Monitoring of Chinese White Dolphins in Southwest Lantau Waters

20th Monthly Progress Report (October 2016)
submitted to Environmental Project Office for the HZMB HKLR, HZMB HKBCF and TM-CLKL – Investigation

Submitted by
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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 20th monthly progress report under this dolphin monitoring study submitted to the Environmental Project Office, summarizing the survey findings during the month of October 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^{o} and 90^{o} (in relation to the bow, which is defined as 0^{o}). 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 October 24th 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 October 6th (with lines no. SWL005, SWL007 and SWL009 covered), October 20th (with lines no. SWL002, SWL004 and SWL006 covered) and October 26th (with lines no. SWL001, SWL003, SWL006 and SWL008 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 75.10 km of survey effort was collected from 10:59 to 16:24 (i.e. 5 hours and 25 minutes of survey time) on October 24th, with 100% 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 57.85 km and 17.25 km respectively.

3.1.4. For the combined monitoring dataset from both the present study and AFCD monitoring study, a total of 144.70 km of survey effort was collected in SWL waters in October 2016.

3.1.5. During this monitoring month, no Chinese White Dolphin was sighted at all from the present study's survey and all three AFCD monitoring surveys. On the other hand, two groups of four finless porpoises were sighted in SWL survey area in October's surveys.

3.1.6. 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 October 2016 are shown in Table 2. Comparison of encounter rates was also made to the one deduced in autumn months (September-November) in the past decade (2005-14), as well as in October 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 October 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 (September-November 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 (October 2016)	0.00	0.00	0.00	0.00
Combined data (October 2016)	0.00	0.00	0.00	0.00
Combined data (October 2015)	2.98	2.16	4.96	3.59
Historical Data (Autumn 2005-14)		4.29		17.05

3.1.7. From the combined data of HYD-HZMB and AFCD monitoring surveys, the overall encounter rates based on the number of dolphin sightings (ER(STG)) and total number of dolphins (ER(ANI) deduced in October 2016 in SWL waters were both nil, which was in stark contrast to the encounter rates recorded in October 2015, as well as the historical data collected during the autumn months of 2005-14 (Table 2).

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.

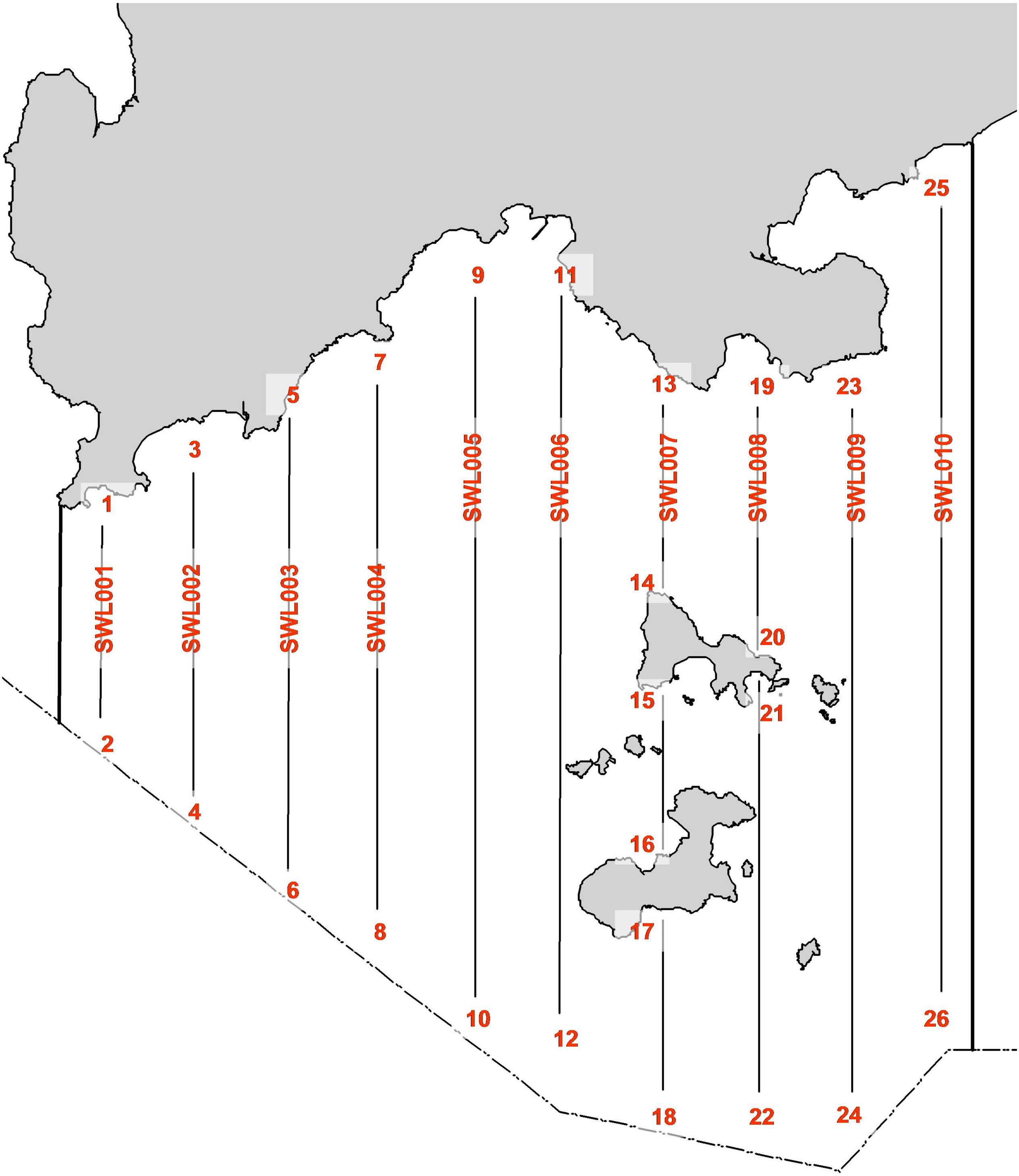

Figure 1. Survey Lines and associated coordinates in Southwest Lantau survey area

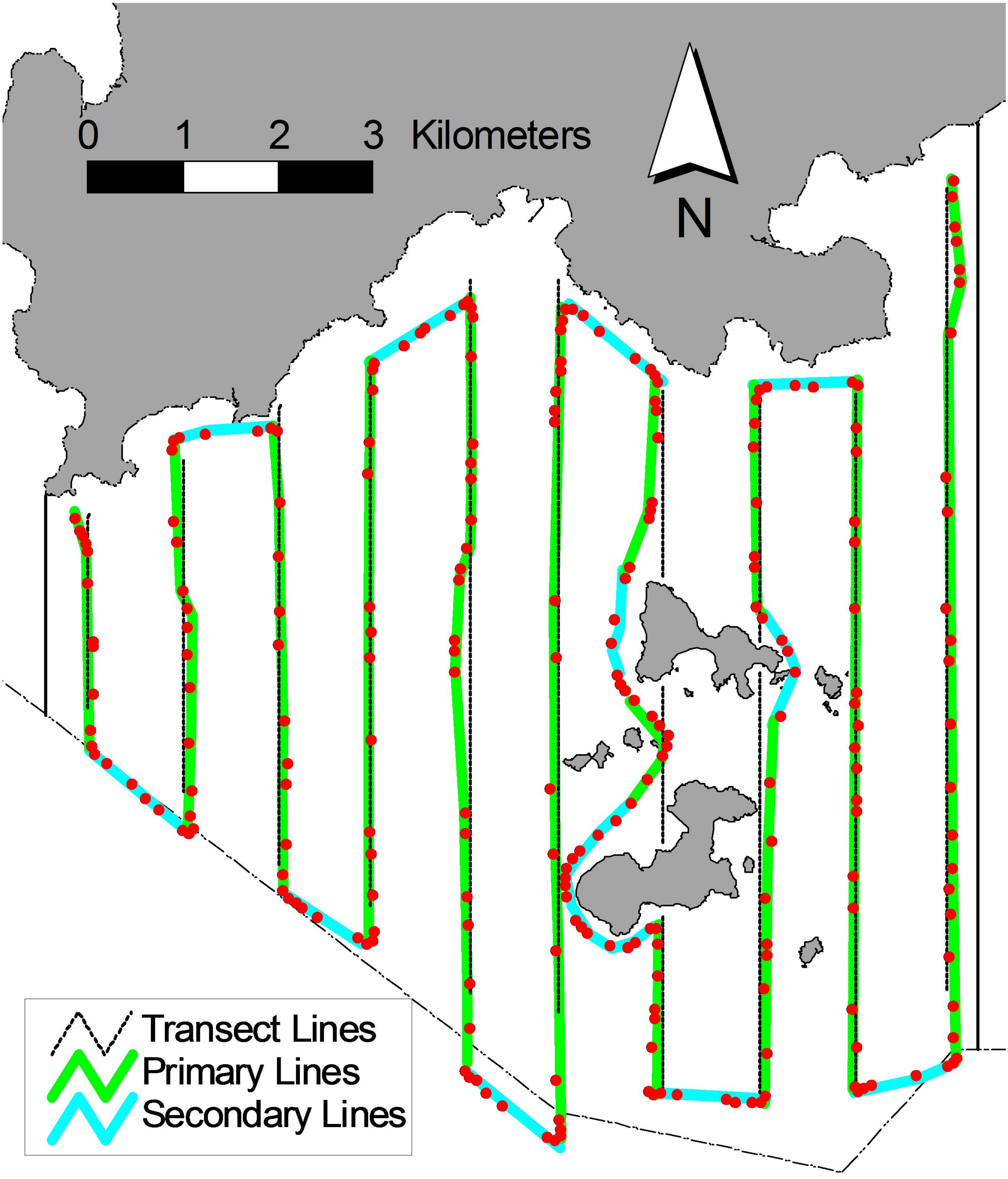

Figure 2. Survey Route on October 24th, 2016 (note: red dots represent the tracked positions of survey boat logged continuously by GPS throughout the course of the survey)

Appendix I. Track Log of SW Lantau Survey on October 24th, 2016

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
24/10/2016 10:59	ON	N22.19233 E113.84852	47 m	0:00:18	9 kph
24/10/2016 10:59	ON	N22.19181 E113.84893	71 m	0:00:23	11 kph
24/10/2016 10:59	ON	N22.19119 E113.84918	74 m	0:00:21	13 kph
24/10/2016 11:00	ON	N22.19043 E113.84928	85 m	0:00:24	13 kph
24/10/2016 11:00	ON	N22.18970 E113.84935	82 m	0:00:23	13 kph
24/10/2016 11:01	ON	N22.18893 E113.84934	85 m	0:00:23	13 kph
24/10/2016 11:01	ON	N22.18827 E113.84934	73 m	0:00:20	13 kph
24/10/2016 11:01	ON	N22.18758 E113.84936	77 m	0:00:20	14 kph
24/10/2016 11:02	ON	N22.18684 E113.84943	83 m	0:00:21	14 kph
24/10/2016 11:02	ON	N22.18590 E113.84956	106 m	0:00:26	15 kph
24/10/2016 11:02	ON	N22.18533 E113.84961	64 m	0:00:16	14 kph
24/10/2016 11:03	ON	N22.18465 E113.84973	76 m	0:00:19	14 kph
24/10/2016 11:03	ON	N22.18381 E113.84974	93 m	0:00:23	15 kph
24/10/2016 11:03	ON	N22.18316 E113.84981	73 m	0:00:18	15 kph
24/10/2016 11:04	ON	N22.18241 E113.84986	83 m	0:00:20	15 kph
24/10/2016 11:04	ON	N22.18186 E113.84991	62 m	0:00:15	15 kph
24/10/2016 11:04	ON	N22.18105 E113.84987	91 m	0:00:22	15 kph
24/10/2016 11:05	ON	N22.18038 E113.84988	74 m	0:00:18	15 kph
24/10/2016 11:05	ON	N22.17986 E113.84998	59 m	0:00:14	15 kph
24/10/2016 11:05	ON	N22.17915 E113.84993	79 m	0:00:19	15 kph
24/10/2016 11:05	ON	N22.17854 E113.84994	68 m	0:00:16	15 kph
24/10/2016 11:06	ON	N22.17765 E113.84995	99 m	0:00:23	15 kph
24/10/2016 11:06	ON	N22.17698 E113.84990	75 m	0:00:18	15 kph
24/10/2016 11:06	ON	N22.17634 E113.84989	71 m	0:00:17	15 kph
24/10/2016 11:07	ON	N22.17578 E113.84987	63 m	0:00:15	15 kph
24/10/2016 11:07	ON	N22.17501 E113.84975	87 m	0:00:21	15 kph
24/10/2016 11:07	ON	N22.17442 E113.84972	66 m	0:00:16	15 kph
24/10/2016 11:07	ON	N22.17366 E113.84979	84 m	0:00:20	15 kph
24/10/2016 11:08	ON	N22.17297 E113.84981	77 m	0:00:18	15 kph
24/10/2016 11:08	ON	N22.17228 E113.85013	83 m	0:00:21	14 kph
24/10/2016 11:08	ON	N22.17192 E113.85072	72 m	0:00:18	14 kph
24/10/2016 11:09	ON	N22.17147 E113.85139	86 m	0:00:20	15 kph
24/10/2016 11:09	ON	N22.17089 E113.85213	100 m	0:00:23	16 kph
24/10/2016 11:09	ON	N22.17041 E113.85281	88 m	0:00:20	16 kph
24/10/2016 11:10	ON	N22.16964 E113.85391	143 m	0:00:33	16 kph
24/10/2016 11:11	ON	N22.16882 E113.85470	122 m	0:00:28	16 kph
24/10/2016 11:11	ON	N22.16829 E113.85533	88 m	0:00:21	15 kph
24/10/2016 11:11	ON	N22.16791 E113.85593	75 m	0:00:18	15 kph
24/10/2016 11:12	ON	N22.16736 E113.85672	102 m	0:00:24	15 kph
24/10/2016 11:12	ON	N22.16675 E113.85740	97 m	0:00:23	15 kph
24/10/2016 11:12	ON	N22.16609 E113.85830	118 m	0:00:28	15 kph
24/10/2016 11:13	ON	N22.16557 E113.85905	96 m	0:00:23	15 kph
24/10/2016 11:13	ON	N22.16528 E113.85982	86 m	0:00:24	13 kph
24/10/2016 11:14	ON	N22.16572 E113.86018	61 m	0:00:22	10 kph
24/10/2016 11:14	ON	N22.16630 E113.86007	65 m	0:00:23	10 kph
24/10/2016 11:14	ON	N22.16678 E113.85992	56 m	0:00:19	11 kph
24/10/2016 11:15	ON	N22.16738 E113.85995	67 m	0:00:22	11 kph
24/10/2016 11:15	ON	N22.16793 E113.85995	61 m	0:00:20	11 kph
24/10/2016 11:15	ON	N22.16841 E113.86003	53 m	0:00:17	11 kph
24/10/2016 11:16	ON	N22.16907 E113.85999	74 m	0:00:23	12 kph
24/10/2016 11:16	ON	N22.16981 E113.85997	82 m	0:00:25	12 kph
24/10/2016 11:16	ON	N22.17050 E113.85989	78 m	0:00:24	12 kph
24/10/2016 11:17	ON	N22.17127 E113.85983	86 m	0:00:26	12 kph
24/10/2016 11:17	ON	N22.17204 E113.85980	85 m	0:00:26	12 kph
24/10/2016 11:18	ON	N22.17273 E113.85978	77 m	0:00:23	12 kph
24/10/2016 11:18	ON	N22.17332 E113.85972	66 m	0:00:20	12 kph
24/10/2016 11:18	ON	N22.17404 E113.85977	80 m	0:00:23	13 kph
24/10/2016 11:19	ON	N22.17485 E113.85978	89 m	0:00:25	13 kph
24/10/2016 11:19	ON	N22.17543 E113.85975	65 m	0:00:18	13 kph
24/10/2016 11:20	ON	N22.17617 E113.85983	84 m	0:00:23	13 kph
24/10/2016 11:20	ON	N22.17700 E113.85983	92 m	0:00:25	13 kph
24/10/2016 11:20	ON	N22.17770 E113.85983	78 m	0:00:21	13 kph
24/10/2016 11:21	ON	N22.17830 E113.85983	67 m	0:00:18	13 kph
24/10/2016 11:21	ON	N22.17894 E113.85981	71 m	0:00:19	14 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
24/10/2016 11:21	ON	N22.17975 E113.85971	91 m	0:00:24	14 kph
24/10/2016 11:22	ON	N22.18047 E113.85971	80 m	0:00:21	14 kph
24/10/2016 11:22	ON	N22.18131 E113.85960	95 m	0:00:25	14 kph
24/10/2016 11:22	ON	N22.18207 E113.85960	84 m	0:00:22	14 kph
24/10/2016 11:23	ON	N22.18295 E113.85957	98 m	0:00:25	14 kph
24/10/2016 11:23	ON	N22.18372 E113.85958	86 m	0:00:22	14 kph
24/10/2016 11:24	ON	N22.18450 E113.85953	88 m	0:00:22	14 kph
24/10/2016 11:24	ON	N22.18534 E113.85948	93 m	0:00:24	14 kph
24/10/2016 11:24	ON	N22.18609 E113.85930	86 m	0:00:22	14 kph
24/10/2016 11:25	ON	N22.18697 E113.85901	102 m	0:00:26	14 kph
24/10/2016 11:25	ON	N22.18786 E113.85890	99 m	0:00:25	14 kph
24/10/2016 11:26	ON	N22.18871 E113.85883	95 m	0:00:24	14 kph
24/10/2016 11:26	ON	N22.18956 E113.85873	96 m	0:00:24	14 kph
24/10/2016 11:26	ON	N22.19048 E113.85859	103 m	0:00:26	14 kph
24/10/2016 11:27	ON	N22.19131 E113.85842	95 m	0:00:24	14 kph
24/10/2016 11:27	ON	N22.19222 E113.85826	103 m	0:00:26	14 kph
24/10/2016 11:28	ON	N22.19306 E113.85820	93 m	0:00:24	14 kph
24/10/2016 11:28	ON	N22.19386 E113.85817	89 m	0:00:23	14 kph
24/10/2016 11:28	ON	N22.19459 E113.85815	81 m	0:00:21	14 kph
24/10/2016 11:29	ON	N22.19547 E113.85811	98 m	0:00:25	14 kph
24/10/2016 11:29	ON	N22.19646 E113.85811	110 m	0:00:29	14 kph
24/10/2016 11:30	ON	N22.19760 E113.85809	127 m	0:00:33	14 kph
24/10/2016 11:30	ON	N22.19846 E113.85806	96 m	0:00:25	14 kph
24/10/2016 11:31	ON	N22.19945 E113.85804	110 m	0:00:29	14 kph
24/10/2016 11:31	ON	N22.20037 E113.85819	104 m	0:00:29	13 kph
24/10/2016 11:32	ON	N22.20072 E113.85883	76 m	0:00:25	11 kph
24/10/2016 11:32	ON	N22.20083 E113.85963	83 m	0:00:25	12 kph
24/10/2016 11:33	ON	N22.20092 E113.86061	101 m	0:00:30	12 kph
24/10/2016 11:33	ON	N22.20101 E113.86136	78 m	0:00:23	12 kph
24/10/2016 11:33	ON	N22.20105 E113.86216	82 m	0:00:24	12 kph
24/10/2016 11:34	ON	N22.20114 E113.86311	99 m	0:00:29	12 kph
24/10/2016 11:34	ON	N22.20117 E113.86394	86 m	0:00:25	12 kph
24/10/2016 11:35	ON	N22.20119 E113.86463	71 m	0:00:21	12 kph
24/10/2016 11:35	ON	N22.20122 E113.86529	68 m	0:00:20	12 kph
24/10/2016 11:35	ON	N22.20121 E113.86589	62 m	0:00:18	12 kph
24/10/2016 11:36	ON	N22.20127 E113.86655	68 m	0:00:20	12 kph
24/10/2016 11:36	ON	N22.20145 E113.86728	78 m	0:00:23	12 kph
24/10/2016 11:36	ON	N22.20156 E113.86811	86 m	0:00:25	12 kph
24/10/2016 11:37	ON	N22.20131 E113.86869	66 m	0:00:21	11 kph
24/10/2016 11:37	ON	N22.20064 E113.86869	75 m	0:00:20	13 kph
24/10/2016 11:37	ON	N22.19978 E113.86871	96 m	0:00:24	14 kph
24/10/2016 11:38	ON	N22.19906 E113.86872	80 m	0:00:20	14 kph
24/10/2016 11:38	ON	N22.19836 E113.86877	78 m	0:00:20	14 kph
24/10/2016 11:39	ON	N22.19747 E113.86882	98 m	0:00:25	14 kph
24/10/2016 11:39	ON	N22.19670 E113.86887	86 m	0:00:22	14 kph
24/10/2016 11:39	ON	N22.19585 E113.86892	95 m	0:00:24	14 kph
24/10/2016 11:40	ON	N22.19488 E113.86896	108 m	0:00:27	14 kph
24/10/2016 11:40	ON	N22.19399 E113.86890	99 m	0:00:25	14 kph
24/10/2016 11:41	ON	N22.19306 E113.86892	104 m	0:00:27	14 kph
24/10/2016 11:41	ON	N22.19218 E113.86887	98 m	0:00:25	14 kph
24/10/2016 11:41	ON	N22.19140 E113.86891	87 m	0:00:23	14 kph
24/10/2016 11:42	ON	N22.19062 E113.86894	87 m	0:00:24	13 kph
24/10/2016 11:42	ON	N22.18997 E113.86882	73 m	0:00:25	11 kph
24/10/2016 11:43	ON	N22.18923 E113.86883	82 m	0:00:27	11 kph
24/10/2016 11:43	ON	N22.18847 E113.86890	85 m	0:00:23	13 kph
24/10/2016 11:43	ON	N22.18772 E113.86889	83 m	0:00:22	14 kph
24/10/2016 11:44	ON	N22.18691 E113.86887	90 m	0:00:24	14 kph
24/10/2016 11:44	ON	N22.18607 E113.86893	94 m	0:00:25	14 kph
24/10/2016 11:45	ON	N22.18510 E113.86899	109 m	0:00:29	14 kph
24/10/2016 11:45	ON	N22.18417 E113.86891	103 m	0:00:27	14 kph
24/10/2016 11:46	ON	N22.18318 E113.86888	111 m	0:00:29	14 kph
24/10/2016 11:46	ON	N22.18213 E113.86882	117 m	0:00:31	14 kph
24/10/2016 11:47	ON	N22.18145 E113.86897	77 m	0:00:21	13 kph
24/10/2016 11:47	ON	N22.18057 E113.86900	98 m	0:00:26	14 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
24/10/2016 11:47	ON	N22.17972 E113.86907	95 m	0:00:25	14 kph
24/10/2016 11:48	ON	N22.17873 E113.86915	110 m	0:00:29	14 kph
24/10/2016 11:48	ON	N22.17783 E113.86920	100 m	0:00:26	14 kph
24/10/2016 11:49	ON	N22.17694 E113.86926	99 m	0:00:26	14 kph
24/10/2016 11:49	ON	N22.17615 E113.86933	89 m	0:00:23	14 kph
24/10/2016 11:50	ON	N22.17529 E113.86948	96 m	0:00:25	14 kph
24/10/2016 11:50	ON	N22.17436 E113.86958	105 m	0:00:27	14 kph
24/10/2016 11:50	ON	N22.17339 E113.86967	108 m	0:00:28	14 kph
24/10/2016 11:51	ON	N22.17251 E113.86969	98 m	0:00:25	14 kph
24/10/2016 11:51	ON	N22.17148 E113.86973	114 m	0:00:29	14 kph
24/10/2016 11:52	ON	N22.17048 E113.86965	112 m	0:00:28	14 kph
24/10/2016 11:52	ON	N22.16974 E113.86961	83 m	0:00:21	14 kph
24/10/2016 11:53	ON	N22.16886 E113.86963	98 m	0:00:25	14 kph
24/10/2016 11:53	ON	N22.16791 E113.86967	107 m	0:00:27	14 kph
24/10/2016 11:53	ON	N22.16698 E113.86967	103 m	0:00:26	14 kph
24/10/2016 11:54	ON	N22.16609 E113.86969	99 m	0:00:25	14 kph
24/10/2016 11:54	ON	N22.16507 E113.86966	113 m	0:00:28	14 kph
24/10/2016 11:55	ON	N22.16429 E113.86968	87 m	0:00:22	14 kph
24/10/2016 11:55	ON	N22.16341 E113.86957	99 m	0:00:25	14 kph
24/10/2016 11:56	ON	N22.16256 E113.86948	95 m	0:00:24	14 kph
24/10/2016 11:56	ON	N22.16164 E113.86939	102 m	0:00:26	14 kph
24/10/2016 11:56	ON	N22.16101 E113.86935	71 m	0:00:18	14 kph
24/10/2016 11:57	ON	N22.16016 E113.86938	95 m	0:00:24	14 kph
24/10/2016 11:57	ON	N22.15947 E113.86986	91 m	0:00:23	14 kph
24/10/2016 11:57	ON	N22.15896 E113.87067	102 m	0:00:24	15 kph
24/10/2016 11:58	ON	N22.15858 E113.87133	80 m	0:00:19	15 kph
24/10/2016 11:58	ON	N22.15808 E113.87225	110 m	0:00:26	15 kph
24/10/2016 11:58	ON	N22.15776 E113.87287	73 m	0:00:17	16 kph
24/10/2016 11:59	ON	N22.15724 E113.87402	132 m	0:00:31	15 kph
24/10/2016 11:59	ON	N22.15683 E113.87496	107 m	0:00:25	15 kph
24/10/2016 12:00	ON	N22.15641 E113.87587	105 m	0:00:25	15 kph
24/10/2016 12:00	ON	N22.15597 E113.87687	114 m	0:00:27	15 kph
24/10/2016 12:01	ON	N22.15543 E113.87794	126 m	0:00:30	15 kph
24/10/2016 12:01	ON	N22.15566 E113.87841	55 m	0:00:18	11 kph
24/10/2016 12:01	ON	N22.15645 E113.87856	89 m	0:00:25	13 kph
24/10/2016 12:02	ON	N22.15721 E113.87851	84 m	0:00:23	13 kph
24/10/2016 12:02	ON	N22.15804 E113.87845	93 m	0:00:25	13 kph
24/10/2016 12:03	ON	N22.15887 E113.87846	93 m	0:00:25	13 kph
24/10/2016 12:03	ON	N22.15972 E113.87841	94 m	0:00:25	14 kph
24/10/2016 12:04	ON	N22.16059 E113.87842	97 m	0:00:26	13 kph
24/10/2016 12:04	ON	N22.16153 E113.87833	105 m	0:00:28	13 kph
24/10/2016 12:04	ON	N22.16247 E113.87829	105 m	0:00:28	14 kph
24/10/2016 12:05	ON	N22.16339 E113.87832	102 m	0:00:27	14 kph
24/10/2016 12:05	ON	N22.16448 E113.87817	122 m	0:00:33	13 kph
24/10/2016 12:06	ON	N22.16542 E113.87808	105 m	0:00:28	13 kph
24/10/2016 12:07	ON	N22.16654 E113.87811	125 m	0:00:33	14 kph
24/10/2016 12:07	ON	N22.16770 E113.87821	130 m	0:00:34	14 kph
24/10/2016 12:08	ON	N22.16872 E113.87811	114 m	0:00:30	14 kph
24/10/2016 12:08	ON	N22.16968 E113.87815	106 m	0:00:28	14 kph
24/10/2016 12:09	ON	N22.17070 E113.87823	114 m	0:00:30	14 kph
24/10/2016 12:09	ON	N22.17167 E113.87820	108 m	0:00:28	14 kph
24/10/2016 12:09	ON	N22.17263 E113.87825	108 m	0:00:28	14 kph
24/10/2016 12:10	ON	N22.17356 E113.87822	104 m	0:00:27	14 kph
24/10/2016 12:10	ON	N22.17451 E113.87814	106 m	0:00:27	14 kph
24/10/2016 12:11	ON	N22.17556 E113.87819	118 m	0:00:30	14 kph
24/10/2016 12:11	ON	N22.17668 E113.87817	124 m	0:00:32	14 kph
24/10/2016 12:12	ON	N22.17780 E113.87807	125 m	0:00:32	14 kph
24/10/2016 12:12	ON	N22.17875 E113.87809	106 m	0:00:27	14 kph
24/10/2016 12:13	ON	N22.17980 E113.87809	117 m	0:00:30	14 kph
24/10/2016 12:13	ON	N22.18096 E113.87805	129 m	0:00:33	14 kph
24/10/2016 12:14	ON	N22.18203 E113.87812	120 m	0:00:31	14 kph
24/10/2016 12:15	ON	N22.18329 E113.87816	140 m	0:00:36	14 kph
24/10/2016 12:15	ON	N22.18453 E113.87811	137 m	0:00:35	14 kph
24/10/2016 12:16	ON	N22.18559 E113.87807	118 m	0:00:30	14 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
24/10/2016 12:16	ON	N22.18650 E113.87803	102 m	0:00:26	14 kph
24/10/2016 12:17	ON	N22.18780 E113.87805	144 m	0:00:37	14 kph
24/10/2016 12:17	ON	N22.18892 E113.87809	125 m	0:00:32	14 kph
24/10/2016 12:18	ON	N22.19001 E113.87813	122 m	0:00:31	14 kph
24/10/2016 12:18	ON	N22.19109 E113.87814	120 m	0:00:31	14 kph
24/10/2016 12:19	ON	N22.19215 E113.87812	118 m	0:00:30	14 kph
24/10/2016 12:19	ON	N22.19322 E113.87808	120 m	0:00:31	14 kph
24/10/2016 12:20	ON	N22.19429 E113.87802	119 m	0:00:31	14 kph
24/10/2016 12:20	ON	N22.19540 E113.87798	123 m	0:00:32	14 kph
24/10/2016 12:21	ON	N22.19650 E113.87797	122 m	0:00:32	14 kph
24/10/2016 12:21	ON	N22.19752 E113.87803	113 m	0:00:30	14 kph
24/10/2016 12:22	ON	N22.19855 E113.87803	115 m	0:00:30	14 kph
24/10/2016 12:22	ON	N22.19949 E113.87797	104 m	0:00:27	14 kph
24/10/2016 12:23	ON	N22.20031 E113.87796	92 m	0:00:24	14 kph
24/10/2016 12:23	ON	N22.20123 E113.87804	103 m	0:00:27	14 kph
24/10/2016 12:24	ON	N22.20222 E113.87814	110 m	0:00:29	14 kph
24/10/2016 12:24	ON	N22.20319 E113.87823	108 m	0:00:29	13 kph
24/10/2016 12:25	ON	N22.20399 E113.87828	89 m	0:00:24	13 kph
24/10/2016 12:25	ON	N22.20491 E113.87841	104 m	0:00:28	13 kph
24/10/2016 12:25	ON	N22.20587 E113.87834	107 m	0:00:28	14 kph
24/10/2016 12:26	ON	N22.20678 E113.87827	101 m	0:00:27	14 kph
24/10/2016 12:26	ON	N22.20743 E113.87849	76 m	0:00:23	12 kph
24/10/2016 12:27	ON	N22.20784 E113.87928	94 m	0:00:28	12 kph
24/10/2016 12:27	ON	N22.20813 E113.87998	79 m	0:00:23	12 kph
24/10/2016 12:28	ON	N22.20855 E113.88062	81 m	0:00:23	13 kph
24/10/2016 12:28	ON	N22.20871 E113.88107	49 m	0:00:15	12 kph
24/10/2016 12:28	ON	N22.20893 E113.88161	61 m	0:00:19	12 kph
24/10/2016 12:28	ON	N22.20937 E113.88210	70 m	0:00:20	13 kph
24/10/2016 12:29	ON	N22.20972 E113.88262	66 m	0:00:19	13 kph
24/10/2016 12:29	ON	N22.21012 E113.88316	71 m	0:00:20	13 kph
24/10/2016 12:29	ON	N22.21054 E113.88374	76 m	0:00:21	13 kph
24/10/2016 12:30	ON	N22.21095 E113.88449	90 m	0:00:25	13 kph
24/10/2016 12:30	ON	N22.21129 E113.88537	98 m	0:00:27	13 kph
24/10/2016 12:31	ON	N22.21172 E113.88627	104 m	0:00:29	13 kph
24/10/2016 12:31	ON	N22.21218 E113.88695	87 m	0:00:24	13 kph
24/10/2016 12:32	ON	N22.21264 E113.88755	80 m	0:00:22	13 kph
24/10/2016 12:32	ON	N22.21288 E113.88813	65 m	0:00:21	11 kph
24/10/2016 12:32	ON	N22.21232 E113.88844	70 m	0:00:23	11 kph
24/10/2016 12:33	ON	N22.21152 E113.88855	90 m	0:00:25	13 kph
24/10/2016 12:33	ON	N22.21068 E113.88849	93 m	0:00:25	13 kph
24/10/2016 12:33	ON	N22.20995 E113.88849	81 m	0:00:22	13 kph
24/10/2016 12:34	ON	N22.20915 E113.88845	90 m	0:00:24	13 kph
24/10/2016 12:34	ON	N22.20855 E113.88842	67 m	0:00:18	13 kph
24/10/2016 12:35	ON	N22.20785 E113.88839	78 m	0:00:21	13 kph
24/10/2016 12:35	ON	N22.20712 E113.88840	81 m	0:00:22	13 kph
24/10/2016 12:35	ON	N22.20613 E113.88849	110 m	0:00:30	13 kph
24/10/2016 12:36	ON	N22.20535 E113.88848	87 m	0:00:23	14 kph
24/10/2016 12:36	ON	N22.20454 E113.88850	91 m	0:00:24	14 kph
24/10/2016 12:37	ON	N22.20369 E113.88854	94 m	0:00:25	14 kph
24/10/2016 12:37	ON	N22.20306 E113.88855	71 m	0:00:19	13 kph
24/10/2016 12:37	ON	N22.20227 E113.88853	87 m	0:00:23	14 kph
24/10/2016 12:38	ON	N22.20168 E113.88852	66 m	0:00:18	13 kph
24/10/2016 12:38	ON	N22.20094 E113.88853	82 m	0:00:22	13 kph
24/10/2016 12:38	ON	N22.20010 E113.88857	94 m	0:00:25	14 kph
24/10/2016 12:39	ON	N22.19935 E113.88850	83 m	0:00:22	14 kph
24/10/2016 12:39	ON	N22.19854 E113.88840	91 m	0:00:24	14 kph
24/10/2016 12:40	ON	N22.19773 E113.88847	91 m	0:00:24	14 kph
24/10/2016 12:40	ON	N22.19695 E113.88843	87 m	0:00:23	14 kph
24/10/2016 12:40	ON	N22.19610 E113.88837	94 m	0:00:25	14 kph
24/10/2016 12:41	ON	N22.19521 E113.88838	100 m	0:00:27	13 kph
24/10/2016 12:41	ON	N22.19431 E113.88841	100 m	0:00:27	13 kph
24/10/2016 12:42	ON	N22.19340 E113.88848	102 m	0:00:28	13 kph
24/10/2016 12:42	ON	N22.19256 E113.88831	95 m	0:00:26	13 kph
24/10/2016 12:43	ON	N22.19163 E113.88819	104 m	0:00:28	13 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
24/10/2016 12:43	ON	N22.19079 E113.88804	95 m	0:00:26	13 kph
24/10/2016 12:44	ON	N22.18979 E113.88779	114 m	0:00:30	14 kph
24/10/2016 12:44	ON	N22.18903 E113.88742	93 m	0:00:24	14 kph
24/10/2016 12:44	ON	N22.18804 E113.88724	112 m	0:00:30	13 kph
24/10/2016 12:45	ON	N22.18703 E113.88712	112 m	0:00:30	13 kph
24/10/2016 12:46	ON	N22.18579 E113.88702	139 m	0:00:37	14 kph
24/10/2016 12:46	ON	N22.18471 E113.88699	120 m	0:00:32	14 kph
24/10/2016 12:47	ON	N22.18355 E113.88689	129 m	0:00:34	14 kph
24/10/2016 12:47	ON	N22.18259 E113.88682	108 m	0:00:29	13 kph
24/10/2016 12:48	ON	N22.18160 E113.88680	110 m	0:00:30	13 kph
24/10/2016 12:48	ON	N22.18071 E113.88680	99 m	0:00:27	13 kph
24/10/2016 12:49	ON	N22.17975 E113.88683	107 m	0:00:29	13 kph
24/10/2016 12:49	ON	N22.17884 E113.88696	102 m	0:00:28	13 kph
24/10/2016 12:50	ON	N22.17789 E113.88704	107 m	0:00:29	13 kph
24/10/2016 12:50	ON	N22.17695 E113.88711	104 m	0:00:28	13 kph
24/10/2016 12:50	ON	N22.17613 E113.88723	92 m	0:00:25	13 kph
24/10/2016 12:51	ON	N22.17517 E113.88728	108 m	0:00:29	13 kph
24/10/2016 12:51	ON	N22.17426 E113.88734	101 m	0:00:27	13 kph
24/10/2016 12:52	ON	N22.17348 E113.88745	88 m	0:00:24	13 kph
24/10/2016 12:52	ON	N22.17252 E113.88754	107 m	0:00:29	13 kph
24/10/2016 12:53	ON	N22.17169 E113.88757	92 m	0:00:25	13 kph
24/10/2016 12:53	ON	N22.17091 E113.88762	87 m	0:00:24	13 kph
24/10/2016 12:53	ON	N22.17009 E113.88764	91 m	0:00:25	13 kph
24/10/2016 12:54	ON	N22.16928 E113.88774	91 m	0:00:25	13 kph
24/10/2016 12:54	ON	N22.16872 E113.88779	62 m	0:00:17	13 kph
24/10/2016 12:55	ON	N22.16800 E113.88785	80 m	0:00:22	13 kph
24/10/2016 12:55	ON	N22.16717 E113.88793	93 m	0:00:25	13 kph
24/10/2016 12:55	ON	N22.16619 E113.88791	109 m	0:00:29	14 kph
24/10/2016 12:56	ON	N22.16534 E113.88786	95 m	0:00:25	14 kph
24/10/2016 12:56	ON	N22.16443 E113.88791	102 m	0:00:27	14 kph
24/10/2016 12:57	ON	N22.16350 E113.88794	103 m	0:00:27	14 kph
24/10/2016 12:57	ON	N22.16234 E113.88801	129 m	0:00:34	14 kph
24/10/2016 12:58	ON	N22.16151 E113.88805	93 m	0:00:24	14 kph
24/10/2016 12:58	ON	N22.16051 E113.88804	111 m	0:00:29	14 kph
24/10/2016 12:59	ON	N22.15963 E113.88809	99 m	0:00:26	14 kph
24/10/2016 12:59	ON	N22.15884 E113.88809	87 m	0:00:23	14 kph
24/10/2016 12:59	ON	N22.15806 E113.88816	87 m	0:00:23	14 kph
24/10/2016 13:00	ON	N22.15710 E113.88819	107 m	0:00:28	14 kph
24/10/2016 13:00	ON	N22.15638 E113.88817	80 m	0:00:21	14 kph
24/10/2016 13:01	ON	N22.15563 E113.88817	84 m	0:00:22	14 kph
24/10/2016 13:01	ON	N22.15490 E113.88820	81 m	0:00:21	14 kph
24/10/2016 13:01	ON	N22.15417 E113.88828	83 m	0:00:21	14 kph
24/10/2016 13:02	ON	N22.15348 E113.88832	77 m	0:00:20	14 kph
24/10/2016 13:02	ON	N22.15277 E113.88833	79 m	0:00:20	14 kph
24/10/2016 13:02	ON	N22.15189 E113.88838	98 m	0:00:25	14 kph
24/10/2016 13:03	ON	N22.15122 E113.88838	74 m	0:00:19	14 kph
24/10/2016 13:03	ON	N22.15053 E113.88829	77 m	0:00:20	14 kph
24/10/2016 13:03	ON	N22.14980 E113.88831	81 m	0:00:22	13 kph
24/10/2016 13:04	ON	N22.14913 E113.88830	75 m	0:00:20	13 kph
24/10/2016 13:04	ON	N22.14853 E113.88827	67 m	0:00:18	13 kph
24/10/2016 13:04	ON	N22.14789 E113.88827	71 m	0:00:19	13 kph
24/10/2016 13:05	ON	N22.14718 E113.88823	79 m	0:00:21	14 kph
24/10/2016 13:05	ON	N22.14623 E113.88815	106 m	0:00:28	14 kph
24/10/2016 13:05	ON	N22.14554 E113.88810	78 m	0:00:21	13 kph
24/10/2016 13:06	ON	N22.14480 E113.88804	83 m	0:00:22	14 kph
24/10/2016 13:06	ON	N22.14403 E113.88801	85 m	0:00:23	13 kph
24/10/2016 13:07	ON	N22.14347 E113.88835	71 m	0:00:20	13 kph
24/10/2016 13:07	ON	N22.14320 E113.88908	81 m	0:00:22	13 kph
24/10/2016 13:07	ON	N22.14267 E113.88956	78 m	0:00:22	13 kph
24/10/2016 13:08	ON	N22.14209 E113.89012	86 m	0:00:23	14 kph
24/10/2016 13:08	ON	N22.14146 E113.89101	115 m	0:00:30	14 kph
24/10/2016 13:09	ON	N22.14098 E113.89171	90 m	0:00:23	14 kph
24/10/2016 13:09	ON	N22.14053 E113.89254	99 m	0:00:25	14 kph
24/10/2016 13:09	ON	N22.14008 E113.89326	89 m	0:00:23	14 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
24/10/2016 13:10	ON	N22.13965 E113.89390	82 m	0:00:21	14 kph
24/10/2016 13:10	ON	N22.13913 E113.89472	103 m	0:00:26	14 kph
24/10/2016 13:11	ON	N22.13860 E113.89553	102 m	0:00:26	14 kph
24/10/2016 13:11	ON	N22.13811 E113.89628	95 m	0:00:24	14 kph
24/10/2016 13:11	ON	N22.13779 E113.89709	91 m	0:00:24	14 kph
24/10/2016 13:12	ON	N22.13819 E113.89757	67 m	0:00:20	12 kph
24/10/2016 13:12	ON	N22.13883 E113.89770	73 m	0:00:20	13 kph
24/10/2016 13:12	ON	N22.13965 E113.89748	94 m	0:00:26	13 kph
24/10/2016 13:13	ON	N22.14050 E113.89742	95 m	0:00:25	14 kph
24/10/2016 13:13	ON	N22.14152 E113.89733	113 m	0:00:30	14 kph
24/10/2016 13:14	ON	N22.14244 E113.89726	103 m	0:00:27	14 kph
24/10/2016 13:14	ON	N22.14323 E113.89722	88 m	0:00:23	14 kph
24/10/2016 13:15	ON	N22.14385 E113.89721	69 m	0:00:18	14 kph
24/10/2016 13:15	ON	N22.14485 E113.89718	112 m	0:00:29	14 kph
24/10/2016 13:15	ON	N22.14558 E113.89721	82 m	0:00:21	14 kph
24/10/2016 13:16	ON	N22.14635 E113.89724	86 m	0:00:22	14 kph
24/10/2016 13:16	ON	N22.14712 E113.89720	85 m	0:00:22	14 kph
24/10/2016 13:16	ON	N22.14786 E113.89718	82 m	0:00:21	14 kph
24/10/2016 13:17	ON	N22.14868 E113.89718	91 m	0:00:23	14 kph
24/10/2016 13:17	ON	N22.14947 E113.89720	88 m	0:00:22	14 kph
24/10/2016 13:18	ON	N22.15031 E113.89719	93 m	0:00:23	15 kph
24/10/2016 13:18	ON	N22.15100 E113.89720	78 m	0:00:19	15 kph
24/10/2016 13:18	ON	N22.15175 E113.89720	83 m	0:00:20	15 kph
24/10/2016 13:19	ON	N22.15248 E113.89721	82 m	0:00:20	15 kph
24/10/2016 13:19	ON	N22.15335 E113.89720	96 m	0:00:23	15 kph
24/10/2016 13:19	ON	N22.15407 E113.89721	80 m	0:00:19	15 kph
24/10/2016 13:20	ON	N22.15484 E113.89721	86 m	0:00:20	15 kph
24/10/2016 13:20	ON	N22.15563 E113.89716	89 m	0:00:21	15 kph
24/10/2016 13:20	ON	N22.15640 E113.89714	85 m	0:00:20	15 kph
24/10/2016 13:21	ON	N22.15744 E113.89710	116 m	0:00:27	16 kph
24/10/2016 13:21	ON	N22.15844 E113.89708	111 m	0:00:26	15 kph
24/10/2016 13:22	ON	N22.15937 E113.89704	104 m	0:00:25	15 kph
24/10/2016 13:22	ON	N22.16021 E113.89700	93 m	0:00:23	15 kph
24/10/2016 13:22	ON	N22.16131 E113.89690	123 m	0:00:30	15 kph
24/10/2016 13:23	ON	N22.16213 E113.89684	91 m	0:00:23	14 kph
24/10/2016 13:23	ON	N22.16294 E113.89685	90 m	0:00:24	14 kph
24/10/2016 13:24	ON	N22.16354 E113.89680	68 m	0:00:18	14 kph
24/10/2016 13:24	ON	N22.16447 E113.89672	103 m	0:00:27	14 kph
24/10/2016 13:24	ON	N22.16526 E113.89671	88 m	0:00:23	14 kph
24/10/2016 13:25	ON	N22.16627 E113.89672	113 m	0:00:29	14 kph
24/10/2016 13:25	ON	N22.16730 E113.89667	114 m	0:00:29	14 kph
24/10/2016 13:26	ON	N22.16839 E113.89660	122 m	0:00:31	14 kph
24/10/2016 13:26	ON	N22.16932 E113.89655	103 m	0:00:26	14 kph
24/10/2016 13:27	ON	N22.17027 E113.89663	106 m	0:00:27	14 kph
24/10/2016 13:27	ON	N22.17123 E113.89662	107 m	0:00:27	14 kph
24/10/2016 13:28	ON	N22.17226 E113.89668	114 m	0:00:29	14 kph
24/10/2016 13:28	ON	N22.17317 E113.89671	102 m	0:00:26	14 kph
24/10/2016 13:29	ON	N22.17425 E113.89683	120 m	0:00:32	14 kph
24/10/2016 13:29	ON	N22.17546 E113.89692	136 m	0:00:35	14 kph
24/10/2016 13:30	ON	N22.17646 E113.89694	111 m	0:00:29	14 kph
24/10/2016 13:30	ON	N22.17753 E113.89701	119 m	0:00:31	14 kph
24/10/2016 13:31	ON	N22.17869 E113.89708	130 m	0:00:33	14 kph
24/10/2016 13:31	ON	N22.17971 E113.89711	113 m	0:00:29	14 kph
24/10/2016 13:32	ON	N22.18100 E113.89710	144 m	0:00:36	14 kph
24/10/2016 13:32	ON	N22.18208 E113.89709	120 m	0:00:30	14 kph
24/10/2016 13:33	ON	N22.18358 E113.89703	167 m	0:00:42	14 kph
24/10/2016 13:34	ON	N22.18493 E113.89696	151 m	0:00:38	14 kph
24/10/2016 13:34	ON	N22.18614 E113.89691	134 m	0:00:34	14 kph
24/10/2016 13:35	ON	N22.18724 E113.89694	122 m	0:00:31	14 kph
24/10/2016 13:35	ON	N22.18800 E113.89698	85 m	0:00:22	14 kph
24/10/2016 13:35	ON	N22.18866 E113.89699	73 m	0:00:19	14 kph
24/10/2016 13:36	ON	N22.18969 E113.89695	115 m	0:00:30	14 kph
24/10/2016 13:36	ON	N22.19059 E113.89699	100 m	0:00:27	13 kph
24/10/2016 13:37	ON	N22.19162 E113.89696	115 m	0:00:30	14 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
24/10/2016 13:37	ON	N22.19248 E113.89693	95 m	0:00:25	14 kph
24/10/2016 13:38	ON	N22.19355 E113.89691	120 m	0:00:31	14 kph
24/10/2016 13:38	ON	N22.19440 E113.89692	94 m	0:00:24	14 kph
24/10/2016 13:39	ON	N22.19557 E113.89693	130 m	0:00:33	14 kph
24/10/2016 13:39	ON	N22.19648 E113.89692	102 m	0:00:26	14 kph
24/10/2016 13:40	ON	N22.19737 E113.89688	99 m	0:00:25	14 kph
24/10/2016 13:40	ON	N22.19815 E113.89686	86 m	0:00:22	14 kph
24/10/2016 13:40	ON	N22.19914 E113.89689	111 m	0:00:28	14 kph
24/10/2016 13:41	ON	N22.20016 E113.89688	113 m	0:00:29	14 kph
24/10/2016 13:42	ON	N22.20133 E113.89694	130 m	0:00:33	14 kph
24/10/2016 13:42	ON	N22.20220 E113.89695	97 m	0:00:25	14 kph
24/10/2016 13:42	ON	N22.20319 E113.89699	110 m	0:00:28	14 kph
24/10/2016 13:43	ON	N22.20392 E113.89704	82 m	0:00:21	14 kph
24/10/2016 13:43	ON	N22.20487 E113.89710	106 m	0:00:27	14 kph
24/10/2016 13:44	ON	N22.20577 E113.89726	101 m	0:00:26	14 kph
24/10/2016 13:44	ON	N22.20671 E113.89754	108 m	0:00:28	14 kph
24/10/2016 13:45	ON	N22.20759 E113.89754	99 m	0:00:25	14 kph
24/10/2016 13:45	ON	N22.20846 E113.89753	96 m	0:00:24	14 kph
24/10/2016 13:45	ON	N22.20935 E113.89752	100 m	0:00:25	14 kph
24/10/2016 13:46	ON	N22.21036 E113.89754	112 m	0:00:28	14 kph
24/10/2016 13:46	ON	N22.21130 E113.89766	106 m	0:00:27	14 kph
24/10/2016 13:47	ON	N22.21218 E113.89797	102 m	0:00:29	13 kph
24/10/2016 13:47	ON	N22.21222 E113.89866	72 m	0:00:23	11 kph
24/10/2016 13:47	ON	N22.21195 E113.89929	71 m	0:00:21	12 kph
24/10/2016 13:48	ON	N22.21161 E113.89981	66 m	0:00:19	12 kph
24/10/2016 13:48	ON	N22.21117 E113.90032	72 m	0:00:21	12 kph
24/10/2016 13:49	ON	N22.21073 E113.90089	77 m	0:00:23	12 kph
24/10/2016 13:49	ON	N22.21027 E113.90150	81 m	0:00:24	12 kph
24/10/2016 13:49	ON	N22.20983 E113.90211	80 m	0:00:24	12 kph
24/10/2016 13:50	ON	N22.20946 E113.90271	74 m	0:00:22	12 kph
24/10/2016 13:50	ON	N22.20910 E113.90333	76 m	0:00:23	12 kph
24/10/2016 13:50	ON	N22.20871 E113.90398	80 m	0:00:24	12 kph
24/10/2016 13:51	ON	N22.20825 E113.90471	91 m	0:00:27	12 kph
24/10/2016 13:51	ON	N22.20792 E113.90521	63 m	0:00:19	12 kph
24/10/2016 13:52	ON	N22.20751 E113.90577	74 m	0:00:22	12 kph
24/10/2016 13:52	ON	N22.20682 E113.90660	115 m	0:00:34	12 kph
24/10/2016 13:53	ON	N22.20632 E113.90717	81 m	0:00:24	12 kph
24/10/2016 13:53	ON	N22.20565 E113.90748	81 m	0:00:26	11 kph
24/10/2016 13:53	ON	N22.20487 E113.90737	87 m	0:00:24	13 kph
24/10/2016 13:54	ON	N22.20399 E113.90724	99 m	0:00:27	13 kph
24/10/2016 13:54	ON	N22.20318 E113.90727	90 m	0:00:25	13 kph
24/10/2016 13:55	ON	N22.20236 E113.90725	91 m	0:00:25	13 kph
24/10/2016 13:55	ON	N22.20142 E113.90733	105 m	0:00:29	13 kph
24/10/2016 13:56	ON	N22.20068 E113.90741	83 m	0:00:23	13 kph
24/10/2016 13:56	ON	N22.19989 E113.90731	88 m	0:00:24	13 kph
24/10/2016 13:56	ON	N22.19914 E113.90716	85 m	0:00:23	13 kph
24/10/2016 13:57	ON	N22.19830 E113.90709	95 m	0:00:26	13 kph
24/10/2016 13:57	ON	N22.19755 E113.90709	83 m	0:00:23	13 kph
24/10/2016 13:58	ON	N22.19668 E113.90702	97 m	0:00:26	13 kph
24/10/2016 13:58	ON	N22.19578 E113.90691	101 m	0:00:27	14 kph
24/10/2016 13:58	ON	N22.19491 E113.90681	98 m	0:00:26	14 kph
24/10/2016 13:59	ON	N22.19419 E113.90670	81 m	0:00:21	14 kph
24/10/2016 13:59	ON	N22.19352 E113.90654	76 m	0:00:20	14 kph
24/10/2016 14:00	ON	N22.19265 E113.90609	108 m	0:00:28	14 kph
24/10/2016 14:00	ON	N22.19183 E113.90571	98 m	0:00:25	14 kph
24/10/2016 14:00	ON	N22.19095 E113.90534	105 m	0:00:27	14 kph
24/10/2016 14:01	ON	N22.19003 E113.90492	111 m	0:00:28	14 kph
24/10/2016 14:01	ON	N22.18918 E113.90446	106 m	0:00:27	14 kph
24/10/2016 14:02	ON	N22.18824 E113.90407	112 m	0:00:28	14 kph
24/10/2016 14:02	ON	N22.18738 E113.90390	97 m	0:00:26	13 kph
24/10/2016 14:03	ON	N22.18636 E113.90359	118 m	0:00:32	13 kph
24/10/2016 14:03	ON	N22.18524 E113.90334	127 m	0:00:34	13 kph
24/10/2016 14:04	ON	N22.18439 E113.90307	98 m	0:00:27	13 kph
24/10/2016 14:04	ON	N22.18324 E113.90286	130 m	0:00:35	13 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
24/10/2016 14:05	ON	N22.18228 E113.90279	107 m	0:00:29	13 kph
24/10/2016 14:05	ON	N22.18138 E113.90287	101 m	0:00:28	13 kph
24/10/2016 14:06	ON	N22.18055 E113.90301	93 m	0:00:26	13 kph
24/10/2016 14:06	ON	N22.17949 E113.90326	121 m	0:00:35	12 kph
24/10/2016 14:07	ON	N22.17872 E113.90365	94 m	0:00:28	12 kph
24/10/2016 14:07	ON	N22.17808 E113.90417	89 m	0:00:27	12 kph
24/10/2016 14:08	ON	N22.17724 E113.90499	126 m	0:00:38	12 kph
24/10/2016 14:09	ON	N22.17653 E113.90585	119 m	0:00:36	12 kph
24/10/2016 14:09	ON	N22.17576 E113.90679	130 m	0:00:38	12 kph
24/10/2016 14:10	ON	N22.17498 E113.90773	130 m	0:00:38	12 kph
24/10/2016 14:10	ON	N22.17407 E113.90849	128 m	0:00:37	12 kph
24/10/2016 14:11	ON	N22.17318 E113.90838	100 m	0:00:28	13 kph
24/10/2016 14:11	ON	N22.17230 E113.90787	111 m	0:00:28	14 kph
24/10/2016 14:12	ON	N22.17122 E113.90716	140 m	0:00:34	15 kph
24/10/2016 14:13	ON	N22.17006 E113.90638	152 m	0:00:37	15 kph
24/10/2016 14:13	ON	N22.16905 E113.90561	138 m	0:00:33	15 kph
24/10/2016 14:14	ON	N22.16802 E113.90482	140 m	0:00:34	15 kph
24/10/2016 14:14	ON	N22.16720 E113.90404	122 m	0:00:30	15 kph
24/10/2016 14:15	ON	N22.16647 E113.90317	121 m	0:00:30	14 kph
24/10/2016 14:15	ON	N22.16585 E113.90238	107 m	0:00:27	14 kph
24/10/2016 14:16	ON	N22.16517 E113.90143	124 m	0:00:31	14 kph
24/10/2016 14:16	ON	N22.16452 E113.90046	123 m	0:00:31	14 kph
24/10/2016 14:17	ON	N22.16384 E113.89961	116 m	0:00:29	14 kph
24/10/2016 14:17	ON	N22.16310 E113.89881	117 m	0:00:29	14 kph
24/10/2016 14:18	ON	N22.16219 E113.89823	117 m	0:00:31	14 kph
24/10/2016 14:18	ON	N22.16144 E113.89806	86 m	0:00:25	12 kph
24/10/2016 14:19	ON	N22.16055 E113.89806	99 m	0:00:28	13 kph
24/10/2016 14:19	ON	N22.15955 E113.89825	113 m	0:00:32	13 kph
24/10/2016 14:19	ON	N22.15893 E113.89854	76 m	0:00:22	12 kph
24/10/2016 14:20	ON	N22.15814 E113.89885	94 m	0:00:27	12 kph
24/10/2016 14:20	ON	N22.15755 E113.89921	75 m	0:00:22	12 kph
24/10/2016 14:21	ON	N22.15696 E113.89972	84 m	0:00:24	13 kph
24/10/2016 14:21	ON	N22.15641 E113.90038	91 m	0:00:26	13 kph
24/10/2016 14:22	ON	N22.15600 E113.90116	93 m	0:00:27	12 kph
24/10/2016 14:22	ON	N22.15565 E113.90190	86 m	0:00:25	12 kph
24/10/2016 14:22	ON	N22.15532 E113.90269	90 m	0:00:26	12 kph
24/10/2016 14:23	ON	N22.15518 E113.90367	102 m	0:00:29	13 kph
24/10/2016 14:23	ON	N22.15521 E113.90450	86 m	0:00:24	13 kph
24/10/2016 14:24	ON	N22.15553 E113.90516	77 m	0:00:21	13 kph
24/10/2016 14:24	ON	N22.15632 E113.90605	127 m	0:00:33	14 kph
24/10/2016 14:25	ON	N22.15692 E113.90671	96 m	0:00:25	14 kph
24/10/2016 14:25	ON	N22.15685 E113.90733	64 m	0:00:20	12 kph
24/10/2016 14:25	ON	N22.15614 E113.90753	81 m	0:00:23	13 kph
24/10/2016 14:26	ON	N22.15538 E113.90758	85 m	0:00:22	14 kph
24/10/2016 14:26	ON	N22.15459 E113.90758	88 m	0:00:23	14 kph
24/10/2016 14:26	ON	N22.15364 E113.90756	105 m	0:00:27	14 kph
24/10/2016 14:27	ON	N22.15256 E113.90762	121 m	0:00:31	14 kph
24/10/2016 14:27	ON	N22.15154 E113.90751	114 m	0:00:29	14 kph
24/10/2016 14:28	ON	N22.15064 E113.90736	101 m	0:00:26	14 kph
24/10/2016 14:28	ON	N22.14962 E113.90728	113 m	0:00:29	14 kph
24/10/2016 14:29	ON	N22.14871 E113.90734	102 m	0:00:26	14 kph
24/10/2016 14:29	ON	N22.14790 E113.90723	90 m	0:00:23	14 kph
24/10/2016 14:30	ON	N22.14704 E113.90712	97 m	0:00:25	14 kph
24/10/2016 14:30	ON	N22.14618 E113.90693	97 m	0:00:25	14 kph
24/10/2016 14:30	ON	N22.14531 E113.90683	97 m	0:00:25	14 kph
24/10/2016 14:31	ON	N22.14439 E113.90686	103 m	0:00:26	14 kph
24/10/2016 14:31	ON	N22.14371 E113.90683	76 m	0:00:20	14 kph
24/10/2016 14:32	ON	N22.14300 E113.90674	80 m	0:00:21	14 kph
24/10/2016 14:32	ON	N22.14227 E113.90668	82 m	0:00:22	13 kph
24/10/2016 14:32	ON	N22.14194 E113.90705	52 m	0:00:18	10 kph
24/10/2016 14:33	ON	N22.14208 E113.90782	81 m	0:00:22	13 kph
24/10/2016 14:33	ON	N22.14197 E113.90868	90 m	0:00:23	14 kph
24/10/2016 14:33	ON	N22.14186 E113.90955	91 m	0:00:23	14 kph
24/10/2016 14:34	ON	N22.14179 E113.91027	74 m	0:00:19	14 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
24/10/2016 14:34	ON	N22.14179 E113.91112	88 m	0:00:22	14 kph
24/10/2016 14:34	ON	N22.14167 E113.91201	93 m	0:00:24	14 kph
24/10/2016 14:35	ON	N22.14152 E113.91274	77 m	0:00:20	14 kph
24/10/2016 14:35	ON	N22.14145 E113.91366	94 m	0:00:24	14 kph
24/10/2016 14:36	ON	N22.14145 E113.91456	93 m	0:00:24	14 kph
24/10/2016 14:36	ON	N22.14127 E113.91547	96 m	0:00:25	14 kph
24/10/2016 14:36	ON	N22.14129 E113.91633	89 m	0:00:23	14 kph
24/10/2016 14:37	ON	N22.14125 E113.91719	89 m	0:00:24	13 kph
24/10/2016 14:37	ON	N22.14124 E113.91807	91 m	0:00:24	14 kph
24/10/2016 14:38	ON	N22.14183 E113.91850	79 m	0:00:22	13 kph
24/10/2016 14:38	ON	N22.14268 E113.91852	94 m	0:00:24	14 kph
24/10/2016 14:38	ON	N22.14363 E113.91855	106 m	0:00:27	14 kph
24/10/2016 14:39	ON	N22.14457 E113.91854	105 m	0:00:26	14 kph
24/10/2016 14:39	ON	N22.14558 E113.91857	112 m	0:00:28	14 kph
24/10/2016 14:40	ON	N22.14647 E113.91853	100 m	0:00:25	14 kph
24/10/2016 14:40	ON	N22.14748 E113.91851	112 m	0:00:28	14 kph
24/10/2016 14:41	ON	N22.14859 E113.91849	124 m	0:00:31	14 kph
24/10/2016 14:41	ON	N22.14954 E113.91852	106 m	0:00:27	14 kph
24/10/2016 14:42	ON	N22.15048 E113.91848	105 m	0:00:26	15 kph
24/10/2016 14:42	ON	N22.15144 E113.91838	107 m	0:00:27	14 kph
24/10/2016 14:42	ON	N22.15234 E113.91850	100 m	0:00:25	14 kph
24/10/2016 14:43	ON	N22.15333 E113.91858	110 m	0:00:28	14 kph
24/10/2016 14:43	ON	N22.15437 E113.91863	116 m	0:00:29	14 kph
24/10/2016 14:44	ON	N22.15541 E113.91857	117 m	0:00:29	14 kph
24/10/2016 14:44	ON	N22.15660 E113.91855	132 m	0:00:33	14 kph
24/10/2016 14:45	ON	N22.15759 E113.91855	111 m	0:00:28	14 kph
24/10/2016 14:45	ON	N22.15850 E113.91855	102 m	0:00:26	14 kph
24/10/2016 14:46	ON	N22.15950 E113.91848	111 m	0:00:28	14 kph
24/10/2016 14:46	ON	N22.16051 E113.91855	113 m	0:00:29	14 kph
24/10/2016 14:47	ON	N22.16156 E113.91875	120 m	0:00:30	14 kph
24/10/2016 14:47	ON	N22.16249 E113.91884	104 m	0:00:26	14 kph
24/10/2016 14:48	ON	N22.16359 E113.91894	123 m	0:00:30	15 kph
24/10/2016 14:48	ON	N22.16455 E113.91901	107 m	0:00:26	15 kph
24/10/2016 14:49	ON	N22.16567 E113.91892	124 m	0:00:30	15 kph
24/10/2016 14:49	ON	N22.16667 E113.91897	112 m	0:00:27	15 kph
24/10/2016 14:50	ON	N22.16769 E113.91893	113 m	0:00:27	15 kph
24/10/2016 14:50	ON	N22.16879 E113.91890	122 m	0:00:29	15 kph
24/10/2016 14:51	ON	N22.16989 E113.91888	122 m	0:00:29	15 kph
24/10/2016 14:51	ON	N22.17090 E113.91904	114 m	0:00:27	15 kph
24/10/2016 14:51	ON	N22.17182 E113.91924	105 m	0:00:25	15 kph
24/10/2016 14:52	ON	N22.17285 E113.91937	115 m	0:00:27	15 kph
24/10/2016 14:52	ON	N22.17389 E113.91949	117 m	0:00:27	16 kph
24/10/2016 14:53	ON	N22.17494 E113.91964	117 m	0:00:28	15 kph
24/10/2016 14:53	ON	N22.17588 E113.91985	107 m	0:00:26	15 kph
24/10/2016 14:54	ON	N22.17680 E113.92019	109 m	0:00:27	15 kph
24/10/2016 14:54	ON	N22.17778 E113.92059	117 m	0:00:29	14 kph
24/10/2016 14:55	ON	N22.17882 E113.92107	126 m	0:00:31	15 kph
24/10/2016 14:55	ON	N22.17984 E113.92146	120 m	0:00:30	14 kph
24/10/2016 14:56	ON	N22.18081 E113.92115	113 m	0:00:28	15 kph
24/10/2016 14:56	ON	N22.18174 E113.92070	114 m	0:00:28	15 kph
24/10/2016 14:57	ON	N22.18260 E113.92005	116 m	0:00:28	15 kph
24/10/2016 14:57	ON	N22.18329 E113.91939	103 m	0:00:25	15 kph
24/10/2016 14:57	ON	N22.18386 E113.91870	96 m	0:00:23	15 kph
24/10/2016 14:58	ON	N22.18459 E113.91807	104 m	0:00:25	15 kph
24/10/2016 14:58	ON	N22.18555 E113.91753	120 m	0:00:29	15 kph
24/10/2016 14:59	ON	N22.18639 E113.91742	94 m	0:00:23	15 kph
24/10/2016 14:59	ON	N22.18730 E113.91742	101 m	0:00:25	15 kph
24/10/2016 14:59	ON	N22.18821 E113.91737	102 m	0:00:25	15 kph
24/10/2016 15:00	ON	N22.18912 E113.91733	102 m	0:00:25	15 kph
24/10/2016 15:00	ON	N22.19010 E113.91730	109 m	0:00:27	15 kph
24/10/2016 15:01	ON	N22.19107 E113.91735	108 m	0:00:27	14 kph
24/10/2016 15:01	ON	N22.19201 E113.91740	105 m	0:00:26	15 kph
24/10/2016 15:02	ON	N22.19306 E113.91743	117 m	0:00:29	15 kph
24/10/2016 15:02	ON	N22.19393 E113.91747	97 m	0:00:24	14 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
24/10/2016 15:03	ON	N22.19501 E113.91752	120 m	0:00:30	14 kph
24/10/2016 15:03	ON	N22.19613 E113.91743	125 m	0:00:31	15 kph
24/10/2016 15:04	ON	N22.19709 E113.91729	108 m	0:00:27	14 kph
24/10/2016 15:04	ON	N22.19798 E113.91724	98 m	0:00:25	14 kph
24/10/2016 15:04	ON	N22.19885 E113.91727	97 m	0:00:25	14 kph
24/10/2016 15:05	ON	N22.19990 E113.91719	117 m	0:00:29	15 kph
24/10/2016 15:05	ON	N22.20092 E113.91719	114 m	0:00:29	14 kph
24/10/2016 15:06	ON	N22.20210 E113.91738	133 m	0:00:34	14 kph
24/10/2016 15:06	ON	N22.20302 E113.91746	103 m	0:00:26	14 kph
24/10/2016 15:07	ON	N22.20424 E113.91749	135 m	0:00:34	14 kph
24/10/2016 15:07	ON	N22.20503 E113.91771	91 m	0:00:25	13 kph
24/10/2016 15:08	ON	N22.20529 E113.91850	86 m	0:00:27	11 kph
24/10/2016 15:08	ON	N22.20533 E113.91938	92 m	0:00:27	12 kph
24/10/2016 15:09	ON	N22.20539 E113.92033	98 m	0:00:29	12 kph
24/10/2016 15:09	ON	N22.20539 E113.92135	105 m	0:00:31	12 kph
24/10/2016 15:10	ON	N22.20534 E113.92241	110 m	0:00:32	12 kph
24/10/2016 15:10	ON	N22.20528 E113.92330	92 m	0:00:26	13 kph
24/10/2016 15:11	ON	N22.20534 E113.92428	101 m	0:00:28	13 kph
24/10/2016 15:11	ON	N22.20553 E113.92518	95 m	0:00:27	13 kph
24/10/2016 15:12	ON	N22.20573 E113.92615	102 m	0:00:29	13 kph
24/10/2016 15:12	ON	N22.20581 E113.92716	105 m	0:00:30	13 kph
24/10/2016 15:13	ON	N22.20549 E113.92775	71 m	0:00:23	11 kph
24/10/2016 15:13	ON	N22.20461 E113.92765	99 m	0:00:25	14 kph
24/10/2016 15:13	ON	N22.20368 E113.92765	103 m	0:00:26	14 kph
24/10/2016 15:14	ON	N22.20278 E113.92759	101 m	0:00:25	15 kph
24/10/2016 15:14	ON	N22.20174 E113.92755	116 m	0:00:29	14 kph
24/10/2016 15:15	ON	N22.20057 E113.92758	130 m	0:00:33	14 kph
24/10/2016 15:15	ON	N22.19945 E113.92765	125 m	0:00:32	14 kph
24/10/2016 15:16	ON	N22.19848 E113.92760	108 m	0:00:27	14 kph
24/10/2016 15:16	ON	N22.19744 E113.92755	116 m	0:00:29	14 kph
24/10/2016 15:17	ON	N22.19641 E113.92756	115 m	0:00:29	14 kph
24/10/2016 15:17	ON	N22.19530 E113.92754	123 m	0:00:31	14 kph
24/10/2016 15:18	ON	N22.19428 E113.92757	114 m	0:00:29	14 kph
24/10/2016 15:18	ON	N22.19334 E113.92748	105 m	0:00:26	14 kph
24/10/2016 15:19	ON	N22.19239 E113.92749	105 m	0:00:27	14 kph
24/10/2016 15:19	ON	N22.19140 E113.92764	112 m	0:00:29	14 kph
24/10/2016 15:20	ON	N22.19032 E113.92763	121 m	0:00:31	14 kph
24/10/2016 15:20	ON	N22.18940 E113.92763	102 m	0:00:26	14 kph
24/10/2016 15:21	ON	N22.18837 E113.92764	114 m	0:00:29	14 kph
24/10/2016 15:21	ON	N22.18727 E113.92763	123 m	0:00:31	14 kph
24/10/2016 15:21	ON	N22.18642 E113.92760	94 m	0:00:24	14 kph
24/10/2016 15:22	ON	N22.18546 E113.92757	107 m	0:00:27	14 kph
24/10/2016 15:22	ON	N22.18457 E113.92757	99 m	0:00:25	14 kph
24/10/2016 15:23	ON	N22.18354 E113.92757	114 m	0:00:29	14 kph
24/10/2016 15:23	ON	N22.18259 E113.92758	106 m	0:00:27	14 kph
24/10/2016 15:24	ON	N22.18167 E113.92758	102 m	0:00:26	14 kph
24/10/2016 15:24	ON	N22.18079 E113.92759	97 m	0:00:25	14 kph
24/10/2016 15:25	ON	N22.17983 E113.92763	107 m	0:00:28	14 kph
24/10/2016 15:25	ON	N22.17895 E113.92768	98 m	0:00:25	14 kph
24/10/2016 15:25	ON	N22.17797 E113.92765	109 m	0:00:28	14 kph
24/10/2016 15:26	ON	N22.17703 E113.92756	106 m	0:00:26	15 kph
24/10/2016 15:26	ON	N22.17603 E113.92763	112 m	0:00:28	14 kph
24/10/2016 15:27	ON	N22.17500 E113.92777	115 m	0:00:29	14 kph
24/10/2016 15:27	ON	N22.17406 E113.92767	105 m	0:00:26	15 kph
24/10/2016 15:28	ON	N22.17300 E113.92755	118 m	0:00:29	15 kph
24/10/2016 15:28	ON	N22.17212 E113.92759	99 m	0:00:25	14 kph
24/10/2016 15:29	ON	N22.17120 E113.92767	102 m	0:00:26	14 kph
24/10/2016 15:29	ON	N22.17038 E113.92768	92 m	0:00:23	14 kph
24/10/2016 15:29	ON	N22.16940 E113.92768	109 m	0:00:27	14 kph
24/10/2016 15:30	ON	N22.16842 E113.92773	110 m	0:00:28	14 kph
24/10/2016 15:30	ON	N22.16739 E113.92770	115 m	0:00:29	14 kph
24/10/2016 15:31	ON	N22.16649 E113.92763	100 m	0:00:25	14 kph
24/10/2016 15:31	ON	N22.16534 E113.92754	129 m	0:00:33	14 kph
24/10/2016 15:32	ON	N22.16450 E113.92751	93 m	0:00:24	14 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
24/10/2016 15:32	ON	N22.16348 E113.92748	114 m	0:00:29	14 kph
24/10/2016 15:33	ON	N22.16249 E113.92742	111 m	0:00:28	14 kph
24/10/2016 15:33	ON	N22.16150 E113.92737	110 m	0:00:28	14 kph
24/10/2016 15:34	ON	N22.16043 E113.92740	119 m	0:00:30	14 kph
24/10/2016 15:34	ON	N22.15949 E113.92747	105 m	0:00:27	14 kph
24/10/2016 15:35	ON	N22.15872 E113.92753	86 m	0:00:22	14 kph
24/10/2016 15:35	ON	N22.15791 E113.92755	90 m	0:00:23	14 kph
24/10/2016 15:35	ON	N22.15688 E113.92747	115 m	0:00:29	14 kph
24/10/2016 15:36	ON	N22.15596 E113.92737	103 m	0:00:26	14 kph
24/10/2016 15:36	ON	N22.15493 E113.92734	115 m	0:00:29	14 kph
24/10/2016 15:37	ON	N22.15403 E113.92731	100 m	0:00:25	14 kph
24/10/2016 15:37	ON	N22.15306 E113.92729	108 m	0:00:27	14 kph
24/10/2016 15:38	ON	N22.15230 E113.92729	84 m	0:00:21	14 kph
24/10/2016 15:38	ON	N22.15143 E113.92729	97 m	0:00:24	15 kph
24/10/2016 15:38	ON	N22.15053 E113.92728	101 m	0:00:25	15 kph
24/10/2016 15:39	ON	N22.14958 E113.92727	105 m	0:00:26	15 kph
24/10/2016 15:39	ON	N22.14885 E113.92732	82 m	0:00:20	15 kph
24/10/2016 15:40	ON	N22.14791 E113.92748	105 m	0:00:26	15 kph
24/10/2016 15:40	ON	N22.14712 E113.92761	90 m	0:00:22	15 kph
24/10/2016 15:40	ON	N22.14625 E113.92773	98 m	0:00:24	15 kph
24/10/2016 15:41	ON	N22.14546 E113.92773	88 m	0:00:22	14 kph
24/10/2016 15:41	ON	N22.14462 E113.92773	93 m	0:00:23	15 kph
24/10/2016 15:42	ON	N22.14350 E113.92766	125 m	0:00:31	15 kph
24/10/2016 15:42	ON	N22.14272 E113.92766	87 m	0:00:22	14 kph
24/10/2016 15:42	ON	N22.14228 E113.92798	59 m	0:00:19	11 kph
24/10/2016 15:43	ON	N22.14261 E113.92852	67 m	0:00:20	12 kph
24/10/2016 15:43	ON	N22.14281 E113.92927	80 m	0:00:22	13 kph
24/10/2016 15:43	ON	N22.14295 E113.92999	76 m	0:00:20	14 kph
24/10/2016 15:44	ON	N22.14311 E113.93075	81 m	0:00:21	14 kph
24/10/2016 15:44	ON	N22.14326 E113.93147	76 m	0:00:20	14 kph
24/10/2016 15:44	ON	N22.14345 E113.93242	100 m	0:00:26	14 kph
24/10/2016 15:45	ON	N22.14356 E113.93311	72 m	0:00:19	14 kph
24/10/2016 15:45	ON	N22.14368 E113.93387	80 m	0:00:21	14 kph
24/10/2016 15:45	ON	N22.14386 E113.93478	95 m	0:00:25	14 kph
24/10/2016 15:46	ON	N22.14401 E113.93549	76 m	0:00:20	14 kph
24/10/2016 15:46	ON	N22.14424 E113.93636	92 m	0:00:24	14 kph
24/10/2016 15:47	ON	N22.14448 E113.93713	84 m	0:00:22	14 kph
24/10/2016 15:47	ON	N22.14475 E113.93768	64 m	0:00:22	11 kph
24/10/2016 15:47	ON	N22.14515 E113.93787	49 m	0:00:21	8 kph
24/10/2016 15:48	ON	N22.14578 E113.93790	70 m	0:00:21	12 kph
24/10/2016 15:48	ON	N22.14627 E113.93779	55 m	0:00:13	15 kph
24/10/2016 15:48	ON	N22.14708 E113.93771	91 m	0:00:21	16 kph
24/10/2016 15:49	ON	N22.14796 E113.93764	98 m	0:00:24	15 kph
24/10/2016 15:49	ON	N22.14899 E113.93764	115 m	0:00:29	14 kph
24/10/2016 15:49	ON	N22.14986 E113.93755	97 m	0:00:24	14 kph
24/10/2016 15:50	ON	N22.15078 E113.93741	104 m	0:00:26	14 kph
24/10/2016 15:50	ON	N22.15156 E113.93736	87 m	0:00:22	14 kph
24/10/2016 15:51	ON	N22.15237 E113.93739	90 m	0:00:23	14 kph
24/10/2016 15:51	ON	N22.15336 E113.93733	111 m	0:00:28	14 kph
24/10/2016 15:52	ON	N22.15428 E113.93722	103 m	0:00:26	14 kph
24/10/2016 15:52	ON	N22.15528 E113.93721	111 m	0:00:28	14 kph
24/10/2016 15:53	ON	N22.15633 E113.93727	118 m	0:00:30	14 kph
24/10/2016 15:53	ON	N22.15726 E113.93735	103 m	0:00:26	14 kph
24/10/2016 15:53	ON	N22.15815 E113.93737	100 m	0:00:25	14 kph
24/10/2016 15:54	ON	N22.15926 E113.93721	124 m	0:00:31	14 kph
24/10/2016 15:54	ON	N22.16043 E113.93721	130 m	0:00:33	14 kph
24/10/2016 15:55	ON	N22.16126 E113.93735	94 m	0:00:24	14 kph
24/10/2016 15:55	ON	N22.16224 E113.93745	109 m	0:00:28	14 kph
24/10/2016 15:56	ON	N22.16332 E113.93737	120 m	0:00:31	14 kph
24/10/2016 15:56	ON	N22.16415 E113.93740	92 m	0:00:24	14 kph
24/10/2016 15:57	ON	N22.16525 E113.93748	123 m	0:00:32	14 kph
24/10/2016 15:57	ON	N22.16607 E113.93746	91 m	0:00:24	14 kph
24/10/2016 15:58	ON	N22.16686 E113.93738	88 m	0:00:23	14 kph
24/10/2016 15:58	ON	N22.16782 E113.93732	107 m	0:00:28	14 kph

Appendix I. (cont'd)

Date & Time	EFFORT	Position	Leg Length	Leg Time	Leg Speed
24/10/2016 15:58	ON	N22.16871 E113.93727	99 m	0:00:26	14 kph
24/10/2016 15:59	ON	N22.16953 E113.93726	92 m	0:00:24	14 kph
24/10/2016 15:59	ON	N22.17052 E113.93730	110 m	0:00:29	14 kph
24/10/2016 16:00	ON	N22.17142 E113.93730	101 m	0:00:26	14 kph
24/10/2016 16:00	ON	N22.17246 E113.93728	115 m	0:00:30	14 kph
24/10/2016 16:01	ON	N22.17336 E113.93727	100 m	0:00:26	14 kph
24/10/2016 16:01	ON	N22.17427 E113.93727	102 m	0:00:27	14 kph
24/10/2016 16:02	ON	N22.17512 E113.93730	95 m	0:00:25	14 kph
24/10/2016 16:02	ON	N22.17597 E113.93732	95 m	0:00:25	14 kph
24/10/2016 16:02	ON	N22.17697 E113.93730	112 m	0:00:29	14 kph
24/10/2016 16:03	ON	N22.17809 E113.93722	124 m	0:00:32	14 kph
24/10/2016 16:03	ON	N22.17908 E113.93718	111 m	0:00:28	14 kph
24/10/2016 16:04	ON	N22.17998 E113.93716	100 m	0:00:25	14 kph
24/10/2016 16:04	ON	N22.18087 E113.93719	99 m	0:00:25	14 kph
24/10/2016 16:05	ON	N22.18166 E113.93724	88 m	0:00:22	14 kph
24/10/2016 16:05	ON	N22.18266 E113.93733	112 m	0:00:28	14 kph
24/10/2016 16:06	ON	N22.18349 E113.93727	93 m	0:00:23	15 kph
24/10/2016 16:06	ON	N22.18446 E113.93703	112 m	0:00:27	15 kph
24/10/2016 16:06	ON	N22.18550 E113.93693	116 m	0:00:29	14 kph
24/10/2016 16:07	ON	N22.18641 E113.93692	101 m	0:00:25	15 kph
24/10/2016 16:07	ON	N22.18724 E113.93690	93 m	0:00:23	15 kph
24/10/2016 16:08	ON	N22.18818 E113.93688	105 m	0:00:26	15 kph
24/10/2016 16:08	ON	N22.18927 E113.93688	120 m	0:00:30	14 kph
24/10/2016 16:09	ON	N22.19025 E113.93688	109 m	0:00:27	15 kph
24/10/2016 16:09	ON	N22.19122 E113.93692	108 m	0:00:27	14 kph
24/10/2016 16:10	ON	N22.19215 E113.93696	105 m	0:00:26	14 kph
24/10/2016 16:10	ON	N22.19321 E113.93692	117 m	0:00:29	15 kph
24/10/2016 16:10	ON	N22.19412 E113.93686	102 m	0:00:25	15 kph
24/10/2016 16:11	ON	N22.19506 E113.93683	105 m	0:00:26	15 kph
24/10/2016 16:11	ON	N22.19619 E113.93682	126 m	0:00:31	15 kph
24/10/2016 16:12	ON	N22.19720 E113.93680	113 m	0:00:28	14 kph
24/10/2016 16:12	ON	N22.19835 E113.93683	128 m	0:00:32	14 kph
24/10/2016 16:13	ON	N22.19908 E113.93689	82 m	0:00:21	14 kph
24/10/2016 16:13	ON	N22.20018 E113.93691	122 m	0:00:31	14 kph
24/10/2016 16:14	ON	N22.20110 E113.93697	102 m	0:00:26	14 kph
24/10/2016 16:14	ON	N22.20221 E113.93703	124 m	0:00:30	15 kph
24/10/2016 16:15	ON	N22.20343 E113.93703	136 m	0:00:34	14 kph
24/10/2016 16:15	ON	N22.20449 E113.93702	117 m	0:00:29	15 kph
24/10/2016 16:16	ON	N22.20549 E113.93705	112 m	0:00:28	14 kph
24/10/2016 16:16	ON	N22.20672 E113.93709	137 m	0:00:34	14 kph
24/10/2016 16:17	ON	N22.20784 E113.93715	125 m	0:00:31	15 kph
24/10/2016 16:17	ON	N22.20904 E113.93725	133 m	0:00:33	15 kph
24/10/2016 16:18	ON	N22.21019 E113.93733	128 m	0:00:32	14 kph
24/10/2016 16:18	ON	N22.21136 E113.93747	131 m	0:00:33	14 kph
24/10/2016 16:19	ON	N22.21251 E113.93770	130 m	0:00:33	14 kph
24/10/2016 16:19	ON	N22.21355 E113.93798	119 m	0:00:30	14 kph
24/10/2016 16:20	ON	N22.21472 E113.93817	133 m	0:00:33	14 kph
24/10/2016 16:21	ON	N22.21592 E113.93819	133 m	0:00:33	15 kph
24/10/2016 16:21	ON	N22.21714 E113.93798	137 m	0:00:34	15 kph
24/10/2016 16:22	ON	N22.21836 E113.93784	137 m	0:00:34	15 kph
24/10/2016 16:22	ON	N22.21966 E113.93771	145 m	0:00:36	14 kph
24/10/2016 16:23	ON	N22.22098 E113.93757	148 m	0:00:37	14 kph
24/10/2016 16:24	ON	N22.22231 E113.93738	149 m	0:00:37	14 kph
24/10/2016 16:24	ON	N22.22367 E113.93747	152 m	0:00:39	14 kph
24/10/2016 16:25	ON	N22.22444 E113.93812	108 m	0:00:30	13 kph

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

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

DATE	AREA	BEAU	EFFORT	SEASON	VESSEL	TYPE	P/S
6-Oct-16	SW LANTAU	2	11.11	AUTUMN	STANDARD31516	HKCRP	P
6-Oct-16	SW LANTAU	3	2.74	AUTUMN	STANDARD31516	HKCRP	S
6-Oct-16	SW LANTAU	2	2.90	AUTUMN	STANDARD31516	HKCRP	P
6-Oct-16	SW LANTAU	3	6.55	AUTUMN	STANDARD31516	HKCRP	S
20-Oct-16	SW LANTAU	2	7.56	AUTUMN	STANDARD31516	HKCRP	P
20-Oct-16	SW LANTAU	3	5.43	AUTUMN	STANDARD31516	HKCRP	P
20-Oct-16	SW LANTAU	2	2.48	AUTUMN	STANDARD31516	HKCRP	S
20-Oct-16	SW LANTAU	3	2.03	AUTUMN	STANDARD31516	HKCRP	S
24-Oct-16	SW LANTAU	2	43.66	AUTUMN	STANDARD36826	HYD-HZMB	P
24-Oct-16	SW LANTAU	3	14.19	AUTUMN	STANDARD36826	HYD-HZMB	P
24-Oct-16	SW LANTAU	2	14.01	AUTUMN	STANDARD36826	HYD-HZMB	S
24-Oct-16	SW LANTAU	3	3.24	AUTUMN	STANDARD36826	HYD-HZMB	S
26-Oct-16	SW LANTAU	2	5.72	AUTUMN	STANDARD36826	HKCRP	P
26-Oct-16	SW LANTAU	3	13.65	AUTUMN	STANDARD36826	HKCRP	P
26-Oct-16	SW LANTAU	2	4.50	AUTUMN	STANDARD36826	HKCRP	S
26-Oct-16	SW LANTAU	3	4.93	AUTUMN	STANDARD36826	HKCRP	S