

ORV SAGAR KANYA

CRUISE REPORT

SK 324

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

NORINCO PRIVATE LIMITED
D3.19, Sancoale Industrial Estate
Zuari Nagar
Goa - 403 726

Phone: +91 832 2555 837
Fax: +91 832 2555 420
Email: goa@norinco.co.in
Web: www.norinco.co.in

Vessel : ORV. Sagar Kanya.
Cruise No : SK 324.
Chief Scientist : Dr. Sajid Ali
Objective : Geotraces
Institution : PRL, Ahmedabad.
Embarkation : Mormugao, Goa.
Disembarkation : Port Luis, Mauritius.
Period : 22.09.2015 to 21.10.2015.
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: 14.10.2015: MS
Service carried out and Remarks: 14.10.2015: Monthly service carried out as per the schedule and all three Titration units are operational.		

A 03.	Quartz Distillation Unit	Maintenance Schedule: Date & Service: 13.10.2015; QS
Service carried out and Remarks: 13.10.2015: Quarterly service carried out as per the schedule and the equipment is operational.		

A 04.	Water Purifying system	Maintenance Schedule: Date & Service: 24.09.2015: MS
Service carried out and Remarks: Prior to the cruise all cartridges and filters of both units were changed, tested and confirmed the operational status. The system was used throughout the cruise by PRL and NIO Vizag scientists. 24.09.2015: Monthly service carried out as per the schedule and both units are operational.		

A 06.	pH Meter	Maintenance Schedule: Date & Service: 25.09.2015 } 02.10.2015 } 09.10.2015 } 16.10.2015 } : WS
Service carried out and Remarks: 25.09.2015 } 02.10.2015 } 09.10.2015 } 16.10.2015 } : Weekly service carried out on these days as per the schedule and the equipment is operational.		

A 08.	UV Chamber, UV Lamp	Maintenance Schedule: Date & Service: 25.09.2015: QS
Service carried out and Remarks: Port side and STBD side fume hoods were used by PRL Scientists. 25.09.2015: Quarterly service carried out as per the schedule and all Chambers are operational.		

B. Geological / Geological Instruments

B 01.	Gravity Corer	Maintenance Schedule: Date & Service: Operation
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Service carried out and Remarks:
Gravity Corer was operated 11 times at 08 stations and samples were collected. The collected sample was sub-sampled and kept in deep freezer.
The equipment is operational.

B 02.	Hydraulic Piston Corer	Maintenance Schedule: Date & Service: 06.10.2015; MS
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Service carried out and Remarks:
06.10.2015: Monthly maintenance carried out as per the schedule and the equipment is operational.

B 03.	Rock Saw	Maintenance Schedule: Date & Service: 04.10.2015: MS
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Service carried out and Remarks:
04.10.2015: Monthly maintenance carried out as per the schedule and the equipment is operational.

B 04.	Liner Saw Unit	Maintenance Schedule: Date & Service: 04.10.2015: MS
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Service carried out and Remarks:
04.10.2015: Monthly maintenance carried out as per the schedule and the equipment is operational.

B 05.	Rock Mill	Maintenance Schedule: Date & Service: 10.10.2015: MS
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Service carried out and Remarks:
10.10.2015: Monthly maintenance carried out as per the schedule and the equipment is operational.

B 06.	Bottom Grab {Small}	Maintenance Schedule: Date & Service: 11.10.2015:MS.
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Service carried out and Remarks:
11.10.2015: Monthly maintenance carried out as per the schedule and the equipment is operational.

B 07.	Bottom Grab {Large}	Maintenance Schedule: Date & Service: 11.10.2015:MS.
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Service carried out and Remarks:
11.10.2015: Monthly maintenance carried out as per the schedule and the equipment is operational.

B 10.	Side Scan Sonar + Tow Fish	Maintenance Schedule: Date & Service: 15.10.2015; MS.
Service carried out and Remarks: 15.10.2015: Monthly maintenance carried out as per the schedule and the equipment is operational.		
B 12.	Pingers	Maintenance Schedule: Date & Service: 16.10.2015; QS
Service carried out and Remarks: 16.10.2015: Quarterly maintenance carried out as per the schedule and both units are operational.		
B 13.	Deep Sea Echo sounder + Repeaters	Maintenance Schedule: Date & Service: Operation : 07.10.2015; MS
Service carried out and Remarks: Deep sea echosounder was used throughout 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: 07.10.2015; MS
Service carried out and Remarks: 07.10.2015: Monthly maintenance carried out as per the schedule and the equipment is partially operational.		
B 15.	MBES	Maintenance Schedule: Date & Service: Operation 16.10.2015: MS
Service carried out and Remarks: The system was used for surveying the Gravity coring station area and operational status of the equipment was satisfactory. 16.10.2015: Monthly maintenance carried out as per the schedule and the equipment is operational.		
B 16.	SBP	Maintenance Schedule: Date & Service: Operation 09.10.2015: MS

Service carried out and Remarks:
 On 22.09.2015, 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.
 09.10.2015: Monthly maintenance carried out as per the schedule and the equipment is operational.

B 17.	Spade Corer	Maintenance Schedule: Date & Service: 17.10.2015: MS
Service carried out and Remarks: 17.10.2015: Monthly maintenance carried out as per the schedule and the equipment is operational.		

B 18.	Chain Bag Dredge	Maintenance Schedule: Date & Service: 18.10.2015: MS
Service carried out and Remarks: 18.10.2015: Monthly maintenance carried out as per the schedule and the equipment is operational.		

B 19.	Core Sub-Sampling Station	Maintenance Schedule: Date & Service:
Service carried out and Remarks: The Core sub-sampling station was used for sub-sampling the collected core and the unit is operational.		

B 21.	Tension Meter for Winch	Maintenance Schedule: Date & Service: Operation 20.10.2015: MS
Service carried out and Remarks: The unit was used during Gravity coring operations along with Deep Sea Winch. 20.10.2015: 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: 22.09.2015: QS
Service carried out and Remarks: 22.09.2015: Quarterly maintenance carried out as per the schedule and the equipment is operational.		

C 04.	CTD Idronaut	Maintenance Schedule: Date & Service: Operation 14.10.2015: QS
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<p>Service carried out and Remarks: On 29.09.2015, the Geo Oceanic Carousel unit was charged with external battery charger. The CTD was operated 43 times at 12 stations and samples were collected. After every operation the system was washed with fresh water and secured</p> <p>14.10.2015: Quarterly maintenance carried out as per the schedule and the equipment is operational.</p>

C 05.	Niskin Sampler 1.7Ltrs	Maintenance Schedule: Date & Service: 23.09.2015: QS
<p>Service carried out and Remarks: 23.09.2015: Quarterly maintenance carried out as per the schedule and the samplers are operational.</p>		

C 06.	Niskin Sampler 5Ltrs	Maintenance Schedule: Date & Service: Operation 24.09.2015: QS
<p>Service carried out and Remarks: Eight numbers of samplers were used for water collection. Found rubber chords of five samplers were faulty these were replaced with new ones from Norinco's stock.</p> <p>24.09.2015: Quarterly maintenance carried out as per the schedule and the samplers are operational.</p>		
<p>Spare used:- Rubber Chords : 05 Nos</p>		

C 07.	Niskin Sampler 10Ltrs	Maintenance Schedule: Date & Service: Operation 23.09.2015: QS
<p>Service carried out and Remarks: Twelve numbers of samplers were used for water collection throughout the cruise. Found rubber chords of some samplers were faulty these were replaced with new ones from Norinco's stock.</p> <p>23.09.2015: Quarterly maintenance carried out as per the schedule and the samplers are operational.</p>		
<p>Spare used:- Rubber Chords : 05 Nos</p>		

C 08.	Niskin Sampler 30Ltrs	Maintenance Schedule: Date & Service: 24.09.2015: QS
<p>Service carried out and Remarks: 24.09.2015: Quarterly maintenance carried out as per the schedule and the samplers are operational.</p>		

C 09.	Go-Flo Sampler 30Ltrs	Maintenance Schedule: Date & Service: 25.09.2015: QS
Service carried out and Remarks: 25.09.2015: Quarterly maintenance carried out as per the schedule and the units are operational.		

C 11.	Bucket Thermometers	Maintenance Schedule: Date & Service: 18.10.2015: MS
Service carried out and Remarks: 18.10.2015: Monthly service carried out as per the maintenance schedule and both the units are operational.		

C 13.	Barometer	Maintenance Schedule: Date & Service: 19.10.2015: MS
Service carried out and Remarks: 19.10.2015: Monthly service carried out as per the maintenance schedule and the unit is operational.		

C 15.	Radio Sonde	Maintenance Schedule: Date & Service: 02.10.2015: QS
Service carried out and Remarks: 02.10.2015: Quarterly maintenance carried out as per the schedule and unit is operational.		

C 17.	Thermosalinograph	Maintenance Schedule: Date & Service: Operation 18.10.2015: 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. 18.10.2015: Monthly service carried out as per the schedule and it is operational.		

C 20.	Rotary Shaker	Maintenance Schedule: Date & Service: 22.09.2015: MS
Service carried out and Remarks: 22.09.2015: 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. : 05.10.2015: QS
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<p>Service carried out and Remarks: GPS was used throughout during the cruise and navigational data was made available to all under way equipments (DSES, TSG, and SBP).</p> <p>05.10.2015: Quarterly maintenance carried out as per the schedule and the equipment is operational.</p>

D 02	CCTV	<p>Maintenance Schedule: Date & Service: 06.10.2015: MS.</p>
<p>Service carried out and Remarks: CCTV was used throughout the cruise for monitor various activities onboard especially in DSW and CTD operations. The system was operational during this cruise period.</p> <p>06.10.2015: Quarterly maintenance carried out as per the schedule and the equipment is operational.</p>		

D 03.	Refrigerators	<p>Maintenance Schedule: Date & Service: 25.09.2015 } 02.10.2015 } 09.10.2015 } 16.10.2015: WS.</p>
<p>Service carried out and Remarks: Refrigerators in Chemistry Lab and Multipurpose Lab were used during this cruise and these are operational.</p> <p>25.09.2015 } 02.10.2015 } 09.10.2015 } 16.10.2015: Weekly service carried out on the above dates as per the maintenance schedule and all refrigerators are operational except the one fitted in Wet Lab STBD. This defective fridge will be attended during the next Indian port.</p>		

D 05.	Deep Freezer	<p>Maintenance Schedule: Date & Service:</p>
<p>Service carried out and Remarks: One of the Deep Freezer (Aft side) was used throughout the cruise by PRL Scientists. Both units are operational.</p>		

D 06.	Meter Wheel Units	<p>Maintenance Schedule: Date & Service: 17.10.2015: MS.</p>
<p>Service carried out and Remarks: Forward Pulley was used during CTD operation and the performance was satisfactory</p> <p>17.10.2015: Monthly maintenance was 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)	<p>Maintenance Schedule: Date & Service: 28.09.2015: MS.</p>
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Service carried out and Remarks: The following computers are included in AMC and their status are as follows:			
Sl. No	PC	Loc: / Dedicated to	Status / Remarks
01	Computer: 01 Make: Lenovo Think Centre. M/N: 8811-FRA. S/N: L9AM500. Monitor: 01 Lenovo Think Vision	Chief scientist Cabin	Used / Operational
02	Computer: 02 Make: Lenovo Think Centre P/N: MT-M 8811-FR8 S/N: L9AM507 Monitor: 02 Make: HPLE1851W. P/N: NK033A. S/N: CNC102QH7B	Met Lab / AWS	Operational
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: CNC102QH1.	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: AOCWSM5NA1802098.	Dry-Lab Port/ ADCP	Operational
07	Computer: 07 Make: HP Compaq 8100. P/N: XT 767PA#ACJ S/N: INA109VJWD. Monitor: 08	Dry-Lab Port / Magnetometer	Operational.

	Make: HP LE1851w. P/N: NK033A. S/N: CNC102QH7K.		
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	These defective CPU and monitor were offloaded to NPL Chennai office on 18.06.2015 and the repairs are in progress through OEM.
09	Computer: 09 Make: HP Compaq 8100. P/N: XT767PA#ACJ. S/N: INA109VJKN. Monitor: 09 Make: HP LE1851w. P/N: NK033A. S/N: CNC102QFYF.	Conference room	Operational
10	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	Photo Lab	Operational
11	Computer: 11 Make: Lenovo Think Centre M/N: 8811-FRA. S/N: L9AM498 Monitor: 11 Make: Lenovo Model: 9227-AD1 Serial Number: VIA2955	Photo Lab	Operational
12	Computer: 12 Make: Zebronic. Model: Elegance.	Photo Lab	Operational
13	Computer: 13 Make: XTECH.	Photo Lab	Operational
Monitors			
14	Monitor:12 Make: Lenovo Think Vision Model: 9227 AD1. S/N: VIA2976.	Wheel House	Operational. This is connected as deep sea echo sounder repeater in wheel house.
15	Monitor:13 Make : AOC S/N: AOCWSM5NA1801905	Dry Lab Stbd / SWES	Operational. This is connected with SWES.

28.09.2015: Monthly maintenance carried out as per the schedule.
Except CPU #08 and Monitor #05 all other systems are operational.

D 08	LAN	Maintenance Schedule: Date & Service: 30.06.2015: MS
Service carried out and Remarks: 29.09.2015: Monthly maintenance carried out as per the schedule and the LAN is operational.		

D 09	Printers	Maintenance Schedule: Date & Service: 30.06.2015: MS	
Service carried out and Remarks: The following printers are included in AMC and their status are as follows:			
<u>No</u>	<u>Make of the printer</u>	<u>Location</u>	<u>Status / Remarks</u>
1	HP LaserJet P2015dn	CS Cabin	Used, Operational
2	HP LaserJet P1007	Met Lab	Used ,Operational
3	HP LaserJet P1007	Photo Lab	Operational
4	HP LaserJet P1007	Photo Lab	Operational
5	HP LaserJet CP 1525n	Conference Room	Used ,Operational
6	HP LaserJet P2015dn	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
30.09.2015: Monthly service carried out to all printers as per the maintenance schedule and all of them are operational.			

D 10.	External CD Writer	Maintenance Schedule: Date & Service: 01.10.2015: MS
Service carried out and Remarks: 01.10.2015: Monthly maintenance was carried out as per the schedule and the CD Writer is operational.		

D 11.	Scanner	Maintenance Schedule: Date & Service: 01.10.2015: MS.
Service carried out and Remarks: 01.10.2015: Monthly maintenance was carried out as per the schedule and the Scanner is operational.		

D 12.	Plotter	Maintenance Schedule: Date & Service:
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Service carried out and Remarks:
This plotter is defective and offloaded from the vessel to Norinco office for repairs.

D 18.	Dynamic Positioning System & All sub - Units	Maintenance Schedule: Date & Service: 27.09.2015: QS
Service carried out and Remarks : The DP was used during the CTD and Gravity Coring operations. Though the system is operational, Portside Wind sensor is non-functional which needs replacement: 27.09.2015: Quarterly service carried out to DP system as per the maintenance schedule and it is operational.		

D 19.	HI-PAP	Maintenance Schedule: Date & Service: 27.09.2015: QS
Service carried out and Remarks : 27.0.2015: Quarterly maintenance carried out as per the schedule and the unit is operational.		

D 20.	Deck Crane	Maintenance Schedule: Date & Service:
Service carried out and Remarks : PRL Clean CTD operations were carried out though a pulley which is attached to the deck crane. Hence, the Crane was used during all CTD stations during this cruise and it was operational.		

E 25.	Deep sea Winch	Maintenance Schedule: Date & Service:
Service carried out and Remarks : The Deep Sea Winch was operated for Gravity Coring operations. On 23.09.2015 at 1845hrs, while retrieving Gravity corer and it reached at a depth of 903 meters, the deep sea winch stopped. This same was informed to ship officials, further inspection found that a driver transformer in the control panel was burnt out. As there was no accurate spare transformer available onboard they managed a temporary arrangement to retrieve the Corer and successfully retrieved the corer. After some modifications the winch was used for rest of the operations.		

ADDITIONAL WORKS CARRIED OUT

	Clean CTD + Winch [PRL]	Maintenance Schedule: Date & Service: operation
<p>Service carried out and Remarks :</p> <p>During the cruise Clean CTD was operated 43 times at 18 stations and data was collected. On completion of every operation, CTD underwater unit 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.</p> <p>In first two stations, it was observed that the DO Sensor was showing erratic reading and this was rectified by cleaning the bulkhead connector on the sensor. Tested and found operational thereafter.</p> <p>On 27.09.2015, at station #05, the CTD was lowered up to a depth of 3750 meters and noticed SBE32 carousel unit (SN:3264933-0864) stopped working. It was not responded with the triggering command and an error message “unsupported modem message from SBE carousel” was appeared on the computer display. Tried to close the bottles manually from deck unit, but no response from the carousel. Restarted Seasave, the acquisition software, observed that the water sampler was failed to initialize, a message “<i>data acquisition stopped, failed to initialize water sampler</i>” appeared on the screen. De-selected the water sampler from software and started. Brought back the CTD to deck and tested, without water sampler the system works fine. Removed the carousel from the frame and opened the pylon for any water ingress, but it was found intact. As there are no spare PCB’s for repairing the carousel, SK CTD’s pylon connector was modified and remaining stations were successfully carried out with this arrangement.</p> <p>On 15.10.2015 at station #17, the CTD was around 3500mtrs of water depth, the communication between underwater unit to deck unit was interrupted and this was rectified by restarting the acquisition software.</p> <p>During this cruise, the umbilical cable got damage three times and chopped off the damage</p>		

<p>portion of cable and re-joined with the pig tail connector. Around 50m of cable were chopped off during these splicing.</p> <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
<p>Service carried out and Remarks :</p> <p>During the cruise CTD was operated 14times at 04 stations and data was collected. After every operation the underwater unit was washed with fresh water and secured.</p> <p>On 27.09.2015, at station No 05, the PRL Clean CTD's carousel became faulty, necessary changes made to SK SBE CTD's carousel and connected to PRL CTD for water sample collection. Hence the rest of the CTD operations carried with Idronaut CTD.</p> <p>The equipment is operational.</p>		

	Autosal	Maintenance Schedule: Date & Service: Operation
<p>Service carried out and Remarks :</p> <p>Prior to the cruise the system was calibrated with pure sea water ampule and used by scientists from PRL. The performance of the system was satisfactorily.</p>		

	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>		

For Norinco Private Limited,

Chief Scientist

ORV. Sagar Kanya - SK 324 Cruise Report 22.09.2015 to 21.10.2015.

P.Boopathy

Senior Manager

Dr.Sajid Ali

PRL, Ahmedabad.