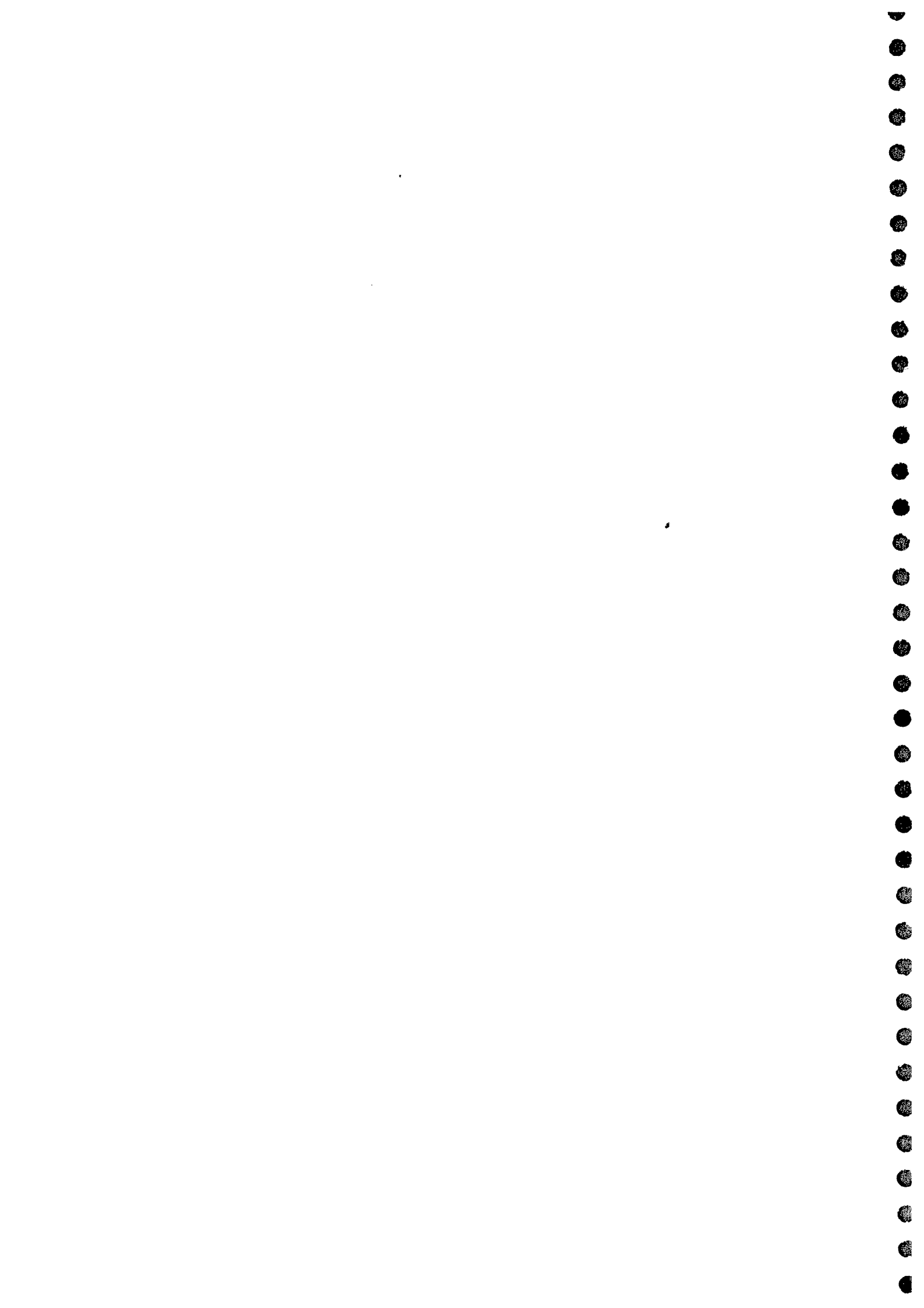


SK 270

CRUISE REPORT

**ORV SAGAR KANYA 270
6th TO 20th APRIL 2010**





राष्ट्रीय समुद्र प्रौद्योगिकी संस्थान
NATIONAL INSTITUTE OF OCEAN TECHNOLOGY



पृथ्वी विज्ञान मंत्रालय, भारत सरकार
(Ministry of Earth Sciences, Government of India)

एन आई वो टी केम्पस, वेल्चचेरि तामबरम रोड, नारायण पुरम, पल्लिकरणै, चेन्नै - ६०० १०० भारत.
NIOT Campus, Velachery - Tambaram Main Road, Narayanapuram, Pallikaranai, Chennai-600 100 INDIA.

Dr. V. RAJENDRAN
Group Head, OOS

11th May 2010

Fax No: 0832 - 2520877

To

Sri. Rasik Ravindra
Director
National Centre for Antarctic & Ocean Research
Ministry of Earth Sciences (Government of India)
Headland Sada, Vasco-da Gama
Goa - 403 804

Sub: Cruise Report for Sagar Kanya - SK-269 & SK-270

Dear Sri. Rasik Ravindra,

Thank you very much for your kind co-operation extended for the allotment of Sagar Kanya Ship for carrying out the above said cruises. Herewith the respective cruise reports of ORV Sagar Kanya is enclosed for your kind reference.

Sagar Kanya SK-269: Goa to Mangalore from 26th March to 04th April 2010

Sagar Kanya SK-270: Mangalore to Chennai from 6th April to 20th April 2010

The cruise report for SK-271 will be sent soon.

Thanking you,

Yours sincerely,


Group Head, OOS

Amil KV H
TRR



**DEPLOYMENT OF TSUNAMI BUOYS IN BAY OF
BENGAL**

CRUISE REPORT

ORV SAGAR KANYA 270

6th to 20th April 2010

Mangalore to Chennai



**OCEAN OBSERVATION SYSTEMS
NATIONAL INSTITUTE OF OCEAN TECHNOLOGY
CHENNAI**

ORV SAGAR KANYA CRUISE REPORT SK-270

SL.NO	CONTENTS	PAGE No.
1	Cruise summary	3
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3	List of participants	3
4	Cruise Track	4
5	Preparation of Tsunami Buoys	5
6	Diary of events	6,7,8,9,10
7	Buoy Accessories	12
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12	Annexures 1. TB10 BPR Search report. 2. TB04 Met buoy Search report. 3. MB10 buoy Search report. 4. Bliss CPU Test report.	

1. CRUISE SUMMARY

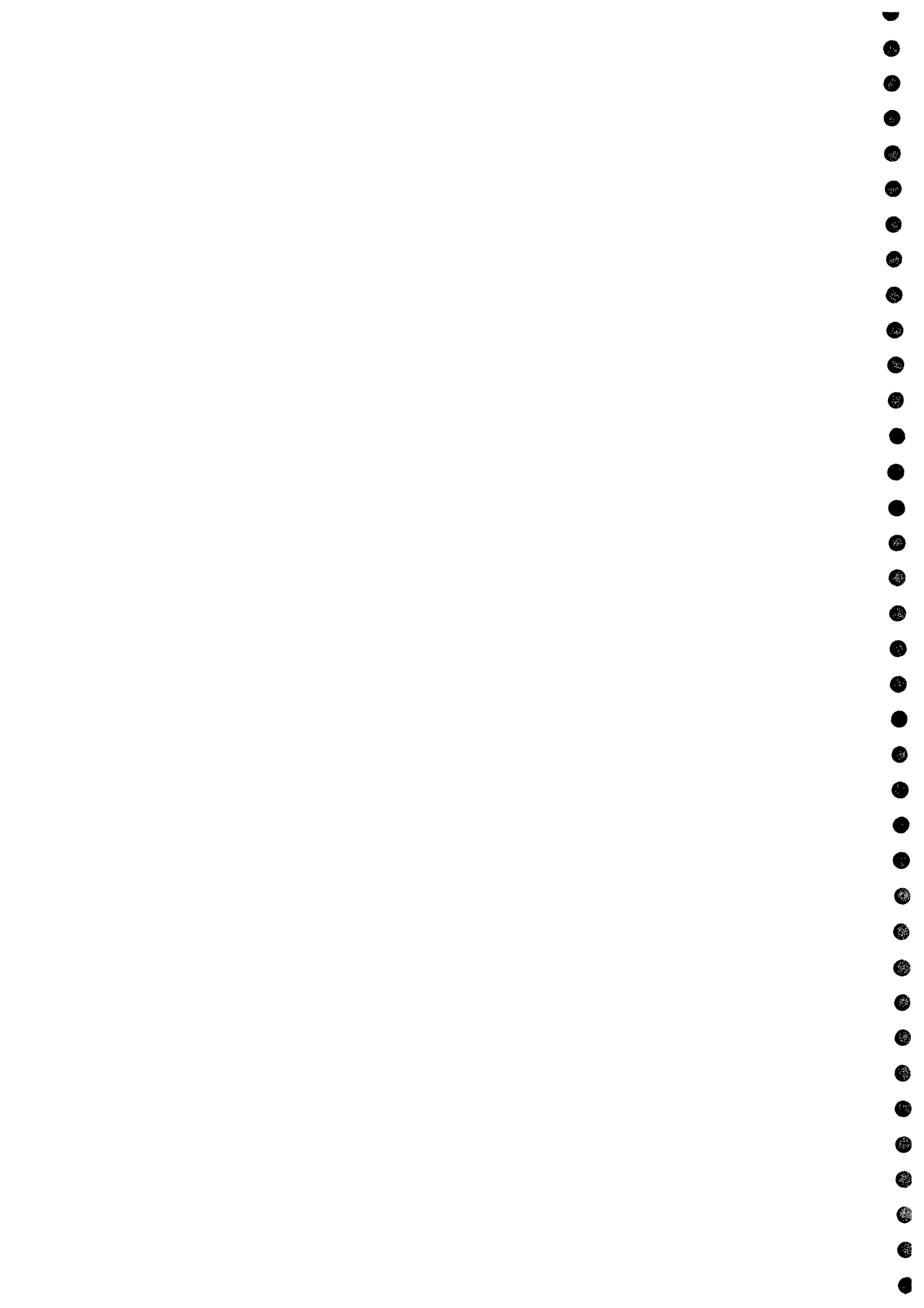
The Sagar Kanya cruise No 270 in Bay of Bengal was undertaken to establish and deploy Four Tsunami buoys.

2. OBJECTIVES OF THE CRUISE

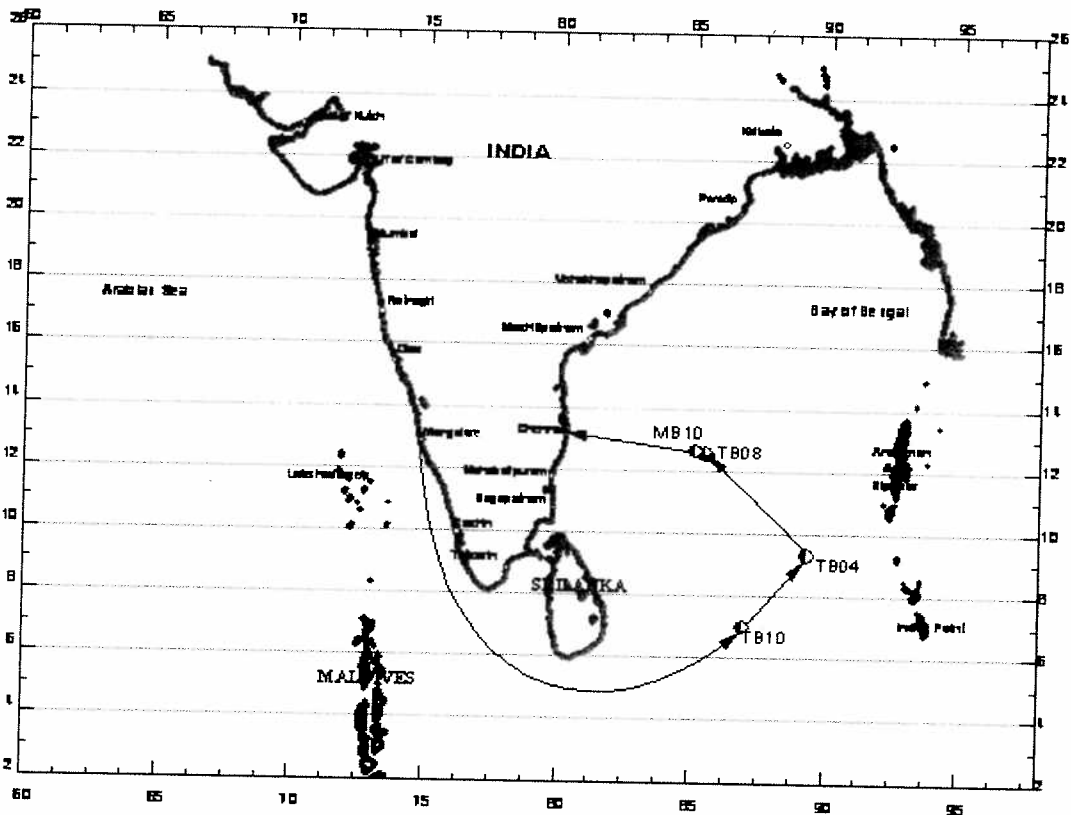
The main objective of the SK-270 cruise is to retrieve a BPR at TB10 Location and to deploy Tsunami Warning buoys and BPR's at TB04, TB05 Locations.

3. LIST OF PARTICIPANTS

S. No.	Name	Organization	Rank
1.	Mr. M.Arul Muthiah	NIOT, Chennai.	Scientist-C
2.	Mr.P.Murugesh	NIOT, Chennai.	Scientist-B
3.	Mr. V.Gowthaman	NIOT, Chennai.	Technical Officer
4.	Mr. K.Ramesh	NIOT, Chennai.	Technical Assistant
5.	Ms.Shreesha	NIOT, Chennai.	Project Scientist-I
6.	Mr. Nithyanatham	NIOT, Chennai.	Project Technical Assistant
7.	Mr.Vinoth Kumar	NIOT, Chennai.	Skilled Assistant
8.	Mr. C.Tharani	NIOT, Chennai.	Sea Man
9.	Mr. V.Govindu	NIOT, Chennai.	Sea Man
10.	Mr. S.Sridhar	NIOT, Chennai.	Sea Man
11.	Mr. D.Sakthivel	NIOT, Chennai.	Sea Man
12.	Mr. S.Arul	NIOT, Chennai.	Sea Man
13.	Mr. M.Murali	NIOT, Chennai.	Sea Man
14.	Mr.Dayalan	Norinco Pvt. Ltd	Engineer
15.	Mr.Karthick raja	Norinco Pvt. Ltd	Engineer
16.	Mr.Callistus Luis	Norinco Pvt. Ltd	Engineer
17.	Mr.Parashuram Durgappa	Norinco Pvt. Ltd	Engineer

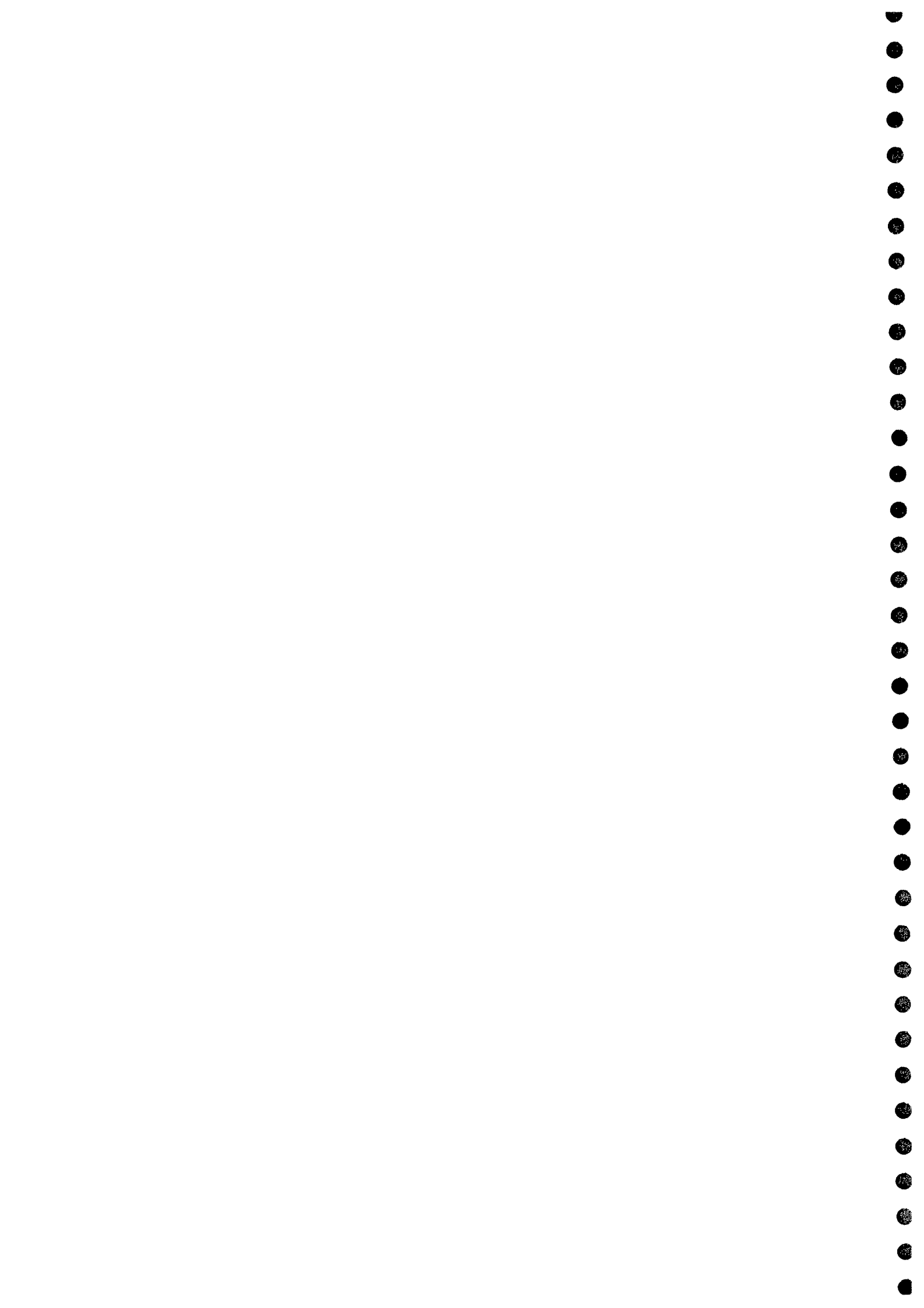


4. CRUISE TRACK



BUOY ID	LATITUDE (° N)	LONGITUDE (° E)
TB08	12° 31' 12"	85° 30' 33"
TB04	09° 17' 27"	89° 22' 03"
TB10	06° 59' 18"	87° 00' 12"
MB10	12° 37' 06"	85° 06' 42"

Total cruising distance : 2165 nm
 Total cruise time (approx) : 15 Days



5. PREPARATION OF TSUNAMI BUOYS

Four Tsunami buoys with surface modem and Sonardyne BPR with pressure tested floats all associated electronic gadgets and mooring systems were loaded on board ORV Sagar Kanya. The preliminary testing of buoys with INSAT transmitters was carried out at NIOT Chennai. All the exposed metal parts of the buoy and sensor assembly were painted with two coats of metal primer over that one coat of self-polishing anti fouling paint. Metallic parts of the buoy were fitted with sacrificial anodes against corrosion.

5.1 SETTING UP OF FIELD STATION

A field station was set up on board the ship in wet lab on the starboard side of the main deck, to communicate with the buoy while testing the assembly and to receive initial set of data from the buoy and for communicating with NIOT.

5.2 BUOY CONFIGURATION

The Tsunami buoy has a discus shaped hull and a pipe mounted under the hull. The buoy has a diameter of 2.2 meters and a total height of 8 meters weighing about 1000 Kg, when assembled with its mast and pipe. The central cylinder of the buoy contains all electronic modules, power package. The buoy is equipped with a mast to support the Beacon light and Inmarsat antenna. Lithium ion batteries are used for power supply of buoy. The buoys are also fitted with a ventilation system to prevent any hydrogen gas accumulation inside the cylinder.

6. DIARY OF EVENTS.

Date	Events
5 th April 2010	<p>We all are onboard by 17.00 hrs the room allocation was done for scientists.</p> <p>Meeting with captain and described about the works to be done during the cruising period.</p> <p>Loading of Cruise items/Equipments onboard. Six trucks of materials were loaded to ship till 02:00 hrs, the next day morning.</p> <p>Unloading of Retrieved buoys and items in the previous cruise to Chennai from ship in a truck.</p>
6 th April 2010	<p>Installed our field station and other equipments.</p> <p>Testing of OOS-D Tsunami Buoys commenced</p> <p>Shifting of material/ equipments and properly secured them for high sea sailing.</p> <p>Started sailing on 14:00 hrs.</p> <p>Testing of OOS tsunami Buoys Started.</p>
7 th April 2010	<p>Regarding our operations cruise team had a meeting with ship officers and explained about our operation sequences and captain explained about the safety and other procedures to be followed in ship.</p> <p>Checking of Zodiac Boat engine for retrieval operation.</p> <p>Up-gradation of one BPR(602) with new software and it was put for bench test.</p> <p>BPR's lithium batteries were replaced with new one for 3 units.</p> <p>Data transmitted from all buoys requested from SS, NIOT, Chennai and found that buoy with M/s Bliss supplied CPU was not transmitting proper data sets in normal mode.</p> <p>So the BPR Linked to it (Bliss CPU) was forced to tsunami mode for tsunami mode check.</p> <p>OOS-In-house developed CPU data found good and OOS-D CPU data confirmation has to be done the next day.</p> <p>Experienced rains during midnight of the day while sailing to</p>

	<p>first location.</p>
8 th April 2010	<p>Testing of acoustic release with the deck unit.</p> <p>Initiative actions to make the deep sea winch ready for BPR Deployment.</p> <p>Sub surface floats with PP Rope slings and thimble for mooring was being made for buoys.</p> <p>Bliss buoy tested for dummy transmission without BPR Link during night hours.</p> <p>Chain links connected with sinker weight and anchor .To arrest the movement of Lower mast it was fixed with the hull with self lock nut and washers for all buoys.</p> <p>As per the request from the captain a detailed procedure was made ready for Captain's reference regarding the operation of buoy deployment.</p> <p>Rubber sheets were fixed with acoustic modem clamps for proper fixing of surface acoustic modem in buoy.</p> <p>OOS in-house developed CPU Removed from buoy for data backup, time correction (IST to GMT) and proper Fixing inside the enclosure.</p> <p>Upgraded BPR (602) Working found satisfactory and it was tested for normal mode and tsunami mode. Awaiting confirmation from M/s Sonardyne for up gradation of rest of the Units</p>
9 th April 2010	<p>Up-gradation of two BPR 1402 and 1102 as per the confirmation from the OEM M/s Sonardyne.</p> <p>Testing of dunker modem and Surface interface unit.</p> <p>Pipe corer head taken from hatch and made ready for deployment purpose.</p> <p>Antenna fixture on buoy lid assembled and tested, for OOS-D buoys.</p> <p>Preparation of BPR Lifting slings.</p> <p>As the Bliss CPU was not transmitting proper data sets in normal mode it was decided by Group Head,OOS not to deploy</p>

	<p>it.(Ref: Mail from Shore station to Ship).</p> <p>OOS-D buoys tested for dummy data sets.</p>
10 TH April 2010	<p>Zodiac Boat made ready for BPR Retrieval. Battery packs in Acoustic release replaced with new one.</p> <p>Boat drill was conducted at 16: 30 hrs</p> <p>Captain, Chief Officer rehearsed the BPR Retrieval operation with Cruise team to make the Ship system ready for next day operation.</p>
11 th April 2010	<p>06:00 hrs reached TB10 Location for BPR (301) Retrieval. Lowered dunker modem from ship for retrieval of BPR. Communication with BPR could not be established.</p> <p>Moved to Buoy location of BPR communication but could not establish link.</p> <p>A search was done in 1 sqkm area around BPR Deployed position and no response /reply came from BPR (301) in all seven stations.</p> <p>The operation went till 14:30 hrs and the issue was reported to GROUP HEAD-OOS, NIOT. Considering the other critical deployment operations and time constraint, started sailing to TB04 Location started at 14:30 hrs after the confirmation from group head.</p> <p>Status of OOS-D Buoys noted and a reboot was given to a buoy with old configuration.</p> <p>During onboard testing there was some issues with OOS-D Buoy and M/s Bliss CPU buoy, so the plan of deploying OOS-D Buoy and Bliss CPU Buoy was called off and the OOS CPU in-house developed by Mr.M.Arul Muthiah, was decided to Deploy in TB04 Location.</p> <p>A reboot was given to the Bliss CPU buoy at 16:15 hrs and connected to BPR (1302) For normal mode tx check for 3 hours (16:30, 17:30, and 18:30). It was noted that acoustic link between BPR and CPU was perfect and the data captured</p>

	<p>through host port using Laptop from CPU. The CPU transmits improper data during normal mode.</p> <p>Assembling the Buoy and other works for buoy Deployment was completed at 01:30 hrs the next day.</p> <p>Buoy kept for testing in assembled condition from 01:00 hrs 12-04-10.</p> <p>ETA TB04 12:30 HRS 12th April 2010</p>
12 th April 2010	<p>Reached TB04 at 12:00 hrs. Old buoy not found in location.</p> <p>A search operation was made in Buoy deployed position and buoy last transmitted position till 14:30 hrs. Weather was satisfactory.</p> <p>A bathymetry survey was done in TB04 Location.</p> <p>To do the buoy deployment in daylight, deployment of TB04 Surface buoy commenced and the buoy was dropped in water at 16:30 hrs.</p> <p>Anchor dropped at 19:30 hrs.</p> <p>BPR deployment planned the next day morning.</p>
13 rd April 2010	<p>BPR deployment started at 09:00 hrs. BPR System was connected with Acoustic release and lowered using deep sea winch. Lowered to a depth of 1000m and the BPR alarm mode signal received by the surface buoy. Lowering of BPR was continued after link confirmation.</p> <p>Destination address is buoytest@niot.res.in & shorestation@niot.res.in</p> <p>The link between buoy and BPR was confirmed the data transmitted to NIOT. BPR was released using acoustic release at depth 3250 mts.</p> <p>Ship moved 5 nm away from the location and the data set transmitted from buoy was observed for 5 hours.</p> <p>BPR went to normal mode at 17:30 hrs. Normal mode data till 20:30 hrs confirmed. As there are issues with OOS-D, decision was taken to deploy one OOS-D Buoy at TB08 location. This has confirmation from Group head, OOS.</p>

	Sailing started towards TB08 Location at 21:00 Hrs. ETA TB08 is 15-04-10 0600 HRS
14 th April 2010	Sailing towards TB08. Testing of OOS-D Buoys with new software and old software in progress and the issues continued. Assembling of Buoy, Mooring preparation and other preparative works went on for the next day deployment.
15 th April 2010	Reached TB08 Location at 0630 hrs. As the testing of OOS-D Buoys was not encouraging the deployment was called off by Head-OOSD and it was decided to capture normal mode reading from BPR by lowering to a depth of 1000m. Captured a normal mode reading at 11:30 hrs at TB08 Location and started sailing towards MB10 location for buoy search operation. Buoy not found in deployed location. A search was made upto 5 nm till 18:30 hrs. Buoy was not Found during search operation Started sailing towards Chennai at 19:00 hrs ETA Chennai 17-04-10 AM Hrs.
16 th April 2010	Sailing towards Chennai
17 th April 2010	Reached Chennai Outer anchorage at 13:00 hrs
18 th April 2010	Waiting for berth allocation
19 th April 2010	Waiting for berth allocation
20 th April 2010	Ship berthed at 0500 hrs and we continued our signoff formalities.

7. BUOY ACCESSORIES

The buoy external fittings

1. Beacon Light.
2. Radar Reflector.
3. Insat Antenna
4. Keel frame
5. Tsunami G.I pipe

The buoy internal fittings

1. CPU
2. Insat modem
3. Battery box.

8. DEPLOYED BUOY DETAILS

1. BUOY ID:

TB04

2. BUOY POSITION:

Lat : 09°17'7530"N
Lon : 89°30'1106"E
Dep.time : 1630hrs
Date : 12/04/2010

3. ANCHOR POSITION:

Lat : 09°18'593"N
Lon : 89°27'181"E
Dep.time : 1903hrs
Date : 12/04/2010

4. BPR POSITION:

Lat : 09°18'5768"N
Lon : 89°27'0692"E
Dep.time : 1215hrs
Date : 13/04/2010

5. DEPTH AT THE LOCATION:

3415m

6. COMBINATION ROPE LENGTH:

550m

7. NYLON ROPE LENGTH:

160m

8. POLYPROPYLENE ROPE LENGTH:

2900m

9. PHOTOS

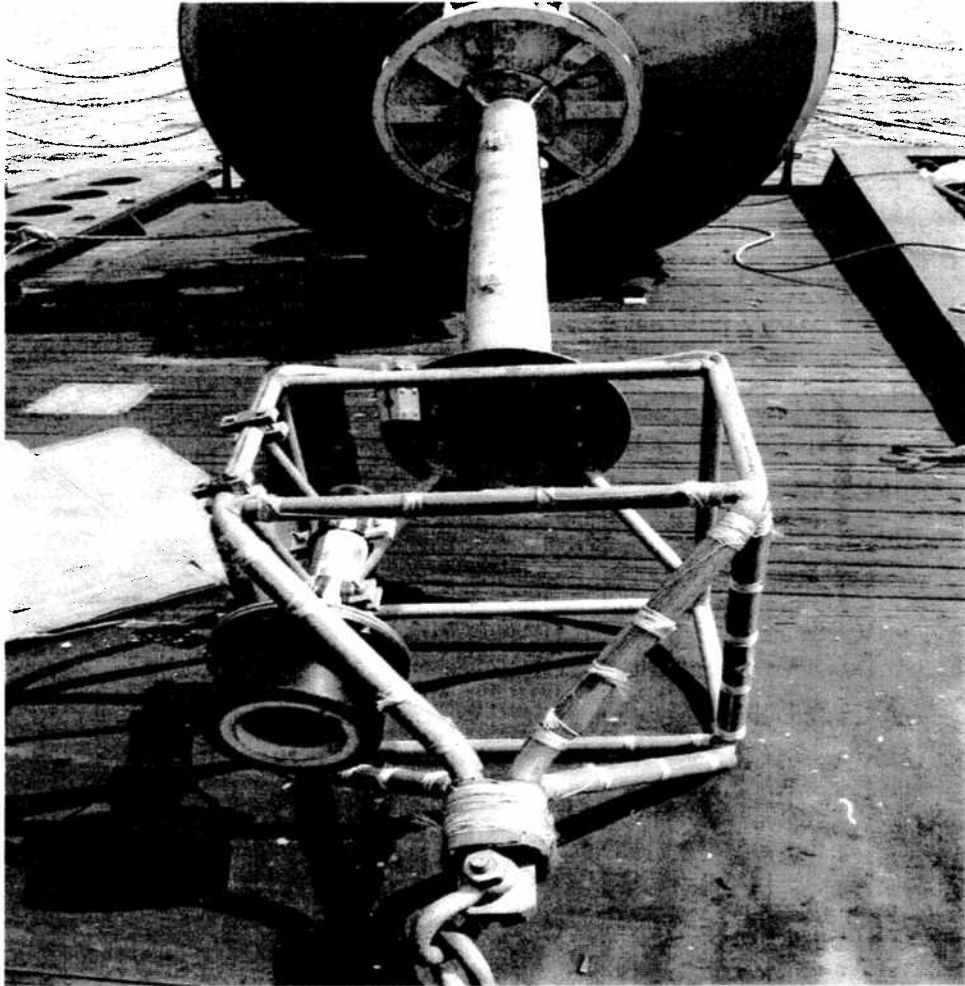


Fig.1.Assembly of TB04 Tsunami buoy

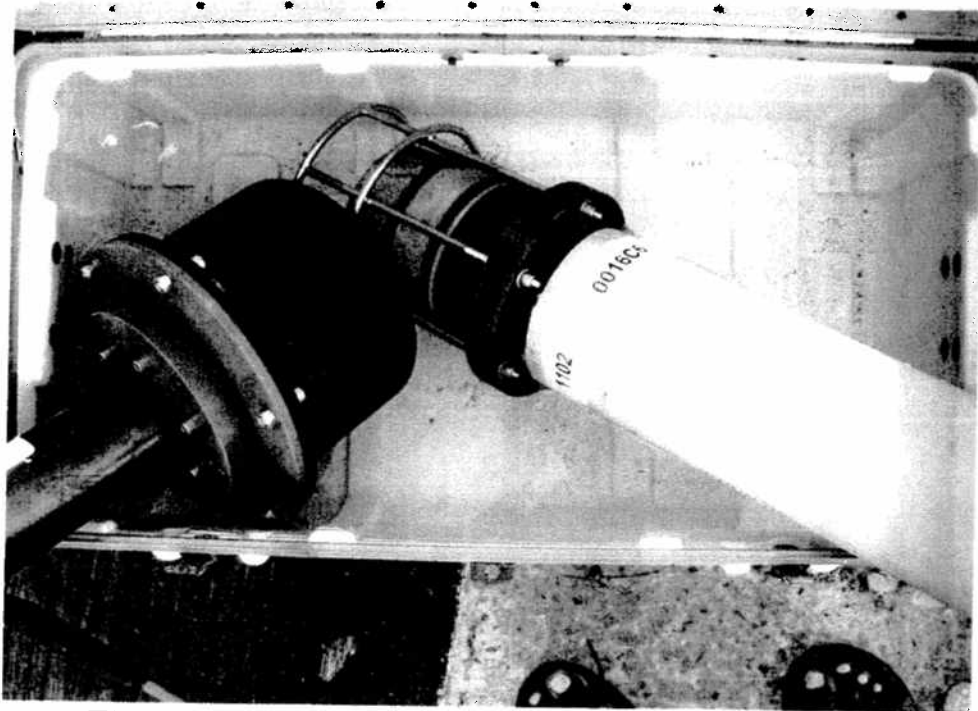


Fig.2. Testing of BPR with Acoustic surface modem

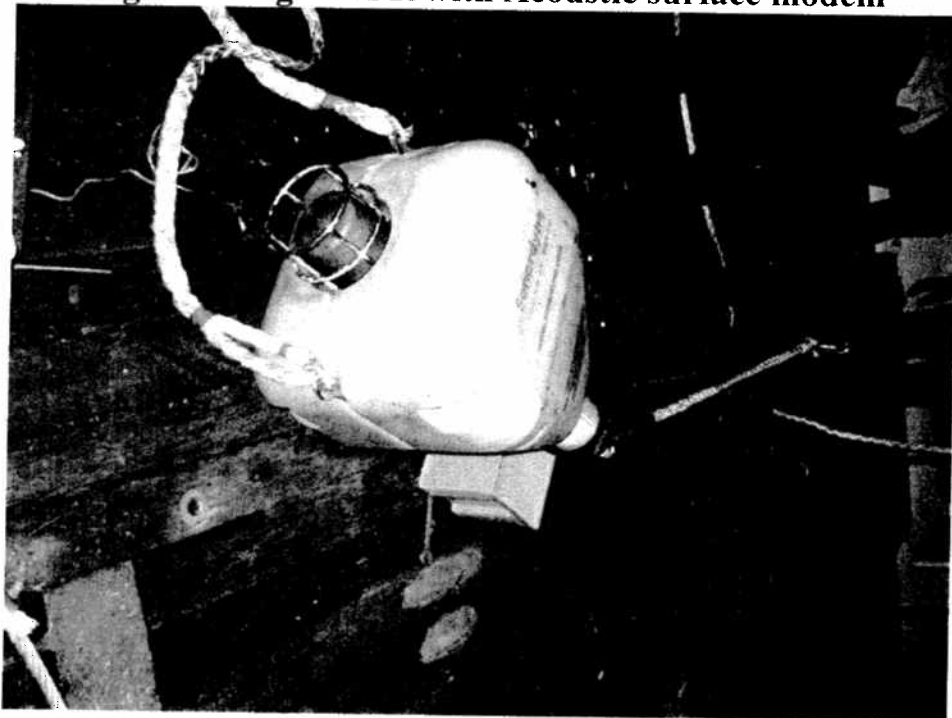


Fig.3. Assembly of BPR with BPR float (TB04)

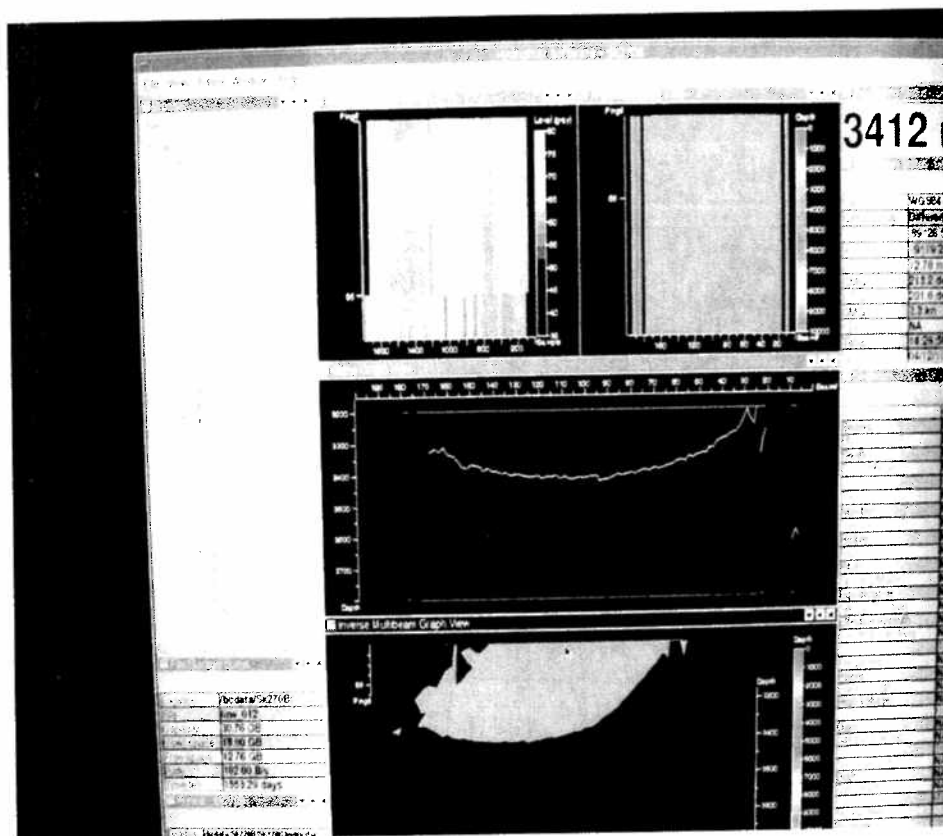


Fig.4. Multi-beam survey of TB04 location

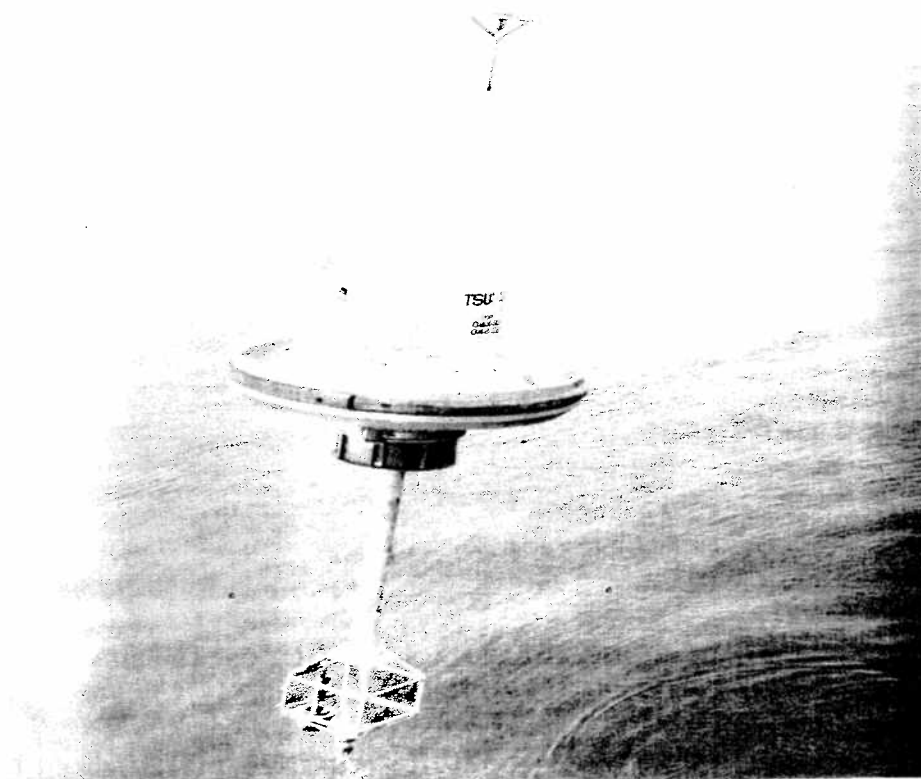


Fig.5. Deployment of Tsunami buoy TB04

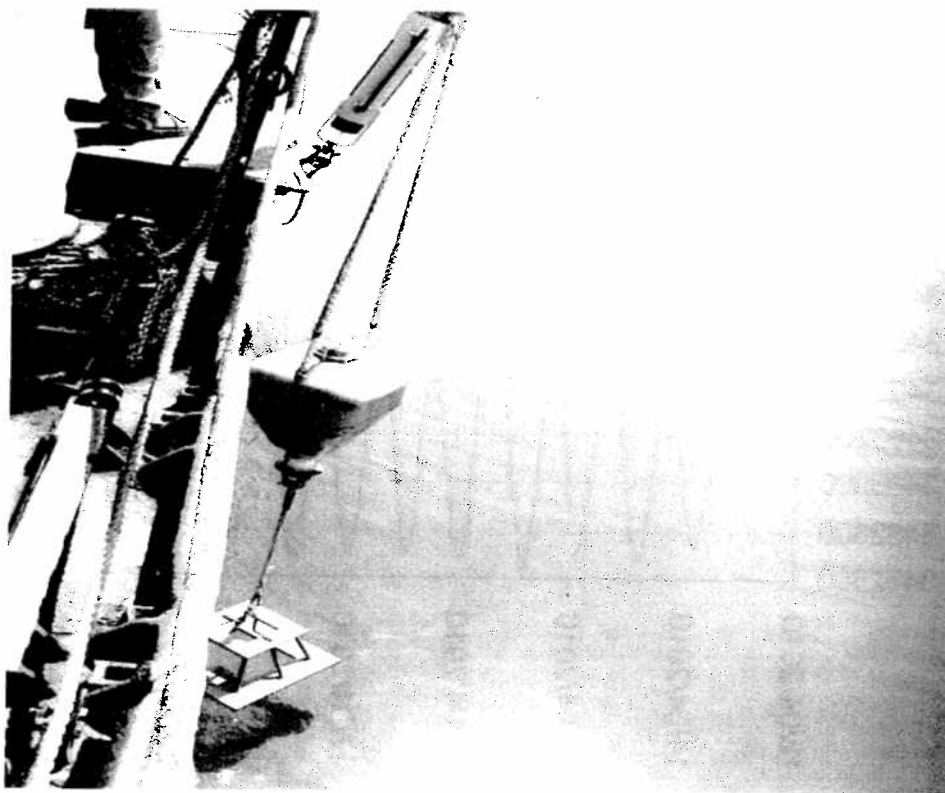


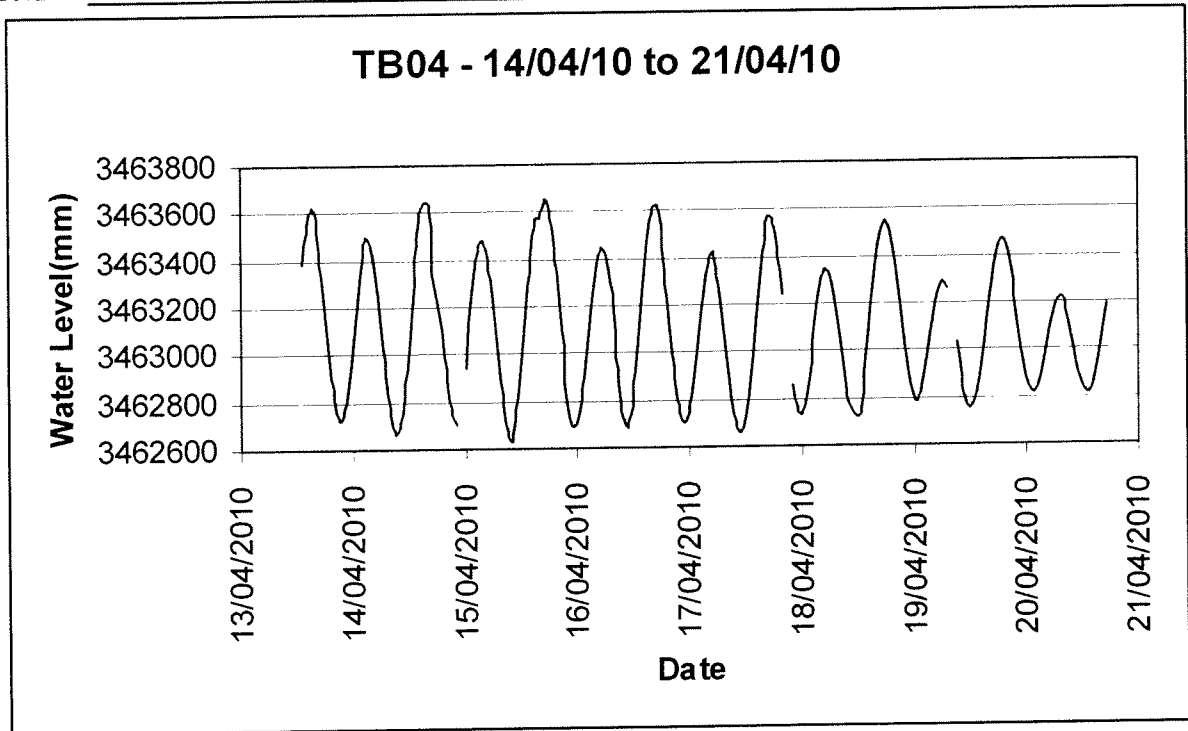
Fig.6.Deployment of BPR (TB04)



Fig.7.Release Commanding to Acoustic release (TB04)

10. REPORTS

10.1 A week Data transmitted from TB04 Tsunami buoy after deployment.



10.2 Bliss CPU Test:

ITEM TESTED	TESTING PERIOD	LOCATION OF TESTING	REMARKS
Bliss CPU	11 days	Testing carried out in Cruise onboard Sagar Kanya	CPU transmits correct data format in tsunami mode but not in normal mode.

11. PERFORMANCE OF EQUIPMENTS ON BOARD SAGAR KANYA

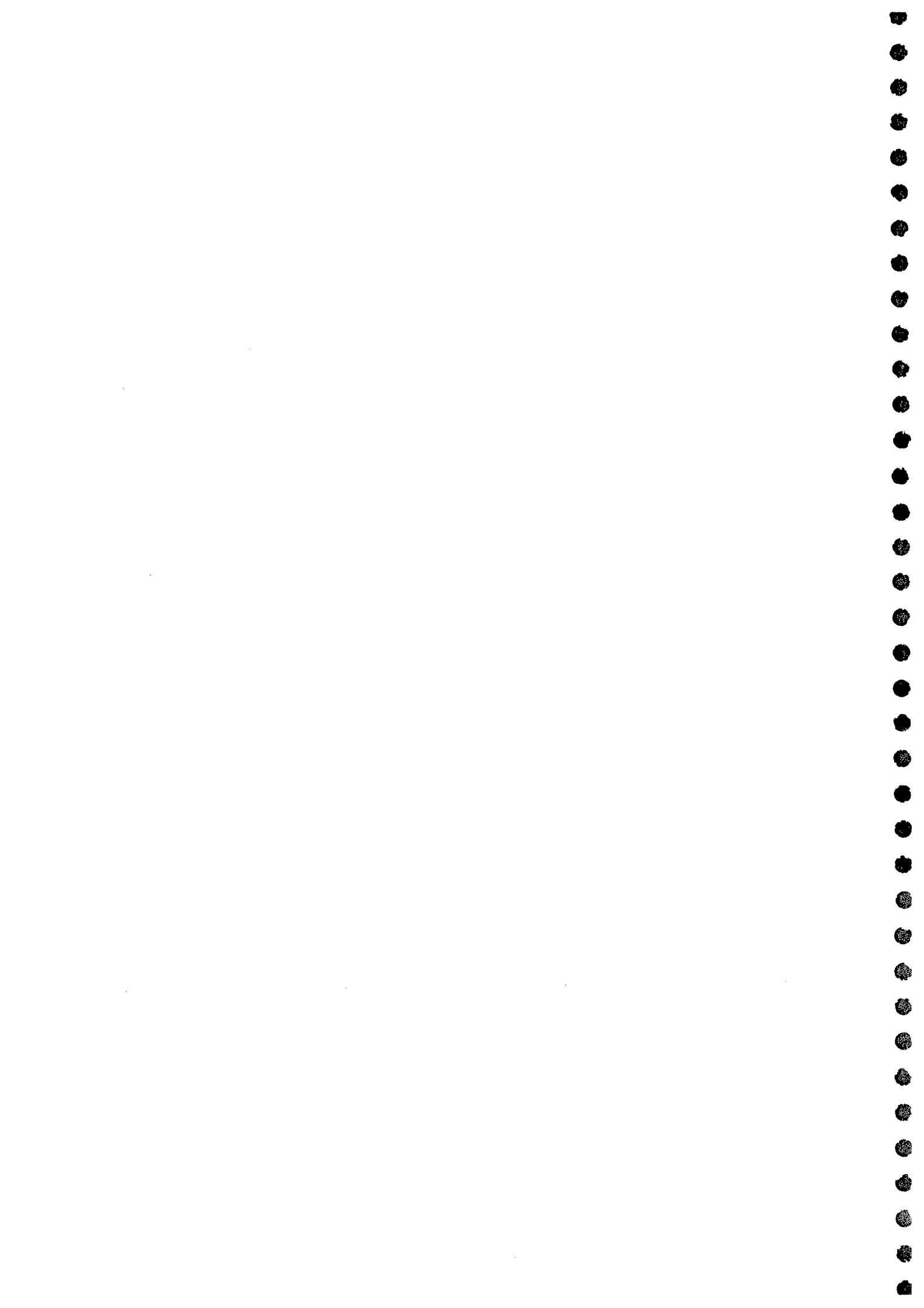
The following equipments were used during the cruise and their working performance.

1. LARS 6 ton crane – Satisfactory
2. Side crane 2 ton crane - Satisfactory
3. EA600 Echo Sounder- Satisfactory

12. ACKNOWLEDGEMENTS

We thank the Vessel management cell, for providing ship time on ORV Sagar Kanya. We express our sincere thanks to Dr. V.Rajendran, The Group Head, OOS Projects, NIOT for coordinating the cruise. Our sincere thanks to Captain, officers and the crew of ORV Sagar Kanya for their cooperation throughout the cruise and their sincere effort in helping us to complete the task.

We express our sincere thanks to Dr.M.Atmanand, Director for entrusting this task. We are also thankful to all NDBP colleagues at NIOT for helping us at various stages for the successful completion of the cruise.



TB04 Met buoy Search Operation –Report

Vessel Name : ORV Sagar Kanya
 Date of search : 12-04-2010
 Cruise reference No : SK270

Sl. No	Date		Position		Station Depth (m)	Buoy Type	Sensors	Remarks
	Deployment	Last Transmission	Lat (⁰ N)	Long (⁰ E)				
1.	01-05-2007	14-12-2008	9.2908	89.3675	3466	Discus 2.2 m	AT,AP,Wind,Humidity,Conductivity,SST	Deployed on 01.05.07 at 12.30 hrs. Swapped old TB4 buoy. Buoy stopped on 14-12-2008 at 11:30 hrs


With the above details it was decided to retrieve the buoy in SK270 Cruise onboard Sagar Kanya on 12-04-2010.

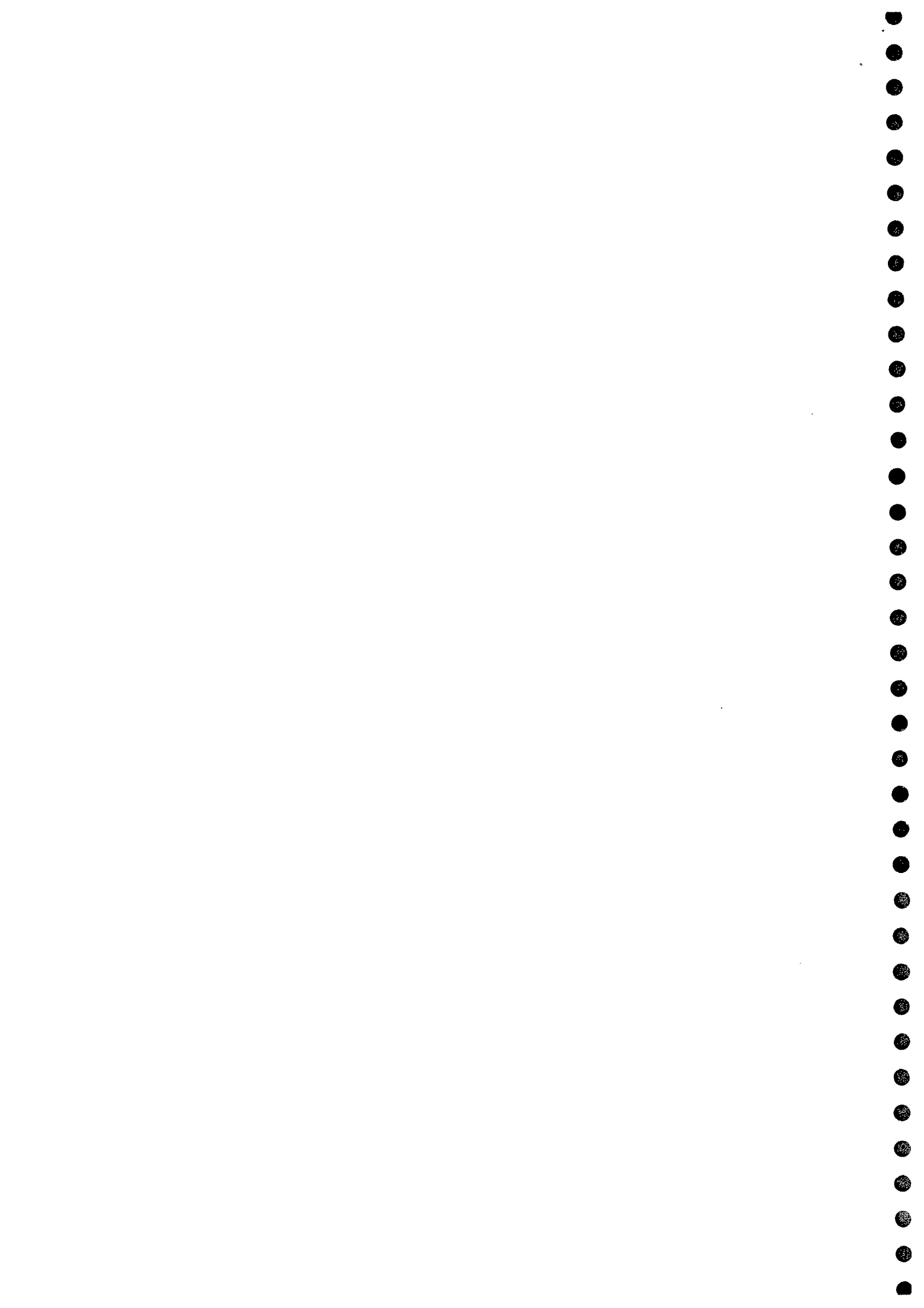
Search Operation Details:

Buoy deployed Position : 09°17'43" N,089°23'35"E
 Buoy last transmitted Position : 09°12'35" N,089°24'35"E

Reached TB04 buoy deployed location at 12:00 hrs on 12-04-10. Buoy not found in location. The weather was good with a surface visibility of 6 nm. A Search was done in Buoy deployed position and last transmitted position till 14: 30 hrs with 5 nm as radius. Buoy was not found during the search operation.

M. Arul Muthian
 Chief Scientist-SK270
 Name & Signature
 M. ARUL MUTHIAN, SCI-C
 NICOT
 Chief Scientist
 ORV SAGAR KANYA

Master –ORV Sagar Kanya
 Name & Signature

L.R. Meena
 12/04/10
 Cpt. L.R. Meena



MB10 buoy Search Operation –Report

Vessel Name : ORV Sagar Kanya
Date of search : 15-04-2010
Cruise reference No : SK270

Date		Position		Station Depth (m)	Buoy Type	Sensors
Deployment	Last Transmission	Lat (⁰ N)	Long (⁰ E)			
20-07-2007	07-04-08	12 ⁰ 37' 06"	85 ⁰ 06' 42"	3260	Discus 2.2 m	AT,AP,Wind, Humidity,SST

With the above details it was decided to retrieve the buoy in SK270 Cruise onboard Sagar Kanya on 15-04-2010.

Search Operation Details:

Reached MB10 buoy deployed location at 14:00 hrs on 15-04-10. Buoy not found in location. The weather was good with a surface visibility of 6 nm. A Search was done in Buoy deployed position till 18: 30 hrs with 5 nm as radius. Buoy was not found during the search operation.

M. Arul Muthiah
15/04/10
(M.Arul Muthiah,Sci-C,NIOT)

Chief Scientist
ORV SAGAR KANYA
1

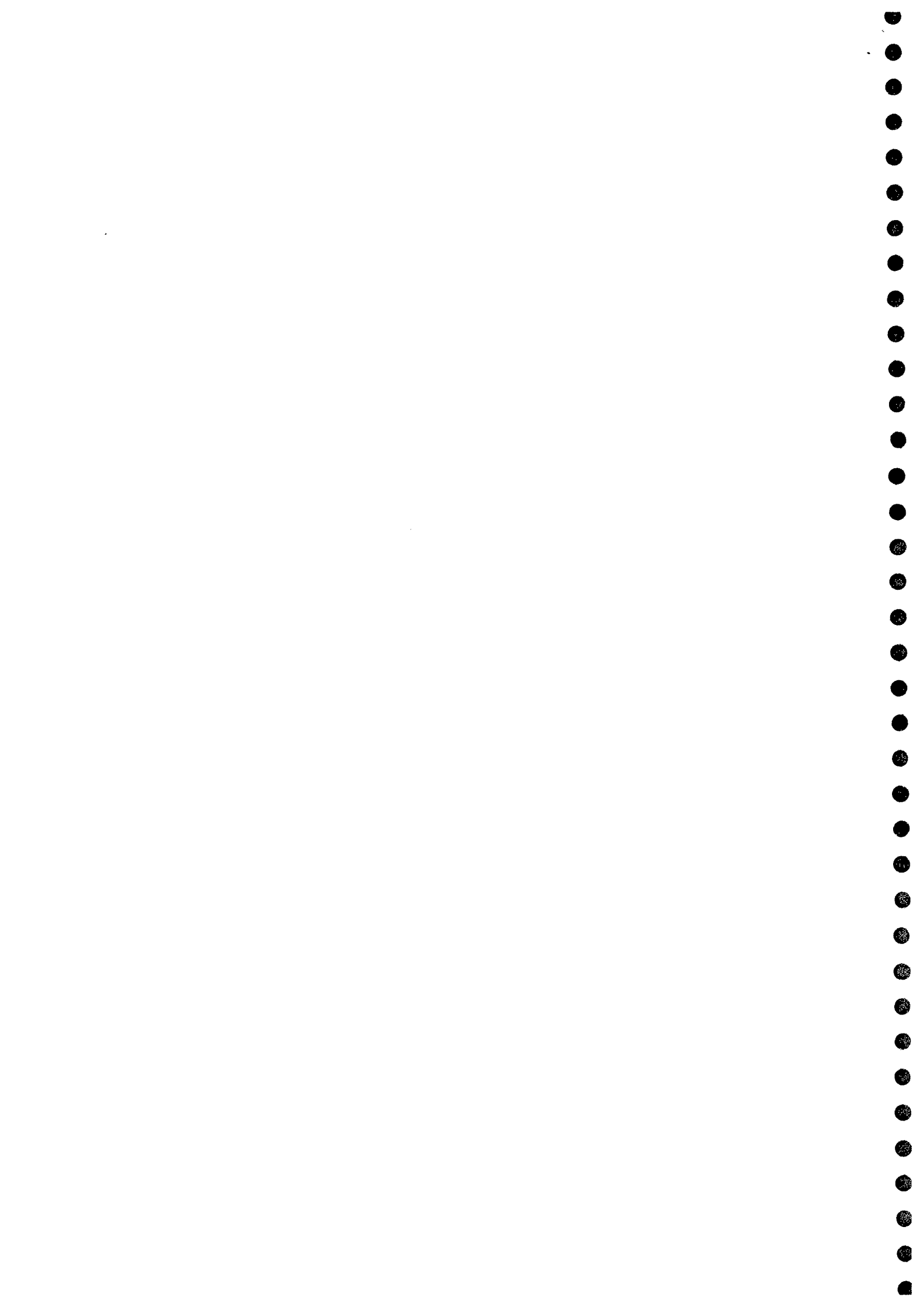
L.R. Meena
15-04-10

Master –ORV Sagar Kanya

L.R. Meena

Master

ORV SAGAR KANYA



TB10 BPR Search Operation –Report

Vessel Name : ORV Sagar Kanya
Date of search : 11-04-2010
Cruise reference No : SK270

Sl. No	Date	BPR Position		Station Depth (m)	BPR id	BPR Float	Remarks
	Deployment	Lat (⁰ N)	Long (⁰ E)				
1.	11-02-2009	06°58.569'N	087°00.203'E	3900	301	Sonardyne	Deployed on 11.02.09 at 11:00 hrs. Surface Buoy already retrieved by NIOT

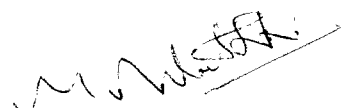
With the above details it was decided to retrieve the BPR in SK270 Cruise onboard Sagar Kanya on 11-04-2010.

Search Operation Details:


Reached TB10 Location for BPR (301) retrieval at 06:00 hrs on 11-04-2010. Dunker modem was lowered from ship for retrieval of BPR. Communication with BPR could not be established. Moved to Surface Buoy Deployed location for BPR communication but could not establish link.

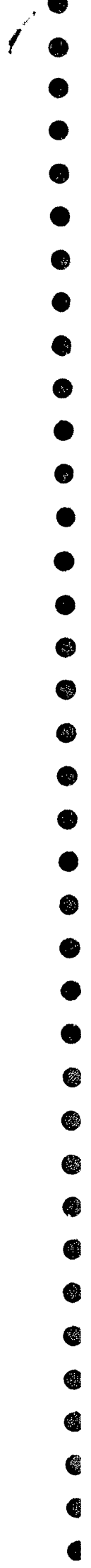
A search was done in 1 sq km area around BPR Deployed position and no response /reply came from BPR (301) in all stations.

The search operation went till 14:30 hrs and the issue was reported to GROUP HEAD-OOS, NIOT. Considering the other critical deployment operations and time constraint, started sailing to TB04 Location at 14:30 hrs after the confirmation from group head.

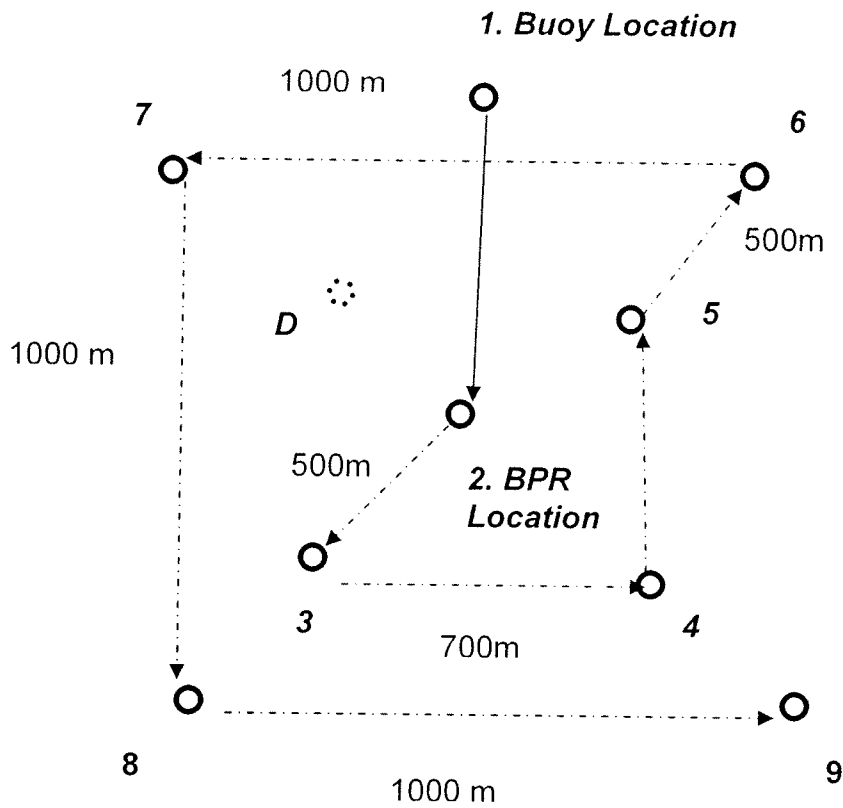

Chief Scientist-SK270
Name & Signature

Chief Scientist
ORV SAGAR KANYA


11-04-10
Master –ORV Sagar Kanya
Name & Signature
Capt. L.R. Meena
Master
ORV SAGAR KANYA

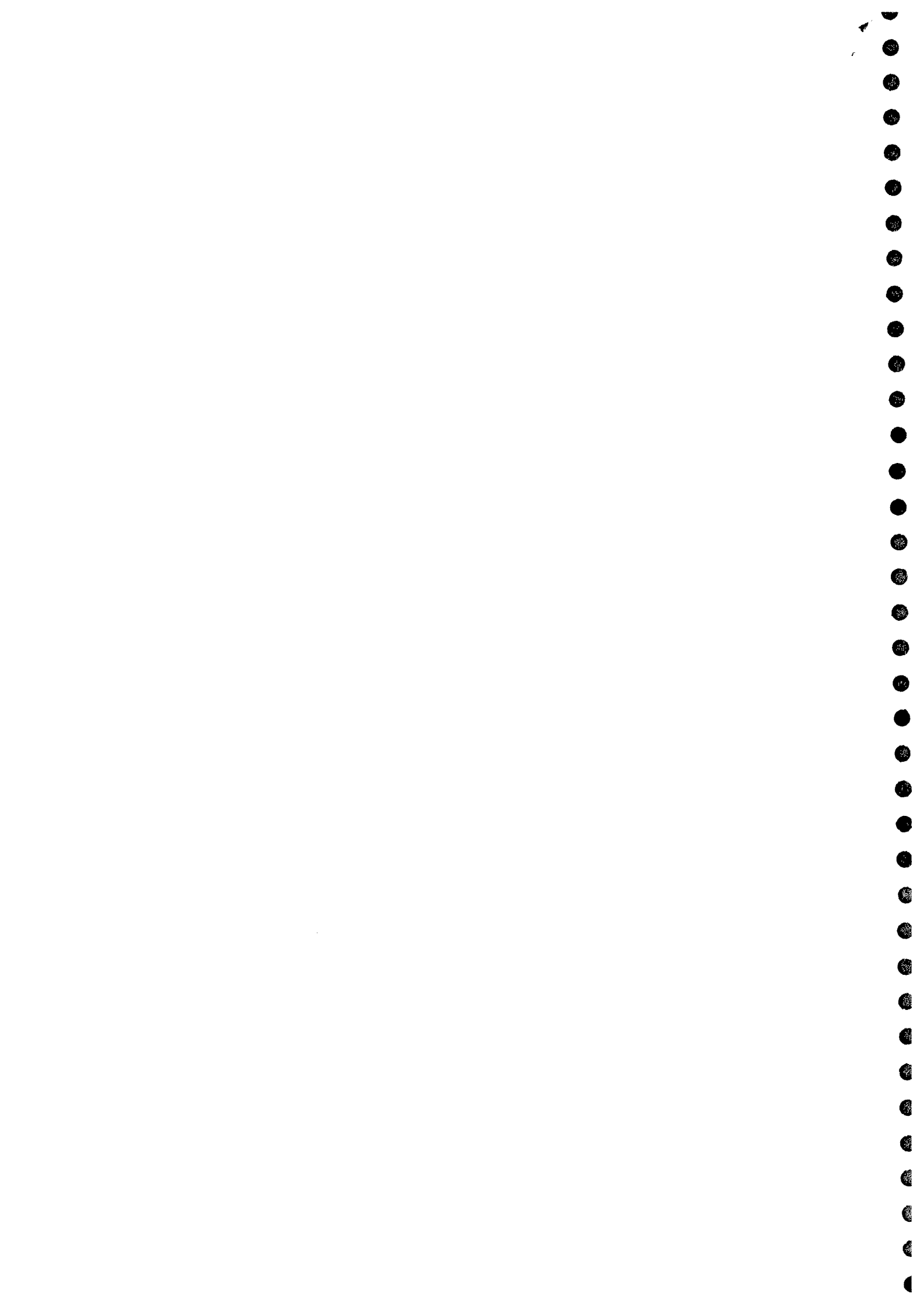



BPR SEARCH MAP



- D - DUMMY LOCATION
- > - STARTING LOCATION
- - - - -> - NEXT LOCATION

Position	Location
Lat : 06 ⁰ 59'.34"N Long: 87 ⁰ 00'.17"E	Buoy
Lat : 06 ⁰ 58'.45"N Long: 87 ⁰ 00'.15"E	BPR




	OCEAN OBSERVATION SYSTEMS	Date	13-04-2010
	Tsunami Buoy- Deployment Report		TB-04

TSUNAMI BUOY -Deployment Report

Location ID/Buoy ID	TB04			
Buoy Deployed Position	Latitude	09 °18.593'N	Longitude	089 ° 27.181' E
Depth at Buoy Deployed Position	3415 m			
Buoy Deployment	Date	12-04-2010	Time (IST)	16:30
BPR Deployed Position	Latitude	09 °18.5768'N	Longitude	089 ° 27.0692' E
Depth at BPR deployed position	3413 m			
BPR Deployment	Date	13-04-2010	Time (IST)	12:15
Communication Device	INMARSAT	456500131		
Buoy Type (Please tick the appropriate column)	Discus Buoy 2.2 m Hull		Yes	
Name of the Vessel and Cruise No.	ORV Sagar Kanya, SK 270			
Electronic/Sensor/Cable Status on Deployment				
Item description	Make/Model/Serial No.		Status	
CPU Details	Advantech UNO 2053		Good	
BPR Details	Id: 1402,SI No 253601-002		Good	
Surface Acoustic Modem	SI no : 253605-002		Good	
Inmarsat Modem/Antenna Details	T&T Mini-c No: 456500131		Good	
Beacon Lamp	Elektronik Lab EBL024		Good	
Radar Reflector	Indigenous		Good	
Charge controller/Dc-Dc Converter details	-NA-			
Battery pack/ Solar Panel	Lithium Battery Pack-WH FORTE 12V – 2125 Ah,24 V-500Ah		Good	
SMT Cable	Sonardyne Armored type		Good	
Beacon Cable	Subconn°		Good	
Inmarsat/Antenna cable	T&T Cable		Good	



	OCEAN OBSERVATION SYSTEMS	Date	13-04-2010
	Tsunami Buoy- Deployment Report		TB-04

Power Modules Status on Deployment	
12 V Battery Pack voltage	14.582V
24 V Battery Pack voltage	29.294V
Percentage of Battery used in BPR	5 %
Status of the Buoy Mechanical items & Total mooring	
Status of Buoy Assembly/Integration/Readiness for Deployment	Good
Status of Buoy Dead Weight, Anchor & Mooring including rope & other items.	Good
Status of BPR ,Acoustic Release, BPR Dead Weight.	Good
Remarks:-	
BPR Placed 200 m near to the anchor position.	

Name of the Chief Scientist:

Signature :

M. Arul Muthiah
14/04/10

Chief Scientist

ORV SAGAR KANYA

M. ARUL MUTHIAH, Sci-C
NIOT.

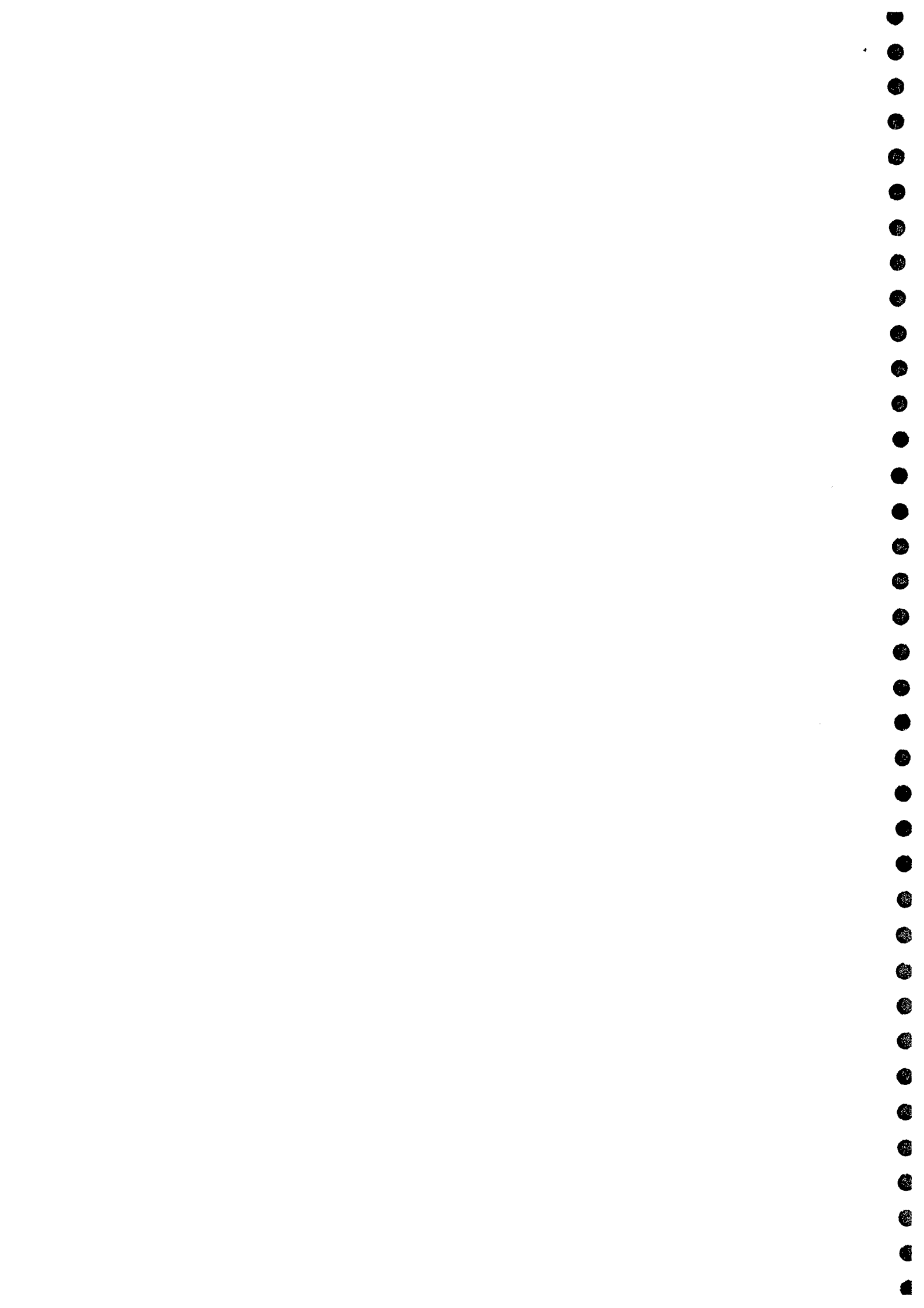
Name of the Master/Captain:

Signature :

L.R. Meena

13-04-10

Capt. L.R. Meena

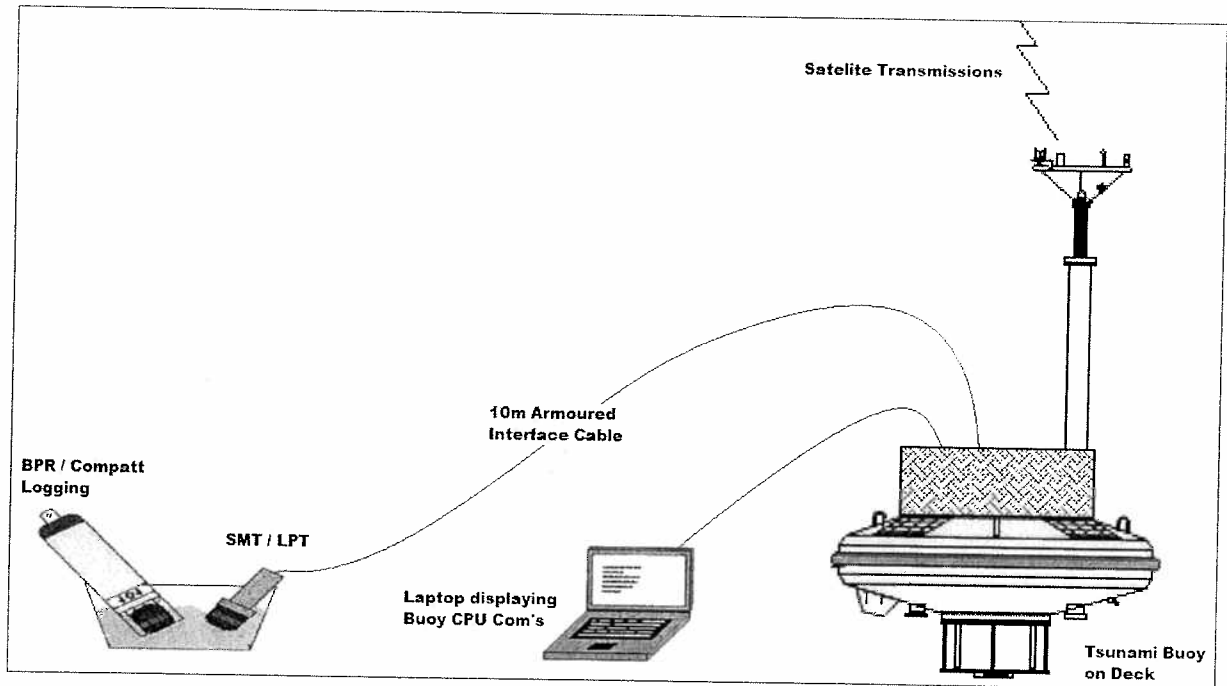


TEST REPORT

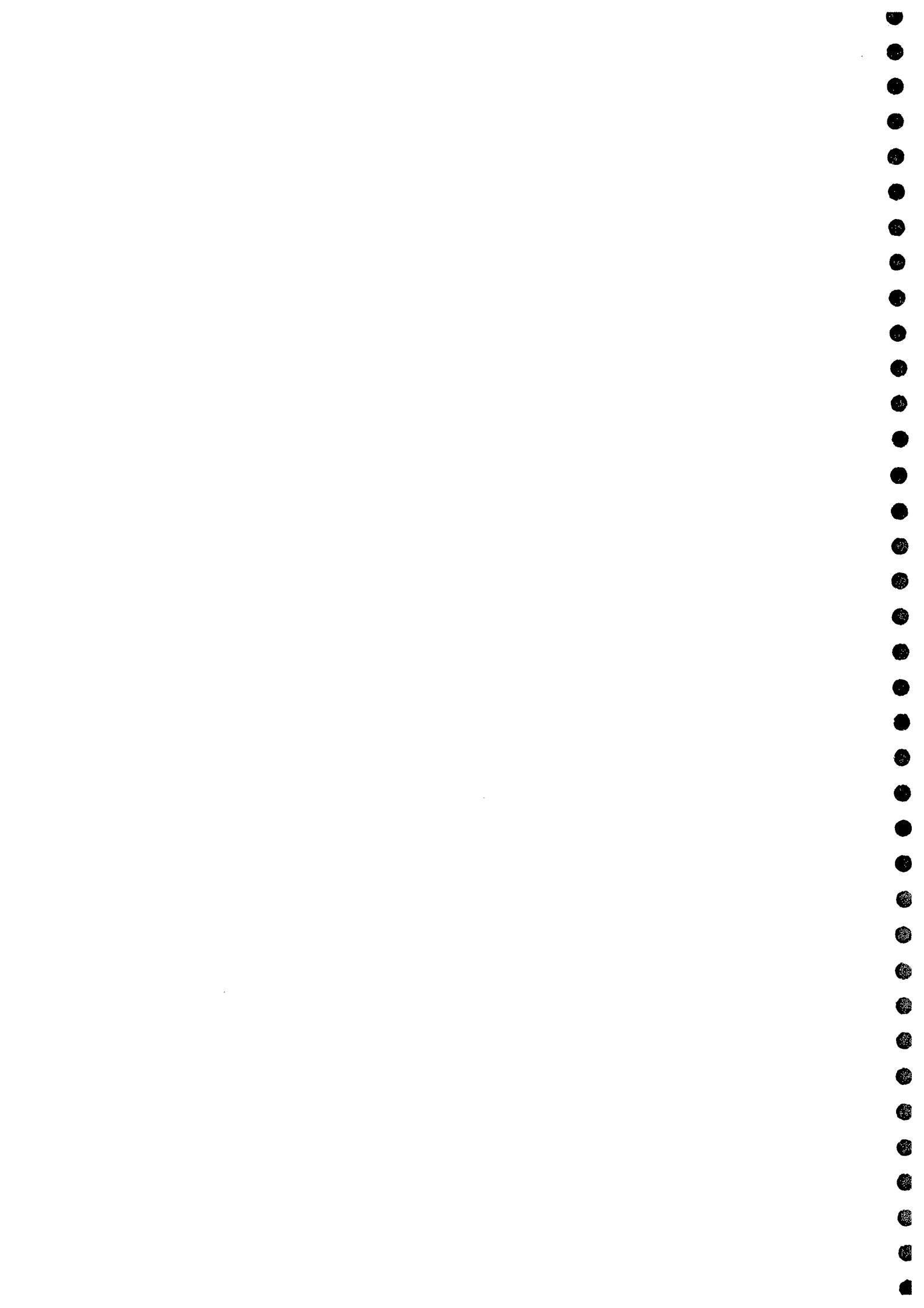
ITEM TESTED	TESTING PERIOD	LOCATION OF TESTING	REMARKS
Bliss CPU	11 days	Testing carried out in the NIOT & Ship	Not able to transmit Normal mode data.

DETAILS

General information and Test setup (before deployment)



Acoustic Communication between BPR and Surface modem developed by place both in a water filled tank within the beam angle, Data from the surface modem collect by the CPU through armoured cable, CPU connected to the satellite modem which send the data to the shore station.



DATA FORMAT TO BE

NORMAL MODE SMS:1102|100407080000;1,9945;1,9969;1,9982;1,9989
SMS:1102|V142,U0,B0,O0,T1,S+3658,

PRE TSUNAMI MODE

SMS:1102|000102151200;2,10168;2,10168;2,10172;2,10175

TSUNAMI MODE

SMS:1102|000102153200,3,33;10189;10188;10181;10184;10182;10180;10183;10186;10184;10182

OBSERVATION ON BLISS SYSTEM IN NIOT (BEFORE LOADING)

CPU was supplied by bliss technology the day before loading the material (01.04.2010)

Wiring was completed with in half of the day, and testing was started on evening itself.

Many of the problem in the CPU was explained to the M/S bliss technology representative

And they agreed to implement that in the balance one system, which they are going to supply,

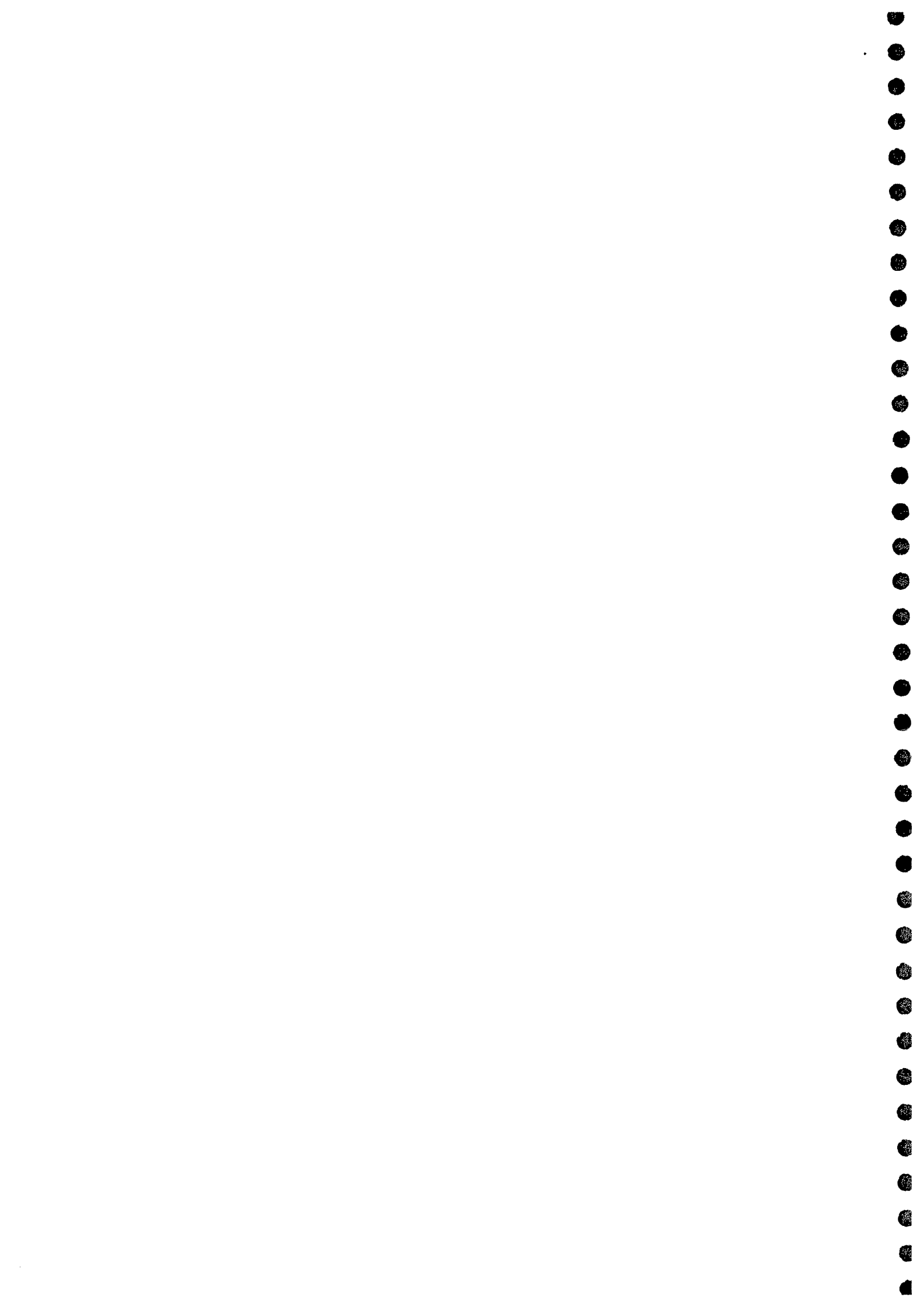
Due to the time constrain we carried out only few transmission before loading the material

by creating tsunami mode on Compatt.

OBSERVATION ON BLISS SYSTEM (ONBOARD SAGAR KANYA)

Testing started on 06 April 2010 and the data received in our shore station is given below

1. 2010.04.06,16:37:44,11 52 73 N 074 58 41 E,TB04,999,SMS:112|V142,U0,B0,O0,T1, \$
2. 2010.04.06,17:37:44,11 47 16 N 075 06 53
E,TB04,999,SMS:1102|V142,U0,B0,O0,T1, \$
3. 2010.04.06,18:37:44,11 40 71 N 075 14 13
E,TB04,999,SMS:112|V142,U0,B0,O0,T1, \$



4. 2010.04.06,18:58:29,11 38 70 N 075 16 86
E,TB04,999,SMS:1102|V142,U0,B0,O0,T1, \$
5. 2010.04.06,19:58:29,11 29 62 N 075 20 38
E,TB04,999,SMS:1102|V142,U0,B0,O0,T1,\$
6. 2010.04.06,20:58:29,11 20 33 N 075 22 08
E,TB04,999,SMS:112|V142,U0,B0,O0,T1, \$
7. 2010.04.06,21:58:29,11 10 87 N 075 22 01
E,TB04,999,SMS:112|V142,U0,B0,O0,T1, \$
8. 2010.04.06,22:58:30,11 01 81 N 075 23 72
E,TB04,999,SMS:112|V142,U0,B0,O0,T1, \$
9. 2010.04.06,23:58:30,10 52 15 N 075 23 26
E,TB04,999,SMS:1102|V142,U0,B0,O0,T1, \$
10. 2010.04.07,00:58:30,10 42 42 N 075 22 63
E,TB04,999,SMS:102|V142,U0,B0,O0,T1, \$
11. 2010.04.07,01:58:30,10 32 62 N 075 24 59
E,TB04,999,SMS:112|V142,U0,B0,O0,T1, \$
12. 2010.04.07,02:58:30,10 22 82 N 075 26 91
E,TB04,999,SMS:112|V142,U0,B0,O0,T1,\$

REMARKS

The above reading shows the normal mode message but it doesn't have the four pressures reading and also the incorrect status message.

14. 2010.04.07,04:22:44,10 09 42 N 075 31 60
E,TB04,999,SMS:1102|100407042445;2,10411;2,10415;2,10433;2,10432 \$
15. 2010.04.07,04:27:45,10 08 58 N 075 31 77
E,TB04,999,SMS:1102|100407042945,3,36;10435;10433;10432;10432;10434;10434;10434;10431;10431;10435 \$

Approved by

M. Muthiah
 [M. ARAC MUTHIAH]
 Sr - C

Tested By

G. R.
 [G. RAMESH]
 TECH. ASSISTANT

