Verification Procedure & Results

Document No.: 3167-20105 rev A

Test Case ID:	Test Case Name:	Test Plan Document No.:	Test Plan Rev.:	Test Date:
005, Ver-CG-72	VE-CG-3100 Sleep at depth	3167-20000	2-00	10/17/2012

Test Director (Print Name) Ed Dever	Signature in lieu of electronic signature	**Design Engineer**	Approval Signature John S. Dingess in lieu of electronic signature	Date 10-11-2012
Test Conductor (Print Name) David Neiman	Signature	**System Engineer**	Approval Signature Ed Dever (in lieu of electronic signature)	Date 10/15/2012
Witnessed by (Print name)	Signature	**QA/QC Engineer**	Approval Signature Michael A. Zernick	Date 10/17/12

Test Class ☑ **Performance** ☑ **Behavioral** ☐ **Reliability** ☐ **Endurance / Longevity** ☐ **Survivability** ☐ **Safety**

Test Description

The glider will be commanded to enter a low-power 'sleep' mode at constant depth.

Requirements Addressed

L4-CG-GD-RQ-190

Test Setup	Test Artifacts
Glider flight documentation	This document Sleep-at-depth glider records

Test Procedure / **Test Results**

Step No.	Instructions	Expected Results (Accept Criteria)	Requirement ID	Test Data	Pass/Fail	Notes/Waiver No.
5.1	Use the low-power/constant depth mode to cause the glider to 'sleep' for a prearranged time at 750m depth. Examine records of glider behavior	The glider will hold constant depth within TWR-specified limits, recover to normal operation, and proceed with further missions.	L4-CG-GD-RQ-190	Lat/lon start 31º 52.917N 120º 32.313W lat/lon end 31º 58.771 depth during sleep 750 m ± 20m See Appendix A for more details.	Pass	Sleep duration 8 hours. Total distance traveled 2.8km. Power use during sleep ~0.05A-hr/hr (compared to ~0.13A-hr/hr in normal operation). Glider continued normally after sleep. Maximum total time between surfacings is 32 hours. With the ballast pump set for 20cm/s forward speed, 0m-750m-0m transit time is ~5.5 hours, so glider 'sleeps' up to 24 hours should leave considerable safety margin.

Appendix A: Glider Sleep Mode

The glider was sent commands to descend to 750m and then commence drift-at-depth low-power ('sleep') behavior for 8 hours prior to returning to the surface. The glider successfully executed these commands, as shown in the dive profile in Figure 1. During the 'sleep' dive, the science sensors were turned off for the entire mission segment. Clock speed for the microprocessor was not reduced. Note that power consumption was ~0.4A-hr during the 8 hours of the drift-at-depth, including several activations of the ballast pump for keeping within the ±20m depth band. Thus, the 'sleep' mode consumes ~0.05A-hr/hr. For the two dives immediately preceding the 'sleep' dive, where the glider was operating normally, the power consumption was ~0.13A-hr/hr., including the required ballast pumping to maintain headway.

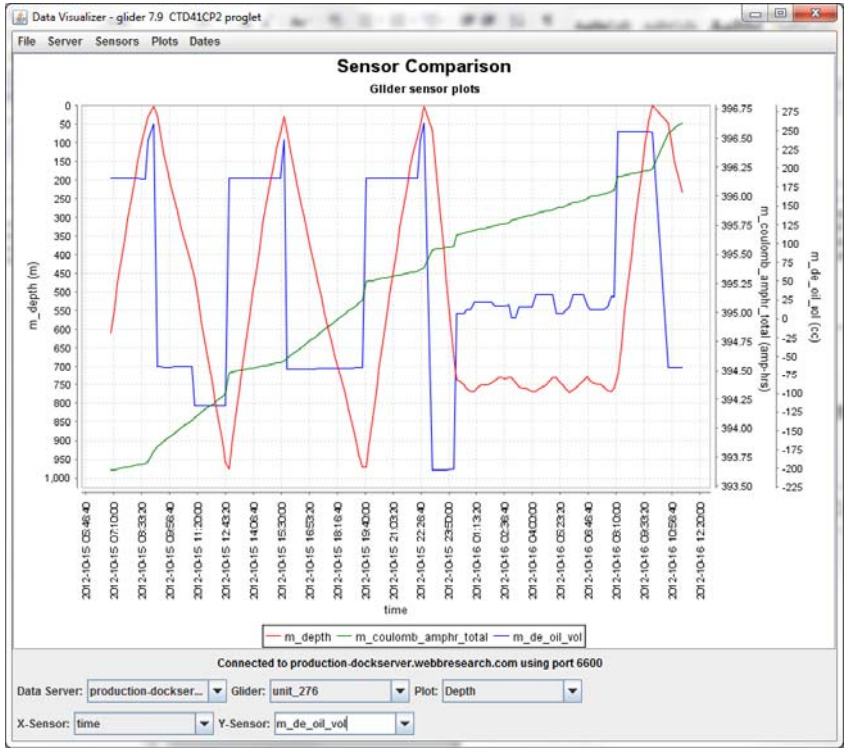

Figure 1: Dive profile for 8-hour 'sleep' mission.