

Ocean Observatory Projections

Input provided by Kendra Daly

From: "Kendra Daly" <kdaly@joiscience.org>
Date: 12 March 2007 18:48:45 GMT-04:00
To: "Dave Hebert" <hebert@gso.uri.edu>
Subject: RE: Ship time needs

Hello Dave,

I am attaching a table for the Global moorings requirements. Snip>
Kendra

From: Kendra Daly <kdaly@marine.usf.edu>
Date: 15 March 2007 08:30:28 GMT-04:00
To: hebert@gso.uri.edu
Subject: ORION Coastal ship and ROV requirments

Hello Dave ,

I have attached a table of the Coastal Scale Observatory ship and ROV requirements for installation and operations and maintenance phases. The Regional cabled group have promised something later today.
Kendra

From: Kendra Daly <kdaly@marine.usf.edu>
Date: 15 March 2007 23:21:17 GMT-04:00
To: Dave Hebert <hebert@gso.uri.edu>
Subject: Regional cabled observatory ship requirements

Hello Dave,

I have attached the Regional Cabled Observatory ship and ROV requirements. Because the oceanographic community has never deployed or maintained a large cabled facility before, the ship time requirements are only rough estimates.

The coastal group also asked me to convey to you that their estimates are for operations after all procedures have been well established and well practiced, especially the ROV operations. Initial operations may take 2-3 times longer. Also they did not include contingency for weather or equipment failures.

ORION Implementing Organizations should develop better estimates of ship and ROV use for the Preliminary Design Review next December (2007). I will ask them to keep your UNOLS committee informed as estimates of requirements are improved.

I hope this provides the information you need for your report.

Kendra

Regional Cabled Observatory

Ship & ROV Operations. The Regional Cabled Observatory (RCO) operations and maintenance will require regular access to a Global Class research vessel. As outlined in the Revised Infrastructure Plan (March 2007), it is estimated that maintenance of the backbone and secondary infrastructure will require a minimum of 24 days ship and ROV time annually and at least 8 days for maintenance of the full water column moorings. Some maintenance operations will likely be contracted out to the cable installer. Based on science indicated by the Response for Assistance documents, up to ~160 ship days annually may be required to service the RCO when it is fully operational. This will likely be ramped up over several years and is dependant on the ability of NSF to fund PI science in the future, development of international partnership and contributions, and contributions from other sources (e.g. Foundations). Prior to installation of the facility, it is likely that at least one month of ship time will be required for surveying of the backbone and node sites, and at least 1-2 months of ship, ROV, and AUV time for high resolution mapping, line of site surveys, and geotechnical sampling.

The primary requirement of the Global Class vessel is that it be capable of ROV operations in a range of sea states – preferable up to Sea State 5. The ROV will need to be capable of laying cables up to 5-7 km in length. The vessel must be set up for a variety of tasks for testing, maintaining, and possibly repairing observatory instruments. This would include a variety of tools and test equipment and a portable node simulator. Because of its geographic location and capabilities, it is anticipated that the R/V *Thompson* will be instrumental in servicing the RCO and some of the CSO (e.g., the Newport and Grays Harbor Endurance sites) and GSO installations (e.g., STATION PAPA). Working in higher sea states is critical to expanding the weather window in the NE Pacific and servicing of other GSO sites. Future consideration should be given to development of a working class ROV with heavy lift load capabilities and heave compensation. A model for operations could include a ~ 1 month dedicated cruise for maintenance of the RCO system and 3-4 cruises dedicated to science, installation, and limited maintenance of the RCO system. The recent addition to the R/V *Thompson* of a high bandwidth transmitter is an important asset because it will allow real-time communication and video transmission to shore during installation and maintenance.

Table XX. Coastal scale observatory ship use and ROV use requirements. The Pioneer Array will be located at the Mid-Atlantic Bight; the Pacific Northwest Endurance Array will be located off Newport, Oregon and Gray's Harbor, Washington

Site	Activity	Type vessel	Number of days ship only	Number of days ship with an ROV
MAB Pioneer Array installation	Install 4 EOM moorings	Coastal	8	
	Install benthic network, connect profilers to EOM moorings	Coastal		8
	Install 2 subsurface profilers	Coastal	4	
	Install 4 repeater moorings	Coastal	2	
	Install 2 AUV docking stations	Coastal		4
	Install sensors?	Coastal	?	?
Pioneer Array O&M	Maintenance	Coastal	10	
	Mooring replacement	Coastal	12	6
	AUV docking stations	Coastal		6
Pacific NW-Oregon Line installation	Install medium voltage benthic node	RCO cable vessel	-----	-----
	Install 1 EOM moorings, connect profiler		2	2
	Connect profilers to MV nodes			5
	Install 2 surface mooring & profilers		4	
	Install 2 surface moorings		4	
Pacific NW-Oregon Line O&M	Maintenance	Coastal	12	
	Mooring turn around	Regional	10	
	Service benthic system	Regional		7
Pacific NW-Washington Line installation	Install 2 EOM moorings		4	
	Install BIN, connect profiler to EOM moorings			4
	Install 2 surface moorings, 2 profilers		4	
Pacific NW-Washington Line O&M	Maintenance	Coastal	10	
	Mooring turn around	Regional	8	
	Service benthic system	Regional		6
Total days east coast vessel installation			14	12
Total days west coast vessel installation			18	11
Total days east coast vessel per year for O&M			22	12
Total days west coast vessel per year for O&M			40	13

*BIN = benthic network

Table xx. Global scale observatory ship use and ROV use requirements						
	Location	Ship type	Installation days	ROV	Maintenance days	ROV
Station Papa, N Pacific	50N, 145W	Global	16	no	19	no
Irminger Sea, N Atlantic	60N, 39W	Global	20	no	23	no
Mid-Atlantic Ridge spar buoy	23N, 44W	Global	24	yes	27	yes
SW Chile	55S, 40W	Global	20	no	23	no
Argentine Basin, S Atlantic	42S, 42W	Intermediate	15	no	18	no
S Pacific Gyre	28S, 120W	Intermediate	23	no	26	no
Hawaii acoustic source	23N, 158W	Global	3	yes	4	yes
Total global vessel days			83		96	
Total intermediate vessel days			38		44	