Monitoring of Chinese White Dolphins in Southwest Lantau Waters

18th *Monthly Progress Report (August 2016)*
submitted to Environmental Project Office for the HZMB HKLR, HZMB HKBCF and TM-CLKL – Investigation

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1. Introduction

1.1. In March 2015, Hong Kong Cetacean Research Project (HKCRP) was appointed by the Environmental Project Office for the HZMB Hong Kong Projects to undertake a monitoring study of Chinese White Dolphins in Southwest Lantau (SWL) waters.

1.2. The objectives of the monitoring study are to quantify the abundance and density of Chinese White Dolphins in SWL waters, to identify individuals during the monitoring surveys, and to analyze their range use and movement patterns in Hong Kong and the wider Pearl River Estuary waters.

1.3. The monitoring study will supplement the on-going EM&A monitoring results of the HZMB Hong Kong Projects in North and West Lantau waters, and provide a more complete picture of dolphin usage and movements between different survey areas in western Hong Kong waters.

1.4. The present report is the 18th monthly progress report under this dolphin monitoring study submitted to the Environmental Project Office, summarizing the survey findings during the month of August 2016.

2. Monitoring Methodology

2.1. Vessel-based Line-transect Survey

2.1.1. According to the requirement of the technical proposal submitted to the Environmental

Project Office, dolphin monitoring programme should cover all transect lines in SWL survey area (see Figure 1) once per month upon instruction. The co-ordinates of all transect lines conducted during the dolphin monitoring survey are shown in Table 1.

Table 1. Co-ordinates of transect lines in SWL survey area (corresponding to transect line layout as shown in Figure 1)

Line #		Northing	Easting		Line #		Northing	Easting
SWL001	1	806180	802510		SWL007	13	807380	808520
	2	804250	802510			14	805600	808520
SWL002	3	806710	803480			15	804400	808520
	4	803450	803480			16	803000	808520
SWL003	5	807270	804500			17	802100	808520
	6	802690	804500			18	800470	808520
SWL004	7	807590	805450		SWL008	19	807380	809550
	8	802295	805450			20	805050	809550
SWL005	9	808490	806500			21	804400	809550
	10	801410	806500			22	800470	809550
SWL006	11	808500	807430		SWL009	23	807380	810550
	12	801250	807430			24	800470	810550
					SWL010	25	809410	811510
						26	801470	811510

2.1.2. The HKCRP survey team used standard line-transect methods (Buckland et al. 2001) to conduct the systematic vessel surveys, and followed the same technique of data collection that has been adopted over the last 18 years of marine mammal monitoring surveys in Hong Kong developed by HKCRP (see Hung 2014). For each monitoring vessel survey, a 15-m inboard vessel with an open upper deck (about 4.5 m above water surface) was used to make observations from the flying bridge area.

2.1.3. Two experienced observers from HKCRP (a data recorder and a primary observer) made up the on-effort survey team, and the survey vessel transited different transect lines at a

constant speed of 13-15 km per hour. The data recorder searched with unaided eyes and filled out the datasheets, while the primary observer searched for dolphins and porpoises continuously through 7 x 50 *Fujinon* marine binoculars. Both observers searched the sea ahead of the vessel, between 270° and 90° (in relation to the bow, which is defined as 0°). One to two additional experienced observer was available on the boat to work in shift (i.e. rotate every 30 minutes) in order to minimize fatigue of the survey team members. All observers were experienced in small cetacean survey techniques and identifying local cetacean species.

2.1.4. During on-effort survey periods, the survey team recorded effort data including time, position (latitude and longitude), weather conditions (Beaufort sea state and visibility), and distance traveled in each series (a continuous period of search effort) with the assistance of a handheld GPS (*Garmin eTrex Legend*).

2.1.5. Data including time, position and vessel speed were also automatically and continuously logged by handheld GPS throughout the entire survey for subsequent review.

2.1.6. When dolphins were sighted, the survey team would end the survey effort, and immediately record the initial sighting distance and angle of the dolphin group from the survey vessel, as well as the sighting time and position. Then the research vessel was diverted from its course to approach the animals for species identification, group size estimation, assessment of group composition, and behavioural observations. The perpendicular distance (PSD) of the dolphin group to the transect line was later calculated from the initial sighting distance and angle.

2.1.7. Survey effort being conducted along the parallel transect lines that were perpendicular to the coastlines (as indicated in Figure 1) was labeled as “primary” survey effort, while the survey effort conducted along the connecting lines between parallel lines as well as the section around the Soko Islands was labeled as “secondary” survey effort. Both primary and secondary survey effort were presented as on-effort survey effort in this report.

2.1.8. Encounter rates of Chinese White Dolphins (number of on-effort sightings per 100 km of survey effort and number of dolphins from all on-effort sightings per 100 km of survey effort) were calculated in SWL survey area in relation to the amount of survey effort conducted during each month of monitoring survey. Only data collected under Beaufort 3 or below condition would be used for encounter rate analysis. Dolphin encounter rates were calculated using the combined survey effort from both primary and secondary lines for comparison to the historical data collected by HKCRP in this survey area. For the historical data, the encounter rates were calculated by pooling all relevant survey effort

and dolphin sightings to calculate a single index.

2.2. Photo-identification Work

2.2.1. When a group of Chinese White Dolphins were sighted during the line-transect survey, the survey team would end effort and approach the group slowly from the side and behind to take photographs of them. Every attempt was made to photograph every dolphin in the group, and even photograph both sides of the dolphins, since the colouration and markings on both sides may not be symmetrical.

2.2.2. A professional digital camera (*Canon* EOS 7D model), equipped with long telephoto lenses (100-400 mm zoom), were available on board for researchers to take sharp, close-up photographs of dolphins as they surfaced. The images were shot at the highest available resolution and stored on Compact Flash memory cards for downloading onto a computer.

2.2.3. All digital images taken in the field were first examined, and those containing potentially identifiable individuals were sorted out. These photographs would then be examined in greater detail, and were carefully compared to the existing Chinese White Dolphin photo-identification catalogue maintained by HKCRP since 1995. For individual dolphins that are not readily identifiable from the catalogue but have distinct features on their bodies, they will be placed in a pool of "potential new individuals", with decision being made at the end of each year on whether any of them should be incorporated into the photo-ID catalogue.

2.2.4. Chinese White Dolphins can be identified by their natural markings, such as nicks, cuts, scars and deformities on their dorsal fin and body, and their unique spotting patterns were also used as secondary identifying features (Jefferson 2000).

2.2.5. All photographs of each individual were then compiled and arranged in chronological order, with data including the date and location first identified (initial sighting), re-sightings, associated dolphins, distinctive features, and age classes entered into a computer database.

3. Monitoring Results

3.1. Vessel-based Line-transect Survey

3.1.1. One set of systematic line-transect vessel survey was conducted under the present

monitoring study on August 22nd to cover all transect lines in SWL survey area once. The route and track log of this survey are presented in Figure 2 and Appendix I respectively.

3.1.2. In addition, three line-transect surveys were also conducted under the AFCD long-term marine mammal monitoring programme in SWL survey area on August 9th (with lines no. SWL001, SWL003, SWL005, SWL007 and SWL010 covered), August 16th (with lines no. SWL002 and SWL004 covered) and August 25th (with lines no. SWL006, SWL008 and SWL010 covered). Such monitoring data were also incorporated into the present study for various analyses.

3.1.3. For the present study alone, a total of 69.30 km of survey effort was collected from 11:13 to 16:18 (i.e. 5 hours and 5 minutes of survey time) on August 22nd, with 91.5% of the total survey effort being conducted under favourable weather conditions (i.e. Beaufort Sea State 3 or below with good visibility) (Appendix II). The total survey effort conducted on primary and secondary lines were 51.40 km and 17.90 km respectively.

3.1.4. For the combined monitoring dataset from both the present study and AFCD monitoring study, a total of 132.34 km of survey effort was collected in SWL waters in August 2016.

3.1.5. During this monitoring month, six groups of eight Chinese White Dolphins were sighted from the present study's survey and the other three AFCD monitoring surveys (Appendix III). Five of the six dolphin groups were sighted during on-effort search, and one of them was associated with an operating purse-seiner.

3.1.6. Notably, three groups of four finless porpoise were also sighted in SWL survey area during this monitoring month.

3.1.7. Distribution of the six dolphin sightings made in August 2016 is shown in Figure 3. These groups were mostly found along the coastline between Fan Lau and Kau Ling Chung, while a lone dolphin was sighted near Shek Pik associated with a purse-seiner (Figure 3). On the contrary, they were mostly absent from the southern and eastern portions of the survey area during this monitoring month (Figure 3).

3.1.8. Encounter rates of Chinese White Dolphins deduced from the survey effort and on-effort sighting data made under favourable conditions (Beaufort 3 or below) in August 2016 are shown in Table 2. Comparison of encounter rates was also made to the one deduced in summer months (June-August) in the past decade (2005-14), as well as in August 2015 under the present study (Table 2).

Table 2. Overall dolphin encounter rates (sightings per 100 km of survey effort) from the present monitoring survey and combined database with AFCD monitoring survey conducted in August 2016 (primary lines only, as well as both primary lines and secondary lines were used) in SWL survey area in comparison to the ones deduced during summer months (June-August 2005-14) in the past decade

	Encounter rate (STG) (no. of on-effort dolphin sightings per 100 km of survey effort)		**Encounter rate (ANI)** (no. of dolphins from all on-effort sightings per 100 km of survey effort)	
	Primary Lines Only	Both Primary and Secondary Lines	Primary Lines Only	Both Primary and Secondary Lines
HYD-HZMB data (August 2016)	2.12	1.58	2.12	1.58
Combined data (August 2016)	3.60	4.15	6.00	5.81
Combined data (August 2015)	8.81	7.34	37.21	32.02
Historical Data (Summer 2005-14)		4.02		11.78

3.1.9. From the combined data of HYD-HZMB and AFCD monitoring surveys, the overall encounter rates based on the number of dolphin sightings (ER(STG)) deduced in August 2016 in SWL waters was similar to the one deduced from the historical data during the summer months of 2005-14, while the total number of dolphins (ER(ANI)) was noticeably lower than the one during the summer months of 2005-14 (Table 2). Both encounter rates (i.e. ER(STG) and ER(ANI)) deduced in August 2016 were also much lower than the ones deduced in August 2015 (Table 2).

3.1.10. The average group size of Chinese White Dolphin sighted during SWL monitoring surveys in August 2016 was 1.3 animals per group, which was much lower than the average group size in summer months of 2005-14 (2.9). All six dolphin groups were composed of only 1-2 animals (Appendix III).

3.2. Photo-identification Work

3.2.1. Attempts were made to photograph the dolphins sighted during all SWL surveys conducted in August 2016.

3.2.2. Among the eight dolphins sighted during this month's surveys, three individual dolphins were identified and re-sighted three times in total (Appendices IV and V). None of them was accompanied by any calf.

3.2.3. The locations where all three individuals were re-sighted were well within their past home ranges in Southwest and West Lantau waters, and all of them have been sighted in Southwest Lantau waters in the past.

4. References

Buckland, S. T., Anderson, D. R., Burnham, K. P., Laake, J. L., Borchers, D. L., and Thomas, L. 2001. Introduction to distance sampling: estimating abundance of biological populations. Oxford University Press, London.

Hung, S. K. 2014. Monitoring of Marine Mammals in Hong Kong waters: final report (2013-14). An unpublished report submitted to the Agriculture, Fisheries and Conservation Department, 231 pp.

Jefferson, T. A. 2000. Population biology of the Indo-Pacific hump-backed dolphin in Hong Kong waters. Wildlife Monographs 144:1-65.

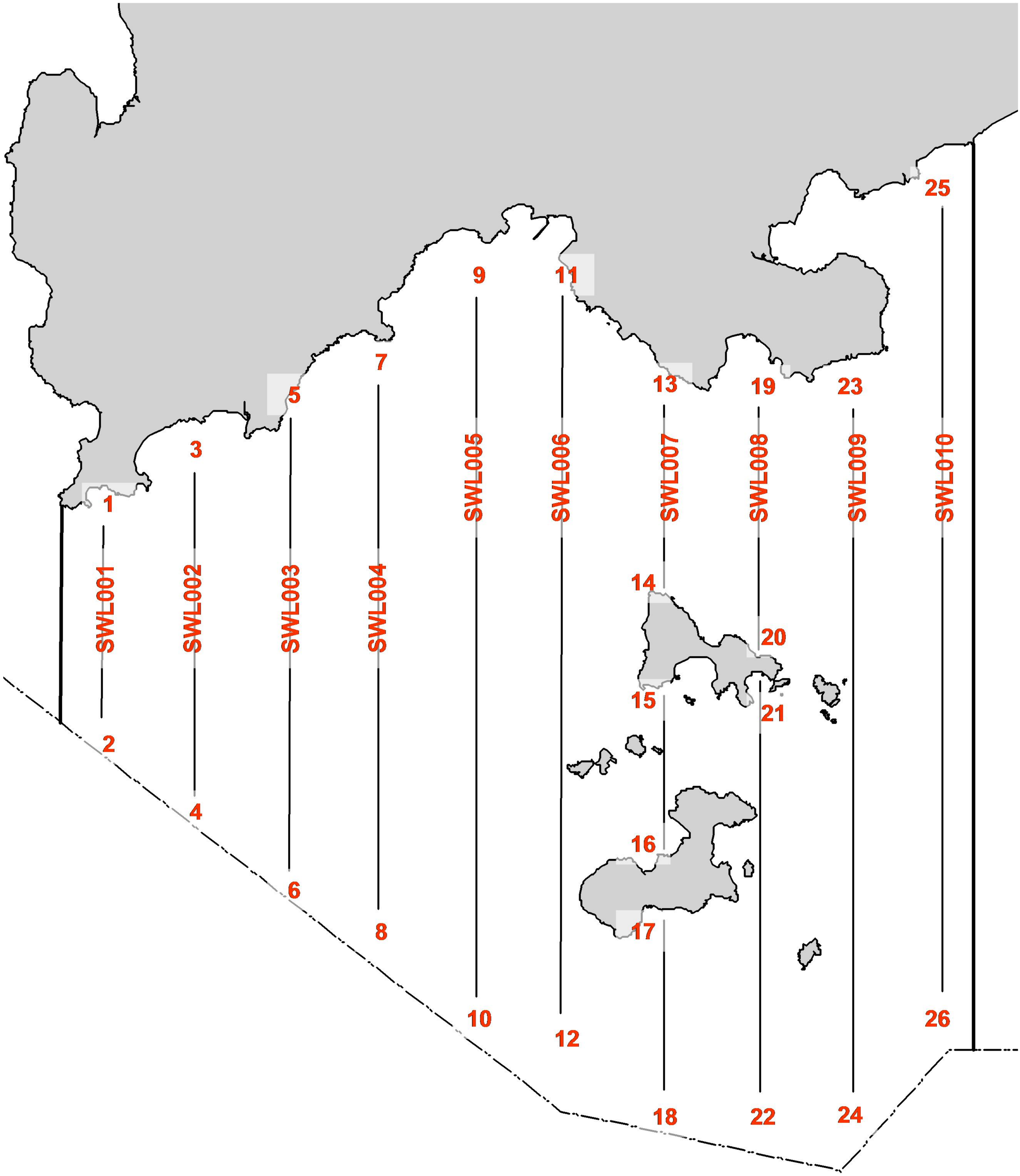

Figure 1. Survey Lines and associated coordinates in Southwest Lantau survey area

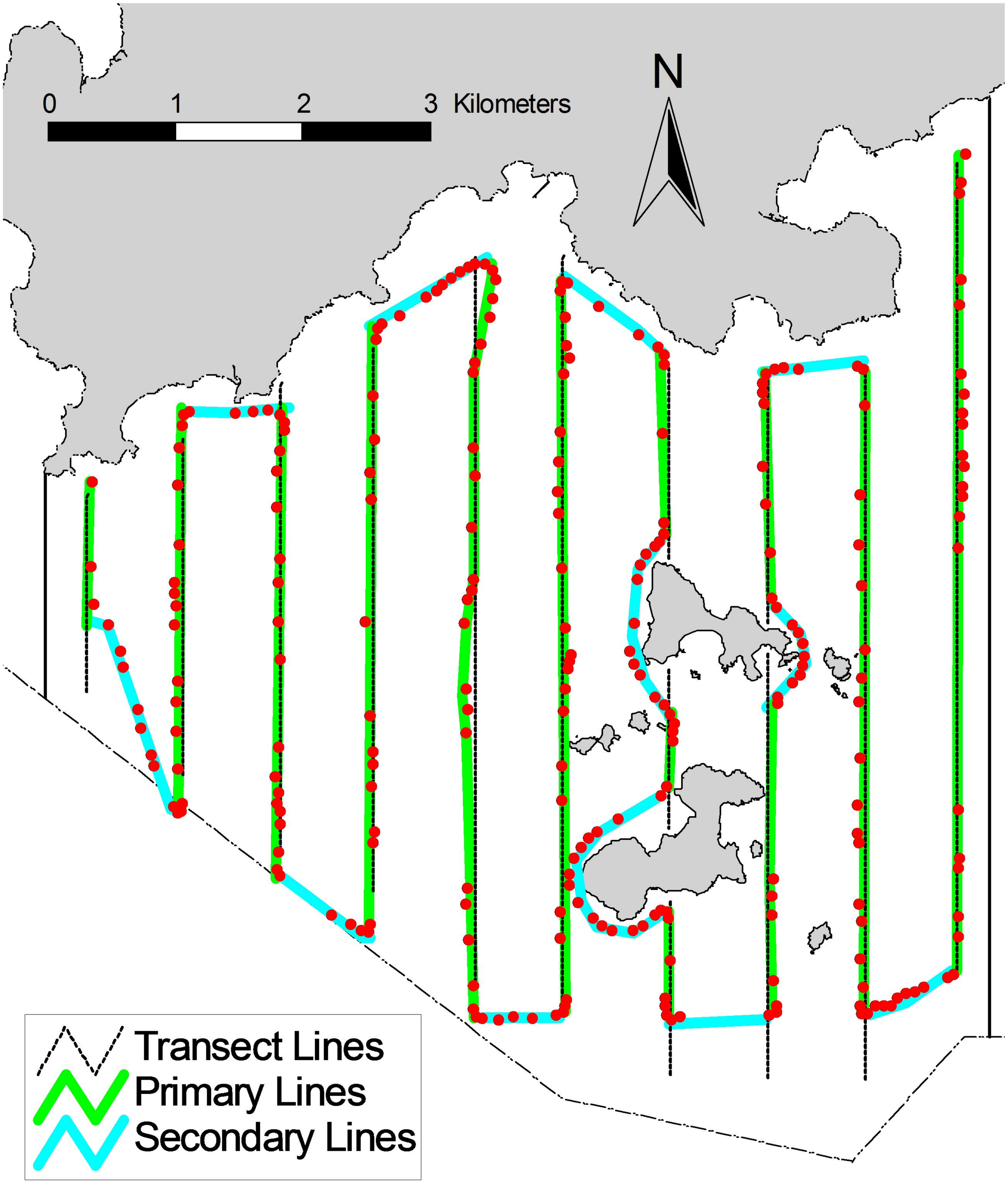

Figure 2. Survey Route on August 22nd, 2016 (note: red dots represent the tracked positions of survey boat logged continuously by GPS throughout the course of the survey)

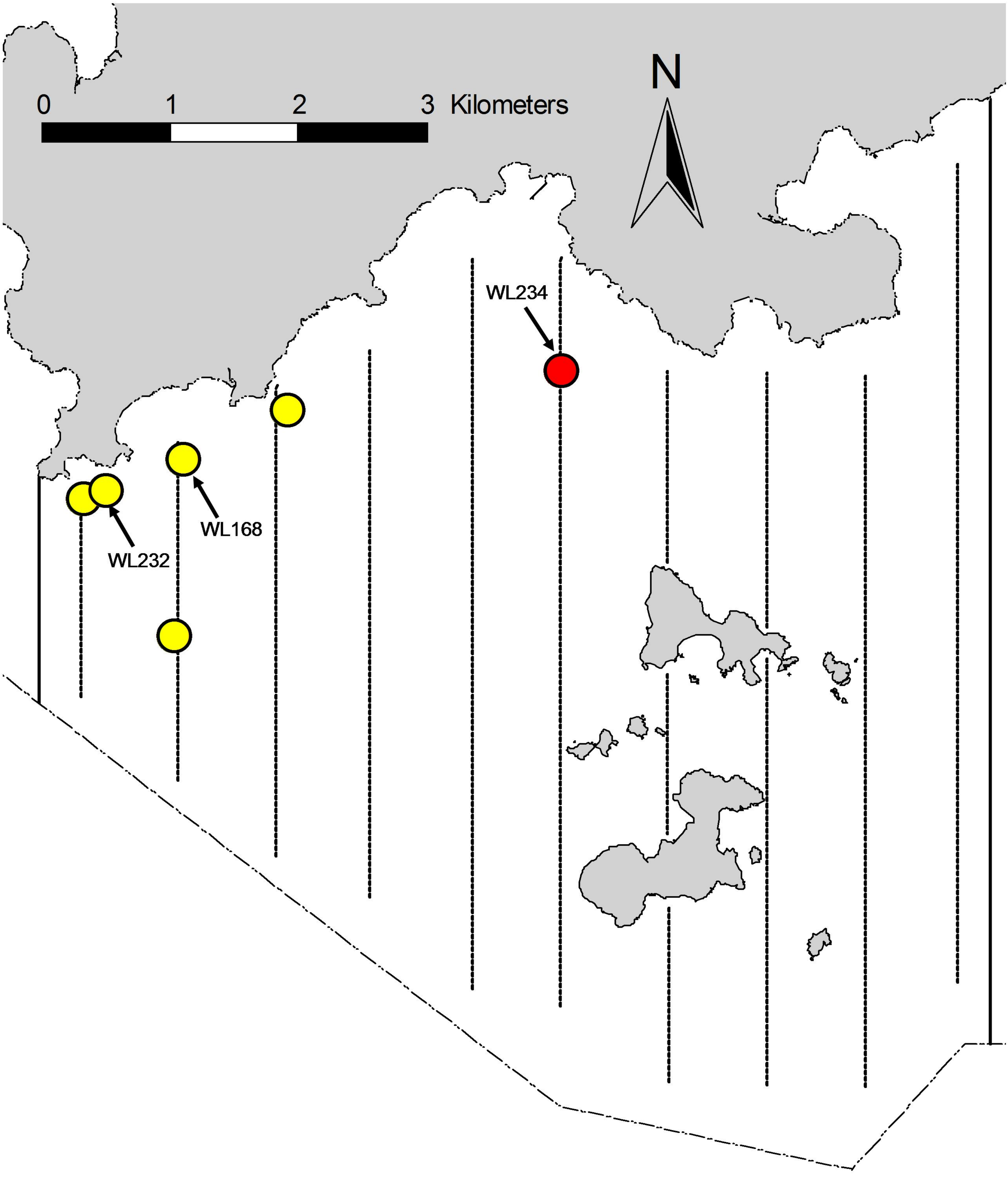

Figure 3. Distribution of Chinese White Dolphin sightings during August 2016 monitoring surveys in Southwest Lantau survey area, with identified individuals indicated for their corresponding sightings (red dot: HYD-HZMB sighting; yellow dot: AFCD sighting)

Appendix I. Track Log of SW Lantau Survey on August 22nd, 2016

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
22/8/2016 11:13	ON	N22.19476 E113.84980			
22/8/2016 11:14	ON	N22.19441 E113.84988	40 m	0:00:15	10 kph
22/8/2016 11:14	ON	N22.19363 E113.84976	88 m	0:00:23	14 kph
22/8/2016 11:14	ON	N22.19269 E113.84972	104 m	0:00:27	14 kph
22/8/2016 11:15	ON	N22.19180 E113.84971	99 m	0:00:26	14 kph
22/8/2016 11:15	ON	N22.19058 E113.84962	136 m	0:00:34	14 kph
22/8/2016 11:16	ON	N22.18945 E113.84964	126 m	0:00:32	14 kph
22/8/2016 11:16	ON	N22.18840 E113.84974	117 m	0:00:30	14 kph
22/8/2016 11:17	ON	N22.18744 E113.84966	107 m	0:00:27	14 kph
22/8/2016 11:17	ON	N22.18638 E113.84976	119 m	0:00:31	14 kph
22/8/2016 11:18	ON	N22.18552 E113.84989	96 m	0:00:25	14 kph
22/8/2016 11:18	ON	N22.18474 E113.85000	88 m	0:00:23	14 kph
22/8/2016 11:19	ON	N22.18397 E113.85013	87 m	0:00:23	14 kph
22/8/2016 11:19	ON	N22.18322 E113.85081	109 m	0:00:28	14 kph
22/8/2016 11:19	ON	N22.18232 E113.85145	120 m	0:00:30	14 kph
22/8/2016 11:20	ON	N22.18164 E113.85188	88 m	0:00:22	14 kph
22/8/2016 11:20	ON	N22.18080 E113.85231	104 m	0:00:26	14 kph
22/8/2016 11:21	ON	N22.17985 E113.85281	118 m	0:00:29	15 kph
22/8/2016 11:21	ON	N22.17905 E113.85299	91 m	0:00:22	15 kph
22/8/2016 11:21	ON	N22.17848 E113.85310	65 m	0:00:16	15 kph
22/8/2016 11:22	ON	N22.17794 E113.85327	63 m	0:00:16	14 kph
22/8/2016 11:22	ON	N22.17721 E113.85366	90 m	0:00:23	14 kph
22/8/2016 11:22	ON	N22.17654 E113.85395	80 m	0:00:20	14 kph
22/8/2016 11:23	ON	N22.17565 E113.85425	104 m	0:00:27	14 kph
22/8/2016 11:23	ON	N22.17483 E113.85456	97 m	0:00:27	13 kph
22/8/2016 11:24	ON	N22.17394 E113.85469	100 m	0:00:28	13 kph
22/8/2016 11:24	ON	N22.17310 E113.85490	96 m	0:00:26	13 kph
22/8/2016 11:25	ON	N22.17232 E113.85514	90 m	0:00:27	12 kph
22/8/2016 11:25	ON	N22.17148 E113.85551	100 m	0:00:31	12 kph
22/8/2016 11:26	ON	N22.17069 E113.85581	93 m	0:00:28	12 kph
22/8/2016 11:26	ON	N22.16984 E113.85617	102 m	0:00:31	12 kph
22/8/2016 11:27	ON	N22.16904 E113.85658	99 m	0:00:30	12 kph
22/8/2016 11:27	ON	N22.16815 E113.85699	107 m	0:00:32	12 kph
22/8/2016 11:28	ON	N22.16741 E113.85742	93 m	0:00:27	12 kph
22/8/2016 11:28	ON	N22.16674 E113.85774	82 m	0:00:23	13 kph
22/8/2016 11:28	ON	N22.16619 E113.85807	70 m	0:00:20	13 kph
22/8/2016 11:29	ON	N22.16567 E113.85845	70 m	0:00:20	13 kph
22/8/2016 11:29	ON	N22.16578 E113.85887	46 m	0:00:18	9 kph
22/8/2016 11:29	ON	N22.16649 E113.85899	80 m	0:00:21	14 kph
22/8/2016 11:30	ON	N22.16737 E113.85889	99 m	0:00:22	16 kph
22/8/2016 11:30	ON	N22.16741 E113.85888	4 m	0:00:01	16 kph
22/8/2016 11:30	ON	N22.16843 E113.85867	115 m	0:00:25	17 kph
22/8/2016 11:31	ON	N22.16950 E113.85861	119 m	0:00:26	16 kph
22/8/2016 11:31	ON	N22.17065 E113.85851	129 m	0:00:28	17 kph
22/8/2016 11:31	ON	N22.17151 E113.85847	96 m	0:00:21	16 kph
22/8/2016 11:32	ON	N22.17277 E113.85840	140 m	0:00:31	16 kph
22/8/2016 11:32	ON	N22.17385 E113.85837	121 m	0:00:27	16 kph
22/8/2016 11:33	ON	N22.17474 E113.85836	99 m	0:00:22	16 kph
22/8/2016 11:33	ON	N22.17549 E113.85844	84 m	0:00:20	15 kph
22/8/2016 11:33	ON	N22.17644 E113.85857	106 m	0:00:26	15 kph
22/8/2016 11:34	ON	N22.17728 E113.85864	94 m	0:00:23	15 kph
22/8/2016 11:34	ON	N22.17811 E113.85862	92 m	0:00:23	14 kph
22/8/2016 11:35	ON	N22.17895 E113.85862	94 m	0:00:24	14 kph
22/8/2016 11:35	ON	N22.18000 E113.85851	117 m	0:00:29	15 kph
22/8/2016 11:36	ON	N22.18101 E113.85835	114 m	0:00:28	15 kph
22/8/2016 11:36	ON	N22.18215 E113.85833	127 m	0:00:32	14 kph
22/8/2016 11:36	ON	N22.18287 E113.85838	81 m	0:00:21	14 kph
22/8/2016 11:37	ON	N22.18387 E113.85838	110 m	0:00:28	14 kph
22/8/2016 11:37	ON	N22.18499 E113.85822	126 m	0:00:31	15 kph
22/8/2016 11:38	ON	N22.18602 E113.85819	115 m	0:00:29	14 kph
22/8/2016 11:38	ON	N22.18685 E113.85824	93 m	0:00:23	15 kph
22/8/2016 11:39	ON	N22.18756 E113.85833	79 m	0:00:20	14 kph
22/8/2016 11:39	ON	N22.18841 E113.85845	95 m	0:00:24	14 kph
22/8/2016 11:39	ON	N22.18930 E113.85856	100 m	0:00:26	14 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
22/8/2016 11:40	ON	N22.19026 E113.85858	107 m	0:00:27	14 kph
22/8/2016 11:40	ON	N22.19131 E113.85847	117 m	0:00:29	15 kph
22/8/2016 11:41	ON	N22.19242 E113.85852	124 m	0:00:31	14 kph
22/8/2016 11:41	ON	N22.19345 E113.85852	115 m	0:00:28	15 kph
22/8/2016 11:42	ON	N22.19459 E113.85851	126 m	0:00:31	15 kph
22/8/2016 11:42	ON	N22.19581 E113.85861	136 m	0:00:34	14 kph
22/8/2016 11:43	ON	N22.19688 E113.85863	119 m	0:00:30	14 kph
22/8/2016 11:43	ON	N22.19788 E113.85868	112 m	0:00:29	14 kph
22/8/2016 11:44	ON	N22.19888 E113.85875	111 m	0:00:29	14 kph
22/8/2016 11:44	ON	N22.19993 E113.85889	117 m	0:00:30	14 kph
22/8/2016 11:45	ON	N22.20084 E113.85910	104 m	0:00:27	14 kph
22/8/2016 11:45	ON	N22.20106 E113.85961	59 m	0:00:21	10 kph
22/8/2016 11:46	ON	N22.20107 E113.86044	85 m	0:00:25	12 kph
22/8/2016 11:46	ON	N22.20104 E113.86106	64 m	0:00:18	13 kph
22/8/2016 11:46	ON	N22.20106 E113.86188	85 m	0:00:21	15 kph
22/8/2016 11:47	ON	N22.20104 E113.86273	88 m	0:00:22	14 kph
22/8/2016 11:47	ON	N22.20099 E113.86350	79 m	0:00:20	14 kph
22/8/2016 11:47	ON	N22.20096 E113.86429	81 m	0:00:21	14 kph
22/8/2016 11:48	ON	N22.20100 E113.86517	92 m	0:00:24	14 kph
22/8/2016 11:48	ON	N22.20109 E113.86598	84 m	0:00:22	14 kph
22/8/2016 11:49	ON	N22.20113 E113.86677	82 m	0:00:22	13 kph
22/8/2016 11:49	ON	N22.20120 E113.86750	76 m	0:00:20	14 kph
22/8/2016 11:49	ON	N22.20111 E113.86811	64 m	0:00:17	13 kph
22/8/2016 11:49	ON	N22.20092 E113.86878	72 m	0:00:20	13 kph
22/8/2016 11:50	ON	N22.20020 E113.86920	91 m	0:00:25	13 kph
22/8/2016 11:50	ON	N22.19941 E113.86920	88 m	0:00:22	14 kph
22/8/2016 11:51	ON	N22.19843 E113.86894	112 m	0:00:27	15 kph
22/8/2016 11:51	ON	N22.19761 E113.86869	95 m	0:00:23	15 kph
22/8/2016 11:52	ON	N22.19667 E113.86852	106 m	0:00:26	15 kph
22/8/2016 11:52	ON	N22.19579 E113.86838	99 m	0:00:24	15 kph
22/8/2016 11:52	ON	N22.19487 E113.86835	103 m	0:00:26	14 kph
22/8/2016 11:53	ON	N22.19382 E113.86836	117 m	0:00:29	15 kph
22/8/2016 11:53	ON	N22.19267 E113.86843	129 m	0:00:32	14 kph
22/8/2016 11:54	ON	N22.19157 E113.86845	122 m	0:00:30	15 kph
22/8/2016 11:54	ON	N22.19044 E113.86854	127 m	0:00:31	15 kph
22/8/2016 11:55	ON	N22.18930 E113.86862	127 m	0:00:31	15 kph
22/8/2016 11:55	ON	N22.18806 E113.86866	138 m	0:00:33	15 kph
22/8/2016 11:56	ON	N22.18704 E113.86863	113 m	0:00:28	15 kph
22/8/2016 11:56	ON	N22.18600 E113.86859	116 m	0:00:28	15 kph
22/8/2016 11:57	ON	N22.18476 E113.86856	139 m	0:00:34	15 kph
22/8/2016 11:57	ON	N22.18362 E113.86858	127 m	0:00:31	15 kph
22/8/2016 11:58	ON	N22.18253 E113.86859	121 m	0:00:29	15 kph
22/8/2016 11:58	ON	N22.18137 E113.86872	130 m	0:00:32	15 kph
22/8/2016 11:59	ON	N22.18023 E113.86880	127 m	0:00:30	15 kph
22/8/2016 11:59	ON	N22.17918 E113.86882	117 m	0:00:28	15 kph
22/8/2016 12:00	ON	N22.17789 E113.86881	144 m	0:00:34	15 kph
22/8/2016 12:01	ON	N22.17667 E113.86881	136 m	0:00:32	15 kph
22/8/2016 12:01	ON	N22.17557 E113.86882	122 m	0:00:30	15 kph
22/8/2016 12:02	ON	N22.17457 E113.86880	112 m	0:00:28	14 kph
22/8/2016 12:02	ON	N22.17355 E113.86878	113 m	0:00:29	14 kph
22/8/2016 12:02	ON	N22.17277 E113.86877	87 m	0:00:23	14 kph
22/8/2016 12:03	ON	N22.17154 E113.86872	137 m	0:00:35	14 kph
22/8/2016 12:03	ON	N22.17060 E113.86863	104 m	0:00:26	14 kph
22/8/2016 12:04	ON	N22.16970 E113.86847	102 m	0:00:26	14 kph
22/8/2016 12:04	ON	N22.16876 E113.86831	105 m	0:00:28	14 kph
22/8/2016 12:05	ON	N22.16813 E113.86845	72 m	0:00:21	12 kph
22/8/2016 12:05	ON	N22.16740 E113.86858	82 m	0:00:23	13 kph
22/8/2016 12:05	ON	N22.16654 E113.86854	95 m	0:00:25	14 kph
22/8/2016 12:06	ON	N22.16580 E113.86876	85 m	0:00:24	13 kph
22/8/2016 12:06	ON	N22.16471 E113.86883	122 m	0:00:32	14 kph
22/8/2016 12:07	ON	N22.16382 E113.86873	100 m	0:00:26	14 kph
22/8/2016 12:07	ON	N22.16303 E113.86863	88 m	0:00:23	14 kph
22/8/2016 12:08	ON	N22.16218 E113.86865	96 m	0:00:25	14 kph
22/8/2016 12:08	ON	N22.16133 E113.86859	95 m	0:00:25	14 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
22/8/2016 12:08	ON	N22.16074 E113.86861	65 m	0:00:17	14 kph
22/8/2016 12:09	ON	N22.16008 E113.86893	81 m	0:00:22	13 kph
22/8/2016 12:09	ON	N22.15960 E113.86972	97 m	0:00:26	13 kph
22/8/2016 12:09	ON	N22.15913 E113.87030	80 m	0:00:22	13 kph
22/8/2016 12:10	ON	N22.15874 E113.87091	77 m	0:00:22	13 kph
22/8/2016 12:10	ON	N22.15822 E113.87160	91 m	0:00:26	13 kph
22/8/2016 12:11	ON	N22.15775 E113.87249	106 m	0:00:30	13 kph
22/8/2016 12:11	ON	N22.15718 E113.87328	104 m	0:00:29	13 kph
22/8/2016 12:12	ON	N22.15666 E113.87401	95 m	0:00:27	13 kph
22/8/2016 12:12	ON	N22.15627 E113.87498	109 m	0:00:31	13 kph
22/8/2016 12:13	ON	N22.15590 E113.87591	105 m	0:00:29	13 kph
22/8/2016 12:13	ON	N22.15533 E113.87698	127 m	0:00:35	13 kph
22/8/2016 12:14	ON	N22.15523 E113.87771	76 m	0:00:24	11 kph
22/8/2016 12:14	ON	N22.15583 E113.87789	69 m	0:00:19	13 kph
22/8/2016 12:14	ON	N22.15659 E113.87790	85 m	0:00:20	15 kph
22/8/2016 12:15	ON	N22.15741 E113.87794	91 m	0:00:21	16 kph
22/8/2016 12:15	ON	N22.15833 E113.87800	103 m	0:00:24	15 kph
22/8/2016 12:16	ON	N22.15933 E113.87811	111 m	0:00:26	15 kph
22/8/2016 12:16	ON	N22.16029 E113.87814	108 m	0:00:25	16 kph
22/8/2016 12:16	ON	N22.16114 E113.87815	94 m	0:00:22	15 kph
22/8/2016 12:17	ON	N22.16205 E113.87812	101 m	0:00:24	15 kph
22/8/2016 12:17	ON	N22.16300 E113.87816	105 m	0:00:25	15 kph
22/8/2016 12:18	ON	N22.16401 E113.87831	114 m	0:00:27	15 kph
22/8/2016 12:18	ON	N22.16493 E113.87824	103 m	0:00:24	15 kph
22/8/2016 12:18	ON	N22.16596 E113.87809	116 m	0:00:27	15 kph
22/8/2016 12:19	ON	N22.16705 E113.87803	122 m	0:00:28	16 kph
22/8/2016 12:19	ON	N22.16803 E113.87799	109 m	0:00:25	16 kph
22/8/2016 12:20	ON	N22.16907 E113.87802	115 m	0:00:27	15 kph
22/8/2016 12:20	ON	N22.17004 E113.87817	109 m	0:00:26	15 kph
22/8/2016 12:21	ON	N22.17110 E113.87810	118 m	0:00:28	15 kph
22/8/2016 12:21	ON	N22.17220 E113.87799	123 m	0:00:29	15 kph
22/8/2016 12:22	ON	N22.17318 E113.87795	109 m	0:00:26	15 kph
22/8/2016 12:22	ON	N22.17426 E113.87793	121 m	0:00:29	15 kph
22/8/2016 12:23	ON	N22.17535 E113.87789	121 m	0:00:29	15 kph
22/8/2016 12:23	ON	N22.17646 E113.87780	124 m	0:00:31	14 kph
22/8/2016 12:24	ON	N22.17765 E113.87768	133 m	0:00:33	14 kph
22/8/2016 12:24	ON	N22.17867 E113.87756	114 m	0:00:28	15 kph
22/8/2016 12:25	ON	N22.17965 E113.87749	110 m	0:00:27	15 kph
22/8/2016 12:25	ON	N22.18049 E113.87744	94 m	0:00:23	15 kph
22/8/2016 12:25	ON	N22.18150 E113.87737	113 m	0:00:27	15 kph
22/8/2016 12:26	ON	N22.18258 E113.87738	120 m	0:00:29	15 kph
22/8/2016 12:26	ON	N22.18363 E113.87741	117 m	0:00:28	15 kph
22/8/2016 12:27	ON	N22.18460 E113.87747	109 m	0:00:26	15 kph
22/8/2016 12:27	ON	N22.18550 E113.87753	101 m	0:00:24	15 kph
22/8/2016 12:28	ON	N22.18666 E113.87757	129 m	0:00:30	15 kph
22/8/2016 12:28	ON	N22.18788 E113.87761	135 m	0:00:32	15 kph
22/8/2016 12:29	ON	N22.18901 E113.87761	126 m	0:00:30	15 kph
22/8/2016 12:29	ON	N22.19016 E113.87768	129 m	0:00:31	15 kph
22/8/2016 12:30	ON	N22.19140 E113.87780	138 m	0:00:33	15 kph
22/8/2016 12:30	ON	N22.19241 E113.87783	113 m	0:00:27	15 kph
22/8/2016 12:31	ON	N22.19342 E113.87790	112 m	0:00:27	15 kph
22/8/2016 12:31	ON	N22.19439 E113.87785	108 m	0:00:26	15 kph
22/8/2016 12:32	ON	N22.19567 E113.87779	142 m	0:00:34	15 kph
22/8/2016 12:32	ON	N22.19665 E113.87792	110 m	0:00:27	15 kph
22/8/2016 12:33	ON	N22.19755 E113.87811	101 m	0:00:25	15 kph
22/8/2016 12:33	ON	N22.19855 E113.87818	112 m	0:00:27	15 kph
22/8/2016 12:33	ON	N22.19947 E113.87821	103 m	0:00:25	15 kph
22/8/2016 12:34	ON	N22.20058 E113.87819	123 m	0:00:29	15 kph
22/8/2016 12:34	ON	N22.20151 E113.87814	104 m	0:00:24	16 kph
22/8/2016 12:35	ON	N22.20248 E113.87810	107 m	0:00:25	15 kph
22/8/2016 12:35	ON	N22.20355 E113.87812	120 m	0:00:28	15 kph
22/8/2016 12:36	ON	N22.20459 E113.87817	116 m	0:00:27	15 kph
22/8/2016 12:36	ON	N22.20564 E113.87820	117 m	0:00:27	16 kph
22/8/2016 12:36	ON	N22.20653 E113.87824	99 m	0:00:23	15 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
22/8/2016 12:37	ON	N22.20751 E113.87835	110 m	0:00:26	15 kph
22/8/2016 12:37	ON	N22.20851 E113.87859	114 m	0:00:27	15 kph
22/8/2016 12:38	ON	N22.20894 E113.87885	55 m	0:00:14	14 kph
22/8/2016 12:38	ON	N22.20922 E113.87975	99 m	0:00:26	14 kph
22/8/2016 12:38	ON	N22.20955 E113.88069	103 m	0:00:26	14 kph
22/8/2016 12:39	ON	N22.21015 E113.88162	117 m	0:00:29	14 kph
22/8/2016 12:39	ON	N22.21080 E113.88256	121 m	0:00:30	15 kph
22/8/2016 12:40	ON	N22.21132 E113.88342	106 m	0:00:26	15 kph
22/8/2016 12:40	ON	N22.21176 E113.88436	108 m	0:00:27	14 kph
22/8/2016 12:41	ON	N22.21234 E113.88511	101 m	0:00:25	14 kph
22/8/2016 12:41	ON	N22.21287 E113.88589	99 m	0:00:25	14 kph
22/8/2016 12:42	ON	N22.21347 E113.88678	114 m	0:00:28	15 kph
22/8/2016 12:42	ON	N22.21392 E113.88766	104 m	0:00:26	14 kph
22/8/2016 12:42	ON	N22.21414 E113.88844	84 m	0:00:22	14 kph
22/8/2016 12:43	ON	N22.21415 E113.88938	97 m	0:00:26	13 kph
22/8/2016 12:43	ON	N22.21362 E113.89009	94 m	0:00:26	13 kph
22/8/2016 12:44	ON	N22.21279 E113.89036	97 m	0:00:26	13 kph
22/8/2016 12:44	ON	N22.21197 E113.89019	93 m	0:00:25	13 kph
22/8/2016 12:45	ON	N22.21114 E113.89007	93 m	0:00:25	13 kph
22/8/2016 12:45	ON	N22.21029 E113.88996	95 m	0:00:25	14 kph
22/8/2016 12:45	ON	N22.20948 E113.88984	91 m	0:00:24	14 kph
22/8/2016 12:46	ON	N22.20880 E113.88952	83 m	0:00:21	14 kph
22/8/2016 12:46	ON	N22.20798 E113.88914	99 m	0:00:25	14 kph
22/8/2016 12:47	ON	N22.20711 E113.88887	101 m	0:00:26	14 kph
22/8/2016 12:47	ON	N22.20627 E113.88850	102 m	0:00:26	14 kph
22/8/2016 12:47	ON	N22.20539 E113.88829	100 m	0:00:26	14 kph
22/8/2016 12:48	ON	N22.20456 E113.88819	92 m	0:00:24	14 kph
22/8/2016 12:48	ON	N22.20383 E113.88818	81 m	0:00:21	14 kph
22/8/2016 12:49	ON	N22.20302 E113.88816	90 m	0:00:23	14 kph
22/8/2016 12:49	ON	N22.20222 E113.88815	89 m	0:00:23	14 kph
22/8/2016 12:49	ON	N22.20155 E113.88813	74 m	0:00:19	14 kph
22/8/2016 12:50	ON	N22.20085 E113.88814	79 m	0:00:20	14 kph
22/8/2016 12:50	ON	N22.19995 E113.88814	99 m	0:00:25	14 kph
22/8/2016 12:50	ON	N22.19903 E113.88814	103 m	0:00:26	14 kph
22/8/2016 12:51	ON	N22.19804 E113.88820	111 m	0:00:28	14 kph
22/8/2016 12:51	ON	N22.19705 E113.88820	110 m	0:00:27	15 kph
22/8/2016 12:52	ON	N22.19633 E113.88822	80 m	0:00:20	14 kph
22/8/2016 12:52	ON	N22.19547 E113.88829	96 m	0:00:26	13 kph
22/8/2016 12:53	ON	N22.19463 E113.88827	93 m	0:00:26	13 kph
22/8/2016 12:53	ON	N22.19364 E113.88820	111 m	0:00:28	14 kph
22/8/2016 12:53	ON	N22.19282 E113.88816	91 m	0:00:24	14 kph
22/8/2016 12:54	ON	N22.19259 E113.88814	27 m	0:00:10	10 kph
22/8/2016 12:54	ON	N22.19245 E113.88812	15 m	0:00:09	6 kph
22/8/2016 12:54	ON	N22.19186 E113.88807	66 m	0:00:21	11 kph
22/8/2016 12:54	ON	N22.19093 E113.88811	104 m	0:00:26	14 kph
22/8/2016 12:55	ON	N22.18998 E113.88806	105 m	0:00:26	15 kph
22/8/2016 12:55	ON	N22.18883 E113.88805	128 m	0:00:32	14 kph
22/8/2016 12:56	ON	N22.18760 E113.88818	138 m	0:00:34	15 kph
22/8/2016 12:57	ON	N22.18644 E113.88816	129 m	0:00:31	15 kph
22/8/2016 12:57	ON	N22.18536 E113.88806	121 m	0:00:29	15 kph
22/8/2016 12:57	ON	N22.18452 E113.88773	100 m	0:00:24	15 kph
22/8/2016 12:58	ON	N22.18351 E113.88761	112 m	0:00:28	14 kph
22/8/2016 12:58	ON	N22.18251 E113.88741	113 m	0:00:28	15 kph
22/8/2016 12:59	ON	N22.18130 E113.88744	134 m	0:00:34	14 kph
22/8/2016 12:59	ON	N22.18031 E113.88752	111 m	0:00:28	14 kph
22/8/2016 13:00	ON	N22.17933 E113.88742	110 m	0:00:27	15 kph
22/8/2016 13:00	ON	N22.17844 E113.88749	99 m	0:00:25	14 kph
22/8/2016 13:01	ON	N22.17752 E113.88751	102 m	0:00:25	15 kph
22/8/2016 13:01	ON	N22.17671 E113.88746	91 m	0:00:22	15 kph
22/8/2016 13:01	ON	N22.17579 E113.88766	105 m	0:00:25	15 kph
22/8/2016 13:02	ON	N22.17490 E113.88772	99 m	0:00:24	15 kph
22/8/2016 13:02	ON	N22.17378 E113.88752	126 m	0:00:30	15 kph
22/8/2016 13:03	ON	N22.17271 E113.88752	119 m	0:00:29	15 kph
22/8/2016 13:03	ON	N22.17177 E113.88762	105 m	0:00:25	15 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
22/8/2016 13:04	ON	N22.17055 E113.88752	136 m	0:00:32	15 kph
22/8/2016 13:04	ON	N22.16932 E113.88759	138 m	0:00:33	15 kph
22/8/2016 13:05	ON	N22.16797 E113.88753	150 m	0:00:36	15 kph
22/8/2016 13:06	ON	N22.16674 E113.88765	138 m	0:00:34	15 kph
22/8/2016 13:06	ON	N22.16573 E113.88757	112 m	0:00:28	14 kph
22/8/2016 13:06	ON	N22.16481 E113.88757	103 m	0:00:26	14 kph
22/8/2016 13:07	ON	N22.16382 E113.88765	110 m	0:00:27	15 kph
22/8/2016 13:07	ON	N22.16271 E113.88758	124 m	0:00:30	15 kph
22/8/2016 13:08	ON	N22.16176 E113.88761	106 m	0:00:26	15 kph
22/8/2016 13:08	ON	N22.16084 E113.88765	102 m	0:00:26	14 kph
22/8/2016 13:09	ON	N22.15984 E113.88763	112 m	0:00:29	14 kph
22/8/2016 13:09	ON	N22.15902 E113.88766	91 m	0:00:23	14 kph
22/8/2016 13:09	ON	N22.15837 E113.88763	72 m	0:00:18	14 kph
22/8/2016 13:10	ON	N22.15769 E113.88762	76 m	0:00:19	14 kph
22/8/2016 13:10	ON	N22.15692 E113.88768	86 m	0:00:22	14 kph
22/8/2016 13:10	ON	N22.15620 E113.88768	80 m	0:00:20	14 kph
22/8/2016 13:11	ON	N22.15538 E113.88771	92 m	0:00:23	14 kph
22/8/2016 13:11	ON	N22.15452 E113.88777	95 m	0:00:24	14 kph
22/8/2016 13:12	ON	N22.15356 E113.88787	108 m	0:00:27	14 kph
22/8/2016 13:12	ON	N22.15273 E113.88800	93 m	0:00:24	14 kph
22/8/2016 13:12	ON	N22.15205 E113.88812	77 m	0:00:20	14 kph
22/8/2016 13:13	ON	N22.15122 E113.88822	92 m	0:00:24	14 kph
22/8/2016 13:13	ON	N22.15053 E113.88827	77 m	0:00:20	14 kph
22/8/2016 13:13	ON	N22.14975 E113.88831	87 m	0:00:22	14 kph
22/8/2016 13:14	ON	N22.14909 E113.88833	74 m	0:00:19	14 kph
22/8/2016 13:14	ON	N22.14843 E113.88831	73 m	0:00:19	14 kph
22/8/2016 13:15	ON	N22.14769 E113.88857	86 m	0:00:24	13 kph
22/8/2016 13:15	ON	N22.14760 E113.88922	68 m	0:00:21	12 kph
22/8/2016 13:15	ON	N22.14762 E113.88999	80 m	0:00:22	13 kph
22/8/2016 13:16	ON	N22.14749 E113.89087	92 m	0:00:25	13 kph
22/8/2016 13:16	ON	N22.14754 E113.89168	83 m	0:00:23	13 kph
22/8/2016 13:16	ON	N22.14770 E113.89236	73 m	0:00:20	13 kph
22/8/2016 13:17	ON	N22.14762 E113.89328	95 m	0:00:26	13 kph
22/8/2016 13:17	ON	N22.14762 E113.89430	105 m	0:00:28	14 kph
22/8/2016 13:18	ON	N22.14772 E113.89520	93 m	0:00:25	13 kph
22/8/2016 13:18	ON	N22.14776 E113.89598	81 m	0:00:22	13 kph
22/8/2016 13:18	ON	N22.14787 E113.89672	77 m	0:00:21	13 kph
22/8/2016 13:19	ON	N22.14819 E113.89735	74 m	0:00:21	13 kph
22/8/2016 13:19	ON	N22.14868 E113.89758	60 m	0:00:16	13 kph
22/8/2016 13:19	ON	N22.14931 E113.89764	71 m	0:00:19	13 kph
22/8/2016 13:20	ON	N22.15011 E113.89756	90 m	0:00:24	13 kph
22/8/2016 13:20	ON	N22.15078 E113.89757	74 m	0:00:19	14 kph
22/8/2016 13:20	ON	N22.15161 E113.89743	94 m	0:00:24	14 kph
22/8/2016 13:21	ON	N22.15237 E113.89732	86 m	0:00:22	14 kph
22/8/2016 13:21	ON	N22.15297 E113.89729	66 m	0:00:17	14 kph
22/8/2016 13:21	ON	N22.15363 E113.89723	74 m	0:00:19	14 kph
22/8/2016 13:22	ON	N22.15455 E113.89710	104 m	0:00:27	14 kph
22/8/2016 13:22	ON	N22.15533 E113.89710	86 m	0:00:22	14 kph
22/8/2016 13:23	ON	N22.15614 E113.89707	91 m	0:00:23	14 kph
22/8/2016 13:23	ON	N22.15702 E113.89706	98 m	0:00:25	14 kph
22/8/2016 13:23	ON	N22.15788 E113.89714	95 m	0:00:24	14 kph
22/8/2016 13:24	ON	N22.15887 E113.89709	110 m	0:00:27	15 kph
22/8/2016 13:24	ON	N22.15975 E113.89709	99 m	0:00:24	15 kph
22/8/2016 13:25	ON	N22.16079 E113.89719	115 m	0:00:28	15 kph
22/8/2016 13:25	ON	N22.16173 E113.89719	105 m	0:00:26	15 kph
22/8/2016 13:26	ON	N22.16267 E113.89715	104 m	0:00:26	14 kph
22/8/2016 13:26	ON	N22.16360 E113.89714	103 m	0:00:26	14 kph
22/8/2016 13:26	ON	N22.16456 E113.89721	108 m	0:00:27	14 kph
22/8/2016 13:27	ON	N22.16556 E113.89720	111 m	0:00:28	14 kph
22/8/2016 13:28	ON	N22.16675 E113.89716	132 m	0:00:33	14 kph
22/8/2016 13:28	ON	N22.16779 E113.89717	116 m	0:00:29	14 kph
22/8/2016 13:29	ON	N22.16895 E113.89719	129 m	0:00:32	15 kph
22/8/2016 13:29	ON	N22.16991 E113.89715	107 m	0:00:26	15 kph
22/8/2016 13:29	ON	N22.17098 E113.89721	119 m	0:00:29	15 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
22/8/2016 13:30	ON	N22.17209 E113.89723	124 m	0:00:31	14 kph
22/8/2016 13:31	ON	N22.17348 E113.89743	157 m	0:00:38	15 kph
22/8/2016 13:31	ON	N22.17468 E113.89744	133 m	0:00:32	15 kph
22/8/2016 13:32	ON	N22.17562 E113.89742	104 m	0:00:25	15 kph
22/8/2016 13:32	ON	N22.17661 E113.89746	111 m	0:00:27	15 kph
22/8/2016 13:32	ON	N22.17749 E113.89755	98 m	0:00:24	15 kph
22/8/2016 13:33	ON	N22.17835 E113.89768	97 m	0:00:24	15 kph
22/8/2016 13:33	ON	N22.17908 E113.89791	85 m	0:00:21	15 kph
22/8/2016 13:33	ON	N22.17973 E113.89803	73 m	0:00:18	15 kph
22/8/2016 13:34	ON	N22.18067 E113.89774	108 m	0:00:26	15 kph
22/8/2016 13:34	ON	N22.18200 E113.89739	152 m	0:00:37	15 kph
22/8/2016 13:35	ON	N22.18315 E113.89739	128 m	0:00:32	14 kph
22/8/2016 13:36	ON	N22.18437 E113.89724	137 m	0:00:34	15 kph
22/8/2016 13:36	ON	N22.18537 E113.89725	111 m	0:00:27	15 kph
22/8/2016 13:36	ON	N22.18632 E113.89722	106 m	0:00:26	15 kph
22/8/2016 13:37	ON	N22.18734 E113.89716	113 m	0:00:28	15 kph
22/8/2016 13:37	ON	N22.18844 E113.89712	122 m	0:00:30	15 kph
22/8/2016 13:38	ON	N22.18947 E113.89705	115 m	0:00:28	15 kph
22/8/2016 13:38	ON	N22.19028 E113.89704	91 m	0:00:22	15 kph
22/8/2016 13:39	ON	N22.19117 E113.89694	99 m	0:00:24	15 kph
22/8/2016 13:39	ON	N22.19205 E113.89683	99 m	0:00:24	15 kph
22/8/2016 13:40	ON	N22.19307 E113.89683	113 m	0:00:27	15 kph
22/8/2016 13:40	ON	N22.19413 E113.89673	119 m	0:00:28	15 kph
22/8/2016 13:40	ON	N22.19489 E113.89673	85 m	0:00:20	15 kph
22/8/2016 13:41	ON	N22.19571 E113.89675	91 m	0:00:22	15 kph
22/8/2016 13:41	ON	N22.19667 E113.89682	107 m	0:00:26	15 kph
22/8/2016 13:42	ON	N22.19752 E113.89689	95 m	0:00:23	15 kph
22/8/2016 13:42	ON	N22.19841 E113.89697	100 m	0:00:24	15 kph
22/8/2016 13:42	ON	N22.19935 E113.89702	105 m	0:00:25	15 kph
22/8/2016 13:43	ON	N22.20038 E113.89705	114 m	0:00:27	15 kph
22/8/2016 13:43	ON	N22.20162 E113.89704	139 m	0:00:33	15 kph
22/8/2016 13:44	ON	N22.20248 E113.89711	96 m	0:00:23	15 kph
22/8/2016 13:44	ON	N22.20347 E113.89716	109 m	0:00:26	15 kph
22/8/2016 13:45	ON	N22.20447 E113.89718	112 m	0:00:27	15 kph
22/8/2016 13:45	ON	N22.20482 E113.89716	39 m	0:00:14	10 kph
22/8/2016 13:45	OFF	N22.20516 E113.89710	39 m	0:00:23	6 kph
22/8/2016 13:46	OFF	N22.20536 E113.89707	22 m	0:00:24	3 kph
22/8/2016 13:46	OFF	N22.20545 E113.89703	10 m	0:00:22	2 kph
22/8/2016 13:46	OFF	N22.20551 E113.89700	8 m	0:00:19	1.5 kph
22/8/2016 13:47	OFF	N22.20557 E113.89696	8 m	0:00:20	1.4 kph
22/8/2016 13:47	OFF	N22.20561 E113.89690	7 m	0:00:19	1.4 kph
22/8/2016 13:47	OFF	N22.20563 E113.89684	7 m	0:00:22	1.2 kph
22/8/2016 13:48	OFF	N22.20566 E113.89678	6 m	0:00:21	1.1 kph
22/8/2016 13:48	OFF	N22.20572 E113.89675	8 m	0:00:11	2 kph
22/8/2016 13:48	OFF	N22.20572 E113.89702	27 m	0:00:24	4 kph
22/8/2016 13:49	OFF	N22.20511 E113.89701	69 m	0:00:24	10 kph
22/8/2016 13:49	OFF	N22.20473 E113.89695	43 m	0:00:22	7 kph
22/8/2016 13:49	OFF	N22.20457 E113.89689	18 m	0:00:22	3 kph
22/8/2016 13:50	OFF	N22.20453 E113.89683	8 m	0:00:24	1.2 kph
22/8/2016 13:50	OFF	N22.20451 E113.89674	10 m	0:00:26	1.4 kph
22/8/2016 13:51	OFF	N22.20447 E113.89663	12 m	0:00:19	2 kph
22/8/2016 13:51	OFF	N22.20442 E113.89656	9 m	0:00:06	5 kph
22/8/2016 13:51	OFF	N22.20410 E113.89663	36 m	0:00:24	5 kph
22/8/2016 13:51	OFF	N22.20421 E113.89679	20 m	0:00:26	3 kph
22/8/2016 13:52	OFF	N22.20433 E113.89679	14 m	0:00:21	2 kph
22/8/2016 13:52	OFF	N22.20442 E113.89677	10 m	0:00:17	2 kph
22/8/2016 13:52	OFF	N22.20447 E113.89674	7 m	0:00:17	1.4 kph
22/8/2016 13:53	OFF	N22.20452 E113.89668	8 m	0:00:24	1.2 kph
22/8/2016 13:53	OFF	N22.20454 E113.89661	8 m	0:00:20	1.4 kph
22/8/2016 13:53	OFF	N22.20458 E113.89653	8 m	0:00:20	2 kph
22/8/2016 13:54	OFF	N22.20459 E113.89647	7 m	0:00:20	1.3 kph
22/8/2016 13:54	OFF	N22.20464 E113.89637	11 m	0:00:30	1.3 kph
22/8/2016 13:55	OFF	N22.20467 E113.89630	8 m	0:00:24	1.2 kph
22/8/2016 13:55	OFF	N22.20469 E113.89624	7 m	0:00:21	1.1 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
22/8/2016 13:55	OFF	N22.20472 E113.89616	9 m	0:00:20	2 kph
22/8/2016 13:56	OFF	N22.20481 E113.89609	12 m	0:00:19	2 kph
22/8/2016 13:56	OFF	N22.20482 E113.89609	1 m	0:00:01	4 kph
22/8/2016 13:56	OFF	N22.20510 E113.89594	36 m	0:00:28	5 kph
22/8/2016 13:57	OFF	N22.20517 E113.89571	24 m	0:00:27	3 kph
22/8/2016 13:57	OFF	N22.20516 E113.89558	14 m	0:00:23	2 kph
22/8/2016 13:57	OFF	N22.20514 E113.89552	6 m	0:00:14	2 kph
22/8/2016 13:57	OFF	N22.20511 E113.89548	5 m	0:00:09	2 kph
22/8/2016 13:58	OFF	N22.20488 E113.89568	33 m	0:00:21	6 kph
22/8/2016 13:58	OFF	N22.20523 E113.89602	52 m	0:00:22	9 kph
22/8/2016 13:58	OFF	N22.20524 E113.89646	45 m	0:00:17	9 kph
22/8/2016 13:59	ON	N22.20492 E113.89724	88 m	0:00:24	13 kph
22/8/2016 13:59	ON	N22.20523 E113.89769	58 m	0:00:18	12 kph
22/8/2016 13:59	ON	N22.20583 E113.89780	68 m	0:00:18	14 kph
22/8/2016 14:00	ON	N22.20698 E113.89757	131 m	0:00:30	16 kph
22/8/2016 14:00	ON	N22.20814 E113.89751	129 m	0:00:30	16 kph
22/8/2016 14:01	ON	N22.20936 E113.89741	136 m	0:00:31	16 kph
22/8/2016 14:01	ON	N22.21065 E113.89717	145 m	0:00:33	16 kph
22/8/2016 14:02	ON	N22.21184 E113.89690	136 m	0:00:32	15 kph
22/8/2016 14:02	ON	N22.21259 E113.89709	85 m	0:00:24	13 kph
22/8/2016 14:03	ON	N22.21250 E113.89769	63 m	0:00:18	13 kph
22/8/2016 14:03	ON	N22.21208 E113.89833	81 m	0:00:19	15 kph
22/8/2016 14:03	ON	N22.21151 E113.89914	105 m	0:00:24	16 kph
22/8/2016 14:04	ON	N22.21093 E113.90004	113 m	0:00:26	16 kph
22/8/2016 14:04	ON	N22.21046 E113.90080	95 m	0:00:22	15 kph
22/8/2016 14:05	ON	N22.20997 E113.90160	98 m	0:00:23	15 kph
22/8/2016 14:05	ON	N22.20958 E113.90233	87 m	0:00:20	16 kph
22/8/2016 14:05	ON	N22.20893 E113.90321	116 m	0:00:26	16 kph
22/8/2016 14:06	ON	N22.20858 E113.90386	77 m	0:00:17	16 kph
22/8/2016 14:06	ON	N22.20804 E113.90485	119 m	0:00:27	16 kph
22/8/2016 14:06	ON	N22.20791 E113.90506	26 m	0:00:06	16 kph
22/8/2016 14:07	ON	N22.20740 E113.90596	109 m	0:00:24	16 kph
22/8/2016 14:07	ON	N22.20692 E113.90682	103 m	0:00:23	16 kph
22/8/2016 14:07	ON	N22.20618 E113.90725	94 m	0:00:22	15 kph
22/8/2016 14:08	ON	N22.20528 E113.90736	101 m	0:00:25	15 kph
22/8/2016 14:08	ON	N22.20437 E113.90733	102 m	0:00:28	13 kph
22/8/2016 14:09	ON	N22.20339 E113.90732	108 m	0:00:27	14 kph
22/8/2016 14:09	ON	N22.20252 E113.90726	98 m	0:00:24	15 kph
22/8/2016 14:09	ON	N22.20172 E113.90723	89 m	0:00:22	15 kph
22/8/2016 14:10	ON	N22.20093 E113.90725	88 m	0:00:22	14 kph
22/8/2016 14:10	ON	N22.20005 E113.90721	98 m	0:00:24	15 kph
22/8/2016 14:11	ON	N22.19932 E113.90718	81 m	0:00:20	15 kph
22/8/2016 14:11	ON	N22.19851 E113.90721	91 m	0:00:23	14 kph
22/8/2016 14:11	ON	N22.19748 E113.90727	114 m	0:00:28	15 kph
22/8/2016 14:12	ON	N22.19654 E113.90731	105 m	0:00:26	15 kph
22/8/2016 14:12	ON	N22.19574 E113.90733	89 m	0:00:22	15 kph
22/8/2016 14:13	ON	N22.19483 E113.90729	102 m	0:00:25	15 kph
22/8/2016 14:13	ON	N22.19397 E113.90738	96 m	0:00:24	14 kph
22/8/2016 14:13	ON	N22.19301 E113.90739	107 m	0:00:26	15 kph
22/8/2016 14:14	ON	N22.19217 E113.90745	94 m	0:00:23	15 kph
22/8/2016 14:14	ON	N22.19126 E113.90740	102 m	0:00:25	15 kph
22/8/2016 14:15	ON	N22.19037 E113.90738	99 m	0:00:24	15 kph
22/8/2016 14:15	ON	N22.18973 E113.90702	80 m	0:00:22	13 kph
22/8/2016 14:15	ON	N22.18926 E113.90645	79 m	0:00:20	14 kph
22/8/2016 14:16	ON	N22.18855 E113.90561	117 m	0:00:30	14 kph
22/8/2016 14:16	ON	N22.18761 E113.90495	125 m	0:00:32	14 kph
22/8/2016 14:17	ON	N22.18643 E113.90471	133 m	0:00:34	14 kph
22/8/2016 14:18	ON	N22.18515 E113.90463	143 m	0:00:35	15 kph
22/8/2016 14:18	ON	N22.18381 E113.90454	149 m	0:00:36	15 kph
22/8/2016 14:19	ON	N22.18251 E113.90442	145 m	0:00:35	15 kph
22/8/2016 14:19	ON	N22.18126 E113.90414	142 m	0:00:34	15 kph
22/8/2016 14:20	ON	N22.18003 E113.90399	138 m	0:00:32	16 kph
22/8/2016 14:20	ON	N22.17890 E113.90437	132 m	0:00:31	15 kph
22/8/2016 14:21	ON	N22.17789 E113.90500	130 m	0:00:30	16 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
22/8/2016 14:21	ON	N22.17678 E113.90590	154 m	0:00:36	15 kph
22/8/2016 14:22	ON	N22.17596 E113.90654	113 m	0:00:27	15 kph
22/8/2016 14:22	ON	N22.17527 E113.90752	127 m	0:00:31	15 kph
22/8/2016 14:23	ON	N22.17451 E113.90813	105 m	0:00:26	15 kph
22/8/2016 14:23	ON	N22.17360 E113.90840	105 m	0:00:26	15 kph
22/8/2016 14:24	ON	N22.17290 E113.90836	78 m	0:00:19	15 kph
22/8/2016 14:24	ON	N22.17213 E113.90828	85 m	0:00:21	15 kph
22/8/2016 14:24	ON	N22.17131 E113.90817	92 m	0:00:24	14 kph
22/8/2016 14:25	ON	N22.17056 E113.90805	84 m	0:00:22	14 kph
22/8/2016 14:25	ON	N22.16927 E113.90789	145 m	0:00:38	14 kph
22/8/2016 14:26	ON	N22.16806 E113.90771	136 m	0:00:36	14 kph
22/8/2016 14:26	ON	N22.16734 E113.90722	94 m	0:00:26	13 kph
22/8/2016 14:27	ON	N22.16682 E113.90600	139 m	0:00:35	14 kph
22/8/2016 14:27	ON	N22.16626 E113.90488	131 m	0:00:33	14 kph
22/8/2016 14:28	ON	N22.16563 E113.90381	131 m	0:00:33	14 kph
22/8/2016 14:29	ON	N22.16515 E113.90281	116 m	0:00:29	14 kph
22/8/2016 14:29	ON	N22.16468 E113.90171	125 m	0:00:31	14 kph
22/8/2016 14:30	ON	N22.16409 E113.90074	120 m	0:00:29	15 kph
22/8/2016 14:30	ON	N22.16353 E113.89987	109 m	0:00:26	15 kph
22/8/2016 14:30	ON	N22.16274 E113.89908	120 m	0:00:28	15 kph
22/8/2016 14:31	ON	N22.16165 E113.89842	140 m	0:00:31	16 kph
22/8/2016 14:31	ON	N22.16037 E113.89802	148 m	0:00:32	17 kph
22/8/2016 14:32	ON	N22.15943 E113.89801	104 m	0:00:23	16 kph
22/8/2016 14:32	ON	N22.15931 E113.89804	14 m	0:00:03	16 kph
22/8/2016 14:32	ON	N22.15844 E113.89847	107 m	0:00:24	16 kph
22/8/2016 14:32	ON	N22.15833 E113.89854	14 m	0:00:03	16 kph
22/8/2016 14:33	ON	N22.15786 E113.89888	64 m	0:00:14	16 kph
22/8/2016 14:33	ON	N22.15708 E113.89960	114 m	0:00:25	16 kph
22/8/2016 14:33	ON	N22.15641 E113.90040	111 m	0:00:25	16 kph
22/8/2016 14:34	ON	N22.15582 E113.90131	115 m	0:00:27	15 kph
22/8/2016 14:34	ON	N22.15540 E113.90230	112 m	0:00:26	15 kph
22/8/2016 14:35	ON	N22.15533 E113.90325	99 m	0:00:23	15 kph
22/8/2016 14:35	ON	N22.15532 E113.90439	117 m	0:00:27	16 kph
22/8/2016 14:36	ON	N22.15573 E113.90542	116 m	0:00:27	15 kph
22/8/2016 14:36	ON	N22.15618 E113.90608	84 m	0:00:21	14 kph
22/8/2016 14:36	ON	N22.15665 E113.90659	74 m	0:00:19	14 kph
22/8/2016 14:37	ON	N22.15715 E113.90719	83 m	0:00:22	14 kph
22/8/2016 14:37	ON	N22.15702 E113.90777	61 m	0:00:19	12 kph
22/8/2016 14:37	ON	N22.15654 E113.90793	56 m	0:00:16	13 kph
22/8/2016 14:38	ON	N22.15579 E113.90793	84 m	0:00:21	14 kph
22/8/2016 14:38	ON	N22.15502 E113.90800	86 m	0:00:21	15 kph
22/8/2016 14:38	ON	N22.15429 E113.90805	81 m	0:00:20	15 kph
22/8/2016 14:39	ON	N22.15351 E113.90806	88 m	0:00:22	14 kph
22/8/2016 14:39	ON	N22.15275 E113.90806	84 m	0:00:21	14 kph
22/8/2016 14:39	ON	N22.15203 E113.90802	80 m	0:00:20	14 kph
22/8/2016 14:40	ON	N22.15139 E113.90797	71 m	0:00:18	14 kph
22/8/2016 14:40	ON	N22.15079 E113.90790	68 m	0:00:17	14 kph
22/8/2016 14:40	ON	N22.15022 E113.90780	65 m	0:00:16	15 kph
22/8/2016 14:40	ON	N22.14943 E113.90762	89 m	0:00:22	15 kph
22/8/2016 14:41	ON	N22.14872 E113.90765	79 m	0:00:19	15 kph
22/8/2016 14:41	ON	N22.14794 E113.90779	87 m	0:00:21	15 kph
22/8/2016 14:41	ON	N22.14750 E113.90819	64 m	0:00:18	13 kph
22/8/2016 14:42	ON	N22.14767 E113.90907	92 m	0:00:24	14 kph
22/8/2016 14:42	ON	N22.14771 E113.91018	115 m	0:00:28	15 kph
22/8/2016 14:43	ON	N22.14773 E113.91119	104 m	0:00:25	15 kph
22/8/2016 14:43	ON	N22.14774 E113.91231	115 m	0:00:28	15 kph
22/8/2016 14:44	ON	N22.14772 E113.91331	103 m	0:00:25	15 kph
22/8/2016 14:44	ON	N22.14778 E113.91429	101 m	0:00:25	15 kph
22/8/2016 14:44	ON	N22.14780 E113.91511	85 m	0:00:21	15 kph
22/8/2016 14:45	ON	N22.14783 E113.91610	102 m	0:00:25	15 kph
22/8/2016 14:45	ON	N22.14786 E113.91719	113 m	0:00:28	14 kph
22/8/2016 14:46	ON	N22.14794 E113.91804	88 m	0:00:22	14 kph
22/8/2016 14:46	ON	N22.14824 E113.91875	80 m	0:00:22	13 kph
22/8/2016 14:46	ON	N22.14880 E113.91876	62 m	0:00:17	13 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
22/8/2016 14:47	ON	N22.14958 E113.91868	88 m	0:00:22	14 kph
22/8/2016 14:47	ON	N22.15038 E113.91845	91 m	0:00:23	14 kph
22/8/2016 14:47	ON	N22.15091 E113.91839	60 m	0:00:15	14 kph
22/8/2016 14:48	ON	N22.15177 E113.91838	95 m	0:00:24	14 kph
22/8/2016 14:48	ON	N22.15250 E113.91836	81 m	0:00:20	15 kph
22/8/2016 14:49	ON	N22.15358 E113.91829	120 m	0:00:30	14 kph
22/8/2016 14:49	ON	N22.15451 E113.91831	105 m	0:00:26	14 kph
22/8/2016 14:50	ON	N22.15581 E113.91824	145 m	0:00:36	14 kph
22/8/2016 14:50	ON	N22.15682 E113.91826	113 m	0:00:28	15 kph
22/8/2016 14:50	ON	N22.15769 E113.91824	97 m	0:00:24	15 kph
22/8/2016 14:51	ON	N22.15841 E113.91825	80 m	0:00:20	14 kph
22/8/2016 14:51	ON	N22.15902 E113.91832	68 m	0:00:17	14 kph
22/8/2016 14:51	ON	N22.15988 E113.91842	97 m	0:00:24	15 kph
22/8/2016 14:52	ON	N22.16060 E113.91843	80 m	0:00:20	14 kph
22/8/2016 14:52	ON	N22.16136 E113.91840	84 m	0:00:21	14 kph
22/8/2016 14:53	ON	N22.16220 E113.91839	94 m	0:00:23	15 kph
22/8/2016 14:53	ON	N22.16296 E113.91843	85 m	0:00:21	15 kph
22/8/2016 14:53	ON	N22.16368 E113.91848	80 m	0:00:20	14 kph
22/8/2016 14:54	ON	N22.16451 E113.91851	92 m	0:00:22	15 kph
22/8/2016 14:54	ON	N22.16524 E113.91852	82 m	0:00:20	15 kph
22/8/2016 14:54	ON	N22.16618 E113.91855	104 m	0:00:25	15 kph
22/8/2016 14:55	ON	N22.16696 E113.91859	87 m	0:00:21	15 kph
22/8/2016 14:55	ON	N22.16778 E113.91858	91 m	0:00:22	15 kph
22/8/2016 14:55	ON	N22.16855 E113.91857	86 m	0:00:21	15 kph
22/8/2016 14:56	ON	N22.16944 E113.91865	99 m	0:00:25	14 kph
22/8/2016 14:56	ON	N22.17007 E113.91869	70 m	0:00:18	14 kph
22/8/2016 14:56	ON	N22.17090 E113.91877	93 m	0:00:23	15 kph
22/8/2016 14:57	ON	N22.17157 E113.91875	74 m	0:00:18	15 kph
22/8/2016 14:57	ON	N22.17241 E113.91877	94 m	0:00:23	15 kph
22/8/2016 14:58	ON	N22.17335 E113.91880	104 m	0:00:26	14 kph
22/8/2016 14:58	ON	N22.17402 E113.91880	75 m	0:00:19	14 kph
22/8/2016 14:58	ON	N22.17469 E113.91877	75 m	0:00:19	14 kph
22/8/2016 14:59	ON	N22.17545 E113.91879	85 m	0:00:21	15 kph
22/8/2016 14:59	ON	N22.17600 E113.91893	63 m	0:00:16	14 kph
22/8/2016 14:59	ON	N22.17634 E113.91930	54 m	0:00:14	14 kph
22/8/2016 14:59	ON	N22.17675 E113.91983	71 m	0:00:17	15 kph
22/8/2016 15:00	ON	N22.17728 E113.92042	85 m	0:00:20	15 kph
22/8/2016 15:00	ON	N22.17798 E113.92107	103 m	0:00:25	15 kph
22/8/2016 15:00	ON	N22.17877 E113.92144	95 m	0:00:23	15 kph
22/8/2016 15:01	ON	N22.17963 E113.92164	99 m	0:00:24	15 kph
22/8/2016 15:01	ON	N22.18072 E113.92139	124 m	0:00:29	15 kph
22/8/2016 15:02	ON	N22.18166 E113.92089	116 m	0:00:27	15 kph
22/8/2016 15:02	ON	N22.18241 E113.92030	104 m	0:00:26	14 kph
22/8/2016 15:03	ON	N22.18318 E113.91952	117 m	0:00:30	14 kph
22/8/2016 15:03	ON	N22.18392 E113.91872	117 m	0:00:30	14 kph
22/8/2016 15:04	ON	N22.18474 E113.91831	100 m	0:00:26	14 kph
22/8/2016 15:04	ON	N22.18543 E113.91824	77 m	0:00:19	15 kph
22/8/2016 15:04	ON	N22.18631 E113.91824	98 m	0:00:24	15 kph
22/8/2016 15:05	ON	N22.18708 E113.91820	86 m	0:00:22	14 kph
22/8/2016 15:05	ON	N22.18792 E113.91814	94 m	0:00:24	14 kph
22/8/2016 15:06	ON	N22.18866 E113.91806	82 m	0:00:21	14 kph
22/8/2016 15:06	ON	N22.18945 E113.91800	88 m	0:00:22	14 kph
22/8/2016 15:06	ON	N22.19027 E113.91793	92 m	0:00:23	14 kph
22/8/2016 15:07	ON	N22.19103 E113.91782	85 m	0:00:21	15 kph
22/8/2016 15:07	ON	N22.19203 E113.91776	111 m	0:00:27	15 kph
22/8/2016 15:08	ON	N22.19304 E113.91771	113 m	0:00:27	15 kph
22/8/2016 15:08	ON	N22.19393 E113.91760	100 m	0:00:24	15 kph
22/8/2016 15:08	ON	N22.19463 E113.91749	79 m	0:00:19	15 kph
22/8/2016 15:09	ON	N22.19561 E113.91737	109 m	0:00:26	15 kph
22/8/2016 15:09	ON	N22.19639 E113.91732	87 m	0:00:21	15 kph
22/8/2016 15:09	ON	N22.19736 E113.91738	109 m	0:00:26	15 kph
22/8/2016 15:10	ON	N22.19820 E113.91741	93 m	0:00:22	15 kph
22/8/2016 15:10	ON	N22.19906 E113.91734	97 m	0:00:23	15 kph
22/8/2016 15:11	ON	N22.19993 E113.91735	96 m	0:00:23	15 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
22/8/2016 15:11	ON	N22.20080 E113.91749	98 m	0:00:23	15 kph
22/8/2016 15:11	ON	N22.20188 E113.91750	120 m	0:00:28	15 kph
22/8/2016 15:12	ON	N22.20277 E113.91732	101 m	0:00:24	15 kph
22/8/2016 15:12	ON	N22.20374 E113.91736	109 m	0:00:26	15 kph
22/8/2016 15:13	ON	N22.20446 E113.91764	85 m	0:00:21	15 kph
22/8/2016 15:13	ON	N22.20488 E113.91848	98 m	0:00:23	15 kph
22/8/2016 15:13	ON	N22.20507 E113.91941	98 m	0:00:23	15 kph
22/8/2016 15:14	ON	N22.20503 E113.92032	94 m	0:00:22	15 kph
22/8/2016 15:14	ON	N22.20493 E113.92092	63 m	0:00:15	15 kph
22/8/2016 15:14	ON	N22.20497 E113.92180	91 m	0:00:21	16 kph
22/8/2016 15:15	ON	N22.20508 E113.92267	91 m	0:00:21	16 kph
22/8/2016 15:15	ON	N22.20508 E113.92357	93 m	0:00:22	15 kph
22/8/2016 15:15	ON	N22.20502 E113.92427	72 m	0:00:17	15 kph
22/8/2016 15:16	ON	N22.20509 E113.92512	88 m	0:00:21	15 kph
22/8/2016 15:16	ON	N22.20509 E113.92572	62 m	0:00:17	13 kph
22/8/2016 15:16	ON	N22.20518 E113.92683	115 m	0:00:26	16 kph
22/8/2016 15:17	ON	N22.20487 E113.92740	68 m	0:00:20	12 kph
22/8/2016 15:17	ON	N22.20428 E113.92749	67 m	0:00:21	11 kph
22/8/2016 15:18	ON	N22.20341 E113.92758	98 m	0:00:24	15 kph
22/8/2016 15:18	ON	N22.20260 E113.92761	90 m	0:00:22	15 kph
22/8/2016 15:18	ON	N22.20175 E113.92760	94 m	0:00:23	15 kph
22/8/2016 15:19	ON	N22.20095 E113.92757	90 m	0:00:22	15 kph
22/8/2016 15:19	ON	N22.20018 E113.92757	86 m	0:00:21	15 kph
22/8/2016 15:19	ON	N22.19944 E113.92754	82 m	0:00:20	15 kph
22/8/2016 15:20	ON	N22.19863 E113.92751	90 m	0:00:22	15 kph
22/8/2016 15:20	ON	N22.19802 E113.92740	69 m	0:00:17	15 kph
22/8/2016 15:20	ON	N22.19719 E113.92732	93 m	0:00:23	15 kph
22/8/2016 15:21	ON	N22.19638 E113.92726	90 m	0:00:22	15 kph
22/8/2016 15:21	ON	N22.19561 E113.92726	87 m	0:00:21	15 kph
22/8/2016 15:21	ON	N22.19483 E113.92723	86 m	0:00:21	15 kph
22/8/2016 15:22	ON	N22.19386 E113.92723	108 m	0:00:26	15 kph
22/8/2016 15:22	ON	N22.19305 E113.92721	90 m	0:00:22	15 kph
22/8/2016 15:23	ON	N22.19205 E113.92715	111 m	0:00:27	15 kph
22/8/2016 15:23	ON	N22.19116 E113.92711	99 m	0:00:24	15 kph
22/8/2016 15:23	ON	N22.19032 E113.92709	94 m	0:00:23	15 kph
22/8/2016 15:24	ON	N22.18947 E113.92708	95 m	0:00:23	15 kph
22/8/2016 15:24	ON	N22.18871 E113.92711	84 m	0:00:20	15 kph
22/8/2016 15:24	ON	N22.18796 E113.92716	84 m	0:00:20	15 kph
22/8/2016 15:25	ON	N22.18710 E113.92724	97 m	0:00:23	15 kph
22/8/2016 15:25	ON	N22.18643 E113.92726	75 m	0:00:18	15 kph
22/8/2016 15:25	ON	N22.18578 E113.92730	72 m	0:00:17	15 kph
22/8/2016 15:26	ON	N22.18487 E113.92739	102 m	0:00:24	15 kph
22/8/2016 15:26	ON	N22.18397 E113.92749	102 m	0:00:24	15 kph
22/8/2016 15:27	ON	N22.18326 E113.92753	79 m	0:00:19	15 kph
22/8/2016 15:27	ON	N22.18259 E113.92753	74 m	0:00:18	15 kph
22/8/2016 15:27	ON	N22.18187 E113.92762	81 m	0:00:19	15 kph
22/8/2016 15:28	ON	N22.18093 E113.92765	105 m	0:00:25	15 kph
22/8/2016 15:28	ON	N22.18016 E113.92766	85 m	0:00:20	15 kph
22/8/2016 15:28	ON	N22.18009 E113.92766	9 m	0:00:02	15 kph
22/8/2016 15:28	ON	N22.17928 E113.92763	89 m	0:00:21	15 kph
22/8/2016 15:29	ON	N22.17841 E113.92752	98 m	0:00:24	15 kph
22/8/2016 15:29	ON	N22.17771 E113.92744	78 m	0:00:19	15 kph
22/8/2016 15:29	ON	N22.17699 E113.92729	82 m	0:00:20	15 kph
22/8/2016 15:30	ON	N22.17630 E113.92716	78 m	0:00:19	15 kph
22/8/2016 15:30	ON	N22.17564 E113.92703	74 m	0:00:18	15 kph
22/8/2016 15:30	ON	N22.17494 E113.92703	78 m	0:00:19	15 kph
22/8/2016 15:31	ON	N22.17434 E113.92703	66 m	0:00:16	15 kph
22/8/2016 15:31	ON	N22.17379 E113.92707	62 m	0:00:15	15 kph
22/8/2016 15:31	ON	N22.17281 E113.92712	109 m	0:00:26	15 kph
22/8/2016 15:32	ON	N22.17206 E113.92710	84 m	0:00:20	15 kph
22/8/2016 15:32	ON	N22.17119 E113.92717	97 m	0:00:23	15 kph
22/8/2016 15:32	ON	N22.17056 E113.92722	70 m	0:00:17	15 kph
22/8/2016 15:33	ON	N22.16966 E113.92724	100 m	0:00:24	15 kph
22/8/2016 15:33	ON	N22.16889 E113.92715	86 m	0:00:21	15 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
22/8/2016 15:33	ON	N22.16813 E113.92703	86 m	0:00:21	15 kph
22/8/2016 15:34	ON	N22.16721 E113.92693	103 m	0:00:25	15 kph
22/8/2016 15:34	ON	N22.16647 E113.92687	83 m	0:00:20	15 kph
22/8/2016 15:34	ON	N22.16562 E113.92689	94 m	0:00:23	15 kph
22/8/2016 15:35	ON	N22.16488 E113.92689	82 m	0:00:20	15 kph
22/8/2016 15:35	ON	N22.16402 E113.92687	96 m	0:00:23	15 kph
22/8/2016 15:36	ON	N22.16315 E113.92704	98 m	0:00:24	15 kph
22/8/2016 15:36	ON	N22.16237 E113.92705	87 m	0:00:21	15 kph
22/8/2016 15:36	ON	N22.16151 E113.92706	96 m	0:00:23	15 kph
22/8/2016 15:37	ON	N22.16076 E113.92707	84 m	0:00:20	15 kph
22/8/2016 15:37	ON	N22.16005 E113.92707	79 m	0:00:19	15 kph
22/8/2016 15:37	ON	N22.15934 E113.92709	79 m	0:00:19	15 kph
22/8/2016 15:38	ON	N22.15844 E113.92712	100 m	0:00:24	15 kph
22/8/2016 15:38	ON	N22.15774 E113.92707	78 m	0:00:19	15 kph
22/8/2016 15:38	ON	N22.15694 E113.92730	92 m	0:00:23	14 kph
22/8/2016 15:39	ON	N22.15617 E113.92740	87 m	0:00:21	15 kph
22/8/2016 15:39	ON	N22.15540 E113.92733	86 m	0:00:21	15 kph
22/8/2016 15:39	ON	N22.15459 E113.92730	90 m	0:00:22	15 kph
22/8/2016 15:40	ON	N22.15370 E113.92730	99 m	0:00:24	15 kph
22/8/2016 15:40	ON	N22.15285 E113.92731	95 m	0:00:23	15 kph
22/8/2016 15:41	ON	N22.15200 E113.92732	95 m	0:00:23	15 kph
22/8/2016 15:41	ON	N22.15123 E113.92738	86 m	0:00:21	15 kph
22/8/2016 15:41	ON	N22.15044 E113.92745	87 m	0:00:21	15 kph
22/8/2016 15:42	ON	N22.14967 E113.92734	87 m	0:00:21	15 kph
22/8/2016 15:42	ON	N22.14879 E113.92720	99 m	0:00:24	15 kph
22/8/2016 15:42	ON	N22.14810 E113.92740	80 m	0:00:21	14 kph
22/8/2016 15:43	ON	N22.14812 E113.92803	65 m	0:00:19	12 kph
22/8/2016 15:43	ON	N22.14865 E113.92871	92 m	0:00:23	14 kph
22/8/2016 15:44	ON	N22.14866 E113.92956	87 m	0:00:23	14 kph
22/8/2016 15:44	ON	N22.14877 E113.93041	88 m	0:00:22	14 kph
22/8/2016 15:44	ON	N22.14936 E113.93097	88 m	0:00:22	14 kph
22/8/2016 15:45	ON	N22.14980 E113.93181	99 m	0:00:26	14 kph
22/8/2016 15:45	ON	N22.14999 E113.93273	97 m	0:00:24	14 kph
22/8/2016 15:46	ON	N22.15043 E113.93369	111 m	0:00:27	15 kph
22/8/2016 15:46	ON	N22.15067 E113.93432	70 m	0:00:17	15 kph
22/8/2016 15:46	ON	N22.15096 E113.93515	91 m	0:00:22	15 kph
22/8/2016 15:47	ON	N22.15117 E113.93599	91 m	0:00:22	15 kph
22/8/2016 15:47	ON	N22.15151 E113.93657	70 m	0:00:19	13 kph
22/8/2016 15:47	ON	N22.15229 E113.93659	86 m	0:00:21	15 kph
22/8/2016 15:48	ON	N22.15301 E113.93669	81 m	0:00:19	15 kph
22/8/2016 15:48	ON	N22.15396 E113.93682	107 m	0:00:25	15 kph
22/8/2016 15:48	ON	N22.15475 E113.93696	89 m	0:00:21	15 kph
22/8/2016 15:49	ON	N22.15559 E113.93701	94 m	0:00:22	15 kph
22/8/2016 15:49	ON	N22.15655 E113.93705	107 m	0:00:25	15 kph
22/8/2016 15:49	ON	N22.15748 E113.93705	103 m	0:00:24	15 kph
22/8/2016 15:50	ON	N22.15851 E113.93704	115 m	0:00:27	15 kph
22/8/2016 15:50	ON	N22.15928 E113.93708	85 m	0:00:20	15 kph
22/8/2016 15:51	ON	N22.16012 E113.93709	94 m	0:00:22	15 kph
22/8/2016 15:51	ON	N22.16088 E113.93710	85 m	0:00:20	15 kph
22/8/2016 15:51	ON	N22.16175 E113.93718	96 m	0:00:23	15 kph
22/8/2016 15:52	ON	N22.16253 E113.93706	88 m	0:00:21	15 kph
22/8/2016 15:52	ON	N22.16334 E113.93706	90 m	0:00:21	15 kph
22/8/2016 15:52	ON	N22.16424 E113.93703	100 m	0:00:23	16 kph
22/8/2016 15:53	ON	N22.16516 E113.93703	103 m	0:00:24	15 kph
22/8/2016 15:53	ON	N22.16609 E113.93699	103 m	0:00:24	15 kph
22/8/2016 15:54	ON	N22.16697 E113.93704	99 m	0:00:23	15 kph
22/8/2016 15:54	ON	N22.16778 E113.93699	90 m	0:00:21	15 kph
22/8/2016 15:54	ON	N22.16870 E113.93702	103 m	0:00:24	15 kph
22/8/2016 15:55	ON	N22.16948 E113.93704	86 m	0:00:20	15 kph
22/8/2016 15:55	ON	N22.16979 E113.93705	35 m	0:00:08	16 kph
22/8/2016 16:00	ON	N22.18262 E113.93557	1.4 km	0:04:58	17 kph
22/8/2016 16:00	ON	N22.18270 E113.93554	9 m	0:00:01	33 kph
22/8/2016 16:00	ON	N22.18203 E113.93703	171 m	0:00:17	36 kph
22/8/2016 16:00	ON	N22.18291 E113.93702	99 m	0:00:23	15 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
22/8/2016 16:01	ON	N22.18382 E113.93700	101 m	0:00:23	16 kph
22/8/2016 16:01	ON	N22.18467 E113.93705	96 m	0:00:22	16 kph
22/8/2016 16:02	ON	N22.18570 E113.93709	114 m	0:00:26	16 kph
22/8/2016 16:02	ON	N22.18663 E113.93702	104 m	0:00:24	16 kph
22/8/2016 16:02	ON	N22.18744 E113.93701	91 m	0:00:21	16 kph
22/8/2016 16:03	ON	N22.18830 E113.93703	95 m	0:00:22	16 kph
22/8/2016 16:03	ON	N22.18916 E113.93700	96 m	0:00:22	16 kph
22/8/2016 16:04	ON	N22.19013 E113.93708	108 m	0:00:25	16 kph
22/8/2016 16:04	ON	N22.19099 E113.93703	96 m	0:00:22	16 kph
22/8/2016 16:04	ON	N22.19203 E113.93705	116 m	0:00:27	16 kph
22/8/2016 16:05	ON	N22.19287 E113.93727	96 m	0:00:22	16 kph
22/8/2016 16:05	ON	N22.19372 E113.93741	96 m	0:00:22	16 kph
22/8/2016 16:05	ON	N22.19455 E113.93742	92 m	0:00:21	16 kph
22/8/2016 16:06	ON	N22.19544 E113.93750	99 m	0:00:23	16 kph
22/8/2016 16:06	ON	N22.19636 E113.93754	103 m	0:00:24	15 kph
22/8/2016 16:07	ON	N22.19727 E113.93741	102 m	0:00:24	15 kph
22/8/2016 16:07	ON	N22.19828 E113.93746	113 m	0:00:27	15 kph
22/8/2016 16:08	ON	N22.19915 E113.93743	97 m	0:00:26	13 kph
22/8/2016 16:08	ON	N22.20008 E113.93742	104 m	0:00:24	16 kph
22/8/2016 16:08	ON	N22.20108 E113.93736	111 m	0:00:26	15 kph
22/8/2016 16:09	ON	N22.20182 E113.93744	83 m	0:00:20	15 kph
22/8/2016 16:09	ON	N22.20273 E113.93759	102 m	0:00:24	15 kph
22/8/2016 16:10	ON	N22.20363 E113.93742	102 m	0:00:25	15 kph
22/8/2016 16:10	ON	N22.20455 E113.93732	103 m	0:00:24	15 kph
22/8/2016 16:10	ON	N22.20556 E113.93736	112 m	0:00:26	16 kph
22/8/2016 16:11	ON	N22.20654 E113.93726	110 m	0:00:26	15 kph
22/8/2016 16:11	ON	N22.20754 E113.93718	112 m	0:00:26	15 kph
22/8/2016 16:12	ON	N22.20867 E113.93711	126 m	0:00:29	16 kph
22/8/2016 16:12	ON	N22.20976 E113.93711	120 m	0:00:27	16 kph
22/8/2016 16:13	ON	N22.21074 E113.93705	110 m	0:00:25	16 kph
22/8/2016 16:13	ON	N22.21183 E113.93713	121 m	0:00:27	16 kph
22/8/2016 16:13	ON	N22.21291 E113.93717	121 m	0:00:27	16 kph
22/8/2016 16:14	ON	N22.21334 E113.93715	48 m	0:00:11	16 kph
22/8/2016 16:14	ON	N22.21429 E113.93709	106 m	0:00:24	16 kph
22/8/2016 16:15	ON	N22.21556 E113.93716	141 m	0:00:32	16 kph
22/8/2016 16:15	ON	N22.21679 E113.93711	137 m	0:00:32	15 kph
22/8/2016 16:16	ON	N22.21797 E113.93703	132 m	0:00:31	15 kph
22/8/2016 16:16	ON	N22.21911 E113.93708	126 m	0:00:29	16 kph
22/8/2016 16:17	ON	N22.22039 E113.93706	143 m	0:00:33	16 kph
22/8/2016 16:17	ON	N22.22135 E113.93722	108 m	0:00:25	16 kph
22/8/2016 16:18	ON	N22.22245 E113.93737	123 m	0:00:29	15 kph
22/8/2016 16:18	ON	N22.22335 E113.93740	101 m	0:00:27	13 kph
22/8/2016 16:18	ON	N22.22388 E113.93756	61 m	0:00:23	9 kph

Appendix II. Survey Effort Database in SWL (August 2016)

(Abbreviations: BEAU = Beaufort Sea State; P = Primary Line Effort; S = Secondary Line Effort)

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	TYPE	P/S
9-Aug-16	SW LANTAU	2	6.22	SUMMER	STANDARD31516	HKCRP	P
9-Aug-16	SW LANTAU	3	3.50	SUMMER	STANDARD31516	HKCRP	P
9-Aug-16	SW LANTAU	4	2.20	SUMMER	STANDARD31516	HKCRP	P
9-Aug-16	SW LANTAU	5	1.80	SUMMER	STANDARD31516	HKCRP	P
9-Aug-16	SW LANTAU	2	4.70	SUMMER	STANDARD31516	HKCRP	S
9-Aug-16	SW LANTAU	3	2.50	SUMMER	STANDARD31516	HKCRP	S
9-Aug-16	SW LANTAU	4	1.99	SUMMER	STANDARD31516	HKCRP	S
16-Aug-16	SW LANTAU	1	4.81	SUMMER	STANDARD36826	HKCRP	P
16-Aug-16	SW LANTAU	2	1.65	SUMMER	STANDARD36826	HKCRP	P
16-Aug-16	SW LANTAU	1	2.17	SUMMER	STANDARD36826	HKCRP	S
22-Aug-16	SW LANTAU	2	1.73	SUMMER	STANDARD36826	HyD-HZMB	P
22-Aug-16	SW LANTAU	3	45.49	SUMMER	STANDARD36826	HyD-HZMB	P
22-Aug-16	SW LANTAU	4	4.18	SUMMER	STANDARD36826	HyD-HZMB	P
22-Aug-16	SW LANTAU	2	2.59	SUMMER	STANDARD36826	HyD-HZMB	S
22-Aug-16	SW LANTAU	3	13.60	SUMMER	STANDARD36826	HyD-HZMB	S
22-Aug-16	SW LANTAU	4	1.71	SUMMER	STANDARD36826	HyD-HZMB	S
25-Aug-16	SW LANTAU	2	19.93	SUMMER	STANDARD36826	HKCRP	P
25-Aug-16	SW LANTAU	2	10.27	SUMMER	STANDARD36826	HKCRP	S
25-Aug-16	SW LANTAU	3	1.30	SUMMER	STANDARD36826	HKCRP	S

Appendix III. Chinese White Dolphin Sighting Database in SWL (August 2016)

(Abberviations: STG# = Sighting Number; HRD SZ = Dolphin Herd Size; BEAU = Beaufort Sea State; PSD = Perpendicular Distance; ND = Not Determined; BOAT ASSOC. = Fishing Boat Association; P/S: Sighting Made on Primary/Secondary Lines)

DATE	STG #	TIME	HRD SZ	AREA	BEAU	PSD	EFFORT	TYPE	NORTHING	EASTING	SEASON	BOAT ASSOC.	P/S
09-Aug-16	1	1316	1	SW LANTAU	2	25	ON	HKCRP	806161	802497	SUMMER	NONE	S
09-Aug-16	2	1328	1	SW LANTAU	2	ND	OFF	HKCRP	807031	804603	SUMMER	NONE	
16-Aug-16	3	1327	2	SW LANTAU	1	69	ON	HKCRP	806546	803519	SUMMER	NONE	P
16-Aug-16	4	1337	2	SW LANTAU	2	93	ON	HKCRP	804841	803433	SUMMER	NONE	P
22-Aug-16	1	1345	1	SW LANTAU	3	30	ON	HYD-HZMB	807402	807419	SUMMER	PURSE-SEINE	P
25-Aug-16	4	1106	1	SW LANTAU	3	131	ON	HKCRP	806238	802735	SUMMER	NONE	S

Appendix IV. Individual dolphins identified during HYD-HZMB and AFCD monitoring surveys in SWL waters in August 2016

ID#	DATE	STG#	TYPE	AREA
WL168	16/08/16	3	HKCRP	SW LANTAU
WL232	25/08/16	4	HKCRP	SW LANTAU
WL234	22/08/16	1	HYD-HZMB	SW LANTAU

Appendix V. Photographs of Identified Individual Dolphins in August 2016 in SWL waters