



CRUISE REPORT ON RESEARCH ACTIVITY

M.V.SEAFDEC 2 Cruise No. 35-3/2010

28 June – 11 August 2010

**National Research Survey by Department of Fisheries,
Sabah and Sarawak, Malaysia**

TD/RP/168

This report is base on preliminary data

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Survey Cruise Report

- 1. Cruise No.** : M.V. SEAFDEC2 No. 35-3/2010
- 2. Period** : 28 June – 11 August 2010 (45 days)
- 3. Area of Operation** : Waters of Sabah and Sarawak, Malaysia
- 4. Port of Call** : Labuan, Bintulu and Kemaman, Malaysia
- 5. Activities** : To facilitate on the national research survey conducted by Department of Fisheries, Malaysia on;
1. Beam trawl, Bottom vertical longline and Deep-sea trap
 2. Migratory pelagic species by automatic squid jigging machines and pelagic longline
 3. Biological oceanographic survey target on larvae, juvenile and plankton sampling by Isaacs-Kidd mid-water trawl (IKMT) and Bongo net.
 4. Physical oceanographic parameter: current condition (3 layers)
 5. Cetacean and turtle sighting

6. Report in General

SEAFDEC2 Cruise No.35-3/2010 is The National Research Survey Cruise collaborated between Department of Fisheries, Malaysia and SEAFDEC. Area of survey is out bound of 200 m contour depth, territory of Sabah State and Sarawak State, Malaysia Waters. Twenty seven (27) survey stations, beyond 200 m depth substratum, has been targeted to conducting the resource and oceanographic research survey. Malaysia researchers are qualified from several relevant fisheries agency under Department of Fisheries Malaysia, e.g. Fisheries Research Institute-Perak, Fisheries Research Institute-Penang, Fisheries Research Institute-Sarawak, SEAFDEC-MFRDMD, Office of State Fisheries-Sabah, Office of State Fisheries-Sarawak, Branch-office of Federal Fisheries-Labuan, Office of Fisheries Head Quarter, etc. Referred to permission document, issued by National Security Agency of Malaysia, the survey cruise is started from 4 July to 7 August 2010, and divided into 3 trips;

The first trip is conducted during from 4 to 14 July 2010. Port of call is Labuan, Malaysia. Total numbers of oceanographic survey stations are 10 stations within Sabah area, Malaysia Waters. Ten (10) Beam trawl fishing operations are conducted during this trip. Beam trawl fishing operation at survey station No.8 is particularly added an operation because beam trawl is supposed to glided regarding to the observation from catch quantity as nil. Seven (7) squid jigging operations, by automatic jigging machines, are conducted during this trip. Three (3) bottom vertical longline fishing operations, three (3) deep sea trap fishing operations and three (3) pelagic longline fishing operations are conducted during this trip. Weather and sea condition during the trip is generally calm however on the day 10 to 13 has moderate sea in the afternoon. On survey station No.1, ISAAC-KID Mid-water Trawl (IKMT) has an accident. Swivel between frame of IKMT and towing warp is broken at the joint while hauling IKMT back onboard at the depth 300 m. IKMT frame and net including with SCANMAR[®] depth sensor and flow meter is lost on position Latitude 06°30'.1N. Longitude 114°30'.3 E. Nine (9) stations of biological oceanographic survey is continually conducted by using Bongo net. Temperature profile has been successful collected 4 stations. Temperature profile has been malfunctioned since survey station No.7 but depth sensors have been well functioned along the cruise survey.

The second trip is conducted during from 15 to 23 July 2010. Port of call is Labuan and Bintulu, Malaysia. Seven (7) Oceanographic surveys, by collecting larvae and plankton sampling by Bongo net, are conducted during trip. Seven (7) Beam trawl fishing operations are conducted during this trip. Beam trawl net is torn by rough sea bottom on fishing operation No.14 at station survey 12 then crew switch to the new trawl net on fishing operation No.15 at the same station survey. After finish repairing beam trawl net, old net is assembled back to operate on fishing operation No.16. During fishing operation No. 17 at survey station No.13, the net is forcibly struggled with sea bottom and seriously damage and catch quantity as found nil. Then beam trawl fishing at survey station No.13 is cancelled. Four (4) squid jigging fishing operations, by automatic jigging machines, are conducted during this trip. Three (3) bottom vertical longline fishing operations and three (3) deep sea trap fishing operations are conducted during this trip. A pelagic longline fishing operation is operated in this trip. Weather and sea condition during the trip is generally slight. Wind condition, however, change from southward to westward and sea condition is change to moderate and rough during 21 to 23 July. Seven (7) stations of biological oceanographic survey are continually conducted by using Bongo net. Temperature profile has been unsuccessful collected since survey station No.7 of the first trip. There are not any temperature profile collected during the second and the third survey.

The third trip is conducted during from 25 July to 7 August 2010. Port of call is Bintulu, Sarawak State and Kemaman, Kuantan State, Malaysia. Weather and sea condition is very severe during 25 to 26 July 2010. Several Malaysia researchers get severe sea sickness and Malaysian cruise leader, Mr. Sallehudin Jamon, is suffered with suffocated symptom and weak pulse. He requests for immediate emergency medical

service. Then Master of SEAFDEC2 agree with Malaysian senior researcher and SEAFDEC operational supervisor, agree to terminate the longline fishing operation after deploy pelagic longline 260 hooks and directly proceeds to Port of Bintulu, Sarawak state, Malaysia. The third trip of research survey is returned to conduct by hauling tuna longline fishing operation on 30 July 2010. Regarding to the limitation of survey period, Mr. Sumsidin Basir, Malaysian senior researcher requests SEAFDEC supervisor to operate by emphasizing the pelagic longline as the first priority, deep sea trap as the second priority, bottom vertical longline, beam trawl and squid jigging are the less priority. He also withdraws 5 Malaysian researchers from the cruise however another one Malaysian researcher absents on the date of voyage. There are 7 Malaysian scientists enable to conduct the resource research survey under the leading by Capt. Norazman Ahmad.

On this trip, Station No.16 and 17 is abandoned regarding to the limitation of survey period. During the third trip, research survey particularly by beam trawl, deep sea trawl and bottom gillnet, is disturbed by Vietnam drifting gillnet fishing fleet, 10-15 fishing boats, what operated to catch King mackerel and flying fish around fishing area of survey station No.18 to No.20. Seven (7) Oceanographic surveys, by collecting larvae and plankton sampling by Bongo net, are conducted during trip. Four (4) Beam trawl fishing operations are conducted during this trip. Beam trawl net is severely torn by rough sea bottom on fishing operation No.20 at station survey 21 and fishing operation No. 21 at survey station No.20. Then beam trawl fishing operations are cancelled. Four (4) squid jigging fishing operations, by automatic jigging machines, are conducted during this trip. Two (2) bottom vertical longline fishing operations and two (2) deep sea trap fishing operations are conducted during this trip. Three (3) pelagic longline fishing operations are operated in this trip.

Overall result from three survey trip is; twenty four (24) survey stations are conducted the biological oceanographic survey by Bongo net. Four (4) of them, particularly in Sabah territorial waters, are able to collected temperature profile. Twenty-one (21) survey stations are conducted the demersal resources survey by beam trawl. Eight (8) survey stations are conducted the demersal resources survey by bottom vertical longline. Eight (8) survey stations are conducted the demersal resources survey by deep sea trap. Seven (7) survey stations are conducted the pelagic resources survey by pelagic longline and 15 survey stations are conducted the pelagic resources survey by Automatic squid jigging machines. (See figure 1)

Regarding to the cruise plan, transforming of the difference fishing gears operated during the same trip is made trouble on deck arrangements particularly from beam trawl to pelagic longline is many assemblies. Deck crane is very important machinery to arrange the large scale assemblies, e.g. beam trawl, otter board, and etc. It requires maintenance for safety of deck crew during fishing gear preparations.

Results of catches, however, are not able to report as a part of fishing log. Malaysian survey project coordinator, Mr.Rosidi Ali, refuses to extend all fishing and

oceanographic and environmental information including with photograph of fishes, crustacean and mollusk to SEAFDEC researches. He also affirms the reason to Master of SEAFDEC2 and Operational Supervisor that the regulation of national security agency does not permit to generous expose aforementioned information to other foreign agencies. That makes this cruise report has no any catch result (See Appendix 6).

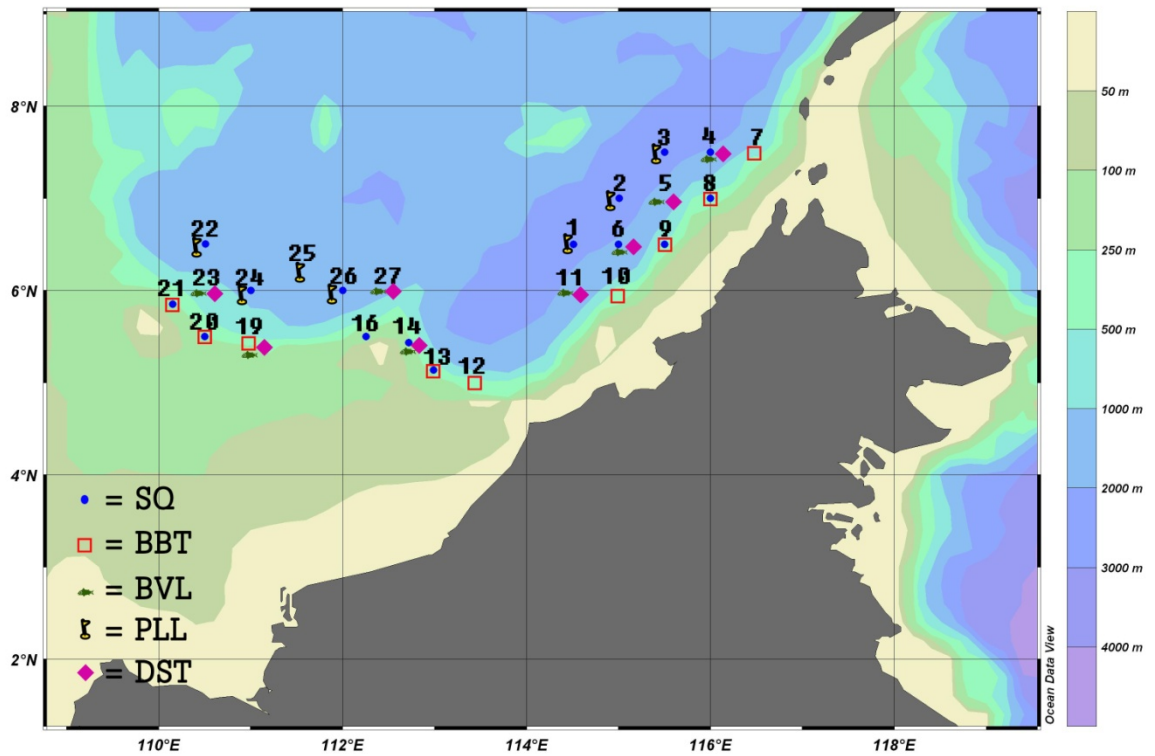


Fig. 2 Map showing the survey stations

7. Report on Fishing activities

7.1 Report on Pelagic longline

Seven pelagic longline fishing operations are conducted in the area of Sabah State and Sarawak State, Malaysia Waters. Three (3) fishing operation are carried out during the first trip. One (1) fishing operation is conducted during the second trip. And Three (3) fishing operations are conducted during the third trip. Sea depth of fishing ground around deep sea area of Sabah State is deeper than 2,000 m and sea depth of fishing ground around deep sea area Sarawak State is 1,200 to 1,500 m. (Fishing logs: Appendix 1.1)

In order to collect pelagic fish, Department of fisheries Malaysia researchers agree with SEAFDEC2 to setting 20 hooks between float interval and interval between each branch line is 40 m. Standard numbers of hooks, what deployed on every operation, are 500 hooks/operation. Distance of main line setting is approximate 9 to 10 nautical miles (nm). Construction of pelagic longline is label in appendix 5.1. Three thousand and forty six (3,046) hooks are totally deployed during 7 fishing operations. There are few operations, however, unable to set on standard numbers because various troubles. The troubles are described as below;

Pelagic longline fishing operation No.1 at station No.1 is conducted on 4 July 2010. Two hundred and eighty hooks (280) are deployed at this station. During shooting operation, main line shooter is found malfunction at the small pulley, then fishing operation has to stop before reaching 500 hooks.

Pelagic longline fishing operation No.5 at station No.25 is conducted on 26 July 2010. Two hundred and sixty hooks (260) are deployed at this station. Cause by rough sea condition and severe weather condition. Some Malaysia researchers get severe sea sickness and Malaysian cruise leader is suffered with suffocated symptom and weak pulse. He requests for immediate emergency medical service. Then Master of SEAFDEC2 agrees with Malaysian senior researcher and SEAFDEC Operational supervisor, to terminate the longline fishing operation after deploy pelagic longline 260 hooks and directly proceeds back to Port of Bintulu, Sarawak State, Malaysia. Hauling operation is conducted on 30 July 2010

Pelagic longline fishing operation No.6 at station No.26 is conducted in the evening on 30 July 2010. There are many branch lines damaged by Lancet fish and Snake like mackerel because pelagic longline fishing operation No. 5 is deployed more than 36 hours. Although new branch lines are increased, total branch lines are not enough to 500 hooks. Four hundred and seventy six branch lines are deployed at station No.26

Four pelagic longline fishing operation has completely standard conducted with 500 hook deployment. Setting operation is operated in the evening and hauling in the

morning. Immersion period is between 10 to 13 hours. Only station No.5 has longest immersion time is about 82 hours regarding to aforementioned reason.

Condition of fishing gear and accessories are fair, however the first station has seriously trouble then pelagic longline is unable to set with standard hook numbers. Line beeper has trouble on station No.5 because there is water, both rain and sea water, leaks into the sensor of counter machine. Main line reel is found little trouble on hauling speed that is dropped when hauling beyond 400 hooks, starts at station No.4. It may caused by increasing of hydraulic oil temperature.

Condition of GPS buoys (Taiyo) and Sel-call radio buoy (O-no) is not satisfied. GPS buoy No.1 and GRS buoy No.2 is not function. Radio buoy No.43 and GPS buoy No.03, is not well function and they are not able to stimulate where position is out of range 20 nm. That may caused by the output of transmitting instrument is only 3 watt. Recommend to check both batteries and performance of GPS buoys (Taiyo) and Sel-call radio buoy (O-no). New Sel-call radio buoy what transmitting frequency is 2331.5 kHz should be prepared few numbers.

From the observation, Yellow-fin tuna and Big-eye tuna are caught only in Sarawak area, Malaysia Waters. Sea surface is slightly less than 30 Degree Celsius. Nil of tunas are caught in Sabah area, Malaysia Waters what sea surface is slightly more than 30 Degree Celsius. However if focus on oceanic squid, what is pray of tunas, numbers of oceanic squid caught in Sabah area, are more than oceanic squids caught in Sarawak area.

The other observation is the differential in size of tunas caught that most of them are equally sized in range 15 to 20 kg. From the SEAFDEC record, Yellow-fin tuna size 48 kg caught in Sabah Area in year 2005 and Big-eye tuna size 51 kg, caught in 2006 with the same month with cruise No.35-3/2010. Both of previous caught were far bigger size with more maturity stage than caught during cruise No.35-3/2010.

Regarding to the tunas species are highly migratory pelagic resources what straddling among SEAFDEC member countries EEZ in ASEAN region, SEAFDEC should collaborate with tunas RFMO in order to carried out fully highly migratory pelagic resources research survey for proper management in the future.

Op./St. No.	Date	Shooting				Hauling				Number of hook	Immersion time (hr:mm)	Sea depth (m.)	Thermocline m/°C	Depth of hook no.1/10
		Start		Finish		Start		Finish						
1/1	4-5/Jul/10	Time	1850	Time	1955	Time	0605	Time	0735	280	11:13	2100	NR	50/141
		Latitude	06°31'.30 N	Latitude	06°26'.30 N	Latitude	06°26'.10 N	Latitude	06°28'.80 N					
		Longitude	114°29'.90E	Longitude	114°33'.20 E	Longitude	114°36'.30 E	Longitude	114°34'.60 E					
2/2	5-6/Jul/10	Time	1502	Time	1630	Time	0605	Time	0835	500	15:34	2304	NA	50/203
		Latitude	06°59'.60 N	Latitude	06°58'.80 N	Latitude	07°01'.00 N	Latitude	07°01'.20 N					
		Longitude	115°00'.10E	Longitude	115°09'.60 E	Longitude	115°04'.80 E	Longitude	114°55'.40 E					
3/3	6-7/Jul/10	Time	1502	Time	1635	Time	0617	Time	0900	530	15:50	2088	NA	55/213
		Latitude	07°31'.00 N	Latitude	07°37'.40 N	Latitude	07°30'.70 N	Latitude	07°36'.70 N					
		Longitude	115°30'.30E	Longitude	115°37'.50 E	Longitude	115°24'.60 E	Longitude	115°30'.90 E					
4/26	21-22/Jul 2010	Time	1750	Time	1915	Time	0608	Time	0855	500	15:50	1,560	NR	90/210
		Latitude	06°01'.60 N	Latitude	05°55'.70 N	Latitude	06°03'.30 N	Latitude	05°58'.00 N					
		Longitude	112°00'.50E	Longitude	111°53'.50 E	Longitude	112°01'.90 E	Longitude	111°55'.70 E					
5/25	26-30/Jul 2010	Time	1758	Time	1850	Time	0828	Time	1012	260	86:56	1,528	NR	50/290
		Latitude	05°59'.90 N	Latitude	05°59'.90 N	Latitude	06°13'.70 N	Latitude	06°13'.50 N					
		Longitude	111°34'.00E	Longitude	111°29'.20 E	Longitude	111°30'.70 E	Longitude	111°33'.70 E					
6/24	30-31/Jul 2010	Time	1538	Time	1702	Time	0602	Time	0823	460	14:49	1,259	NR	60/240
		Latitude	06°00'.10 N	Latitude	06°06'.30 N	Latitude	06°06'.40 N	Latitude	06°02'.40 N					
		Longitude	111°00'.20E	Longitude	110°54'.00 E	Longitude	110°53'.90 E	Longitude	111°00'.00 E					
7/23	31Jul-1 Aug 2010	Time	1542	Time	1704	Time	0625	Time	0914	500	15:27	1,396	NR	60/306
		Latitude	06°29'.90 N	Latitude	06°21'.60 N	Latitude	06°27'.30 N	Latitude	06°19'.80 N					
		Longitude	110°31'.10E	Longitude	110°31'.80 E	Longitude	110°30'.20 E	Longitude	110°30'.80 E					

Table 1 Summary of pelagic longline fishing operations

7.2 Report on Automatic Squid Jigging

Fifteen (15) Automatic squid jigging fishing operations are conducted in Sabah and Sarawak Waters, Malaysia. Seven (7) fishing operation are conducted during the first trip. Four (4) fishing operations are conducted during the second trip and the other four fishing operations are conducted during the third trip. Regarding to depth of each survey station, squid jigging fishing operations are conducted from the depth 200 m to 2,000 m. (Fishing logs: Appendix 1.2)

Four squid jigging machines are installed both side of M.V. SEAFDEC2. The machine on M.V. SEAFDEC2 starboard side is different model and different jerking accessories and technology. Each squid jigging machines has 20 jigs with different color i.e. pink, purple, light green, dark green. A lead 2 kg is weight at end of jigging line. Construction of squid jigging machines is label in appendix 5.2.

Luring light is started at 19:00 hrs and jigging machine is usually started at 20:00 hrs until 22:00-23:00 hrs, designed by Malaysian researcher. Automatic squid jigging fishing operations are normally associated with sea anchor setting. This cruise is the first operation of sea anchor for additional performing of squid jigging machines.

There are few troubles of squid jigging fishing operations, i.e.

Sea anchor is not able to set by various reasons, e.g. moderate sea condition, improper period of fishing operation, and etc. Fishing operations, No.1, No. and No.15, do not associate set with sea anchor then the catch is suppose to lower than station what sea anchor is performed.

Severe wind and sea current is one of the seriously trouble with squid jigging fishing operations. The trouble when squid jigging operation is conducted without sea anchor setting is there are two machines on only side, port or starboard what jigging main lines are not blown beneath ship hull, able to operate. However these main lines are not straightly vertical direction into the shadow zone of ship hull. They are always oblique direction outside the shadow zone of ship hull and fishing performance become low. Sea anchor made 4 machines, 8 main lines, on both side straightly pointed into ship hull so that jigging is fully performed. It is a reason what squid jigging result of cruise No.35 is surprised high catch (by visual observation). The trouble of squid fishing operation with sea anchor is occurred while wind force is more than three (3). MV SEAFDECs is always drifted to astern direction then main line of jigging machine is oblique pointed to foredeck direction. Mine lines of jigging are possible to entangle between 2 jigging machines what installed on the same ship's side. This trouble particularly occurred while jigging machines are different setting character or/and jigging machines are different model, setting at the same ship's side. This limitation can be avoided by installation of the same jigging machine model and the harmonized function setting of machines on the same ship's side when wind or current condition is strong.

Squid jigging fishing operations is disturbed by large carnivorous fishes and cetacean. Bonito, Dolphin fish, Lancet fish and porpoise usually come close to vessel in order to find their prey, e.g. squid, flying fish and etc, what attracted by luring light. They are sometime entangled by main lines of jigging machines and make jigging machine struggle.

During luring light and automatic squid jigging machines is operated, crew members always do hand jigging and their lines are sometime entangled with main line of jigging machines particularly while wind and current condition is uncertain condition. However, advantage of crew's jigging is catches by crew, both fish and squid, are observed, measured and recorded as result of survey.

Recommendation on squid jigging machine is the preparation of fishing gear and accessories. New inventories of jigging machines have never been spared since MV SEAFDEC2 delivered to SEAFDEC/TD. Many of accessories, e.g. jigging lure, main line has damage from the previous fishing cruises. I affirm SEAFDEC to prepare budget for provide the spare part of jigging including with luring lamps for the future fishing operations.

From the observation, oceanic squid is able to be a new pelagic resource for SEAFDEC member countries in ASEAN region. Fishing gears what suitable to catch oceanic squid, are hand jigging, automatic squid jigging, drifting gillnet and possible to catch by stick-held cast net.

Op./St. no.	Date	Luring time	squid jigging				Jigging time	Number of Jig	Sea depth (m)	Remark
			Start		Finish					
1/1	04-Jul-10	2000-2400	Time	2100	Time	2400	3:00	200	>2,000	Sea anhor performed
			Latitude	06° 26'.10 N	Latitude	06° 26'.30 N				
			Longitude	114° 34'.20 E	Longitude	114° 36'.50 E				
2/2	05-Jul-10	1900-2400	Time	2000	Time	2400	4:00	150	>2,000	Sea anhor performed
			Latitude	06° 59'.00 N	Latitude	07° 00'.20 N				
			Longitude	115° 08'.80 E	Longitude	115° 07'.10 E				
3/3	06-Jul-10	1900-2330	Time	1930	Time	2330	4:00	200	2088	Sea anhor performed
			Latitude	07° 37'.70 N	Latitude	07° 37'.90 N				
			Longitude	115° 36'.20 E	Longitude	115° 34'.60 E				
4/4	07-Jul-10	1900-2330	Time	2000	Time	2330	3:30	200	263	No Sea anhor performed
			Latitude	07° 37'.70 N	Latitude	07° 37'.90 N				
			Longitude	115° 36'.20 E	Longitude	115° 34'.60 E				
5/6	09-Jul-10	1915-2330	Time	2000	Time	2300	3:00	200	414	Sea anhor performed
			Latitude	06° 29'.90 N	Latitude	06° 31'.60 N				
			Longitude	115° 22'.40 E	Longitude	115° 26'.10 E				
6/8	11-Jul-10	1945-2230	Time	2030	Time	2230	2:00	200	437	Sea anhor performed
			Latitude	07° 37'.70 N	Latitude	07° 37'.90 N				
			Longitude	115° 36'.20 E	Longitude	115° 34'.60 E				
7/9	12-Jul-10	1930-2243	Time	2000	Time	2230	2:30	200	380	Sea anhor performed
			Latitude	06° 43'.60 N	Latitude	06° 43'.60 N				
			Longitude	115° 30'.20 E	Longitude	115° 31'.20 E				
8/13	18-Jul-10	1900-2140	Time	2000	Time	2130	1:30	200	250	Sea anhor performed
			Latitude	06° 06'.50 N	Latitude	06° 06'.80 N				
			Longitude	110° 53'.70 E	Longitude	110° 53'.70 E				
9/14	19-Jul-10	1900-2200	Time	2000	Time	2200	2:00	200	137	Sea anhor performed
			Latitude	05° 14'.30 N	Latitude	05° 14'.30 N				
			Longitude	112° 46'.50 E	Longitude	112° 47'.00 E				
10/16	20-Jul-10	1945-2230	Time	2030	Time	2030	2:00	200	544	Sea anhor performed
			Latitude	07° 37'.70 N	Latitude	07° 37'.70 N				
			Longitude	115° 36'.20 E	Longitude	115° 36'.20 E				
11/26	21-Jul-10	2000-2230	Time	2010	Time	2230	2:20	200	1,500	Sea anhor performed
			Latitude	05° 59'.70 N	Latitude	06° 00'.90 N				
			Longitude	111° 56'.90 E	Longitude	111° 57'.70 E				
12/24	30-Jul-10	1900-2200	Time	2000	Time	2200	2:00	200	1,318	Sea anhor performed
			Latitude	06° 06'.50 N	Latitude	06° 06'.80 N				
			Longitude	110° 53'.70 E	Longitude	110° 53'.70 E				
13/22	31-Jul-10	1900-2200	Time	2000	Time	2200	2:00	200	1,396	Sea anhor performed
			Latitude	06° 30'.10 N	Latitude	06° 30'.30 N				
			Longitude	110° 31'.40 E	Longitude	110° 32'.20 E				
14/20	01-Aug-10	1900-2200	Time	2000	Time	2200	2:00	100	219	Sea anhor performed
			Latitude	05° 34'.10 N	Latitude	06° 34'.20 N				
			Longitude	110° 25'.50 E	Longitude	110° 26'.20 E				
15/21	02-Aug-10	2020-2200	Time	2100	Time	2200	1:00	100	184	No Sea anhor performed
			Latitude	05° 23'.90 N	Latitude	05° 23'.90 N				
			Longitude	111° 02'.40 E	Longitude	111° 03'.10 E				

Table 2 Summary of Squid jigging fishing operations

7.3 Report on Bottom Beam Trawl

Twenty-one (21) bottom beam trawl fishing operations are conducted during cruise MV SEAFDEC 2 No.35-3/2010, Sabah and Sarawak area, Malaysia Waters. Ten (10) fishing operations are conducted during the first trip, Sabah Waters. Seven (7) fishing operations are conducted during the second trip and the other four (4) fishing operations are conducted during the third trip. Special condition of bottom beam trawl fishing operation referred to depth of each survey stations is fishing operation is divided into three (3) depth ranges, i.e. 200 to 300, 300 to 400, 400 to 500 m. Individual survey station is operated bottom beam trawl 3 times within different depth substratum. (Fishing logs: Appendix 1.3)

Bottom beam trawl net is design to investigate the marine species what live in very deep sea. Fishing gear is very suitable for the area what bottom otter trawl difficult to serve. Beam is 4 m length, made by iron bar. Two skies are fixed at the both side of iron bar in order to slip on the sea bottom. Beam trawl frame is strong from both soft bottom and hard bottom. Ground rope is 7.70 m length made by iron chain. Net is 13.5 m length. Cod end part is made by Polyethylene net twine size 380 denier 18 ply and mesh size 25 mm. Construction of squid jigging machines is label in appendix 5.3

Bottom beam trawl operations during the first trip have successful conducted with 10 fishing operations. Beam trawl fishing operation No.4 at survey station No.8 is particularly added an operation because beam trawl is supposed to glided regarding to the observation from catch quantity as nil. Few bottom beam trawl operations are struggled at station No.3, No.8 what trawling time is slightly less than 60 minutes. Bottom beam trawl net is found torn after finish fishing operation No.10 at station No.09, the last station of the first trip.

The second trip has not fully success. There are 7 fishing operations conducted during this trip. Bottom topography is found difficult to trawl, starts from survey station No.12. Net is damage on fishing operation No.14. Trawl net is switched to the new one. Finally beam trawl operation has to cancel at survey station No. 13, near South Luconia Shoal, after bottom beam trawl is forcibly struggled with rough sea bottom during fishing operation No.17 and trawl net is severely torn. The remained stations look untrawlable although echo sounder image shows flatten bottom characteristic but some sharpen rocks scatter around the fishing ground then fishing operations at station No. 16 are cancelled.

The third trip has fully affected with the reschedule program regarding to severe weather condition. There are six station planned to operate during the third trip. Regarding to the limitation of survey period, Mr. Sumsidin Basir, Malaysian senior researcher requests SEAFDEC supervisor to operate by emphasizing bottom beam trawl with the less priority. He also requests to change condition of beam trawl fishing operation to conduct 2 times on each remained stations at the same depth substratum. By this principle, operational supervisor plan to operate at survey station No.18, No.20

and No.21. Total numbers of bottom beam trawling are 6 operations. However regarding to the severe weather condition on 1 to 3 August 2010, MV SEAFDEC2 cannot follow schedule to operated beam trawl fishing at station No.18. Operational supervisor skip station No. 18 and operated 2 beam trawl fishing operations at station No.19 with depth substratum 200 to 300 m. The other bottom beam trawl fishing operations are disturbed by 10 to 15 Vietnamese king mackerel gillnet vessels. M.V. SEAFDEC2 has to escape these Vietnamese fishing vessels to station No.21 and station 20 operates other 2 fishing operations at both stations.

Bottom beam trawl fishing at station 20 and 21 have trouble with untrawlable bottom characteristic and trawl nets are severe torn at both stations. Then beam trawl fishing operations, on the third trip, are 4 stations with success at station No.19 only.

Recommendation on beam trawl fishing operation should operate within 500 m depth. Although fishing gear and accessories are strong enough to reach deeper substratum, towing warp length is limited and should not be paid out more than 1,300 m. Bottom beam trawl has to set by following or against wind direction. Setting by obstruction the wind direction is possible to make frame of beam trawl turn over. Observation form the catch, beam trawl should operate within towing speed 2.0 to 2.5 knot. Towing speed more than 3.0 knot may cause beam trawl glides and catch is possible to be poor. (found by 4th fishing operation)

From the observation, beam trawl is suitable for collect epibenthic fauna, e.g. cetacean and mollusk, particularly shrimp, crab, gastropod, bivalve and sessile organisms. Although large number of other deep sea species, e.g. spiny dog shark, are caught by bottom vertical longline. By this reason, future deep sea resource survey what focus on resources abundance and stock assessment, bottom otter trawl is necessary to operate after carefully investigate the bottom topography or after pre-trawling operation by bottom beam trawl. Nevertheless result of the resource survey has proven that a deep-sea shrimp resource, Genus *Heterocarpus*, disperses on substratum 200 to 500 m depth and possible to catch both beam trawl and shrimp pot. It is possible to promote to local fishermen in the future. The survey should be conducted on the other deep sea area, in another part of ASEAN region e.g. Andaman Sea of Myanmar and Thailand, Indonesia Eastern Sabah, Malaysia and Philippine.

Op/St No.	Date	Time	Position				Sea Depth (m)	Towing					Remark
			Shooting		Hauling			Time (min.)	Spd (kt.)	Dir (°)	Distance (nm.)	Warp Length (m.)	
			Start	Finish	Start	Finish							
1/7	11-Jul-10	0654-0824	07°30'.3 N 116°31.30 E	07°29'.80 N 116°31.30 E	07°27'.80 N 116°30.00 E	07°27'.90 N 116°29.50 E	200 -130	60	2.8	180	2.4	500	
2/7		0838-1020	07°29'.10 N 116°28.80 E	07°28'.80 N 116°28.10 E	07°26'.90 N 116°25.30 E	07°26'.80 N 116°24.30 E	239-234	60	3.0	235	3.4	600	
3/7		1110-1220	07°29'.60 N 116°26'.50 E	07°28'.90 N 116°25'.80 E	07°27'.20 N 116°24'.40 E	07°26'.90 N 116°23'.90 E	322-380	49	3.0	235	2.2	800	
4/8		1515-1647	07°13'.70 N 116°09'.20 E	07°13'.10 N 116°08'.30 E	07°11'.10 N 116°05'.60 E	07°10'.90 N 116°05'.10 E	362-343	60	3.5	230	3.3	800	
5/8		1720-1851	07°11'.00 N 116°09'.90 E	07°11'.50 N 116°10'.30 E	07°13'.20 N 116°11'.90 E	07°13'.80 N 116°11'.70 E	230-250	60	2.5	042	2.3	650	
6/8	12-Jul-2010	0550-0743	07°10'.40 N 116°04'.40 E	07°11'.10 N 116°05'.00 E	07°12'.30 N 116°07'.20 E	07°13'.00 N 116°06'.80 E	348-386	60	2.5	057	2.5	950	
7/8		0750-0918	07°13'.10 N 116°06'.70 E	07°12'.80 N 116°05'.80 E	07°11'.60 N 116°03'.50 E	07°11'.70 N 116°03'.00 E	390-411	55	2.9	252	2.6	1,100	
8/9		1432-1627	06°44'.10 N 115°30'.70 E	06°44'.30 N 115°31'.80 E	06°45'.60 N 115°34'.10 E	06°45'.80 N 115°34'.40 E	485-305	60	2.5	060	2.4	900	
9/9		1635-1758	06°45'.80 N 115°34'.80 E	06°45'.80 N 115°35'.50 E	06°45'.80 N 115°37'.90 E	06°45'.70 N 115°37'.90 E	252-292	60	2.5	090	2.4	750	
10/9	13-Jul-2010	0604-0735	06°46'.70 N 100°30'.90 E	06°45'.70 N 115°30'.90 E	06°43'.90 N 115°30'.40 E	06°44'.20 N 115°29'.90 E	405-503	60	2.5	190	1.9	1,200	net broken
11/10	16-Jul-2010	0705-0840	06°00'.90 N 114°55'.50 E	06°00'.50 N 114°54'.90 E	05°59'.00 N 114°52'.90 E	05°58'.90 N 114°52'.60 E	225-271	60	2.5	230	2.5	700	
12/10		0850-1018	05°58'.60 N 114°51'.20 E	05°59'.20 N 114°51'.80 E	06°00'.70 N 114°53'.60 E	06°00'.70 N 114°54'.00 E	310-386	60	2.5	045	2.3	900	
13/10		1037-1205	06°01'.50 N 114°53'.60 E	06°01'.00 N 114°52'.90 E	05°59'.90 N 114°50'.80 E	06°00'.10 N 114°50'.40 E	475-509	60	2.5	235	2.4	1,100	

Table 3 Summary of beam trawl fishing operations (Page 1)

Op./St No.	Date	Time	Position				Sea Depth (m)	Towing					Remark
			Shooting		Hauling			Time (min.)	Spd (kt.)	Dir (°)	Distance (nm.)	Warp Length (m.)	
			Start	Finish	Start	Finish							
14/12	18-Jul-2010	0715-0837	05°00'.70 N 113°22'.40 E	05°00'.30 N 113°22'.40 E	05°00'.00 N 113°24'.70 E	05°00'.10 N 113°25'.20 E	306-260	60	2.5	155	2.3	650	
15/12		0855-1022	05°00'.30 N 113°25'.60 E	05°00'.50 N 113°25'.00 E	06°01'.30 N 113°22'.90 E	05°01'.90 N 113°23'.10 E	336-326	60	2.0	280	2.2	930	
16/12		1144-1317	05°03'.30 N 113°23'.50 E	05°03'.10 N 113°24'.30 E	05°02'.10 N 113°27'.00 E	05°02'.10 N 113°27'.20 E	435-506	60	2.5	110	2.9	1,100	
17/13	19-Jul-2010	0604-0647	05°07'.70 N 113°01'.10 E	05°07'.50 N 113°00'.70 E	05°07'.70 N 113°00'.20 E	05°08'.30 N 113°00'.50 E	219-200	16	2.5	250	-	700	net broken
18/19	3-Aug-2010	1305-1427	05°23'.8 N 111°00'.00 E	05°23'.80 N 111°00'.50 E	05°24'.50 N 111°02'.70 E	05°24'.80 N 111°02'.90 E	231-214	60	2.5	090	2.5	600	
19/19		1435-1558	05°24'.8 N 111°02'.80 E	05°24'.70 N 111°02'.30 E	05°23'.90 N 111°00'.00 E	05°23'.60 N 110°59'.80 E	233-240	60	2.5	260	2.4	650	
20/21	4-Aug-2010	0638-0835	05°49'.1 N 110°18'.60 E	05°49'.10 N 110°17'.80 E	05°47'.80 N 110°16'.60 E	05°47'.60 N 110°16.30 E	513-414	54	2.5	270	1.84	1,250	net broken
21/20		1138-1310	05°38'.50 N 110°23'.02 E	05°38'.30 N 110°22'.40 E	05°37'.30 N 110°20'.10 E	05°36.90 N 110°20.40 E	300-275	60	2.5	255	2.5	850	net broken

Table 3 Summary of beam trawl fishing operations (Page 2)

7.4 Report on Bottom Vertical Longline

Eight (8) bottom vertical longline fishing operations are conducted during cruise MV SEAFDEC 2 No.35-3/2010, Sabah and Sarawak area, Malaysia Waters. Three (3) fishing operations are conducted during the first trip, Sabah Waters and the other three (3) fishing operations are conducted during the second trip and the other two (2) fishing operations are conducted during the third trip. (Fishing logs: Appendix 1.4) Special condition of bottom vertical longline fishing operation referred to depth is operation planned to operate more than 500 m. However Mr. Sumsidin Basir, Malaysian senior researcher requests SEAFDEC supervisor to find out the good fishing ground for bottom longline by ignore very deep area, more than 500 m. Then Bottom vertical longline fishing turn to emphasize on fishing ground deeper than 200 m where none of local fishers operated bottom longline.

Bottom vertical long line is consisted of main line, branch line and hooks line. The mainline is suspended at some distance above the bottom, depending on the length of the branch line. Thus the mainline does not touch the bottom whereas the branch line does. If some obstacle at the bottom catches the branch line, only that particular line get damaged or lost, without a risk to the rest of the gear. In this type of gear, hooks are places between the sea bottom and the mainline so that the fish, which dwell near or at the bottom, are caught.

Material of main line is composite texture as polypropylene mixed, diameter 8 mm, 3 strands, Z-twisted. Branch line is made by polyvinyl alcohol (PVA) diameter 3 mm, 2 strands, Z twisted, 12.5 m in length. Interval of length between each branch line is 25 m. Hooks line is made by nylon monofilament No.26 diameter 0.2 mm. 60 cm in length. There are 2 type of hook, J-shape design and C-designed are used. Six (6) hooks are fixed with a branch line. There are 105 branch lines, 630 hooks deployed within an operation. Squid is used for bait. Construction of bottom vertical longline is label in appendix 5.4. Fishing operations are conducted in early morning 5 to 6 am. Hauling operation is conducted about 8 to 9 am. Immersion time is between 2 to 3 hours.

Three (3) bottom vertical longline operations are conducted on the first trip. Depth substratum of operation No.1 and No.2 is between 300 to 400 m. and operation No.3 is 400-500 m depth. Ninety (90) branch lines and five hundred and forty hooks (540) are deployed every station. Total number of hook line deployed in the first trip is 1,620 hooks. Immersion time of trap fishing operation No.1, 2 and 3 is between 3 to 6 hours.

Three (3) bottom vertical longline operations are conducted on the second trip. Depth substratum of operation No.4 and No.6 is between 200 to 300 m. and operation No.5 is 300-400 m depth. One hundred and five (105) branch lines, six hundred and thirty hooks (630) are deployed every station. Total number of hook line deployed in the first trip is 1,890 hooks Immersion time of trap fishing operation No.4, 5 and 6 is about 3 hours.

Two (2) bottom vertical longline operations are conducted on the third trip. Depth substratum of both operations, No.7 and No.8, are between 200 to 325 m. Seventy (70) branch lines, four hundred and twenty hooks (420) are deployed every station. Total number of hook line deployed in the first trip is 840 hooks. Immersion time of fishing operation No.7 is 5 hours and 25 minutes because after setting longline sea condition is become too rough to hauling back. M.V. SEAFDEC2 need to wait for the sea condition is safe enough for hauling operation. Immersion time of trap fishing operation No.8 is about 3 hours.

Recommendation for on bottom vertical longline fishing operation is appropriable for the depth 200 to 300 m regarding to resources. Regarding to the echo sounder There is some fishing ground around Sarawak Waters proper to operated with deep sea bottom longline e.g. station No.23 (close to station No.20) and fishing ground around South and North Luconia Shoal. From the visual observation, there is a foreign fishing vessel operate hand line or fish jigging around the shallow water of South Loconia Shoal. MV SEAFDEC2 does not navigate close to the North and South Luconia Shoal because there are not any local charts available onboard. It is very dangerous for vessel to close to shoal without the small scale charts (Large magnified charts). By this reason MV SEAFDEC2 or research project manager should prepare the local charts for supreme safety during survey near wreck or rocky shoal.

Bottom vertical longline is important for the resource research survey. In order to fulfill the catches of marine species what cannot catch by beam trawl e.g. Spiny dog shark, eel, scorpion fish and etc. Bottom vertical longline may need to adjust for this fishing ground because positions of hook No.1 to No.3 (from the lowest hook) are frequently found catches.

Op./St No.	Date	Shooting				Hauling				Number of hook	Immersion time(hrs.min)	Sea depth (m)
		Start		Finish		Start		Finish				
1/4	8-Jul-10	Time	0634	Time	0718	Time	1200	Time	1350	540	5:59 hrs.	315-331
		Latitude	07°18'.80 N	Latitude	07°20'.80 N	Latitude	07°18'.90 N	Latitude	07°20'.60 N			
		Longitude	116°17'.10 E	Longitude	116°17'.50 E	Longitude	116°16'.10 E	Longitude	116°16'.10 E			
2/5	9-Jul-10	Time	0550	Time	0620	Time	0845	Time	1005	540	3:20 hrs.	348-375
		Latitude	06°59'.70 N	Latitude	07°00'.00 N	Latitude	07°00'.30 N	Latitude	07°00'.10 N			
		Longitude	115°46'.90 E	Longitude	115°46'.00 E	Longitude	115°46'.40 E	Longitude	115°47'.00 E			
3/6	10-Jul-10	Time	0536	Time	0613	Time	0826	Time	0945	540	3:07 hrs.	414-421
		Latitude	06°32'.80 N	Latitude	06°34'.10 N	Latitude	06°34'.10 N	Latitude	06°33'.50 N			
		Longitude	115°24'.20 E	Longitude	115°24'.30 E	Longitude	115°24'.70 E	Longitude	115°24'.70 E			
4/11	17-Jul-10	Time	0548	Time	0627	Time	0845	Time	1000	648	3:44 hrs.	238-274
		Latitude	05°45'.80 N	Latitude	05°47'.00 N	Latitude	05°48'.10 N	Latitude	05°46'.90 N			
		Longitude	114°31'.30 E	Longitude	114°32'.40 E	Longitude	114°30'.50 E	Longitude	114°32'.60 E			
5/14	20-Jul-10	Time	0554	Time	0634	Time	0847	Time	1007	630	3:13 hrs.	450-320
		Latitude	05°17'.70 N	Latitude	05°16'.60 N	Latitude	05°16'.60 N	Latitude	05°17'.20 N			
		Longitude	112°48'.50 E	Longitude	112°49'.50 E	Longitude	112°49'.60 E	Longitude	112°49'.30 E			
6/27	21-Jul-10	Time	0613	Time	0644	Time	0856	Time	1020	630	3:05 hrs.	253-263
		Latitude	05°47'.60 N	Latitude	05°46'.90 N	Latitude	05°47'.90 N	Latitude	05°47'.50 N			
		Longitude	112°18'.30 E	Longitude	112°17'.20 E	Longitude	112°18'.20 E	Longitude	112°17'.60 E			
7/23	2-Aug-10	Time	0553	Time	0635	Time	1230	Time	1410	630	7:06 hrs.	274-280
		Latitude	05°36'.40 N	Latitude	05°35'.70 N	Latitude	05°35'.60 N	Latitude	05°36'.20 N			
		Longitude	110°27'.10 E	Longitude	110°28'.50 E	Longitude	110°28'.50 E	Longitude	110°27'.50 E			
8/19	3-Aug-10	Time	0556	Time	0631	Time	0832	Time	0935	630	2:57 hrs.	200-323
		Latitude	05°23'.80 N	Latitude	05°24'.50 N	Latitude	05°23'.70 N	Latitude	05°24'.20 N			
		Longitude	110°00'.90 E	Longitude	110°59'.80 E	Longitude	111°01'.00 E	Longitude	111°00'.20 E			

Table 4 Summary of bottom vertical longline fishing operations

7.5 Report on Deep Sea Trap

Eight (8) deep sea trap fishing operations are conducted during cruise MV SEAFDEC 2 No.35-3/2010, Sabah and Sarawak area, Malaysia Waters. Deep sea trap fishing operations are conducted at the adjacent position as bottom vertical longline. Then numbers of fishing operation are equal as bottom vertical longline fishing operations. Three (3) fishing operations are conducted during the first trip, Sabah Waters and the other three (3) fishing operations are conducted during the second trip and the other two (2) fishing operations are conducted during the third trip. (Fishing logs: Appendix 1.5) Special condition of bottom vertical longline fishing operation referred to depth is operation planned to operate more than 600 m. However Mr. Sumsidin Basir, Malaysian senior researcher requests SEAFDEC supervisor to find out the good fishing ground for Deep sea trap by ignore very deep sea area, more than 600 m. Then deep sea trap fishing operations are turned to emphasize on fishing ground deeper than 200 m where none of local fishers operated bottom longline.

Crustacean, e.g. crab, shrimp and etc is target for deep sea trap fishing. There are 2 deep sea trap designs operated during resource research survey. The first is cubic shape with dimension 30 cm × 90 cm × 30 cm (wide× length × depth). Frame is made by stainless steel with plastic panel, mesh size 2 cm pentagon shape. There are 2 types of entrance, i.e. oval shape with 8 to 10 cm opening diameter and slit shape. Performance of both entrance designs are under investigating. The other design is cylinder design with 35 cm diameter 90 cm in length. Frame is made by stainless steel with plastic panel, mesh size 2 cm pentagon shape. Entrance is oval shape with 8 to 10 cm opening diameter. Round scad and small crab is used for bait. The design is modified from French shrimp trap what operated by BFAR (Bureau of Fisheries and Aquatic Resources, Philippines) in Philippine Waters. Construction of deep sea trap is label in appendix 5.5

Three (3) deep sea trap operations are conducted on the first trip. Depth substratum of operation No.1 and No.2 is between 300 to 400 m. and operation No.3 is 400-500 m depth. Forty (40) traps are deployed at fishing operation No.1. Thirty (30) traps are deployed at fishing operation No.2 and No.3. Total number of trap deployed in the first trip is one hundred (100) traps. Immersion time of trap fishing operation No.1, 2 and 3 is between 11 to 15 hours.

Three (3) deep sea trap operations are conducted on the second trip. Depth substratum of operation No.4 and No.6 is between 200 to 300 m. and operation No.5 is 300 to 400 m depth. Thirty-three (33) traps are deployed at fishing operation No.1 and No.3. Thirty-two (32) traps are deployed at fishing operation No.2. Total number of trap deployed in the first trip is ninety (98) traps. Immersion time of trap fishing operation No.4, 5 and 6 is between 13 to 15 hours.

Two (2) deep sea trap operations are conducted on the third trip. Depth substratum of both operations, No.7 and No.8, are between 200 to 319 m. Thirty-two (32) traps are

deployed in each fishing operation. Total number of trap deployed in the first trip is sixty four (64) traps. Immersion time of fishing operation No.7 is the longest immersion time as 23 hours and 23 minutes because after before hauling traps, sea condition is become rough sea. M.V. SEAFDEC2 has to wait for the sea condition is safe enough for hauling operation. Immersion time of traps fishing operation No.8 is between 11 hours 11 minutes.

Deep sea trap fishing operation is obviously suitable for shrimp capture. Two (2) species of Isopod is also massive caught by this trap design. This trap designed may not suitable with economic fish e.g. grouper, snapper and etc, because the design particularly the entrance is invented for crustacean. However there are some carpet shark, spiny dog shark and eel, caught by these traps.

Traps are deployed same system with longline. There is main line and branch line attached with each trap. Main line is made by polypropylene diameter 16 mm and branch line is made by polypropylene diameter 8 mm. The durability of main line is enough to operate within 400 m. If fishing ground is deeper than 400 m, recommended to use polypropylene rope (Dan line) diameter 18 mm and hauling device must be capstan winch, capacity 5 ton, with special side roller on port side. Pelagic longline side roller is not strong enough to operate in very deep sea. Result from the deep sea trap fishing operations on resource survey, has proven that a deep-sea shrimp resource, Genus *Heterocarpus*, disperses on substratum 200 to 500 m depth and possible to catch by this design of deep sea trap. It is possible to promote to local fishermen in the future. The survey should be conducted on the other deep sea area, in another part of ASEAN region e.g. Andaman Sea of Myanmar and Thailand, Indonesia Eastern Sabah, Malaysia and Philippine.

Op./St No.	Date	Shooting				Hauling				Number of trap	Immersion time(hrs.min)	Sea depth (m)
		Start		Finish		Start		Finish				
1/4	7-8/Jul/2010	Time	1624	Time	1650	Time	0822	Time	1030	40	16:55	362-340
		Latitude	07°17'.60 N	Latitude	07°18'.50 N	Latitude	07°18'.40 N	Latitude	07°18'.40 N			
		Longitude	116°16.90 E	Longitude	116°17'.00 E	Longitude	116°16'.80 E	Longitude	116°16'.60 E			
2/5	8-9/Jul/2010	Time	1844	Time	1900	Time	0645	Time	1030	30	13:25	328-352
		Latitude	06°59'.10 N	Latitude	06°59'.10 N	Latitude	06°59'.20 N	Latitude	06°59'.40 N			
		Longitude	115°46.40 E	Longitude	115°46'.00 E	Longitude	115°46'.30 E	Longitude	115°46'.60 E			
3/6	9-10/Jul/2010	Time	1805	Time	1825	Time	0630	Time	0750	30	12:55	405-425
		Latitude	06°31'.90 N	Latitude	06°32'.30 N	Latitude	06°32'.20 N	Latitude	06°32'.10 N			
		Longitude	115°24.10 E	Longitude	115°24'.10 E	Longitude	115°24'.40 E	Longitude	115°24'.50 E			
4/11	16-17/Jul/2010	Time	1756	Time	1815	Time	0647	Time	0810	33	13:23	400-410
		Latitude	05°46'.20 N	Latitude	05°46'.50 N	Latitude	05°46'.60 N	Latitude	05°46'.50 N			
		Longitude	114°30.00 E	Longitude	114°30'.10 E	Longitude	114°30'.40 E	Longitude	114°30'.20 E			
5/14	19-20/Jul/2010	Time	1535	Time	1607	Time	0648	Time	0815	33	15:40	271-345
		Latitude	05°15'.40 N	Latitude	05°15'.70 N	Latitude	05°15'.50 N	Latitude	05°15'.60 N			
		Longitude	112°50.40 E	Longitude	112°50'.50 E	Longitude	112°50'.70 E	Longitude	112°50'.90 E			
6/27	20-21/Jul/2010	Time	1735	Time	1750	Time	0715	Time	0835	33	14:13	330-375
		Latitude	05°48'.20 N	Latitude	05°48'.30 N	Latitude	05°48'.30 N	Latitude	05°48'.50 N			
		Longitude	112°14.90 E	Longitude	112°15'.50 E	Longitude	112°15'.50 E	Longitude	112°15'.60 E			
7/23	1-2/Aug/2010	Time	1545	Time	1600	Time	1437	Time	1557	32	23:25	319
		Latitude	05°38'.10 N	Latitude	05°38'.10 N	Latitude	05°37'.90 N	Latitude	05°37'.90 N			
		Longitude	110°24.80 E	Longitude	110°25'.20 E	Longitude	110°25'.00 E	Longitude	110°25'.20 E			
8/19	2-3/Aug/2010	Time	2003	Time	2017	Time	0655	Time	0748	32	11:12	210-235
		Latitude	05°24'.60 N	Latitude	05°24'.20 N	Latitude	05°24'.50 N	Latitude	05°24'.40 N			
		Longitude	110°02.00 E	Longitude	111°02'.00 E	Longitude	111°02'.00 E	Longitude	111°02'.10 E			

Table 5 Summary of deep sea trap fishing operations

8. Report on Oceanographic activities

Oceanographic survey, cruise M.V. SEAFDEC2 No.35-3/2010, is completely carried out during 5 July to 6 August 2010. Twenty four (24) stations are conducted in area of Sabah and Sarawak, Malaysia Waters. (Fig 1) Station survey No. 15, 17 and 18, of the third trip, are cancelled because of inconvenient period of survey. All details composed with oceanographic and environmental condition of each station are not able to report in the part of fishing log. Malaysian survey project manager, Mr. Rosidi Ali, refuses to extend all of to SEAFDEC researches. He also affirms the reason to master of SEAFDEC2 and operational supervisor that the regulation of national security agency does not permit to generous expose aforementioned information to other agencies. Cruise report has not included with any oceanographic and weather information. The following are material and method of oceanographic survey. Available

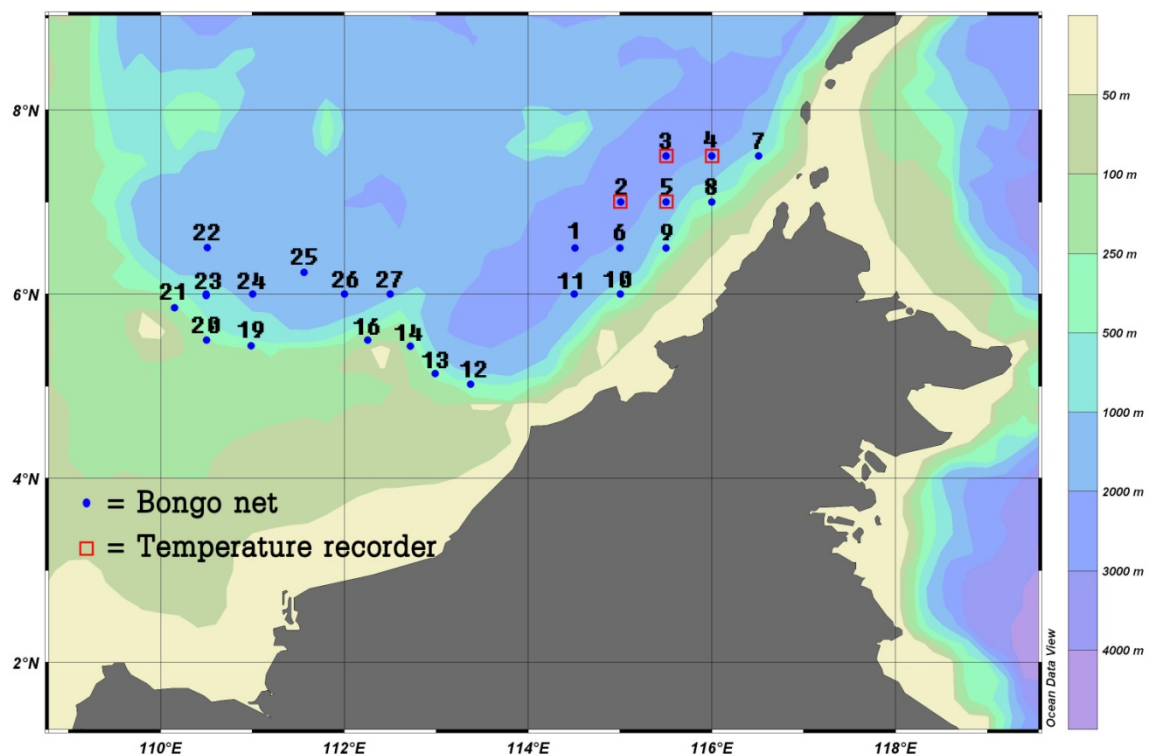


Fig. 2 Map showing the survey stations

8.1 Sea Water Temperature profile

Sea water temperature was collected by Temperature and Depth recorder (MkV/T and MkV/D, Alec Electronics) for Thermocline layer determination and set up pelagic longline. They were deployed from sea surface to maximum depth approximately 300 m with velocity 0.5-1.0 m/s and retrieved to surface at a similar speed. Both sensor

were record every 1 second interval. They were operated in station no. 2, 3, 4 and 5. From station no.6, Temperature sensor malfunction because recharge battery problem.

8.2 Plankton and Larvae sampling by Bongo net

Twin stainless steel frame, circle shape, 55 cm diameter, looks like bongo drum, namely “Bongo frame” is attached with two net pieces, mesh size of 330 and 521 μm . Two flow meters were attached at the aperture of net to measure the water volume passing through the net. TSK flow meters no. 7021 and 7035 were attached at Bongo frames of net mesh size 330 and 521 respectively. The TSK flow meter is calibrated before the survey period which calibration factor show in Table 3.

Bongo net is oblique towed with ship speed approximately between 1.5 to 2 knots. Angle of towing cable was maintained at 45° Towing depth is recognized by using depth sensor, namely Net Sonde[®] and approximated towing time of 30 minutes (Fig.6). Collected specimens are preserved by 10% formalin with buffered by sea water. Partial details of Bongo net operations are show in Table 4. All samples are not shared and fully responsible by Malaysian researchers.

8.3 Juvenile sampling by Isaac-Kid Midwater trawl

Isaacs-Kidd mid-water trawl (IKMT) is an oceanography instrument, used to collect bathypelagic biological specimens. It has been firstly developed by National Oceanic and Atmospheric administration (NOAA) United State of America since 1956. The trawl consists of the specifically designed net attached to a wide, V-shaped, rigid diving device, called a depressor. The vane keeps the mouth of the net open and exerts a depressing force, maintaining the trawl at depth for extended periods at towing speeds up to 5 knots, but the optimum towing speeds should be 2-3 knots because of the high level of drag exerted by the net in the water. The inlet opening is unobstructed by the towing cable.

The IKMT’s largemouth opening and capacity for fast towing speeds enables it to capture a wider range of relatively large and more active organisms than smaller nets. In addition, its fine mesh allows it to snag animals that are not retained in the large trawl nets that are used for commercial fishing. Thus, it is well suited for capturing an array of fishes, squids and shrimp that inhabit the mid-water zone. To make sample collection easier, the IKMT is always used in conjunction with echo-sounders, which provide a target area for the researchers to sample. (Referred to TD/RES112, download at <http://www.map.seafdec.org>)

On survey station No.1, ISAAC-KID Mid-water Trawl (IKMT) has an accident. Swivel between depressor of IKMT and towing warp is broken, at the joint part, while hauling

IKMT back onboard at the depth 300 m. IKMT frame and net including with SCANMAR[®] depth sensor and flow meter is lost, on position Latitude 06°30'.1N and Longitude 114°30'.3 E. IKMT is not able to recover back regarding to sea depth 2,100 m.

8.4 Meteorological and water current observation

Meteorological data along cruise including with wind speed, wind direction, air temperature, air pressure, sea surface temperature, humidity, cloud and water current, is recorded hourly by navigators who has duty. Data is not able to present regarding to aforementioned reason.

OS. No.	St. No.	Date	Start	Finish	Latitude (N)		Longitude (E)		Sea depth (m)	Temperature sensor file name	Depth sensor file name	Remark
					Degree	Minute	Degree	Minute				
LEG I.												
1	1	4-Jul-10	17:25	18:30	6	30.1	114	30.3	2,103	NR	NR	NR = No Record
2	2	5-Jul-10	11:18	12:25	6	59.9	115	00.3	2,304	07051222	07051222	
3	3	6-Jul-10	12:46	14:15	7	29.9	115	30.0	2,088	07061412	07061414	
4	4	7-Jul-10	12:10	13:10	7	29.9	116	00.0	1,355	07071314	07071312	
5	5	9-Jul-10	11:48	12:50	6	59.9	115	30	998	07091314	07081315	
6	6	10-Jul-10	12:17	14:00	6	30.0	115	00.2	1,300	NR	NR	TD Sensor malfunction
7	7	11-Jul-10	06:05	06:36	7	29.8	116	30.4	215	NR	NR	TD Sensor malfunction
8	8	12-Jul-10	10:32	11:02	6	59.9	116	00.2	120	NR	NR	TD Sensor malfunction
9	9	13-Jul-10	08:58	09:28	6	29.8	115	30.1	108	NR	NR	TD Sensor malfunction
LEG II.												
10	10	16-Jul-10	06:00	06:31	6	000	115	00.2	114	NR	NR	TD Sensor malfunction
11	11	16-Jul-10	14:20	14:51	6	000	114	30.1	1,941	NR	NR	TD Sensor malfunction
12	12	18-Jul-10	6:04	6:37	5	01.1	113	22.5	322	NR	NR	TD Sensor malfunction
13	13	18-Jul-10	16:08	16:38	5	08.1	112	59.3	295	NR	NR	TD Sensor malfunction
14	14	19-Jul-10	19:30	10:02	5	25.9	112	43.1	1,021	NR	NR	TD Sensor malfunction
15	27	21-Jul-10	11:56	12:28	5	59.9	112	30.1	450	NR	NR	TD Sensor malfunction
16	26	21-Jul-10	15:26	15:56	6	00.1	112	00.1	1,541	NR	NR	TD Sensor malfunction
LEG III.												
17	16	26-Jul-10	07:48	08:21	5	29.9	112	15.3	145	NR	NR	TD Sensor malfunction
18	25	30-Jul-10	10:55	11:25	6	14.1	111	33.7	1,775	NR	NR	TD Sensor malfunction
19	24	30-Jul-10	14:52	15:24	5	59.9	111	00.2	1,259	NR	NR	TD Sensor malfunction
20	22	31-Jul-10	14:57	15:30	6	30.2	110	30.7	1,397	NR	NR	TD Sensor malfunction
21	23	1-Aug-10	11:15	11:47	5	59.9	110	30.2	354	NR	NR	TD Sensor malfunction
22	19	2-Aug-10	9:56	10:30	5	26.2	110	59.2	476	NR	NR	TD Sensor malfunction
23	21	4-Aug-10	9:10	9:40	5	51.1	110	9.3	354	NR	NR	TD Sensor malfunction
24	20	4-Aug-10	14:30	15:00	5	29.9	110	30.2	197	NR	NR	TD Sensor malfunction

Table 6 Summary of Oceanographic Survey

St.No.	Bongo net							
	Towing depth (m)	Start Time	Towing period (min)	Towing spd. (knt.)	330 μ m : TSK 7021		521 μ m : TSK 7035	
					No. of flow meter revolution	Vol. of sea water (m ³)	No. of flow meter revolution	Vol. of sea water (m ³)
LEG I.								
1	130	17:25	30	2	7155	317	6831	295
2	115	11:18	29	2	7750	343	7503	324
3	125	12:46	31	2	7905	350	7659	330
4	125	12:10	33	2	8463	375	8150	352
5	98	11:48	29	2	10442	462	10341	446
6	125	12:17	31	2	10390	460	10750	464
7	65	06:05	31	1.3	11100	491	10987	474
8	65	10:32	30	2	10812	479	10672	460
9	80	08:58	30	1.7	8370	370	9070	391
LEG II.								
10	85	06:00	31	1.7	10830	479	10340	446
11	110	14:20	31	2	9072	402	8532	368
12	115	06:04	33	2	10030	444	10510	453
13	115	16:08	30	2	8580	380	8100	349
14	125	09:30	32	2	8,451	374	8,000	345
27	115	11:56	32	2	9369	415	9800	423
26	118	15:26	30	2	9380	415	9815	423
LEG III.								
16	75	07:48	33	2.0	10780	477	10780	465
25	110	10:55	30	2.0	9920	439	10660	460
24	90	14:52	32	2.0	10280	455	10820	467
22	80	14:57	33	2.0	10980	486	10605	457
23	110	11:15	32	2.0	9525	422	9250	399
19	120	09:56	34	2.0	8620	382	8595	371
21	115	09:10	30	2.0	8805	390	8415	363
20	100	14:30	30	2.0	10059	445	10650	459

Table 7 Summary of larvae and plankton survey by Bongo Net

Research vessel name:
Cruise: 35-3/2010
Date: 4 July 2010
Latitude 6°29.9 'N

M.V.SEAFDEC2
Time: 16:00 - 17:00
Longitude 114° 3.2 'E

Recorded by:
Area:
Wire-out length(m):

Rosdi Mohd Nor
 Malaysia waters
 50 m.

Times	Wire Angle	Distance	time	Flowmeter						
				IKMT		G.O. Environ. ¹		330 µm	521 µm	
				Hydro-Bios ¹	Hydro-Bios ¹	G.O. Environ. ¹	G.O. Environ. ¹	TSK ²	TSK ²	
				Yellow tape	No tape	20399	20383	7021	7035	
6		50.9		start		43797			0	0
				finish		44178			292	355
				Rev4.		381			292	355
7		51		start		44178			0	0
				finish		44543			285	348
				Rev2.		365			285	348
8		60.6		start		44543			0	0
				finish		45022			411	431
				Rev3.		479			411	431
9		51.7		start		45022			Error	0
				finish		45416				365
				Rev4.		394				365
10		51.5		start		45416			0	0
				finish		45817			372	390
				Rev5.		401			372	390
Calibrate factor(m/r)					Lost			0.186407653	0.181659802	

Remark

¹ = flow meters will count revolution both downcast and upcast (When calculate Rev. will divide 2)

² = flow meters will count revolution only downcast

Table 8 Partial details of Flow meter calibration on pre-survey

9. Report on Cetacean sighting survey

Cetacean sighting survey are conducted along the route of survey, Sighting data, obtained during the primary searching, is primary sights only and attempts to approach the objects for species identification, school size estimation by counting in number, and other relevant data collection including with taking photograph is carried out.

During the sighting survey, only school of Spinner dolphins and Common bottlenose dolphins are observed and indentified. The school of Bottlenose dolphins are found during fishing operation three (3) times. The first time is discovered during shooting Bottom vertical longline fishing in the morning time at Latitude 7°18'.80 N and Longitude 116°17'.10 E. They are swimming around the vessel (Fig 3). The second and the third groups are discovered during conducted the Automatic squid jigging operation No.5 and No.7. They swim around the vessel to search for prey what attracted by luring light (Fig 4). The schools of spinner dolphin were found during the vessel navigated along the survey route (Fig 5).

No.	Date	Time	Position		Cetaceans sighted	Number
			Latitude (N)	Longitude (E)		
1	2-July-10	12:05	05°08'.0	115°06'.0	Spinner Dolphin	15
2	8-July-10	06:30	07°18'.8	116°17'.1	Common bottle nose Dolphin	20
3	8-July-10	15:45	07°09'.4	115°58'.5	Common bottle nose Dolphin	10
4	9-July-10	20:00	06°26'.9	115°22'.4	Common bottle nose Dolphin	15
5	12-July-10	21:00	06°43'.6	115°30'.2	Common bottle nose Dolphin	10
6	18-July-10	09:25	05°00'.8	113°24'.2	Common bottle nose Dolphin	15
7	29-July-10	17:30	03°49'.9	112°41'.6	Spinner Dolphin	15
8	8-Aug-10	06:48	05°24'.0	111°01'.9	Spinner Dolphin	20

Table 9 Summary on the result of Cetacean sighting activities

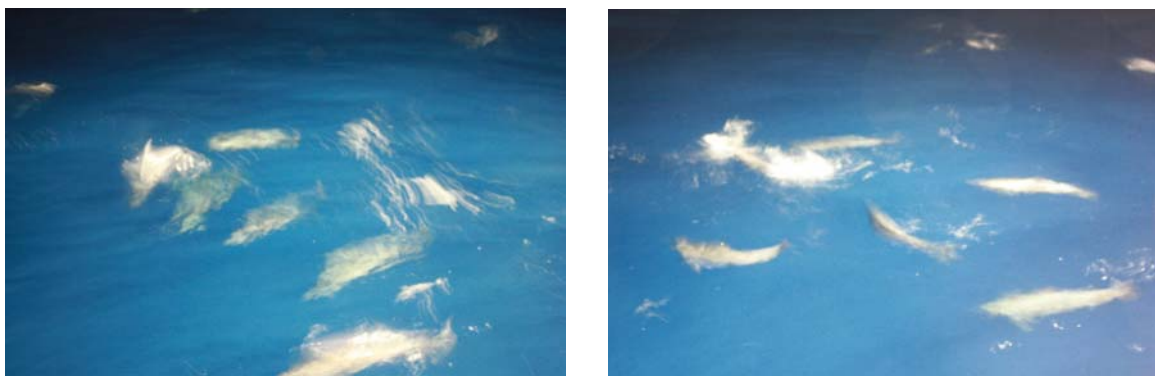


Fig. 3 The school of Bottlenose dolphin during conducted the Squid jigging fishing operations



Fig.4 The school of Bottlenose dolphins are swimming around the vessel during the vessel is sailing on the survey route



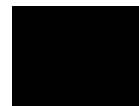
During the vessel is sailing on the survey route



Appendix 1) Fishing log

Appendix 1.1 Pelagic longline fishing log

**PELAGIC LONGLINE FISHING LOGSHEET
Operation No.1**



Recorded by Sayan Promjinda
Certified by Isara Chanrachkij

Cruise no: 35-3 /2010		Name of Vessel				Air temp: NA °C
Survey station No:St 01		M.V.SEAFDEC 2				Air pressure: NA mbar
Date: 4-July-2010						Humidity : NA %
Moon age: 22 phase 51%		Start shooting 04/07/10	Finish shooting 04/07/10	Water		
Wind		Time 1850	Time 1955	Surface temp: NA °C		
Spd (kt)	Direction	Latitude 06°31'.30 N	Latitude 06°26'.30 N	100 m. temp : NA °C		
NA	NA	Longitude 114°29'.90E	Longitude 114°33'.20 E	Thermocline : NA		
Weather cond: NA		Start hauling 05/07/10	Finish hauling 05/07/10	Current		
Sea condition: NA		Time 0605	Time 0735	Depth	Spd (kt)	Direction
Gear		Latitude 06°26'.10 N	Latitude 06°28'.80 N	50	NA	
No. hook/basket: 20		Longitude 114°36'.30 E	Longitude 114°34'.60 E	100	NA	
Total hook no: 280		Memorandum: 1) Speed of vessel: 7.0 knots			200	NA
Immersion time: 11 hrs 13 min.		2) Setting distance: 6.0 NM /Course 146°			Total catch in number:	
Type of bait: Round scad		3) Mainline paid out: 11,742 m (Setting machine)			NA	
		4) Sea depth: 2,100 m (Echo sounder)			Total catch in weight:	
		5) Depth of hook: 50 -141 m			NA	

No.	Species	Length (cm)	Weight (kg)	Remarks
	Correspondence person			NA: Not available
	Rosidi Ali, Fishereis Research Institute			
	(DOF), Kumpong Ache, Perak, Malaysia			
	Email: rosidi@seafdec.org.my			

PELAGIC LONGLINE FISHING LOGSHEET

Operation No.2

Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise no: 35-3 /2010		Name of Vessel M.V.SEAFFDEC 2				Air temp: NA °C	
Survey station No:St 02						Air pressure: NA mbar	
Date: 5-July-2010		Start shooting <u>05/07/10</u> Finish shooting <u>05/07/10</u>				Humidity : NA %	
Moon age: 23 phase 41%						Water	
Wind		Time	1502	Time	1630	Surface temp: NA °C	
Spd (kt)	Direction	Latitude	06°59'.60 N	Latitude	06°58'.80 N	100 m. temp : NA °C	
NA	NA	Longitude	115°00'.10E	Longitude	115°09'.60 E	Thermocline : NA	
Weather cond: NA		Start hauling <u>06/07/10</u> Finish hauling <u>06/07/10</u>				Current	
Sea condition: NA		Time	0605	Time	0835	Depth	Spd (kt) Direction
Gear		Latitude	07°01'.00 N	Latitude	07°01'.20 N	50	NA
No. hook/basket: 20		Longitude	115°04'.80 E	Longitude	114°55'.40 E	100	NA
Total hook no: 500		Memorandum: 1) Speed of vessel: 7.0 knots				200	NA
Immersion time: 15 hrs 34 min.		2) Setting distance: 9.5 NM /Course094°				Total catch in number:	
Type of bait: Round scad		3) Mainline paid out: 21,109 m (Setting machine)				NA	
		4) Sea depth: 2,304 m (Echo sounder)				Total catch in weight:	
		5) Depth of hook: 50 -203 m				NA	

PELAGIC LONGLINE FISHING LOGSHEET

Operation No.3

Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise no: 35-3 /2010		Name of Vessel M.V.SEAFFDEC 2				Air temp: NA °C	
Survey station No:St 03						Air pressure: NA mbar	
Date: 6-July-2010		Start shooting <u>06/07/10</u> Finish shooting <u>06/07/10</u>				Humidity : NA %	
Moon age: 24phase 32%						Water	
Wind		Time	1502	Time	1635	Surface temp: NA °C	
Spd (kt)	Direction	Latitude	07°31'.00 N	Latitude	07°37'.40 N	100 m. temp : NA °C	
NA	NA	Longitude	115°30'.30E	Longitude	115°37'.50 E	Thermocline : NA	
Weather cond: NA		Start hauling <u>07/07/10</u> Finish hauling <u>07/07/10</u>				Current	
Sea condition: NA		Time	0617	Time	0900	Depth	Spd (kt) Direction
Gear		Latitude	07°30'.70 N	Latitude	07°36'.70 N	50	NA
No. hook/basket: 20		Longitude	115°24'.60 E	Longitude	115°30'.90 E	100	NA
Total hook no: 530		Memorandum: 1) Speed of vessel: 6.5 knots				200	NA
Immersion time: 15 hrs 50 min.		2) Setting distance: 9.6 NM /Course 048°				Total catch in number:	
Type of bait: Round scad		3) Mainline paid out: 21,955 m (Setting machine)				NA	
		4) Sea depth: 2,088 m (Echo sounder)				Total catch in weight:	
		5) Depth of hook: 55 -213 m				NA	

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpong Ache, Perak State, Malaysia. [Email: rosidi@seafdec.org.my](mailto:rosidi@seafdec.org.my)

PELAGIC LONGLINE FISHING LOGSHEET

Operation No.4

Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise no: 35-3 /2010		Name of Vessel				Air temp: NA °C
Survey station No:St 26		M.V.SEAFDEC 2				Air pressure: NA mbar
Date: 21-July-2010						Humidity : NA %
Moon age: 10phase 81%		Start shooting <u>21/07/10</u>		Finish shooting <u>21/07/10</u>		Water
Wind		Time	1750	Time	1915	Surface temp: NA °C
Spd (kt)	Direction	Latitude	06°01'.60 N	Latitude	05°55'.70 N	100 m. temp : NA °C
NA	NA	Longitude	112°00'.50E	Longitude	111°53'.50 E	Thermocline : NA
Weather cond: NA		Start hauling <u>22/07/10</u>		Finish hauling <u>22/07/10</u>		Current
Sea condition: NA		Time	0608	Time	0855	Depth
Gear		Latitude	06°03'.30 N	Latitude	05°58'.00 N	Spd (kt)
No. hook/basket: 20		Longitude	112°01'.90 E	Longitude	111°55'.70 E	Direction
Total hook no: 500		Memorandum: 1) Speed of vessel: 6.5 knots				10
Immersion time: 15 hrs 50 min.		2) Setting distance: 9.1 NM /Course 230°				50
Type of bait: Round scad / Squid		3) Mainline paid out: 21,000 m (Setting machine)				NA
		4) Sea depth: 1,560 m (Echo sounder)				NA
		5) Depth of hook: 90 -210 m				NA
						Total catch in number: NA
						Total catch in weight: NA

PELAGIC LONGLINE FISHING LOGSHEET

Operation No.5

Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise no: 35-3 /2010		Name of Vessel				Air temp: NA °C
Survey station No:St 25		M.V.SEAFDEC 2				Air pressure: NA mbar
Date: 26-July-2010						Humidity : NA %
Moon age: 15phase		Start shooting <u>26/07/10</u>		Finish shooting <u>26/07/10</u>		Water
Wind		Time	1758	Time	1850	Surface temp: NA °C
Spd (kt)	Direction	Latitude	05°59'.90 N	Latitude	05°59'.90 N	100 m. temp : NA °C
NA	NA	Longitude	111°34'.00E	Longitude	111°29'.20 E	Thermocline : NA
Weather cond: NA		Start hauling <u>30/07/10</u>		Finish hauling <u>30/07/10</u>		Current
Sea condition: NA		Time	0828	Time	1012	Depth
Gear		Latitude	06°13'.70 N	Latitude	06°13'.50 N	Spd (kt)
No. hook/basket: 20		Longitude	111°30'.70 E	Longitude	111°33'.70 E	Direction
Total hook no: 260		Memorandum: 1) Speed of vessel: 6.5 knots				10
Immersion time: 86 hrs 56 min.		2) Setting distance: 4.8 NM /Course 270°				50
Type of bait: Round scad /Squid		3) Mainline paid out: 11,000 m (Setting machine)				NA
		4) Sea depth: 1,528 m (Echo sounder)				NA
		5) Depth of hook: 50 -290 m				NA
						Total catch in number: NA
						Total catch in weight: NA

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpang Ache, Perak State, Malaysia. [Email: rosidi@seafdec.org.my](mailto:rosidi@seafdec.org.my)

PELAGIC LONGLINE FISHING LOGSHEET

Operation No.6

Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise no: 35-3 /2010		Name of Vessel M.V.SEAFFDEC 2				Air temp: NA °C	
Survey station No:St 24						Air pressure: NA mbar	
Date: 30-July-2010		Start shooting <u>30/07/10</u> Finish shooting <u>30/07/10</u>				Humidity : NA %	
Moon age: 19phase 83%						Water	
Wind		Time	1538	Time	1702	Surface temp: NA °C	
Spd (kt)	Direction	Latitude	06°00'.10 N	Latitude	06°06'.30 N	100 m. temp : NA °C	
NA	NA	Longitude	111°00'.20E	Longitude	110°54'.00 E	Thermocline : NA	
Weather cond: NA		Start hauling <u>31/07/10</u> Finish hauling <u>31/07/10</u>				Current	
Sea condition: NA		Time	0602	Time	0823	Depth	Spd (kt) Direction
Gear		Latitude	06°06'.40 N	Latitude	06°02'.40 N	10	NA
No. hook/basket: 20		Longitude	110°53'.90 E	Longitude	111°00'.00 E	50	NA
Total hook no: 460		Memorandum: 1) Speed of vessel: 6.5 knots				150	NA
Immersion time: 14 hrs 49 min.		2) Setting distance: 8.7 NM /Course 315°				Total catch in number:	
Type of bait: Round scad		3) Mainline paid out: - m (Setting machine)				NA	
		4) Sea depth: 1,259 m (Echo sounder)				Total catch in weight:	
		5) Depth of hook: 60 -240 m				NA	

PELAGIC LONGLINE FISHING LOGSHEET

Operation No.7

Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise no: 35-3 /2010		Name of Vessel M.V.SEAFFDEC 2				Air temp: NA °C	
Survey station No:St 22						Air pressure: NA mbar	
Date: 31-July-2010		Start shooting <u>31/07/10</u> Finish shooting <u>31/07/10</u>				Humidity : NA %	
Moon age: 20 phase 75%						Water	
Wind		Time	1542	Time	1704	Surface temp: NA °C	
Spd (kt)	Direction	Latitude	06°29'.90 N	Latitude	06°21'.60 N	100 m. temp : NA °C	
NA	NA	Longitude	110°31'.10E	Longitude	110°31'.80 E	Thermocline : NA	
Weather cond: NA		Start hauling <u>1/08/10</u> Finish hauling <u>1/08/10</u>				Current	
Sea condition: NA		Time	0625	Time	0914	Depth	Spd (kt) Direction
Gear		Latitude	06°27'.30 N	Latitude	06°19'.80 N	10	NA
No. hook/basket: 20		Longitude	110°30'.20 E	Longitude	110°30'.80 E	50	NA
Total hook no: 500		Memorandum: 1) Speed of vessel: 6.5 knots				150	NA
Immersion time: 15 hrs 27 min.		2) Setting distance: 8.3 NM /Course 180°				Total catch in number:	
Type of bait: Round scad		3) Mainline paid out: 21,024 m (Setting machine)				NA	
		4) Sea depth: 1,396 m (Echo sounder)				Total catch in weight:	
		5) Depth of hook: 60 -306 m				NA	

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpang Ache, Perak State, Malaysia. [Email: rosidi@seafdec.org.my](mailto:rosidi@seafdec.org.my)

Appendix 1.2 Squid jigging fishing log

**SQUID JIGGING FISHING LOGSHEET
Operation No.1**



Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise No.35-3/2010		Name of Vessel				Air temp: NA °C	
Survey station No :St01		M.V. SEAFDEC 2				Air pressure: NA mbar	
Date: 4-July-2010						Humidity : NA %	
Moon age: 22 phase 51%		Start Luring		Finish Luring		Water	
Wind		Time	2000	Time	2400	Surface temp: NA °C	
Spd (kt)	Direction	Start Jigging		Finish Jigging		100 m. temp : NA °C	
NA	NA	Time	2100	Time	2400	Thermocline : NA	
Weather condition: NA		Latitude	06° 26'.10 N	Latitude	06° 26'.30 N	Current	
No. of Jig		Longitude	114° 34'.20 E	Longitude	114° 36'.50	Depth	Spd (kt) Direction
M1: 50	M2: 50	Total jigging time: 3 hrs				50	NA
M3: 50	M4: 50	Memorandum:				100	NA
Total 200 jigs		Sea depth : > 2,000 m				200	NA
Angling depth 150		Operation performed with sea anchor				Total catch by weight: NA	
ICTD data file						Total catch by Individual : NA	
						Target species: NA	

No.	Species	Mantle length(cm)	Weight (g)	Sex
	Correspondence person		NA: Not available	
	<u>Rosidi Ali</u> , Fishereis Research Institute			
	(DOF), Kumpong Ache, Perak State,			
	Malaysia			
	Email: <u>rosidi@seafdec.org.my</u>			

SQUID JIGGING FISHING LOGSHEET

Operation No.2



Recorded by Sayan Promjinda
 Certified by Isara Chanrachkij

Cruise No.35-3/2010		Name of Vessel				Air temp: NA °C
Survey station No :St02		M.V. SEAFDEC 2				Air pressure: NA mbar
Date: 5-July-2010						Humidity : NA %
Moon age: 23 phase 41%		Start Luring		Finish Luring		Water
Wind		Time	1900	Time	2400	Surface temp: NA °C
Spd (kt)	Direction	Start Jigging		Finish Jigging		100 m. temp : NA °C
NA	NA	Time	2000	Time	2400	Thermocline : NA
Weather condition: NA		Latitude	06° 59'.00 N	Latitude	07° 00'.20 N	Current
No. of Jig		Longitude	115° 08'.80 E	Longitude	115° 07'.10	Depth
M1: -	M2: 50	Total jigging time: 4 hrs				5
M3: 50	M4: 50	Memorandum:				100
Total 150 jigs		Sea depth : > 2,000 m				200
Angling depth		Operation performed with sea anchor				Total catch by weight: NA
150		M1 was cancels due to jigging line was cut				Total catch by Individual : NA
ICTD data file		Total catch by hand line jigging :				Target species: NA
-						

SQUID JIGGING FISHING LOGSHEET

Operation No.3



Recorded by Sayan Promjinda
 Certified by Isara Chanrachkij

Cruise No.35-3/2010		Name of Vessel				Air temp: NA °C
Survey station No :St03		M.V. SEAFDEC 2				Air pressure: NA mbar
Date: 6-July-2010						Humidity : NA %
Moon age: 24 phase 32%		Start Luring		Finish Luring		Water
Wind		Time	1900	Time	2330	Surface temp: NA °C
Spd (kt)	Direction	Start Jigging		Finish Jigging		100 m. temp : NA °C
NA	NA	Time	1930	Time	2330	Thermocline : NA
Weather condition: NA		Latitude	07° 37'.70 N	Latitude	07° 37'.90 N	Current
No. of Jig		Longitude	115° 36'.20 E	Longitude	115° 34'.60	Depth
M1: 50	M2: 50	Total jigging time: 4 hrs				5
M3: 50	M4: 50	Memorandum:				100
Total 200 jigs		Sea depth : 2,088 m				200
Angling depth		Operation performed with sea anchor				Total catch by weight: NA
150						Total catch by Individual : NA
ICTD data file		Target species: NA				
-						

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpong Ache, Perak State, Malaysia. [Email: rosidi@seafdec.org.my](mailto:rosidi@seafdec.org.my)

SQUID JIGGING FISHING LOGSHEET
Operation No.4



Recorded by Sayan Promjinda
Certified by Isara Chanrachkij

Cruise No.35-3/2010		Name of Vessel				Air temp: NA °C
Survey station No :St04		M.V. SEAFDEC 2				Air pressure: NA mbar
Date: 7-July-2010						Humidity : NA %
Moon age: 25 phase 22%		Start Luring		Finish Luring		Water
Wind		Time	1900	Time	2330	Surface temp: NA °C
Spd (kt)	Direction	Start Jigging		Finish Jigging		100 m. temp : NA °C
NA	NA	Time	2000	Time	2330	Thermocline : NA
Weather condition: NA		Latitude	07° 37'.70 N	Latitude	07° 37'.90 N	Current
No. of Jig		Longitude	115° 36'.20 E	Longitude	115° 34'.60	Depth
M1: 50	M2: 50	Total jigging time: 3.30 hrs				5
M3: 50	M4: 50	Memorandum:				100
Total 200 jigs		Sea depth : 263 m				200
Angling depth 100/150		Operation performed without sea anchor				Total catch by weight: NA
ICTD data file		Jinging line of M1/M2 and M3/M4 were tangled together due to strong wind				Total catch by Individual : NA
						Target species: NA

SQUID JIGGING FISHING LOGSHEET
Operation No.5



Recorded by Sayan Promjinda
Certified by Isara Chanrachkij

Cruise No.35-3/2010		Name of Vessel				Air temp: NA °C
Survey station No :St06		M.V. SEAFDEC 2				Air pressure: NA mbar
Date: 9-July-2010						Humidity : NA %
Moon age: 27 phase 07%		Start Luring		Finish Luring		Water
Wind		Time	1915	Time	2300	Surface temp: NA °C
Spd (kt)	Direction	Start Jigging		Finish Jigging		100 m. temp : NA °C
NA	NA	Time	2000	Time	2300	Thermocline : NA
Weather condition: NA		Latitude	06° 29'.90 N	Latitude	06° 31'.60 N	Current
No. of Jig		Longitude	115° 22'.40 E	Longitude	115° 26'.10	Depth
M1: 50	M2: 50	Total jigging time: 3 hrs				5
M3: 50	M4: 50	Memorandum:				100
Total 200 jigs		Sea depth : 414 m				200
Angling depth 150		Operation performed with sea anchor				Total catch by weight: NA
ICTD data file		School of Dolphins swim around the vessel				Total catch by Individual : NA
						Target species: NA

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpong Ache, Perak State, Malaysia. [Email: rosidi@seafdec.org.my](mailto:rosidi@seafdec.org.my)

SQUID JIGGING FISHING LOGSHEET
Operation No.6

Recorded by Sayan Promjinda
Certified by Isara Chanrachkij

Cruise No.35-3/2010		Name of Vessel				Air temp: NA °C
Survey station No :St08		M.V. SEAFDEC 2				Air pressure: NA mbar
Date: 11-July-2010						Humidity : NA %
Moon age: 29 phase 00%		Start Luring		Finish Luring		Water
Wind		Time	19045	Time	2230	Surface temp: NA °C
Spd (kt)	Direction	Start Jigging		Finish Jigging		100 m. temp : NA °C
NA	NA	Time	2030	Time	2230	Thermocline : NA
Weather condition: NA		Latitude	07° 37'.70 N	Latitude	07° 37'.90 N	Current
No. of Jig		Longitude	115° 36'.20 E	Longitude	115° 34'.60	Depth
M1: 50	M2: 50	Total jigging time: 2 hrs				5
M3: 50	M4: 50	Memorandum:				100
Total 200 jigs		Sea depth : 437 m				200
Angling depth		Operation performed with sea anchor				Total catch by weight: NA
150		M2 : was started on 21:00, M1/M2 were finished				Total catch by Individual : NA
ICTD data file		on 22:30				Target species: NA
-		M3/M4 were finished on 22:00				

SQUID JIGGING FISHING LOGSHEET
Operation No.7

Recorded by Sayan Promjinda
Certified by Isara Chanrachkij

Cruise No.35-3/2010		Name of Vessel				Air temp: NA °C
Survey station No :St09		M.V. SEAFDEC 2				Air pressure: NA mbar
Date: 12-July-2010						Humidity : NA %
Moon age: 01 phase 01%		Start Luring		Finish Luring		Water
Wind		Time	1930	Time	2243	Surface temp: NA °C
Spd (kt)	Direction	Start Jigging		Finish Jigging		100 m. temp : NA °C
NA	NA	Time	2000	Time	2230	Thermocline : NA
Weather condition: NA		Latitude	06° 43'.60 N	Latitude	06° 43'.60 N	Current
No. of Jig		Longitude	115° 30'.20 E	Longitude	115° 31'.20	Depth
M1: 50	M2: 50	Total jigging time: 2.3 hrs				5
M3: 50	M4: 50	Memorandum:				100
Total 200 jigs		Sea depth : 380 m				200
Angling depth		Operation performed with sea anchor				Total catch by weight: NA
150						Total catch by Individual : NA
ICTD data file						Target species: NA
-						

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpong Ache, Perak State, Malaysia. [Email: rosidi@seafdec.org.my](mailto:rosidi@seafdec.org.my)

SQUID JIGGING FISHING LOGSHEET
Operation No.8



Recorded by Sayan Promjinda
Certified by Isara Chanrachkij

Cruise No.35-3/2010		Name of Vessel				Air temp: NA °C
Survey station No :St13		M.V. SEAFDEC 2				Air pressure: NA mbar
Date: 18-July-2010						Humidity : NA %
Moon age: 7 phase 51%		Start Luring		Finish Luring		Water
Wind		Time	1900	Time	2140	Surface temp: NA °C
Spd (kt)	Direction	Start Jigging		Finish Jigging		100 m. temp : NA °C
NA	NA	Time	2000	Time	2130	Thermocline : NA
Weather condition: NA		Latitude	06° 06'.50 N	Latitude	06° 06'.80 N	Current
No. of Jig		Longitude	110° 53'.70 E	Longitude	110° 53'.70	Depth
M1: 50	M2: 50	Total jigging time: 1.30 hrs				10
M3: 50	M4: 50	Memorandum:				50
Total 200 jigs		Sea depth : 250 m				150
Angling depth		Operation performed with sea anchor				Total catch by weight: NA
150						Total catch by Individual : NA
ICTD data file						Target species: NA
-						

SQUID JIGGING FISHING LOGSHEET
Operation No.9

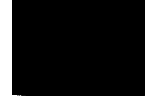


Recorded by Sayan Promjinda
Certified by Isara Chanrachkij

Cruise No.35-3/2010		Name of Vessel				Air temp: NA °C
Survey station No :St14		M.V. SEAFDEC 2				Air pressure: NA mbar
Date: 19-July-2010						Humidity : NA %
Moon age: 8 phase 62%		Start Luring		Finish Luring		Water
Wind		Time	1900	Time	2200	Surface temp: NA °C
Spd (kt)	Direction	Start Jigging		Finish Jigging		100 m. temp : NA °C
NA	NA	Time	2000	Time	2200	Thermocline : NA
Weather condition: NA		Latitude	05° 14'.30 N	Latitude	05° 14'.30 N	Current
No. of Jig		Longitude	112° 46'.50 E	Longitude	112° 47'.00	Depth
M1: 50	M2: 50	Total jigging time: 2.0 hrs				10
M3: 50	M4: 50	Memorandum:				50
Total 200 jigs		Sea depth : 137 m				150
Angling depth		Operation performed with sea anchor				Total catch by weight: NA
100						Total catch by Individual : NA
ICTD data file						Target species: NA
-						

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpong Ache, Perak State, Malaysia. [Email: rosidi@seafdec.org.my](mailto:rosidi@seafdec.org.my)

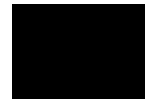
SQUID JIGGING FISHING LOGSHEET
Operation No.10



Recorded by Sayan Promjinda
Certified by Isara Chanrachkij

Cruise No.35-3/2010		Name of Vessel				Air temp: NA °C
Survey station No :St16		M.V. SEAFDEC 2				Air pressure: NA mbar
Date: 20-July-2010						Humidity : NA %
Moon age: 9 phase 72%		Start Luring		Finish Luring		Water
Wind		Time	1900	Time	2200	Surface temp: NA °C
Spd (kt)	Direction	Start Jigging		Finish Jigging		100 m. temp : NA °C
NA	NA	Time	2000	Time	2200	Thermocline : NA
Weather condition: NA		Latitude	05° 49'.00 N	Latitude	05° 49'.90 N	Current
No. of Jig		Longitude	112° 13'.50 E	Longitude	112° 13'.90	Depth
M1: 50	M2: 50	Total jigging time: 2.0 hrs				10
M3: 50	M4: 50	Memorandum:				50
Total 200 jigs		Sea depth : 544 m				150
Angling depth		Operation performed with sea anchor				Total catch by weight: NA
100						Total catch by Individual : NA
ICTD data file						Target species: NA
-						

SQUID JIGGING FISHING LOGSHEET
Operation No.11



Recorded by Sayan Promjinda
Certified by Isara Chanrachkij

Cruise No.35-3/2010		Name of Vessel				Air temp: NA °C
Survey station No :St26		M.V. SEAFDEC 2				Air pressure: NA mbar
Date: 21-July-2010						Humidity : NA %
Moon age: 10 phase 81%		Start Luring		Finish Luring		Water
Wind		Time	2000	Time	2230	Surface temp: NA °C
Spd (kt)	Direction	Start Jigging		Finish Jigging		100 m. temp : NA °C
NA	NA	Time	2000	Time	2230	Thermocline : NA
Weather condition: NA		Latitude	05° 59'.70 N	Latitude	06° 00'.90 N	Current
No. of Jig		Longitude	111° 56'.90 E	Longitude	111° 57'.70	Depth
M1: 50	M2: 50	Total jigging time: 2.0 hrs				10
M3: 50	M4: 50	Memorandum:				50
Total 200 jigs		Sea depth : 1500 m.				150
Angling depth		Operation performed with sea anchor				Total catch by weight: NA
100						Total catch by Individual : NA
ICTD data file						Target species: NA
-						

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpong Ache, Perak State, Malaysia. Email: rosidi@seafdec.org.my

SQUID JIGGING FISHING LOGSHEET
Operation No.12

Recorded by Sayan Promjinda
Certified by Isara Chanrachkij

Cruise No.35-3/2010		Name of Vessel				Air temp: NA °C
Survey station No :St24		M.V. SEAFDEC 2				Air pressure: NA mbar
Date: 30-July-2010						Humidity : NA %
Moon age: 19 phase 83%		Start Luring		Finish Luring		Water
Wind		Time	1900	Time	2200	Surface temp: NA °C
Spd (kt)	Direction	Start Jigging		Finish Jigging		100 m. temp : NA °C
NA	NA	Time	2000	Time	2200	Thermocline : NA
Weather condition: NA		Latitude	06° 06'.50 N	Latitude	06° 06'.80 N	Current
No. of Jig		Longitude	110° 53'.70 E	Longitude	110° 53'.70	Depth
M1: 50	M2: 50	Total jigging time: 2 hrs				10
M3: 50	M4: 50	Memorandum:				50
Total 200 jigs		Sea depth : 1318 m				150
Angling depth		Operation performed with sea anchor				Total catch by weight: NA
150						Total catch by Individual : NA
ICTD data file						Target species: NA
-						

SQUID JIGGING FISHING LOGSHEET
Operation No.13

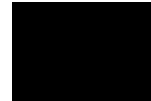
Recorded by Sayan Promjinda
Certified by Isara Chanrachkij

Cruise No.35-3/2010		Name of Vessel				Air temp: NA °C
Survey station No :St22		M.V. SEAFDEC 2				Air pressure: NA mbar
Date: 31-July-2010						Humidity : NA %
Moon age: 20 phase 75%		Start Luring		Finish Luring		Water
Wind		Time	1900	Time	2200	Surface temp: NA °C
Spd (kt)	Direction	Start Jigging		Finish Jigging		100 m. temp : NA °C
NA	NA	Time	2000	Time	2200	Thermocline : NA
Weather condition: NA		Latitude	06° 30'.10 N	Latitude	06° 30'.30 N	Current
No. of Jig		Longitude	110° 31'.40 E	Longitude	110° 32'.20	Depth
M1: 50	M2: 50	Total jigging time: 2 hrs				10
M3: 50	M4: 50	Memorandum:				50
Total 200 jigs		Sea depth : 1396 m.				150
Angling depth		Operation performed with sea anchor				Total catch by weight: NA
150						Total catch by Individual : NA
ICTD data file						Target species: NA
-						

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpong Ache, Perak State, Malaysia. [Email: rosidi@seafdec.org.my](mailto:rosidi@seafdec.org.my)

SQUID JIGGING FISHING LOGSHEET

Operation No.14

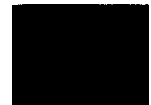


Recorded by Sayan Promjinda
 Certified by Isara Chanrachkij

Cruise No.35-3/2010		Name of Vessel				Air temp:	NA	°C
Survey station No :St20		M.V. SEAFDEC 2				Air pressure:	NA	mbar
Date: 1-August-2010						Humidity :	NA	%
Moon age: 21 phase 67%		Start Luring		Finish Luring		Water		
Wind		Time	1900	Time	2200	Surface temp:	NA	°C
Spd (kt)	Direction	Start Jigging		Finish Jigging		100 m. temp :	NA	°C
NA	NA	Time	2000	Time	2200	Thermocline :	NA	
Weather condition: NA		Latitude	05° 34'.10 N	Latitude	06° 34'.20 N	Current		
No. of Jig		Longitude	110° 25'.50 E	Longitude	110° 26'.20	Depth	Spd (kt)	Direction
M1: 50	M2: -	Total jigging time: 2 hrs				10	NA	
M3: -	M4: 50	Memorandum:				50	NA	
Total 100 jigs		Sea depth : 219 m.				150	NA	
Angling depth		Operation performed with sea anchor				Total catch by weight: NA		
150						Total catch by Individual : NA		
ICTD data file						Target species: NA		
-								

SQUID JIGGING FISHING LOGSHEET

Operation No.15



Recorded by Sayan Promjinda
 Certified by Isara Chanrachkij

Cruise No.35-3/2010		Name of Vessel				Air temp:	NA	°C
Survey station No :St21		M.V. SEAFDEC 2				Air pressure:	NA	mbar
Date: 2-August-2010						Humidity :	NA	%
Moon age: 22 phase 57%		Start Luring		Finish Luring		Water		
Wind		Time	2020	Time	2200	Surface temp:	NA	°C
Spd (kt)	Direction	Start Jigging		Finish Jigging		100 m. temp :	NA	°C
NA	NA	Time	2100	Time	2200	Thermocline :	NA	
Weather condition: NA		Latitude	05° 23'.90 N	Latitude	05° 23'.90 N	Current		
No. of Jig		Longitude	111° 02'.40 E	Longitude	111° 03'.10	Depth	Spd (kt)	Direction
M1: 50	M2: 50	Total jigging time: 1 hrs				10	NA	
M3: -	M4:	Memorandum:				50	NA	
Total 100 jigs		Sea depth : 184 m				150	NA	
Angling depth		Operation performed without sea anchor				Total catch by weight: NA		
150						Total catch by Individual : NA		
ICTD data file						Target species: NA		
-								

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpong Ache, Perak State, Malaysia. [Email: rosidi@seafdec.org.my](mailto:rosidi@seafdec.org.my)

Appendix 1.3 Beam trawl fishing log

BEAM TRAWL FISHING LOGSHEET
Operation No.1



Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise no: 35-5 /2010		Name of Vessel				Air		
Survey station No.07		M.V. SEAFDEC 2				Air temp:	NA	°C
Date: 11-July-2010		Start shooting		Finish shooting		Air pressure:	NA	mbar
Moon age:29 phase: 0%		Time	0654	Time	0702	Humidity :	NA	%
Wind		Water						
Speed (Kt)	Direction	Latitude	07_30.30 N	Latitude	07_29.80 N	Surface temp:	NA	°C
NA	NA	Longitude	116_31.30 E	Longitude	116_31.30 E	100 m. temp :	NA	°C
Weather condition		Start hauling		Finish hauling		Transparency NA (m)		
NA		Time	0758	Time	0824	Current		
Sea condition : NA		Latitude	07_27.80 N	Latitude	07_27.90 N	Depth (m)	Spd (kt)	Direction
Vessel		Longitude	116_30.00 E	Longitude	116_29.50 E	50	NA	
Eng. Mode: Trawl		Fishing gear				100	NA	
Speed (kt): 2.8		Type of trawl: Beam trawl				200	NA	
RPM: 880		Towing time: 56 minute		Towing distance(nm): 2.4		Depth of capture (m) 200-130		
Pitch: 5		Warp angle: P/56		Warp length (m): 500 m		Type of bottom Muddy		
Towing direction: 180°		Net spread (m): 4		Net opening (m): 0.8		Total catch (kg)		

→ 2°

N/R: Not be recorded

No.	Species	Number	Weight (kg)	Remark
	Correspondence person			NA: Not available
	Rosidi Ali, Fishereis Research Institute			
	(DOF), Kumpong Ache, Perak State, Malaysia			
	Email: rosidi@seafdec.org.my			

BEAM TRAWL FISHING LOGSHEET Operation No.2

Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise no: 35-5 /2010		Name of Vessel				Air		
Survey station No.07		M.V. SEAFDEC 2				Air temp:	NA	°C
Date: 11-July-2010						Air pressure:	NA	mbar
Moon age:29 phase: 0%		Start shooting		Finish shooting		Humidity :	NA	%
Wind		Time	0838	Time	0853	Water		
Speed (Kt)	Direction	Latitude	07_29.10 N	Latitude	07_28.80 N	Surface temp:	NA	°C
NA	NA	Longitude	116_28.80 E	Longitude	116_28.10 E	100 m. temp :	NA	°C
Weather condition		Start hauling		Finish hauling		Transparency	NA	(m)
NA		Time	0953	Time	1020	Current		
Sea condition : NA		Latitude	07_26.90 N	Latitude	07_26.80 N	Depth (m)	Spd (kt)	Direction
Vessel		Longitude	116_25.30 E	Longitude	116_24.30 E	50	NA	
Eng. Mode: Trawl		Fishing gear				100	NA	
Speed (kt): 3.0		Type of trawl: Beam trawl				200	NA	
RPM: 920		Towing time: 60 minute		Towing distance(nm): 3.4		Depth of capture (m) 239-234		
Pitch: 6		Warp angle: P/55		Warp length (m): 600 m		Type of bottom Muddy		
Towing direction: 235°		Net spread (m): 4		Net opening (m): 0.8		Total catch (kg)		

BEAM TRAWL FISHING LOGSHEET Operation No.3

Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise no: 35-5 /2010		Name of Vessel				Air		
Survey station No.07		M.V. SEAFDEC 2				Air temp:	NA	°C
Date: 11-July-2010						Air pressure:	NA	mbar
Moon age:29 phase: 0%		Start shooting		Finish shooting		Humidity :	NA	%
Wind		Time	1100	Time	1113	Water		
Speed (Kt)	Direction	Latitude	07_29.60 N	Latitude	07_28.90 N	Surface temp:	NA	°C
NA	NA	Longitude	116_26.50 E	Longitude	116_25.80 E	100 m. temp :	NA	°C
Weather condition		Start hauling		Finish hauling		Transparency	NA	(m)
NA		Time	1202	Time	1220	Current		
Sea condition : NA		Latitude	07_27.20 N	Latitude	07_26.90 N	Depth (m)	Spd (kt)	Direction
Vessel		Longitude	116_24.40 E	Longitude	116_23.90 E	50	NA	
Eng. Mode: Trawl		Fishing gear				100	NA	
Speed (kt): 3.0		Type of trawl: Beam trawl				200	NA	
RPM: 910		Towing time: 49 minute		Towing distance(nm): 2.2		Depth of capture (m) 322-380		
Pitch: 5		Warp angle: P/61		Warp length (m): 800 m		Type of bottom Muddy		
Towing direction: 216°		Net spread (m): 4		Net opening (m): 0.8		Total catch (kg)		

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpong Ache, Perak State, Malaysia. [Email: rosidi@seafdec.org.my](mailto:rosidi@seafdec.org.my)

BEAM TRAWL FISHING LOGSHEET
Operation No.4



Recorded by Sayan Promjinda
Certified by Isara Chanrachkij

Cruise no: 35-5 /2010		Name of Vessel				Air		
Survey station No.08		M.V. SEAFDEC 2				Air temp:	NA	°C
Date: 11-July-2010						Air pressure:	NA	mbar
Moon age:29 phase: 0%		Start shooting		Finish shooting		Humidity :	NA	%
Wind		Time	1515	Time	1530	Water		
Speed (Kt)	Direction	Latitude	07_13.70 N	Latitude	07_13.10 N	Surface temp:	NA	°C
NA	NA	Longitude	116_09.20 E	Longitude	116_08.30 E	100 m. temp :	NA	°C
Weather condition		Start hauling		Finish hauling		Transparency	NA	(m)
NA		Time	1630	Time	1647	Current		
Sea condition : NA		Latitude	07_11.10 N	Latitude	07_10.90 N	Depth (m)	Spd (kt)	Direction
Vessel		Longitude	116_05.60 E	Longitude	116_05.10 E	50	NA	
Eng. Mode: Trawl		Fishing gear				100	NA	
Speed (kt): 3.5		Type of trawl: Beam trawl				200	NA	
RPM: 920		Towing time: 60 minute		Towing distance(nm): 3.3		Depth of capture (m)		326-343
Pitch: 5		Warp angle: P/68		Warp length (m): 800 m		Type of bottom		Muddy
Towing direction: 230°		Net spread (m): 4		Net opening (m): 0.8		Total catch (kg)		

BEAM TRAWL FISHING LOGSHEET
Operation No.5



Recorded by Sayan Promjinda
Certified by Isara Chanrachkij

Cruise no: 35-5 /2010		Name of Vessel				Air		
Survey station No.08		M.V. SEAFDEC 2				Air temp:	NA	°C
Date: 11-July-2010						Air pressure:	NA	mbar
Moon age:29 phase: 0%		Start shooting		Finish shooting		Humidity :	NA	%
Wind		Time	1720	Time	1732	Water		
Speed (Kt)	Direction	Latitude	07_11.00 N	Latitude	07_11.50 N	Surface temp:	NA	°C
NA	NA	Longitude	116_09.90 E	Longitude	116_10.30 E	100 m. temp :	NA	°C
Weather condition		Start hauling		Finish hauling		Transparency	NA	(m)
NA		Time	1832	Time	1851	Current		
Sea condition : NA		Latitude	07_13.20 N	Latitude	07_13.80 N	Depth (m)	Spd (kt)	Direction
Vessel		Longitude	116_11.90 E	Longitude	116_11.70 E	50	NA	
Eng. Mode: Trawl		Fishing gear				100	NA	
Speed (kt): 2.5		Type of trawl: Beam trawl				200	NA	
RPM: 920		Towing time: 60 minute		Towing distance(nm): 2.3		Depth of capture (m)		230-250
Pitch: 5		Warp angle: P/65		Warp length (m): 650 m		Type of bottom		Muddy
Towing direction: 042°		Net spread (m): 4		Net opening (m): 0.8		Total catch (kg)		

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpong Ache, Perak State, Malaysia. [Email: rosidi@seafdec.org.my](mailto:rosidi@seafdec.org.my)

BEAM TRAWL FISHING LOGSHEET
Operation No.6 (for BT Op.4)



Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise no: 35-5 /2010		Name of Vessel				Air		
Survey station No.08		M.V. SEAFDEC 2				Air temp:	NA	°C
Date: 12-July-2010						Air pressure:	NA	mbar
Moon age:01 phase: 1%		Start shooting		Finish shooting		Humidity :	NA	%
Wind		Time	0550	Time	0607	Water		
Speed (Kt)	Direction	Latitude	07_10.40 N	Latitude	07_11.10 N	Surface temp:	NA	°C
NA	NA	Longitude	116_04.40 E	Longitude	116_05.00 E	100 m. temp :	NA	°C
Weather condition		Start hauling		Finish hauling		Transparency	NA	(m)
NA		Time	0707	Time	0743	Current		
Sea condition : NA		Latitude	07_12.30 N	Latitude	07_13.00 N	Depth (m)	Spd (kt)	Direction
Vessel		Longitude	116_07.20 E	Longitude	116_06.80 E	50	NA	
Eng. Mode: Trawl		Fishing gear				100	NA	
Speed (kt): 2.5		Type of trawl: Beam trawl				200	NA	
RPM: 920		Towing time: 60 minute		Towing distance(nm): 2.5		Depth of capture (m)		348-386
Pitch: 5		Warp angle: P/60		Warp length (m): 950 m		Type of bottom		Muddy
Towing direction: 057°		Net spread (m): 4		Net opening (m): 0.8		Total catch (kg)		

BEAM TRAWL FISHING LOGSHEET
Operation No.7



Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise no: 35-5 /2010		Name of Vessel				Air		
Survey station No.08		M.V. SEAFDEC 2				Air temp:	NA	°C
Date: 12-July-2010						Air pressure:	NA	mbar
Moon age:01 phase: 1%		Start shooting		Finish shooting		Humidity :	NA	%
Wind		Time	0750	Time	0805	Water		
Speed (Kt)	Direction	Latitude	07_13.10 N	Latitude	07_12.80 N	Surface temp:	NA	°C
NA	NA	Longitude	116_06.70 E	Longitude	116_05.80 E	100 m. temp :	NA	°C
Weather condition		Start hauling		Finish hauling		Transparency	NA	(m)
NA		Time	0900	Time	0918	Current		
Sea condition : NA		Latitude	07_11.60 N	Latitude	07_11.70 N	Depth (m)	Spd (kt)	Direction
Vessel		Longitude	116_03.50 E	Longitude	116_03.00 E	50	NA	
Eng. Mode: Trawl		Fishing gear				100	NA	
Speed (kt): 2.9		Type of trawl: Beam trawl				200	NA	
RPM: 920		Towing time: 55 minute		Towing distance(nm): 2.6		Depth of capture (m)		390-411
Pitch: 5		Warp angle: P/65		Warp length (m): 1,100 m		Type of bottom		Muddy
Towing direction: 252°		Net spread (m): 4		Net opening (m): 0.8		Total catch (kg)		

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpong Ache, Perak State, Malaysia. [Email: rosidi@seafdec.org.my](mailto:rosidi@seafdec.org.my)

BEAM TRAWL FISHING LOGSHEET Operation No.8

Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise no: 35-5 /2010		Name of Vessel				Air		
Survey station No.09		M.V. SEAFDEC 2				Air temp:	NA	°C
Date: 12-July-2010						Air pressure:	NA	mbar
Moon age:01 phase: 1%		Start shooting		Finish shooting		Humidity :	NA	%
Wind		Time	1432	Time	1508	Water		
Speed (Kt)	Direction	Latitude	06_44.10 N	Latitude	06_44.30 N	Surface temp:	NA	°C
NA	NA	Longitude	115_30.70 E	Longitude	115_31.80 E	100 m. temp :	NA	°C
Weather condition		Start hauling		Finish hauling		Transparency	NA	(m)
NA		Time	1608	Time	1627	Current		
Sea condition : NA		Latitude	06_45.60 N	Latitude	06_45.80 N	Depth (m)	Spd (kt)	Direction
Vessel		Longitude	115_34.10 E	Longitude	115_34.40 E	50	NA	
Eng. Mode: Trawl		Fishing gear				100	NA	
Speed (kt): 2.5		Type of trawl: Beam trawl				200	NA	
RPM: 900		Towing time: 60 minute		Towing distance(nm): 2.6		Depth of capture (m)		485-305
Pitch: 5		Warp angle: P/65		Warp length (m): 900 m		Type of bottom		Muddy
Towing direction: 060°		Net spread (m): 4		Net opening (m): 0.8		Total catch (kg)		
Operation trouble: beam frame is turn over								

BEAM TRAWL FISHING LOGSHEET Operation No.9

Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise no: 35-5 /2010		Name of Vessel				Air		
Survey station No.09		M.V. SEAFDEC 2				Air temp:	NA	°C
Date: 12-July-2010						Air pressure:	NA	mbar
Moon age:01 phase: 1%		Start shooting		Finish shooting		Humidity :	NA	%
Wind		Time	1635	Time	1645	Water		
Speed (Kt)	Direction	Latitude	06_45.80 N	Latitude	06_45.80 N	Surface temp:	NA	°C
NA	NA	Longitude	115_34.80 E	Longitude	115_35.50 E	100 m. temp :	NA	°C
Weather condition		Start hauling		Finish hauling		Transparency	NA	(m)
NA		Time	1745	Time	1758	Current		
Sea condition : NA		Latitude	06_45.80 N	Latitude	06_45.70 N	Depth (m)	Spd (kt)	Direction
Vessel		Longitude	115_37.90 E	Longitude	115_37.90 E	50	NA	
Eng. Mode: Trawl		Fishing gear				100	NA	
Speed (kt): 2.5		Type of trawl: Beam trawl				200	NA	
RPM: 900		Towing time: 60 minute		Towing distance(nm): 2.4		Depth of capture (m)		296-252
Pitch: 5		Warp angle: P/65		Warp length (m): 750 m		Type of bottom		Muddy
Towing direction: 090°		Net spread (m): 4		Net opening (m): 0.8		Total catch (kg)		

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpong Ache, Perak State, Malaysia. Email: rosidi@seafdec.org.my

BEAM TRAWL FISHING LOGSHEET
Operation No.10



Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise no: 35-5 /2010 Survey station No.09 Date: 13-July-2010 Moon age:02 phase: 4%	Name of Vessel				Air		
	M.V. SEAFDEC 2				Air temp:	NA	°C
					Air pressure:	NA	mbar
	Start shooting		Finish shooting		Humidity :		
	Time	0604	Time	0617	Water		
Wind	Speed (Kt)	Direction	Latitude	06_46.70 N	Latitude	06_45.70 N	Surface temp:
NA	NA	NA	Longitude	100_30.90 E	Longitude	115_30.90 E	100 m. temp :
Weather condition	Start hauling		Finish hauling		Transparency		
NA	Time	0705	Time	0735	Current		
Sea condition : NA	Latitude	06_43.90 N	Latitude	06_44.20 N	Depth (m)	Spd (kt)	Direction
Vessel	Longitude	115_30.40 E	Longitude	115_29.90 E	50	NA	
Eng. Mode: Trawl	Fishing gear				100	NA	
Speed (kt): 2.5	Type of trawl: Beam trawl				200	NA	
RPM: 890	Towing time: 48 minute		Towing distance(nm): 1.9		Depth of capture (m) 405-530		
Pitch: 5	Warp angle: P/64		Warp length (m): 1,200 m		Type of bottom Muddy		
Towing direction: 190°	Net spread (m): 4		Net opening (m): 0.8		Total catch (kg)		
Vessel is turn to maintain the depth substratum							

BEAM TRAWL FISHING LOGSHEET
Operation No.11



Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise no: 35-3 /2010 Survey station No.10 Date: 16-July-2010 Moon age:05 phase: 29%	Name of Vessel				Air		
	M.V. SEAFDEC 2				Air temp:	NA	°C
					Air pressure:	NA	mbar
	Start shooting		Finish shooting		Humidity :		
	Time	0705	Time	0718	Water		
Wind	Speed (Kt)	Direction	Latitude	06_00.90 N	Latitude	06_00.50 N	Surface temp:
NA	NA	NA	Longitude	114_55.50 E	Longitude	114_54.90 E	100 m. temp :
Weather condition	Start hauling		Finish hauling		Transparency		
NA	Time	0818	Time	0840	Current		
Sea condition : NA	Latitude	05_59.00 N	Latitude	05_58.90 N	Depth (m)	Spd (kt)	Direction
Vessel	Longitude	114_52.90 E	Longitude	114_52.60 E	10	NA	
Eng. Mode: Trawl mode	Fishing gear				50	NA	
Speed (kt): 2.5	Type of trawl: Beam trawl				150	NA	
RPM: 890	Towing time: 60 minute		Towing distance(nm): 2.5		Depth of capture (m) 225-271		
Pitch: 5	Warp angle: P/63		Warp length (m): 700 m		Type of bottom Muddy		
Towing direction: 230°	Net spread (m): 4		Net opening (m): 0.8		Total catch (kg)		

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpong Ache, Perak State, Malaysia. [Email: rosidi@seafdec.org.my](mailto:rosidi@seafdec.org.my)

**BEAM TRAWL FISHING LOGSHEET
Operation No.12**



Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise no: 35-3 /2010		Name of Vessel				Air		
Survey station No.10		M.V. SEAFDEC 2				Air temp:	NA	°C
Date: 16-July-2010		Start shooting		Finish shooting		Air pressure:	NA	mbar
Moon age:05 phase: 29%		Time 0850		Time 0900		Humidity :	NA	%
Wind		Time		Time		Water		
Speed (Kt)	Direction	Latitude	05_58.60 N	Latitude	05_59.20 N	Surface temp:	NA	°C
NA	NA	Longitude	114_51.20 E	Longitude	114_51.80 E	100 m. temp :	NA	°C
Weather condition		Start hauling		Finish hauling		Transparency NA (m)		
NA		Time 1000		Time 1018		Current		
Sea condition : NA		Latitude	06_00.70 N	Latitude	06_00.70 N	Depth (m)	Spd (kt)	Direction
Vessel		Longitude	114_53.60 E	Longitude	114_54.00 E	10	NA	
Eng. Mode: Trawl mode		Fishing gear				50	NA	
Speed (kt): 2.5		Type of trawl: Beam trawl				150	NA	
RPM: 890		Towing time: 60 minute		Towing distance(nm): 2.3		Depth of capture (m) 310-386		
Pitch: 5		Warp angle: P/56		Warp length (m): 900 m		Type of bottom Muddy		
Towing direction: 045°		Net spread (m): 4		Net opening (m): 0.8		Total catch (kg)		

**BEAM TRAWL FISHING LOGSHEET
Operation No.13**



Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise no: 35-3 /2010		Name of Vessel				Air		
Survey station No.10		M.V. SEAFDEC 2				Air temp:	NA	°C
Date: 16-July-2010		Start shooting		Finish shooting		Air pressure:	NA	mbar
Moon age:05 phase: 29%		Time 1037		Time 1047		Humidity :	NA	%
Wind		Time		Time		Water		
Speed (Kt)	Direction	Latitude	06_01.50 N	Latitude	06_01.00 N	Surface temp:	NA	°C
NA	NA	Longitude	114_53.60 E	Longitude	114_52.90 E	100 m. temp :	NA	°C
Weather condition		Start hauling		Finish hauling		Transparency NA (m)		
NA		Time 1147		Time 1205		Current		
Sea condition : NA		Latitude	05_59.90 N	Latitude	06_00.10 N	Depth (m)	Spd (kt)	Direction
Vessel		Longitude	114_50.80 E	Longitude	114_50.40 E	10	NA	
Eng. Mode: Trawl mode		Fishing gear				50	NA	
Speed (kt): 2.5		Type of trawl: Beam trawl				150	NA	
RPM: 890		Towing time: 60 minute		Towing distance(nm): 2.4		Depth of capture (m) 475-509		
Pitch: 5		Warp angle: P/63		Warp length (m): 1,100 m		Type of bottom Muddy		
Towing direction: 235°		Net spread (m): 4		Net opening (m): 0.8		Total catch (kg) 12.51		

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpong Ache, Perak State, Malaysia. [Email: rosidi@seafdec.org.my](mailto:rosidi@seafdec.org.my)

BEAM TRAWL FISHING LOGSHEET Operation No.14



Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise no: 35-3 /2010		Name of Vessel				Air		
Survey station No.12		M.V. SEAFDEC 2				Air temp:	NA	°C
Date: 18-July-2010		Start shooting		Finish shooting		Air pressure:	NA	mbar
Moon age:07 phase: 51%		Time		Time		Humidity :	NA	%
Wind		0715		0725		Water		
Speed (Kt)	Direction	Latitude	05_00.70 N	Latitude	05_00.30 N	Surface temp:	NA	°C
NA	NA	Longitude	113_22.40 E	Longitude	113_22.40 E	100 m. temp :	NA	°C
Weather condition		Start hauling		Finish hauling		Transparency	NA	(m)
NA		Time		Time		Current		
Sea condition : NA		0825		0837		Depth (m)	Spd (kt)	Direction
Vessel		Latitude		Latitude		10	NA	
Eng. Mode: Trawl mode		Longitude		Longitude		50		
Speed (kt): 2.5		113_24.70 E		113_25.20 E		150		
RPM: 910		Fishing gear				NA		
Pitch: 5		Type of trawl: Beam trawl				NA		
Towing direction: 155°-100°		Towing time: 60 minute		Towing distance(nm): 2.3		Depth of capture (m) 306-260		
		Warp angle: P/55		Warp length (m): 650 m		Type of bottom Muddy		
		Net spread (m): 4		Net opening (m): 0.8		Total catch (kg)		

BEAM TRAWL FISHING LOGSHEET Operation No.15



Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise no: 35-3 /2010		Name of Vessel				Air		
Survey station No.12		M.V. SEAFDEC 2				Air temp:	NA	°C
Date: 18-July-2010		Start shooting		Finish shooting		Air pressure:	NA	mbar
Moon age:07 phase: 51%		Time		Time		Humidity :	NA	%
Wind		0855		0905		Water		
Speed (Kt)	Direction	Latitude	05_00.30 N	Latitude	05_00.50 N	Surface temp:	NA	°C
NA	NA	Longitude	113_25.60 E	Longitude	113_25.00 E	100 m. temp :	NA	°C
Weather condition		Start hauling		Finish hauling		Transparency	NA	(m)
NA		Time		Time		Current		
Sea condition : NA		1005		1022		Depth (m)	Spd (kt)	Direction
Vessel		Latitude		Latitude		10	NA	
Eng. Mode: Trawl mode		Longitude		Longitude		50		
Speed (kt): 2.0		113_22.90 E		113_23.10 E		150		
RPM: 910		Fishing gear				NA		
Pitch: 5		Type of trawl: Beam trawl				NA		
Towing direction: 280°		Towing time: 60 minute		Towing distance(nm): 2.2		Depth of capture (m) 326-336		
		Warp angle: P/60		Warp length (m): 930 m		Type of bottom Muddy		
		Net spread (m): 4		Net opening (m): 0.8		Total catch (kg)		

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpong Ache, Perak State, Malaysia. Email: rosidi@seafdec.org.my

**BEAM TRAWL FISHING LOGSHEET
Operation No.16**



Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise no: 35-3 /2010		Name of Vessel				Air		
Survey station No.12		M.V. SEAFDEC 2				Air temp:	NA	°C
Date: 18-July-2010		Start shooting		Finish shooting		Air pressure:	NA	mbar
Moon age:07 phase: 51%		Time		Time		Humidity :	NA	%
Wind		1144		1200		Water		
Speed (Kt)	Direction	Latitude	05_03.30 N	Latitude	05_03.10 N	Surface temp:	NA	°C
NA	NA	Longitude	113_23.50 E	Longitude	113_24.30 E	100 m. temp :	NA	°C
Weather condition		Start hauling		Finish hauling		Transparency	NA	(m)
NA		Time		Time		Current		
Sea condition : NA		1300		1317		Depth (m)	Spd (kt)	Direction
Vessel		Latitude		Latitude		10		
Eng. Mode: Trawl mode		05_02.10 N		05_02.10 N		NA		
Fishing gear		Longitude		Longitude		50		
Type of trawl: Beam trawl		113_27.00 E		113_27.20 E		150		
Speed (kt): 2.5		Towing time: 60 minute		Towing distance(nm): 2.9		NA		
RPM: 890		Warp angle: P/63		Warp length (m): 1,100 m		Depth of capture (m) 435-506		
Pitch: 5		Net spread (m): 4		Net opening (m): 0.8		Type of bottom Muddy		
Towing direction: 110°						Total catch (kg)		

BEAM TRAWL FISHING LOGSHEET Operation No.17



Recorded by Sayan Promjinda
Certified by Isara Chanrachkij

Cruise no: 35-3 /2010		Name of Vessel				Air		
Survey station No.13		M.V. SEAFDEC 2				Air temp:	NA	°C
Date: 19-July-2010						Air pressure:	NA	mbar
Moon age:08 phase: 62%		Start shooting		Finish shooting		Humidity :	NA	%
Wind		Time	0604	Time	0614	Water		
Speed (Kt)	Direction	Latitude	05_07.70 N	Latitude	05_07.50 N	Surface temp:	NA	°C
NA	NA	Longitude	113_01.10 E	Longitude	113_00.70 E	100 m. temp :	NA	°C
Weather condition		Start hauling		Finish hauling		Transparency	NA	(m)
NA		Time	0630	Time	0647	Current		
Sea condition : NA		Latitude	05_07.70 N	Latitude	05_08.30 N	Depth (m)	Spd (kt)	Direction
Vessel		Longitude	113_00.20 E	Longitude	113_00.50 E	10	NA	
Eng. Mode: Trawl mode		Fishing gear				50	NA	
Speed (kt): 2.5		Type of trawl: Beam trawl				150	NA	
RPM: 890		Towing time: 16 minute		Towing distance(nm): -		Depth of capture (m) 219-200		
Pitch: 5		Warp angle: P/65		Warp length (m): 700 m		Type of bottom Muddy		
Towing direction: 250°		Net spread (m): 4		Net opening (m): 0.8		Total catch (kg)		
Net was struggled with bottom obstruct, net broken								

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpong Ache, Perak State, Malaysia. [Email: rosidi@seafdec.org.my](mailto:rosidi@seafdec.org.my)

BEAM TRAWL FISHING LOGSHEET Operation No.18



Recorded by Sayan Promjinda
Certified by Isara Chanrachkij

Cruise no: 35-3 /2010		Name of Vessel				Air		
Survey station No.19		M.V. SEAFDEC 2				Air temp:	NA	°C
Date: 3-August-2010						Air pressure:	NA	mbar
Moon age:23 phase: 47%		Start shooting		Finish shooting		Humidity :	NA	%
Wind		Time	1305	Time	1315	Water		
Speed (Kt)	Direction	Latitude	05_23.8 N	Latitude	05_23.80 N	Surface temp:	NA	°C
NA	NA	Longitude	111_00.00 E	Longitude	111_00.50 E	100 m. temp :	NA	°C
Weather condition		Start hauling		Finish hauling		Transparency	NA	(m)
NA		Time	1415	Time	1427	Current		
Sea condition : NA		Latitude	05_24.50 N	Latitude	05_24.80 N	Depth (m)	Spd (kt)	Direction
Vessel		Longitude	111_02.70 E	Longitude	111_02.90 E	10	NA	
Eng. Mode: Trawl mode		Fishing gear				50	NA	
Speed (kt): 2.5		Type of trawl: Beam trawl				150	NA	
RPM: 870		Towing time: 60 minute		Towing distance(nm): 2.3		Depth of capture (m) 231-214		
Pitch: 5		Warp angle: P/65		Warp length (m): 600 m		Type of bottom -		
Towing direction: 090°		Net spread (m): 4		Net opening (m): 0.8		Total catch (kg)		

BEAM TRAWL FISHING LOGSHEET Operation No.19

Recorded by Sayan Promjinda
Certified by Isara Chanrachkij

Cruise no: 35-3 /2010		Name of Vessel				Air		
Survey station No.19		M.V. SEAFDEC 2				Air temp:	NA	°C
Date: 3-August-2010						Air pressure:	NA	mbar
Moon age:23 phase: 47%		Start shooting		Finish shooting		Humidity :	NA	%
Wind		Time	1435	Time	1445	Water		
Speed (Kt)	Direction	Latitude	05_24.8 N	Latitude	05_24.70 N	Surface temp:	NA	°C
NA	NA	Longitude	111_02.80 E	Longitude	111_02.30 E	100 m. temp :	NA	°C
Weather condition		Start hauling		Finish hauling		Transparency	NA	(m)
NA		Time	1545	Time	1558	Current		
Sea condition : NA		Latitude	05_23.90 N	Latitude	05_23.60 N	Depth (m)	Spd (kt)	Direction
Vessel		Longitude	111_00.00 E	Longitude	110_59.80 E	10	NA	
Eng. Mode: Trawl mode		Fishing gear				50	NA	
Speed (kt): 2.5		Type of trawl: Beam trawl				150	NA	
RPM: 900	Towing time: 60 minute		Towing distance(nm): 2.4		Depth of capture (m) 233-240			
Pitch: 5	Warp angle: P/64		Warp length (m): 650 m		Type of bottom -			
Towing direction: 260°		Net spread (m): 4		Net opening (m): 0.8		Total catch (kg)		

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpong Ache, Perak State, Malaysia. Email: rosidi@seafdec.org.my

BEAM TRAWL FISHING LOGSHEET Operation No.20

Recorded by Sayan Promjinda
Certified by Isara Chanrachkij

Cruise no: 35-3 /2010		Name of Vessel				Air		
Survey station No.21		M.V. SEAFDEC 2				Air temp:	NA	°C
Date: 4-August-2010						Air pressure:	NA	mbar
Moon age:24 phase: 37%		Start shooting		Finish shooting		Humidity :	NA	%
Wind		Time	0638	Time	0650	Water		
Speed (Kt)	Direction	Latitude	05_49.1 N	Latitude	05_49.10 N	Surface temp:	NA	°C
NA	NA	Longitude	110_18.60 E	Longitude	110_17.80 E	100 m. temp :	NA	°C
Weather condition		Start hauling		Finish hauling		Transparency	NA	(m)
NA		Time	0748	Time	0805	Current		
Sea condition : NA		Latitude	05_47.80 N	Latitude	05_47.60 N	Depth (m)	Spd (kt)	Direction
Vessel		Longitude	110_16.60 E	Longitude	110_16.30 E	10	NA	
Eng. Mode: Trawl mode		Fishing gear				50	NA	
Speed (kt): 2.5		Type of trawl: Beam trawl				150	NA	
RPM: 900	Towing time: 54 minute		Towing distance(nm): 1.84		Depth of capture (m) 513-414			
Pitch: 5	Warp angle: P/55		Warp length (m): 1,250 m		Type of bottom -			
Towing direction: 270°		Net spread (m): 4		Net opening (m): 0.8		Total catch (kg)		
Net was struggled with bottom obstruct, net broken								

BEAM TRAWL FISHING LOGSHEET Operation No.21



Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise no: 35-3 /2010		Name of Vessel				Air		
Survey station No.20		M.V. SEAFDEC 2				Air temp:	NA	°C
Date: 4-August-2010						Air pressure:	NA	mbar
Moon age:24 phase: 37%		Start shooting		Finish shooting		Humidity :	NA	%
Wind		Time	1138	Time	1152	Water		
Speed (Kt)	Direction	Latitude	05_38.50 N	Latitude	05_38.30 N	Surface temp:	NA	°C
NA	NA	Longitude	110_23.02 E	Longitude	110_22.40 E	100 m. temp :	NA	°C
Weather condition		Start hauling		Finish hauling		Transparency	NA	(m)
NA		Time	1252	Time	1310	Current		
Sea condition : NA		Latitude	05_37.30 N	Latitude	05_36.90 N	Depth (m)	Spd (kt)	Direction
Vessel		Longitude	110_20.10 E	Longitude	110_20.40 E	10	NA	
Eng. Mode: Trawl mode		Fishing gear				50	NA	
Speed (kt): 2.5		Type of trawl: Beam trawl				150	NA	
RPM: 900	Towing time: 60 minute		Towing distance(nm): 2.5		Depth of capture (m)		300-275	
Pitch: 5	Warp angle: P/60		Warp length (m): 850 m		Type of bottom -			
Towing direction: 255°		Net spread (m): 4		Net opening (m): 0.8		Total catch (kg)		
Net was struggled with bottom obstruct, net broken								

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpong Ache, Perak State, Malaysia. [Email: rosidi@seafdec.org.my](mailto:rosidi@seafdec.org.my)

Appendix 1.4 Bottom Vertical Longline fishing log

BOTTOM VERTICAL LONGLINE FISHING LOGSHEET

Operation No. 1

Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise No: 35-3/2010	Name of Vessel				Air temp: NA °C						
Survey station No: 04	M.V.SEAFFDEC 2				Air pressure: NA mbar						
Date: 8-July-2010	Start shooting		Finish shooting		Humidity : NA %						
Moon age: 26 phase 14%	Time		Time		Water						
Wind	0634		0718		Surface temp: NA °C						
Spd (kt)	Direction	Latitude	07°18'.80 N	Latitude	07°20'.80 N	100 m. temp : NA °C					
NA	NA	Longitude	116°17'.10 E	Longitude	116°17'.50 E	Thermocline : NA					
Weather cond: NA	Start hauling		Finish hauling		Current						
Sea condition: NA	Time	1200	Time	1350	Depth	Spd (kt)	Direction				
Gear	Latitude	07°18'.90 N	Latitude	07°20'.60 N	50	NA					
Total hook no: 540	Longitude	116°16'.10 E	Longitude	116°16'.10 E	100	NA					
No. hook/branch line: 6	Memorandum: Sea depth : 315 -331 m Total distance 2 nm Setting course 011° Shooting speed 2.0 knot				200	NA					
Immersion time: 5 hrs 59 min									Total catch in number: NA		
Type of bait: Squid									Total catch in weight: NA		

No.	Species	Number	Weight (kg)	Remarks
	Correspondence person			NA: Not available
	Rosidi Ali, Fishereis Research Institute			
	(DOF), Kumpong Ache, Perak State,			
	Malaysia			
	Email: rosidi@seafdec.org.my			

BOTTOM VERTICAL LONGLINE FISHING LOGSHEET

Operation No. 2

Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise No: 35-3/2010	Name of Vessel				Air temp: NA °C
Survey station No: 05	M.V.SEAFFDEC 2				Air pressure: NA mbar
Date: 9-July-2010					Humidity : NA %
Moon age: 27 phase 7 %	Start shooting		Finish shooting		Water
Wind		Time	0550	Time	0620
Spd (kt)	Direction	Latitude	06°59'.70 N	Latitude	07°00'.00 N
NA	NA	Longitude	115°46'.90 E	Longitude	115°46'.00 E
Weather cond: NA	Start hauling		Finish hauling		Current
Sea condition: NA	Time	0845	Time	1005	Depth
Gear		Latitude	07°00'.30 N	Latitude	07°00'.10 N
Total hook no: 540	Longitude	115°46'.40 E	Longitude	115°47'.00 E	100
No. hook/branch line: 6	Memorandum:				200
Immersion time: 3 hrs. 20 min.	Sea depth : 348 - 375 m				Total catch in number:
Type of bait: Squid	Total distance 0.9 nm Setting course 288°				NA
	Shooting speed 2.6 knot				Total catch in weight:
					NA

BOTTOM VERTICAL LONGLINE FISHING LOGSHEET

Operation No. 3

Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise No: 35-3/2010	Name of Vessel				Air temp: NA °C
Survey station No: 06	M.V.SEAFFDEC 2				Air pressure: NA mbar
Date: 10-July-2010					Humidity : NA %
Moon age: 28 phase 2%	Start shooting		Finish shooting		Water
Wind		Time	0536	Time	0613
Spd (kt)	Direction	Latitude	06°32'.80 N	Latitude	06°34'.10 N
NA	NA	Longitude	115°24'.20 E	Longitude	115°24'.30 E
Weather cond: NA	Start hauling		Finish hauling		Current
Sea condition: NA	Time	0826	Time	0945	Depth
Gear		Latitude	06°34'.10 N	Latitude	06°33'.50 N
Total hook no: 540	Longitude	115°24'.70 E	Longitude	115°24'.70 E	100
No. hook/branch line: 6	Memorandum:				200
Immersion time: 3 hrs.7 min	Sea depth : 414 - 421 m				Total catch in number:
Type of bait: Squid	Total distance 1.3 nm Setting course 005°				NA
	Shooting speed 2.5 knot				Total catch in weight:
					NA

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpong Ache, Perak State, Malaysia. [Email: rosidi@seafdec.org.my](mailto:rosidi@seafdec.org.my)

BOTTOM VERTICAL LONGLINE FISHING LOGSHEET

Operation No. 4

Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise No: 35-3/2010	Name of Vessel				Air temp: NA °C
Survey station No: 11	M.V.SEAFFDEC 2				Air pressure: NA mbar
Date: 17-July-2010					Humidity : NA %
Moon age: 06 phase 40%	Start shooting		Finish shooting		Water
Wind		Time	0548	Time	0627
Spd (kt)	Direction	Latitude	05°45'.80 N	Latitude	05°47'.00 N
NA	NA	Longitude	114°31'.30 E	Longitude	114°32'.40 E
Weather cond: NA	Start hauling		Finish hauling		Current
Sea condition: NA	Time	0845	Time	1000	Depth
Gear		Latitude	05°48'.10 N	Latitude	05°46'.90 N
Total hook no: 648	Longitude	114°30'.50 E	Longitude	114°32'.60 E	50
No. hook/branch line: 6	Memorandum:				150
Immersion time:	Sea depth : 238 - 274 m				Total catch in number:
3 hrs.44 min	Total distance 1.6 nm Setting course 049°-040°				NA
Type of bait:	Shooting speed 2.5 knot				Total catch in weight:
Squid					NA

BOTTOM VERTICAL LONGLINE FISHING LOGSHEET

Operation No. 5

Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise No: 35-3/2010	Name of Vessel				Air temp: NA °C
Survey station No: 14	M.V.SEAFFDEC 2				Air pressure: NA mbar
Date: 20-July-2010					Humidity : NA %
Moon age: 09 phase 72%	Start shooting		Finish shooting		Water
Wind		Time	0554	Time	0634
Spd (kt)	Direction	Latitude	05°17'.70 N	Latitude	05°16'.60 N
NA	NA	Longitude	112°48'.50 E	Longitude	112°49'.50 E
Weather cond: NA	Start hauling		Finish hauling		Current
Sea condition: NA	Time	0847	Time	1007	Depth
Gear		Latitude	05°16'.60 N	Latitude	05°17'.20 N
Total hook no: 630	Longitude	112°49'.60 E	Longitude	112°49'.30 E	50
No. hook/branch line: 6	Memorandum:				150
Immersion time:	Sea depth : 450 - 320 m				Total catch in number:
3 hrs.13 min	Total distance 1.5 nm Setting course 140°				NA
Type of bait:	Shooting speed 2.5 knot				Total catch in weight:
Squid					NA

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpong Ache, Perak State, Malaysia. Email: rosidi@seafdec.org.my

BOTTOM VERTICAL LONGLINE FISHING LOGSHEET

Operation No. 6

Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise No: 35-3/2010	Name of Vessel				Air temp: NA °C
Survey station No: 27	M.V.SEAFFDEC 2				Air pressure: NA mbar
Date: 21-July-2010					Humidity : NA %
Moon age: 10 phase 81%	Start shooting		Finish shooting		Water
Wind		Time	0613	Time	0644
Spd (kt)	Direction	Latitude	05°47'.60 N	Latitude	05°46'.90 N
NA	NA	Longitude	112°18'.30 E	Longitude	112°17'.20 E
Weather cond: NA	Start hauling		Finish hauling		Current
Sea condition: NA	Time	0856	Time	1020	Depth
Gear		Latitude	05°47'.90 N	Latitude	05°47'.50 N
Total hook no: 630	Longitude	112°18'.20 E	Longitude	112°17'.60 E	50
No. hook/branch line: 6	Memorandum:				150
Immersion time:	Sea depth : 253 - 263 m				Total catch in number:
3 hrs.5 min	Total distance 1.3 nm Setting course 237°				NA
Type of bait:	Shooting speed 2.5 knot				Total catch in weight:
Squid					NA

BOTTOM VERTICAL LONGLINE FISHING LOGSHEET

Operation No. 7

Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise No: 35-3/2010	Name of Vessel				Air temp: NA °C
Survey station No: 23	M.V.SEAFFDEC 2				Air pressure: NA mbar
Date: 2-August-2010					Humidity : NA %
Moon age: 22 phase 57%	Start shooting		Finish shooting		Water
Wind		Time	0553	Time	0635
Spd (kt)	Direction	Latitude	05°36'.40 N	Latitude	05°35'.70 N
NA	NA	Longitude	110°27'.10 E	Longitude	110°28'.50 E
Weather cond: NA	Start hauling		Finish hauling		Current
Sea condition: NA	Time	1230	Time	1410	Depth
Gear		Latitude	05°35'.60 N	Latitude	05°36'.20 N
Total hook no: 630	Longitude	110°28'.50 E	Longitude	110°27'.50 E	50
No. hook/branch line: 6	Memorandum:				150
Immersion time:	Sea depth : 274 - 280 m				Total catch in number:
7 hrs.6 min	Total distance 1.6 nm Setting course 115°				NA
Type of bait:	Shooting speed 2.5 knot				Total catch in weight:
Squid					NA

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpong Ache, Perak State, Malaysia. Email: rosidi@seafdec.org.my

BOTTOM VERTICAL LONGLINE FISHING LOGSHEET

Operation No. 8

Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise No: 35-3/2010	Name of Vessel				Air temp: NA °C	
Survey station No: 19	M.V.SEAFFDEC 2				Air pressure: NA mbar	
Date: 3-August-2010					Humidity : NA %	
Moon age: 23 phase 47%	Start shooting		Finish shooting		Water	
Wind	Time	0556	Time	0631	Surface temp: NA °C	
Spd (kt)	Direction	Latitude	05°23'.80 N	Latitude	05°24'.50 N	
NA	NA	Longitude	110°00'.90 E	Longitude	110°59'.80 E	
Weather cond: NA	Start hauling		Finish hauling		Current	
Sea condition: NA	Time	0832	Time	0935	Depth	
Gear	Latitude	05°23'.70 N	Latitude	05°24'.20 N	Spd (kt)	
Total hook no: 630	Longitude	111°01'.00 E	Longitude	111°00'.20 E	Direction	
No. hook/branch line: 6	Memorandum: Sea depth : 200 - 323 m Total distance 1.3 nm Setting course 300° Shooting speed 3.0 knot				10	
Immersion time: 2 hrs.57min					50	NA
Type of bait: Squid					150	NA
					Total catch in number: NA	
					Total catch in weight: NA	

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpang Ache, Perak State, Malaysia. [Email: rosidi@seafdec.org.my](mailto:rosidi@seafdec.org.my)

Appendix 1.5 Deep Sea Trap fishing log

**TRAP FISHING LOGSHEET
Operation No.01**



Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise No:35-3/2010		Name of Vessel				Air temp: NA °C
Survey station No: 04		M.V.SEADEC 2				Air pressure: NA mbar
Date: 7-8-July-2010		Start shooting 07/07/10		Finish shooting 07/07/05		Humidity : NA %
Moon age: 1 phase 22%		Water				
Wind		Time	1624	Time	1650	Surface NA °C
Spd (kt)	Direction	Latitude	07°17'.60 N	Latitude	07°18'.50 N	100 m. temp NA °C
NA	NA	Longitud	116°16.90 E	Longitude	116°17'.00 E	Thermocline : NA
Weather cond: NA		Start hauling 08/07/10		Finish hauling 08/07/10		Current
Sea condition: NA		Time	0822	Time	1030	Depth Spd (kt) Direction
Gear		Latitude	07°18'.40 N	Latitude	07°18'.40 N	50 NA
Type of trap: Deep sea trap		Longitud	116°16'.80 E	Longitude	116°16'.60 E	100 NA
Total No. of trap: 40		Depth of capture: mem		Bottom type: Muddy		200 NA
Type of bait: Scad/ Crab		Memorandum:				Total catch in number:
Immersion time:		Shooting speed 2.5 knot				NA
16 hrs 55 min		Sea depth : 362 - 340 m				Total catch in weight:
		Total distance 0.9 nm Setting course 006°				NA

No.	Species	Number	Weight (kg)	Remarks
	Correspondence person			NA: Not available
	Rosidi Ali, Fishereis Research Institute			
	(DOF), Kumpong Ache, Perak, Malaysia			
	Email: rosidi@seafdec.org.my			

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpong Ache, Perak State, Malaysia. [Email: rosidi@seafdec.org.my](mailto:rosidi@seafdec.org.my)

TRAP FISHING LOGSHEET

Operation No.02

Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise No:35-3/2010		Name of Vessel				Air temp: NA °C
Survey station No: 04		M.V.SEAFFDEC 2				Air pressure: NA mbar
Date: 8-9-July-2010						Humidity : NA %
Moon age: 26 phase 14%		Start shooting <u>08/07/10</u>		Finish shooting <u>08/07/05</u>		Water
Wind		Time	1844	Time	1900	Surface NA °C
Spd (kt)	Direction	Latitude	06°59'.10 N	Latitude	06°59'.10 N	100 m. temp NA °C
NA	NA	Longitud	115°46'.40 E	Longitude	115°46'.00 E	Thermocline : NA
Weather cond: NA		Start hauling <u>09/07/10</u>		Finish hauling <u>09/07/10</u>		Current
Sea condition: NA		Time	0645	Time	1030	Depth Spd (kt) Direction
Gear		Latitude	06°59'.20 N	Latitude	06°59'.40 N	50 NA
Type of trap: Deep sea trap		Longitud	115°46'.30 E	Longitude	115°46'.60 E	100 NA
Total No. of trap: 30		Depth of capture: mem		Bottom type: Muddy		200 NA
Type of bait: Scad/ Crab		Memorandum:				Total catch in number:
Immersion time:		Shooting speed 2.5 knot				NA
13 hrs 25 min		Sea depth : 348 - 352 m				Total catch in weight:
		Total distance 0.4 nm Setting course 270°				NA

TRAP FISHING LOGSHEET

Operation No.03

Recorded by Sayan Promjinda

Certified by Isara Chanrachkij

Cruise No:35-3/2010		Name of Vessel				Air temp: NA °C
Survey station No: 06		M.V.SEAFFDEC 2				Air pressure: NA mbar
Date: 9-10-July-2010						Humidity : NA %
Moon age: 27 phase 7%		Start shooting <u>09/07/10</u>		Finish shooting <u>09/07/05</u>		Water
Wind		Time	1805	Time	1825	Surface NA °C
Spd (kt)	Direction	Latitude	06°31'.90 N	Latitude	06°32'.30 N	100 m. temp NA °C
NA	NA	Longitud	115°24'.10 E	Longitude	115°24'.10 E	Thermocline : NA
Weather cond: NA		Start hauling <u>10/07/10</u>		Finish hauling <u>10/07/10</u>		Current
Sea condition: NA		Time	0630	Time	0750	Depth Spd (kt) Direction
Gear		Latitude	06°32'.20 N	Latitude	06°32'.10 N	50 NA
Type of trap: Deep sea trap		Longitud	115°24'.40 E	Longitude	115°24'.50 E	100 NA
Total No. of trap: 30		Depth of capture: Mem		Bottom type: Muddy		200 NA
Type of bait: Scad/ Crab		Memorandum:				Total catch in number:
Immersion time:		Shooting speed 2.5 knot				NA
12 hrs 55 min		Sea depth : 405 - 425 m				Total catch in weight:
		Total distance 0.4 nm Setting course 000°				NA

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpong Ache, Perak State, Malaysia. [Email: rosidi@seafdec.org.my](mailto:rosidi@seafdec.org.my)

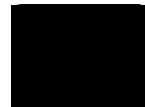
TRAP FISHING LOGSHEET Operation No.04



Recorded by Sayan Promjinda
Certified by Isara Chanrachkij

Cruise No:35-3/2010	Name of Vessel				Air temp: NA °C
Survey station No: 11	M.V.SEAFFDEC 2				Air pressure: NA mbar
Date: 16-17/July/2010					Humidity : NA %
Moon age: 05 phase 29%	Start shooting <u>16/07/10</u>	Finish shooting <u>16/07/10</u>	Water		
Wind	Time	1756	Time	1815	Surface NA °C
Spd (kt)	Direction	Latitude	05°46'.20 N	Latitude	05°46'.50 N
NA	NA	Longitud	114°30.00 E	Longitude	114°30'.10 E
Weather cond: NA	Start hauling <u>17/07/10</u>	Finish hauling <u>17/07/10</u>	Current		
Sea condition: NA	Time	0647	Time	0810	Depth Spd (kt) Direction
Gear	Latitude	05°46'.60 N	Latitude	05°46'.50 N	10 NA
Type of trap: Deep sea trap	Longitud	114°30'.40 E	Longitude	114°30'.20 E	50 NA
Total No. of trap: 33	Depth of capture: mem	Bottom type: Muddy		150	NA
Type of bait: Scad	Memorandum:				Total catch in number:
Immersion time:	Shooting speed 2.5 knot				NA
13 hrs 23 min	Sea depth : 410 - 400 m				Total catch in weight:
	Total distance 0.3 nm Setting course 054°				NA

TRAP FISHING LOGSHEET Operation No.05



Recorded by Sayan Promjinda
Certified by Isara Chanrachkij

Cruise No:35-3/2010	Name of Vessel				Air temp: NA °C
Survey station No: 14	M.V.SEAFFDEC 2				Air pressure: NA mbar
Date: 19-20/July/2010					Humidity : NA %
Moon age: 08 phase 62%	Start shooting <u>19/07/10</u>	Finish shooting <u>19/07/10</u>	Water		
Wind	Time	1535	Time	1607	Surface NA °C
Spd (kt)	Direction	Latitude	05°15'.40 N	Latitude	05°15'.70 N
NA	NA	Longitud	112°50.40 E	Longitude	112°50'.50 E
Weather cond: NA	Start hauling <u>20/07/10</u>	Finish hauling <u>20/07/10</u>	Current		
Sea condition: NA	Time	0648	Time	0815	Depth Spd (kt) Direction
Gear	Latitude	05°15'.50 N	Latitude	05°15'.60 N	10 NA
Type of trap: Deep sea trap	Longitud	112°50'.70 E	Longitude	112°50'.90 E	50 NA
Total No. of trap: 32	Depth of capture: mem	Bottom type: Muddy		150	NA
Type of bait: Scad/ Crab	Memorandum:				Total catch in number:
Immersion time:	Shooting speed 3.5 knot				NA
15 hrs 40 min	Sea depth : 271 - 345 m				Total catch in weight:
	Total distance 0.3 nm Setting course 030°				NA

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpong Ache, Perak State, Malaysia. [Email: rosidi@seafdec.org.my](mailto:rosidi@seafdec.org.my)

TRAP FISHING LOGSHEET

Operation No.06



Recorded by Sayan Promjinda
 Certified by Isara Chanrachkij

Cruise No:35-3/2010	Name of Vessel				Air temp: NA °C
Survey station No: 27	M.V.SEAFFDEC 2				Air pressure: NA mbar
Date: 20-21/July/2010					Humidity : NA %
Moon age: 09 phase 72%	Start shooting <u>20/07/10</u>	Finish shooting <u>20/07/10</u>	Water		
Wind	Time	1735	Time	1750	Surface NA °C
Spd (kt)	Direction	Latitude	05°48'.20 N	Latitude	05°48'.30 N
NA	NA	Longitud	112°14.90 E	Longitude	112°15'.50 E
Weather cond: NA	Start hauling <u>21/07/10</u>	Finish hauling <u>21/07/10</u>	Current		
Sea condition: NA	Time	0715	Time	0835	Depth Spd (kt) Direction
Gear	Latitude	05°48'.30 N	Latitude	05°48'.50 N	10 NA
Type of trap: Deep sea trap	Longitud	112°15'.50 E	Longitude	112°15'.60 E	50 NA
Total No. of trap: 33	Depth of capture: mem	Bottom type: Muddy		150	NA
Type of bait: Scad/ Crab	Memorandum:				Total catch in number:
Immersion time:	Shooting speed 3.0 knot				NA
14 hrs 13 min	Sea depth : 330 - 375 m				Total catch in weight:
	Total distance 0.6 nm Setting course 080°				NA

TRAP FISHING LOGSHEET

Operation No.07



Recorded by Sayan Promjinda
 Certified by Isara Chanrachkij

Cruise No:35-3/2010	Name of Vessel				Air temp: NA °C
Survey station No: 23	M.V.SEAFFDEC 2				Air pressure: NA mbar
Date: 1-2/Aug/2010					Humidity : NA %
Moon age: 21 phase 67%	Start shooting <u>1/08/10</u>	Finish shooting <u>1/08/10</u>	Water		
Wind	Time	1545	Time	1600	Surface NA °C
Spd (kt)	Direction	Latitude	05°38'.10 N	Latitude	05°38'.10 N
NA	NA	Longitud	110°24.80 E	Longitude	110°25'.20 E
Weather cond: NA	Start hauling <u>2/08/10</u>	Finish hauling <u>2/08/10</u>	Current		
Sea condition: NA	Time	1437	Time	1557	Depth Spd (kt) Direction
Gear	Latitude	05°37'.90 N	Latitude	05°37'.90 N	10 NA
Type of trap: Deep sea trap	Longitud	110°25'.00 E	Longitude	110°25'.20 E	50 NA
Total No. of trap: 32	Depth of capture: mem	Bottom type: Rocky		150	NA
Type of bait: Scad	Memorandum:				Total catch in number:
Immersion time:	Shooting speed 2.5 knot				NA
23 hrs 23 min	Sea depth : 319 m				Total catch in weight:
	Total distance 0.4 nm Setting course 090°				NA

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpong Ache, Perak State, Malaysia. [Email: rosidi@seafdec.org.my](mailto:rosidi@seafdec.org.my)

TRAP FISHING LOGSHEET

Operation No.08



Recorded by Sayan Promjinda
 Certified by Isara Chanrachkij

Cruise No:35-3/2010		Name of Vessel				Air temp: NA °C			
Survey station No: 19		M.V.SEAFFDEC 2				Air pressure: NA mbar			
Date: 2-3/Aug/2010						Humidity : NA %			
Moon age: 22 phase 57%		Start shooting <u>2/08/10</u>		Finish shooting <u>2/08/10</u>		Water			
Wind		Time	2003	Time	2017	Surface NA °C			
Spd (kt)	Direction	Latitude	05°24'.60 N	Latitude	05°24'.20 N	100 m. temp NA °C			
NA	NA	Longitud	110°02'.00 E	Longitude	111°02'.00 E	Thermocline : NA			
Weather cond: NA		Start hauling <u>3/08/10</u>		Finish hauling <u>3/08/10</u>		Current			
Sea condition: NA		Time	0655	Time	0748	Depth			
Gear		Latitude	05°24'.50 N	Latitude	05°24'.40 N	Spd (kt)			
Type of trap: Deep sea trap		Longitud	111°02'.00 E	Longitude	111°02'.10 E	Direction			
Total No. of trap: 32		Depth of capture: mem		Bottom type: Muddy		10 NA			
Type of bait: Scad		Memorandum: Shooting speed 3.0 knot Sea depth : 210-235 m Total distance 0.4 nm Setting course 180°				50 NA			
Immersion time: 11 hrs 11 min						Total catch in number: NA			
						Total catch in weight: NA			

Correspondence person on catch report: Rosidi Ali, Fishereis Research Institute, Department of Fisheries, Kumpong Ache, Perak State, Malaysia. [Email: rosidi@seafdec.org.my](mailto:rosidi@seafdec.org.my)

Appendix 3 List of Malaysian Scientists

Leg I : 4 - 14 July 2010

No.	Name	Responsibility	E-mail
1	Nadzri Bin Seman	Cruise Leader	nadzri@seafdec.org.my
2	Abdul Aziz Yusof	Cameraman	are_gist@yahoo.com
3	Azman Bin Taib	Cook	azzu_thayyib@yahoo.com
4	Ahmad Fa'idz Bin Kastolany	Bottom Vertical Longline	afaidzi@yahoo.com
5	Mohamad Azmi Abdullah	Deep Sea Trap	azmi@seafdec.org.my
6	Desmond Bin Hassan	Taxonomist	des_intan@yahoo.com
7	Binjamin Martin	Sighting Mammals & turtle	binjamin.martin@sabah.gov.my
8	Kamal Salleh	Squid Jigging Operation	Kamal.salleh@sabah.gov.my
9	Mohd Azri Bin Kallam	Sighting Mammals & turtle	azri@dof.gov.my
10	Adaha Bin Hj Hamdan	Sighting Mammals & turtle	adaha@dof.gov.my
11	Mohd Nazir Bin Taib	Fish Juvenile	nazir_taib@yahoo.com
12	Sai-Fulhak Yahya	Pelagic Long Line	-
13	Rosdi Mohd Nor	Fish Larvae (Bongo net)	rosdi@seafdec.org.my
14	Arabi Materang	Beam Trawl	-

Leg II : 15-23 July 2010

No.	Name	Responsibility	E-mail
1	Rosidi Ali	Cruise leader - 2	rosidi@seafdec.org.my
2	Jamil Musel	Beam Trawl leader - 2	jamilmusel@dof.gov.my /
3	Sharum Yusof	Bottom Vertical Longline	sharum@seafdec.org.my
4	Ibrahim Jol	Local Fisherman	ibh-job@yahoo.com
5	Mohd Nawab B. Arshad	Oceanographic leader	Nawab@mafung.yahoo.com.my
6	Mohd Rashidi B. Abdul Rashid	Cooking	adey_21@yahoo.com
7	Zahari Said	Trap leader	zahari_said68@yahoo.com
8	Hady Asek	Cameraman	adyasek@gmail.com
9	Moktar Br Tolib	Marine Turtle leader	mokfar@seafdec.com.my
10	Rajendran Afe R. Krisnan	Taxonomy	rajkri@hotmail.com
11	Buniamin Bin Kiprawi	Pelagic Long Line & Squid jigging leader	buniamin_kip@yahoo.com
12	Kamarul Ariffin Nin Kushairi	Entrepreneur	kamarul84@gmail.com

Leg III : 25 July – 27 August 2010

No.	Name	Responsibility on M.V.SEAFFDEC2	E-mail or Contact address
1	Sallehhudin Jamon*	Cruise leader	
2	Mohd Sukri Muda	Cameraman	
3	Sobri Samad	Cook	
4	Abd. Manaf Daud	Taxonomist	
5	Che Din Taha	Technical	
6	Morul Azis Summat	Technical	
7	Mohd Tamimi Ali Ahmad	Technical	
8	Mior Walid bin Mior Lop	Technical	
9	Mohd Nazir Talib	Technical	nazir_talb@yahoo.com
10	Wan Muhamad Jamel Wan Husin	Technical	
11	Norazman Ahmad	Technical	
12	Jackson Clive Jusak	Technical	
13	Lindy Enggong	Technical	

Leg III : 29 July – 4 August 2010

No.	Name	Responsibility on M.V.SEAFFDEC2	E-mail or Contact address
1	Norazman Ahmad	Cruise leader	
2	Mohd Sukri Muda	Cameraman	
3	Sobri Samad	Cook	
4	Abd. Manaf Daud	Taxonomist	
5	Che Din Taha	Technical	
6	Morul Azis Summat	Technical	
7	Mohd Nazir Talib	Technical	nazir_talb@yahoo.com

Appendix 4 List of SEAFDEC/TD personnel onboard

I. Ship Personnel (M.V. SEAFDEC 2)

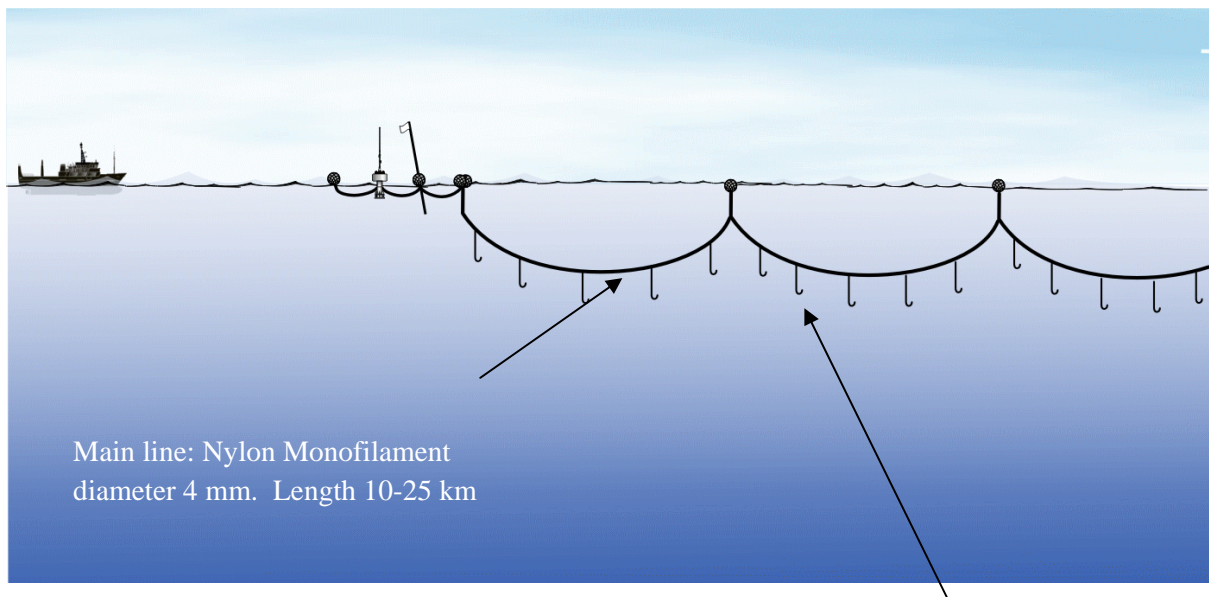
No.	Name	Position
1	Mr. Tossaporn Sukhapindha	Captain
2	Mr. Nanthawat Phungsuk	Chief Engineer
3	Mr. Suren Pruksarat	Second Officer
4	Mr. Vudhirat Vudthipanyo	Third Officer
5	Mr. Padung Ngowlimhua	Second Engineer
6	Mr. Nattapong Chaitanawisud	Third Engineer
7	Mr. Thana rungjoy	Boatswain
8	Mr. Pradit Kui-prasert	Steersman
9	Mr. Charan Intippunya	Steersman
10	Mr. Mr. Yuttachai How-han	Able Seaman
11	Mr. Boontarin Wora-in	Fitter
12	Mr. Plew Shodok	Oiler
13	Mr. Teeradet Jantana	Oiler
14	Mr. Akarapol Chaibanyat	Oiler
15	Mr. Saichol Kornnoom	Cook
16	Mr. Marut SangPhuek	Ship's Boy

II. Additional Personnel from SEAFDEC/TD

No.	Name	Position
1	Mr. Isara Chanrakhij	Supervisor
2	Mr. Sayan Promjinda	Assistant Supervisor I
3	Mr. Ritthirong Prommas	Assistant Supervisor II
4	Mr. Komson Pofa	Assistant Supervisor III

Appendix 5) Diagram of Fishing gear

Appendix 5.1 Pelagic longline



Mainline

Mainline is constructed by Nylon monofilament diameter 4.0 mm. The weight per 1000 m is 12-14 kg. Breaking strength of mainline is 500-600 kgf. Mainline deployed without any joints or swivels. Length interval between buoy lines is standardized at 840 m (for 20 branch lines). The standard operational of pelagic longline has carried out onboard M.V. SEAFDEC2 is setting 25-30 kilometer within an operation.

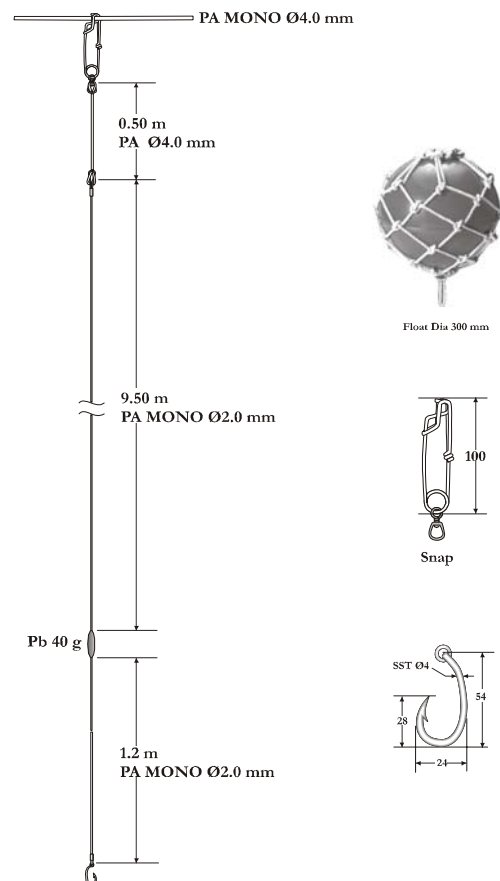
Branch line

Branch line is made by Nylon monofilament diameter 2.0 mm, 11 m length.

Two (2) types of hook design, Circle shape and J-shape, setting with branch line in order to investigate and compare the efficiency of both types.

M.V. SEAFDEC2 has standard operational of pelagic longline to deploy 500 hooks within an operation mean that 20 hooks are set between float intervals.

Two sets of Temperature and Depth sensor (called T/D sensors) were attached at the branch line No.1 and No.10 in order to investigate the actual depth of hook. Branch No.1 and No.20 are presumed the shallowest layer and branch No.10 and 11 presumed the deepest layer within same float interval.

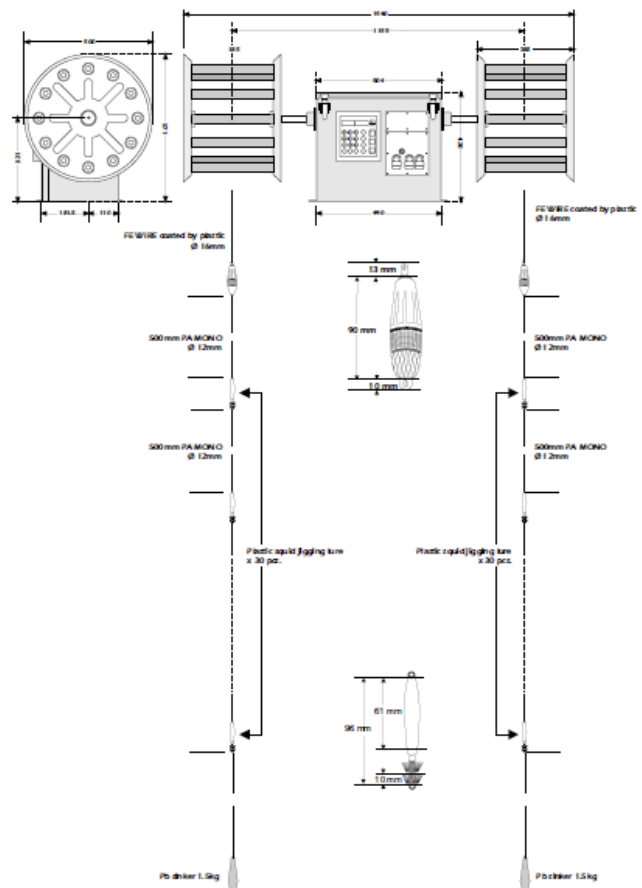


Appendix 5.2 Systematic diagram of Automatic Squid jigging machine

Automatic Squid jigging

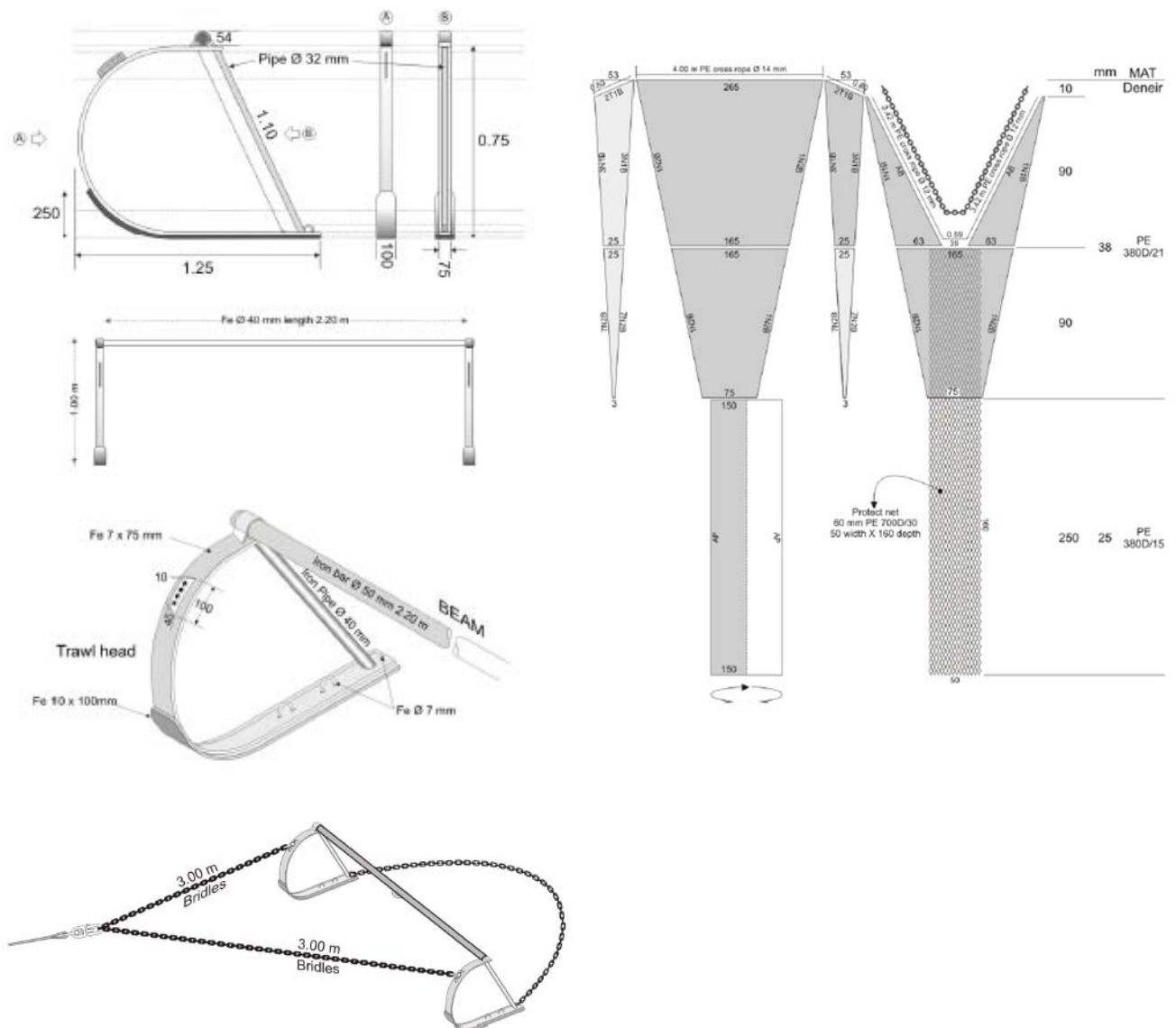
Fours automatic jigging equipment with 160-200 jigs employed with a set of parachute anchor is engaged for fishing operation.

Four (4) bulbs of 2 kW, halogen luring lamp, will be appropriated for the limitation space of M.V. SEAFDEC2, to perform the flying squid resource survey.



Appendix 5.3 Systematic diagram of beam trawl

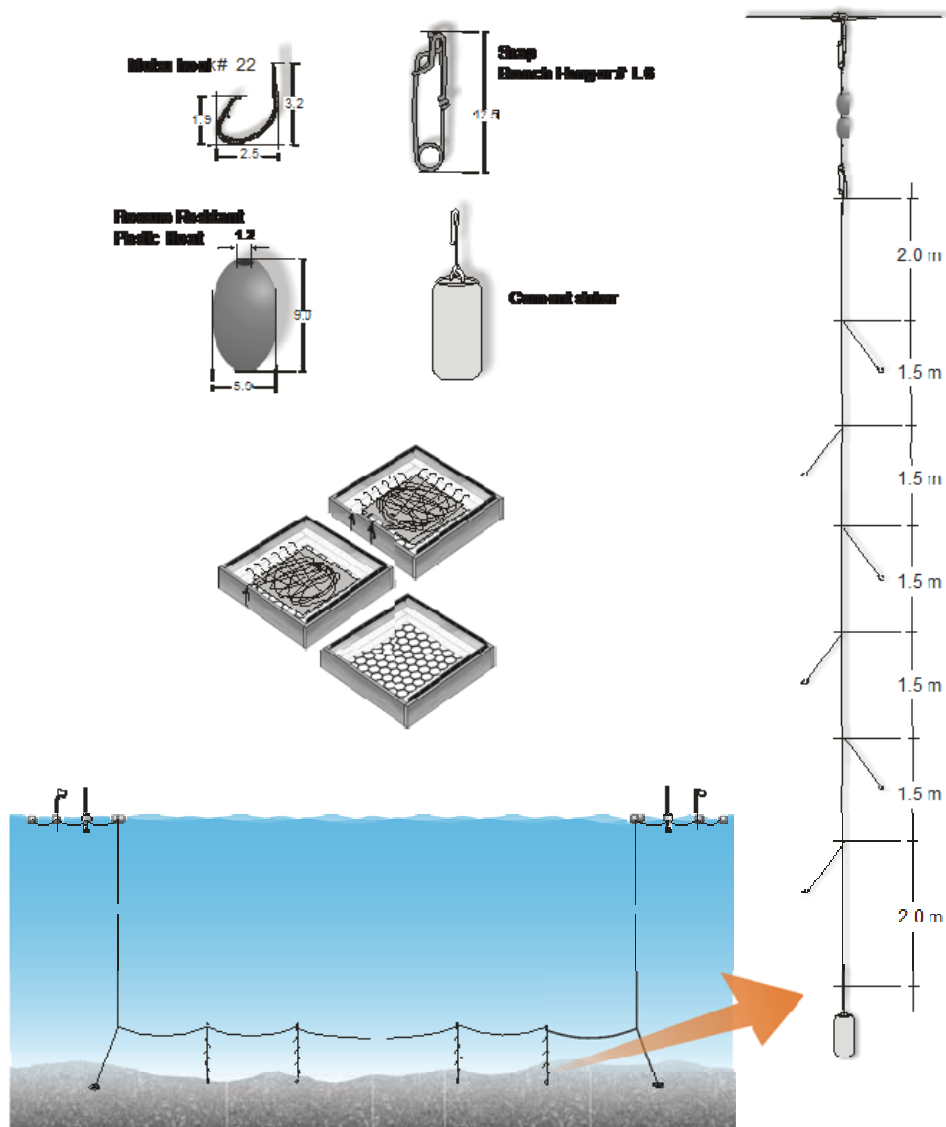
SEAFDEC design of deep sea beam trawl gear and its net were developed and modified from the fisherman in the Northern part and Northeast of the European water. The design is suitable for M.V. SEAFDEC 2 and other research vessels for deep sea fauna samplings in particularly deep sea shrimps and bottom fishes. (Reference: SEAFDEC Publication TD/RES113, downloaded at <http://www.map.seafdec.org>)



Appendix 5.4 Systematic diagram of bottom vertical longline

Bottom vertical longline

The Bottom Vertical Longline setting the mainline close to the bottom and connecting it to branch lines that extend further to several hook lines, these branch lines have an appearance similar to vertical lines. With regard to minimum fishing operation scale, the mainline of 1,500 m is deployed with 90 branch lines, 540 hooks, are arranged in 30 boxes.



Appendix 5.5 Systematic diagram of Deep sea trap

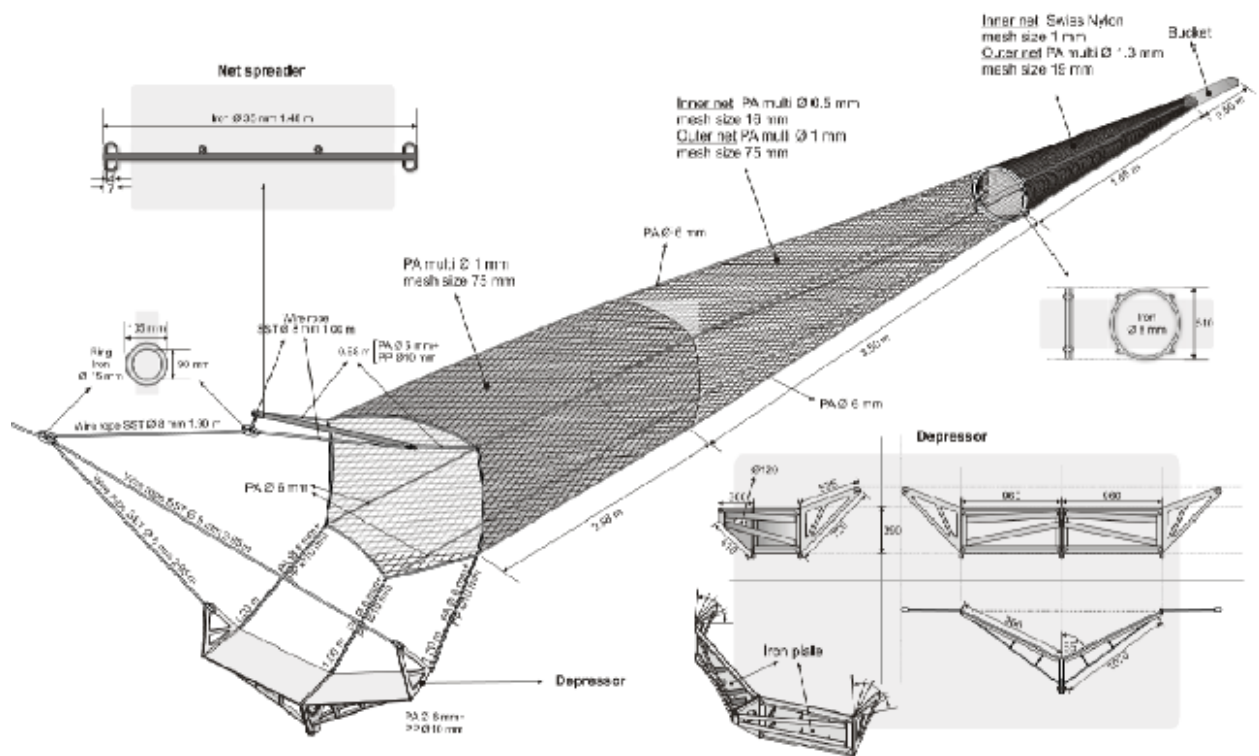
Two (2) deep sea trap designs are deployed during resource research survey. The first is cubic shape trap with dimension 30 cm × 90 cm × 30 cm (wide× length × depth). Frame is made by stainless steel with polyethylene panel, pentagon shape with opening 2 cm mesh size. There are 2 types of entrance, i.e. oval shape with 8 to 10 cm opening diameter and slit shape. Performance of both entrance designs are under investigating. The other design is cylinder design with 35 cm diameter 90 cm in length. Frame is made by stainless steel with polyethylene panel, pentagon shape with opening 2 cm mesh size. Entrance is oval shape with 8 to 10 cm diameter.



Appendix 5.6 Systematic diagram of Isaacs-Kidd mid-water trawl (IKMT)

The IKMT is a long, round net approximately 6.50 m long, with a series of hoops decreasing in size extending from the mouth of the net to the rear (cod) end, which measures an additional 2 m in length. The hoops maintain the shape of the net during towing. The mouth of the net is 1.75 m wide by 1.30 m high, and is attached to a depressor.

Design of IKMT net is duplicated from the IKMT of Research vessel namely T/S TENYO-MARU that belongs to National Fisheries University (NFU), Japan. But the local materials were used instead. The outer net is PA multifilament diameter 1 mm, mesh side 75 mm and the inner net is PA multifilament (knotless) diameter 0.5 mm, mesh size 16 mm. Codend part used the plankton net mesh size 1 mm and cover with PA multifilament diameter 1 mm, mesh side 19 mm net. All bridles are SST wire diameter 8 mm. The net spreader is iron diameter 35 mm, with approximately 1.50 m in length. (More Detail: SEAFDEC Publication TD/RES113)





MALIS KESELAMATAN NEGARA
 JABATAN PERDANA MENTERI
 ARAS LG & G, BLOK BARAT
 BANGUNAN PERDANA PUTRA
 PUSAT PENTADBIRAN KERAJAAN PERSEKUTUAN
 62502 PUTRAJAYA

MKN-MARITIM

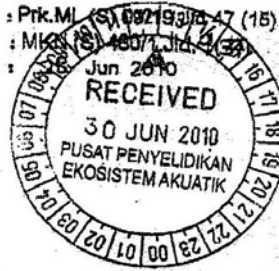
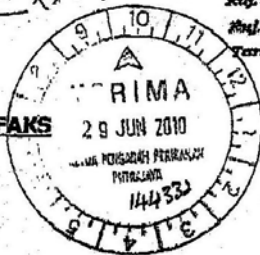
PAGE 01/06

Telefon : 03-8872 4321
 Faks : 03-8881 3091

"Pemikiran Strategik Teras Kesejahteraan"

Fax ke PPN Labuan *2/7/2010*

Ref. Tuan : Prik.ML (S) 09219310-17 (15)
 Ref. Kemat : MKN (S) 4807/Jld. 2/33
 Tarikh : Jun 2010



SEGERA/DENGAN FAKS

SENARAI AGIHAN

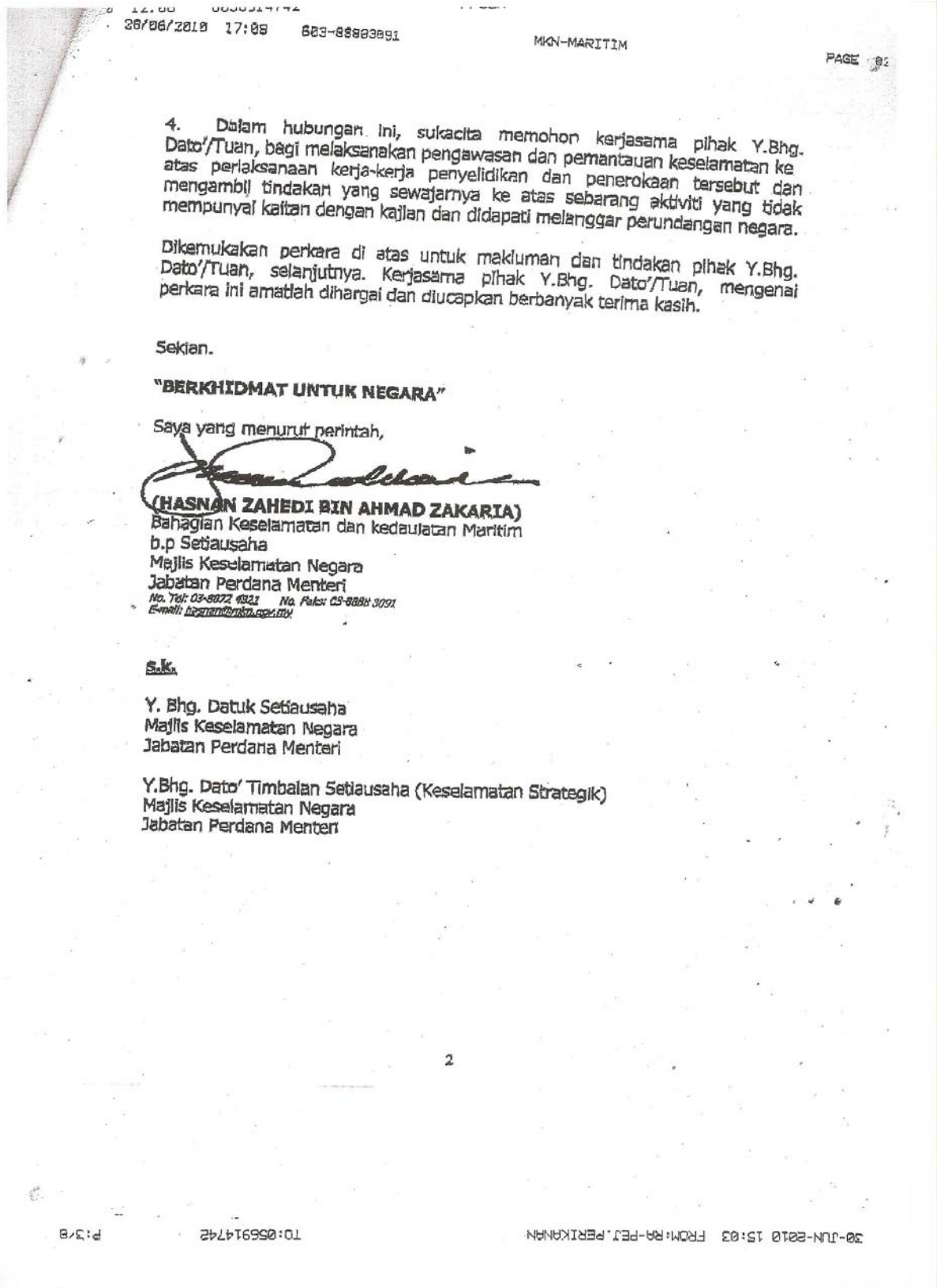
Y.Bhg. Dato'/Tuan,

KEBENARAN MENGGUNAKAN VESEL M.V. SEAFDEC 2 UNTUK MENJALANKAN KAJIAN PENEROKAAN SUMBER PERIKANAN DEMERSAL DAN SUMBER PERIKANAN OSEANIK DI PERAIRAN MALAYSIA PADA KEDALAMAN 200 M KE ATAS

Dengan segala hormatnya saya ingin menarik Y.Bhg. Dato'/Tuan, mengenai perkara tersebut di atas.

2. Untuk makluman Y.Bhg. Dato'/Tuan, Majlis Keselamatan Negara (MKN) telah menerima permohonan daripada Jabatan Perikanan Malaysia untuk menggunakan Vesel M.V. Seafdec 2 bagi menjalankan penyelidikan dari penerokaan sumber perikanan demersal dan oseanik. Kerja-kerja penyelidikan dan penerokaan tersebut akan dijalankan di perairan Malaysia pada kedalaman 200 m dan ke atas. Tarikh cadangan kajian ini dijalankan ialah pada 4 Julai sehingga 7 Ogos 2010 (selama 35 hari). Sehubungan itu, kerja-kerja penyelidikan dan penerokaan ini akan melibatkan para saintis daripada Malaysia manakala krew-krew kapal pula terdiri daripada warganegara Thailand.

3. Setelah meneliti permohonan tersebut, MKN **tiada halangan** ke atas pelaksanaan kerja-kerja penyelidikan dan penerokaan tersebut. Senarai nama saintis dan krew-krew kapal yang dibenarkan berada sepanjang kajian tersebut dijalankan adalah seperti di Lampiran A. Sehubungan itu, sukacita pihak tuan turut diingatkan bahawa segala data yang diperolehi nanti hanya akan dimanfaatkan untuk kegunaan pihak Jabatan Perikanan sahaja dan tidak sekali-kali dikongsi bersama dengan pihak luar/pemilik kapal Seafdec 2 demi menjaga kepentingan dan keselamatan negara.



Appendix 6.3 Translated Permission Document for Research Cruise of M.V. SEAFDEC2
Page 2

Proposal to use M.V. SEAFDEC 2 for conducting research on demersal and oceanic fisheries resources in Malaysia Waters at depth 200 meters and above.

All due respects, I would like to ask you about this matter above,

1 To inform you all that the National Security Department/Majlis Keselamatan Negara (MKN) has received the proposal from Department of Fisheries of Malaysia to use M.V. SEAFDEC 2 for conducting research on demersal and oceanic fisheries resources. The research will be conducted in Malaysia Waters at the depth 200 meters and above. The schedule planned tentatively from 4 July 2010 to 7 August 2010 (within 35 days). Regarding to that matter, this research will involve many scientists from Malaysia, while the vessel crews will come from Thailand.

2 After reviewing the proposal/request, there is no reason for MKN not to approve the research activities. The list of scientists and vessel crews legally involve in the project is attached at attachment A. Regarding to this matter also please be reminded that whole data obtained from the research activities will be use only for DOF of Malaysia and not to be shared with the outsider/the owner of M.V. SEAFDEC 2 for national security reasons.

3 With this regards, I also would like to request you to control and to take care of the safety during the research and to avoid the illegal/indiscriminate actions, which are not related to research activities.

Signed and approved by: Hasnan Zahedi bin Ahmad Zakaria

National Security Department of Malaysia

Note:

The letter was from the National Security of Malaysia to Department of Fisheries of Malaysia.