



CRUISE REPORT ON RESEARCH ACTIVITIES

M.V.SEAFDEC 2 Cruise No. 3-3/2004

24 June-4 August 2004

**Verify research methodology in water of Malaysia,
Brunei Darussalam, Philippines, Vietnam and Cambodia**

TD/RP/81

This report is base on preliminary data

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Cruise report

1. Cruise no.: M.V SEAFDEC 2 cruise no 3-3/2004
2. Period: 24 June-4 August 2004
3. Area of Operation: Verify research methodology in water of Malaysia, Brunei Darussalum, Philippines, Vietnam and Cambodia
4. Objective: Verify research methodology in water of relevant countries
5. List of personal:

Ship personals

No.	Position	Name
1	Master	Mr. Tossaporn Sukhapindha
2	C/E	Mr. Veerachai Chettasumon
3	2/O	Mr. Suren Pruksarat
4	3/O	Mr. Somphote Vudthipanyo
5	2/E	Mr. Komson Sangphuek
6	3/E	Mr. Padung Ngowlimhuat
7	B/S	Mr. Vudthirat Vudthipanyo
8	Steerman	Mr. Pradit Kui-prasert
9	"	Mr. Tana Rungjoy
10	A/B	Mr. Yuttachai How-harn
11	Fitter	Mr. Vallop Phimroon
12	Oiler	Mr. Plew Shodok
13	"	Mr. Boontarin Wora-in
14	Cook	Mr. Saichol Kornnoom
15	Ship's boy	Mr. Somsak Pangkumhuk
16	Chief/Scientist	Mr. Isara Chanrachkij
17	Scientist	Mr. Nobphadol Somjit (29/06- 4/07/2004)
18	"	Dr. Taweekiet Amornpiyakrit
19	"	Mr. Pratakphol Prajakjitt
20	"	Ms. Pattaratjit Kaewnuratchadasorn
21	"	Mr. Anuruk Loog-on
22	"	Mr. Aussawin Buachuay
23	"	Mr. Sayan Promjinda
24	"	Ms. Kamolwan Pokaeo
25	Guest scientist	Mr. Nadzri Bin Seman
26	"	Mr. Azman Bin Mohd Ali
27	"	Mr. Masaki Ogata (29/06- 4/07/2004)

Malaysia

No.	Position	Name
1	Chief/Scientist	Mr. Abd. Haris Hilmi Bin Ahmad Arshad
2	Scientist	Mr. Sallehudin bin Jamon
3	"	Mr. Abdul Rasak bin Abd. Rahman
4	"	Mr. Ahmad Husin bin Alias
5	"	Mr. Hadil bin Rajali
6	"	Mr. Richard Rumpet
7	"	Mr. Pang A/K Nyukang
8	"	Mr. Suffian
9	"	Mr. Mohammad Zakaria bin Morshidi
10	"	Ms. Annie Lim Pek Khiok

Brunei Darussalam

No.	Position	Name
1	Chief/Scientist	Mr. Mohammad bin Mail
2	Scientist	Mr. El Sinco
3	"	Act. PP Matzai Hj Juna
4	"	SFA Abdul Hamid Hj Zainin
5	"	Act Ketua Nelayan Bidin bin Suru
6	"	Serang Harun bin Puteh
7	"	Nelayan Norasmi Hj Bagol
8	"	Nelayan Hatral Kamal
9	"	Nelayan Talip Omar
10	"	FLo Abd Aziz Hj Abdul Rahman
11	"	Roslan Hj Lamit
12	"	Hj Ramlee Hj Hassan



Philippine

No.	Position	Name
	Chief/Scientist	Mr. Elmer Alba
1	Scientist	Mr. Arsenio Banares
2	"	Mr. Pierre Easter Velasco
3	"	Mr. Ariel Arizabal
4	"	Mr. Euriphedes Osorio
5	"	Mr. Remar Asuncion
6	"	Mr. Miguel Angelo Callos
7	"	Ms. Marylene Mandreza
8	"	Ms. Jennifer Viron
9	"	Ms. Rhoda Servidad



Vietnam

No.	Position	Name
1	Chief/Scientist	Mr. Nguyen Viet Nghia
2	Scientist	Mr. Nguyen Cong Con
3	"	Mr. Pham Quoc Huy
4	"	Mr. Tran Lim Khiet
5	"	Mr. Truong Van Tuan
6	"	Mr. Le Hong Cau
7	"	Mr. Le Van Bon
8	"	Mr. Tran Ngoc Khanh
9	"	Mr. Nguyen Quoc Nghi
10	"	Mr. Nguyen Viet Thanh
11	"	Mr. Nguyen Trong Thao
12	"	Mr. Nguyen Phong Hai

Cambodia

No.	Position	Name
1	Cambodia's Chief Scientist	Mr. Ouk Vibol
2	Scientist	Mr. Sin Satharath
3	"	Mr. Hout Vuthy
4	"	Mr. Mok Sotheara
5	"	Mr. Leng Sam Ath
6	"	Mr. Ra Choup Sophal
7	"	Mr. Nhem Vanna
8	"	Mr. Kao Moni Rith
9	"	Mr. Ket Kea
10	"	Mr. Sin Phal Kun
11	"	Mr. Tan Thearith
12	"	Mr. Sourn Savon
13	"	Mr. Tim Savuth

MV SEAFDEC2 was provided to SEAFDEC by the government of Japan through the Japanese Grant Aid Scheme with the object to support and conduct coastal fisheries and fisheries oceanography research in the exclusive economic zone of SEAFDEC member countries under the ASEAN SEAFDEC program.

MV SEAFDEC2 is a research and training vessel having a 207 international gross tonnage Length overall is 32.5 m and 7.2 m width. Main fishing gears are Trawl (bottom and pelagic trawl), longline (Bottom and pelagic longline), automatic squid jigging machine, deep sea pot and drifting gillnet. M.V. SEAFDEC2 is also equipped with modern technology oceanographic equipments e.g. Integrated conductivity temperature and depth (ICTD), Thermo-Salino graph and Fluorometer, Expendable Bathy Thermograph (XBT) and expendable conductivity temperature and depth (XCTD), Depth and temperature recorder, etc. Hydroacoustic equipments, i.e., Mapping Sonar for 3 dimension analysis of bottom topography characteristic and advance scientific echo sounder for analysis of biomass and stock assessment are also equipped in order to cover all details of marine resource survey.

Respected to the conclusions of eligible countries committee meeting in March 2004, Operational plan of MV SEAFDEC2 in year 2004, has been appointed to conduct the research cruise on verify of research activities on board MV SEAFDEC2 by visiting all SEAFDEC Member countries. The cruise aim to introduce the facility and capability of vessel included the various fishing gear, hydroacoustic and oceanographic equipments to marine scientists of member countries. Cruise No. 3-3/2004 is carried out during 24 June to 4 August 2004 (40 days) in EEZ of Malaysia, Brunei Darussalam, the Philippine, Vietnam and Cambodia respectively. During the cruise, Navigators, Engineers and Researchers had fully spent their capabilities to conduct the activities and make the verifying of research activities on board MV SEAFDEC2 succeeded. The mission might not be accomplished if the vessel could not effort supporting from all of Department of fisheries of SEAFDEC member countries, SEAFDEC training department and the agency concern.

Result of the report is concerned on the marine survey on continental slope and pelagic resources. Because of the limitation on the period of time, fishing trials and oceanographic data collections and hydroacoustic surveys were conducted with the few stations in the EEZ of each member countries. Nevertheless the result shall be the important guides for future program of MV SEAFDEC2 in the year 2005-6.

6. Observation summary:

Oceanographic activities:

Oceanographic survey was divided into 2 main of oceanographic study were physical and biological study. Four kinds of oceanographic instrument were carried out during the cruise such as Integrated Conductivity Temperature Depth (ICTD), Thermo-Salinograph and Fluorometer (TSG), Temperature and Depth Recorder (TD), Expendable Conductivity Temperature Depth (XCTD), etc. Additionally, biological data collection was carried out including larvae collecting by bongo net and benthic animal by Smith-McIntyre Grab. The detail of oceanographic equipment were in Annex1. The shortly activities summary of each countries as follows:

Malaysia (Port of Call: Miri)

Period: 30 June-3 July 2004

Three oceanographic station were conducted by Sea-Bird CTD 911- an oceanographic instrument which measured conductivity, salinity, temperature, Dissolved Oxygen, pH, PAR and irradiances (Table 1). Sea water was collected by SBE 32 CAROUSEL Water samplers at the standard depths; 0, 25, 50, 75, 100, 125, 150,175, 200 meters. All water samplers will be analyzed for nutrients (Nitrite, Nitrate, Phosphate and Silicate) by auto-analyzer in the Chemical laboratory at Training Department. Unfortunately, DO and pH data was error because of misconnected cable. Furthermore, Thermo-Salinograph & Fluorometer was conducted during the ship was sailing for 3 times.

Brunei Darussalam (Port of Call: Muara)

Period: 6-8 July 2004

Two oceanographic stations were collected using ICTD SBE 9 plus which it can be measured several parameters such as ; temperature, depth, dissolve oxygen, pH and also using PAR for light measurement. Additionally, the water samples were collected for nutrient analyze at TD laboratory. The

The station of ICTD operation is shown in Table 1.

For Pelagic longline operation, Temperature and Depth Recorder (TD) were attached with the mainline to collect continuously temperature and depth data. The profile were shown in

The Philippines (Port of Call: Subic)

Period: 13-16 July 2004

Three oceanographic stations were conducted by Sea-Bird CTD 911 - a oceanographic instrument which measured conductivity, salinity, temperature, dissolved oxygen, pH, PAR and irradiances (Table 1).And sea water was collected by SBE 32 CAROUSEL water samplers at the standard depths; 0, 25, 50, 75, 100, 125, 150,175, 200,

250, and 300 meters. All water samplers will be analyzed for nutrients (Nitrite, Nitrate, Phosphate and Silicate) by auto-analyzer in the Chemical laboratory at Training Department. The profile is shown in Fig.

Temperature and Depth Recorder (TD) was conducted for 1 time for pelagic longline operation. This equipment was attached to the mainline of PLL to collect continuously temperature and depth data.

For Thermo-Salinograph & Fluorometer (TSG), it was operated for 24 hrs while the vessel was sailing and far away from the shore. However, during this trip it could not use this instrument due to the phytoplankton bloom in Subic bay, so the data recording was stopped temporarily.

Vietnam (Port of Call: Nha Trang)

Period: 21-23 July 2004

According to the sea weather was rough; Expendable Conductivity Temperature Depth (XCTD) was operated before pelagic longline operation. It noticed that the sea surface temperature was quite low, it might be upwelling situation. The profile was shown in.

For pelagic longline operation, Temperature and Depth Recorder (TD) was attached with the mainline to collect continuously temperature and depth data.

Sea-Bird CTD 911 was demonstrated for local researchers, and also water samplers were collected by using SBE 32 CAROUSEL water samplers at 5m, 10m, 25m and 60m of sea depth.

Cambodia (Port of Call: Sihanouvil)

Period: 28-31 July 2004

Port of call	Sihanouk Ville, Cambodia
Main Activities	1) Preliminary survey on Oceanographic data collection; ICTD, ThermoSalinograph-Fluorometer. 2) Biological Data collection; Benthos, Fish larvae collection. 3) Demonstration for HydroAcoustic Survey and Mapping Sonar. 4) Fish Samplings by Bottom Vertical Longline, Crab Trap Longline, Automatic squid fishing.

Research Area and Station:

The research area will be covered within the depth of waters from 20-35 m nearby the coastal zone. 4 survey stations (Station1 to 4) are able to conduct the survey and

station No.5-8 was cancelled because of the rough sea condition. The stations designed as appeared in the chart 1 below and the surveyed stations are appeared in the chart No.2

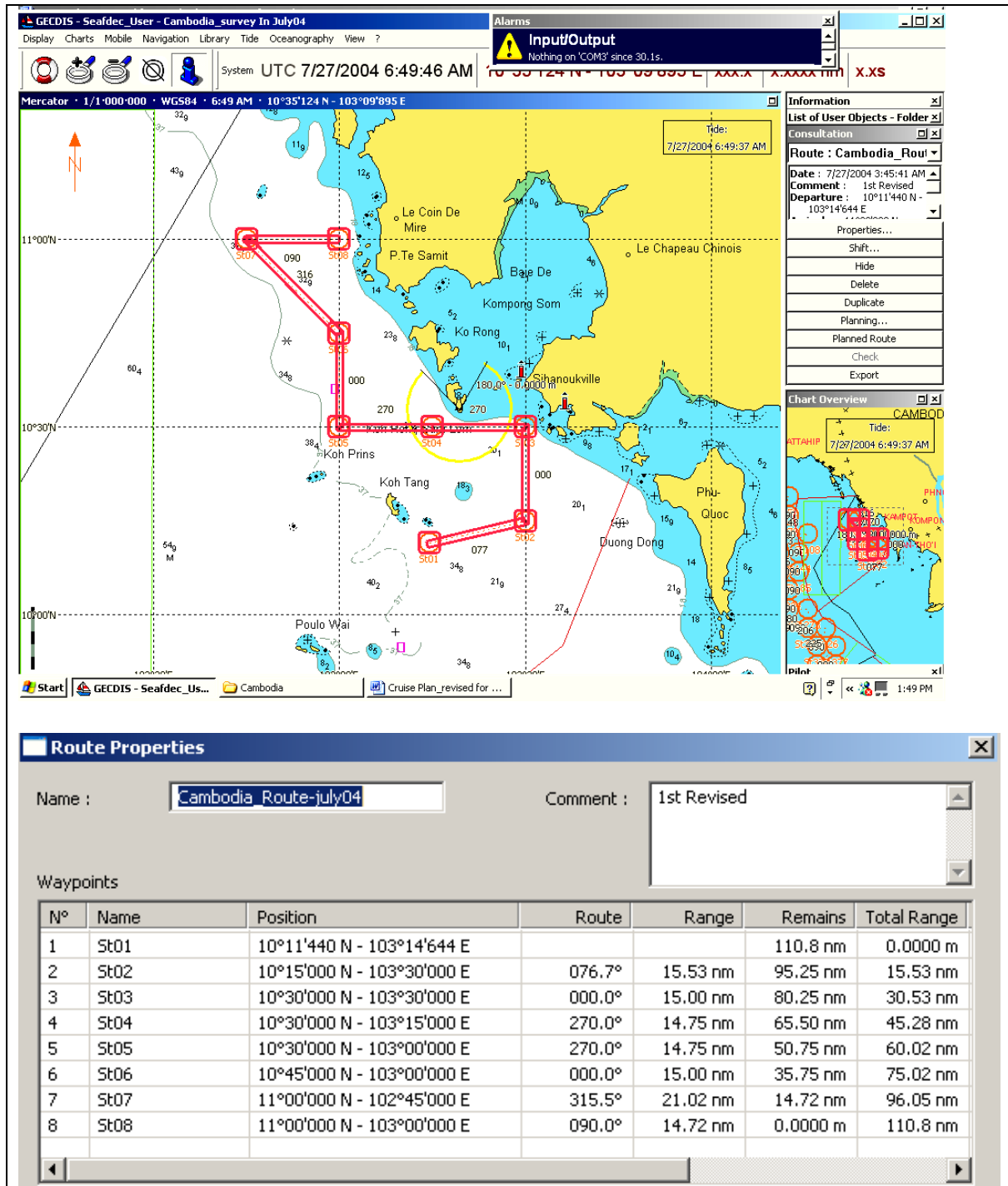


Chart 1: Station Designed for the marine research survey in Cambodia water

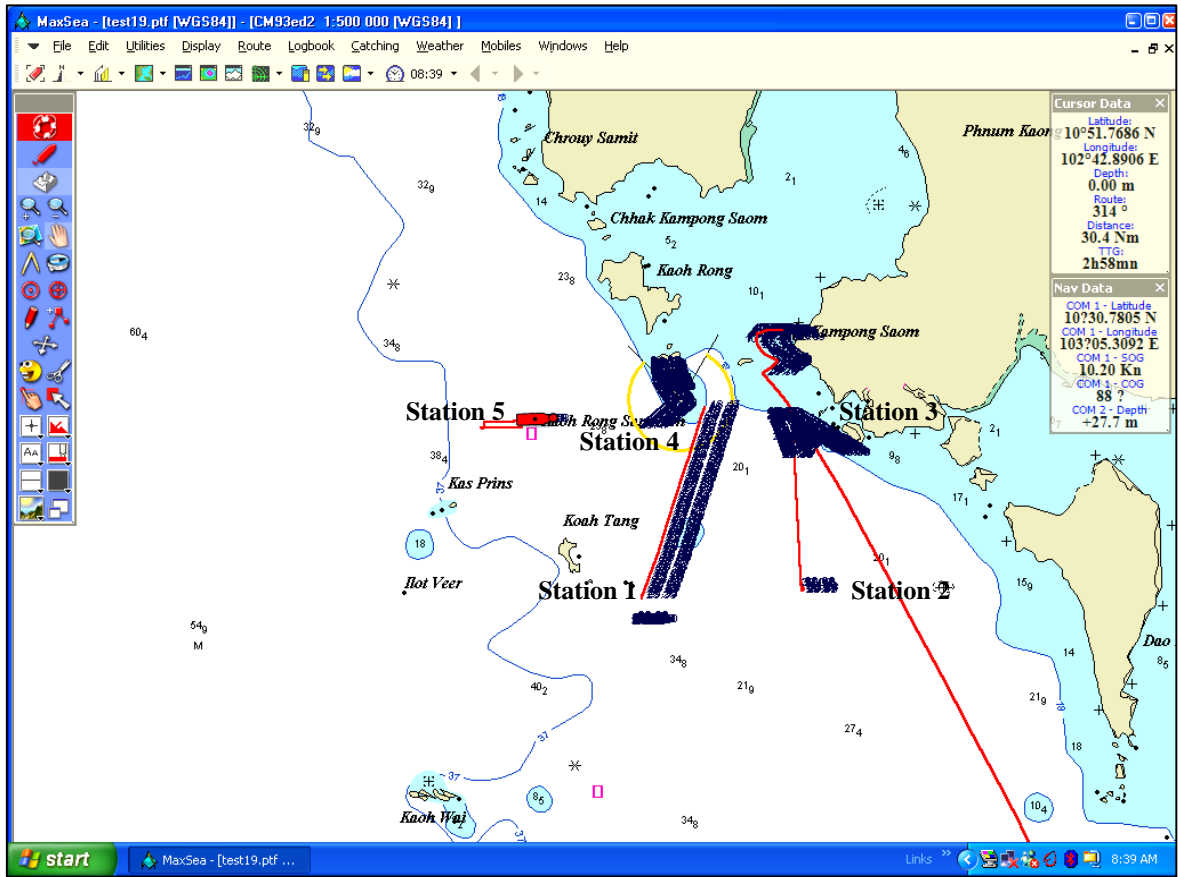


Chart 2: Station surveyed by MV SEAFDEC2 in Cambodia water

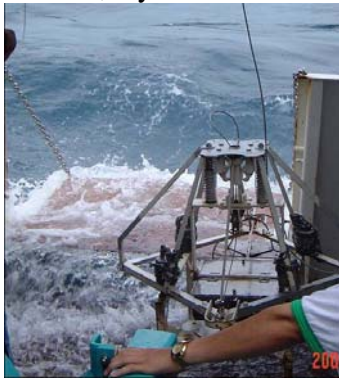
Survey Station Table

Survey	Station No.	Position	Remark
Oceanographic survey	1	Lat.10°_11'.7N Long. 103°_14'.1E	
	2	Lat.10°_15'.4N Long. 103°_30'.8E	
	3	Lat.10°_29'.3N Long. 103°_30'.4E	
	4	Lat.10°_29'.9N Long. 103°_14'.9E	
Hydroacoustic survey	1-2	Lat.10°_11'.7N Long. 103°_14'.1E to Lat.10°_15'.4N Long. 103°_30'.8E	
	2-3	Lat.10°_15'.4N Long. 103°_30'.8E to Lat.10°_29'.3N Long. 103°_30'.4E	
	3-4	Lat.10°_29'.3N Long. 103°_30'.4E to Lat.10°_29'.3N Long. 103°_30'.4E	
	4-5	Lat.10°_29'.3N Long. 103°_30'.4E to Lat.10°_30'.1N Long. 103°_00'.0E	Data has interfere so can not be analyzed
Fish sampling trap	1	Lat.10°_35'.2N Long. 103°_21'.0E	
	2	Lat.10°_35'.9N Long. 103°_16'.5E	
Fish sampling BVL	1	Lat.10°_34'.5N Long. 103°_16'.9E	
Squid sampling	1	Lat.10°_29'.3N Long. 103°_30'.4E	
	2	Lat.10°_29'.7N Long. 103°_14'.7E	
	3	Lat.10°_33'.8N Long. 103°_21'.2E	

Research Activities

Station No. 1-4 has been conducted the research survey by all instruments i.e. ICTD, ThermoSalinograph-Fluorometer, Biological Data collection; Benthos, Fish larvae collection and hydroacoustic survey by Scientific echo sounder. The fishing operation of 1st Collapsible trap and 1st Bottom vertical longline had been conducted in the area of station No.4, west side of Koh Rong Samloen.

According to the moderate sea condition, swell 2-3 m., MV SEAFDEC 2 has been cancelled the remained research station No.5-8 and proceeded to shelter at Koh Rong Samloen, Hydroacoustic survey was effected by the pitching of ship and not to be able to conduct with the full performance. There were a lot of gap space during the ship was pitching so that by this condition Chief scientist request to the Hydroacoustic scientist, Dr. Taweekiet A. stopped conducting hydroacoustic survey FQ-80 at station No.4



Oceanographic survey by all instruments were commanded to cancelled t station No.4 because the possibility of the damage of all wire cable and electrical wire cable of ICTD. Discussion among Master of SEAFDEC2, Chief scientist of SEAFDEC2 and Cambodia, agree to stop the remained survey activities and proceeded to shelter at Koh Rong Samloen. Only collapsible trap was operated at shelter area, east part of Koh Rong Samloen. Bottom vertical longline was cancelled because of unsuitable fishing ground at the shelter area.

Oceanographic platform of MV SEAFDEC2 was flood by rough sea

Activity of research during 28-31 July 2004

Date	Time	Activities	Remark
28 July 2004	0800	All local researchers embark M.V. SEAFDEC 2	
	1000	Leave Sihanouville Port for the Survey Area	
	1330-1500	Oceanographic and Biological data collection at Station #1 Lat.10°_11'.7N Long. 103°_14'.1E	Sea depth 33 m.
	1500-1630	Leave Station#1 for Station#2,	Acoustic Survey
	1645-1745	Oceanographic and Biological data collection at Station #2 Lat.10°_15'.4N Long. 103°_30'.8E	Sea depth 34 m.
	1745-1915	Leave Station#2 for Station#3,	Acoustic Survey
	1918-2000	Oceanographic and Biological data collection at Station #3 Lat.10°_29'.3N Long. 103°_30'.4E	Sea depth 27 m.
	2000	Switch on luring lights	

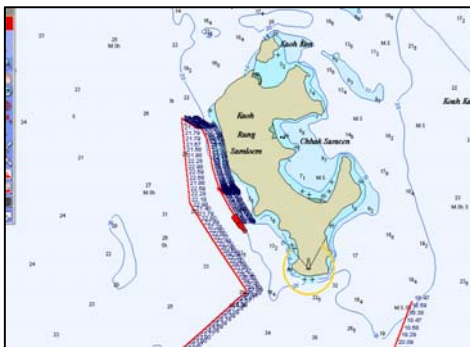
Date	Time	Activities	Remark
	2100-2300	Automatic Squid jigging at Station#3 Lat.10°_29'.3N Long. 103°_30'.4E	Heavy rain
29 July 2004	0330-0445	Leave Station#2 for Station#3,	Acoustic Survey
	0445-0545	Survey Bottom topography for fishing operation	
	0629-0654	Collapsible trap fishing operation at Station#4 Lat.10°_35'.9N Long. 103°_16'.5E (Number of trap is 88 traps)	Operation were disturbed by few local trawler
29 July 2004	0725-0745	Bottom Vertical longline at Lat.10°_34'.5N Long. 103°_16'.9E (Number of branch line is 60 lines)	
	1348-1430	Hauling 1st Collapsible trap	
	1440-1515	Hauling Bottom Vertical longline	
	1540-1630	Oceanographic and Biological data collection at Station #4 Lat.10°_29'.9N Long. 103°_14'.9E	
	1900	Switch on luring lights	
	2000-2400	Automatic Squid jigging at Station#4 Lat.10°_29'.7N Long. 103°_14'.7E	
30 July 2004	0539-0745	Leave Station#4 for Station#5,	Acoustic Survey
	0800	Cancelled all Oceanographic and Biological data collection program, then proceed to shelter at Koh Rong	
	1300-1530	Short lecture on Oceanographic instrument Hydroacoustic instrument and Fishing gear and operation	
	1620-1630	Collapsible trap fishing operation at wind shelter Lat.10°_35'.2N Long. 103°_21'.0E (Number of trap is 108 traps)	
	1830	Switch on luring lights	
	2000-2330	Automatic Squid jigging at Lat.10°_33'.8N Long. 103°_21'.2E	
31 July 2004	0755-0850	Hauling 2nd Collapsible trap	Flag buoy is lost Mainline entangles with local gillnet
		Finish mission then proceed to port of Sihanouk ville	

Fish Samplings:

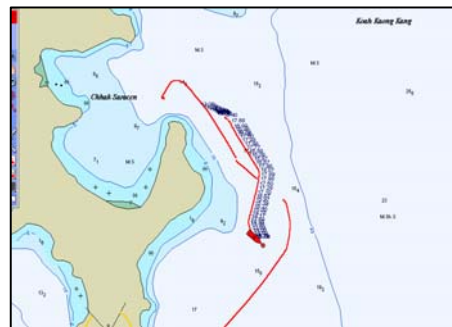
3 main fishing gears, i.e. collapsible trap, Bottom Vertical Longline and automatic squid jigging, were designed during the marine survey in Cambodia water. The fish sampling at station No.8 has been cancelled because the moderate sea condition the replacement fishing station was at wind shelter, east side of Koh Rong Samloen.

Collapsible crab trap:

2 types of collapsible crab trap have been set for collecting the marine animal samples. Target catch of coastal trap is swimming crab, *Portunus pelagicus* and *Carypdis* sp. 2 Operations were conducted in west and east side of Koh Rong Samloen. Numbers of trap deployed for operations were 88 traps and 108 trap respectively. Indian mackerels and chub mackerel were selected to bait. Immersion time of 1st operation in the daytime was about 7 hour and the 2nd operation was about 16 hours in nighttime. Total swimming crabs catch by 2 operations are 9.07 kg with number of crabs are 62. Total swimming crab catching percentage is 31.63% and catch percentage on the east side Koh Rong Samloen is 48% and west side of Koh Rong Samloen is 11.36% The other detail of catch have been appeared in the fishing log. Around the east side of Koh Rong Samloen, there were a lot of fishing gillnet local fisherman boat, collapsible trap and squid trap.



Fishing ground of 1st fishing operation



Fishing ground of 2nd fishing operation

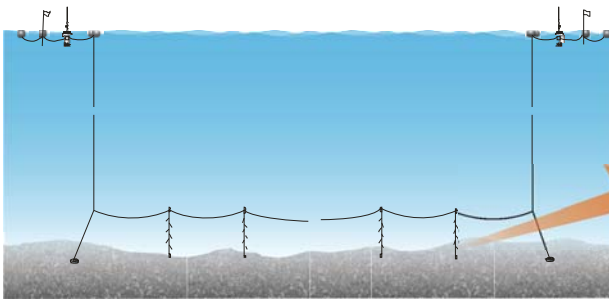
1) Local fisherman collapsible trap.

The trap has been designed by Japanese fisherman and introduced to Thailand since 1980. Until now this collapsible trap design is very widely use in Thailand. The construction is rectangular type with 65 cm long, 45 cm wide and 20 cm. high. 2 entrance with about 20-30 angle sloped into center of trap. Trap wall is made from polyester net twine size 380/12. Sting line is PE 3 mm diameter length 3 m. This kind of trap found in Sihanouk ville and Koh Kong too.



2) SEAFDEC2 collapsible trap

The trap is transferred to SEAFDEC/TD with MV SEAFDEC2 on March 2004 and become the standard fishing gear of MV SEAFDEC2. By the recorded, this type of trap had been introduced to Thailand before the introducing of the Rectangular above but the result of promotion was not successful. The trap is 78 cm length and 48 centimeter width. The shape is semi cylinder with oval shape entrance. Net panel is make from polyester net twine size 250/12, Sting line is PE 3 mm diameter length 3 m.

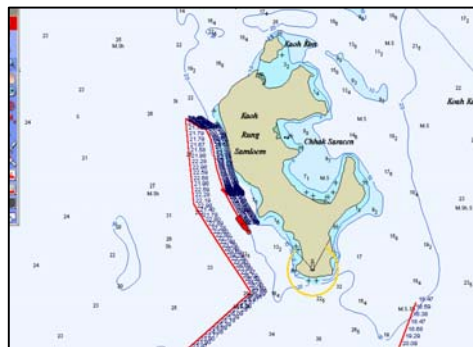


Bottom Vertical Longline

Bottom Vertical longline is modification line between bottom longline and vertical line. In order to harvest marine fish at the untrawlable area i.e. continental slope, rocky area and coral reef area. The construction is composed

with the mainline, branch line and hook line. Mainline of is a new material design for prevent the entangling between man line and underwater obstacles. Material is mix between polypropylene and poly vinyl alcohol diameter 6 mm with 450 kg breaking strength with the positive buoyancy. Branch line is Poly-vinyleden 2 strands diameter 3 mm. a branch line is composed with 8 hooks, No.22 circle type hook. Hook line is nylon monofilament No.26 (0.8 mm diameter)

According to the fishing ground at the station designed did not proper for bottom vertical longline, the rocky area is too close to shore (500 m from west side of Koh Rong Samloen) Ship could not close to rocky area because it was dangerous for ship safety. Setting was far from shore line about 800 m so that catch is very poor, only marine eel. Chief scientist decided to cancel the 2nd operation because can not find out any proper fishing position. Total number of the operation is only. A marine eel was caught.



Fishing ground of BVL

Automatic Squid fishing:

Automatic squid jigging machine is one of the most advance and selective fishing technique for catching both coastal and deep sea squid. SEAFDE2 has installed 4 automatic squid jigging machines with 4 halogen bulbs of 3000 watts. Jigging line is compose by 20 jigs, be able to operate to 200 m. The luring was done at least one hour after switch on luring light. Even though the heavy rain during the fishing operation, luring had not any effect. Operation is started at 2000 hrs, and finish about 2400 hrs. The squid jigging machines had been operated at station No.3,4 and shelter area (east of Koh Rong Samloen) Catch at the station No.3 is the highest numbers of squid, 16 individual squid follow by shelter area and station No.4 respectively. The other details are appeared in the fishing logsheet.



Oceanographic Equipment

SBE CTD 911 plus

SBE CTD911 is including conductivity, temperature, salinity, fluorescence, light intensity sensors. The CTD was equipped with 12 -2.5 litres bottles (SBE 32 CAROUSEL Water samplers) for *in situ* water sampling. Water samples were determined for nutrients by Auto Analyzer in the Chemical laboratory at Training Department.

Thermo-Salinograph and Fluorometer (TSG)

During the ship sailing, TSG was operated for 24 hrs measuring temperature, salinity and fluorescence at sea surface. However, TSG must be stopped during fishing operation or using the main hydraulic.

Temperature & Depth Recorder (TD)

Each Pelagic longline operation, TD was attached at the main line in order to measure temperature and depth.

XCTD (Expendable Conductivity Temperature Depth)

During the ship was sailing from the Philippines to Vietnam, XCTD was shot every 12 hrs with the ship speed about 10 knots. The probe type is XCTD-1 (maximum depth is 1100 meters), measure water temperature and conductivity verses water depth. From the XCTD data, WinMK21 can calculate salinity, water density and sound velocity. Five XCTD probes were shot in this cruise (4 probe from the Philippines to Vietnam route and one probe for pelagic longline operation in Vietnam).The profile was shown in Table 1.

Larvae net (Bongo net)

Zooplankton and fish larvae were collected using 300 and 500 μm mesh net attached to bongo frames. A flowmeter was attached at the bongo frame each tow to measure the amount of water filtered. At each station a 15 minutes oblique tow of bongo net was made while the ship speed at 2 knots. The depth of the haul was 10 meters above the sea bottom. The samples were preserved in 10 % buffer formalin-sea water immediately.

Smith-McIntyre Grab

Bottom sediment was collected by Smith-McIntyre Grab for 2 times on each station. The sediment was wash through a set of 4 sieves (2.0, 1.0, 0.5 and 0.1 mm in meshes) with the smallest one lies under the rest. Benthic animals were picked up and fixed in 10 % buffer solution in sea water on board. The samples will be identified in the laboratory