

ORV SAGAR KANYA

CRUISE REPORT

SK 325

Submitted to
NATIONAL CENTRE FOR ANTARCTIC & OCEAN RESEARCH,
HEAD LAND SADA, MORMUGAO, GOA,
As per ORV Sagar Kanya Annual Maintenance Contract
With
Ministry of Earth Science, New Delhi

By

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Vessel : ORV. Sagar Kanya.
Cruise No : SK 325.
Chief Scientist : Dr. Sajid Ali
Objective : Geotraces
Institution : PRL, Ahmedabad.
Embarkation : Port Luis, Mauritius.
Disembarkation : Chennai, Tamilnadu.
Period : 04.11.2015 to 06.12.2015.
Participants : P Boopathy
V.C. Sarathchandran.
J Ragunath
M Velkumar
R. Ramesh

Acknowledgement.

We, the Norinco engineers onboard, thank the Chief Scientist and the scientific team for their support and extending their knowledge during the course of our servicing activities onboard.

We thank the Captain, ship staff and crew for their active support and care during the voyage.

The co-ordination and support of Director, NCAOR and his colleagues are gratefully acknowledged.

-Norinco Engineers Team

Introduction.

This report forms part of the Annual Maintenance Contract awarded to Norinco Private Limited for maintenance of scientific equipment onboard ORV. Sagar Kanya.

Regular servicing and Maintenance of equipment during cruise was carried out as per maintenance schedule.

This report describes the breakdown service carried out on those equipments that were found defective during routine maintenance, equipment used and required breakdown maintenance and performance of those equipment used in the cruise.

The report also includes a list of spares consumed, their source and requirement of spare for future use onboard.

A. Chemical / Analytical Instruments

A 02.	Oxygen Titration Units	Maintenance Schedule: Date & Service: 14.11.2015: MS
Service carried out and Remarks: 14.11.2015: Monthly service carried out as per the schedule and all three units are operational.		

A 04.	Water Purifying system	Maintenance Schedule: Date & Service: 24.11.2015: QS
Service carried out and Remarks: The system was used throughout the cruise by scientists from PRL, NCAOR and NIO Vizag. 24.11.2015: Quarterly service carried out as per the schedule and both the units are operational.		

A 06.	pH Meter	Maintenance Schedule: Date & Service: 06.11.2015 } 13.11.2015 } 27.11.2015 } 04.12.2015 } : WS 20.11.2015: MS
Service carried out and Remarks: 06.11.2015 } 13.11.2015 } 27.11.2015 } 04.12.2015 } : Weekly service carried out on these days as per the schedule. 20.11.2015: Monthly service carried out as per the schedule and the equipment is operational.		

A 08.	UV Chamber, UV Lamp	Maintenance Schedule: Date & Service: 25.11.2015: MS
Service carried out and Remarks: Port side and STBD side fume hoods were used by PRL Scientists. 25.11.2015: Monthly service carried out as per the schedule and all the Chambers are operational.		

B. Geological / Geological Instruments

B 01.	Gravity Corer	Maintenance Schedule: Date & Service: 06.11.2015 : MS Operation
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Service carried out and Remarks:
 Gravity Corer was operated 02 times at Two stations and samples were collected. The collected sample was sub-sampled and kept in deep freezer.
 06.11.2015: Monthly maintenance carried out as per the schedule and the equipment is operational.

B 02.	Hydraulic Piston Corer	Maintenance Schedule: Date & Service: 08.11.2015: YS
Service carried out and Remarks: 08.11.2015: Yearly maintenance carried out as per the schedule and the equipment is operational.		

B 03.	Rock Saw Unit	Maintenance Schedule: Date & Service: 04.12.2015: QS
Service carried out and Remarks: 04.12.2015: Quarterly maintenance carried out as per the schedule and the equipment is operational.		

B 04.	Liner Saw Unit	Maintenance Schedule: Date & Service: 04.12.2015: QS
Service carried out and Remarks: 04.12.2015: Quarterly maintenance carried out as per the schedule and the equipment is operational.		

B 05.	Rock Mill	Maintenance Schedule: Date & Service: 10.11.2015: QS
Service carried out and Remarks: 10.11.2015: Quarterly maintenance carried out as per the schedule and the equipment is operational.		

B 06.	Bottom Grab {Small}	Maintenance Schedule: Date & Service: 11.11.2015: MS.
Service carried out and Remarks: 11.11.2015: Monthly maintenance carried out as per the schedule and the equipment is operational.		

B 07.	Bottom Grab {Large}	Maintenance Schedule: Date & Service: Operation 11.11.2015: MS.
Service carried out and Remarks: The Grab was operated 08 times at 07 stations and samples were collected. After every operation the unit was washed with fresh water and secured 11.11.2015: Monthly maintenance carried out as per the schedule and the equipment is operational.		

B 10.	Side Scan Sonar + Tow Fish	Maintenance Schedule: Date & Service: 15.11.2015; MS.
Service carried out and Remarks: 15.11.2015: Monthly maintenance carried out as per the schedule and the equipment is operational.		

B 13.	Deep Sea Echo sounder + Repeaters	Maintenance Schedule: Date & Service: Operation : 07.11.2015; MS
Service carried out and Remarks: Deep sea echosounder was used in this cruise and data was recorded. On completion of the cruise the recorded data was copied on CD. 07.10.2015: Monthly maintenance carried out as per the schedule and the equipment is operational.		

B 14.	Shallow Water Echo sounder + Repeaters	Maintenance Schedule: Date & Service: 07.11.2015; MS
Service carried out and Remarks: 07.11.2015: Monthly maintenance carried out as per the schedule and the equipment is partially operational.		

B 15.	MBES	Maintenance Schedule: Date & Service: Operation 16.11.2015; QS
Service carried out and Remarks: The system was used at CTD, Gravity Corer and Bottom Grab stations for surveying the area and operational status of the equipment was satisfactory. 16.11.2015: Quarterly maintenance carried out as per the schedule and the equipment is operational.		

B 16.	SBP	Maintenance Schedule: Date & Service: Operation 09.11.2015; MS
Service carried out and Remarks: On 04.11.2015, as soon as the vessel left harbour, the system was switched on and the system was ON throughout the cruise and data was recorded. On completion of the cruise data was copied on CD. On 27.11.2015 at 1100hrs, on safety of the instrument the Tx / Rx and CPU units were		

switched off as the Lab temperature raised to 40°C.
 On 28.11.2015 at 0545hrs the system was again switched on and started logging.
 09.11.2015: Monthly maintenance carried out as per the schedule and the equipment is operational.

B 17.	Spade Corer	Maintenance Schedule: Date & Service: 17.11.2015: MS
Service carried out and Remarks: 17.11.2015: Monthly maintenance carried out as per the schedule and the equipment is operational.		

B 18.	Chain Bag Dredge	Maintenance Schedule: Date & Service: 18.11.2015: MS
Service carried out and Remarks: 18.11.2015: Monthly maintenance carried out as per the schedule and the equipment is operational.		

B 19.	Core Sub-Sampling Station	Maintenance Schedule: Date & Service: 18.10.2015: MS
Service carried out and Remarks: The Core sub-sampling station was used for sub-sampling the collected core sample. 18.11.2015: Quarterly maintenance carried out as per the schedule and the unit is operational.		

B 21.	Tension Meter for Winch	Maintenance Schedule: Date & Service: Operation 20.11.2015: MS
Service carried out and Remarks: The unit was used during Grab and Gravity coring operations along with Deep Sea Winch. 20.11.2015: Monthly maintenance carried out as per the schedule and the equipment is operational.		

B 22.	Sieve Shaker	Maintenance Schedule: Date & Service: 21.11.2015: MS
Service carried out and Remarks: 21.11.2015: Monthly maintenance carried out as per the schedule and the equipment is operational.		

C. Oceanography / Meteorology / Biology Equipment
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C 01.	MPN	Maintenance Schedule: Date & Service: 22.11.2015: MS
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<p>Service carried out and Remarks: 22.11.2015: Monthly maintenance carried out as per the schedule and the equipment is operational.</p>
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C 03.	XBT System	<p>Maintenance Schedule: Date & Service: 22.11.2015: QS</p>
<p>Service carried out and Remarks: 22.11.2015: Quarterly maintenance carried out as per the schedule and the equipment is operational.</p>		

C 04.	CTD Idronaut	<p>Maintenance Schedule: Date & Service: Operation 14.11.2015: MS</p>
<p>Service carried out and Remarks: The Idronaut CTD was operated 14 times at 05 stations and samples were collected. After every operation the system was washed with fresh water and secured.</p> <p>14.11.2015: Monthly maintenance carried out as per the schedule and the equipment is operational.</p>		

C 06.	Niskin Sampler 5Ltrs	<p>Maintenance Schedule: Date & Service: Operation</p>
<p>Service carried out and Remarks: Eight numbers of samplers were used for water collection. At end of the cruise the samplers were washed with fresh water and secured in port side WetLab. The samplers are operational.</p> <p>Spare used:-</p>		

C 07.	Niskin Sampler 10Ltrs	<p>Maintenance Schedule: Date & Service: Operation</p>
<p>Service carried out and Remarks: Twelve numbers of samplers were used for water collection throughout the cruise. At end of the cruise the samplers were washed with fresh water and secured in Photo Lab. The samplers are operational.</p> <p>Spare used:-</p>		

C 11.	Bucket Thermometers	<p>Maintenance Schedule: Date & Service: 18.11.2015: MS</p>
<p>Service carried out and Remarks: 18.11.2015: Monthly maintenance carried out as per the schedule and both units are operational.</p>		

C 13.	Barometer	Maintenance Schedule: Date & Service: 19.11.2015: MS
Service carried out and Remarks: 19.11.2015: Monthly maintenance carried out as per the schedule and the unit is operational.		

C 17.	Thermosalinograph	Maintenance Schedule: Date& Service: Operation 18.11.2015: MS
Service carried out and Remarks: Thermosalinograph was used during entire period of the cruise and data was recorded. The recorded data was processed and copied on CD. At the end of the cruise the sensors were flushed with fresh water. 18.11.2015: Monthly maintenance carried out as per the schedule and the equipment is operational.		

C 20.	Rotary Shaker	Maintenance Schedule: Date& Service: 22.11.2015: MS
Service carried out and Remarks: 22.11.2015: Monthly maintenance carried out as per the schedule and the equipment is operational.		

D. Auxiliary / General Equipment

D 01	GPS + Power Supply	Maintenance Schedule: Date & Service: Operation.
Service carried out and Remarks: GPS was used throughout during the cruise and navigational data was made available to all under way equipments (DSES, CTD, TSG, and SBP). The equipment is operational.		

D 02	CCTV	Maintenance Schedule: Date & Service: Operation 06.11.2015: QS
Service carried out and Remarks: CCTV was used throughout the cruise for monitor various activities onboard especially in DSW and CTD operations. 06.10.2015: Quarterly maintenance carried out as per the schedule and the equipment is operational.		

D 03.	Refrigerators	Maintenance Schedule: Date & Service: 06.11.2015 } 13.11.2015 }
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		27.11.2015} 04.12.2015} : WS 20.11.2015: MS
<p>Service carried out and Remarks: Refrigerators in Chemistry Lab and Multipurpose Lab were used. 06.11.2015} 13.11.2015} 27.11.2015} 04.12.2015}: Weekly maintenance carried out on these days as per the schedule. 20.11.2015}: Monthly maintenance carried out as per the schedule Except WetLab STBD side all other refrigerators are operational.</p>		

D 05.	Deep Freezer	Maintenance Schedule: Date & Service: Operation : 23.11.2015: QS
<p>Service carried out and Remarks: One of the Deep Freezer (Aft side) was used throughout the cruise by PRL Scientists. 23.11.2015: Quarterly maintenance carried out as per the schedule and both the units are operational.</p>		

D 06.	Meter Wheel Units	Maintenance Schedule: Date & Service: Operation 17.11.2015: MS
<p>Service carried out and Remarks: Forward Pulley was used during CTD operation and the performance was satisfactory 17.11.2015: Monthly maintenance carried out as per the schedule. Except cable payout unit, both pulleys are operational.</p>		

D 07	Personal Computer / Server & Peripherals (12 CPUs, 15 monitors)	Maintenance Schedule: Date & Service: Operation 28.11.2015: MS	
<p>Service carried out and Remarks: The following computers are available onboard and their status are as follows:</p>			
Sl. No	PC	Loc: / Dedicated to	Status / Remarks
01	<p>Computer: 01 Make: Lenovo Think Centre. M/N: 8811-FRA. S/N: L9AM500. Monitor: 01 Lenovo Think Vision</p>	Chief scientist Cabin	Used / Operational
02	<p>Computer: 02 Make: Lenovo Think Centre P/N: MT-M 8811-FR8 S/N: L9AM507 Monitor: 02</p>	Met Lab / AWS	Operational

	Make: HPLE1851W. P/N: NK033A. S/N: CNC102QH7B		
03	Computer: 03 Make: HP Compaq 8100. P/N: XT767PA#ACJ. S/N: INA109VJRJ. Monitor: 03 Make: HP LE1851w. P/N: NK033A. S/N: CNC102QH85.	Met Lab / General Purpose	Used / Operational
04	Computer: 04 Make: HP Compaq 8100 P/N: XT767PA#ACJ S/N: INA109VJYS Monitor: 04 Make: HP LE1851w. P/N: NK033A. S/N: CNC102QH85.	Dry-Lab Port / Thermosalinograph	Used / Operational
05	Computer: 05 Make: HP Compaq 8100 P/N: XT767PA#ACJ S/N: INA109VJRR Monitor: 07 Make: HP LE1851w. P/N: NK033A. S/N: CNC102QHM3.	Dry-Lab Port / CTD	Used / Operational.
06	Computer: 06 Make: Lenovo Think Centre. M/N: 8811-FRA. S/N: L9AM534. Monitor: 06 Make :AOC Model No. TFT185W80PS S/N: AOCW5M5NA1802098.	Dry-Lab Port/ ADCP	Operational
07	Computer: 07 Make: HP Compaq 8100. P/N: XT 767PA#ACJ S/N: INA109VJWD. Monitor: 08 Make: HP LE1851w. P/N: NK033A. S/N: CNC102QH7K.	Dry-Lab Port / Magnetometer	Operational.
08	Computer: 08 Make: Lenovo Think Centre. M/N: 8811-FRA. S/N: L9AM499. Monitor: 05 Make : Acer Model : V193HQL Version : V193HQL H6 P/N : VM.XV3SS.HO1 S/N : MMLKESS0063010C9938507	Dry Lab Stbd / Echo sounder	The CPU and monitor were offloaded to NPL Chennai office for Repairs.

09	<p>Computer: 09 Make: HP Compaq 8100. P/N: XT767PA#ACJ. S/N: INA109VJKN. Monitor: 09 Make: HP LE1851w. P/N: NK033A. S/N: CNC102QFYF.</p>	Conference room	Operational
10	<p>Computer: 10 Make: HP Compaq 8100. P/N: XT767PA#ACJ. S/N: INA109VJYM. Monitor: 10 AOC. 18.5" Wide LED P/N. e950Sw Model No.185LM00013 S/N: AOCAR96C3052436</p>	Photo Lab	Operational
11	<p>Computer: 11 Make: Lenovo Think Centre M/N: 8811-FRA. S/N: L9AM498 Monitor: 11 Make: Lenovo Model: 9227-AD1 Serial Number: VIA2955</p>	Photo Lab	Operational
12	<p>Computer: 12 Make: Zebronics. Model: Elegance.</p>	Photo Lab	Operational
13	<p>Computer: 13 Make: XTECH.</p>	Photo Lab	Operational
Monitors			
14	<p>Monitor:12 Make: Lenovo Think Vision Model: 9227 AD1. S/N: V1A2976.</p>	Wheel House	Operational. This is connected as deep sea echo sounder repeater in wheel house.
15	<p>Monitor:13 Make : AOC S/N: AOCWSM5NA1801905</p>	Dry Lab Stbd / SWES	Operational. This is connected with SWES.
<p>28.09.2015: Monthly maintenance carried out as per the schedule. Except Server, CPU #08 and Monitor #05 all other systems are operational.</p>			

D 08	LAN	Maintenance Schedule: Date & Service: 29.11.2015: MS
Service carried out and Remarks: 29.11.2015: Monthly maintenance carried out as per the schedule and the LAN is operational.		

D 09	Printers	Maintenance Schedule: Date & Service: 30.11.2015: MS
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Service carried out and Remarks:

The following printers are available onboard and their status are as follows:

No	Make of the printer	Location	Status / Remarks
1	HP LaserJet P 2015dn	CS Cabin	Used, Operational
2	HP LaserJet P 1007	Met Lab	Used ,Operational
3	HP LaserJet P 1007	Photo Lab	Operational
4	HP LaserJet P 1007	Photo Lab	Operational
5	HP LaserJet CP 1525n	Conference Room	Used ,Operational
6	HP LaserJet P 2015dn	CTD Lab	Used, Operational
7	HP LaserJet 1150	Photo Lab	Operational
8	HP LaserJet 1150	Tape Store	Operational, Cover broken
9	HP LaserJet 1150	Tape Store	Operational

30.11.2015: Monthly maintenance carried out as per the schedule and all Printers are operational.

D 10.	External CD Writer	Maintenance Schedule: Date & Service: 01.12.2015: MS
Service carried out and Remarks: 01.12.2015: Monthly maintenance was carried out as per the schedule and the CD Writer is operational.		

D 11.	Scanner	Maintenance Schedule: Date & Service: 01.12.2015: MS
Service carried out and Remarks: 01.12.2015: Monthly maintenance was carried out as per the schedule and the Scanner is operational.		

D 12.	Plotter	Maintenance Schedule: Date & Service: 03.12.2015: MS
Service carried out and Remarks: The equipment is non - operational		

D 13.	Autoclave	Maintenance Schedule: Date & Service: 21.11.2015; MS
Service carried out and Remarks: 21.11.2015: Monthly maintenance was carried out as per the schedule and the unit is operational.		

D 15.	Overhead Projector	Maintenance Schedule: Date & Service: 26.11.2015: QS
Service carried out and Remarks: 26.11.2015: Quarterly maintenance was carried out as per the schedule and the unit is operational.		

D 16.	Slide Projector	Maintenance Schedule: Date & Service: 26.11.2015: QS
Service carried out and Remarks: 26.11.2015: Quarterly maintenance was carried out as per the schedule and the unit is operational.		

D 17.	LCD Projector	Maintenance Schedule: Date & Service: 26.11.2016: QS
Service carried out and Remarks: 26.11.2015: Quarterly maintenance was carried out as per the schedule and the unit is operational.		

D 18.	Dynamic Positioning System & All sub - Units	Maintenance Schedule: Date & Service: Operation 27.11.2015: MS
Service carried out and Remarks : The DP was used during the CTD, Gravity Coring and Grab Operations. As the ship's steering wheel was not operational, DP was used for entering the vessel to port. Though the system was operational, the following sub unit is non-functional and need replacement: 1. Portside Wind sensor. 27.11.2015: Monthly maintenance carried out as per the schedule.		

D 19.	HI-PAP	Maintenance Schedule: Date & Service: 27.11.2015: MS
Service carried out and Remarks : 27.11.2015: Monthly maintenance carried out as per the schedule and the unit is operational.		

D 20.	Deck Crane	Maintenance Schedule: Date & Service: Operation
Service carried out and Remarks : The Crane was used during PRL Clean CTD stations the cruise and it is operational.		

E 25.	Deep sea Winch	Maintenance Schedule: Date & Service: Operation
Service carried out and Remarks : The Deep Sea Winch was operated for Bottom Grab and Gravity corer operations. On 14.11.2015 at 0030hrs, while lowering Grab, the winch wire rope slipped off from the Jib		

Boom Pulley and wire got damage, around 05 meters of winch wire was chopped off and made new eye connection and continued operation. Observed that the winch counter was not responding beyond 4500meters, this should be attended at next port call.

ADDITIONAL WORKS CARRIED OUT

	Clean CTD + Winch [PRL]	Maintenance Schedule: Date & Service: operation
<p>Service carried out and Remarks</p> <p>:</p> <p>During the cruise Clean CTD was operated 18 times at 09 stations and data was collected. After every operation the system was washed with fresh water and secured. The recorded data was processed as per the requirement of the scientist’s team and handed over to Chief scientist. As the carousel unit was non operational necessary modifications was made to SK CTD’s carousel and used for water collection.</p> <p>While operating the winch it was observed that the cooling water cut off relay was not functioning, the same was bypassed and continued operation.</p> <p>After finishing the sampling stations the underwater unit was dismantled from the frame, the Temperature sensor {Model: 3F 10,500m Part No: 90235.2 Serial No: 032225} which was used from SK was removed and kept.</p> <p>Note:-</p> <ul style="list-style-type: none"> * There is a physical damage on the outer sleeve of the cable at 215mtrs. ** Wireless remote unit is non operational. *** Cameras in the Winch van should be repaired. **** Check the cooling water cut off temperature setting. ***** The CTD (Whole unit) should send for calibration. <p>The equipment is operational.</p>		

	SBE 9/11plus CTD. (Deck unit SN: 11P61163-0862 / Underwater unit SN: 09P61163-1019).	Maintenance Schedule: Date & Service: operation
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Service carried out and Remarks :

On 10.11.2015, before reaching the Hydrothermal stations, after necessary modifications the carousel was switched back from PRL Clean CTD. During this voyage the CTD was operated 15 times at 14 stations and data was collected. The recorded data was processed as per the requirement of the scientist's team and handed over to Chief scientist.

On 15.11.2015 at 1355Hrs while lowering observed that Fluorescence/Turbidity (Sr No: FLNTURTD-1095) values shows erratic, the CTD was brought back to deck and inspected the sensor, on visual inspection it was observed that there is a small crack on the lens. Suspects this may be the reason for showing erratic reading.

After Hydrothermal stations on 16.11.2015, the carousel was dismantled and fitted to PRL CTD for water sample collection. At the end of the cruise on 30.11.2015 the carousel was fitted back and secured.

After every operation the system was washed with fresh water and secured.

The equipment is operational.

	CTD Winches (Aft& forward).	Maintenance Schedule: Date & Service: Operation
<p>Service carried out and Remarks :</p> <p>Forward CTD winch was operated during the CTD operations and the performance was satisfactorily.</p> <p>On 18.11.2015 at 2135hrs while operating Idronaut CTD the level winder stopped working further inspection found that "lead screw guide" of the winch was broken and the CTD was manually brought back to deck. This was informed to ship officials, as there were no spares to repair onboard, this needs to be attended at next port call.</p> <p>Both winches are non operational.</p>		

For Norinco Private Limited,

Chief Scientist

P Boopathy

Dr. Saajid Ali

Senior Manager

PRL, Ahmedabad.