

Activity: Woods Hole Oceanographic Institution (WHOI)
Ship: R/V ATLANTIS
Component: ALVIN LARS
Subject: Request for NAVSEA approval of 2018 Non-ALVIN LARS operations

Discussion:

WHOI is requesting a maximum line tension for 2018 operations, similar in nature with the NAVSEA Ser Ltr 394D/0019 (2017) which states approval of Non-ALVIN use of the LARS for line tensions not to exceed a defined weight. We do not plan on exceeding line tensions greater than 15,000 lbs. There is no plan to use the certified ALVIN lift line during the 2018 Non-ALVIN LARS operations.

WHOI requests ONR and NAVSEA approval on the NON-ALVIN use of the ALVIN LARS for the 2018 operations described in this document.

The following provides a summary for the 2018 Non-ALVIN Use operations.

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1 NSF OOI Argentine Basin Global Array

(Removed for the purpose of this document for the AT40-03:Lyle "WANT" expedition)

2 NSF OCE Northern Atlantic, Bermuda to Woods Hole, MA

2.1 Science Operation Mission:

The mission is to perform seismic reflection and swath mapping of drill sites in the western North Atlantic from 33° to 54° N along the west flank of the mid Atlantic ridge.

2.2 Operation Dates:

The dates of this operations are 14 June through 17 July 2018.

2.3 Description:

The science equipment consists of four types of seismic gear: 1.) a 48 channel hydrophone streamer, 2.) a 16 channel hydrophone streamer, 3.) a two generator injector (GI) sound source array and 4.) a single GI sound source array. The Principle Investigator (PI) requests approval to deploy and recover all four seismic packages using the LARS in order to have flexibility during their cruise to decide which deck gear should be used to deploy or recover their science equipment. However, only one package will be use LARS at a time, while another package is simultaneously deployed with other ship's equipment.

2.3.1 Hydrophone Streamer Equipment Operations

The 48 Channel hydrophone streamer cable has a total length of 2,789 feet. The 16 Channel hydrophone streamer cable has a total length of 985 ft. Each hydrophone streamer cable is neutrally buoyant and surface towed. A Crossline streamer reel is used to deploy and recover each hydrophone streamer cable. Each streamer cable is towed from a fixed tow point, bollard or cleat, provided by the vessel mounted to the aft working deck. For each streamer deployment, a Sherman & Reilly 78 series 28 inch snatch block will be attached to the LARS and suspended approximately 6.5 feet off the deck. The weight of the Sherman & Reilly 78 series 28 inch snatch block is 68lbs. The tension on each streamer cable during deployment is a maximum of 500lbs. Each streamer will never be completely lifted by the LARS. The Sherman & Reilly 78 series snatch block will be attached to the LARS on the main winch test line. Each streamer cable is deployed through the snatch block while the vessel is underway at 2 – 3 kts. During deployment floats and cable leveling devices (ballasting weights) are attached. At the end of deployment, a Yale grip is attached to the tow cable of the streamer and the load is transferred from LARS to a fixed point on the vessel. The LARS will not be used for towing the streamer cable. The streamer operations are planned with 20 deployments and 20 recoveries. The 48 Channel streamer tow depth is 3 – 14 feet and is achieved with cable levelers. The 16 channel streamer tow depth is 14 – 20 feet and is achieved with ballasting weights. Recovery operations are the reverse of deployment, the line is transferred from the vessel mounted tow point to the LARS for recovery of the equipment. The breaking strength of the vectran based streamer electromechanical tow cable is 5000lbs. During deployment and recovery operations the expected maximum line tension is 500lbs.

2.3.2 GI Sound Source Array Equipment

The two generating injector (GI) sound source array consists of one Polyform F13 float, one 4 inch stainless steel hanger 10ft long, four 3.3 foot ½ inch stainless steel chains, and two Sercel GI 210 seismic sound sources. The weight of the two GI Sound Source Array is 550lbs. The Single GI Sound Source consists of one Polyform F11 float (or equivalent), one 4 inch stainless steel hanger 4 feet long, two 3.3 feet ½ inch stainless steel chains, and one Sercel GI 210 seismic sound source. The weight of the single GI Sound Source Array is 275lbs. Each GI sound source array is connected to the vessel in two ways: 1.) a 3/8 inch Amsteel Blue towing umbilical with an air hose and electric cable bundle and 2.) a ¼ inch 7x19 304 stainless steel lifting cable on a Bloom LS10 winch. Each GI sound source array will be towed using the towing umbilical attached to a fixed tow point, bollard or cleat, provided by the vessel mounted on the aft working deck. For each GI sound source array equipment deployment will be with a ¼ inch wire rope snatch block suspended from the LARS using the main lift test line. Each sound source array is deployed using the LARS and Bloom winch with the vessel underway at 2 – 3kts. The Sound Source Array is lowered to the water until floating. The wire rope is slowly paid out while the towing umbilical is paid out by hand until the tension is transferred from the LARS to the aft deck mounted tow point. The lifting rope attached to the Bloom winch remains slack during towing operations. The LARS will not be used for towing. The tentative two GI sound source operations are planned with 20 deployments and 20 recoveries. The tentative single GI sound source operations are planned with 40 deployments and 40 recoveries. Each GI sound

source will suspend between 6.5 – 14 feet off the deck. Recovery operations are the reverse of deployment, the line is transferred from the vessel mounted tow pint to the LARS for recovery of the equipment. The breaking strength of the ¼ inch wire rope is 5000lbs. The maximum tension during deployment and recovery lifting operations is 800lbs.

2.4 Seismic Equipment Summary:

Total number of deployment and recoveries: 60 each (potentially)

Maximum Weight of the heaviest Seismic Package, dry weight: 550 lbs.

Deployment and recovery depths will not exceed: 165 feet.

Maximum line tension during deployment and recovery: 1000 lbs.

Deployment and recovery will be performed with a vessel speed of: 2 – 3 kts.

The certified ALVIN lift line will not be used.