

SK – 235

From 12/06/2007 – 21/06/2007

Embarkation ⇒ Chennai

Disembarkation ⇒ Chennai

Participants :-

1)	Dr. M. A. Atmanand	NIOT	Chief Scientist
2)	Mr. C. A. Deepak	“	Dy. Chief Scientist
3)	Mr. Raju Abraham	“	
4)	Mr. S. M. Babu	“	
5)	Mr. S. Ramji	“	
6)	Ms. K. Amudha	“	
7)	Mr. R. Thirumurugan	“	
8)	Ms. P. M. Rajeshwari	“	
9)	Mr. V. Chandran	“	
10)	Mr. A. Umapathy	“	
11)	Mr. R. Vikram	“	
12)	Mr. K. Nayumdhan	“	
13)	Mr. K. Ashok Kumar	“	
14)	Mr. V. S. Suresh	“	
15)	Mr. R. Satish kumar	“	
16)	Mr. J. Logesh	“	
17)	Mr. R. Balamurugan	“	
18)	Mr. P. Elumalai	“	
19)	Mr. D. Rajan	“	
20)	Mr. Pasli kumar	“	
21)	Mr. Gumunanjay	“	
22)	Mr. S. A Alwar	“	
23)	Mr. D. Thibursian	“	
24)	Mr. Rajesh	“	
25)	Mr. Bhoopathy	Norinco	
26)	Mr. Madhusudhan	“	
27)	Mr. Dayalan	“	
28)	Mr. Bentin	“	
29)	Mr. M. Charan	“	
30)	Mr. Anil Patel	“	

Objectives: Testing and Qualification of artificial nodule laying system and messenger based system at depths more than 500m. .

Daily Log during Hopper Trials

6th June 2007 to 11th June 2007

Platform erection was done. It was noticed that the A-frame was not holding with load. This was tested onboard in the presence of Captain. It was also informed to Dr. Sudhakar. As there was no means for SCI to rectify the system immediately, a contingency plan to launch using LARS was worked out. This required modifications in the hopper system.

12th June 2007

All items were loaded on board vessel by late night. All personnel signed on.

13th June 2007

All interconnections were made and system was checked. Modifications being done on board vessel due to changed launching plan. Platform work was completed.

14th June 2007

Sailed to anchorage for performing initial setting and testing. Wheel assembly was completed. Welding in feeder was completed. Cone assembly was completed. Problem in getting APOS signal to control room is being solved. Winch work being attended. Hasp was also got ready as contingency plan. One seaman was hurt. He was later okay after stitching the wound. One camera signal was not available at control room. Worked till late night trying to solve.

15th June 2007

Camera problem may be due to mux card inside enclosure. Still working on that. Meanwhile, ship crew while cleaning the deck early morning poured water and drum of hydraulic oil was spoiled. Arranged to get this and other items through boat from NIOT/shore. Sonar also is giving problems, which is attended to worked on contingency plan with hasp and PP rope. Started adding buoyancy to system as contingency plan.

16th June 2007

Got spare Mux card through boat. System was tested externally and found to be ok. But it was not okay with main cable. Completed buoyancy attachments and hydraulic oil filling. Additional pick up planned using deep sea winch.

17th June 2007

Finally set up one camera with pan and tilt. System was integrated back and tested by late night. Also started making arrangements with sheave for using deep sea winch. Held prelaunch meeting and briefed operation to all personnel.

18th June 2007

Tested hydraulic system with feeder and thrusters. Did oil bleeding. Did launching at 17 m water depth successfully. Winch had problems in heaving up. Use of deep sea winch was made to assist the main winch. Camera recorded nodule laying. Also Sonar was connected through separate cable and nodule launching seen. Heaved up and brought to deck. Weight was reduced and buoyancy added. Additional stiffener welding was done for winch base. Rain at night hampered welding operation.

19th June 2007

Started to 500 m water depth for further testing. Started launching at 13.45 hrs. Location is 13° ; 17.0993" N, 080° ; 40.3048" E. Launching was assisted by deep sea winch also.

20th June, 2007

The messenger based system of laying artificial nodules were tested at a depth of 1000 m. Five specially designed bags were launched through CTD winch and the messenger was sent from the top to open the bags in sequence. All the bags opened. Pinger attached at the end could not be seen through HiPAP. This is to be intimated to Simrad. Later moved to very shallow water of 17 m depth and once again tested hopper system. Artificial nodules were laid for a distance of about 28 m and the same could be tracked later by moving ship in reverse direction. This completed all the operations as planned for the cruise. Gave clearance for sailing to Chennai Port and reached anchorage by 11 PM.

21st June 2007

Packed all items for unloading.

SK – 235 -B

From 22/06/2007 to 01/07/2007

Embarkation ⇒ Chennai
Disembarkation ⇒ Chennai

Participants :-

1) Dr. G. Ananda Ramadass	NIOT	Chief Scientist
2) Dr. Sergey Sukonkin	EDBOE, Russia	Dy. Chief Scientist
3) Mr. N. Vedachalam	NIOT	
4) Mr. Sethuraman Ramesh	“	
5) Mr. Raju Ramesh	“	
6) Mr. J. M. Selvakumar	“	
7) Mr. Siva Rajesh	“	
8) Mr. V. K. Jayakumar	“	
9) Mr. E. Chandrasekharan	“	
10) Mr. S. Elangovan	“	
11) Mr. S. Zacharia	“	
12) Mr. M. Murugesan	“	
13) Mr. Doss Prakash	“	
14) Mr. Sahoo Ramakrushna	“	
15) Mr. C. Jothi	“	
16) Mr. Amirogov Alexey	EDBOE, Russia	
17) Mr. Ilin Ilya	“	
18) Dr. Alexander Nosov	“	
19) Mr. A. Dremuchev Sergey	“	
20) Mr. Kanstautim Kuznetsev	“	
21) Mr. Vladimir Kuznetsev	“	
22) Mr. Delvar Thirbusian	“	
23) Mr. Solai Appan Alwar	“	
24) Mr. K. Madhusudhan	Norinco	
25) Mr. P. Bhoopathy	“	
26) Mr. M. Dayalan	“	
27) Mr. P. G. Bentin	“	
28) Mr. M. Chavan	NCAOR	
29) Mr. Amit Patel	“	

Objectives of the Cruise:-

1. Testing of Hydro-Acoustic Navigation System (HANS) at 3000m depth.
2. Calibration of PHINS & DVL of ROV at 60m depth.
3. Integration of HANS with ROV and testing at 500m water depth.

Daily Log of Sagar Kanya Cruise SK – 235-B

Day	Date	Tasks carried out	Remark
1	22 nd June 2007	<ol style="list-style-type: none"> 1. Signed on at 1300 hrs 2. Loaded the equipments 3. Assembled ADU5 GPS array 4. Setup the labs for HANS 	
2	23 rd June 2007	<ol style="list-style-type: none"> 1. Sailed at 1300 hrs 2. Unpacked all ROV & HANS components & latched them to deck 3. Calibrated ADU5 4. Umbilical termination was carried out 	Sea was rough & wind speed was 25 knots. Rained intermittently
3	24 th June 2007	<ol style="list-style-type: none"> 1. Reached 3000 m depth by night 2. Integrated dry testing of ROV, fixing the cameras etc continued 3. Launched 2 transponders & responders by CTD winch. Tracked upto 1200 metres acoustic contact not good after that. 4. Ship USBL array was retrieved. Connected cable broke in the process. Operations was halted at 2330 hrs. 	Sea conditions was moderate. But wind speed was 20 knots. Ship was drifting with 3 knots speed.
4	25 th June 2007	<ol style="list-style-type: none"> 1. Cable & PCBs repaired and tested 2. ROV was launched in water and buoyancy test was performed. 	Weather is fare.
5	26 th June 2007	<ol style="list-style-type: none"> 1. Dropped the bottom transponder to 3200 m water depth and recorded the acoustic communication for 2 hours. 2. ROV USBL array launched and tested. 3. Tether cable routing in ROV and monting of power bulk head completed. 	Wind is above 25 knots.

		4. Insulation in the power house container was improved	
6	27 th June 2007	<ol style="list-style-type: none"> 1. Bottom transponder was tracked acoustically continuously. 2. Transponder was released at 0900 hrs & it surfaced at 1130 hrs. 3. Transponder was tracked using radio beacon & retrieved. 4. Modifications were made in the mooring of the transponder and software corrections were made. 5. Repositioning of TMS & ROV and tether cable connection & disconnection ROV were performed. 	
7	28 th June 2007	<ol style="list-style-type: none"> 1. Bottom transponder was launched at 0430 hrs & tracked acoustically. 2. Calibration performed. 3. Transponder released through acoustic command. 4. Tracked using radio beacon and retrieved. 5. Insulation improved in umbilical cable. 6. TMS & ROV checking continued. Due to severe thunder storm. Started sailing to 60 m water depth. 	Operations are hampered high winds and rain
8	29 th June 2007	<ol style="list-style-type: none"> 1. ROV & TMS were docked & launched to a depth of 10 m depth and powered up. 2. All ROV and TMS systems were checked for functionally. PHINS was calibrated with GPS to reach a standard deviation in heading up to 0.05°. 4. TMS & ROV were towed up to a distance of 5 km & 	Thunder storm occurred in the evening. Wind was 32 knots in the night.

		<p>DVL was calibrated.</p> <p>5. Forward & bottom looking sonar was launched and checked.</p>	
9	30 th June 2007	<ol style="list-style-type: none"> 1. Reached 300 m water depth by 0730 hrs & fixed Ship USBL antenna to the bottom of the ship 2. Dropped the transponder to the bottom 3. Calibrated the ship USBL by going round the point of dropping. 4. Hydro Acoustic Navigation System was connected to the control console of ROV data & control links were checked. ROV USBL antennae were checked by keeping transponders close by in air and acoustic link was confirmed. 5. ROV & TMS were launched in water. System was swinging wildly. 6. ROV USBL antennae were activated in water. Operation was stopped before ship reached the location of bottom transponder owing to heavy currents which are potentially dangerous to the ROV and intermittent missing of data link between ROV and control console. 7. ROV & TMS were removed from water. System swung uncontrollably due to heavy winds. System was latched on the deck. 8. Bottom transponder was released and retrieved using radio direction finder. Ship USBL antenna was removed from the bottom 	

		and retrieved to the deck.	
10	4 th July 2007	Dismantled & packed the material.	Waited for berth at outer anchorage of Chennai Port.
11	2 nd July 2007	ROV undocked from TMS and wrapped with bubble cover.	Waited for berth at outer anchorage of Chennai Port.
12	3 rd July 2007	Cruise Team were signed off at 1000 hrs.	Material could not be off loaded as the lorries and crane could not approach the coal jetty at which ship was berthed.

NIOT team record their appreciation and thanks to the Master of ORV Sagar Kanya for all their help during the operations onboard. NIOT team also thanks NCAOR for their cooperation and arrangements in making this cruise a success.

Dr GA Ramadass (NIOT)
Chief Scientist