

CONTRACT NO. HY/2012/07

Hong Kong-Zhuhai-Macao Bridge

Tuen Mun – Chek Lap Kok Link (Southern Connection Viaduct Section)

**Baseline Monitoring Report for Land-based Dolphin Behavioural and
Movement Monitoring**

Prepared by Hong Kong Cetacean Research Project

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1. INTRODUCTION

The Tuen Mun-Chek Lap Kok Link (TM-CLKL) comprises a 1.6 km long dual 2-lane viaduct section between the Hong Kong Boundary Crossing Facilities (HKBCF) and the North Lantau Highway and associated roads at Tai Ho. Gammon Construction Limited (hereinafter called the “Contractor”) was awarded as the main contractor of “Contract No. HY/2012/07 – Hong Kong-Zhuhai-Macao Bridge Tuen Mun-Chek Lap Kok Link – Southern Connection Viaduct Section”.

According to the TM-CLKL EM&A Manual, a number of environmental monitoring and audit (EM&A) works related to Chinese white dolphins (a.k.a Indo-Pacific humpback dolphins, *Sousa chinensis*) are to be conducted during baseline, construction and post-construction phases, including land-based dolphin behavioural and movement monitoring, to record and note any changes in response of dolphins to the bored piling noise. Such monitoring is being undertaken by qualified dolphin specialist, who have sufficient relevant post-graduate experience and publication in the respective aspects. The specialists approved for the land-based works are Professor Bernd Würsig and Dr. David Lundquist.

This baseline monitoring report of land-based dolphin behaviour and movement monitoring details the methodology and results, from September 9th to October 14th, 2013, at a location hereafter termed Pak Mong Station.

2. METHODS AND MATERIALS

2.1. *Monitoring Location – Pak Mong Station*

To conduct the land-based monitoring on dolphin behaviour and movement near the alignment of TM-CLKL, HKCRP research team has set up a theodolite-tracking station at Pak Mong near Tai Ho Wan in August 2013 with the assistance of Professor Bernd Würsig and Ms. Sarah Piwetz, following the same methodology that was used to set up other well-established theodolite tracking stations in Hong Kong since 2011 (Hung 2012, 2013; Piwetz et al. 2012).

The Pak Mong station near Tai Ho Wan is located near the northeast coast of Lantau Island (GPS position: 22°17.86' N and 113°57.98' E; Figure 1). The station was selected based on its height above sea level (minimum requirement of over 20 m; Würsig et al. 1991), close proximity to shore, and relatively unobstructed views of the TM-CLKL alignment (see panoramic view from the station in Figure 2). The height of Pak Mong station established by HKCRP team is 24.88 m high at mean low water (or 24.73 m relative to mPD) and 170 m from shore. Moreover, the station is only situated 650-780 m from the six bored piling sites of TM-CLKL southern viaduct section that will be monitored during the present study (i.e. Piers B1-3, B5-7; Figure 1), which is ideal for the purpose of the present behavioural and movement monitoring in relation to the TM-CLKL bored piling works.

2.2. *Monitoring Methodology*

The methodology of the present monitoring programme generally followed the one established under the Piwetz et al. 2012 study, which was also part of the AFCDC long-term marine mammal monitoring programme (Hung 2012, 2013). On each survey day, observers searched systematically for Chinese white dolphins using the unaided eye and handheld binoculars (7 x 50) from the Pak Mong Station, overlooking the viaduct alignment to the northeast coast of Lantau Island, in particular the area around the six bored pile sites as indicated in Figure 1. Notably, all six bored piling sites were monitored during baseline phase, while three of these six sites will be chosen for construction phase and post-construction phase monitoring when the initial phase of the construction schedule is confirmed.

A theodolite tracking session was initiated when an individual dolphin or group of dolphins was located, and focal follow methods were used to track the dolphins. Within a group, a focal individual was selected for the purposes of tracking the behaviour and movement of the group,

based on its distinctive feature such as colouration or severe injury mark. The focal individual would then be tracked continuously via the theodolite, with positions recorded whenever the dolphin surfaces. If an individual could not be positively distinguished from other members, the group would be tracked by recording positions based on a central point within the group when the dolphins surfaced.

Tracking continued until animals were lost from view, moved beyond the range of reliable visibility (>5 km), or when environmental conditions obstructed visibility (e.g. intense haze). Behavioural state data (Table 1) were also recorded every 5 minutes for the focal individual or group. This interval is long enough to allow for determination of the behavioural state, and short enough to capture behavioural responses to the bored piling activities. Moreover, when multiple groups or individuals were present in the study area, attempts were made to record the behaviours of all groups/individuals every 10 minutes, with spotters assisting in determining behaviour of the dolphins.

Positions of dolphins, boats and construction activities were measured using a Sokkisha DT5 digital theodolite with ± 5 -sec precision and 30-power magnification connected to a laptop computer running the program *Pythagoras* Version 1.2 (Gailey and Ortega-Ortiz 2002). This program calculates a real-time conversion of horizontal and vertical angles collected by the theodolite into geographic positions of latitude and longitude each time a fix is initiated. *Pythagoras* also displays positions, movements, and distances in real-time. When possible, the position of the focal dolphin was recorded at every surfacing with use of *Pythagoras*. The position, type, and activity of all vessels within 5 km of the focal dolphin were also recorded. An effort was made to obtain at least several positions for each vessel, and additional positions were acquired when vessels changed course or speed.

While the primary source of human disturbance to dolphins of interest in this study is bored piling works for the TM-CLKL Project, the presence of vessels may also have an effect on the behaviour and movement patterns of dolphins. Prior to the construction phase (i.e. baseline phase), the simultaneous tracking of dolphins and boats over time provides information on the speed and orientation of dolphins, as well as their movements in relation to vessel activities. This data are used as a baseline for comparison once construction begins. Other construction activities and vessel movements in relation to the bored piling works will be recorded during the construction phase monitoring, and the same theodolite tracking and behavioural procedures will be followed as during baseline phase.

2.5. Data Analysis

2.5.1. Assessment on potential impacts from bored piling activities

2.5.1.1. Movement patterns

To evaluate if dolphin behaviour or movement patterns varied in the presence of vessels in the baseline phase, it was necessary to determine how many vessels were present with the focal group at any time. A vessel was considered to be present with the focal dolphin when the two were within 500 metres of each other. Data recorded in *Pythagoras* was used to calculate dolphin and vessel positions in latitude and longitude for this comparison. Tracks were required to have a minimum duration of 10 min. to be included in the analysis. If two consecutive fixes in a track for one dolphin were more than 300 seconds apart, the track was split at this point and analysed separately. Dolphin and vessel positions were interpolated every 150 seconds, assuming linear travel at a constant speed between subsequent positions. Distance between the focal individual/group and each vessel was calculated to determine how many vessels were within 500 metres of the group at each point in time.

Using the above calculations, the maximum number and type of vessels present was calculated for each track. Response variables, including mean leg speed, mean inter-breath interval, reorientation rate and linearity, were calculated for each track. These response variables have been commonly used by many researchers, including the dolphin specialists of the present project (Lundquist et al. 2012a; Lundquist 2012; Lundquist and Markowitz 2009). Leg speed (km/hr) is the displacement between two successive points divided by the time interval. Inter-breath interval (s) is the length of time between successive surfacings. Reorientation rate ($^{\circ}$ /surfacing) is a measure of how much the group changed course over time. It is calculated as the sum of the absolute values of heading changes (defined as 0 to 180 degrees relative to the current bearing) divided by the number of surfacings in the track. Linearity is a dimensionless index ranging from 0 (no net movement) to 1 (straight line). It is calculated by dividing net distance from the first to last fix of a track by the sum of all the distances for each leg.

Due to the very small number of dolphin groups found during baseline monitoring, it was not possible to use the statistical technique originally proposed (Generalized Additive Modelling). Instead, the response variables are reported below in raw form, along with a description of the number and type of vessels tracked during monitoring. Similarly, there were only a few behavioural state observations collected due to the small number of dolphin groups sighted, so the intended analysis was not possible.

3. RESULTS

3.1. *Summary of Theodolite Tracking Effort*

A total of 186 hours and 28 minutes were spent during the 30 days of effort from September 9th through October 14th, 2013. Dolphins were successfully tracked from shore on 2 of 30 days of effort, and a total of 3 dolphin groups were tracked. A total of 3,053 vessels of 16 different types were tracked, with the majority being transportation vessels (Table 2). Vessels observed in the study area were typically travelling (92% of observations) or stationary (5% of observations). On the two days when dolphin groups were observed in the area, 182 vessels were tracked, with 7 vessels observed within 500m of dolphins (fishing boats = 4, research vessel = 1, dumping guide boat = 2). The track log data included in these analyses are presented in Appendix I.

3.2. *Movement patterns and behavioural state*

After filtering the tracks as described above in the data analysis section, only 1 of the 3 dolphin tracks met the conditions for analysis. This group was tracked for 47 minutes and 37 seconds near Siu Ho Wan (approximately 1.5-2.0 km from the bridge alignment; Figures 3 and 4), during which 3 vessels approached within 500 meters (fishing boat = 1, dumping guide boats = 2). A maximum of one boat was present at any time, for a total of 10 minutes of interaction time for all three boats. The mean speed of the dolphin group over the duration of the track was 9.02 km/hr, reorientation rate was 156.1 °/surfacing, linearity was 0.010, and inter-breath interval was 99 seconds. There were 12 behavioural state observations for the three dolphin groups, with dolphins milling 62.5% of the time, feeding 25% of the time, and travelling 12.5% of the time.

4. DISCUSSION

While it was not possible to statistically analyse the movement patterns of dolphin groups in this area due to the paucity of sightings, a general comparison can be made to numbers reported during baseline monitoring for construction of the Hong Kong-Zhuhai-Macao Bridge Hong Kong Link Road – Section between HKSAR Boundary and Scenic Hill (i.e. HKLR09 project). Based on a sample size of 38 tracks, the numbers reported there for dolphin groups in the presence of a maximum of one vessel were: mean speed = 3.91 km/hr, reorientation rate = 48.8 °/surfacing, linearity = 0.572, and inter-breath interval = 36.9 seconds (Table 4 in Impact Phase Monitoring Report for Land-based Dolphin Behaviour and Movement Monitoring under Hong Kong Link

Road – Section between HKSAR Boundary and Scenic Hill (Contract HY/2011/09)). This indicates that the group tracked in the present study swam faster, dived longer, and changed direction of travel more often than might be predicted based on the HKLR project, though it was not possible to determine the statistical significance of these differences.

Notably, the single track analysed for the present project was located near Siu Ho Wan and Shum Shui Kok (Figure 4), at least two kilometres from the Pak Mong Station and at a distance from the TM-CLKL bridge alignment area. Therefore, the movement pattern of dolphins at this great distance away from the potential impact area may not provide indicative information to establish the baseline condition.

There was a much greater level of vessel traffic in the present project area than in the HKLR project area, and this resulted in a doubling of the number of vessels within 500 m of dolphin groups (HKLR: 1.16 vessels per dolphin group, present: 2.33 vessels per dolphin group). Based on the results of the HKLR project, it is expected that the presence of so many more vessels would affect the movement and behaviour of any dolphins in the study area, but again it was not possible to analyse the extent to which this happens.

From the results presented here, it is clear that the study area is not frequently used by dolphins. In fact, there are multiple lines of evidence to support that dolphins rarely occur in the area near TM-CLKL bridge alignment in the past and present:

- 1) Review of HKCRP long-term monitoring data on Chinese white dolphins indicated that very few dolphins have occurred in this area in the past. Out of the 927 dolphin sightings made in NEL during 2002-2013, fewer than 10 groups were sighted in the proximity to the bridge alignment (Figure 5).
- 2) Under the same bored piling monitoring programme for the TM-CLKL, concurrent intensive surveys were conducted to examine dolphin acoustic behaviours in NEL area between September 26th and October 25th, 2013. Despite a large amount of search effort spent in this area (especially near the bridge alignment) during the 30-day period, no dolphin was sighted in the proximity to the TM-CLKL bridge alignment at all, and most dolphin sightings were made in the northern portion of the survey area (Figure 6).
- 3) For the same bored piling monitoring programme, passive acoustic monitoring was also

conducted to detect dolphin presence 24 hours a day, by deploying an Ecological Acoustic Recorder (EAR) adjacent to the bridge alignment from September 27th to October 26th, 2013. Results indicated that dolphin acoustic activity near the bridge alignment area was much lower than a control site near Lung Kwu Chau. The study concluded that the lack of dolphin whistles recorded and the sparse detections of clicks was an indicator that the area near the bridge alignment was likely not used very much for socializing or regular foraging by the dolphins.

In summary, dolphins rarely occur along or near the TM-CLKL bridge alignment in the past and present. This may be related to the high level of human activity, but more likely is driven by other factors such as the presence of prey, or the shallowness of seabed in this area. If this area has a naturally low density of dolphins, then the overall effect of construction activities on dolphins is likely to be low, which confirm the prediction from the original EIA study for the TM-CLKL.

5. EVENT AND ACTION PLAN

According to Section 6.5 of the EM&A Manual, the Action and Limit Levels as well as the Event and Action Plan (EAP) for ecology shall be proposed upon the baseline monitoring data, and agreed by AFCD and EPD. Similar to the HKLR09 bored piling monitoring programme, the response variables for dolphin movement patterns (i.e. mean leg speed, mean inter-breath interval, reorientation rate and linearity) and dolphin behaviours (five different behavioural states) should be assessed under the EAP, and these variables should be recorded during both baseline and construction phase monitoring works. Departures of any of these variables between baseline and construction phases by a certain percentage of difference would trigger the Action and Limit Levels.

However, due to the paucity of dolphin sightings and the availability of a single track for analysis from the present 30-day shore-based theodolite tracking works, it is impossible to reliably establish the baseline values for the various response variables. Moreover, as dolphins rarely occur in this area as discussed in Section 4, we expect that such rare occurrence of dolphins would persist during the construction phase of the TM-CLKL projects. Without appropriate baseline information established for the behaviour and movement of Chinese white dolphins, we decide that any EAP cannot be properly implemented for the shore-based theodolite tracking study, and therefore would rely on the implementation of EAP on dolphin acoustic behaviour to safeguard

dolphins from the potential impacts of the bored piling works. Nevertheless, it is important to conduct the construction phase and post-construction phase monitoring on behaviour and movements of Chinese white dolphins through shore-based theodolite tracking, to confirm that they are not seriously affected by the construction works if they are present.

6. REFERENCES

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Table 1. Definitions of group behavioural states of dolphins.

State	Definition
Resting	Dolphins close to the surface and each other, surfacing at regular intervals and in a coordinated fashion. Movement very slow.
Traveling	All individuals oriented and moving in the same direction. This behavioural state includes all high-speed, directional behaviours (e.g. porpoising).
Milling	Individuals within the group simultaneously moving in different directions, with no overall clear direction of travel.
Socialising	Physical interactions taking place among members of the group, including chasing, high levels of body contact, coordinated clean leaps and noisy leaps.
Feeding	Dolphins observed either capturing or pursuing fish at the surface. High number of non-coordinated re-entry leaps, rapid changes in direction and long dives. Dolphin rostrum or body covered with mud. Associations with operating fishing boats.

Table 2. Number and type of vessels tracked in study area.

<i>Vessel Type</i>	<i>Count</i>
Construction Boat	175
Container Boat	148
Dumping Guide Boat	38
Ferry	7
Fishing Boat	58
Fuel Boat	2
Government Boat	68
HSF High Speed Ferry	197
Research Vessel	26
Sand barge	1
Speed Boat	231
Tour Boat	13
Transportation Boat*	1812
Tug Boat	270
Water ski	4
Yacht	3
TOTAL	3053

* Transportation boats denote the one that carry passengers to and from the construction sites and Tung Chung Public Pier, as well as the regular ferries that serve between Tung Chung and Tuen Mun

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Figure 1. Location of Pak Mong Station in NE Lantau with alignment of TM-CLKL southern connection viaduct

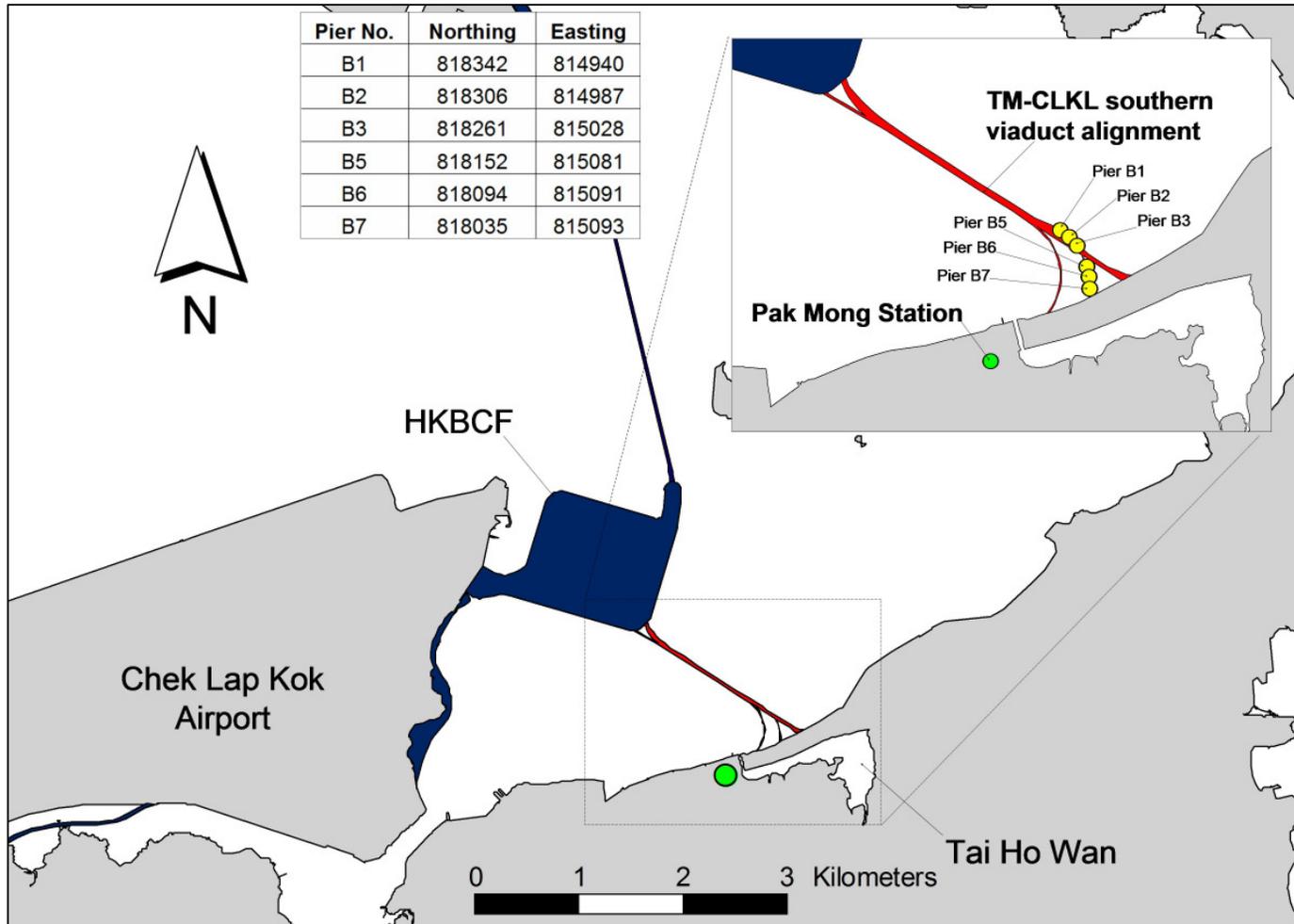


Figure 2. Panoramic View from Pak Mong Theodolite Tracking Station (photos taken on August 2013)



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Figure 3. Fix positions of vessels (green dots) and dolphins (purple triangle) from Pak Mong Theodolite Tracking Station in relation to TM-CLKL alignment and HKBCF/HKLR reclamation sites in Sept. 9th –Oct. 14th 2013

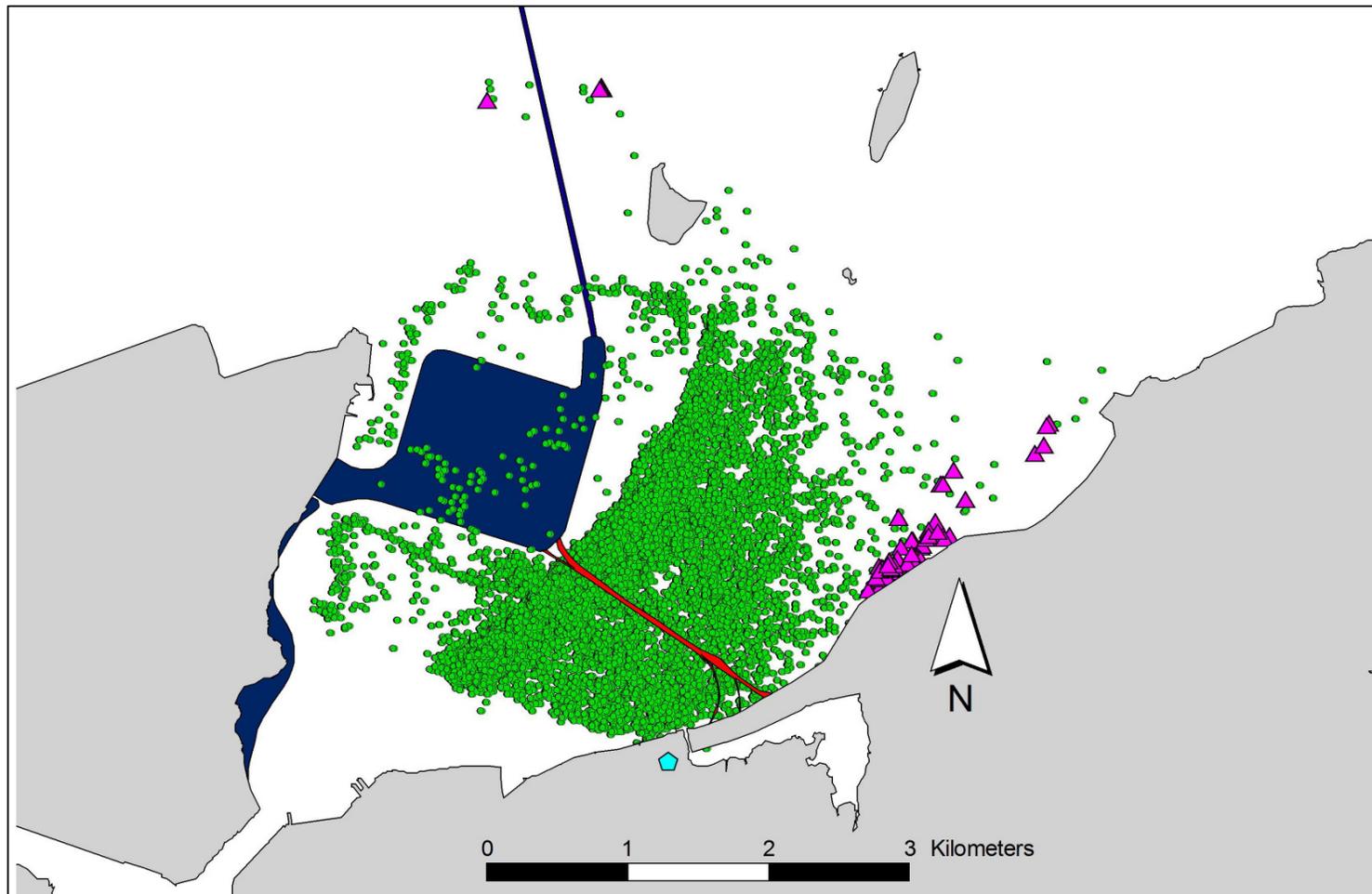


Figure 4. Track lines of the only dolphin group that was tracked and analyzed for movement and behavioural patterns in the present study

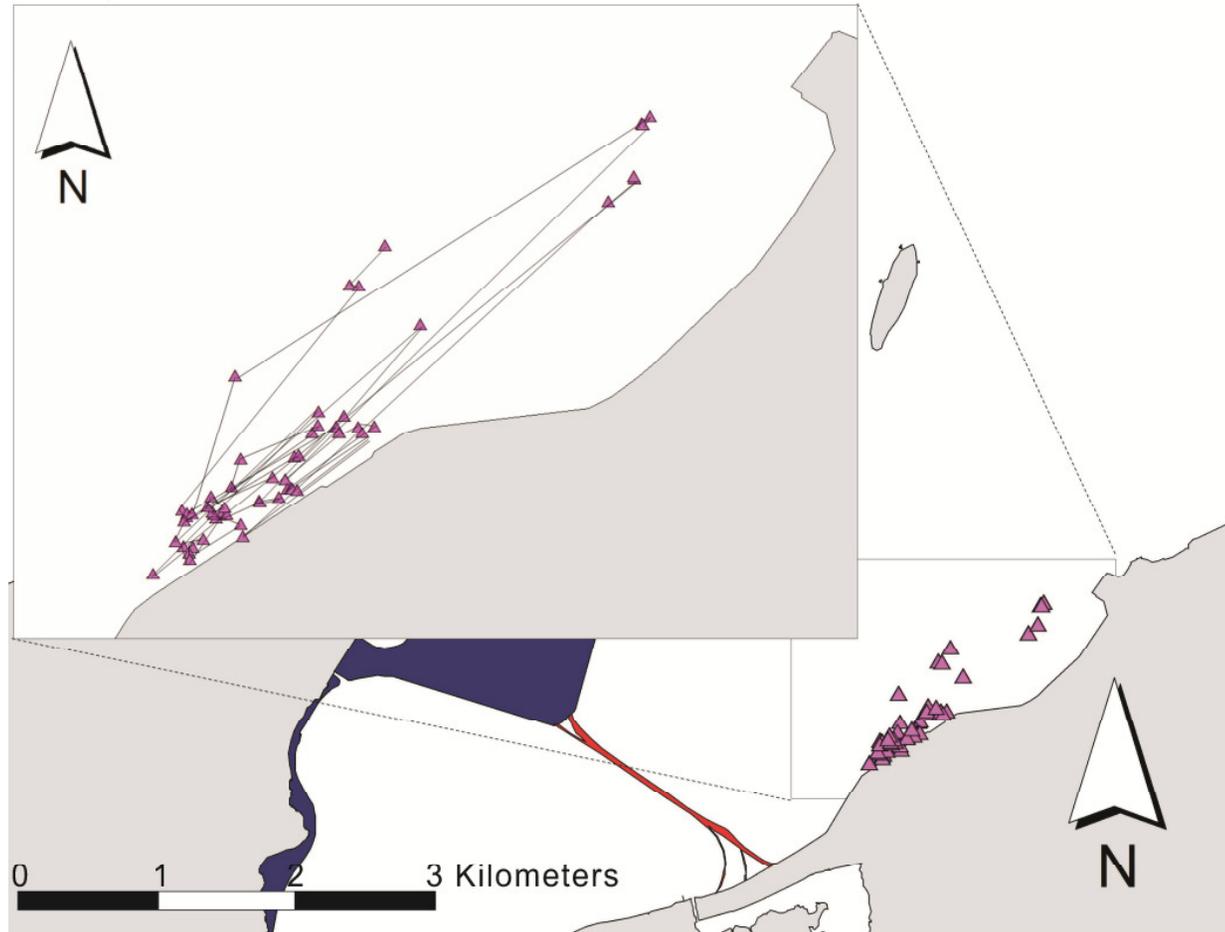


Figure 5. Distribution of Chinese white dolphin sightings in Northeast Lantau during January 2002-December 2013
(source: HKCRP unpublished data)

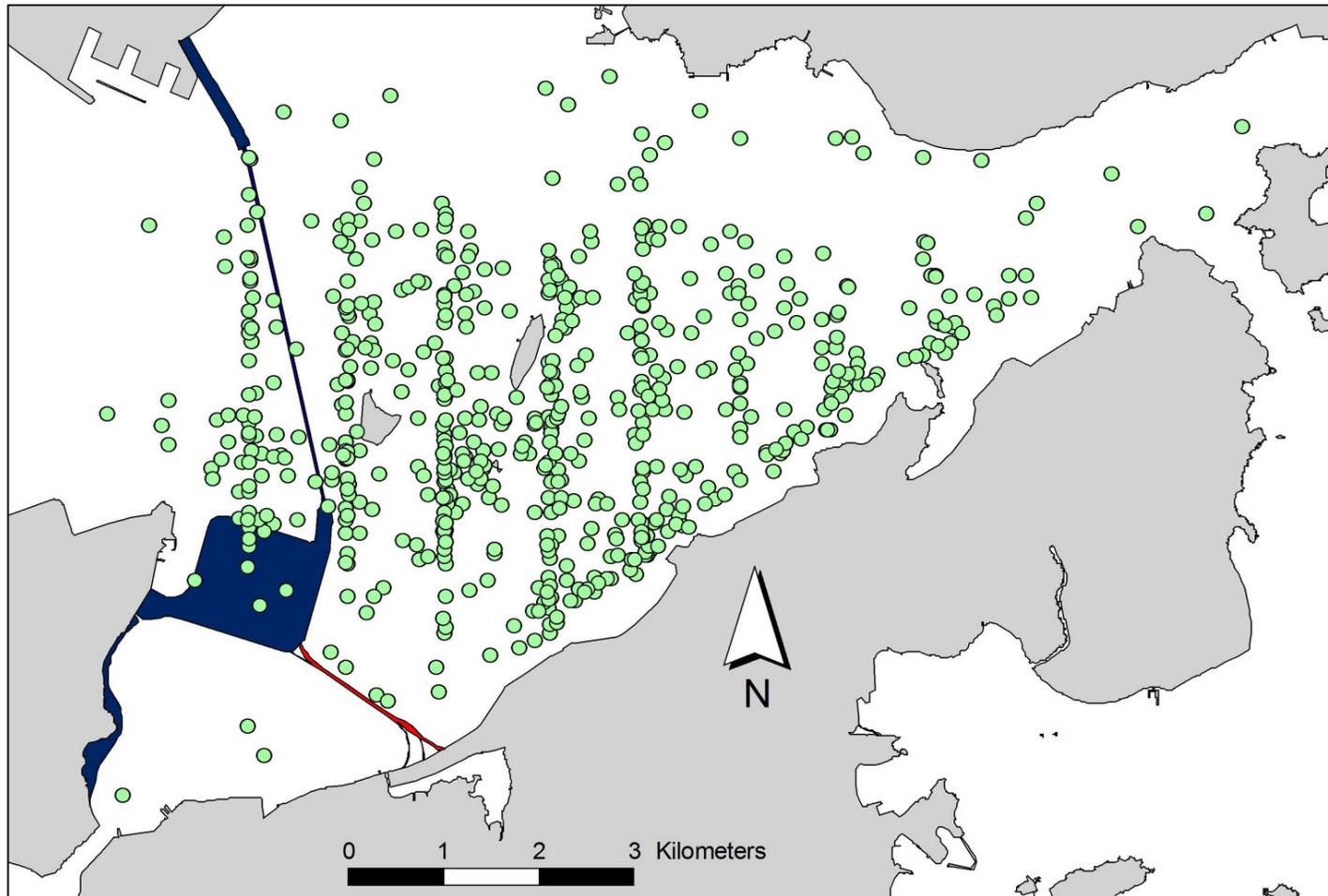


Figure 6. Distribution of Chinese white dolphin sightings during TM-CLKL acoustic surveys (Sep 26th-Oct 25th, 2013)



APPENDIX I. Baseline Monitoring on Shore-based Theodolite Tracking to Investigate Dolphin Behaviour and Movement in relation to Bored Piling Activities (September-October 2013)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
01-Sep	02-Sep	03-Sep	04-Sep	05-Sep	06-Sep	07-Sep
08-Sep	09-Sep	10-Sep	11-Sep	12-Sep	13-Sep	14-Sep
	Theodolite Tracking Survey (Day 1) (Completed)	Theodolite Tracking Survey (Day 2) (Completed)	Theodolite Tracking Survey (Day 3) (Completed)	Theodolite Tracking Survey (Day 4) (Completed)	Theodolite Tracking Survey (Day 5) (Completed)	Theodolite Tracking Survey (Day 6) (Completed)
15-Sep	16-Sep	17-Sep	18-Sep	19-Sep	20-Sep	21-Sep
Theodolite Tracking Survey (Day 7) (Completed)	Theodolite Tracking Survey (Day 8) (Completed)	Theodolite Tracking Survey (Day 9) (Completed)	Theodolite Tracking Survey (Day 10) (Completed)	Theodolite Tracking Survey (Day 11) (Completed)		Theodolite Tracking Survey (Day 12) (Completed)
22-Sep	23-Sep	24-Sep	25-Sep	26-Sep	27-Sep	28-Sep
		Theodolite Tracking Survey (Day 13) (Completed)	Theodolite Tracking Survey (Day 14) (Completed)	Theodolite Tracking Survey (Day 15) (Completed)	Theodolite Tracking Survey (Day 16) (Completed)	
29-Sep	30-Sep					
Theodolite Tracking Survey (Day 17) (Completed)	Theodolite Tracking Survey (Day 18) (Completed)					

APPENDIX I. (cont'd)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
		01-Oct	02-Oct	03-Oct	04-Oct	05-Oct
			Theodolite Tracking Survey (Day 19) (Completed)	Theodolite Tracking Survey (Day 20) (Completed)	Theodolite Tracking Survey (Day 21) (Completed)	Theodolite Tracking Survey (Day 22) (Completed)
06-Oct	07-Oct	08-Oct	09-Oct	10-Oct	11-Oct	12-Oct
	Theodolite Tracking Survey (Day 23) (Completed)	Theodolite Tracking Survey (Day 24) (Completed)	Theodolite Tracking Survey (Day 25) (Completed)	Theodolite Tracking Survey (Day 26) (Completed)	Theodolite Tracking Survey (Day 27)	Theodolite Tracking Survey (Day 28)
13-Oct	14-Oct	15-Oct	16-Oct	17-Oct	18-Oct	19-Oct
Theodolite Tracking Survey (Day 29)	Theodolite Tracking Survey (Day 30)					
20-Oct	21-Oct	22-Oct	23-Oct	24-Oct	25-Oct	26-Oct
27-Oct	28-Oct	29-Oct	30-Oct	31-Oct		

Appendix II. Track log data for TMCLKL study on dolphin movement and behaviour

Date	Time	Fix Type	Fix Type Behaviour	Fix Vert Degrees	Fix Vert Minutes	Fix Vert Seconds	Fix Horiz Degrees	Fix Horiz Minutes	Fix Horiz Seconds	Fix Latitude	Fix Longitude	Distance	Bearing
09-Sep-13	8:04:39	Other	Stationary	94	37	40	0	0	0	22.3005	113.9672	326.72	13.73
09-Sep-13	8:13:14	Other	Stationary	90	34	20	278	25	20	22.3065	113.9427	2631.43	292.15
09-Sep-13	8:13:24	Other	Stationary	90	34	20	282	58	0	22.3083	113.9435	2631.43	296.70
09-Sep-13	8:13:37	Other	Stationary	90	33	30	285	13	0	22.3094	113.9434	2699.83	298.95
09-Sep-13	8:13:47	Other	Stationary	90	32	30	287	39	30	22.3107	113.9433	2786.88	301.39
09-Sep-13	8:13:57	Other	Stationary	90	32	10	290	18	10	22.3118	113.9437	2817.18	304.03
09-Sep-13	8:14:06	Other	Stationary	90	33	40	293	12	10	22.3121	113.9455	2685.86	306.93
09-Sep-13	8:14:18	Other	Stationary	90	43	30	295	44	50	22.3094	113.9509	2060.26	309.48
09-Sep-13	8:14:30	Other	Stationary	90	52	10	300	12	30	22.3083	113.9544	1711.13	313.94
09-Sep-13	8:15:21	Other	Stationary	91	0	10	304	50	10	22.3076	113.9569	1480.27	318.57
09-Sep-13	8:15:37	Other	Stationary	90	53	10	307	34	30	22.3094	113.9562	1678.38	321.30
09-Sep-13	8:15:47	Other	Stationary	90	59	0	312	43	50	22.3089	113.9583	1509.95	326.46
09-Sep-13	8:15:52	Other	Stationary	90	58	0	316	36	10	22.3096	113.9590	1536.36	330.33
09-Sep-13	8:16:00	Other	Stationary	90	56	20	322	54	40	22.3107	113.9603	1582.52	336.64
09-Sep-13	8:16:05	Other	Stationary	90	54	0	328	44	20	22.3118	113.9616	1652.03	342.47
09-Sep-13	8:16:10	Other	Stationary	90	52	30	331	58	10	22.3124	113.9623	1700.07	345.70
09-Sep-13	8:16:19	Other	Stationary	90	50	20	335	46	40	22.3133	113.9633	1774.65	349.51
09-Sep-13	8:16:31	Other	Stationary	90	49	10	337	14	40	22.3138	113.9636	1817.61	350.97
09-Sep-13	8:16:39	Other	Stationary	90	44	0	340	59	50	22.3159	113.9646	2036.24	354.73
09-Sep-13	8:16:45	Other	Stationary	90	40	50	346	17	40	22.3174	113.9664	2198.71	0.02
09-Sep-13	8:16:52	Other	Stationary	90	34	30	350	9	30	22.3211	113.9681	2618.18	3.89
09-Sep-13	8:17:02	Other	Stationary	90	31	20	351	49	40	22.3236	113.9691	2895.99	5.56
09-Sep-13	8:17:40	Other	Stationary	90	29	50	348	9	40	22.3251	113.9674	3049.88	1.89
09-Sep-13	8:17:48	Other	Stationary	90	31	0	351	48	50	22.3239	113.9692	2928.79	5.54
09-Sep-13	8:17:58	Other	Stationary	90	29	40	347	20	40	22.3252	113.9670	3068.02	1.07
09-Sep-13	8:18:05	Other	Stationary	90	29	10	345	36	10	22.3257	113.9660	3123.82	359.33
09-Sep-13	8:18:15	Other	Stationary	90	29	10	343	35	30	22.3257	113.9650	3123.82	357.32
09-Sep-13	8:18:24	Other	Stationary	90	28	40	341	4	50	22.3261	113.9636	3181.74	354.81
09-Sep-13	8:18:30	Other	Stationary	90	28	50	339	38	40	22.3259	113.9629	3162.19	353.37
09-Sep-13	8:18:42	Other	Stationary	90	28	20	334	35	30	22.3260	113.9601	3221.61	348.32
09-Sep-13	8:18:52	Other	Stationary	90	27	0	329	48	40	22.3269	113.9571	3391.96	343.54
09-Sep-13	8:19:05	Other	Stationary	90	27	0	325	45	0	22.3262	113.9548	3391.96	339.48
09-Sep-13	8:19:13	Other	Stationary	90	25	50	322	56	20	22.3270	113.9527	3557.14	336.67
09-Sep-13	8:19:23	Other	Stationary	90	26	30	316	40	50	22.3247	113.9498	3460.76	330.41
09-Sep-13	8:19:30	Other	Stationary	90	28	0	311	42	0	22.3218	113.9484	3262.52	325.43
09-Sep-13	8:19:41	Other	Stationary	90	29	0	309	46	30	22.3204	113.9482	3142.88	323.50
09-Sep-13	8:19:55	Other	Stationary	90	29	30	303	24	30	22.3180	113.9460	3086.39	317.14
09-Sep-13	8:20:10	Other	Stationary	90	29	40	300	53	20	22.3170	113.9452	3068.02	314.62
09-Sep-13	8:20:37	Other	Stationary	91	26	40	309	38	10	22.3050	113.9605	1023.98	323.37
09-Sep-13	8:20:53	Construction Boat	Stationary	91	8	40	311	41	0	22.3072	113.9592	1294.97	325.41
09-Sep-13	8:21:12	Other	Stationary	91	2	30	321	58	10	22.3093	113.9607	1424.29	335.70
09-Sep-13	8:21:21	Other	Stationary	91	2	40	322	35	50	22.3093	113.9609	1420.46	336.33
09-Sep-13	8:21:36	Tug Boat	Stationary	91	16	10	332	26	30	22.3078	113.9637	1166.30	346.17
09-Sep-13	8:21:44	Construction Boat	Stationary	91	14	50	334	38	10	22.3081	113.9641	1187.26	348.37
09-Sep-13	8:22:02	Other	Stationary	90	42	20	341	12	0	22.3166	113.9646	2118.59	354.93
09-Sep-13	8:22:18	Other	Stationary	90	42	30	342	25	10	22.3166	113.9650	2110.06	356.15
09-Sep-13	8:22:38	Construction Boat	Stationary	90	33	50	356	50	20	22.3213	113.9712	2672.04	10.57
09-Sep-13	8:22:45	Construction Boat	Stationary	90	36	10	358	42	30	22.3195	113.9716	2492.73	12.44
09-Sep-13	8:22:52	Construction Boat	Stationary	90	32	20	0	21	20	22.3221	113.9730	2801.94	14.09
09-Sep-13	8:23:13	Other	Stationary	90	58	50	358	20	40	22.3109	113.9695	1514.29	12.07
09-Sep-13	8:23:21	Other	Stationary	90	58	50	0	52	50	22.3108	113.9701	1514.29	14.61
09-Sep-13	8:23:39	Other	Stationary	90	46	0	1	57	0	22.3145	113.9715	1945.58	15.68
09-Sep-13	8:23:53	Other	Stationary	90	45	20	4	49	40	22.3145	113.9725	1974.88	18.56
09-Sep-13	8:24:00	Tug Boat	Stationary	90	45	0	5	39	10	22.3145	113.9728	1989.86	19.38
09-Sep-13	8:24:14	Other	Stationary	90	35	10	3	30	40	22.3197	113.9738	2566.48	17.24
09-Sep-13	8:24:20	Other	Stationary	90	35	30	4	14	0	22.3194	113.9740	2541.41	17.96
09-Sep-13	8:24:32	Construction Boat	Stationary	90	29	40	16	24	0	22.3215	113.9814	3068.02	30.13
09-Sep-13	8:25:02	Transportation Boat	Travelling	91	0	50	296	51	50	22.3062	113.9556	1463.83	310.59
09-Sep-13	8:25:15	Transportation Boat	Travelling	91	4	30	310	51	50	22.3077	113.9586	1379.59	324.59
09-Sep-13	8:25:32	Transportation Boat	Travelling	90	44	0	346	2	30	22.3159	113.9663	2036.24	359.77
09-Sep-13	8:26:20	Dumping Guide Boat	Travelling	91	18	50	290	43	0	22.3034	113.9574	1126.52	304.45
09-Sep-13	8:26:42	Transportation Boat	Travelling	90	56	50	306	0	20	22.3084	113.9565	1568.38	319.74
09-Sep-13	8:26:48	Transportation Boat	Travelling	90	57	10	329	29	0	22.3111	113.9620	1559.10	343.21
09-Sep-13	8:26:59	Transportation Boat	Travelling	90	54	20	306	21	10	22.3090	113.9562	1641.73	320.08
09-Sep-13	8:27:19	Transportation Boat	Travelling	90	52	10	338	16	20	22.3129	113.9641	1711.13	352.00
09-Sep-13	8:28:47	Transportation Boat	Travelling	90	45	0	345	1	20	22.3155	113.9660	1989.86	358.75
09-Sep-13	8:28:59	Transportation Boat	Travelling	90	58	20	325	57	50	22.3105	113.9612	1527.46	339.69
09-Sep-13	8:29:13	Transportation Boat	Travelling	90	58	20	296	22	30	22.3065	113.9550	1527.46	310.10
09-Sep-13	8:29:54	Transportation Boat	Travelling	91	1	10	304	50	40	22.3074	113.9570	1455.75	318.57
09-Sep-13	8:30:15	Transportation Boat	Travelling	91	1	10	305	24	20	22.3075	113.9571	1455.75	319.14
09-Sep-13	8:30:24	Transportation Boat	Travelling	91	3	30	296	9	0	22.3057	113.9559	1401.58	309.88
09-Sep-13	8:30:30	Transportation Boat	Travelling	90	37	0	354	42	10	22.3193	113.9699	2434.49	8.43
09-Sep-13	8:30:38	Transportation Boat	Travelling	91	2	10	310	54	40	22.3081	113.9583	1432.03	324.64
09-Sep-13	8:30:48	HSF High Speed Ferry	Travelling	91	2	40	283	35	40	22.3035	113.9541	1420.46	297.32
09-Sep-13	8:31:42	Transportation Boat	Travelling	91	1	30	300	40	20	22.3067	113.9563	1447.75	314.40
09-Sep-13	8:31:48	Transportation Boat	Travelling	90	58	40	320	17	20	22.3099	113.9599	1518.65	334.02
09-Sep-13	8:32:02	HSF High Speed Ferry	Travelling	91	19	10	305	29	40	22.3053	113.9593	1121.74	319.22
09-Sep-13	8:32:15	Dumping Guide Boat	Travelling	91	9	40	292	18	50	22.3044	113.9564	1276.19	306.04
09-Sep-13	8:32:35	Tug Boat	Travelling	91	2	20	313	34	50	22.3084	113.9589	1428.15	327.31
09-Sep-13	8:32:42	Construction Boat	Travelling	91	4	10	312	40	0	22.3080	113.9589	1386.85	326.40
09-Sep-13	8:33:24	Dumping Guide Boat	Travelling	91	1	0	283	16	50	22.3036	113.9537	1459.78	297.01
09-Sep-13	8:33:33	Transportation Boat	Travelling	90	54	10	285	38	10	22.3049	113.9524	1646.86	299.37
09-Sep-13	8:33:39	Transportation Boat	Travelling	90	54	0	336	38	40	22.3123	113.9637	1652.03	350.37
09-Sep-13	8:33:55	HSF High Speed Ferry	Travelling	91	15	10	349	32	20	22.3082	113.9671	1181.95	3.27
09-Sep-13	8:34:04	Tug Boat	Travelling	91	0	20	318	51	10	22.3094	113.9598	1476.12	332.58
09-Sep-13	8:34:10	Construction Boat	Travelling	91	0	20	317	12	40	22.3092	113.9594	1476.12	330.94
09-Sep-13	8:34:24	Transportation Boat	Travelling	91	1	50	307	58	40	22.3078	113.9577	1439.85	321.71
09-Sep-13	8:35:02	Transportation Boat	Travelling	95	19	20	354	6	20	22.3001	113.9668	276.35	7.84
09-Sep-13	8:35:35	HSF High Speed Ferry	Travelling	91	1	0	291	1	30	22.3051	113.9547	1459.78	304.75
09-Sep-13	8:35:43	HSF High Speed Ferry	Travelling	90	51	20	13	12	10	22.3116	113.9741	1739.42	26.93
09-Sep-13	8:36:01	Transportation Boat	Travelling	90	41	30	346	37	20	22.3171	113.9665	2162.36	0.35
09-Sep-13	8:36:11	Transportation Boat	Travelling	90	59	50	322	48	20	22.3099	113.9606	1488.63	336.54
09-Sep-13													

Appendix II. (cont'd)

Date	Time	Fix Type	Fix Type Behaviour	Fix Vert Degrees	Fix Vert Minutes	Fix Vert Seconds	Fix Horz Degrees	Fix Horz Minutes	Fix Horz Seconds	Fix Latitude	Fix Longitude	Distance	Bearing
09-Sep-13	8:43:27	Transportation Boat	Travelling	90	52	50	345	21	20	22.3128	113.9661	1689.15	359.09
09-Sep-13	8:43:34	Transportation Boat	Travelling	91	1	40	298	44	10	22.3064	113.9560	1443.79	312.47
09-Sep-13	8:43:55	Transportation Boat	Stationary	91	3	0	322	31	40	22.3093	113.9609	1412.85	336.26
09-Sep-13	8:44:12	Transportation Boat	Travelling	90	58	20	306	26	20	22.3082	113.9569	1527.46	320.17
09-Sep-13	8:44:22	Transportation Boat	Travelling	91	7	30	292	39	50	22.3047	113.9561	1317.60	306.39
09-Sep-13	8:44:42	Speed Boat	Travelling	94	34	0	340	5	10	22.3005	113.9661	322.34	353.82
09-Sep-13	8:44:56	Transportation Boat	Travelling	90	50	0	304	14	10	22.3096	113.9548	1786.71	317.97
09-Sep-13	8:45:20	Transportation Boat	Travelling	91	11	40	322	58	20	22.3079	113.9616	1240.23	336.70
09-Sep-13	8:45:26	Transportation Boat	Travelling	91	8	0	320	59	0	22.3083	113.9610	1307.80	334.71
09-Sep-13	8:45:40	Research Vessel	Travelling	91	4	40	324	0	40	22.3091	113.9613	1376.00	337.74
09-Sep-13	8:45:59	Speed Boat	Travelling	92	42	20	295	11	40	22.3007	113.9623	545.14	308.92
09-Sep-13	8:46:40	Transportation Boat	Travelling	90	50	50	308	40	0	22.3101	113.9560	1756.86	322.40
09-Sep-13	8:46:59	Transportation Boat	Travelling	91	34	50	322	22	30	22.3053	113.9627	935.26	336.10
09-Sep-13	8:47:06	Transportation Boat	Travelling	91	9	50	293	17	20	22.3045	113.9565	1273.11	307.02
09-Sep-13	8:47:16	Tug Boat	Travelling	91	2	20	290	29	20	22.3048	113.9549	1428.15	304.22
09-Sep-13	8:47:23	Construction Boat	Travelling	91	3	10	291	31	10	22.3049	113.9552	1409.07	305.25
09-Sep-13	8:47:46	Tug Boat	Travelling	90	55	10	2	12	40	22.3116	113.9707	1616.52	15.94
09-Sep-13	8:47:58	Transportation Boat	Travelling	91	1	30	281	31	40	22.3032	113.9537	1447.75	295.26
09-Sep-13	8:48:13	Research Vessel	Travelling	91	6	0	296	1	50	22.3054	113.9563	1347.88	309.76
09-Sep-13	8:48:38	Transportation Boat	Travelling	92	21	10	322	54	0	22.3028	113.9640	627.18	336.63
09-Sep-13	8:48:57	Tug Boat	Travelling	90	58	0	1	26	50	22.3110	113.9703	1536.36	15.18
09-Sep-13	8:49:39	Research Vessel	Travelling	91	1	10	281	40	0	22.3032	113.9536	1455.75	295.40
09-Sep-13	8:50:46	Transportation Boat	Travelling	95	3	10	340	49	20	22.3002	113.9661	291.17	354.55
09-Sep-13	8:50:55	Transportation Boat	Travelling	91	0	20	317	8	0	22.3092	113.9594	1476.12	330.86
09-Sep-13	8:51:08	Tug Boat	Travelling	90	52	40	3	58	10	22.3121	113.9714	1694.59	17.70
09-Sep-13	8:52:34	Transportation Boat	Travelling	91	6	40	337	5	0	22.3095	113.9643	1334.25	350.81
09-Sep-13	8:52:49	Transportation Boat	Travelling	90	58	10	328	8	10	22.3107	113.9618	1531.90	341.87
09-Sep-13	8:52:56	Tug Boat	Travelling	90	44	40	5	44	20	22.3146	113.9729	2005.08	19.47
09-Sep-13	8:54:51	Transportation Boat	Travelling	90	52	0	338	2	50	22.3129	113.9640	1716.71	351.78
09-Sep-13	8:55:02	Transportation Boat	Travelling	91	41	50	325	51	20	22.3050	113.9634	870.63	339.59
09-Sep-13	8:55:28	Transportation Boat	Travelling	90	58	0	288	59	30	22.3051	113.9538	1536.36	302.72
09-Sep-13	8:56:52	Container Boat	Travelling	91	19	20	313	5	40	22.3061	113.9604	1119.37	326.82
09-Sep-13	8:57:21	Transportation Boat	Travelling	90	56	0	306	27	20	22.3086	113.9565	1592.08	320.19
09-Sep-13	8:57:32	Dumping Guide Boat	Travelling	91	1	10	285	28	10	22.3040	113.9540	1455.75	299.20
09-Sep-13	8:57:41	Transportation Boat	Travelling	90	43	0	346	49	10	22.3164	113.9666	2084.85	0.55
09-Sep-13	8:57:49	Transportation Boat	Travelling	91	56	10	326	8	50	22.3041	113.9638	762.73	339.88
09-Sep-13	8:58:04	Container Boat	Travelling	91	8	40	310	28	50	22.3071	113.9590	1294.97	324.21
09-Sep-13	9:00:56	Dumping Guide Boat	Travelling	91	8	0	316	35	30	22.3078	113.9601	1307.80	330.32
09-Sep-13	9:01:08	Container Boat	Travelling	90	46	20	301	26	40	22.3099	113.9532	1931.26	315.17
09-Sep-13	9:04:04	Transportation Boat	Travelling	93	55	20	349	59	50	22.3010	113.9666	375.55	3.73
09-Sep-13	9:04:35	Other	Travelling	90	52	20	25	12	50	22.3096	113.9768	1705.58	38.94
09-Sep-13	9:05:08	Dumping Guide Boat	Travelling	90	57	0	346	38	20	22.3117	113.9665	1563.72	0.37
09-Sep-13	9:05:16	Transportation Boat	Travelling	92	30	40	323	48	40	22.3025	113.9642	587.50	337.54
09-Sep-13	9:10:22	Ferry	Travelling	93	41	0	334	29	40	22.3011	113.9656	400.01	348.22
09-Sep-13	9:10:35	Speed Boat	Travelling	90	56	40	296	21	0	22.3067	113.9547	1573.06	310.08
09-Sep-13	9:10:44	Transportation Boat	Travelling	91	4	20	296	24	20	22.3056	113.9561	1383.21	310.14
09-Sep-13	9:11:07	Ferry	Travelling	94	40	30	332	18	10	22.3004	113.9657	314.83	346.03
09-Sep-13	9:11:30	Transportation Boat	Travelling	90	59	30	308	8	0	22.3082	113.9574	1497.08	321.86
09-Sep-13	9:11:38	Speed Boat	Travelling	90	58	30	306	4	30	22.3081	113.9568	1523.04	319.80
09-Sep-13	9:12:06	Transportation Boat	Travelling	91	6	40	306	41	10	22.3069	113.9581	1334.25	320.42
09-Sep-13	9:12:22	Ferry	Travelling	94	40	0	337	28	0	22.3004	113.9659	315.40	351.20
09-Sep-13	9:12:35	Speed Boat	Travelling	90	54	20	312	38	20	22.3099	113.9576	1641.73	326.37
09-Sep-13	9:12:57	HSF High Speed Ferry	Travelling	90	29	30	353	49	40	22.3252	113.9703	3086.39	7.56
09-Sep-13	9:13:28	Tug Boat	Travelling	90	57	30	287	24	10	22.3048	113.9535	1549.92	301.13
09-Sep-13	9:13:49	Ferry	Stationary	94	21	30	331	8	20	22.3006	113.9655	338.04	344.87
09-Sep-13	9:14:12	Transportation Boat	Travelling	91	4	40	322	51	20	22.3090	113.9611	1376.00	336.59
09-Sep-13	9:14:19	Transportation Boat	Travelling	91	9	0	325	48	10	22.3085	113.9620	1288.65	339.53
09-Sep-13	12:21:11	Research Vessel	Travelling	93	2	40	336	16	10	22.3017	113.9656	459.81	350.00
09-Sep-13	12:21:28	Tug Boat	Travelling	90	38	0	350	46	30	22.3178	113.9681	2246.71	4.50
09-Sep-13	12:21:38	Ferry	Travelling	92	21	50	305	1	10	22.3016	113.9626	592.71	318.75
09-Sep-13	12:22:25	Transportation Boat	Travelling	91	2	40	299	45	30	22.3060	113.9569	1348.53	313.49
09-Sep-13	12:22:39	Transportation Boat	Travelling	91	2	20	288	40	10	22.3042	113.9553	1355.87	302.40
09-Sep-13	12:22:49	Transportation Boat	Travelling	91	0	20	288	43	40	22.3044	113.9549	1401.42	302.46
09-Sep-13	12:23:00	Transportation Boat	Travelling	90	59	0	306	30	10	22.3075	113.9575	1433.55	320.23
09-Sep-13	12:23:32	Transportation Boat	Travelling	90	53	10	306	31	20	22.3086	113.9565	1593.42	320.25
09-Sep-13	12:24:00	Transportation Boat	Travelling	91	1	0	305	19	50	22.3070	113.9576	1386.12	319.06
09-Sep-13	12:24:17	Transportation Boat	Travelling	90	57	30	307	17	30	22.3079	113.9574	1471.71	321.02
09-Sep-13	12:24:48	Transportation Boat	Travelling	90	52	10	306	58	30	22.3089	113.9564	1624.75	320.70
09-Sep-13	12:25:04	Transportation Boat	Travelling	90	50	20	307	54	40	22.3095	113.9562	1685.07	321.64
09-Sep-13	12:25:13	Transportation Boat	Travelling	91	0	30	304	7	30	22.3069	113.9573	1397.94	317.85
09-Sep-13	12:25:27	Container Boat	Travelling	90	55	10	305	34	0	22.3081	113.9567	1535.12	319.30
09-Sep-13	12:30:04	Container Boat	Stationary	91	19	30	313	35	0	22.3057	113.9608	1061.60	327.31
09-Sep-13	12:33:15	Ferry	Stationary	91	47	0	285	55	50	22.3011	113.9597	787.69	299.66
09-Sep-13	12:33:26	Research Vessel	Stationary	92	38	40	321	18	20	22.3019	113.9642	530.42	335.04
09-Sep-13	12:33:43	Transportation Boat	Travelling	90	44	20	346	37	40	22.3149	113.9665	1920.40	0.36
09-Sep-13	12:34:56	Transportation Boat	Travelling	90	52	0	334	24	20	22.3120	113.9631	1632.17	348.14
09-Sep-13	12:35:03	Transportation Boat	Travelling	90	56	50	307	8	10	22.3080	113.9572	1491.27	320.87
09-Sep-13	12:36:10	Transportation Boat	Travelling	90	59	0	317	5	0	22.3089	113.9596	1435.96	330.81
09-Sep-13	12:36:19	Transportation Boat	Travelling	91	7	40	318	11	0	22.3075	113.9607	1250.04	331.91
09-Sep-13	12:37:05	Transportation Boat	Travelling	93	35	10	338	57	50	22.3011	113.9659	390.93	352.69
09-Sep-13	12:37:19	Transportation Boat	Travelling	90	54	10	305	34	20	22.3083	113.9565	1566.29	319.30
09-Sep-13	12:37:38	Transportation Boat	Travelling	91	13	10	331	58	0	22.3077	113.9636	1155.40	345.70
09-Sep-13	12:38:07	Transportation Boat	Travelling	90	49	40	338	39	40	22.3129	113.9642	1710.97	352.39
09-Sep-13	12:38:38	Transportation Boat	Travelling	92	2	20	328	53	50	22.3035	113.9644	689.04	342.63
09-Sep-13	12:39:52	Transportation Boat	Stationary	91	11	50	332	18	30	22.3079	113.9636	1177.38	346.04
09-Sep-13	12:40:00	Transportation Boat	travelling	90	57	10	324	59	30	22.3101	113.9612	1483.39	338.72
09-Sep-13	12:40:07	Transportation Boat	travelling	91	25	40	325	16	50	22.3059	113.9630	985.92	339.01
09-Sep-13	12:40:33	Fishing Boat	Travelling	91	19	20	31	18	50	22.3044	113.9737	1065.27	45.04
09-Sep-13	12:40:49	Research Vessel	Stationary	92	19	20	302	0	30	22.3015	113.9623	604.85	315.74
09-Sep-13	12:41:18	Ferry	Travelling	91	29	40	286	29	50	22.3019	113.9585	941.81	300.23
09-Sep-13	12:42:05	Transportation Boat	Travelling	91	10	50	329	37	20	22.3079	113.9631	1194.49	343.35
09-Sep-13	12:42:12</												

Appendix II. (cont'd)

Date	Time	Fix Type	Fix Type Behaviour	Fix Vert Degrees	Fix Vert Minutes	Fix Vert Seconds	Fix Horz Degrees	Fix Horz Minutes	Fix Horz Seconds	Fix Latitude	Fix Longitude	Distance	Bearing
09-Sep-13	12:52:27	Transportation Boat	Travelling	90	59	10	285	54	0	22.3040	113.9543	1434.84	299.63
09-Sep-13	12:52:34	Transportation Boat	Travelling	91	8	30	345	43	40	22.3088	113.9663	1237.24	359.46
09-Sep-13	12:53:16	Transportation Boat	Travelling	91	0	40	307	58	10	22.3075	113.9580	1399.05	321.70
09-Sep-13	12:53:24	Construction Boat	Travelling	91	2	20	308	51	20	22.3073	113.9584	1361.20	322.59
09-Sep-13	12:55:57	Transportation Boat	Travelling	92	12	50	344	3	10	22.3033	113.9662	635.77	357.78
09-Sep-13	12:59:53	Research Vessel	Acoustic Recording	91	27	10	308	48	50	22.3046	113.9607	971.28	322.54
09-Sep-13	13:00:43	Transportation Boat	Travelling	94	40	0	353	38	10	22.3003	113.9668	300.98	7.37
09-Sep-13	13:00:57	Transportation Boat	Travelling	95	2	50	359	13	30	22.3001	113.9670	278.18	12.95
09-Sep-13	13:02:31	Research Vessel	Stationary	91	23	30	305	59	0	22.3046	113.9600	1014.57	319.71
09-Sep-13	13:03:07	Transportation Boat	Travelling	94	29	0	358	6	50	22.3004	113.9670	313.44	11.84
09-Sep-13	13:03:27	Transportation Boat	Travelling	94	30	10	355	42	40	22.3004	113.9669	312.09	9.44
09-Sep-13	13:03:52	Research Vessel	Acoustic Recording	91	22	30	304	15	40	22.3045	113.9597	1027.13	317.99
09-Sep-13	13:04:46	Transportation Boat	Travelling	91	30	10	284	26	0	22.3016	113.9583	939.35	298.16
09-Sep-13	13:08:31	Transportation Boat	Travelling	93	44	40	345	4	40	22.3010	113.9663	375.83	358.81
09-Sep-13	13:09:20	Transportation Boat	Travelling	94	55	50	0	23	30	22.3001	113.9671	285.10	14.12
09-Sep-13	13:17:18	Transportation Boat	Travelling	91	32	50	323	37	50	22.3052	113.9630	913.66	337.36
09-Sep-13	13:17:42	Research Vessel	Travelling	91	7	50	288	30	20	22.3036	113.9561	1253.52	302.24
09-Sep-13	13:18:52	Research Vessel	Travelling	90	59	40	279	5	40	22.3026	113.9536	1427.45	292.82
09-Sep-13	13:19:20	Transportation Boat	Travelling	92	46	40	328	29	30	22.3020	113.9649	507.83	342.22
09-Sep-13	13:21:07	Transportation Boat	Travelling	95	31	30	357	31	20	22.2999	113.9669	254.63	11.25
09-Sep-13	13:24:58	Transportation Boat	Travelling	91	0	50	302	27	0	22.3067	113.9570	1400.80	316.18
09-Sep-13	13:25:59	Transportation Boat	Stationary	93	14	0	309	8	50	22.3008	113.9638	436.43	322.88
09-Sep-13	13:26:18	Transportation Boat	Stationary	90	59	10	290	29	10	22.3049	113.9548	1441.03	304.22
09-Sep-13	13:27:29	Transportation Boat	Travelling	90	56	30	280	43	0	22.3032	113.9530	1510.26	294.45
09-Sep-13	13:36:48	Research Vessel	Travelling	91	2	0	291	8	10	22.3047	113.9554	1376.18	304.87
09-Sep-13	13:37:01	HSF High Speed Ferry	Stationary	90	57	40	289	17	40	22.3049	113.9543	1481.05	303.02
09-Sep-13	13:37:41	Tug Boat	Travelling	90	43	40	348	41	40	22.3153	113.9672	1966.48	2.42
09-Sep-13	13:37:47	Construction Boat	Travelling	90	42	50	349	10	10	22.3156	113.9674	2005.75	2.90
09-Sep-13	13:38:15	Construction Boat	Travelling	90	58	30	326	51	40	22.3100	113.9617	1459.89	340.59
09-Sep-13	13:38:29	HSF High Speed Ferry	Travelling	90	59	40	316	17	20	22.3088	113.9594	1431.00	330.02
09-Sep-13	13:38:51	Transportation Boat	Travelling	92	34	0	313	33	20	22.3018	113.9635	551.09	327.29
09-Sep-13	13:39:02	Speed Boat	Travelling	93	14	50	317	15	30	22.3010	113.9643	435.27	330.99
09-Sep-13	13:39:33	Research Vessel	Travelling	91	27	20	314	24	20	22.3051	113.9614	974.30	328.14
09-Sep-13	13:40:11	HSF High Speed Ferry	Travelling	90	47	30	340	46	40	22.3138	113.9647	1804.86	354.51
09-Sep-13	13:40:18	Tug Boat	Travelling	90	52	20	340	23	20	22.3123	113.9648	1635.16	354.12
09-Sep-13	13:40:26	Construction Boat	Travelling	90	53	0	339	55	30	22.3121	113.9647	1614.27	353.65
09-Sep-13	13:40:40	Transportation Boat	Travelling	95	28	0	342	33	20	22.2999	113.9662	258.00	356.29
09-Sep-13	13:40:51	Speed Boat	Travelling	94	35	10	335	31	30	22.3003	113.9658	307.84	349.25
09-Sep-13	13:41:16	Construction Boat	Travelling	90	54	30	343	6	30	22.3117	113.9656	1569.29	356.84
09-Sep-13	13:41:34	HSF High Speed Ferry	Travelling	90	36	40	350	14	0	22.3188	113.9680	2355.43	3.96
09-Sep-13	13:41:51	Transportation Boat	Travelling	90	38	40	343	51	40	22.3177	113.9655	2229.64	357.59
09-Sep-13	13:42:07	Research Vessel	Travelling	91	36	20	345	29	0	22.3056	113.9663	883.04	359.21
09-Sep-13	13:42:40	Transportation Boat	Stationary	95	53	30	354	16	20	22.2998	113.9667	239.32	8.00
09-Sep-13	13:43:10	Research Vessel	Stationary	91	39	50	346	34	20	22.3053	113.9664	852.03	0.30
09-Sep-13	13:43:29	Tug Boat	Travelling	91	6	0	324	42	20	22.3084	113.9618	1292.93	338.44
09-Sep-13	13:43:35	Construction Boat	Travelling	91	5	30	325	40	20	22.3086	113.9619	1302.92	339.40
09-Sep-13	13:43:49	Construction Boat	Travelling	90	48	50	354	4	30	22.3133	113.9687	1755.40	7.80
09-Sep-13	13:44:21	Transportation Boat	Travelling	90	37	30	337	33	50	22.3181	113.9630	2302.09	351.29
09-Sep-13	13:47:00	Tug Boat	Travelling	91	3	40	311	36	50	22.3075	113.9590	1341.46	325.34
09-Sep-13	13:47:08	Construction Boat	Travelling	91	2	40	310	41	40	22.3076	113.9587	1363.14	324.42
09-Sep-13	13:51:34	Speed Boat	Stationary	94	39	10	346	46	50	22.3004	113.9664	303.82	0.51
09-Sep-13	13:51:53	Transportation Boat	Travelling	93	42	40	345	2	10	22.3011	113.9663	381.30	358.77
09-Sep-13	13:53:38	Transportation Boat	Travelling	91	46	50	332	10	20	22.3046	113.9645	796.99	345.90
09-Sep-13	13:53:57	Research Vessel	Acoustic Recording	91	33	20	335	40	50	22.3057	113.9648	912.95	349.41
09-Sep-13	13:54:32	Other	Travelling	91	31	20	335	45	30	22.3059	113.9647	933.13	349.49
09-Sep-13	13:54:44	Transportation Boat	Travelling	91	22	0	326	17	50	22.3064	113.9629	1040.11	340.03
09-Sep-13	13:55:02	Construction Boat	Stationary	91	16	20	312	20	30	22.3060	113.9603	1117.98	326.07
09-Sep-13	13:57:55	Transportation Boat	Stationary	90	57	0	321	18	10	22.3099	113.9602	1502.60	335.03
09-Sep-13	13:58:09	Transportation Boat	Travelling	91	14	10	297	40	30	22.3045	113.9580	1151.38	311.40
09-Sep-13	14:00:06	Transportation Boat	Travelling	91	15	30	309	57	0	22.3058	113.9599	1131.15	323.68
09-Sep-13	14:00:18	Transportation Boat	Travelling	91	8	10	328	2	20	22.3083	113.9626	1254.07	341.77
09-Sep-13	14:01:04	Fishing Boat	Non-operate and travelling	91	7	50	298	0	30	22.3052	113.9573	1260.41	311.74
09-Sep-13	14:01:47	Transportation Boat	Travelling	91	22	30	337	53	30	22.3068	113.9649	1034.68	351.62
09-Sep-13	14:02:00	Transportation Boat	Stationary	91	15	30	308	39	40	22.3057	113.9597	1131.42	322.39
09-Sep-13	14:02:09	Fishing Boat	Non-operate and travelling	91	20	40	301	46	20	22.3044	113.9592	1058.41	315.50
09-Sep-13	14:02:32	Research Vessel	Travelling	91	11	0	4	54	10	22.3079	113.9701	1203.88	18.63
09-Sep-13	14:04:24	Research Vessel	Travelling	91	29	40	315	38	40	22.3050	113.9617	951.76	329.37
09-Sep-13	14:04:42	Transportation Boat	Travelling	91	50	40	8	50	0	22.3040	113.9693	770.33	22.56
09-Sep-13	14:05:49	Research Vessel	Travelling	91	6	10	282	50	0	22.3028	113.9551	1293.28	296.56
09-Sep-13	14:06:19	Research Vessel	Acoustic Recording	91	19	30	326	20	10	22.3067	113.9628	1074.63	340.07
09-Sep-13	14:06:29	Other	Stationary	91	18	30	326	59	20	22.3069	113.9629	1088.45	340.72
09-Sep-13	14:06:44	Transportation Boat	Travelling	91	48	0	37	25	50	22.3021	113.9724	789.64	51.16
09-Sep-13	14:07:51	Transportation Boat	Travelling	91	43	30	43	53	0	22.3016	113.9732	824.26	57.61
09-Sep-13	14:08:28	Transportation Boat	Travelling	93	9	40	344	10	50	22.3017	113.9662	448.83	357.91
09-Sep-13	14:08:44	Fishing Boat	Operate and travelling	90	57	30	293	56	20	22.3058	113.9549	1491.38	307.67
09-Sep-13	14:09:54	Transportation Boat	Travelling	91	51	0	34	41	10	22.3022	113.9720	768.51	48.42
09-Sep-13	14:10:02	Transportation Boat	Travelling	91	54	50	332	24	30	22.3041	113.9647	742.76	346.14
09-Sep-13	14:10:32	Fishing Boat	Non-operate and stationary	90	57	40	296	17	40	22.3062	113.9553	1487.35	310.02
09-Sep-13	14:12:14	Transportation Boat	Travelling	91	10	0	323	21	30	22.3078	113.9618	1222.73	337.09
09-Sep-13	14:12:40	Transportation Boat	Travelling	91	43	0	355	17	20	22.3050	113.9677	828.78	9.02
09-Sep-13	14:12:49	Research Vessel	Travelling	91	12	30	317	13	40	22.3069	113.9608	1180.27	330.96
09-Sep-13	14:13:28	Transportation Boat	Travelling	91	1	10	322	30	0	22.3092	113.9609	1401.65	336.23
09-Sep-13	14:13:51	Transportation Boat	Travelling	91	30	10	342	32	50	22.3061	113.9658	947.58	356.28
09-Sep-13	14:14:02	Speed Boat	Travelling	90	36	0	350	29	50	22.3193	113.9681	2410.66	4.23
09-Sep-13	14:14:36	Research Vessel	Travelling	91	5	10	297	50	20	22.3055	113.9568	1314.80	311.57
09-Sep-13	14:17:33	HSF High Speed Ferry	Travelling	91	1	50	310	21	30	22.3077	113.9585	1387.06	324.09
09-Sep-13	14:21:20	Transportation Boat	Travelling	91	14	40	331	55	0	22.3076	113.9636	1146.94	345.65
09-Sep-13	14:22:21	Transportation Boat	Travelling	95	14	30	347	12	0	22.3001	113.9664	270.55	0.93
09-Sep-13	14:22:46	Transportation Boat	Travelling	95	43	20	356	31	20	22.2998	113.9668	247.70	10.25
09-Sep-13	14:26:03	Transportation Boat	Travelling	91	48	30	7	4	50	22.3042	113.9691	787.89	20.81
09-Sep-13	14:31:05	Transportation Boat	Travelling	91	41	30	354	0	30	22.3051			

Appendix II. (cont'd)

Date	Time	Fix Type	Fix Type Behaviour	Fix Vert Degrees	Fix Vert Minutes	Fix Vert Seconds	Fix Horz Degrees	Fix Horz Minutes	Fix Horz Seconds	Fix Latitude	Fix Longitude	Distance	Bearing
09-Sep-13	14:49:32	Transportation Boat	Travelling	90	57	20	305	46	0	22.3079	113.9569	1503.49	319.50
09-Sep-13	14:49:50	Speed Boat	Travelling	95	14	50	344	30	30	22.3001	113.9663	271.20	358.24
09-Sep-13	14:49:54	Speed Boat	Travelling	95	14	30	344	24	10	22.3001	113.9663	271.49	358.13
09-Sep-13	14:52:46	Transportation Boat	Travelling	91	17	10	332	9	50	22.3073	113.9638	1113.86	345.89
09-Sep-13	14:53:22	Speed Boat	Travelling	92	13	40	28	30	10	22.3019	113.9706	641.20	42.23
09-Sep-13	14:53:27	Speed Boat	Travelling	92	13	40	28	25	20	22.3019	113.9706	641.21	42.15
09-Sep-13	14:55:34	Transportation Boat	Travelling	91	47	10	358	53	20	22.3047	113.9681	800.70	12.62
09-Sep-13	14:55:44	Transportation Boat	Travelling	91	22	20	299	8	50	22.3040	113.9590	1043.83	312.88
09-Sep-13	14:57:03	Transportation Boat	Travelling	91	55	0	20	55	40	22.3031	113.9705	746.06	34.66
09-Sep-13	14:57:10	Transportation Boat	Travelling	91	29	40	326	24	0	22.3057	113.9632	958.08	340.13
09-Sep-13	14:57:19	Speed Boat	Travelling	91	17	50	28	57	20	22.3049	113.9737	1104.88	42.69
09-Sep-13	14:57:22	Speed Boat	Travelling	91	18	0	29	2	10	22.3049	113.9737	1102.50	42.77
09-Sep-13	14:57:38	Research Vessel	Stationary	91	39	10	340	39	30	22.3054	113.9656	865.85	354.39
09-Sep-13	14:58:21	Speed Boat	Travelling	93	3	50	323	31	10	22.3015	113.9646	466.02	337.25
09-Sep-13	14:58:41	Transportation Boat	Travelling	91	46	30	44	26	40	22.3014	113.9731	806.05	58.17
09-Sep-13	14:58:50	Transportation Boat	Travelling	91	16	10	356	15	40	22.3076	113.9683	1129.47	9.99
09-Sep-13	14:59:02	Speed Boat	Travelling	92	33	50	2	50	10	22.3024	113.9679	557.27	16.57
09-Sep-13	14:59:35	Speed Boat	Stationary	91	7	20	23	41	20	22.3068	113.9740	1279.25	37.42
09-Sep-13	14:59:41	Speed Boat	Stationary	91	8	50	24	7	10	22.3065	113.9739	1251.10	37.85
09-Sep-13	14:59:50	Speed Boat	Travelling	91	44	10	23	6	30	22.3036	113.9712	824.31	36.84
09-Sep-13	15:02:24	Transportation Boat	Travelling	93	26	30	8	53	0	22.3011	113.9680	414.91	22.61
09-Sep-13	15:02:39	Transportation Boat	Travelling	90	39	0	26	3	30	22.3131	113.9803	232.81	39.79
09-Sep-13	15:03:01	Speed Boat	Stationary	91	29	20	24	30	50	22.3044	113.9722	962.38	38.24
09-Sep-13	15:04:33	Transportation Boat	Travelling	95	53	50	353	56	30	22.2998	113.9667	241.56	7.67
09-Sep-13	15:06:41	Speed Boat	Stationary	92	7	40	17	50	30	22.3028	113.9698	672.56	31.57
09-Sep-13	15:06:50	Speed Boat	Stationary	90	56	40	20	55	50	22.3089	113.9748	1524.75	34.66
09-Sep-13	15:06:56	Speed Boat	Stationary	91	5	10	22	26	20	22.3072	113.9740	1323.47	36.17
09-Sep-13	15:07:03	Speed Boat	Stationary	91	14	10	26	23	50	22.3056	113.9737	1161.38	40.13
09-Sep-13	15:07:27	Research Vessel	Stationary	91	20	50	338	23	40	22.3071	113.9650	1064.90	352.12
09-Sep-13	15:07:35	Transportation Boat	Travelling	91	49	30	41	55	20	22.3016	113.9727	784.73	55.65
09-Sep-13	15:08:53	Transportation Boat	Travelling	91	51	10	39	16	10	22.3018	113.9724	773.04	53.00
09-Sep-13	15:13:13	Transportation Boat	Travelling	91	35	50	345	46	40	22.3057	113.9663	897.88	359.51
09-Sep-13	15:13:24	Tug Boat	Travelling	90	58	10	334	44	40	22.3107	113.9635	1486.09	348.47
09-Sep-13	15:15:51	Transportation Boat	Travelling	91	11	0	327	45	10	22.3080	113.9626	1215.01	341.48
09-Sep-13	15:16:01	Tug Boat	Travelling	91	2	0	310	21	20	22.3078	113.9584	1393.48	324.09
09-Sep-13	15:18:07	Tug Boat	Travelling	90	56	10	306	28	0	22.3083	113.9568	1540.71	320.20
09-Sep-13	15:18:20	Research Vessel	Travelling	91	12	10	331	0	20	22.3080	113.9633	1195.55	344.74
09-Sep-13	15:18:47	Transportation Boat	Travelling	91	0	20	321	18	30	22.3093	113.9605	1432.97	335.04
09-Sep-13	15:19:01	Transportation Boat	Travelling	90	46	40	23	1	0	22.3110	113.9772	1860.91	36.75
09-Sep-13	15:19:26	Tug Boat	Travelling	90	50	20	304	3	0	22.3091	113.9551	1722.76	317.78
09-Sep-13	15:20:28	Research Vessel	Travelling	91	19	0	306	16	40	22.3051	113.9596	1091.58	320.01
09-Sep-13	15:28:16	Transportation Boat	Travelling	91	47	40	43	24	40	22.3015	113.9729	800.28	57.14
09-Sep-13	15:29:30	Transportation Boat	Travelling	91	36	40	43	53	20	22.3019	113.9737	891.97	57.62
09-Sep-13	15:38:59	Transportation Boat	Travelling	91	20	30	333	40	30	22.3070	113.9641	1073.65	347.40
09-Sep-13	15:39:11	Container Boat	Travelling	90	41	10	348	20	40	22.3167	113.9671	2121.77	2.07
09-Sep-13	15:39:29	Government Boat	Travelling	90	46	0	343	27	20	22.3146	113.9655	1893.50	357.19
09-Sep-13	15:39:46	Transportation Boat	Travelling	91	1	10	299	26	40	22.3063	113.9563	1417.02	313.17
09-Sep-13	15:40:03	Speed Boat	Travelling	90	48	40	344	27	50	22.3137	113.9659	1787.70	358.19
09-Sep-13	15:41:10	Government Boat	Travelling	90	58	40	318	48	20	22.3094	113.9598	1478.49	332.54
09-Sep-13	15:41:20	Transportation Boat	Travelling	90	57	30	326	48	20	22.3104	113.9615	1508.95	340.54
09-Sep-13	15:41:28	Speed Boat	Travelling	91	5	50	318	1	30	22.3080	113.9603	1315.69	331.75
09-Sep-13	15:41:39	Container Boat	Travelling	90	50	0	339	27	0	22.3132	113.9644	1739.44	353.18
09-Sep-13	15:42:33	Government Boat	Travelling	90	57	50	292	56	50	22.3057	113.9547	1500.36	306.68
09-Sep-13	15:42:44	Transportation Boat	Travelling	90	45	20	343	48	50	22.3149	113.9656	1922.78	357.54
09-Sep-13	15:43:35	Transportation Boat	Travelling	90	58	30	316	11	40	22.3092	113.9592	1483.21	329.92
09-Sep-13	15:44:13	Container Boat	Travelling	90	58	0	323	28	10	22.3100	113.9608	1496.30	337.20
09-Sep-13	15:46:59	Transportation Boat	Travelling	91	0	50	310	32	10	22.3080	113.9583	1426.17	324.27
09-Sep-13	15:48:48	Transportation Boat	Travelling	91	29	10	339	34	20	22.3063	113.9653	969.79	353.30
09-Sep-13	15:48:58	Transportation Boat	Travelling	90	53	40	330	33	20	22.3117	113.9621	1620.02	344.29
09-Sep-13	15:49:06	Container Boat	Travelling	90	59	0	285	12	40	22.3040	113.9539	1471.48	298.94
09-Sep-13	15:51:48	Transportation Boat	Travelling	90	40	30	347	57	0	22.3171	113.9670	2161.15	1.68
09-Sep-13	15:52:02	Transportation Boat	Travelling	91	58	40	21	16	20	22.3030	113.9705	727.93	35.00
09-Sep-13	16:02:28	Transportation Boat	Travelling	91	21	30	333	28	0	22.3070	113.9641	1063.47	347.20
09-Sep-13	16:07:28	Transportation Boat	Travelling	90	58	0	317	52	0	22.3095	113.9595	1500.64	331.60
09-Sep-13	16:07:45	Speed Boat	Travelling	91	19	0	314	28	10	22.3060	113.9608	1098.11	328.20
09-Sep-13	16:08:04	Speed Boat	Stationary	92	6	50	17	53	40	22.3028	113.9699	682.24	31.62
09-Sep-13	16:08:16	Speed Boat	Stationary	90	37	30	30	36	40	22.3127	113.9823	2344.69	44.34
09-Sep-13	16:08:25	Speed Boat	Stationary	90	41	30	29	14	10	22.3115	113.9804	2111.97	42.97
09-Sep-13	16:08:45	Speed Boat	Travelling	91	18	40	315	51	30	22.3062	113.9610	1102.94	329.59
09-Sep-13	16:15:59	Transportation Boat	Travelling	91	44	50	350	55	50	22.3050	113.9671	826.90	4.66
09-Sep-13	16:16:14	Speed Boat	Stationary	91	15	30	313	2	10	22.3063	113.9603	1150.66	326.77
09-Sep-13	16:20:53	Speed Boat	Travelling	93	2	0	23	28	0	22.3010	113.9692	475.61	37.20
09-Sep-13	16:21:08	Transportation Boat	Travelling	91	50	30	41	49	0	22.3016	113.9727	784.80	55.55
09-Sep-13	16:21:22	Speed Boat	Travelling	91	11	50	315	58	50	22.3070	113.9605	1210.71	329.71
09-Sep-13	16:22:00	Speed Boat	Travelling	91	38	10	33	21	0	22.3030	113.9727	884.01	47.08
09-Sep-13	16:23:11	Speed Boat	Travelling	91	4	40	35	54	20	22.3055	113.9764	1346.67	49.64
09-Sep-13	16:23:34	Research Vessel	Acoustic Recording	91	9	20	279	58	10	22.3022	113.9552	1255.14	293.70
09-Sep-13	16:23:51	Other	Stationary	91	9	20	279	11	0	22.3020	113.9552	1255.18	292.91
09-Sep-13	16:24:57	Transportation Boat	Travelling	92	56	50	22	58	50	22.3012	113.9692	489.80	36.71
09-Sep-13	16:26:56	Transportation Boat	Travelling	95	38	20	358	49	10	22.2999	113.9669	255.32	12.55
09-Sep-13	16:32:13	Transportation Boat	Travelling	92	26	10	339	24	50	22.3029	113.9657	593.47	353.14
09-Sep-13	16:32:22	Transportation Boat	Travelling	92	14	10	27	19	10	22.3020	113.9705	646.75	41.05
09-Sep-13	16:33:43	Transportation Boat	Travelling	92	5	40	29	54	40	22.3021	113.9710	690.78	43.64
09-Sep-13	16:33:50	Transportation Boat	Travelling	91	43	20	327	37	50	22.3048	113.9638	840.81	341.36
09-Sep-13	16:34:32	Speed Boat	Travelling	91	1	50	355	21	50	22.3102	113.9686	1411.13	9.09
09-Sep-13	16:36:45	Transportation Boat	Travelling	91	30	0	315	32	0	22.3051	113.9616	966.47	329.26
09-Sep-13	16:36:54	Transportation Boat	Travelling	92	2	20	26	51	20	22.3025	113.9709	709.96	40.59
09-Sep-13	16:37:03	Speed Boat	Travelling	91	26	50	355	49	50	22.3065	113.9680	1001.99	9.56
09-Sep-13	16:37:37	Research Vessel	Acoustic Recording	91	0	40	279	55	50	22.3028	113.9536	1439.17	293.66
09-Sep-13	16:39:20	Speed Boat	Travelling	92	16	20	356	10	50	22.3033	113.9675	636.98	9.91
09-Sep-13	16:39:30	Transportation Boat	Travelling	91	9	40	286	43	0	22.3033	113.9559	1251.54	300.45
09-Sep-13	16:41:23	Speed Boat	Travelling										

Appendix II. (cont'd)

Date	Time	Fix Type	Fix Type Behaviour	Fix Vert Degrees	Fix Vert Minutes	Fix Vert Seconds	Fix Horz Degrees	Fix Horz Minutes	Fix Horz Seconds	Fix Latitude	Fix Longitude	Distance	Bearing
10-Sep-13	8:55:43	Construction Boat	Travelling	91	0	55	315	57	30	22.3088	113.9593	1436.79	329.69
10-Sep-13	8:58:14	Transportation Boat	Travelling	90	45	35	342	33	5	22.3149	113.9652	1929.39	356.28
10-Sep-13	9:00:23	Transportation Boat	Travelling	90	43	30	347	45	0	22.3158	113.9669	2023.57	1.48
10-Sep-13	9:00:31	Construction Boat	Travelling	90	42	50	347	29	45	22.3161	113.9668	2055.87	1.23
10-Sep-13	9:05:55	Tug Boat	Travelling	90	49	40	346	42	45	22.3135	113.9665	1765.76	0.44
10-Sep-13	9:07:31	Transportation Boat	Travelling	90	41	40	346	12	20	22.3166	113.9664	2113.13	359.94
10-Sep-13	9:07:55	Tug Boat	Travelling	90	46	50	348	43	40	22.3145	113.9672	1874.41	2.46
10-Sep-13	9:08:09	Container Boat	Travelling	90	46	55	348	0	15	22.3144	113.9670	1870.95	1.73
10-Sep-13	9:09:27	Transportation Boat	Travelling	90	53	30	333	3	5	22.3120	113.9628	1636.27	346.78
10-Sep-13	9:09:38	Transportation Boat	Travelling	90	54	50	306	18	35	22.3086	113.9564	1595.80	320.04
10-Sep-13	9:10:25	Transportation Boat	Travelling	91	1	20	307	17	25	22.3076	113.9577	1424.23	321.02
10-Sep-13	9:10:38	Transportation Boat	Travelling	90	59	20	319	42	0	22.3095	113.9600	1472.84	333.43
10-Sep-13	9:10:51	Tug Boat	Travelling	90	45	55	357	11	30	22.3145	113.9699	1911.96	10.92
10-Sep-13	9:11:00	Container Boat	Travelling	90	46	10	356	17	55	22.3145	113.9696	1901.33	10.03
10-Sep-13	9:11:46	Transportation Boat	Travelling	91	2	40	304	57	50	22.3070	113.9575	1393.31	318.69
10-Sep-13	9:11:55	Transportation Boat	Travelling	91	2	5	291	7	10	22.3049	113.9552	1406.53	304.85
10-Sep-13	9:13:42	Transportation Boat	Travelling	90	56	25	280	39	35	22.3034	113.9527	1549.51	294.39
10-Sep-13	9:13:52	Speed Boat	Travelling	91	11	20	303	34	35	22.3057	113.9583	1221.97	317.31
10-Sep-13	9:16:05	Container Boat	Travelling	90	45	0	7	29	30	22.3140	113.9733	1950.52	21.22
10-Sep-13	9:16:12	Tug Boat	Travelling	90	47	50	353	41	55	22.3140	113.9687	1832.43	7.43
10-Sep-13	9:16:23	Speed Boat	Travelling	91	4	50	308	29	20	22.3072	113.9584	1345.40	322.22
10-Sep-13	9:16:37	HSF High Speed Ferry	Travelling	90	44	5	345	30	50	22.3155	113.9661	1991.95	359.24
10-Sep-13	9:16:47	Tug Boat	Travelling	90	48	5	350	47	35	22.3140	113.9678	1822.56	4.52
10-Sep-13	9:17:01	Speed Boat	Travelling	90	56	15	306	54	40	22.3084	113.9568	1553.51	320.64
10-Sep-13	9:17:36	Transportation Boat	Travelling	90	59	30	306	46	55	22.3078	113.9573	1467.35	320.51
10-Sep-13	9:17:51	HSF High Speed Ferry	Travelling	90	54	35	333	19	30	22.3117	113.9629	1601.54	347.05
10-Sep-13	9:18:11	Tug Boat	Travelling	90	47	50	348	41	15	22.3141	113.9672	1831.96	2.42
10-Sep-13	9:18:58	HSF High Speed Ferry	Travelling	91	0	45	315	23	15	22.3087	113.9592	1436.51	329.12
10-Sep-13	9:20:03	Container Boat	Travelling	91	5	50	316	13	35	22.3079	113.9600	1324.11	329.96
10-Sep-13	9:20:32	Transportation Boat	Travelling	90	58	30	309	2	25	22.3083	113.9576	1492.23	327.77
10-Sep-13	9:20:39	HSF High Speed Ferry	Travelling	90	57	35	285	25	30	22.3043	113.9535	1516.30	299.15
10-Sep-13	9:21:05	Transportation Boat	Travelling	91	1	30	318	23	20	22.3089	113.9599	1418.38	332.12
10-Sep-13	9:21:19	Tug Boat	Travelling	90	43	45	354	3	25	22.3155	113.9690	2006.30	7.79
10-Sep-13	9:21:31	Container Boat	Travelling	90	44	5	353	23	15	22.3154	113.9688	1990.70	7.12
10-Sep-13	9:22:22	Transportation Boat	Travelling	91	1	40	303	13	0	22.3069	113.9570	1414.27	316.95
10-Sep-13	9:22:28	Transportation Boat	Travelling	90	59	50	327	33	35	22.3100	113.9618	1458.16	341.29
10-Sep-13	9:22:36	Transportation Boat	Travelling	91	2	5	313	56	30	22.3083	113.9591	1404.61	327.67
10-Sep-13	9:22:45	Transportation Boat	Travelling	91	3	15	300	8	40	22.3062	113.9567	1378.36	313.87
10-Sep-13	9:23:04	Container Boat	Travelling	90	48	10	353	11	5	22.3139	113.9685	1817.87	6.91
10-Sep-13	9:23:14	Container Boat	Travelling	90	56	10	306	9	10	22.3083	113.9567	1554.61	319.88
10-Sep-13	9:23:31	Transportation Boat	Travelling	91	1	0	306	21	35	22.3075	113.9575	1429.71	320.09
10-Sep-13	9:23:46	Transportation Boat	Travelling	90	53	40	298	37	35	22.3075	113.9547	1628.11	312.36
10-Sep-13	9:23:54	Transportation Boat	Travelling	90	57	45	336	45	20	22.3110	113.9640	1511.24	350.49
10-Sep-13	9:24:03	Transportation Boat	Travelling	90	56	15	328	10	45	22.3109	113.9617	1552.11	341.91
10-Sep-13	9:24:08	Transportation Boat	Travelling	90	56	10	304	41	50	22.3081	113.9564	1554.43	318.43
10-Sep-13	9:24:24	Tug Boat	Travelling	90	42	10	3	51	5	22.3155	113.9725	2082.84	17.58
10-Sep-13	9:24:29	Container Boat	Travelling	90	42	10	2	49	30	22.3156	113.9722	2082.82	16.55
10-Sep-13	9:25:30	Container Boat	Travelling	90	51	5	307	13	45	22.3096	113.9559	1711.56	320.96
10-Sep-13	9:25:59	Container Boat	Travelling	90	46	0	349	27	50	22.3147	113.9674	1904.71	3.19
10-Sep-13	9:26:23	Transportation Boat	Travelling	90	42	55	294	51	45	22.3091	113.9509	2044.94	308.59
10-Sep-13	9:26:33	Transportation Boat	Travelling	90	50	50	349	53	10	22.3131	113.9675	1719.90	3.62
10-Sep-13	9:26:41	Transportation Boat	Travelling	90	43	5	345	40	50	22.3159	113.9662	2036.75	359.41
10-Sep-13	9:27:16	Transportation Boat	Travelling	91	9	15	15	56	0	22.3074	113.9725	1256.94	29.66
10-Sep-13	9:27:37	Container Boat	Stationary	90	42	45	5	12	0	22.3151	113.9729	2052.80	18.93
10-Sep-13	9:28:28	Speed Boat	Travelling	90	47	5	297	27	35	22.3086	113.9528	1859.31	311.19
10-Sep-13	9:30:16	Transportation Boat	Travelling	90	43	10	358	22	40	22.3155	113.9705	2031.77	12.11
10-Sep-13	9:30:23	Transportation Boat	Travelling	92	22	55	1	38	55	22.3029	113.9680	606.25	15.38
10-Sep-13	9:30:42	Tug Boat	Travelling	90	50	25	8	40	10	22.3120	113.9728	1733.46	22.40
10-Sep-13	9:31:18	Tug Boat	Travelling	90	46	0	354	15	35	22.3146	113.9690	1903.40	7.99
10-Sep-13	9:32:12	Transportation Boat	Travelling	90	59	0	323	13	55	22.3099	113.9608	1477.19	336.96
10-Sep-13	9:32:32	Transportation Boat	Travelling	93	3	0	354	12	15	22.3018	113.9670	472.95	7.93
10-Sep-13	9:33:12	Transportation Boat	Travelling	94	25	0	359	48	40	22.3005	113.9671	326.11	13.54
10-Sep-13	9:34:16	Transportation Boat	Travelling	90	47	25	340	51	5	22.3141	113.9647	1844.58	354.58
10-Sep-13	9:34:28	Tug Boat	Travelling	90	47	55	5	47	35	22.3131	113.9723	1824.88	19.52
10-Sep-13	9:34:53	Tug Boat	Travelling	90	30	40	354	58	5	22.3234	113.9707	2895.81	8.70
10-Sep-13	9:36:42	Tug Boat	Travelling	90	31	20	348	36	10	22.3231	113.9675	2830.32	2.33
10-Sep-13	9:38:00	Tug Boat	Travelling	90	35	10	343	8	50	22.3202	113.9651	2508.19	356.88
10-Sep-13	9:38:18	Tug Boat	Travelling	90	35	0	352	30	5	22.3202	113.9691	2520.51	6.23
10-Sep-13	9:40:44	Tug Boat	Travelling	90	46	30	341	51	35	22.3145	113.9650	1880.19	355.59
10-Sep-13	9:41:14	Transportation Boat	Travelling	91	2	30	2	34	5	22.3096	113.9702	1391.80	16.30
10-Sep-13	9:43:31	Transportation Boat	Travelling	90	59	35	1	21	0	22.3103	113.9701	1460.41	15.08
10-Sep-13	9:44:00	Tug Boat	Travelling	91	1	50	321	45	20	22.3091	113.9607	1406.50	335.49
10-Sep-13	9:44:30	Construction Boat	Travelling	91	5	20	325	55	0	22.3088	113.9619	1330.19	339.65
10-Sep-13	9:48:26	Construction Boat	Travelling	90	46	10	343	20	30	22.3146	113.9655	1892.19	357.07
10-Sep-13	9:48:53	Transportation Boat	Stationary	90	49	5	358	13	0	22.3133	113.9700	1777.32	11.95
10-Sep-13	9:49:06	Transportation Boat	Travelling	90	42	15	22	12	35	22.3127	113.9782	2071.99	35.94
10-Sep-13	9:53:52	Tug Boat	Travelling	90	59	15	308	24	35	22.3080	113.9576	1466.79	322.14
10-Sep-13	9:54:18	Other	Travelling	90	59	35	308	52	0	22.3080	113.9578	1458.39	322.60
10-Sep-13	9:54:34	Transportation Boat	Travelling	91	27	25	320	34	15	22.3057	113.9622	990.36	334.30
10-Sep-13	9:55:30	Transportation Boat	Travelling	91	1	50	355	12	20	22.3101	113.9685	1404.42	8.94
10-Sep-13	9:55:49	Tug Boat	Travelling	90	49	35	358	57	40	22.3130	113.9702	1757.47	12.69
10-Sep-13	9:56:13	Transportation Boat	Travelling	91	1	10	359	29	0	22.3101	113.9696	1419.79	13.21
10-Sep-13	9:56:21	Transportation Boat	Travelling	91	14	15	291	33	55	22.3037	113.9571	1167.16	305.30
10-Sep-13	9:57:09	Tug Boat	Travelling	90	42	55	0	3	20	22.3154	113.9711	2036.83	13.79
10-Sep-13	9:57:31	Transportation Boat	Travelling	91	0	20	0	52	40	22.3102	113.9699	1439.42	14.61
10-Sep-13	9:57:50	Tug Boat	Travelling	90	50	55	306	4	15	22.3094	113.9557	1710.13	319.80
10-Sep-13	9:58:11	Other	Travelling	90	51	50	305	48	55	22.3091	113.9558	1679.27	319.55
10-Sep-13	9:59:00	Transportation Boat	Travelling	91	13	40	358	9	25	22.3080	113.9688	1176.09	11.89
10-Sep-13	10:04:08	Transportation Boat	Travelling	95	10	35	349	50	50	22.3001	113.9666	276.92	3.58
10-Sep-13	10:06:48	Transportation Boat	Travelling	93	10	30	2	43	10	22.3015	113.9676	452.28	16.45
10-Sep-13	10:11:37	Transportation Boat	Travelling	91	11	10	4	34	20	22.3080	113.9701	1215.82	18.30
10-Sep-13	10:11:48	Speed Boat	Travelling	92	2	0	4	17	45	22.			

