile.

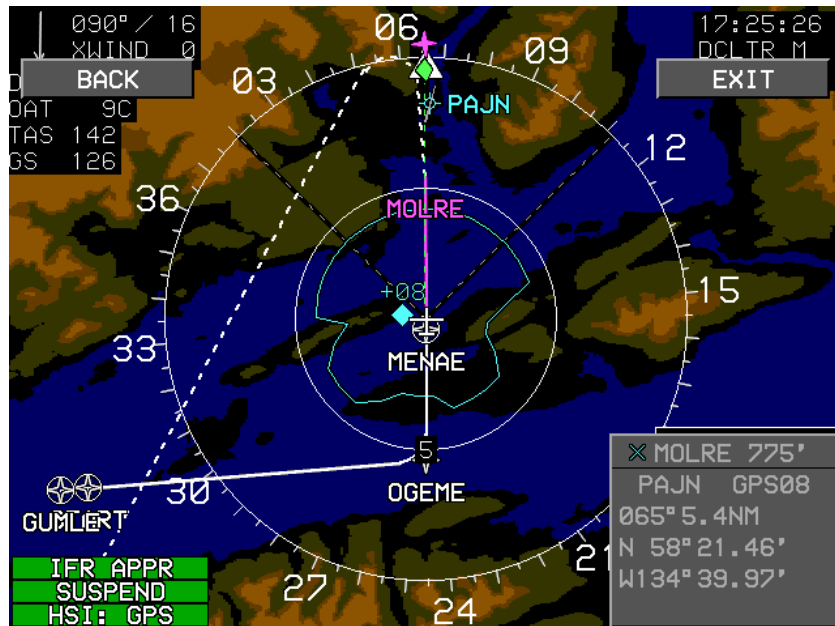
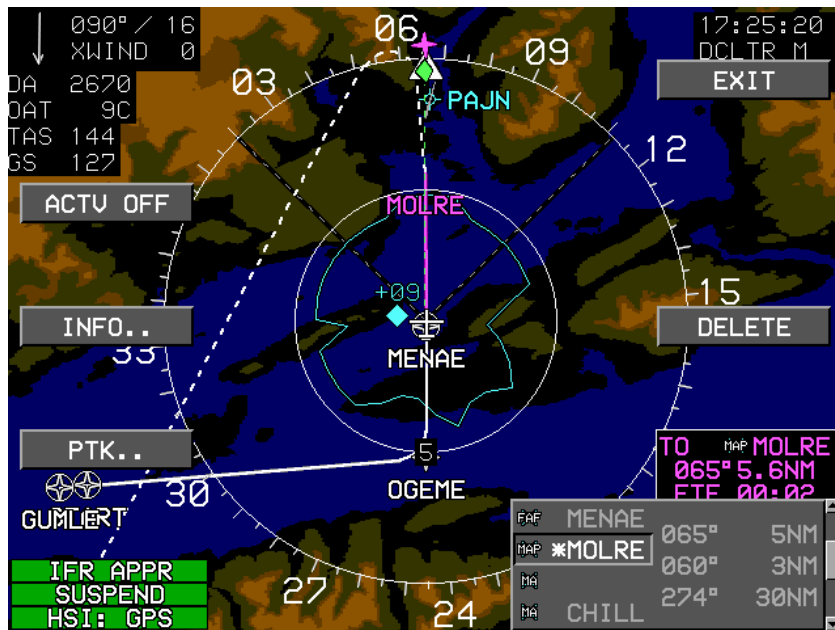
Instrument Approach Procedure where the Database Missed Approach Point Altitude is Lower than the MDA or DH and the First Leg of the Missed Approach is an Altitude Leg:

Under ARINC424 rules, whenever there are straight-in minimums for an instrument approach procedure, the database Missed Approach Point (“MAP”) altitude will be coded so as to provide a stabilized approach to the designated straight-in runway and will not reflect the MDA or DH for the approach. In the case where the database MAP altitude is lower than the MDA or DH, and the first leg of the missed approach procedure is an altitude leg, the altitude leg length calculated by the current methodology may exceed the designed protected length. This is depicted graphically below:



The following steps can be taken to detect this condition:

1. Review the approach plate for the procedure. If the first leg of the missed approach is an altitude leg, then there is the possibility of hazardously misleading guidance into non-protected areas.
2. Review the active flight plan waypoints using the <ACTV> button. Highlight the MAP (identified by the letters “MAP” over the waypoint symbol in the active flight plan list). Use the <INFO> option to view the database MAP altitude. In the screen captures below, the database MAP altitude (waypoint MOLRE) is displayed as 775’:



3. If the database altitude is below the MDA or DH published for the approach then, workload permitting, the following formula can be used to determine whether there is hazardously misleading guidance into non-protected areas:

$$\text{Climb from database altitude} > 1.5 \times \text{Climb from MDA/DH}$$

If workload does not permit use of the formula, then the missed approach guidance should be considered hazardously misleading.

4. If the guidance is hazardously misleading, the operator must ignore the guidance and fly the missed approach procedure manually by reference to the published approach plate only. It is recommended that Highway in the Sky guidance be decluttered from the PFD in this condition. The operator should also keep in mind that the terrain display function is unaffected by this condition and continues to provide situational awareness cues.
5. In all cases, the published approach plate takes precedence over the database derived approach guidance. ALWAYS comply with the published approach plate.

OPERATOR ACTION

1. Use of the equipment to provide guidance on departure procedures that require a climb rate greater than 300 feet per nautical mile and that require a climb to an altitude before initiating a turn is prohibited.
2. Instrument approach navigation must be accomplished in accordance with the approved instrument approach procedure. Before conducting an instrument procedure, the displayed procedure must be verified by reference to current approved data. If the displayed Missed Approach Procedure is different than the written published Missed Approach Procedure, the displayed guidance is incorrect and the procedure must be flown in accordance with the written published Missed Approach Procedure. Use of the equipment to provide missed approach guidance is prohibited.
3. For Missed Approach Procedures that require a climb to an altitude before initiating a turn, use of the equipment to provide missed approach guidance is prohibited. The procedure must be flown in accordance with the written published Missed Approach Procedure.
4. Always comply with the published procedures.