ORV- Sagar Kanya

SK-329 Cruise Report

(April 9th 2016 to May 4th 2016)

Geo-scientific Studies of the Exclusive Economic Zone

NATIONAL CENTRE FOR ANTARCTIC AND OCEAN RESEARCH

HEADLAND SADA, VASCO-DA-GAMA (GOA)-403804

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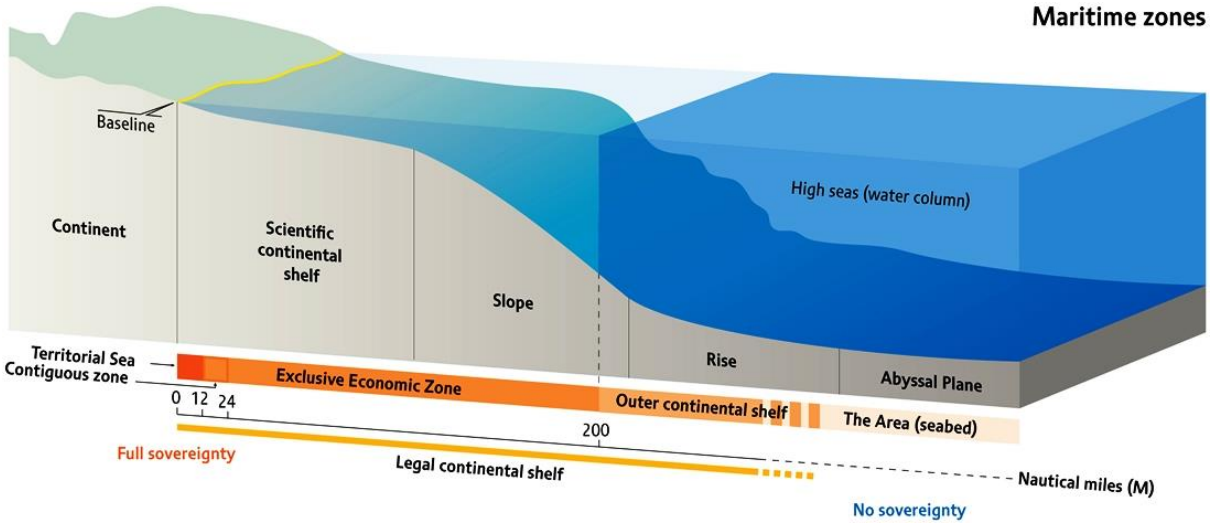
1. INTRODUCTION

Judicious utilization of offshore resources is very vital for the economic prosperity of any country in the world. The control over the oceans is regulated by the *Law of the Sea convention* of 1982, which came into force on November 16, 1994 and it defines oceanic jurisdiction for all countries. This Law extends the legal right to the coastal countries to exploit, develop, manage and conserve all resources to be found in the water and in the sub-soil of an area extending 200 nautical miles from its shore i.e. Exclusive Economic Zone (EEZ).

Utilities:

The Exclusive Economic Zone (EEZ), about 200 nautical miles from coast, the zone outside the territorial water of the country over which a country is permitted to do economic activities like fishing and is entitled to explore and exploit the natural resources of the area.



The detailed map of the EEZ shall be useful in the following purposes:

(i) Fishermen for fishing operations using deep trawl or bottom fishing gear,

(ii) Petroleum, natural gas and mineral exploration as well as exploitation,

(iii) Development and assessment of mineral resources,

(iv) Telecommunication industry for lying cables,

(v) Sub-sea pipe lines for geological hazard assessment,

(vi) Effective disposal of waste and reducing pollutants,

(vii) Ocean engineers for constructing and maintaining structures of port and harbor.

Indian EEZ:

India has an Exclusive Economic Zone (EEZ) with an area of about 23,05,143 km^2 along its 7516 km coastline (including the coastline of Andaman and Nicobar Islands and Lakshadweep Islands) as shown in figure-1. This constitutes about two-third of the land area of the country. Realizing the need to be cognizant about the enormous potentials of our country's EEZ, the *Government of India* has decided to prepare a comprehensive map of entire EEZ of India and *National Centre for Antarctic and Ocean Research (NCAOR), Goa* has been appointed as the nodal agency for the implementation of this programme.

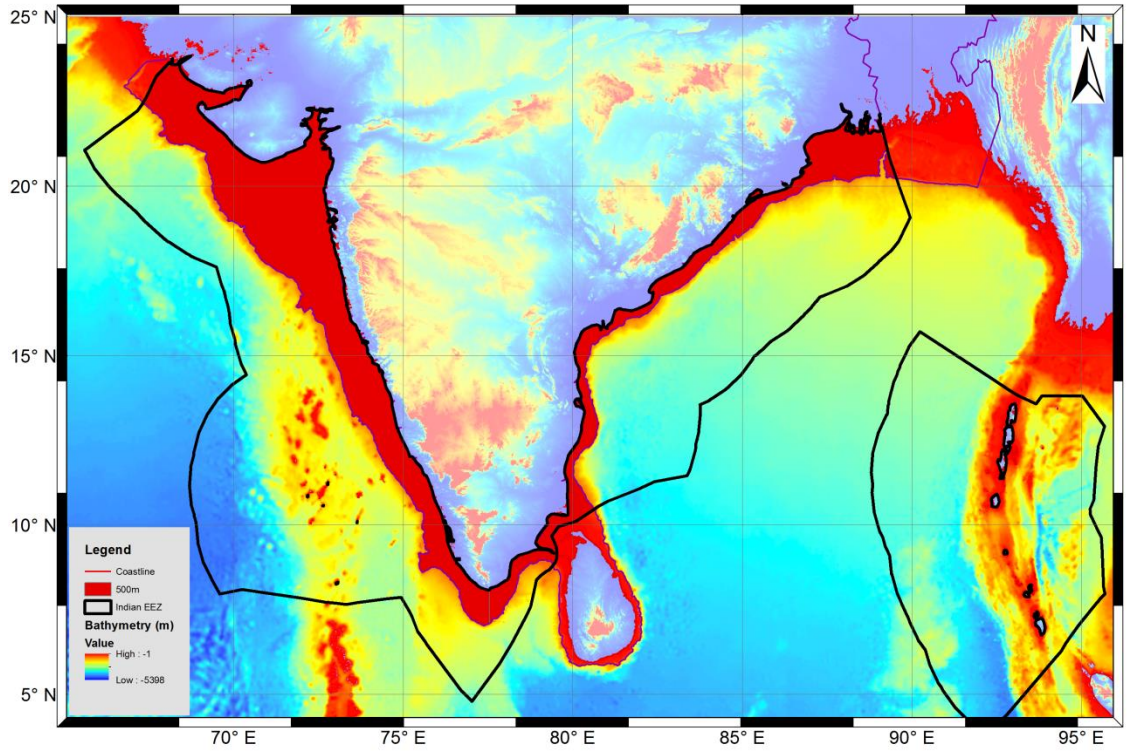


Figure 1: Indian EEZ map with the satellite bathymetry data, costal line of India and EEZ boundary of India

2. CRUISE ITERNERY

The scientific team embarked onboard the vessel at Chennai Port on 04th April 2016. After the successful completion of the survey the vessel returned to Chennai Port on 4th May 2016.

Departure : Chennai, 09.04.2016

Arrival : Chennai, 04.05.2016

3. LIST OF PARTICIPENTS

1.	Bijesh C. M.	NCAOR	Chief Scientist
2.	Suman Kilaru	-do-	-do-
3.	Rahul Mavi	-do-	Shipboard Asst.
4.	Ranju R.	CUSAT	JRF
5.	Sooria. P.	-do-	-do-
6.	Krishnarajaperumal	Norinco	Service Engineer
7.	Vinoth Kumar	-do-	-do-
8.	Tharanitharan	-do-	-do-
9.	Vijayakumar	-do-	-do-
10.	Ramesh	-do-	-do-

4. OBJECTIVE and AREA OF OPERATION

The primary objective of the SK-329 cruise was to undertake multibeam bathymetric survey in the west coast of Andaman (Block_A and Block_B), Bay of Bengal within the EEZ of India as shown in figure-2. Also to collect gravity cores and to conduct CTD/SVP cast at different locations within survey area. And in figure 3. shows the CTD/Sound Velocity Profile (SVP) locations, Gravity Core (GC) locations alongwith vessel tracks prepared for the bathymetry data acquisition.

The total area covered in Block_A is 18737 sq. km, with trackline distance of 2873km; 6032sq.km in Block_B with trackline distance of 788km.

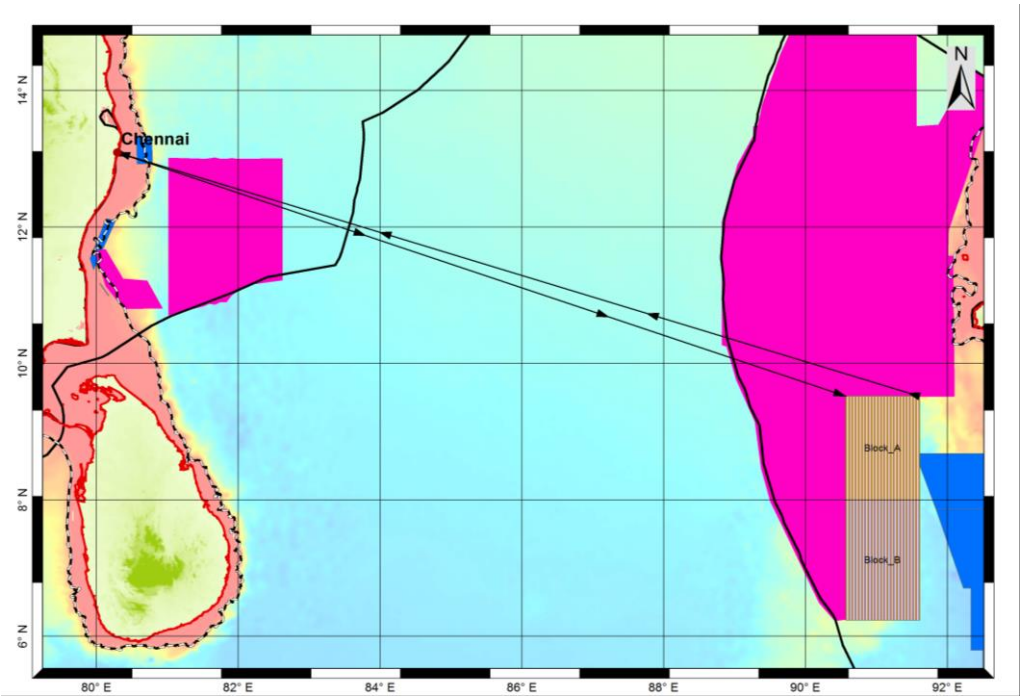


Figure 2: Image shows the transit from Chennai Port and proposed survey blocks, Block_A and Block_B.

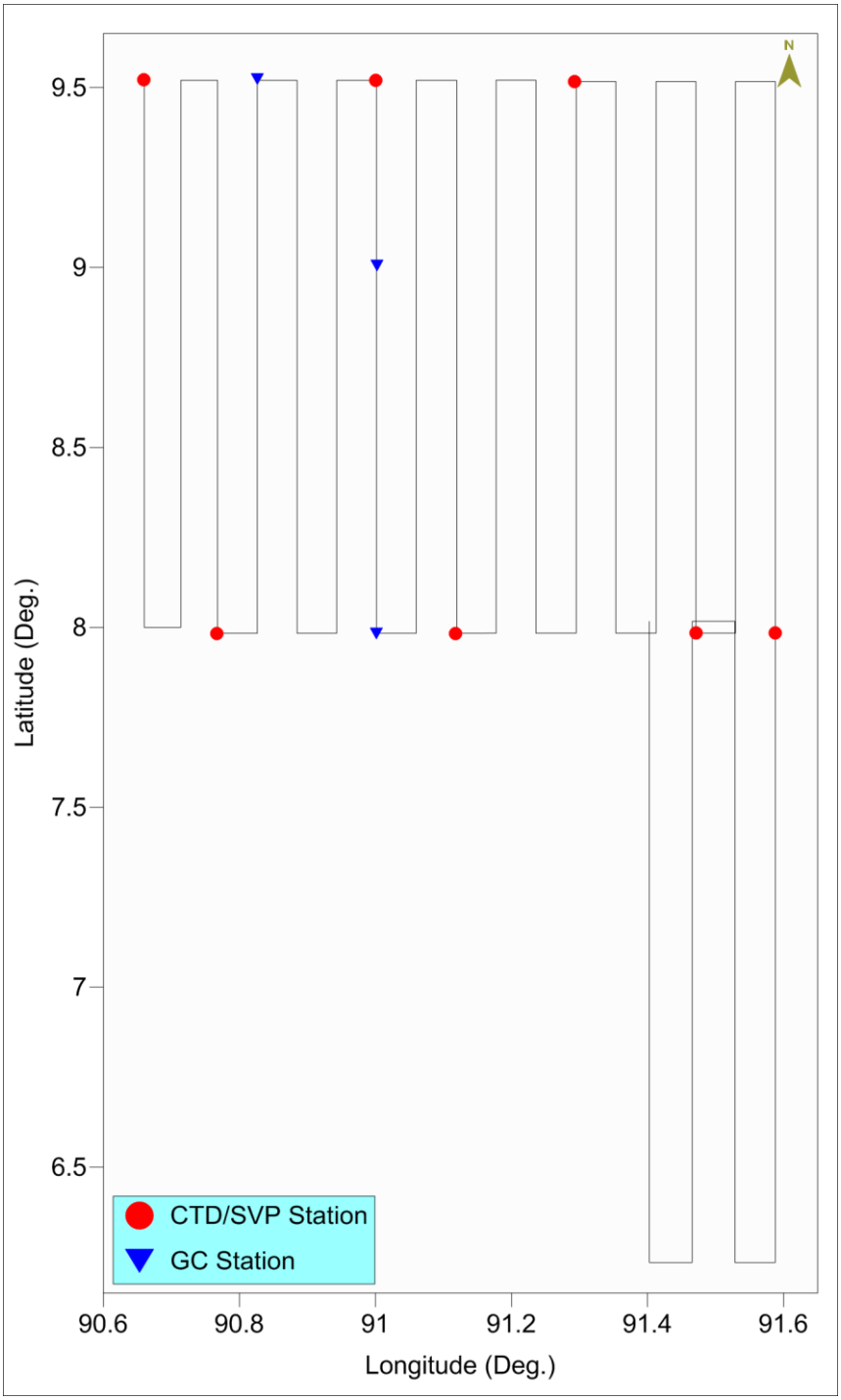


Figure 3: Cruise tracks prepared for the bathymetry survey and locations of gravity coring and CTD/SVP stations.

5. METHODOLOGY AND SURVEY EQUIPMENTS

a. Methodology :

The Multibeam survey was carried out using standard Survey practices. The track lines were planned in order to obtain about 20% coverage at average speed of 5-7.5 knots. Navigational

and attitude information is provided by C-NAV DGPS system. Ship track was maintained within ±20 m.

b. Equipment details:

7.2.1 SeaBeam-3012 Multibeam Echosounder System:

SeaBeam-3012 Multibeam Echosounder onboard ORV-Sagar Kanya was utilised to carry out the surveys in Off-Chennai region in Bay of Bengal. The SB-3012 is a 12 kHz, 201 beam sonar system, has a beam width of 2° at nadir and is capable of measuring depths ranging from 200 m to 11000 m. Brief technical specification of the SB-3012 MBES system are as follows:

Manufacturer : L3-Communications Elac-Nautik GmbH, Germany

Number of Beams : 201

Swath Coverage : 140°, 2° × 2° (5.5 × Depth), ~20 dB backscatter

Depth : 200 to 11, 000 m

Frequency of Operation : 12 kHz

Max. Source Level : 2° = 241 dB/mPa

Pulse Length : 2, 3, 5, 7, 10, 14, 20 ms

Side Lobe Suppression : > -30 dB

Technology : Full motion compensation (Sweptbeam technology)

Acquisition Software : Hydrostar

Data Processing Software : EIVA

The complete Multibeam system complex comprises of many sub systems:

a. Surface Sound velocity (SSV): The surface sound velocity profiler is an underway ocean surface profiling system that collects the water sound speed continuously.

b. Gyro & Motion Sensor: Multibeam system uses IXSEA-Octans sensor for Gyro and motion input. Octans is an IMO compliant survey grade gyrocompass with an integral motion sensor.

c. Positioning System: The C-NAV DGPS subsystem is used for positioning accuracy. C-Nav GcGPS corrections are similar to other wide area DGPS system such as the Federal Aviation Administration's (FDA) wide area augmentation system (WAAS). The C-Nav GPS receiver can accept two (2) different GcGPS correction service message formats. The C-Nav, dual frequency, GPS equipment receives either of these corrections broadcast from the communications satellite, applies them its own observed refraction corrected C/A code, dual

frequency observations, and performs a navigation solution. The resulting corrected GPS position; velocity and time (PVT) are output from the C-Nav equipment to other subsystems on the platform/vehicle/vessel to support the navigation positioning control requirements.

d. Network Time Server with GPS Synchronized Time Base: LANTIME (local area network timeserver) provides a high precision time base to a TCP/IP network (stratum-1-server). The NTP (network time protocol) is used to synchronize all NTP clients with the reference. LANTIME/GPS is a set of equipment composed of a satellite controlled clock GPS167, a single board computer with integrated network board and a power supply, all installed in a metal 19" on the single-board computer flash disk. Four push buttons and a 2 x 40 character LC display can be used configure and monitor the time server. After the network connection has been bestialized, the timeserver can also be configured and monitored remotely from a work station via TEL/NET or FTP.

e. Network Time Protocol (NTP): NTP is a common method for synchronization of hardware clocks in local and global networks. Timeservers synchronize themselves by a reference time source, such as a radio controlled clock, GPS-receiver or modem time distribution. Stratum-1-server distribute their time to several clients in the network which are called stratum-2. A high precision synchronization is feasible because of the several time references. Every computer synchronizes itself by up to three valued time sources. NTP enable the comparison of the hardware times and the adjustment of the own clock, a time precision of 128 ms, often better than 50 ms is possible.

7.2.2. Conductivity Temperature & Depth (CTD)

As the Sound Velocity Profiler (SVP) depth display was working, for this Sound Velocity Profiler attached with the CTD cast. The vertical structure of sound velocity was derived using SVP and CTD Cast. CTD is used to study various parameters like temperature, conductivity, pressure etc. at various depths. The *SBE-911plus* was utilized to measure conductivity, temperature, and pressure in depths up to 6,000 meters. The sketch diagram of deployment of CTD as shown in figure 6.

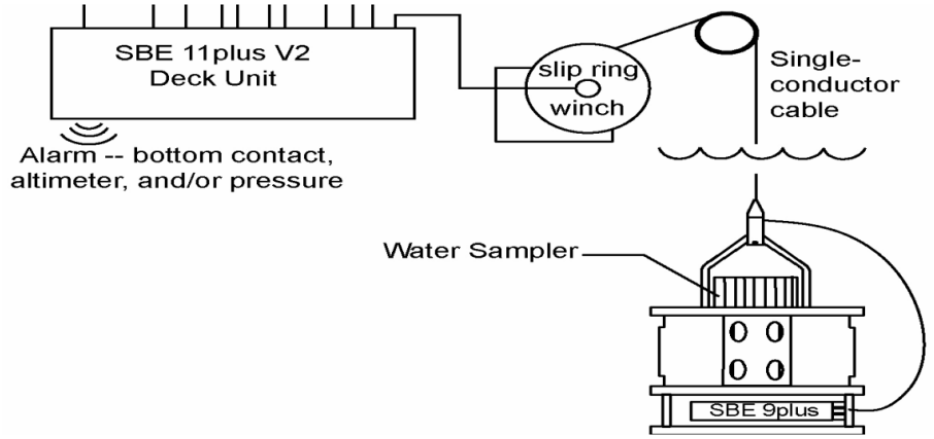


Figure 4: the sketch shows the CTD cast with deployment unit.

7.2.3: Gravity Coring:

Gravity corer was used for sediment sample collection at one location. The corer consists of an open-ended tube with lead weight (~700kgs).The corer is lowered into the seabed and generally penetrates to a depth of up to 4-5 m. Gravity core lowering as shown in figure 5.

Figure 5: Gravity coring operations

6. SCIENTIFIC OBSERVATION AND OTHER WORK DURING THE CRUISE

a. During the cruise, the MB data was processed with CARIS and Mapped.

b. Gravity core was collected at 3 locations. The sediment core was sub-sampled at 1cm interval up to 100 cm, 2 cm up to 200 cm and remaining core at 5cm interval.

7. ACKNOWLEDGEMENT

The whole team of SK-329 place on record their deep sense of gratitude to *Director, National Centre for Antarctic and Ocean Research,* for assigning responsibilities for EEZ survey cruise. Team is also thankful to *Dr. John Kurian P.,Dr, Anil Kumar Mr. Abhishek Tyagi* and *Mr. M. M. Subramaniam* for their support for the success of SK-329 cruise. The Scientific team also wishes to thank the Master and crew of the vessel for their co-operation during the cruise. The support and co-operation rendered by NORINCO personnel is appreciated.

ANNEXURE

1. Diary of Events

DIARY OF EVENTS SK-329		
Date	Time (GMT)	Events (Lat/Long - dd mm ; SOG- Speed Over Ground; COG- Course Over Ground; D-Depth; WS- Wind Speed (knots); W- Weather)
BLOCK-A		
10/04/2016	@0230	12 39.7'N, 81 37.270E, SOG 5.8; COG 110; D 3256m; WS NE*3; W Calm
		Vessel heading to survey location
11/04/2016	@0230	11 56.45'N, 83 42.44'E, SOG 5.4; COG 110; m; WS SW*7; W Calm
	0530	Start testing of MPN, CTD/SVP, Deep sea winch, 12 34.18'N, 81 53.35'E
	1130	End testing of MPN, CTD/SVP
12/04/2015	@0230	11 03.535N, 86 14.79E, SOG 6.6; COG 110; D 3414m; SW*2; W Calm
		Vessel heading to survey location
13/04/2016	@0230	10 08.569N, 88 52.545E, SOG 6.9; COG 110; D 2670m; WS SW*3; W Calm Sea
		Vessel heading to survey location
	2103	Cast CTD/SVP_01, 9 31.218N, 90 39.522E
14/04/2016	@0230	9 31.20N, 90 39.50E, SOG 0.1; COG 282; D3060m; WS NE*01; W Calm

	0055	CTD/SVP onbord
	0250	MPN onboard with sample
	0305	Deploy Idronaut CTD
	0455	SOL Line01,9 31 12.90 N, 90 39 36.04E
	1832	EOL Line01, 8 00 04.03N, 90 39 33.71E
	1907	SOL Line02, 7 59 09.35N, 90 42 21.17E
15/04/2016	@0230	8 49.91N, 90 42.82N; ,SOG 7; COG 360; D 3470m; WS SE*01; W Calm
	0826	EOL Line02, 9 32 15.56N, 90 42 49.81E
	0858	SOL Line03, 9 32 05.76N, 90 46 03.73E
	2316	EOL Line03, 7 59 19.02N, 90 46 04.92E
	2325	Start Cast CTD/SVP_02, 7 59 15.88N, 90 46 01.55E
16/04/2016	@0230	7 59.26N, 90 46.038E, SOG 0.2; COG 112; D 3210m; WS NE*02; W Calm
	0218	End Cast CTD/SVP_02, 7 59 15.88N, 90 46 01.55E
	0353	SOL Line04,7 59 08.34 N, 90 49 32.36E
	1907	EOL Line04, 9 31 11.54N, 90 49 33.54E
	2000	Start Gravity Coring GC_01, 9 31 11.48N, 90 49 34.25E
	2254	Gravity Corer onboard
17/04/2016	@0230	9 16.98N, 90 53.086E, SOG 6.9; COG 180; D 3495m; WS NE*02; W Calm
	0030	SOL Line05, 9 31 09.22N, 90 53 05.22E
	1407	EOL Line05, 7 58 44.79N, 90 53 33.31E
	1457	SOL Line06, 7 59 00.48N, 90 56 34.37E
18/04/2016	@0230	9 12.577N, 90 56.58E, SOG 5.9; COG 1.1; D 3527m; WS NE*03; W Calm
	0537	EOL Line06, 9 31 12.93N, 90 56 35.39E
	0600	Start Cast CTD/SVP_03 ,9 31 20.59N, 90 56 31.13E
	0830	End Cast CTD/SVP_03
	0920	SOL Line07, 9 31 02.75N, 91 00 00E
	1416	Stop Line07, 9 00 30.16N, 91 00 09.27E

	1445	Start Gravity Coring GC_02, 9 00 24.28N, 91 00 05.78E
	1810	Gravity Corer onboard
	1835	Continue Line07, 09 01 01.46N, 91 00 16.99E
19/04/2016	@0230	8 08.019N, 91 00.093E, SOG 5.8; COG 177; D 3550m; WS NE*02; W Calm
	0405	EOL Line07, 8 00 01.71N, 91 00 05.02E
	0445	Start Gravity coring GC_03, 7 58 58.8N, 91 00 05.02E
	0745	Gravity Corer Onboard
	0855	SOL Line08, 7 59 00.35N, 91 03 37.27E
	2245	EOL Line08, 9 31 16.84N, 91 03 35.33E
	2318	SOL Line09, 9 30 59.49N, 91 07 07.11E
20/04/2016	@0230	9 08.46N, 91 07.10E; SOG 7.1; COG 182.7; D 3589m; WS NE*02; W Calm
	1227	EOL Line09, 7 59 07.15N, 91 07 05.19E
	1245	Start Cast CTD/SVP_04, 7 59 00.22N, 91 07 05.24E
	1545	End Cast CTD/SVP_04
	1751	SOL Line10,7 58 46.8 N, 91 10 38.5E
21/04/2016	@0230	8 58.318N, 91 10.637E, SOG 7; COG 357.8; D 3621; WS NE*2; W Calm
	0723	EOL Line10, 09 31 17.85N, 91 10 41E
	0757	SOL Line11,9 31 12.39N, 91 14 13.47E
	1505	System restarted, low memory
	1507	Continue Line11 , 8 50 32.4N, 91 14 15E
	2247	EOL Line11, 7 58 53.36N, 91 14 08.89E
	2325	SOL Line12, 7 58 58.67N, 91 47 40.21E
22/04/2016	@0230	8 18.423N, 91 17.697E, SOG 6.3; COG45; D 3676m; WS NE*02; W Calm
	1356	EOL Line12, 9 31 00.86N, 91 17 41.46E
	1400	Start Cast CTD/SVP_05, 9 31 01.44N, 91 17 41.20E
	1659	End Cast CTD/SVP
	1746	SOL Line13, 9 30 59.63N, 91 21 17.63E

23/04/2016	@0230	8 32.168N, 91 21.21E, SOG 6; COG 185.3; D 3708m; WS NE*02 ; W Calm
	0730	EOL Line13, 8 00 55.30N, 91 21 4.12E
	0804	SOL Line14, 7 58 49.87N, 91 24 40.03E
	2154	EOL Line14, 9 31 15.45N, 91 24 48.49E
	2227	SOL Line15, 9 31 08.93N, 91 28 07.94E
24/04/2016	@0230	9 04.260N, 91 28.260E, SOG 6.6; COG 180; D 2538m; WS NE*2; W Calm
	1253	EOL Line15, 7 59 02.76N, 91 28 10.49E
	1300	Start Cast CTD/SVP_06, 7 58 59.75N, 91 28 14.64E
	1600	End Cast CTD/SVP, deployed upto 2400m due to CTD Cable got entangled in winch
	1653	SOL Line16, 7 59 04.38N, 91 31 39.39E
25/04/2016	@0230	9 03.696N, 91 31.758E, SOG 6.7; COG 0.2; D 3586m; WS NE*02; W Calm
	0630	EOL Line16, 9 31 02.29N, 91 31 46.69E
		Vessel stopped for attending issue with CTD Cable
	1044	SOL Line17, 9 30 54.01N, 91 35 20.59E
26/04/2016	@0230	07 59.038N, 91 35.266E, SOG 0.3; COG 143; D 3655m; WS NE*02; W Calm
	0059	EOL Line17, 7 59 15.30N, 91 35 12.04E
	0130	Start Cast CTD/SVP_07, 7 59 01.71N, 91 35 15.38E
	0450	End Cast CTD/SVP
BLOCK_B		
	0624	SOL Line18, 8 00 40.48N, 91 35 09.13E
	2308	EOL Line18, 6 13 49.90N, 91 35 15.84E
	2345	SOL Line19, 6 14 12.06N, 91 31 42.70E
27/04/2016	@0230	6 34.968N, 91 31.694E, SOG 7.2; COG 356.5; D 3717m; WS NE*02; W Calm
	1504	EOL Line19, 8 00 59.32N, 91 31 42.30E
	1538	SOL Line20, 8 01 10.54N, 91 27 51.81E
28/04/2016	@0230	06 47.55N, 91 27.930E, SOG 7.1; COG 182; D 3683m; WS NE*02; W Calm
	0402	Stop Line20 for LT cooler maintenance , 6 37 27.27N, 91 27 54.46E

	0850	Continue Line20, 6 39 02.57N, 91 27 55.73E
	1340	EOL Line20, 6 13 40.39N, 91 27 55.73E
	1416	SOL Line21, 6 14 10.65N, 91 24 07.59E
29/04/2016	@0230	07 35.669N, 91 24.157E, SOG 6.9; COG 357.8; D 3397m; WS NE*02; W Calm
	0637	EOL Line21, 8 01 02.54N, 91 24 07.38E
Survey completed, vessel heading to Chennai Port		
30/04/2016	@0230	08 55.753N,89 26.437E, SOG 6.2; COG 295; D 3400m; WS NE*02; W Calm
		Vessel heading to Chennai
01/05/2016	@0230	10 02.077N, 87 02.283E, SOG9.5 ; COG 295; WS NE*02; W Calm
		Vessel heading to Chennai
02/05/2016	@0230	11 05.966N, 84 43.307E, SOG 6.1 ; COG 295; WS NW*02; W Calm
		Vessel heading to Chennai
03/05/2016	@0230	12 07.502N, 82 29.212E, SOG 6; COG 295; WS SW*04; W Moderate
		Vessel heading to Chennai
04/05/2016		Vessel arrived in Chennai Port

2. CTD/SVP Data Collection

SVP/CTD						
Sl No	Date	Time UTC	Depth(m)	Latitude	Longitude	Filename/Folder name
1	14.04.2016	0:55	3060	9°31.218'	90°39.522'	SVP1_14042016
2	16.04.2016	2:18	3210	07°59'15.884"	90°46'01.5888"	SVP2_16042016
3	18.04.2016	8:30	3488	09°31'20.5938"	90°56'31.1356"	SVP3_18042016
4	20.04.2016	15:54	3465	07°59'00.2219"	91°07'05.2428"	SVP4_20042016
5	22.04.2016	16:59	3626	09°31'01.4400"	91°17'41.2000"	SVP5_22042016
6	24.04.2016	16:00	3708	07°58'59.7564"	91°28'14.6424"	SVP6_24042016
7	26.04.2016	4:50	3637	07°59'01.7171"	91°35'15.3834"	SVP7_26042016

3. Logsheet

Line No	Beginning of Line						End of Line					
	Date	Time(UTC)	Depth(m)	Latitude	Longitude	Filename	Date	Time(UTC)	Depth(m)	Latitude	Longitude	Filename
Line01	14.04.2016	4:55	3236	9°31'12.9076"	90°39'36.04"	Line01_201614Apr045508	14.04.2016	18:32	3124	08°00'04.0356"	90°39'33.7152"	Line01_201614Apr182031
Line02	14.04.2016	19:07	3076	07°59'09.3534"	90°42'21.1796"	Line02_201614Apr190748	15.04.2016	8:26	3413	09°32'15.5634"	90°42'49.8138"	Line02_201615Apr081123
Line03	15.04.2016	9:30	3430	09°28'06.8184"	90°46'03.9618"	Line03_201615Apr092246	15.04.2016	23:16	3211	07°59'19.0002"	90°46'04.9254"	Line03_201615Apr231151
Line04	16.04.2016	3:53	3355	07°59'08.3429"	90°49'32.3670"	Line04_201616Apr035266	16.04.2016	19:07	3459	09°31'11.5410"	90°49'33.5454"	Line04_a_201616Apr190630
Line05	17.04.2016	0:30	3475	09°31'09.2226"	90°53'05.2212"	Line05_201617Apr003016	17.04.2016	14:07	3492	07°58'44.7921"	90°53'05.5273"	Line05_201617Apr135242
Line06	17.04.2016	14:57	3498	07°59'00.48"	90°56'34.3794"	Line06_201617Apr145634	18.04.2016	5:37	3489	09°31'12.9360"	90°56'35.3928"	Line06_201618Apr053150
Line07	18.04.2016	9:20	3515	09°31'02.7558"	91°00'00.0036"	Line07_201618Apr091944	18.04.2016	14:16	3552	09°00'30.1602"	91°00'09.2760"	Line07_201618Apr140926
Line07A	18.04.2016	18:35	3552	09°01'01.4670"	91°00'16.9964"	Line07A_201618Apr183425	19.04.2016	4:05	3483	08°00'01.7123"	91°00'05.0226"	Line07A_201619Apr035046

Line08	19.04.2016	8:55	3413	07°59'00.3504"	91°03'37.2714"	Line08_201619Apr085532	19.04.2016	22:45	3520	09°31'16.8495"	91°03'35.5338"	Line08_201619Apr223811
Line09	19.04.2016	23:18	3622	09°31'18.1140"	91°07'07.1132"	Line09_201619Apr231848	20.04.2016	12:27	3468	07°59'07.1576"	91°07'05.1996"	Line09_201620Apr121615
Line10	20.04.2016	17:51	3522	07°58'46.8822"	91°10'38.5032	Line10_201620Apr175109	20.04.2016	7:23	3575	09°31'17.8546"	91°10'41.0204"	Line10_201621Apr071237
Line11	20.04.2016	7:57	3612	09°31'12.3960"	91°14'13.4712"	Line11_201621Apr075745	21.04.2016	22:47	3586	07°58'53.3624"	91°14'08.8948"	Line11_201621Apr222535
Line12	21.04.2016	23:25	3619	07°58'58.6758"	91°17'40.2156"	Line12_201621Apr232439	22.04.2016	13:56	3623	09°31'00.8610"	91°17'41.6406"	Line12_201622Apr133931
Line13	22.04.2016	17:46	3626	09°30'59.6352"	91°21'17.6394"	Line13_201622Apr174622	23.04.2016	7:30	3642	08°00'55.3012"	91°21'14.1231"	Line13_201623Apr071253
Line14	23.04.2016	8:00	3654	07°58'49.8798"	91°24'40.0034"	Line14_201623Apr080410	23.04.2016	21:54	3588	09°31'15.4506"	91°24'48.4924"	Line14_201623Apr213126
Line15	23.04.2016	22:27	3310	09°31'08.9316"	91°28'07.9452"	Line15_201623Apr222707	24.04.2016	12:53	3711	07°59'02.7666"	91°28'10.9194"	Line15_201624Apr124237
Line16	24.04.2016	16:53	3616	07°59'04.3812"	91°31'39.3972"	Line16_201624Apr165256	25.04.2016	6:30	3238	09°31'02.2902"	91°31'46.6938"	Line16_201625Apr061710
Line17	25.04.2016	10:49	2968	09°30'54.0156"	91°35'20.5914"	Line17_201625Apr104908	26.04.2016	0:59	3637	07°59'15.3822"	91°35'12.0432"	Line17_201626Apr005800
Line18	26.04.2016	6:24	3605	08°00'40.4856"	91°35'09.1362"	Line18_201626Apr062418	26.04.2016	23:30	3732	06°13'49.9016"	91°35'15.8489"	Line18_201626Apr230144
Line19	26.04.2016	23:45	3732	06°14'12.0652"	91°31'42.7022"	Line19_201626Apr234516	27.04.2016	15:04	3692	08°00'59.3286"	91°31'42.3018"	Line19_201627Apr144139
Line20	27.04.2017	15:38	3694	08°01'10.5455"	91°27'51.8103"	Line20_201627Apr153842	28.04.2016	13:40	3725	06°13'40.3950"	91°27'56.7388"	Line20_201628Apr133220
Line21	28.04.2018	14:16	3566	06°14'10.6518"	91°24'07.5930"	Line21_201628Apr141547	29.04.2016	6:37	3679	08°01'02.5494"	91°24'07.3830"	Line21_201629Apr062032

4. Sediment Sampling

Sediment Sampling Details							
Sl No.	Sample No.	Date	Time UTC	Depth(m)	Latitude	Longitude	Remarks
1	GC_01	16.04.2016	22:54	3452	09°31'11.5362"	90°49'34.1592"	2.55 M Length Core Collected
4	GC_02	18.04.2016	18:10	3566	09°00'24.2832"	91°00'05.7892"	3.15 M Length Core Collected
2	GC_03	19.04.2016	7:45	3467	07°59'00.6906"	91°00'01.0608"	2 M Length Core Collected