



# Verification Procedure & Results

Test Procedure Document No.: <b>3167-00107</b>		Test Procedure Rev.: <b>1-01</b>	
Test Case Name: <b>L3 Requirement Analysis</b>		Test Plan Document # <b>3166-70000</b>	Test Plan Rev.: <b>1-01</b>
Test End Date:		Date:	
Test Conductor (Print Name)		Approval Signature	Date
Signature	Design Engineer (Print Name) <b>Taylor Semingson</b>		2013-07-01
Test Director (Print Name)		Approval Signature	Date
Signature	System Engineer (Print Name) <b>Sheri N. White</b>		2013-06-28
Witnessed by (Print name)		Approval Signature	Date
Signature	QA/QC Engineer (Print Name) <b>Gary Cook (I&amp;T Lead)</b>		2013-06-28
DOORS Verification Procedure ID	DOORS Verification Event ID	QA:	
Ver-CG-270	CG-VE-3092	Test Dir.	
Test Results Reviewed		Date	
		Date	

**Test Description**

This Test Case will satisfy those L3 requirements that are verified via analysis through an aggregation of lower level (L4) requirement verifications. This will be accomplished by running a DOORS script that checks the verification state of each of the L4 requirements that is associated with an L3 'parent' requirement. The script will show the L3 requirement as VERIFIED once all of the L4 'child' requirements have been verified.

**Requirements Addressed**

L3-CG-RQ-160 CGSN Global Arrays shall be designed so that installation and maintenance can be performed with UNOLS Global Class vessels.

L3-CG-RQ-1006 CGSN Infrastructure design shall include features that support serviceability of the infrastructure.

L3-CG-RQ-1030 Global Hybrid Profiler Moorings shall include an inductive telemetry link for transmission of data, commands and status to subsea resources not electrically connected to the mooring.

L3-CG-RQ-1035 CGSN acoustic components (acoustic modems and bio-acoustic sonars) shall conform to source power limitations defined in the OOI Environmental Compliance and Permit Plan (1001-00001) and preceding documents.

L3-CG-RQ-166 CGSN Platform telemetry links shall support standard protocols.

L3-CG-RQ-168 The designed deployment interval for Global moored assets shall be twelve months.

L3-CG-RQ-191 Global hybrid profiler moorings shall include one Wire-Following Profiler and one Surface-Piercing Profiler.

L3-CG-RQ-193 Global hybrid profiler moorings shall include a long-range bi-directional communications capability.

L3-CG-RQ-195 Global hybrid profiler moorings shall include a short-range (line-of-sight) RF-based bi-directional communications capability.

L3-CG-RQ-199 Global Surface-Piercing Profilers shall travel between a subsurface buoy located at approximately 200 meters depth to the surface.

L3-CG-RQ-200 Global Surface-Piercing Profilers shall measure Conductivity, Temperature, and Depth (CTD).

L3-CG-RQ-201 Global Surface-Piercing Profilers shall measure Dissolved Oxygen (DO).

L3-CG-RQ-202 Global Surface-Piercing Profilers shall measure Chlorophyll a fluorescence and Optical Backscatter.

L3-CG-RQ-204 Global Surface-Piercing Profilers shall measure Optical attenuation and absorption.

L3-CG-RQ-205 Global Surface-Piercing Profilers shall measure Spectral irradiance.

L3-CG-RQ-206 Global Surface-Piercing Profilers shall measure Nitrate concentration.

L3-CG-RQ-208 Global Wire-Following Profilers shall travel from a subsurface buoy at approximately 200 meters depth to as close to the bottom as practicable.

L3-CG-RQ-210 Global Wire-Following Profilers shall measure Conductivity, Temperature, and Depth (CTD).

L3-CG-RQ-211 Global Wire-Following Profilers shall measure Dissolved Oxygen.

L3-CG-RQ-212 Global Wire-Following Profilers shall measure Three Axis Point Water Velocity.

L3-CG-RQ-213 Global Wire-Following Profilers shall measure Chlorophyll a Fluorescence, and Optical Backscatter.

L3-CG-RQ-432 Procured CGSN platforms and components shall be provided with transportation cases that meet or exceed, ASTM-D3951 "Standard Practice for Commercial Packaging."

L3-CG-RQ-433 CGSN subsea components shall operate at their deployment depths.

L3-CG-RQ-438 The CGSN infrastructure design shall be modular and expandable.

L3-CG-RQ-439 The CGSN infrastructure design shall use common interfaces.

L3-CG-RQ-444 The CGSN infrastructure shall provide at least single fault tolerance for all elements, where practical.

L3-CG-RQ-445 Components of the CGSN shall be shared between the regional, coastal and global infrastructure.

L3-CG-RQ-485 CGSN shall store data until it is published.

L3-CG-RQ-489 CGSN Platforms shall include a satellite based recovery beacon.

L3-CG-RQ-490 CGSN Platforms with an occasional or constant surface expression shall include a GPS receiver.

L3-CG-RQ-494 All CGSN assets, excluding Surface Buoy buoyancy material, shall be designed to fit within one or more standard ISO shipping containers in assembled or partially disassembled form.

L3-CG-RQ-495 CGSN platforms shall UTC time-stamp stored data from resources on the platform including all core instruments and engineering sensors.

L3-CG-RQ-499 CGSN platforms shall be designed to operate in conditions and locations defined in their respective Site Characterization documents (see Section 2.3)

L3-CG-RQ-524 Global Surface-Piercing Profilers shall be capable of making 780 vertical water column profiles during its deployment interval.

L3-CG-RQ-526 Global Surface-Piercing Profilers shall have the capability of profiling no less than two times per day.

L3-CG-RQ-528 Global Surface-Piercing Profilers shall profile from 150 meters depth to the surface.

L3-CG-RQ-530 Global Surface-Piercing Profilers shall measure the Partial Pressure of Carbon Dioxide (pCO2) in water.

L3-CG-RQ-533 Global Wire-Following Profilers shall have the capability of performing no less than two profiles per day.

L3-CG-RQ-855 CGSN platforms shall measure platform orientation.

L3-CG-RQ-856 CGSN platforms shall measure platform motion.

L3-CG-RQ-867 CGSN infrastructure and assets that are subject to performance degradation due to bio-fouling shall utilize biofouling reduction techniques, with the goal to enable nominal operations over the defined deployment interval.

L3-CG-RQ-885 Standard oceanographic engineering designs, details and practices shall be used where possible.

L3-CG-RQ-894 Global hybrid profiler moorings shall measure acoustic backscatter on the subsurface platform.

L3-CG-RQ-923 CGSN subsea components shall be designed to sustain pressures equivalent to 120% of their planned deployment depths.

L3-CG-RQ-947 The upper sensor package on a global hybrid profiler mooring shall be able to reach the surface in eddy current events.

L3-CG-RQ-948 The upper sensor package on a global hybrid profiler mooring shall be able to remain above 500m depth in extreme event currents.

L3-CG-RQ-987 CGSN shall include design features that support prevention of damage to system components.

**Test Environment**  
 - Test can be performed at any location with a computer that has DOORS installed.

**Test Setup**  
 Computer with DOORS installed

**Test Artifacts**  
 Test Artifacts consist of the Pass/Fail results for steps contained within this procedure.

Test Procedure 3167-00107 Rev 1-01				Test Results		
Step#	Instructions	Expected Results	Requirement ID	Observed Results	Pass/Fail	Notes
1	Verify that all L4 children that are allocated to the HYPM have been verified. This may be accomplished using a DOORS script or by manual analysis.	All L4 children allocated to the HYPM are verified or waived.	L3-CG-RQ-160			
2	"	"	L3-CG-RQ-1006			
3	"	"	L3-CG-RQ-1030			
4	"	"	L3-CG-RQ-1035			
5	"	"	L3-CG-RQ-166			
6	"	"	L3-CG-RQ-168			
7	"	"	L3-CG-RQ-191			
8	"	"	L3-CG-RQ-193			
9	"	"	L3-CG-RQ-195			

Test Procedure 3167-00107 Rev 1-01				Test Results		
Step#	Instructions	Expected Results	Requirement ID	Observed Results	Pass/Fail	Notes
10	"	"	L3-CG-RQ-199			
11	"	"	L3-CG-RQ-200			
12	"	"	L3-CG-RQ-201			
13	"	"	L3-CG-RQ-202			
14	"	"	L3-CG-RQ-204			
15	"	"	L3-CG-RQ-205			
16	"	"	L3-CG-RQ-206			
17	"	"	L3-CG-RQ-208			
18	"	"	L3-CG-RQ-210			
19	"	"	L3-CG-RQ-211			
20	"	"	L3-CG-RQ-212			
21	"	"	L3-CG-RQ-213			
22	"	"	L3-CG-RQ-432			
23	"	"	L3-CG-RQ-433			
24	"	"	L3-CG-RQ-438			
25	"	"	L3-CG-RQ-439			
26	"	"	L3-CG-RQ-444			
27	"	"	L3-CG-RQ-445			
28	"	"	L3-CG-RQ-485			
29	"	"	L3-CG-RQ-489			
30	"	"	L3-CG-RQ-490			
31	"	"	L3-CG-RQ-494			
32	"	"	L3-CG-RQ-495			
33	"	"	L3-CG-RQ-499			
34	"	"	L3-CG-RQ-524			
35	"	"	L3-CG-RQ-526			
36	"	"	L3-CG-RQ-528			
37	"	"	L3-CG-RQ-530			
38	"	"	L3-CG-RQ-533			
39	"	"	L3-CG-RQ-855			
40	"	"	L3-CG-RQ-856			
41	"	"	L3-CG-RQ-867			
42	"	"	L3-CG-RQ-885			
43	"	"	L3-CG-RQ-894			
44	"	"	L3-CG-RQ-923			
45	"	"	L3-CG-RQ-947			
46	"	"	L3-CG-RQ-948			
47	"	"	L3-CG-RQ-987			
48	"	"	L3-CG-RQ-993			