



## **CRUISE REPORT ON RESEARCH ACTIVITIES**

**M.V.SEAFDEC 2 Cruise No. 7-1/2005**

**1-13 February 2005**

**Fisheries Resources Survey in the Gulf of Thailand**

**TD/RP/85**

This report is based on preliminary data

For readers who may need data in the report, please contact to:

**Southeast Asian Fisheries Development Center**

**Training Department**

PO. BOX 97 Phrasamutchedi

Samut Prakan, 10290

THAILAND

Tel: 662-4256100

Fax: 662-4256110

E-mail: [td@seafdec.org](mailto:td@seafdec.org)

## Cruise report on Research Activities

### 1. Cruise Summary

**Vessel name:** M.V. SEAFDEC 2  
**Cruise no.:** 7-1/2005      **Leg no:** -  
**Project Title:** Marine Resources Survey in the Gulf of Thailand  
**Duration:** 1-13 February 2005 (13 days)  
**Covered water:** The Gulf of Thailand  
Latitude      07°07'.50 N-11°37'.50 N  
Longitude      100°22'.50 E-102°22'.50 E  
**Port of call:** Samui Island; Suratthani province and Songkhla province, Thailand  
**Objective:** Verify research methodology in water of relevant countries (Thailand) and National survey for Thailand.  
1. To conduct demersal fish sampling by Bottom trawl  
2. Oceanographic survey by using Intregated Conductivity Temperature and Depth System (ICTD), ThermoSalinograph-Fluorometer Sytsem (TSG) and Profiling Reflectant Radiometer system (PRR)  
3. Biological Data collection; Plankton and Marine larvae collection by Bongo net  
4. Hydro-acoustic bottom survey by Scientific Echo Sounder (Furuno FQ-80)

### 2. List of personal on board

#### Ship personnel

No.	Position	Name
1	Captain	Mr. Tossaporn Sukhapindha
2	Chief engineer	Mr. Veerachai Chettasumon
3	Third officer	Mr. Somphote Vudthipanyo
4	Second engineer	Mr. Komson Sangphuek
5	Boatswain	Mr. Vudthirat Vudthipanyo
6	Steersman	Mr. Pradit Kui-prasert
7	Steersman	Mr. Tana Rungjoy
8	Oiler	Mr. Plew Shodok
9	Cook	Mr. Saichol Kornnoom
10	Ship's boy	Mr. Phaithoon Sriratanaphon

#### SEAFDEC Researchers

No.	Position	Name
1	Chief/Scientist	Mr. Isara Chanrachkij
2	Oceanographer	Mr. Sukchai Anuparpboon
3	Assistant researcher	Mr. Nakaret Yasook
4	Assistant researcher	Mr. Narong Raungsivakul
5	Assistant researcher	Mr. Aussawin Buachuay
6	Assistant researcher	Ms. Sukanya Obsomwan

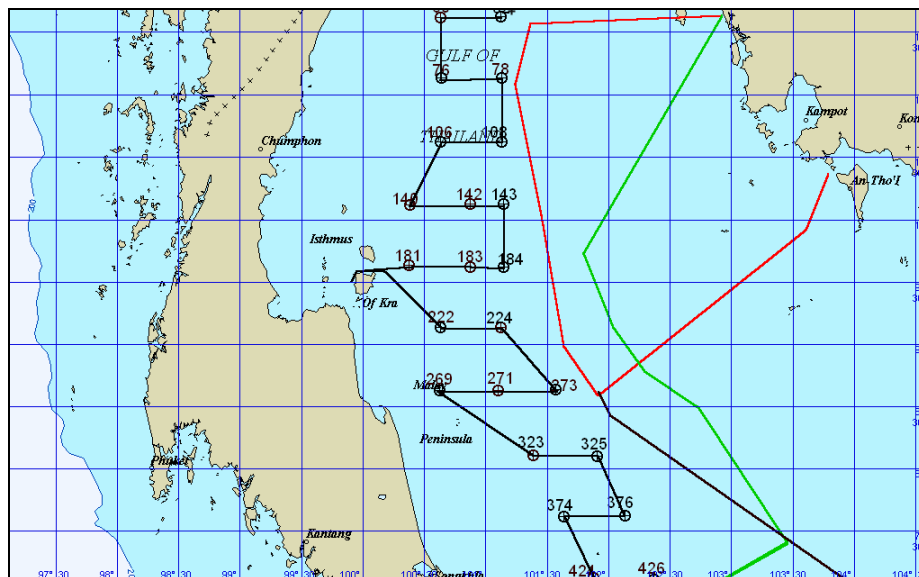
### Department of Fisheries Thailand Researchers

No.	Position	Name
1	Chief/Scientist	Mrs. Pattira Lirdwitayaprasit
2	Scientist	Lt. Chirat Nuangsang
3	Scientist	Mr. Kanit Chuapun
4	Scientist	Mr. Reangchai Sujittsakul
5	Scientist	Ms. Chanthip Bunluedaj
6	Scientist	Lt. Phitak Chaidee
7	Scientist	Mr. Aekkarat Wangkeaw
8	Scientist	Mr. Somsak Songnak
9	Scientist	Mr. Viboon Mechareon
10	Scientist	Mr. Chalao Pairaw
11	Scientist	Mr. Surasuk Krainet
12	Scientist	Mr. Amnuay Pisanpant

### 3. Observation Summary

#### Research Area and Station

23 survey stations are covered within the EEZ of the Central Gulf of Thailand, which has been assigned for the research survey. The research survey is composed of 4 main activities: fish sampling by bottom trawl, oceanographic survey, fish larvae and plankton sampling, and hydroacoustic survey by Scientific Echo Sounder. The range of sea depth is 30 – 70 m, covering 200 nautical miles. The activities of the bottom survey have included 22 route tracks of hydro-acoustic survey. The position of the survey station is shown in the figure below.



**Fig. 1** Station surveyed by M.V. SEAFDEC 2 in the Gulf of Thailand

**Table 1** Survey stations position of cruise no. 7-1/2005 in the Gulf of Thailand.

Station No.	Position	Station No.	Position
50	11-37.5 N, 100-37.5 E	222	09-07.5 N, 100-37.5 E
52	11-37.5 N, 101-07.5 E	224	09-07.5 N, 101-07.5 E
76	11-07.5 N, 100-37.5 E	269	08-37.5 N, 100-37.5 E
78	11-07.5 N, 101-07.5 E	271	08-37.5 N, 101-07.5 E
106	10-37.5 N, 100-37.5 E	273	08-37.5 N, 101-37.5E
108	10-37.5N, 101-37.5 E	323	08-07.5 N, 101-37.5 E
140	10-07.5 N, 100-22.5 E	325	08-07.5 N, 102-07.5 E
142	10-07.5 N, 100-52.5 E	374	07-37.5 N, 101-52.5 E
143	10-07.5 N, 101-22.5 E	376	07-37.5 N, 102-22.5 E
181	09-37.5 N, 100-22.5 E	424	07-07.5 N, 101-52.5 E
183	09-37.5 N, 100-52.5 E	426	07-07.5 N, 102-22.5 E
184	09-37.5 N, 101-22.5 E		

### Research Activity

The Pelagic research Survey in Brunei Darussalam water (Zone 4) has been conducted by the collaboration between Department of fisheries, Brunei Darussalam and Training Department, by using M/V SEAFDEC2.

The survey had been conduct during 18 September to 5 October 2004. The survey was separated into 2 sessions. Survey stations No.1-17 were conducted in the 1st session, during 18-25 September 2004, the 2nd session were conduct at station no.16-22 and 27-32. Activities of the survey have been shown by the table 2 Summary survey station.

**Table 2** Summary of survey stations

Station No.	Position	Hydro-acoustic	Bottom Trawl	Plankton and Larvae sampling	Oceanographic Survey
50	11-37.5 N, 100-37.5 E	√	√	√	√
52	11-37.5 N, 101-07.5 E	√	√	√	√
76	11-07.5 N, 100-37.5 E	√	√	√	√
78	11-07.5 N, 101-07.5 E	√	√	√	√
106	10-37.5 N, 100-37.5 E	√	√	√	√
108	10-37.5N, 101-37.5 E	√	*	√	√
140	10-07.5 N, 100-22.5 E	√	√	√	√
142	10-07.5 N, 100-52.5 E	√	√	√	√
143	10-07.5 N, 101-22.5 E	√	*	√	√

Station No.	Position	Hydro-acoustic	Bottom Trawl	Plankton and Larvae sampling	Oceanographic Survey
181	09-37.5 N, 100-22.5 E	√	-	√	√
183	09-37.5 N, 100-52.5 E	√	√	√	√
184	09-37.5 N, 101-22.5 E	√	√	√	√
222	09-07.5 N, 100-37.5 E	√	√		√
224	09-07.5 N, 101-07.5 E	√	√	√	√
269	08-37.5 N, 100-37.5 E	√	√	√	√
271	08-37.5 N, 101-07.5 E	√	√	√	√
273	08-37.5 N, 101-37.5E	√	√	√	√
323	08-07.5 N, 101-37.5 E	√	√	√	√
325	08-07.5 N, 102-07.5 E	√	√	√	√
374	07-37.5 N, 101-52.5 E	√	√	√	√
376	07-37.5 N, 102-22.5 E	√	√	√	√
424	07-07.5 N, 101-52.5 E	√	√	√	√
426	07-07.5 N, 102-22.5 E	√	√		

### Oceanographic survey summary

Oceanographic survey in this cruise was operated 22 stations. Each station conducted with 2 main activities including physical and biological oceanography. Four types of oceanographic instrument were operated through the cruise that composing of iCTD, bongo net, PRR 2600, and TSG with Fluorometer. The position of oceanographic stations, used oceanographic instruments and field names in each station are shown in **table 2**. The partial detail of oceanographic activities is shown in **table 3**. Additionally, in every station physical parameters collected by iCTD are shown in **Appendix I**.

*Remark: Oceanographic survey at station number 23 was cancel because of rough sea reason*

**iCTD (SBE 911) equipped with carousel:** The iCTD was lowered from the ship through the water from surface up to 5-10 m above sea bottom approximately with constant velocity 0.5 m/s and retrieved to sea surface at the same speed. During retrieved instrument, it was stopped at standard depth; surface, 10, 20, 30, 40, 50 and 60 m to collect water sampling for nutrient analyzing at SEAFDEC laboratory.

**Bongo net equipped with flow meter:** Bongo net consisted of zoo plankton net and larvae net with mesh size are 330  $\mu\text{m}$  and 500  $\mu\text{m}$ , respectively. Net diameter was 60 cm. This instrument was used for long oblique tows. It was lowered and retrieved from surface to 10 m above sea bottom with 30 minuses of operation period. Flow rate of flow meter in front of zooplankton was 30.1945 r/m and larvae net was 29.500 r/m.

**PRR2600:** PRR2600 was only operated in day time from 08:00 to 16:00. It consisted of two sensor units. First unit was underwater radiometer that was slowly dropped in to seawater until 10 meter above sea bottom or 45 m if water depth was higher than 55 m. The other one was deck references radiometer that was placed for exposing sunlight at sterndeck area.

***TSG with Fluorometer:*** TSG with fluorometer was operated during ship sailing from station to station. Its system was designed to continuously collect three parameters including temperature, salinity and fluorescence from underway vessel at approximately 5 meters below the sea surface. However, some station was canceled to avoid unexpected damage. Owing to power pump in this ship was not enough for required rate.

#### **Acoustic survey summary**

This is the 3<sup>rd</sup> marine resource survey has been carried out in collaboration with the DOF/Thailand in order to obtain the preliminary data on the Bio-mass assessment in the Gulf of Thailand. The survey was conducted by using the Scientific Echo Sounder model FQ-80 equipped onboard M.V. SEAFDEC 2. All together 21 tracks (23 stations) were surveyed and data were recorded and preliminary analyzed onboard. The information of operations is shown in the table of FQ-80 Log Book (Appendix II).

#### **Demersal fish sampling by bottom trawl summary**

Trawl fishing operation by using SEAFDEC standard trawl net. 22 fishing operation had been done and one operation was cancelled because the time is not available. Total number of fishing operation was 22 operations and 20 operations has been succeed. Trawl operation at survey station No. 106 and 143 has been stopped because the net was struggled by rough bottom topography. Total catch was 185.018 kg, the partial details is shown in the **table 4**.

**Table 3** Partial details of Oceanographic activities cruise no. 7-1/2005 (1 - 13 February 2005) in the Gulf of Thailand

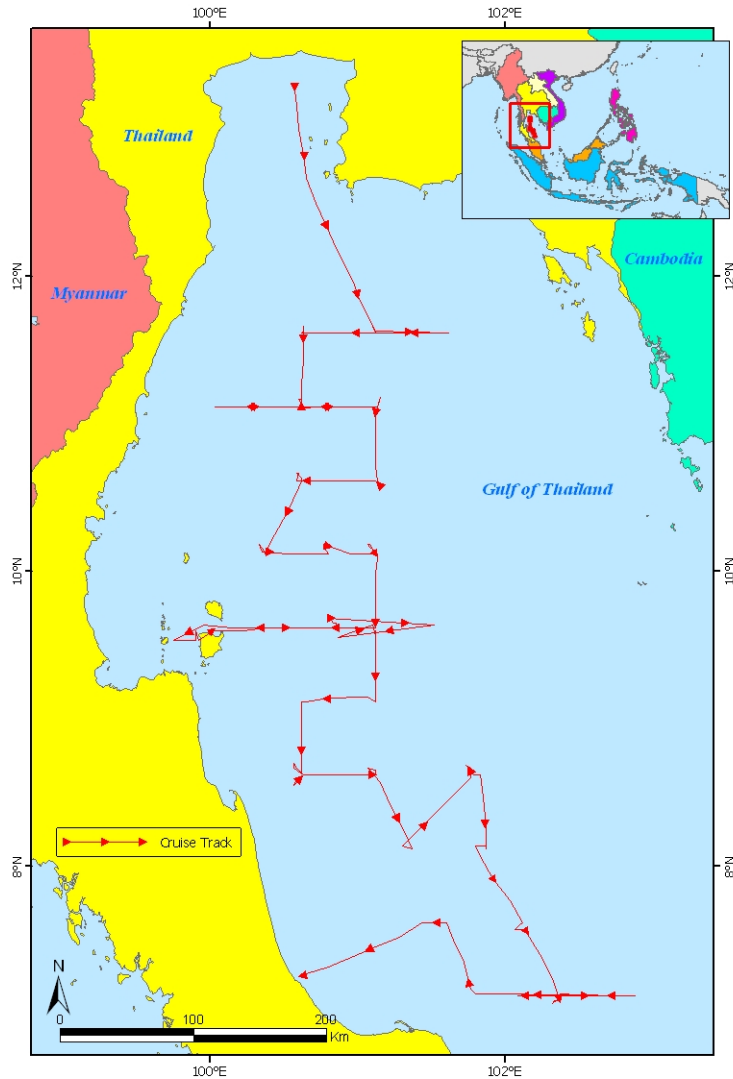
Oceanographic st.		Date	Time (Thai)	Lat	Long	Bottom Depth (m)	Oceanographic instruments				Profile name		
SEAFDEC	DOF Thailand						SBE CTD	TSG	PRR 2600	Bongo	SBE CTD	PRR	TSG
1	52	2 Feb 05	0848	11° 37' 36 N	101° 07' 89 E	57.6	√	√	-	√	s2d07001	-	20050202(1)
2	50	2 Feb 05	1255	11° 37' 44 N	100° 37' 71 E	47	√	√	√	√	s2d07002	2005_02_02_1308	20050202(2)
3	76	3 Feb 05	0735	11° 06' 11 N	100° 37' 32 E	58	√	√	-	√	s2d07003	-	20050203(1)
4	78	3 Feb 05	1130	11° 07' 43 N	101° 07' 89 E	60	√	√	√	√	s2d07004	2005_02_03_1136	20050203(2)
5	108	3 Feb 05	1730	10° 37' 67 N	101° 07' 70 E	63	√	√	-	√	s2d07005	-	20050203(3)
6	106	4 Feb 05	0743	10° 37' 51 N	100° 37' 95 E	54	√	√	-	√	s2d07006	-	20050204(1)
7	140	4 Feb 05	1145	10° 07' 63 N	100° 22' 56 E	60	√	√	√	√	s2d07007	2005_02_04_1153	20050204(2)
8	142	4 Feb 05	1734	10° 07' 51 N	100° 48' 05 E	60	√	√	-	√	s2d07008	-	20050204(3)
9	143	5 Feb 05	0533	10° 06' 60 N	101° 08' 01 E	69	√	-	-	√	s2d07009	-	-
10	184	5 Feb 05	1115	09° 37' 33 N	101° 07' 75 E	64	√	-	√	√	s2d07010	2005_02_05_1115	-
11	183	5 Feb 05	1349	09° 37' 43 N	100° 52' 89 E	56	√	-	√	√	s2d07011	2005_02_05_1401	-
12	181	5 Feb 05	1757	09° 37' 55 N	100° 22' 89 E	40	√	-	-	√	s2d07012	-	-
13	224	8 Feb 05	1417	09° 07' 35 N	101° 07' 80 E	59	√	√	√	√	s2d07013	2005_02_08_1358	20050208(3)
14	222	8 Feb 05	1957	09° 07' 15 N	100° 37' 45 E	36	√	-	-	-	s2d07014	-	-
15	269	9 Feb 05	0545	08° 37' 10 N	100° 38' 19 E	30	√	√	-	√	s2d07015	-	20050209(1)
16	271	9 Feb 05	1147	08° 37' 51 N	101° 07' 85 E	56	√	√	√	√	s2d07016	2005_02_09_1148	20050209(2)
17	323	9 Feb 05	1755	08° 07' 46 N	101° 22' 97 E	50	√	-	-	√	s2d07017	-	-
18	273	10 Feb 05	0535	08° 37' 78 N	101° 46' 97 E	75	√	√	-	√	s2d07018	-	20050210(1)
19	325	10 Feb 05	1058	08° 07' 37 N	101° 52' 83 E	74	√	√	√	√	s2d07019	2005_02_10_1100	20050210(2)
20	376	10 Feb 05	1650	07° 37' 71 N	102° 07' 60 E	69	√	√	-	√	s2d07020	-	20050210(3)
21	426	11 Feb 05	0530	07° 07' 62 N	102° 22' 93 E	50	√	√	-	√	s2d07021	-	20050211(1)
22	424	11 Feb 05	1105	07° 07' 56 N	101° 52' 63 E	50	√	√	√	√	s2d07022	2005_02_11_1108	20050211(2)

**Table 4** Partial details of fishing survey cruise no. 7-1/2005 (1-13 February 2005) in the Gulf of Thailand

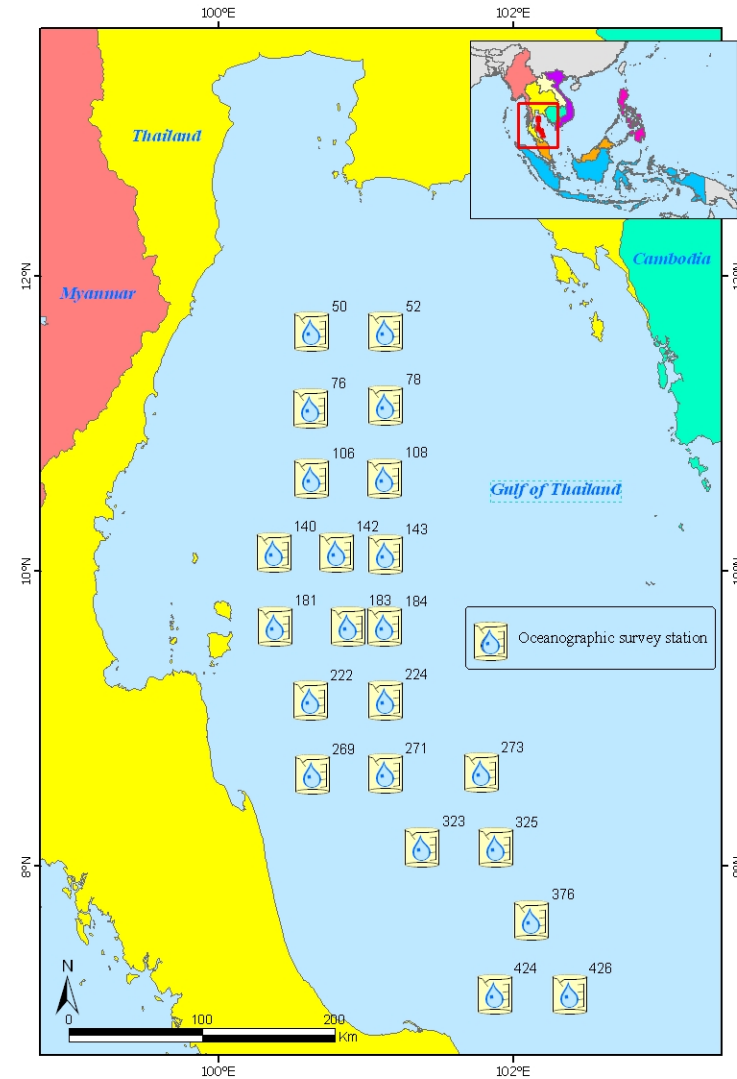
Station no.	Date		Shooting		Hauling		Depth of capture (m)	Speed vessel (kt)	Total catch (kg)
			Start	Finish	Start	Finish			
52	2-Feb-05	Time	0642	0700	0800	0815	54.0-56.0	3.3	5.977
		Latitude	11° 36'.38 N	11° 37'.33 N	11° 40'.55 N	11° 40'.92 N			
		Longitude	101° 07'.78 E	101° 07'.55 E	101° 06'.67 E	101° 06'.54 E			
50	2-Feb-05	Time	1401	1415	1515	1528	38.0-46.0	3.3-3.5	6.205
		Latitude	11° 37'.54 N	11° 38'.16 N	11° 41'.64 N	11° 41'.92 N			
		Longitude	100° 38'.02 E	100° 38'.07 E	100° 38'.31 E	100° 38'.33 E			
76	3-Feb-05	Time	0555	0610	0710	0730	55.0-57.5	3.3-3.4	8.675
		Latitude	11° 10'.54 N	11° 09'.77 N	11° 06'.47 N	11° 06'.13 N			
		Longitude	100° 37'.62 E	100° 37'.61 E	100° 37'.55 E	100° 37'.32 E			
78	3-Feb-05	Time	1228	1255	1355	1412	59.0	3.2	6.869
		Latitude	11° 07'.22 N	11° 08'.02 N	11° 11'.40 N	11° 11'.80 N			
		Longitude	101° 08'.67 E	101° 08'.76 E	101° 09'.37 E	101° 09'.50 E			
108	3-Feb-05	Time	1804	1821	1902	1927	58.0-63.0	3.2	5.362
		Latitude	10° 37'.72 N	10° 36'.93 N	10° 35'.28 N	10° 35'.38 N			
		Longitude	101° 08'.70 E	101° 08'.47 E	101° 09'.08 E	101° 08'.59 E			
106	4-Feb-05	Time	0600	0617	0713	0727	59.0-60.0	3.3-3.6	13.441
		Latitude	10° 37'.49 N	10° 37'.55 N	10° 37'.73 N	10° 37'.86 N			
		Longitude	100° 35'.62 E	100° 36'.59 E	100° 39'.73 E	100° 39'.99 E			
140	4-Feb-05	Time	1254	1308	1410	1426	57.0-62.0	3.3-3.5	19.973
		Latitude	10° 08'.62 N	10° 09'.32 N	10° 12'.23 N	10° 12'.47 N			
		Longitude	100° 22'.82 E	100° 22'.34 E	100° 20'.51 E	100° 20'.30 E			
142	4-Feb-05	Time	1808	1822	1922	1937	60.1-65.7	3.5	11.630
		Latitude	10° 08'.24 N	10° 09'.10 N	10° 12'.04 N	10° 12'.44 N			
		Longitude	100° 48'.30 E	100° 47'.70 E	100° 45'.73 E	100° 45'.44 E			
143	5-Feb-05	Time	0553	0614	0633	0706	70.0	3.0-3.5	Operation cancelled*
		Latitude	10° 06'.60 N	10° 05'.77 N	10° 04'.99 N	10° 04'.52 N			
		Longitude	101° 08'.12 E	101° 08'.57 E	101° 09'.00 E	101° 08'.59 E			
183	8-Feb-05	Time	0551	0615	0715	0730	57.0-59.6	3.0-3.5	11.495
		Latitude	09° 38'.23 N	09° 36'.98 N	09° 33'.63 N	09° 33'.33 N			
		Longitude	100° 51'.90 E	100° 52'.02 E	100° 52'.36 E	100° 52'.27 E			
184	8-Feb-05	Time	0903	0918	1018	1036	63.0-66.0	3.4-3.5	8.637
		Latitude	09° 38'.67 N	09° 37'.81 N	09° 34'.75 N	09° 34'.19 N			
		Longitude	100° 06'.58 E	100° 06'.83 E	101° 07'.42 E	101° 07'.49 E			
224	8-Feb-05	Time	1449	1506	1606	1624	59.0-61.0	3.1-3.3	5.780
		Latitude	09° 08'.00 N	09° 08'.23 N	09° 09'.70 N	09° 09'.69 N			
		Longitude	101° 07'.50 E	101° 06'.98 E	101° 04'.08 E	101° 03'.72 E			
222	8-Feb-05	Time	1827	1839	1939	1952	32.0-40.0	3.2	12.935
		Latitude	09° 07'.83 N	09° 07'.73 N	09° 07'.30 N	09° 07'.20 N			
		Longitude	100° 41'.20 E	100° 40'.85 E	100° 37'.81 E	100° 37'.48 E			
269	9-Feb-05	Time	0646	0700	0800	0813	29.1-29.5	3.0	4.430
		Latitude	08° 36'.29 N	08° 35'.60 N	08° 32'.90 N	08° 32'.84 N			
		Longitude	100° 36'.40 E	100° 35'.80 E	100° 34'.56 E	100° 34'.18 E			
271	9-Feb-05	Time	1240	1253	1353	1409	29.1-29.5	3.2-3.4	8.160
		Latitude	08° 38'.50 N	08° 38'.93 N	08° 40'.70 N	08° 40'.84 N			
		Longitude	101° 07'.90 E	101° 07'.22 E	101° 04'.48 E	101° 04'.17 E			
323	9-Feb-05	Time	1846	1900	2000	2016	52.0	3.4	9.765
		Latitude	08° 07'.68 N	08° 07'.78 N	08° 08'.20 N	08° 08'.23 N			
		Longitude	101° 22'.65 E	101° 21'.79 E	101° 17'.80 E	101° 17'.90 E			
275	10-Feb-05	Time	0547	0605	0705	0720	76.0-76.8	3.2-3.5	12.798
		Latitude	08° 37'.94 N	08° 37'.85 N	08° 37'.41 N	08° 37'.53 N			
		Longitude	101° 46'.82 E	101° 47'.80 E	101° 51'.08 E	101° 51'.30 E			
325	10-Feb-05	Time	1153	1210	1310	1327	73.0-74.0	3.3	6.855
		Latitude	08° 08'.08 N	08° 08'.30 N	08° 08'.88 N	08° 08'.90 N			
		Longitude	101° 52'.41 E	101° 51'.29 E	101° 48'.01 E	101° 47'.60 E			
376	10-Feb-05	Time	1727	1742	1842	1900	66.0-72.0	3.3-3.5	8.010
		Latitude	07° 37'.69 N	07° 36'.94 N	07° 43'.89 N	07° 34'.46 N			
		Longitude	102° 07'.95 E	102° 07'.00 E	102° 04'.45 E	102° 04'.11 E			
426	11-Feb-05	Time	0555	0608	0708	0719	50.0-51.0	3.2-3.4	7.857
		Latitude	07° 07'.53 N	07° 07'.93 N	07° 08'.74 N	07° 08'.38 N			
		Longitude	102° 22'.70 E	102° 23'.42 E	102° 26'.62 E	102° 26'.80 E			
424	11-Feb-05	Time	1200	1220	1320	1335	50.0	3.2-3.4	4.667
		Latitude	07° 08'.08 N	07° 08'.37 N	07° 08'.50 N	07° 08'.50 N			
		Longitude	101° 52'.19 E	101° 50'.76 E	101° 47'.52 E	101° 47'.15 E			
374	11-Feb-05	Time	1650	1705	1805	1827	49.0-50.0	3.3	8.355
		Latitude	07° 37'.42 N	07° 37'.33 N	07° 37'.00 N	07° 36'.72 N			
		Longitude	101° 37'.50 E	101° 36'.47 E	101° 33'.19 E	101° 32'.30 E			

\* Net is struggle by rough bottom topography and widely broken at the left wing. Operation is cancelled in order to repair trawl.

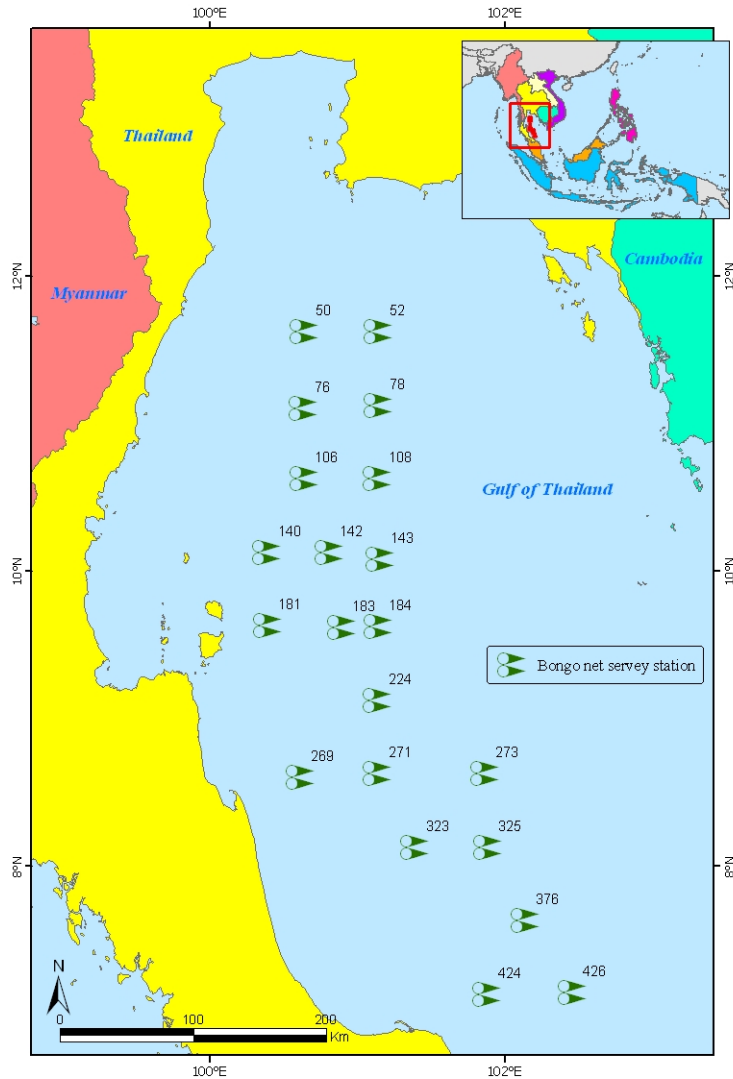




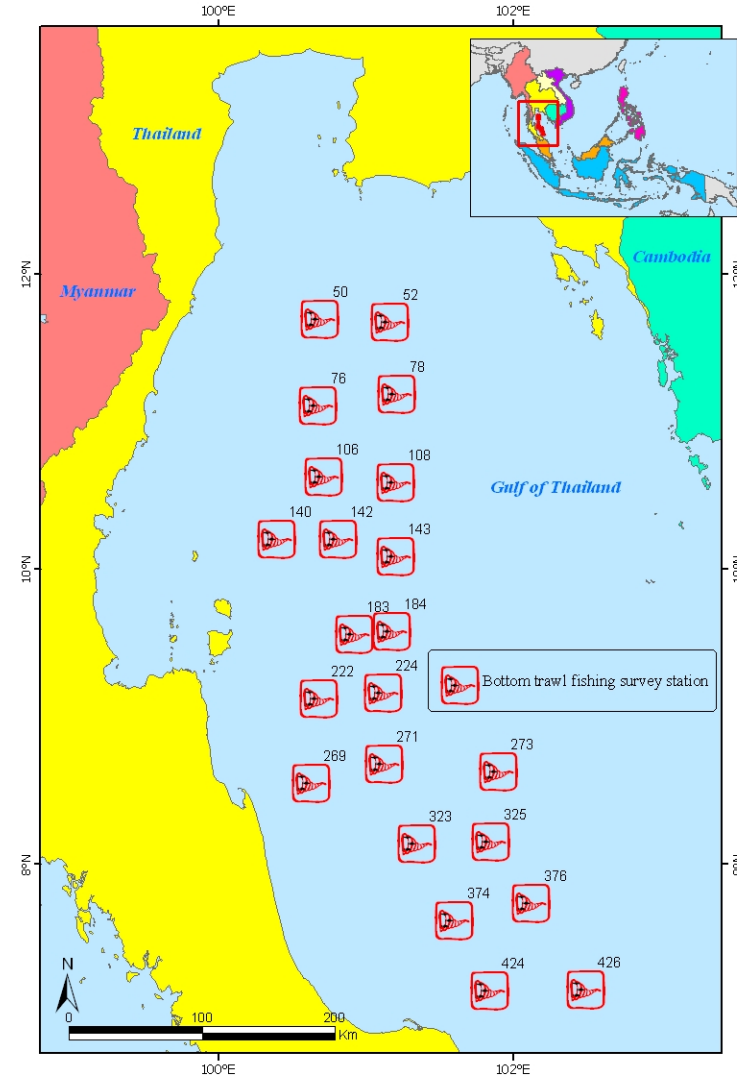
**Fig. 2** Cruise track map: cruise no. 7-1/2005 (1-13 February 2005) in the Gulf of Thailand



**Fig. 3** Oceanographic survey stations of cruise no. 7-1/2005 (1-13 February 2005) in the Gulf of Thailand

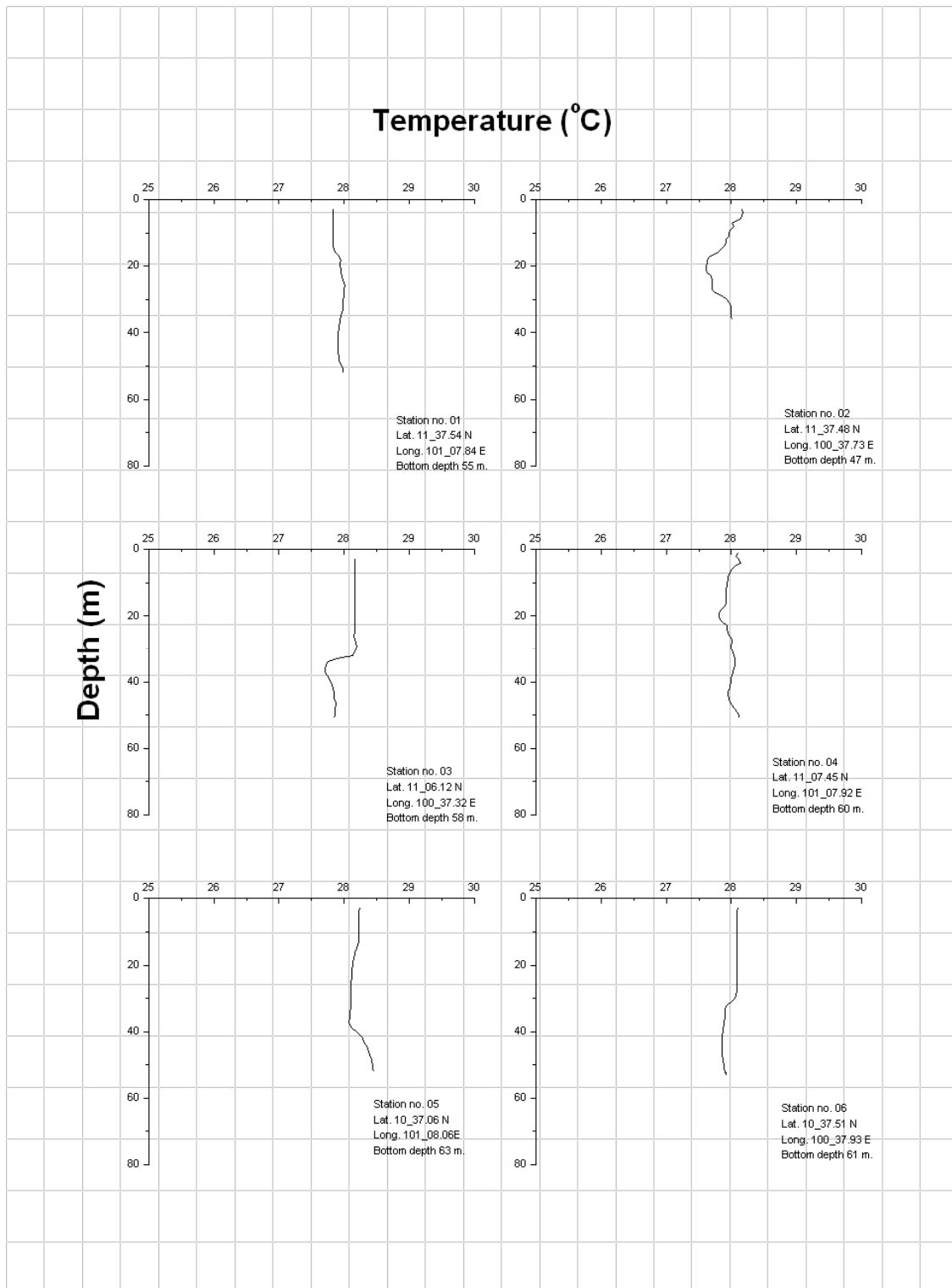


**Fig. 4** Bongo net survey stations of cruise no. 7-1/2005 (1-13 February 2005) in the Gulf of Thailand

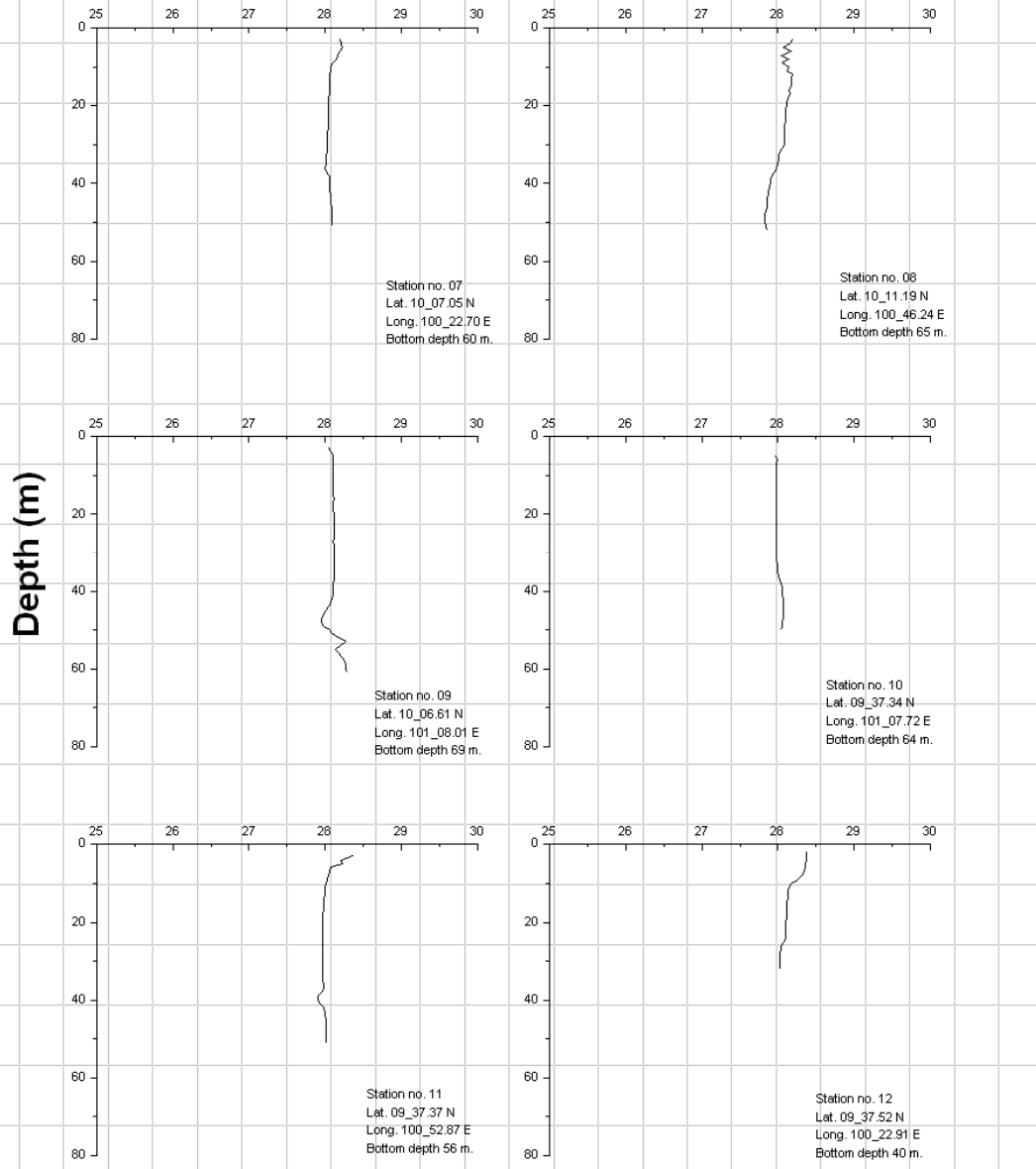


**Fig. 5** Bottom Trawl fishing survey stations cruise no. 7-1/2005 (1-13 February 2005) in the Gulf of Thailand

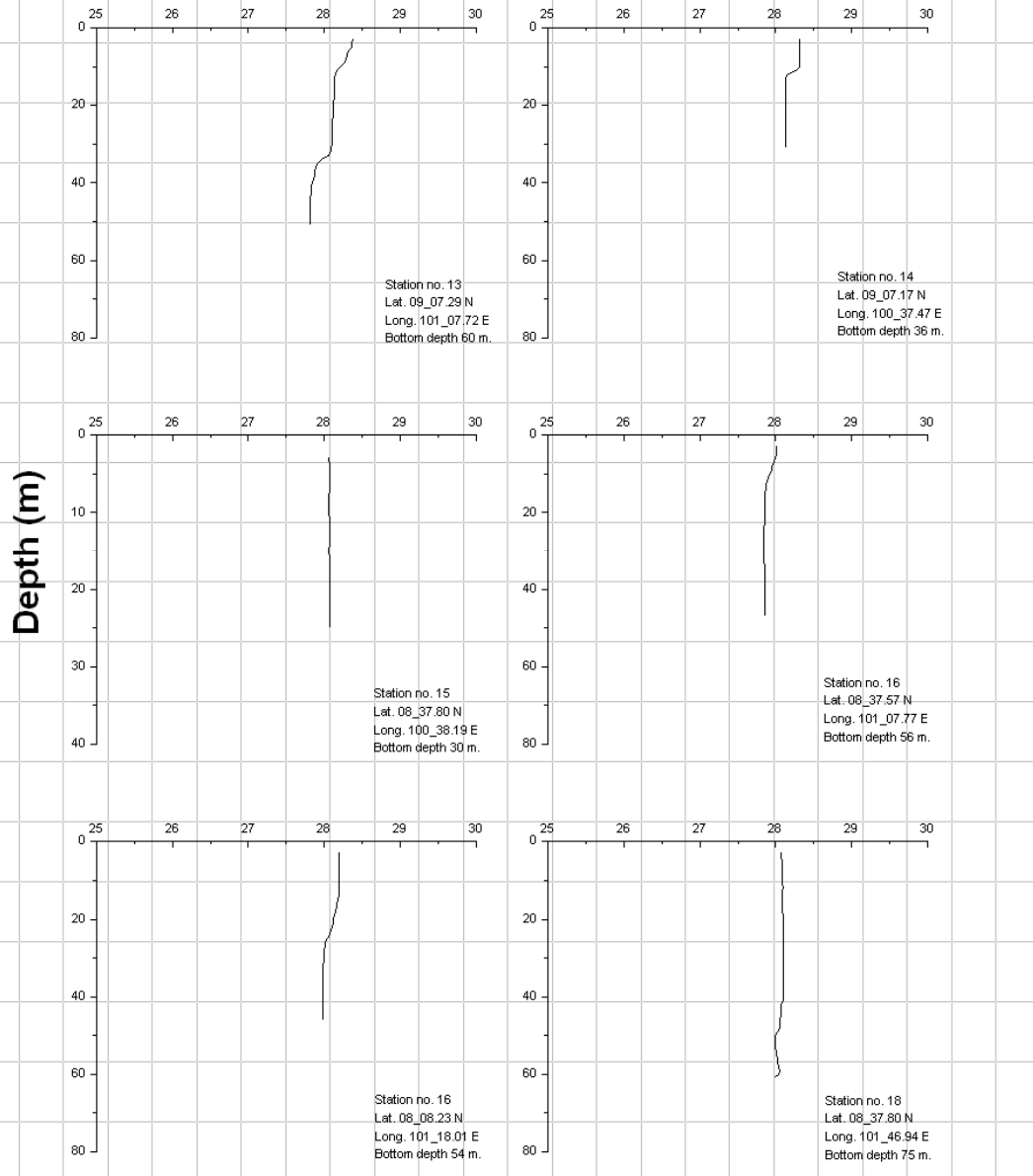
# Appendix I



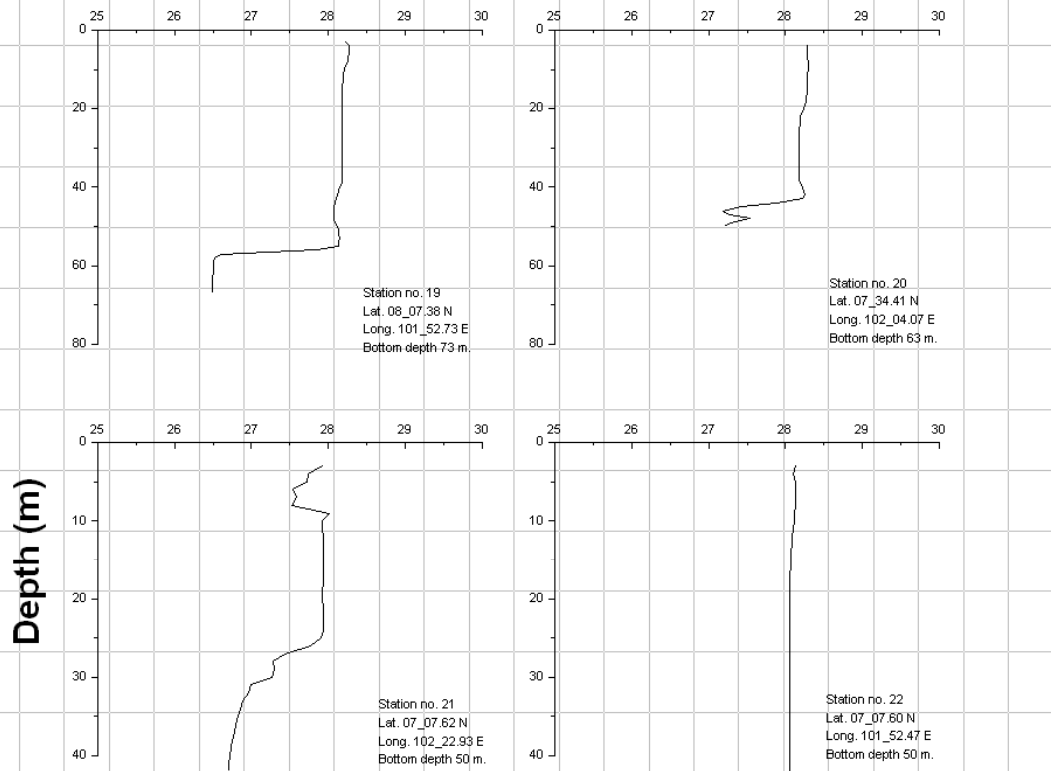
# Temperature (°C)



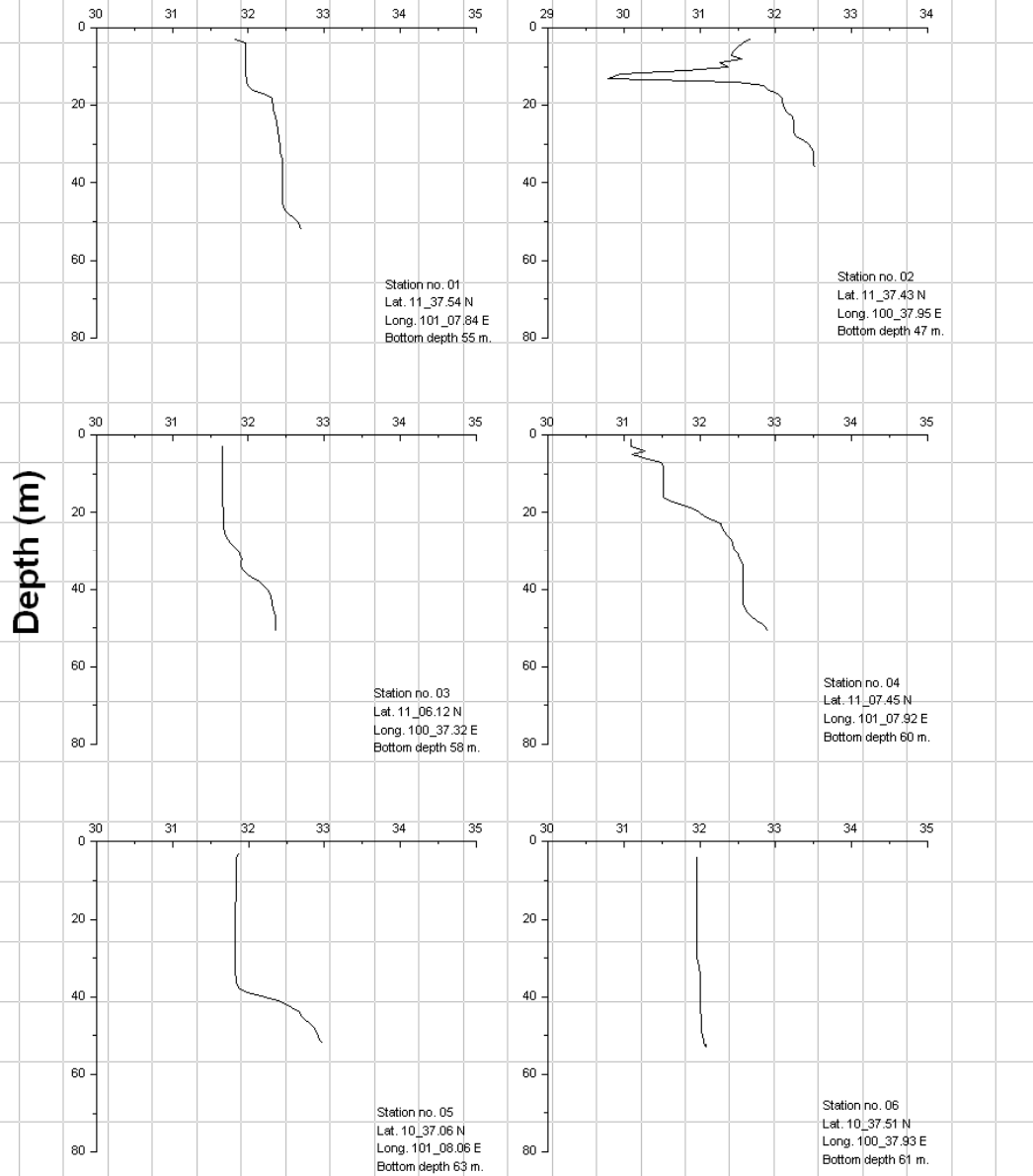
# Temperature (°C)



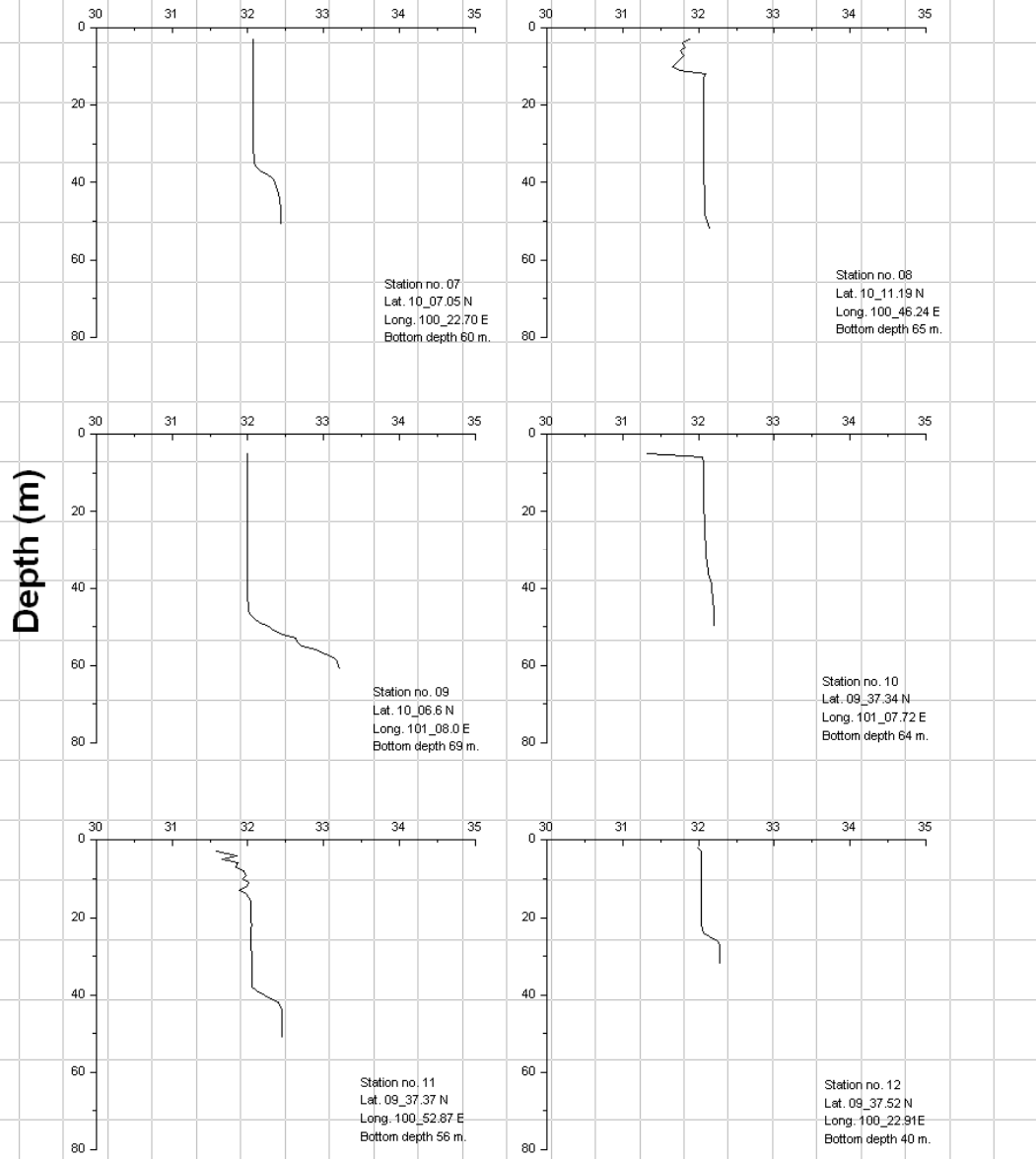
# Temperature (°C)



# Salinity (PSU)

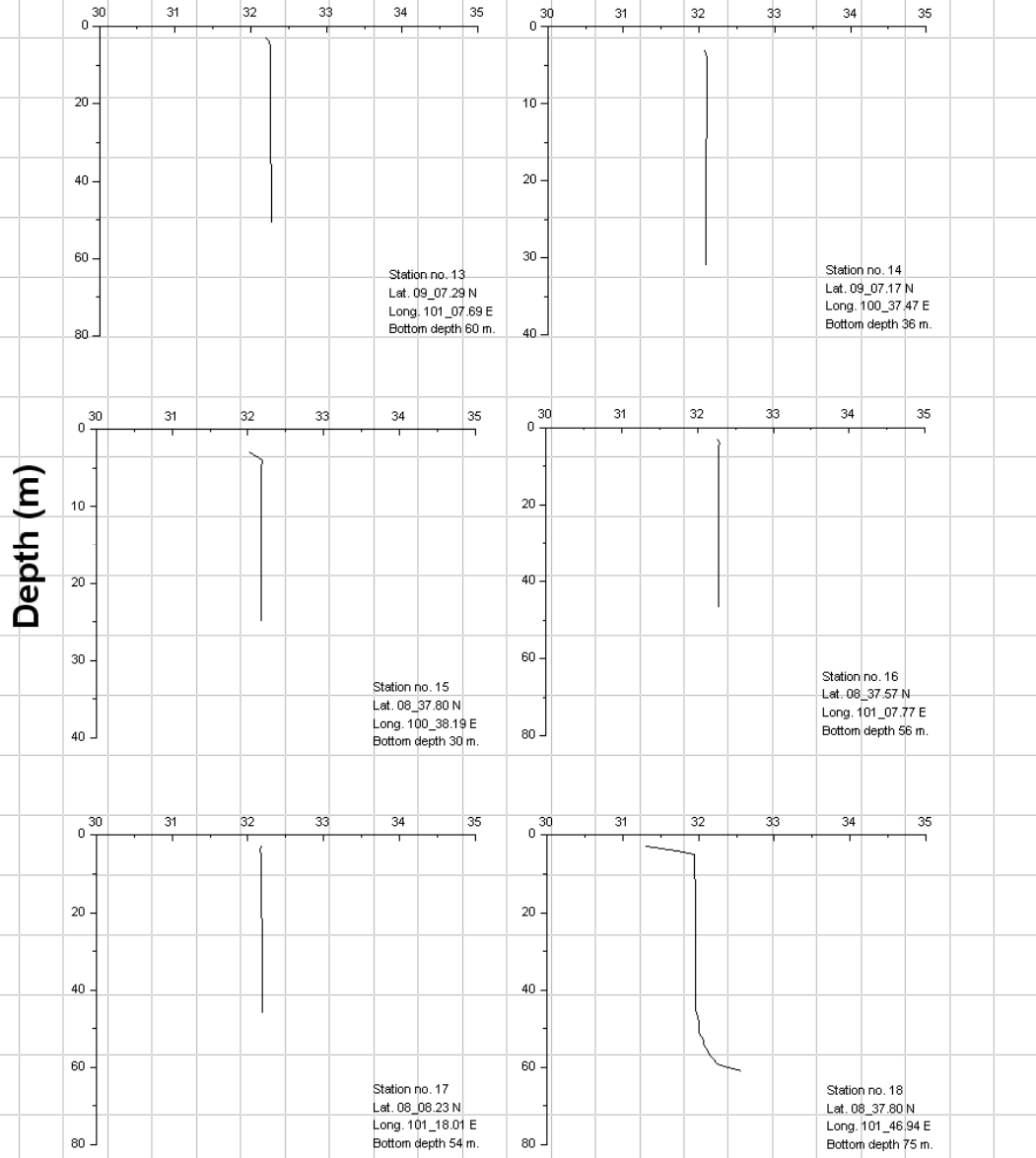


# Salinity (PSU)

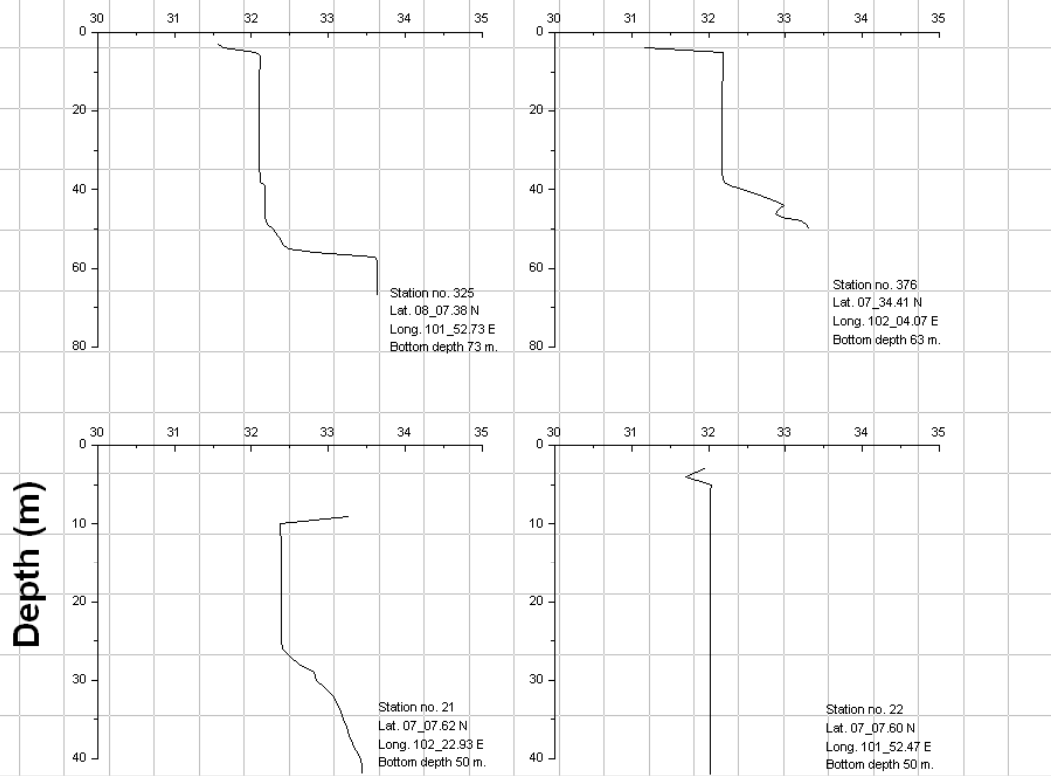




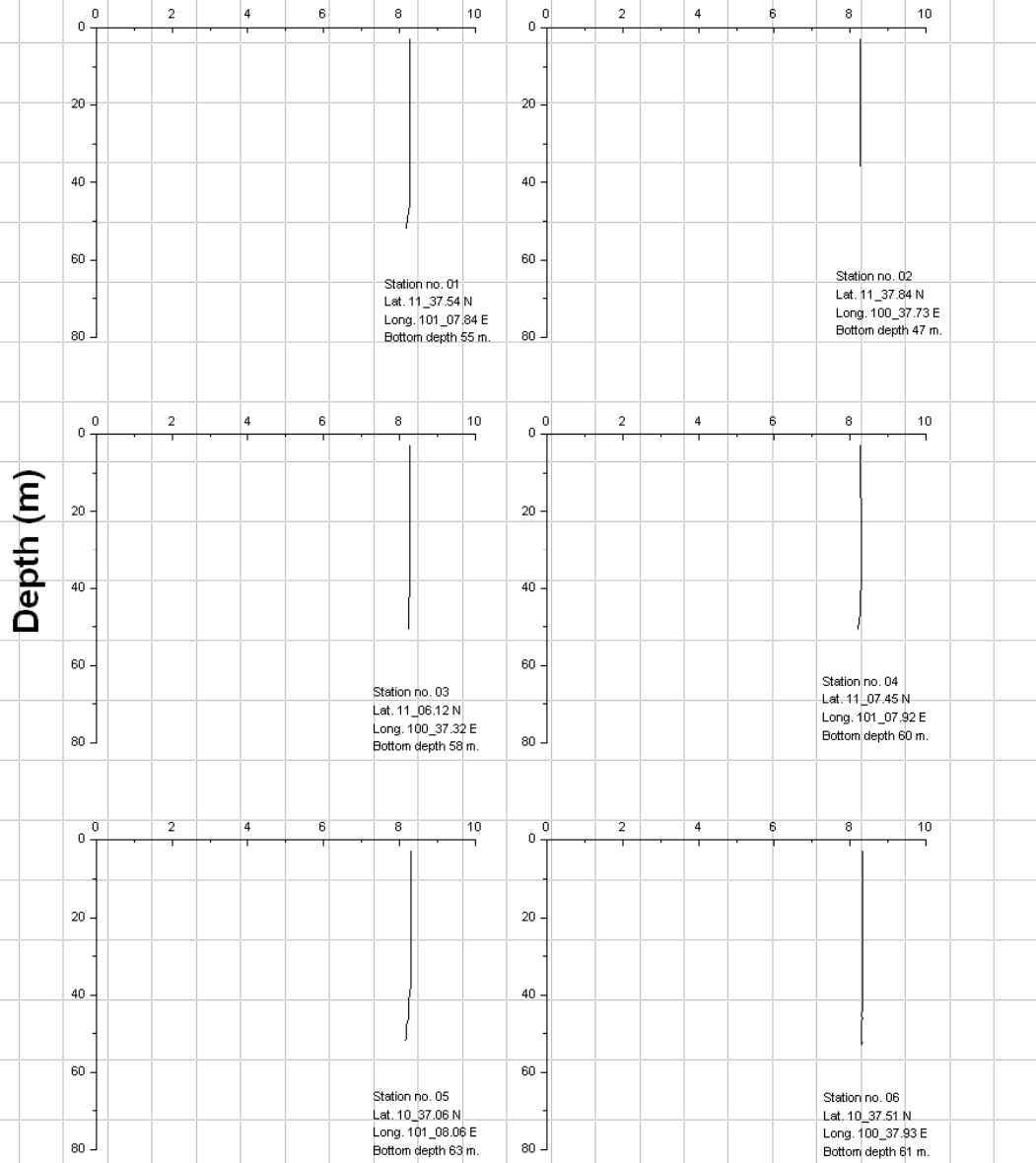
# Salinity (PSU)



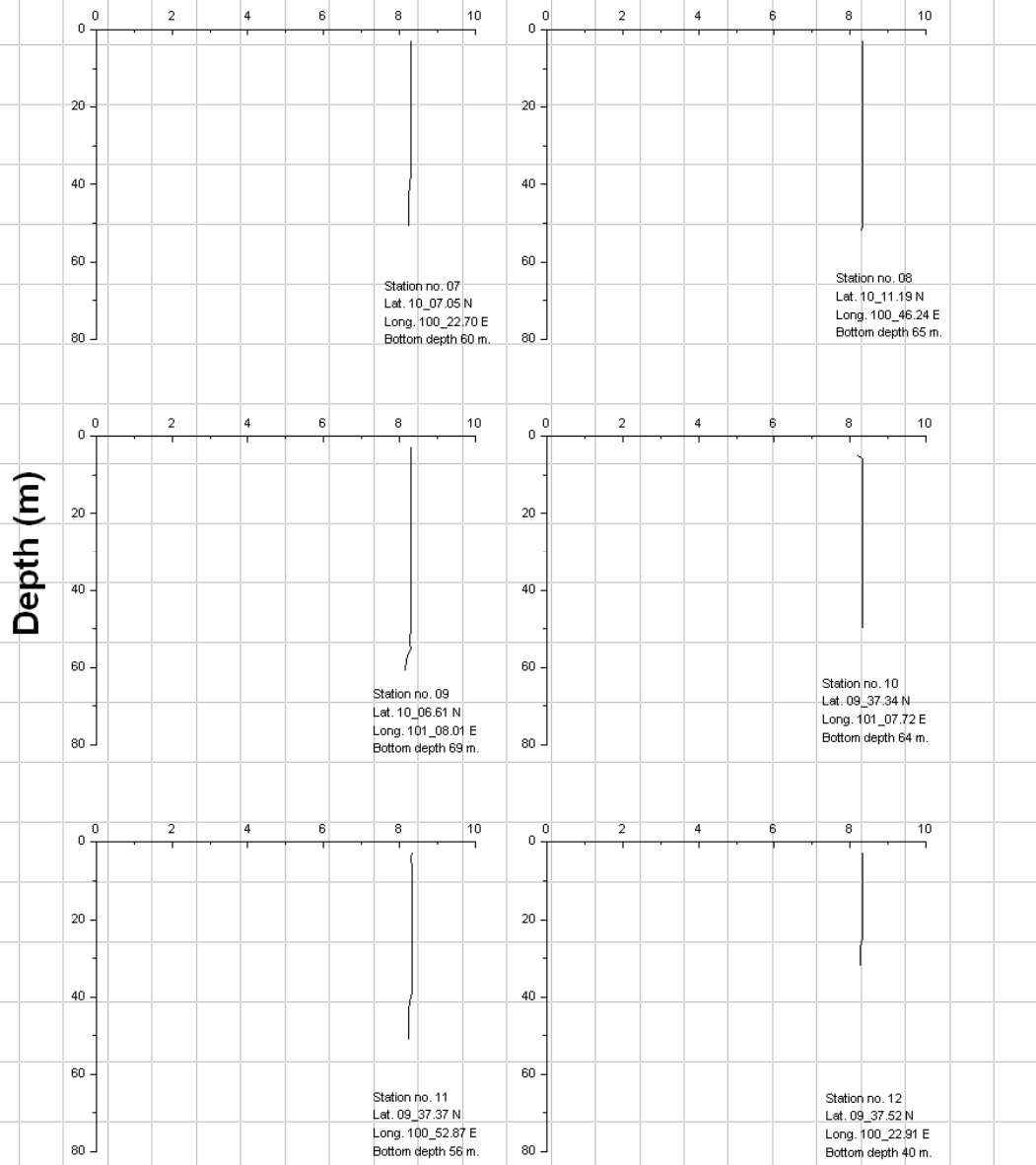
# Salinity (PSU)



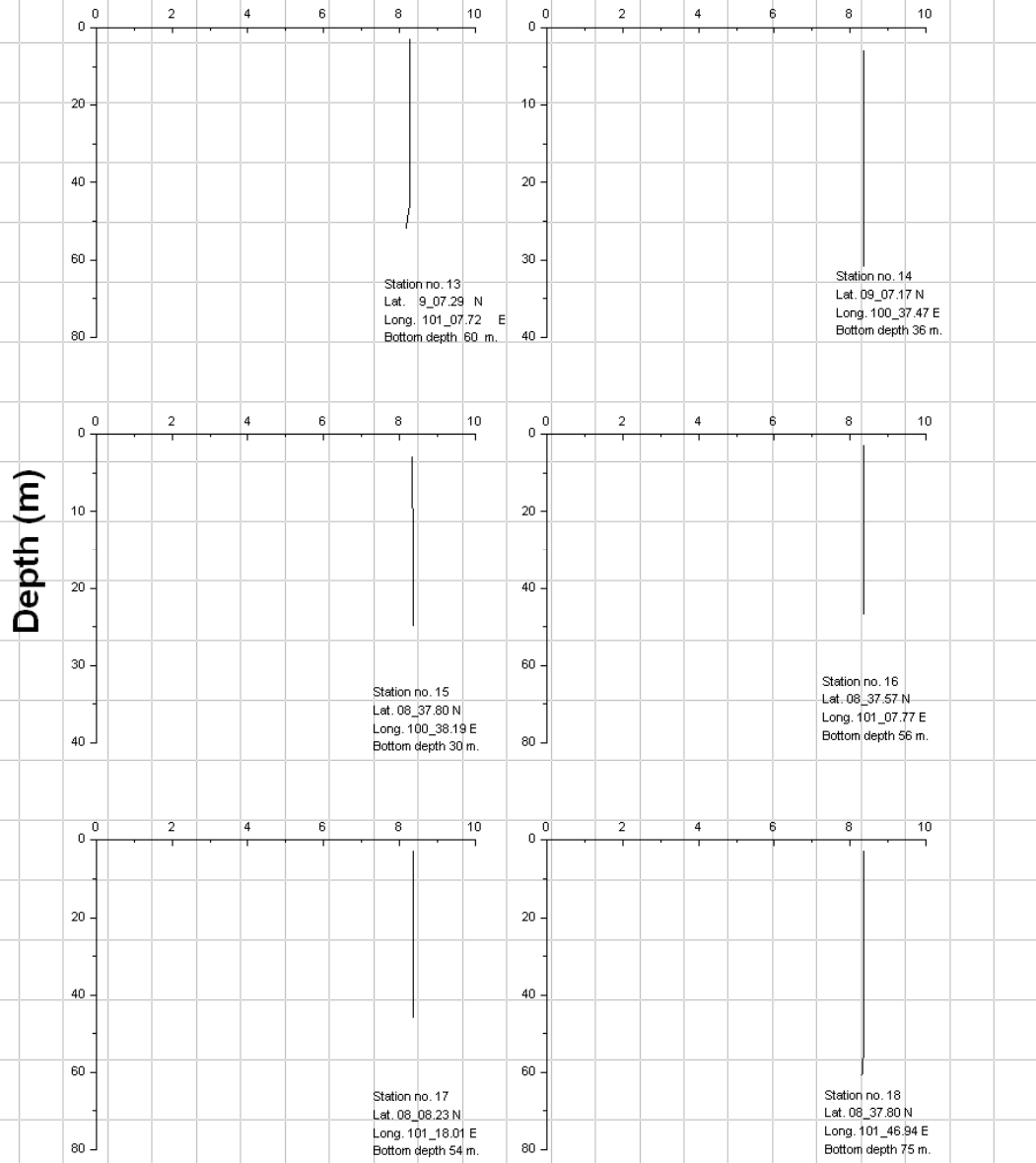
# pH

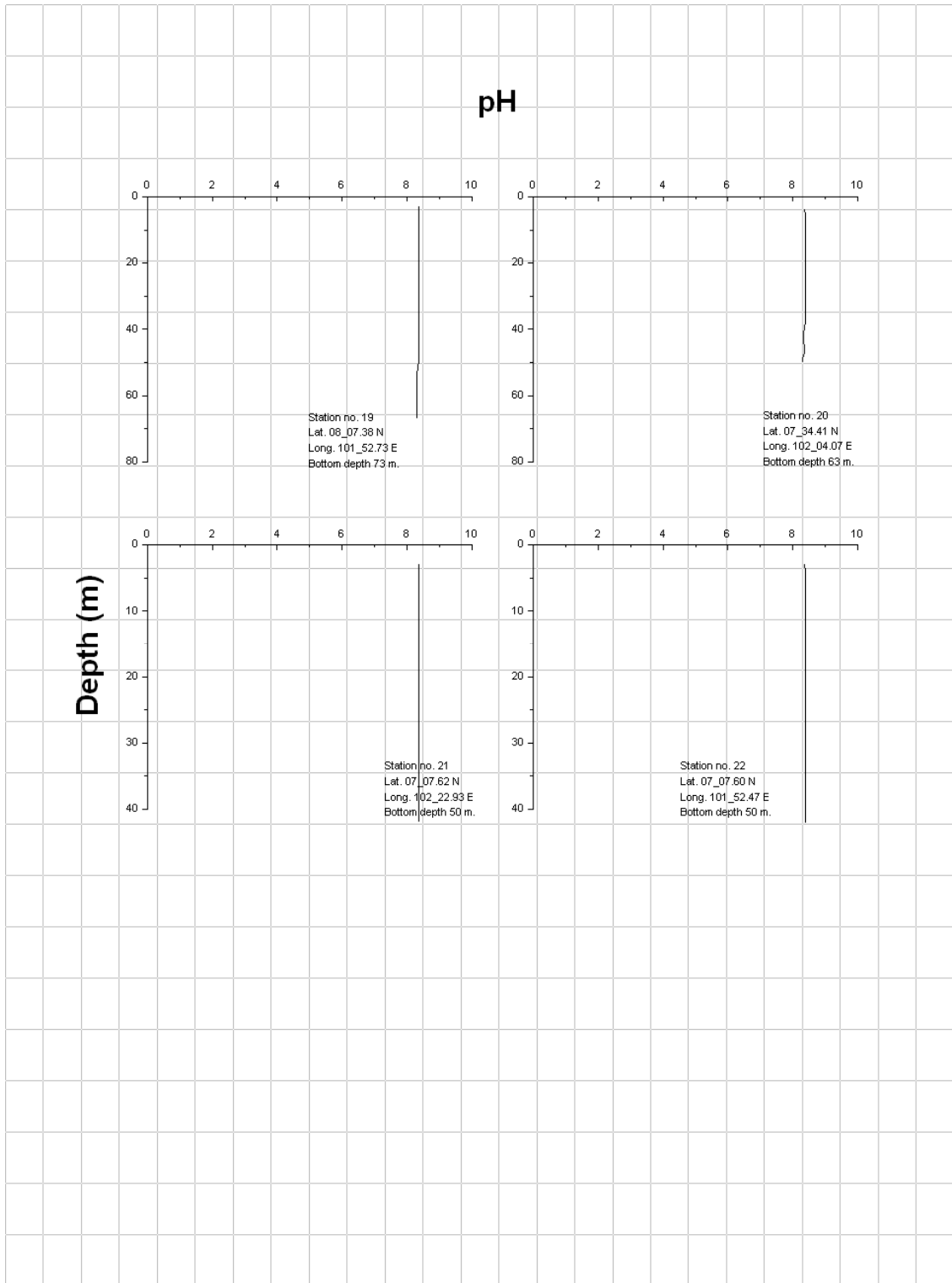


# pH

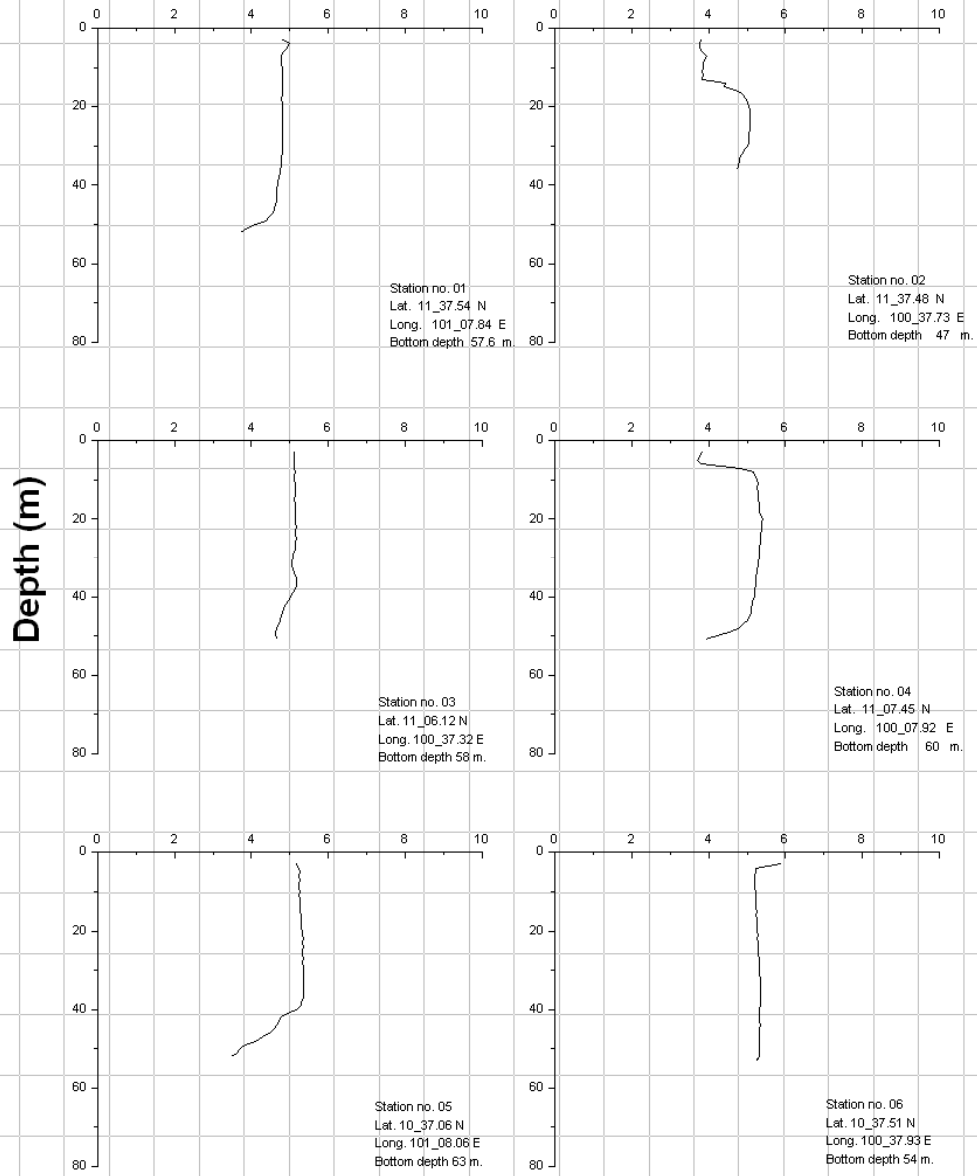


# pH

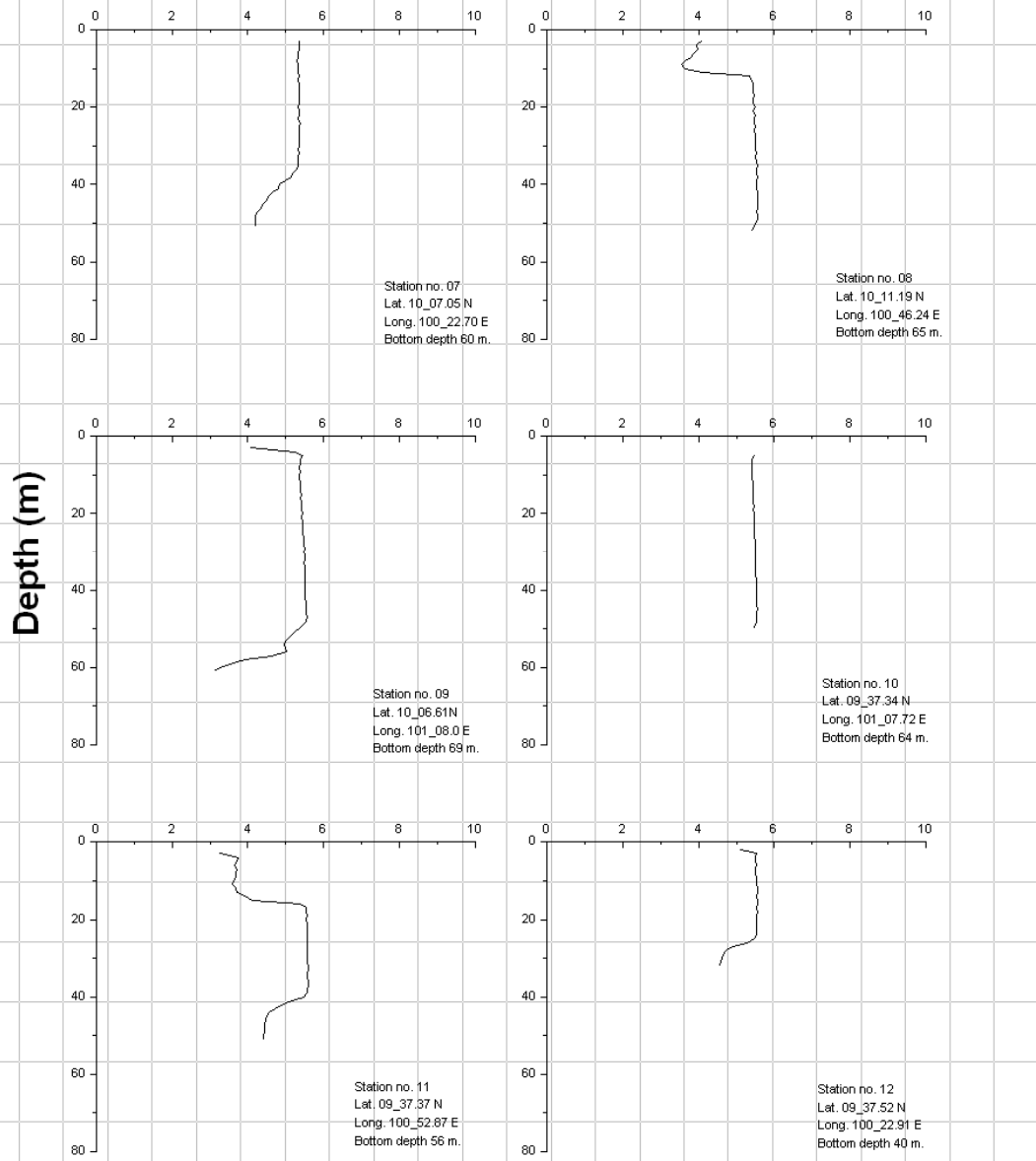




# Oxygen (ml/l)

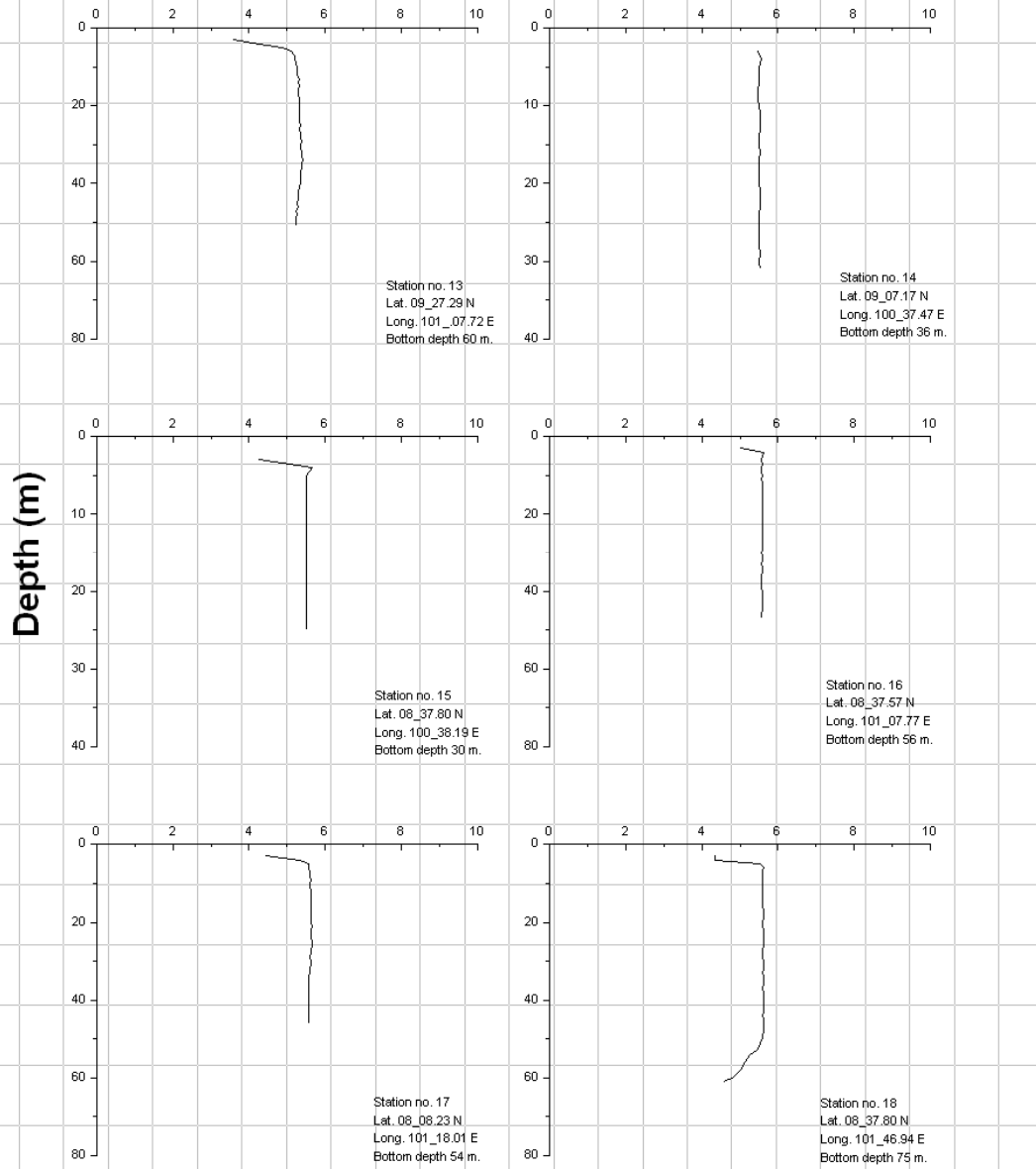


# Oxygen (ml/l)

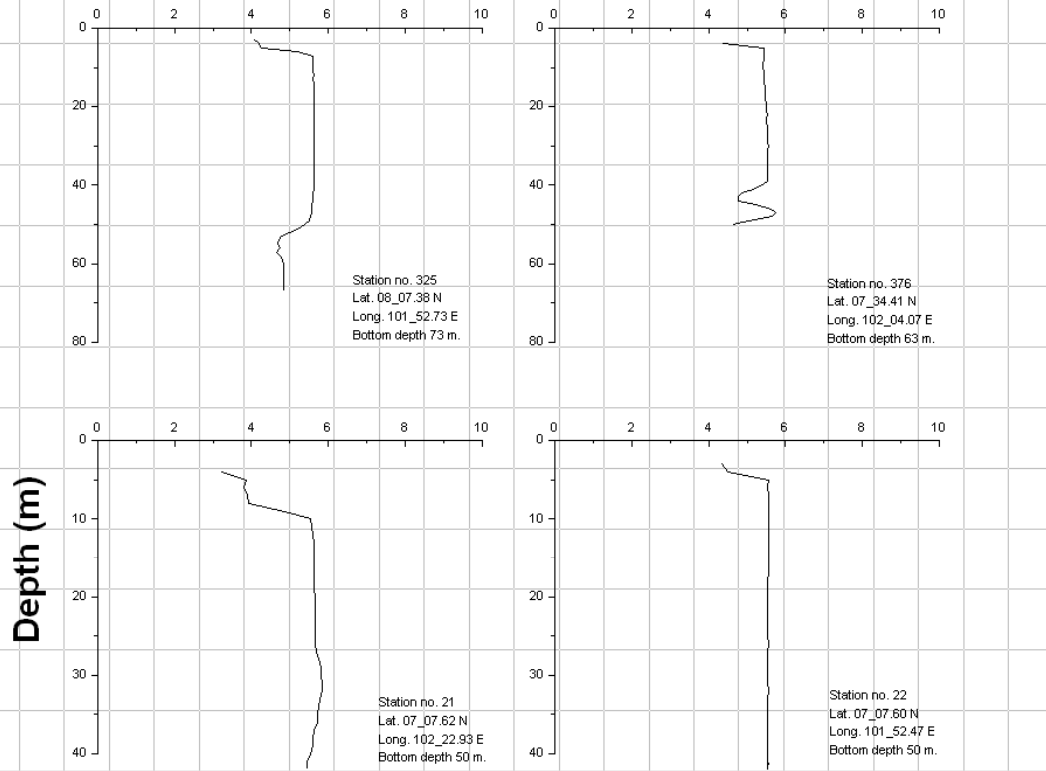




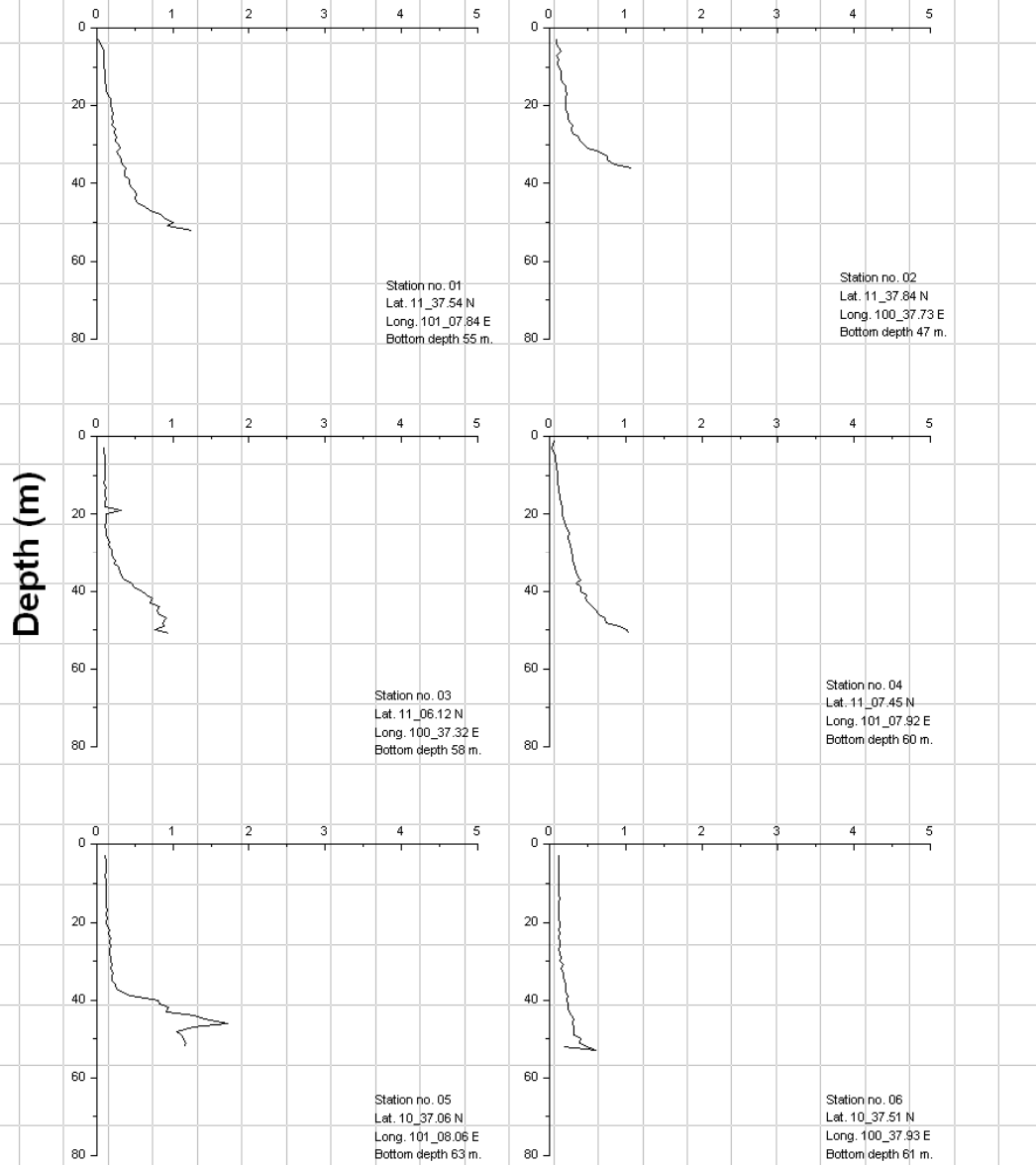
# Oxygen (ml/l)



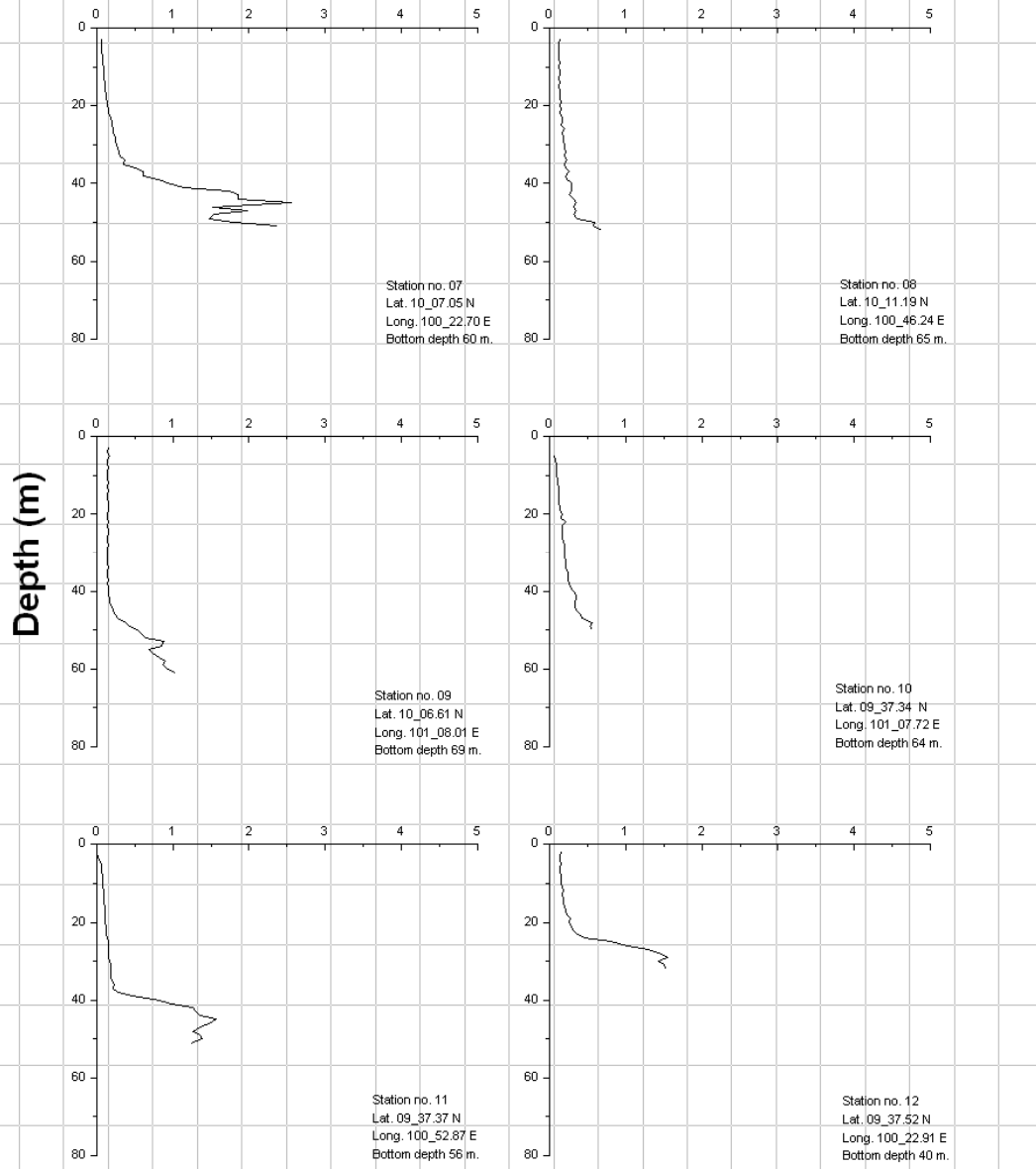
# Oxygen (ml/l)



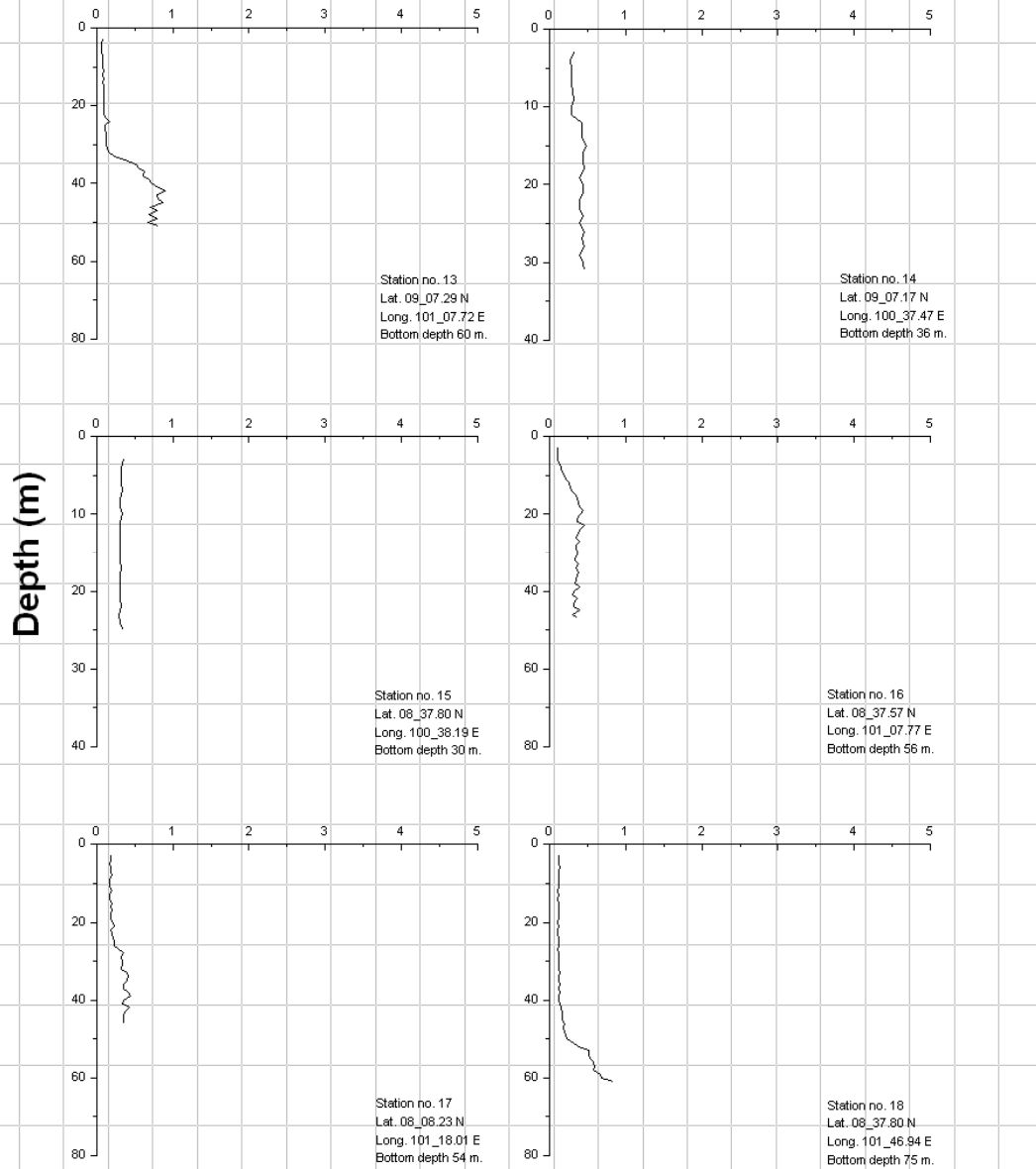
# Fluorescence



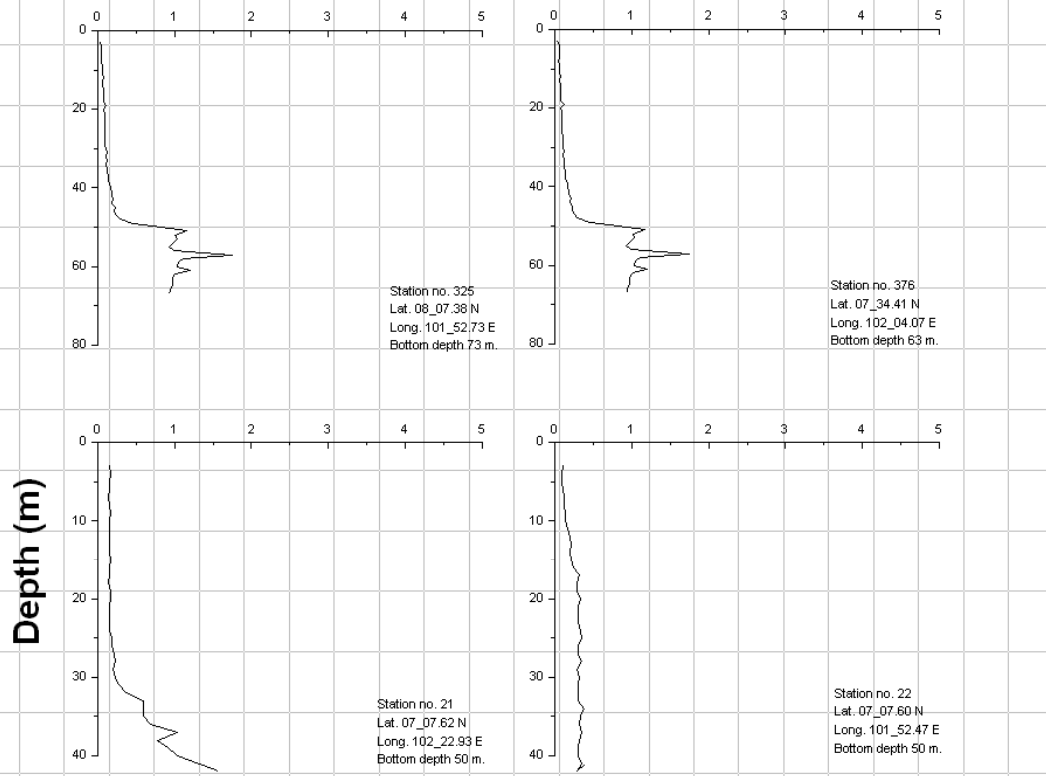
# Fluorescence



# Fluorescence



# Fluorescence



## Appendix II

Doc ID.	2467	Station	52-50	Ship Course	270	Remark
	2-2-05	From	Lat. 11°37.385 N	Ship Speed	10 kt.	
Start Time	0955		Long. 101°07.660 E	Sea State	Slight	
Finish Time	1253	To	Lat. 11°37.423 N	Bottom Depth	43-51 m.	
			Long. 101°37.710 E			
Doc ID.	2468	Station	50-76	Ship Course	180	Remark
Date	2-2-05	From	Lat. 11°37.375 N	Ship Speed	10 kt.	
Start Time	1555		Long. 100°38.075 E	Sea State	Slight	
Finish Time	1853	To	Lat. 11°07.416 N	Bottom Depth	43- m.	
			Long. 101°37.800 E			
Doc ID.	2470	Station	76-78	Ship Course	090	Remark The finish position was forgot to record
Date	3-2-05	From	Lat. 11°07.329 N	Ship Speed	10 kt.	
Start Time	0837		Long. 101°37.890 E	Sea State	Slight	
Finish Time	1127	To	Lat. -	Bottom Depth	52-57 m.	
			Long. -			
Doc ID.	2471	Station	78-108	Ship Course	180	Remark
Date	3-2-05	From	Lat. 11°07.400 N	Ship Speed	10 kt.	
Start Time	1440		Long. 101°07.791 E	Sea State	Slight	
Finish Time	1728	To	Lat. 10°37.787 N	Bottom Depth	56-63 m.	
			Long. 101°07.670 E			
Doc ID.	2472	Station	108-106	Ship Course	270	Remark
Date	3-2-05	From	Lat. 10°37.416 N	Ship Speed	10 kt.	
Start Time	1955		Long. 101°07.731 E	Sea State	Slight	
Finish Time	2247	To	Lat. 10°37.472 N	Bottom Depth	57-63 m.	
			Long. 100°37.722 E			

Doc ID.	2477	Station		106-140	Ship Course	206	Remark
Date	4-2-05	From	Lat.	10°37.327 N	Ship Speed	10 kt.	
Start Time	0835		Long.	100°37.738 E	Sea State	Slight	
Finish Time	1147	To	Lat.	10°07.395 N	Bottom Depth	58- m.	
			Long.	100°22.778 E			
Doc ID.	2478	Station		140-142	Ship Course	090	Remark Stop survey 5 nm. before arrive station 142
Date	4-2-05	From	Lat.	10°07.230 N	Ship Speed	10 kt.	
Start Time	1506		Long.	100°22.734 E	Sea State	Slight	
Finish Time	1735	To	Lat.	10°07.464 N	Bottom Depth	54- m.	
			Long.	100°47.958 E			
Doc ID.	2479	Station		142-143	Ship Course	180	Remark The survey was cancel because of the sea stage is not good
Date	4-2-05	From	Lat.	10°07.459 N	Ship Speed	10 kt.	
Start Time	2049		Long.	100°52.851 E	Sea State	Slight to Moderate	
Finish Time	2108	To	Lat.	10°07.514 N	Bottom Depth	62- m.	
			Long.	100°55.364 E			
Doc ID.	2480	Station		143-184	Ship Course	180	Remark
Date	5-2-05	From	Lat.	10°07.386 N	Ship Speed	10 kt.	
Start Time	0816		Long.	101°07.868 E	Sea State	Slight	
Finish Time	1106	To	Lat.	9°37.345 N	Bottom Depth	62-65 m.	
			Long.	101°07.735 E			
Doc ID.	2481	Station		184-183	Ship Course	270	Remark
Date	5-2-05	From	Lat.	9°37.322 N	Ship Speed	10 kt.	
Start Time	1217		Long.	101°07.601 E	Sea State	Calm	
Finish Time	1347	To	Lat.	9°37.411 N	Bottom Depth	53-62 m.	
			Long.	100°52.923 E			



Doc ID.	2482	Station	183-181	Ship Course	270	Remark
Date	5-2-05	From	Lat. 9°37.320 N	Ship Speed	10 kt.	
Start Time	1506		Long. 100°53.869 E	Sea State	Calm	
Finish Time	1752	To	Lat. 9°37.487 N	Bottom Depth	37-54 m.	
			Long. 100°23.982 E			
Doc ID.	2484	Station	184-224	Ship Course	206	Remark
Date	8-2-05	From	Lat. 9°37.273 N	Ship Speed	10 kt.	There is a message during analyzing data
Start Time	1101		Long. 101°07.395 E	Sea State	Calm to Slight	C:\afuruno\0000002484\Position\Pos.tmp cannot be read
Finish Time	1347	To	Lat. 9°07.380 N	Bottom Depth	59-62 m.	
			Long. 101°07.776 E			
Doc ID.	2486	Station	224-222	Ship Course	265	Remark
Date	8-2-05	From	Lat. 9°09.559 N	Ship Speed	11 kt.	Start position is not on the mark of station 224
Start Time	1629		Long. 101°02.938 E	Sea State	Slight	to save the time for fishing
Finish Time	1822	To	Lat. 9°07.897 N	Bottom Depth	32-56 m.	
			Long. 100°42.090 E			
Doc ID.	2487	Station	222-269	Ship Course	180	Remark
Date	8-2-05	From	Lat. 9°07.304 N	Ship Speed	10 kt.	
Start Time	2010		Long. 100°37.740 E	Sea State	Slight	
Finish Time	2303	To	Lat. 8°37.352 N	Bottom Depth	26-33 m.	
			Long. 100°37.833 E			
Doc ID.	2488	Station	269-271	Ship Course	090	Remark
Date	9-2-05	From	Lat. 8°37.482 N	Ship Speed	10 kt.	There is the strong wind (10 kt) on direction 150;
Start Time	0849		Long. 100°37.831 E	Sea State	Slight	therefore, the last part of survey have a lot of lost
Finish Time	1143	To	Lat. 8°37.472 N	Bottom Depth	27-52 m.	signal
			Long. 101°07.872 E			

Doc ID.	2489	Station	271-323		Ship Course	154	Remark There are lost signal in the start to middle of survey
Date	9-2-05	From	Lat.	8°37.198 N	Ship Speed	10 kt.	
Start Time	1445		Long.	101°07.839 E	Sea State	Slight	
Finish Time	1742	To	Lat.	8°07.478 N	Bottom Depth	52 m.	
			Long.	101°22.771 E			
Doc ID.	2491	Station	323-273		Ship Course	043	Remark Start position is not on the mark of station 323 to save the time for fishing
Date	9-2-05	From	Lat.	8°08.788 N	Ship Speed	10 kt.	
Start Time	2037		Long.	101°18.678 E	Sea State	Slight	
Finish Time	0010	To	Lat.	8°37.456 N	Bottom Depth	49-72 m.	
			Long.	101°47.520 E			
Doc ID.	2492	Station	273-325		Ship Course	206	Remark Start position is not on the mark of station 273 to save the time for fishing
Date	10-2-05	From	Lat.	8°37.853 N	Ship Speed	10 kt.	
Start Time	0757		Long.	101°50.797 E	Sea State	Slight	
Finish Time	1155	To	Lat.	8°07.386 N	Bottom Depth	70-73 m.	
			Long.	101°52.840 E			
Doc ID.	2493	Station	325-376		Ship Course	147	Remark Start position is not on the mark of station 325 to save the time for fishing
Date	10-2-05	From	Lat.	8°08.718 N	Ship Speed	10 kt.	
Start Time	1346		Long.	101°47.630 E	Sea State	Slight	
Finish Time	1650	To	Lat.	7°37.736 N	Bottom Depth	68- m.	
			Long.	102°07.597 E			
Doc ID.	2494	Station	376-426		Ship Course	154	Remark
Date	10-2-05	From	Lat.	7°36.916 N	Ship Speed	10 kt.	
Start Time	1940		Long.	102°07.724 E	Sea State	Slight	
Finish Time	2246	To	Lat.	7°07.396 N	Bottom Depth	65- m.	
			Long.	102°22.896 E			

Doc ID.	2495	Station	426-424	Ship Course	270	Remark
Date	11-2-05	From	Lat. 7°07.493 N	Ship Speed	11 kt.	
Start Time	0824		Long. 102°22.665 E	Sea State	Slight	
Finish Time	1104	To	Lat. 7°07.533 N	Bottom Depth	27-52 m.	
			Long. 101°52.704 E			
Doc ID.	2496	Station	424-374	Ship Course	342	Remark Start position is not on the mark of station 325 to save the time for fishing
Date	11-2-05	From	Lat. 7°08.380 N	Ship Speed	10 kt.	
Start Time	1340		Long. 101°47.072 E	Sea State	Slight	
Finish Time	1639	To	Lat. 7°37.325 N	Bottom Depth	45	
			Long. 101°37.733 E			