

INCOIS-WHOI MOORING TRAINING REPORT

(29 October to 15 December 2018)



Training Participants:

- 1. Suresh Kumar, Scientist 'D', ODG, INCOIS**
- 2. Shivaprasad S, Scientist 'C', ODG, INCOIS**
- 3. Shridharan, 'Technical Officer', NDBP, NIOT**

Introduction:

INCOIS placed the order for the procurement of mooring on WHOI on January 10, 2018. Accordingly, the WHOI is in the advanced stages of fabrication of the heavily instrumented mooring. In addition, INCOIS started procuring and provide few more meteorological and oceanographic instruments to be mounted on the surface buoy and on the mooring line. The mooring hardware components and met & sub surface sensors will be integrated and tested at Woods Hole facility before it would have ship to India.

As per purchase agreement with WHOI, the scientists/engineers from INCOIS and NIOT are getting training from 29 October to 14 December 2018 on mooring integration, assembly, pre-deployment tests and verification of mooring met sensors & sub surface sensors configuration. At present the WHOI has started the design, fabrication and sensor testing for the said mooring at WHOI, USA and INCOIS and NIOT personnel's are undergoing training schedule.

Training Details:

Mr. S Shivaprasad, Scientist 'C' and Mr. Suresh Kumar, Scientist 'D' from INCOIS, Hyderabad reached WHOI, USA on 29 October, 2018. The training started with WHOI orientation program conducted by Mr. Emerson G Hasbrouck from 29 October to 02 November, 2018, we were taken to different department in WHOI and group activities of Upper oceanic process (UOP). And also on 02nd Nov 2018 INCOIS team exercised with UOP team on Buoy spin test to evaluate of ASIMET modules fitted on buoy tower of STRATUS # 18 systems similar like INCOIS system with no DCFS.



ASIMET Data Logger in the Buoy well and Buoy under Spin test.

During the second week from 5th to 9th Nov, 2018. INCOIS team were learned the Data downloading techniques from STRATUS buoy and worked with Mr. Ray for the buoy tope section towers assemblies **Base Plate** hold all Metrological sensors segments , **Halo-** protection ring and Mid Sections towers, also we audited the battery packing, array arrangements and power distribution boxes for the whole system and insertion of tower top assembly into the hull is left off for next training session. During this period the data for the buoy spin test (detailed report will be made at the end of training) were analysed and evaluated of ASIMET modules, also made a visit to the rigging shop noted the operations procedures and performance.

In the rigging workshop at woods hole village beside of Smith lab-WHOI , The mooring mechanical components/hardware's especially mooring wire ropes, nylon ropes and etc will be tested and verified with company standards in prior to deployment. Highly sophisticated instruments were used for the said operations and a special team is working for the same in a dedication fashion.

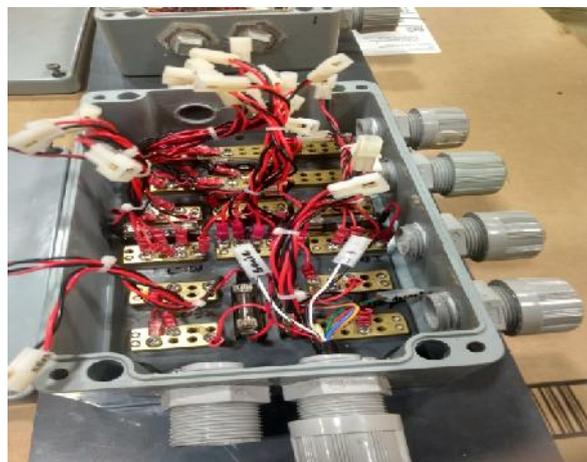


Halo section (left) and well of the INCOIS mooring with fully assembled 80 Battery packs



Rigging Shop Facility at Woods hole Village.

Mr. Shridharan, NDBP, NIOT joined INCOIS team, from 12 Nov 2018 to 24 Nov 2018, the two weeks were exclusive for learning about the mechanical related and details of various mooring components conducted by Mr. Ben Pietro, all the team members were introduced to different gears of the mooring. During this period detailed training was conducted on an electro-mechanical (EM) interface developed by the WHOI Applied Ocean Physics and Engineering (AOPE), an electro-mechanical (EM) interface was designed to reduce fatigue while providing an electrical connection from the surface buoy to jacketed wire rope on the mooring. Conductors from electronics in the buoy well are mated to a six-meter EM section which terminates at a wire coupling assembly. Mr. Benjamin Greenwood gave brief details and discussed about the buoy telemetry systems.



Mr. Shridharan, NDBP, NIOT assembling universal joint and power distribution module for DCFS.

Trained on DCFS, the Flux Direct Covariance High Power(DCFS) system is an instrument package that collects high speed wind and platform motion and computes air-sea fluxes. These systems were developed for use on OOI buoy platforms and their telemetry and power systems. In order to reduce telemetry requirements, the instrument calculates fluxes and generates other statistics for the collected data. This information is sent to the buoy data collection system for transmission back to shore. In the last week we trained on SIM-Surface Inductive Modem system testing. INCOIS team visited calibration facility for ASIMET sensors and learnt about acoustic release system.

Finally INCOIS team examined the preparation for the shipment of INCOIS "Flux Buoy " system to 2 x 40 foot containers.