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REPORT OF A MARINE MAMMAL SURVEY OF THE EASTERN TROPICAL PACIFIC ABOARD THE RESEARCH VESSEL *McArthur*, JULY 30-DECEMBER 10, 1987

Rennie S. Holt
Alan Jackson

NOAA-TM-NMFS-SWFC-116

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southwest Fisheries Center

NOAA Technical Memorandum NMFS

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REPORT OF A MARINE MAMMAL SURVEY OF THE EASTERN TROPICAL PACIFIC ABOARD THE RESEARCH VESSEL McARTHUR JULY 30 - DECEMBER 10, 1987

Rennie S. Holt
and
Alan Jackson

In 1984, as a result of an amendment to the Marine Mammal Protection Act of 1972, the National Marine Fisheries Service (NMFS) was mandated to conduct a research program to monitor trends in the abundance of stocks of dolphins in the eastern tropical Pacific (ETP). These dolphins are killed incidentally during fishing operations by the U. S. purse seine fishery for yellowfin tuna (Thunnus albacares). In 1986, the Southwest Fisheries Center (SWFC) of the NMFS initiated a five-year program to monitor these stocks of dolphins. In the first year of the program, two surveys of marine mammal populations in the ETP were conducted concurrently aboard the National Oceanic and Atmospheric Administration ships the David Starr Jordan and the McArthur. The surveys lasted 120 days each. In 1987, the second two surveys were conducted using the same ships and during approximately the same time period.

In this report, we describe the experimental procedures used during the 1987 surveys and we present summaries of the distance searched and marine mammals encountered from aboard the McArthur (Cruise AR 87-0812; SWFC Observer Cruise 1080). A separate report of the David Starr Jordan cruise has been published by Holt and Sexton (1988). A report of environmental data collected during the surveys is reported by Thayer et al. (1988).

SURVEY OBJECTIVES

The primary objective of the cruise was to collect information to calculate relative abundance of dolphin species in the ETP that are taken incidentally by the purse seine fishery for yellowfin tuna. Specific objectives were to collect information to:

1. estimate school density, school size, and species composition of each species taken by the fishery;

2. investigate the physical and biological environment of the affected species; and

3. contribute to on-going U.S. and international programs investigating oceanography and ocean-atmosphere interactions in the ETP.

MATERIALS AND METHODS

Study Area and Itinerary

The McArthur traversed predetermined tracklines in the ETP from July 30 through December 10, 1987 (Figure 1), with scheduled port calls in Hilo, Hawaii; Panama City, Panama; and Callao, Peru. Instead of stopping at Callao, however, the ship returned a second time to Panama City. The itinerary of the ship included four segments or effort legs:

Leg 1.		
Departed	San Diego	July 30, 1987
Arrived	Hilo	August 28, 1987
Leg 2.		
Departed	Hilo	September 2, 1987
Arrived	Panama City	October 1, 1987
Leg 3.		
Departed	Panama City	October 6, 1987
Arrived	Panama City	November 4, 1987
Leg 4.		
Departed	Panama City	November 9, 1987
Arrived	San Diego	December 10, 1987

Scientific Personnel

Cruise Leaders	Legs
Marc Webber, SWFC	1-2
Alan Jackson, SWFC	3-4
Identification Specialists	
Marc Webber, SWFC	1-2
Richard LeDuc, SWFC	1-2
Robert Pitman, SWFC	3-4
Scott Sinclair, SWFC	3-4
Observers	
Scott Benson, SWFC	1-2
Carla Bisbee, SWFC	1-2
Joe Raffetto, SWFC	1-2
David Scordal, SWFC	1-2
Sallie Beavers, SWFC	3-4
Carrie Fried, SWFC	3-4
William Irwin, SWFC	3-4
Keith Rittmaster, SWFC	3-4

Bird Census and Oceanographic Specialists

Jim Caretta, Southampton College	1-4
Jim Gilardi, UC Santa Cruz	2-3
Cynthia Moore, UC Santa Barbara	1
Victoria Thayer, SWFC	3-4

Marine Mammal Species Surveyed

During the survey, the observers recorded information on all species of whales and dolphins sighted throughout the cruise. However, encounter rates are presented only for dolphin species.

Equipment

The McArthur, commissioned in 1966, is 53.3 m in length and 11.6 m in breadth, and has a 3.7 m draft. During the surveys, the vessel maintained a cruising speed of approximately 18.5 km/hr.

Several pieces of equipment were used to gather data. The geographic position of the vessel was recorded periodically and at the time of a marine mammal sighting using the ship's Satellite Navigation System (SAT NAV). Marine mammals were detected using port and starboard pedestal mounted 25X Fuginon[1] binoculars and a variety of hand-held 7-15X binoculars. The glasses were mounted on the upper deck approximately 10.7 m above the sea surface. Surface temperature and salinity, fluorescence (chlorophyll), and temperature-depth profiles were obtained using a thermosalinograph, fluorometer, and expendable bathythermograph (XBT), respectively. Discrete conductivity and temperature-depth profiles were also obtained using conductivity-temperature-depth (CTD) probes.

The bearing and radial distances of marine mammals from the ship were calculated using two methods. First, the Computer Assisted Sighting Technology (CAST) system used information from several sensors to measure sighting angles and then to calculate radial distances. A CAMAC[1] computer collected data from various sources: the ship's course from the gyroscope; the electronically encoded train angles of the 25X binoculars; a measurement of the relative motion of the ship from a pitch-roll sensor; speed from the speed log; and information concerning survey status, such as identification of observers occupying survey positions from data pads located on the flying bridge. An IBM-compatible computer, which was interfaced with the CAMAC, was then used to process

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[1]Reference to trade names does not imply endorsement by the NMFS.

information to determine the sighting angle to the cue. Successive sighting angles, recorded as the ship traveled along the trackline, were used to calculate radial distances. Analyses of CAST data will be presented in a separate report.

The second method was the use of estimates of the bearing and radial distance of a school from the ship, which were recorded by the observers using a 360° graduated washer attached to the base of the 25X binoculars and graduated reticles enclosed in the right eye piece of the binoculars.

A 35 mm F-1 Canon[1] camera with motor drive was used to photograph animals to aid in stock and species identification. The system included 400 mm, 75-210 mm zoom, and 28 mm lens. Some observers also used film supplied by the SWFC in personal camera equipment to photograph sightings. Animals were also recorded on 1.27 cm video tape using a Panasonic[1] VHS recorder and a Panasonic[1] camera equipped with telephoto lens.

Duty Stations

Three duty stations were used during the survey, with observers rotating through each station.

1. Left Binocular - The port-side observer used a 25X binocular, mounted on the port side of the ship to scan the ocean for marine mammal sighting cues. The major area of responsibility for this observer was from the midpoint of the trackline to abeam the port-side of the vessel and outward to the horizon or to the extent possible with prevailing environmental conditions.

2. Right Binocular - The starboard observer used a 25X binocular, mounted on the starboard side of the ship, to search from the midpoint of the trackline to abeam the right side of the ship; and outward to the horizon or to the extent possible with prevailing environmental conditions. Observers in the left and right positions frequently searched areas on the opposite side of the tracklines.

3. Recorder - The recorder's duties were to transcribe effort data at regular intervals, to make notes of information pertaining to each sighting, and, when possible, to search the trackline adjacent to the ship with hand held binoculars for schools not detected by the observers on the 25X glasses.

Observer Teams and Rotation

Two teams of three observers each alternately occupied the three duty stations. Each team was on duty for 2-hour shifts. During each shift members spent approximately equal time occupying each duty station. Two of the six observers were

experts in identifying marine mammals. These two identification specialists were assigned to separate teams so that one would always be on duty. The other four observers were systematically assigned to a different team every three days. Two of the other four observers were randomly assigned to each team. Team members remained constant during the entire survey. Team members rotated among the duty stations and teams rotated on and off duty without interrupting searching effort. Teams alternated completing the first watch of the day. Observers aboard the Jordan and McArthur changed vessels after leg 2.

Data Collection Procedures

A typical day's searching activity began at sunrise, approximately 0630 hours local time, and ended at sunset, approximately 1830 hours local time. The searching procedure was initiated when observers were occupying the duty stations and a recorder was in place to record information on the Research Vessel Effort Form (Figure 2). The ship traversed a predetermined trackline at a constant speed of approximately 18.5 km/hr. Except for approximately 2 to 3 hours per night when oceanographic data were collected, the ship maintained its speed and course between sunset and sunrise to provide wider spatial distribution of searching effort.

When a sighting cue (marine mammals, birds, splashes, etc.) was detected, it was determined if the cue was a marine mammal and if the cue was appropriate for tracking using the CAST system. Schools that were not tracked included whales, dolphins detected close to the vessel or at distances greater than 5.6 km lateral to the vessel, small schools of dolphins (<15 animals), and schools detected during poor sighting conditions. If tracking was appropriate, the searching effort was terminated and the observer began tracking by turning on a switch attached to the binocular stand. With the ship still on course and with the school in the field of view of the binoculars, the CAST system recorded successive bearings of the animals to the ship. After approximately 8 minutes the ship was directed towards the cue and the tracking continued for another 8 minutes. When the target was not in the field of view, the switch was deactivated until the target was again sighted. At the end of the tracking sequence, if the target was lost from view and not resighted, or if the cue was not a marine mammal, the tracking procedure was terminated. All marine mammal schools were approached to obtain estimates of school size and species composition. The searching mode was resumed when the vessel returned to course and speed and the observers resumed searching for other sighting cues.

During each marine mammal sighting, the recorder collected data to complete Research Vessel Effort and Research Vessel Sighting (Figure 3) forms. Definition of each data element is

given by Ralston (1983).[2] Criteria for assigning sun position and sea state conditions are given in Figure 4 and Table 1, respectively. Observers recorded bearing and range for schools using the 360° washer and reticle increments. The reticle measurements were converted to km using

$$a = 0.003942 \tan (\arctan (45242.52) - 0.001088\ r),$$

where a equals radial distance in km and r denotes the number of reticles below the topmost reticle. Values in this equation were calculated by Barlow (per. comm.) using an equation presented by Smith (1982) and data collected during a previous research vessel cruise and the present ETP cruise.

Each observer who had a good view of the school independently recorded in his/her logbook an estimate of school size and a determination of species composition. All available observers determined species identification and animal behavior, and a consensus was entered on the Research Vessel Sighting and Research Vessel Continuation (Figure 5) Forms at the time of a sighting. Species identifications were validated when possible by photographing the school at close range using 35 mm and video cameras.

Data Analyses

Data were recorded for each Beaufort sea state and then grouped into (1) "calm" sea state conditions without whitecaps (Beaufort numbers 0-2) or (2) "rough" sea state conditions with whitecaps (Beaufort numbers 3-5). The presence of whitecaps was important in searching for sighting cues. Animal splashes could not be used as a sighting cue during rough seas because whitecaps were easily confused with the animal splashes.

Sun location was recorded by noting its horizontal and vertical position relative to the ship (Figure 4). Visibility effects were investigated by classifying sun positions into "good" and "poor" categories defined by the effect of the glare from the sun on the trackline. Criteria used were those described in Holt (1987). Poor sun conditions were recorded only when horizontal sun position was 12 and vertical position was 1, 2, or 3 or when there were clouds together with fog or rain. All other conditions were good conditions.

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[2]Ralston, F. Ms. Usage procedures and coding notes for research vessel sighting and effort records. Southwest Fisheries Center. P.O. Box 271, La Jolla, CA. 92038.

The rate of encountering marine mammal schools was determined as the simple ratio of sightings detected per 1000 km searched. The standard error of the encounter rate was calculated as

$$\hat{Var}(n/L) = [\Sigma l_i[(n_i/l_i) - (n/L)]^2]/L(R - 1)$$

where n equals the number of dolphin schools detected in the survey, L equals the km searched, l_i equals km searched during the ith day, n_i equals schools detected during the ith day, and R equals number of days searched.

Encounter rates were calculated for all dolphin schools and for schools with 15 or more animals that were detected during Beaufort states 0 through 5 (elimination of Beaufort 6 data discussed below). Rates were calculated for these schools detected in the entire study area and for schools stratified by area, species, individual Beaufort numbers, calm and rough sea conditions, good and poor sun conditions, individual observers, and observer teams.

RESULTS

Data describing each leg of searching effort during the entire survey are summarized in Table 2. Information summarized for each marine mammal sighting encountered during the survey is presented in Table 3. The geographic positions of all schools detected during the survey are presented for each species category (code) in Figures 6 through 19. Observer estimates of school size are presented by species codes in Table 4.

During the entire survey, observers searched 14,850 km and detected 613 marine mammal sightings (Table 5). Dolphins were detected in 356 schools and whales were detected in 237 schools (20 schools contained both dolphins and whales). These included 8 species of dolphins and 14 species of whales.

While operating in the searching mode in the study area (Figure 1), observers searched 13,901 km and detected 317 dolphin schools (Table 6). Searching effort was conducted during Beauforts 0 through 6 conditions, although because Beaufort 6 seas were very rough, data collected during these conditions were omitted from further analysis. During Beauforts 0 through 5, 13,259 km were searched and 309 dolphin schools were detected. Of the 309 dolphin schools, 188 were large schools (i.e., average school size greater than 14 animals). The rate of detecting large schools in the study area was 14.78 schools/1000 km searched (Table 6).

The McArthur's searching effort was distributed among all four strata (Table 6). In the northern area, detection rates decreased with increased distance from shore. The detection rates in the south and middle strata were similar (Table 6).

Sea conditions in the study area were very rough; only 11% of the searching effort was completed in calm seas (Table 6). However, 28% of all schools were detected during calm seas and the rate of detecting schools during calm seas was more than three times the rate detected during rough seas.

Poor visibility conditions occurred only during 14% of the surveying effort during which 11% of the schools were detected (Table 6). The rate of detecting schools during good conditions was slightly higher than the rate during poor conditions.

All observers spent approximately equal time searching, although, the percent of schools detected by individual observers ranged from 4 to 14% (Table 6). Consequently, rates of detecting target schools also varied greatly (range of 2.15 to 7.86 schools/1000 km).

Teams spent approximately equal time searching, although, the percent of schools detected by teams ranged from 19 to 34% (Table 6). The rate of detecting schools by teams ranged from 10.53 to 18.34 schools/1000 km searched. The larger rate by team 1 was due, in part, to the high detection rate of observer 4.

SUMMARY

In this report, we have presented data on dolphin encounter rates, school size, and species composition which meet the primary objectives of the cruise aboard the McArthur. Data on effort and sightings have been summarized. We found that the rate of encountering dolphin schools was higher during calm seas than during rough seas, and the rate during good visibility conditions was higher than the rate during poor visibility conditions. Rates were highest in the inshore area. Encounter rates among observers were variable.

ACKNOWLEDGMENTS

Because of the work of many dedicated professionals, the cruise aboard the McArthur was successfully executed. Among those contributing to the success of the cruise were the observers who spent many hours collecting the data, the officers and crew of the McArthur who gave their continuous support, and L. Farrar (Jordan Port Captain) who provided liaison with ship support personnel and the scientists. We also thank E. Duffin, and R. Schipper for their contribution to the CAST system. Critical logistical arrangements were completed by S. Sexton and P. Stangl. Special efforts were provided in procurement by B.

Engstrand and B. Watkins. Many people contributed to training the observers, including H. Bernard, R. Pitman, and P. Stangl all of whom provided valuable assistance. The manuscript benefited from critical reviews by J. Davis, D. DeMaster, and S. Reilly. Part of the manuscript was typed by C. Ratcliffe. Finally, we are grateful to I. Barrett, J. Carr, D. DeMaster, and B. Remington for their support during the entire cruise preparation and execution.

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Table 1. Sea state conditions measured by the Beaufort scale (from Bowditch, 1966).

Wind force (Beaufort)	Knots	Descriptive	Sea Conditions	Probable wave height in ft.
0	0- 1	Calm	Sea smooth and mirror-like	-
1	1- 3	Light air	Scale-like ripple without foam crests	1/4
2	4- 6	Light breeze	Small short wavelets; crests have a glassy appearance and do not break	1/2
3	7-10	Gentle breeze	Large wavelets; some crests begin to break; foam of glassy appearance. Occasional white foam crests	2
4	11-16	Moderate breeze	Small waves, becoming longer; fairly frequent white foam crests	4
5	17-21	Fresh breeze	Moderate waves, taking a more pronounced long form; many white foam crests; there may be some spray	6
6	22-27	Strong breeze	Large waves begin to form; white foam crests are more extensive everywhere; there may be some spray	10

Table 2. Daily searching effort recorded in the eastern tropical Pacific aboard the McArthur during July 30 through December 10, 1987.

series	leg	date	speed km/hr	observer codes left	observer codes right	observer codes rec.	sun position horz.	sun position vert.	beauf. no.	course (deg.)	position latitude	position longitude	km in leg
01	01	870731	18.52	64	69	31			4	184			8.03
01	02	870731	18.52	69	31	64			4	184			7.41
01	03	870731	18.52	55	56	63			4	184	30 23 n	118 05 w	12.35
01	04	870731	18.52	56	63	55			4	184			2.47
01	05	870731	18.52	56	63	55	09	02	4	184			9.88
01	06	870731	18.52	63	55	56			4	184			1.85
01	07	870731	18.52	63	55	56	09	02	4	184			5.86
01	08	870731	18.52	63	55	56			4	184			3.09
01	09	870731	18.52	63	55	56	09	02	4	184			1.54
01	10	870731	18.52	69	64	31	09	02	4	184	30 01 n	118 05 w	6.48
01	11	870731	18.52	69	64	31			4	184			7.41
01	12	870731	18.52	64	31	69	09	01	4	184			7.72
01	13	870731	18.52	64	31	69			4	184			4.63
01	14	870731	18.52	31	69	64	09	01	4	184			4.01
01	15	870731	18.52	31	69	64	10	01	4	159			8.33
01	16	870731	18.52	55	56	63	10	01	4	159			4.63
01	17	870731	18.52	56	63	55	11	12	4	159			6.17
01	18	870731	18.52	63	55	56	12	12	4	159			6.17
01	19	870731	18.52	55	56	63	12	12	4	159	29 31 n	118 03 w	6.17
01	20	870731	18.52	56	63	55	12	12	4	159			6.17
01	21	870731	18.52	63	55	56	01	12	4	159			1.54
01	22	870731	18.52	63	55	56	12	12	4	224	29 21 n	117 59 w	6.17
02	01	870731	18.52	55	56	63	03	01	3	185			9.26
02	02	870731	18.52	56	63	55	03	01	3	185			7.10
02	03	870731	18.52	56	63	55	04	01	3	140	28 53 n	118 11 w	6.79
02	04	870731	18.52	63	55	56	04	01	3	140			4.63
02	05	870731	18.52	69	64	31	04	02	3	140			13.27
02	06	870731	18.52	64	31	69	04	02	3	140			12.04
02	07	870731	18.52	31	69	64	04	02	3	140			8.64
02	08	870731	18.52	63	56	55			3	140	28 33 n	117 53 w	6.17
02	09	870731	18.52	56	55	63			3	140			3.09
02	10	870731	18.52	56	55	63	05	03	3	140			3.09
01	01	870801	18.52	55	63	56			3	160			7.72
01	02	870801	18.52	63	56	55			3	160			7.72
01	03	870801	18.52	56	55	63			3	160			7.72
01	04	870801	18.52	31	64	56			3	160	27 35 n	117 09 w	3.40
01	05	870801	18.52	31	64	56	09	02	3	160			2.78
01	06	870801	18.52	31	64	69	09	02	3	160			6.17
01	07	870801	18.52	64	69	31	09	02	4	160			12.35
01	08	870801	18.52	69	31	64	10	02	4	160			12.35
01	09	870801	18.52	63	55	56	10	01	4	160	27 15 n	117 01 w	12.35
01	10	870801	18.52	55	56	63	10	01	4	160			7.72
01	11	870801	18.52	55	56	63			4	160			4.63
01	12	870801	18.52	56	63	55			4	160			12.35
01	13	870801	18.52	31	64	69			4	160	26 55 n	116 53 w	12.35
01	14	870801	18.52	64	69	31			4	160			12.35

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
01	15	870801	18.52	69	31	64			4	160			1.85
01	16	870801	18.52	69	31	64	12	12	4	160			10.49
01	17	870801	18.52	56	63	55	01	12	4	160	26 34 n	116 46 w	10.80
01	18	870801	20.37	63	55	56	02	12	4	160			7.13
01	19	870801	20.37	63	55	56	03	01	4	160			3.06
01	20	870801	20.37	55	56	63	03	01	4	160			8.49
02	01	870801	20.37	31	64	69	03	01	4	160			8.83
02	02	870801	20.37	64	69	31	03	02	4	160			10.19
02	03	870801	20.37	69	31	64	03	02	4	160			8.15
02	04	870801	20.37	56	63	55	04	02	4	160			13.58
02	05	870801	20.37	63	55	56	04	02	4	160			11.88
02	06	870801	20.37	63	55	56			4	160			1.70
02	07	870801	20.37	56	55	63			4	160			11.88
02	08	870801	20.37	31	64	69			3	160	25 42 n	116 26 w	10.19
02	09	870801	20.37	64	69	31			3	160	25 37 n	116 25 w	3.40
02	10	870801	20.37	64	69	31	04	03	3	160			3.06
02	11	870801	20.37	64	69	31			4	160			3.73
02	12	870801	20.37	64	69	31			4	160	25 32 n	116 23 w	0.00
01	01	870802	18.52	56	63	55			4	191	24 26 n	115 52 w	3.09
02	01	870802	18.52	64	69	31	01	12	4	215	24 09 n	116 02 w	9.26
02	02	870802	18.52	69	31	64	01	12	4	215			3.09
02	03	870802	18.52	69	31	64			4	215	24 03 n	116 07 w	3.09
02	04	870802	18.52	69	31	64	01	12	4	215			6.17
02	05	870802	18.52	55	63	56	02	01	4	215	23 58 n	116 10 w	9.26
02	06	870802	18.52	63	56	55	02	01	4	215			2.16
03	01	870802	18.52	31	64	69	02	01	4	215			13.89
03	02	870802	18.52	64	69	31	02	02	4	215	23 38 n	116 27 w	7.72
01	01	870803	18.52	63	56	55			3	215	21 39 n	118 00 w	4.01
01	02	870803	18.52	63	56	55	07	02	3	215	21 37 n	118 02 w	3.40
02	01	870803	18.52	56	55	63	07	02	3	215	21 34 n	118 02 w	7.41
02	02	870803	18.52	31	64	69	07	02	3	215	21 31 n	118 05 w	12.35
02	03	870803	18.52	64	69	31	07	02	3	215			7.72
02	04	870803	18.52	64	69	31			3	215	21 22 n	118 13 w	2.47
03	01	870803	18.52	69	31	64			3	215	21 19 n	118 15 w	12.35
03	02	870803	18.52	63	56	55			3	215	21 13 n	118 21 w	4.94
04	01	870803	18.52	56	55	63	08	02	3	215	21 12 n	118 24 w	1.23
05	01	870803	18.52	56	55	63	08	02	3	215	21 12 n	118 24 w	10.80
05	02	870803	18.52	55	63	56	08	01	3	215			9.26
05	03	870803	18.52	55	63	56			3	215			4.63
05	04	870803	18.52	31	64	69			3	215			1.54
06	01	870803	18.52	64	69	31			3	215	21 01 n	118 33 w	3.09
06	02	870803	18.52	69	31	64	12	12	3	215			15.43
06	03	870803	18.52	63	56	55	12	12	3	215	20 53 n	118 44 w	12.35
06	04	870803	18.52	56	55	63	02	12	3	215			12.35
07	01	870803	18.52	55	63	56	02	01	3	215	20 38 n	118 51 w	4.63
07	02	870803	18.52	31	64	69	02	01	3	215	20 36 n	118 53 w	3.09
08	01	870803	18.52	31	64	69	02	01	3	215	20 34 n	118 55 w	6.17
08	02	870803	18.52	64	69	31	02	02	3	215			6.17
08	03	870803	18.52	56	63	55	02	02	3	215	20 28 n	118 59 w	3.70
09	01	870803	18.52	63	56	55	02	02	3	215	20 22 n	119 07 w	10.19
09	02	870803	18.52	56	55	63	02	02	3	215			4.01
10	01	870803	18.52	56	55	63			3	215	20 12 n	119 13 w	0.62

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
11	01	870803	18.52	55	63	56			3	215	20 04 n	119 16 w	2.16
01	01	870804	18.52	64	69	31			2	215	18 43 n	120 13 w	6.17
01	02	870804	18.52	69	31	64	07	03	2	215			6.17
01	03	870804	18.52	55	63	56	07	03	2	215	18 36 n	120 18 w	7.72
01	04	870804	18.52	55	63	56	07	02	2	215	18 33 n	120 21 w	4.63
01	05	870804	18.52	63	56	55	07	02	2	215			10.80
02	01	870804	18.52	56	55	63	07	02	2	215	18 24 n	120 25 w	6.17
02	02	870804	18.52	64	69	31	08	01	2	215	18 21 n	120 27 w	9.57
03	01	870804	18.52	69	31	64	08	01	2	215	18 15 n	120 32 w	9.26
03	02	870804	18.52	31	64	69	08	01	3	215			12.35
03	03	870804	18.52	55	63	56	08	01	3	215	18 04 n	120 39 w	4.63
03	04	870804	18.52	55	63	56	08	12	3	215			7.72
03	05	870804	18.52	63	56	55	08	12	3	215			2.78
03	06	870804	18.52	63	56	55	08	12	3	215			2.47
03	07	870804	18.52	63	56	55	10	12	3	180	17 55 n	120 45 w	4.32
03	08	870804	18.52	63	56	55	10	12	3	180			2.78
03	09	870804	18.52	56	55	63			3	180			3.09
03	10	870804	18.52	56	55	63	12	12	3	180	17 50 n	120 45 w	9.26
03	11	870804	18.52	64	69	56	12	12	3	180	17 44 n	120 45 w	5.56
04	01	870804	18.52	64	69	56			3	180	17 38 n	120 45 w	1.54
04	02	870804	18.52	69	31	64			3	180	17 37 n	120 45 w	0.31
05	01	870804	18.52	69	31	64			3	180	17 36 n	120 46 w	1.54
05	02	870804	18.52	69	64	31	03	01	3	180			5.25
05	03	870804	18.52	31	64	69	03	01	3	180			2.16
06	01	870804	18.52	55	63	56			3	180	17 23 n	120 46 w	3.09
06	02	870804	18.52	55	63	56	03	01	3	180	17 21 n	120 46 w	9.26
06	03	870804	18.52	31	64	69	03	01	3	180	17 16 n	120 47 w	4.63
06	04	870804	18.52	31	64	69			3	180			1.54
06	05	870804	18.52	63	56	55			3	180			6.17
06	06	870804	18.52	56	55	63			3	180			6.17
06	07	870804	18.52	69	64	31			3	180	17 05 n	120 47 w	12.35
06	08	870804	18.52	64	31	69			3	180			12.35
06	09	870804	18.52	31	69	64	03	03	3	180			2.78
07	01	870804	18.52	31	69	64			3	180	16 49 n	120 48 w	4.63
07	02	870804	18.52	31	69	64			3	180	16 45 n	120 48 w	0.31
01	01	870805	18.52	56	55	63			2	180	15 07 n	120 49 w	7.72
01	02	870805	18.52	55	63	56	08	03	2	180			7.72
01	03	870805	18.52	69	56	64	09	02	2	180	14 58 n	120 50 w	3.70
02	01	870805	18.52	69	31	64	09	02	2	180	14 55 n	120 50 w	7.72
02	02	870805	18.52	31	64	69	09	02	2	180			12.35
02	03	870805	18.52	64	69	31	09	02	3	180			12.35
02	04	870805	18.52	56	55	63	09	02	3	180	14 36 n	120 48 w	7.72
02	05	870805	18.52	56	55	63	09	01	3	180	14 32 n	120 48 w	4.63
02	06	870805	18.52	55	63	56	09	01	3	180			12.35
02	07	870805	18.52	63	56	55	09	01	3	180			9.26
02	08	870805	18.52	63	56	55	11	01	3	103	14 17 n	120 48 w	3.70
03	01	870805	18.52	69	31	64	11	01	3	103	14 16 n	120 44 w	6.17
03	02	870805	18.52	69	31	64	11	12	3	103	14 15 n	120 41 w	3.09
03	03	870805	18.52	31	64	69	11	12	3	103			12.35
03	04	870805	18.52	64	69	31	12	12	4	103			12.35
03	05	870805	18.52	56	55	63	12	12	4	103	14 10 n	120 25 w	12.35
03	06	870805	18.52	55	63	56	06	12	4	103			12.35

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
03	07	870805	18.52	63	56	55	06	01	4	103			12.35
03	08	870805	18.52	69	31	64	06	01	4	103	14 06 n	120 03 w	12.35
03	09	870805	18.52	31	64	69	06	01	4	103			1.54
03	10	870805	18.52	56	55	63	06	02	4	103			5.56
03	11	870805	18.52	31	64	69	06	02	4	103	14 03 n	119 53 w	5.25
03	12	870805	18.52	64	69	31	06	02	4	103			10.80
04	01	870805	18.52	56	55	63			4	103	13 58 n	119 42 w	1.54
04	02	870805	18.52	56	55	63	06	02	4	103	13 58 n	119 41 w	5.25
04	03	870805	18.52	56	55	63			4	103			4.63
04	04	870805	18.52	55	63	56			4	103	13 56 n	119 36 w	4.32
04	05	870805	18.52	55	63	56	06	03	4	103			4.32
04	06	870805	18.52	63	56	55	06	03	4	103	13 57 n	119 30 w	6.79
04	07	870805	18.52	63	56	55	06	03	4	103	13 54 n	119 26 w	0.31
01	01	870806	18.52	31	64	69	11	03	4	100	13 54 n	119 23 w	8.95
01	02	870806	18.52	63	56	55	11	03	4	100	13 52 n	119 18 w	12.35
01	03	870806	18.52	56	55	63	11	02	4	100			12.35
01	04	870806	18.52	55	63	56	11	02	4	100			7.41
01	05	870806	18.52	55	63	56			4	100			4.94
01	06	870806	18.52	31	64	69			4	100	13 48 n	118 58 w	13.89
01	07	870806	18.52	64	69	31	11	01	4	100			10.80
01	08	870806	18.52	69	31	64	11	01	4	100	13 45 n	118 42 w	12.35
01	09	870806	18.52	63	56	55	11	01	4	100	13 44 n	118 35 w	12.35
01	10	870806	18.52	56	55	63	12	12	4	100			12.35
01	11	870806	18.52	55	63	56	12	12	4	100			12.35
01	12	870806	18.52	31	64	56	12	12	4	100	13 40 n	118 13 w	2.16
01	13	870806	18.52	31	64	69	12	12	4	100	13 40 n	118 12 w	10.80
01	14	870806	18.52	64	69	31	06	12	4	100			12.35
01	15	870806	18.52	69	31	64	06	01	4	100			11.73
01	16	870806	18.52	63	56	55			4	100	13 37 n	117 52 w	13.89
01	17	870806	18.52	31	64	69	06	01	4	100			6.17
01	18	870806	18.52	56	55	63	06	02	4	100			4.63
01	19	870806	18.52	56	55	63	06	02	3	100			2.47
01	20	870806	18.52	56	55	63	06	02	3	100	13 33 n	117 36 w	2.16
01	21	870806	18.52	55	63	56	06	02	3	100			6.48
01	22	870806	18.52	55	63	56	07	02	2	143	13 32 n	117 31 w	1.23
01	23	870806	18.52	31	64	69			2	143	13 32 n	117 31 w	6.79
02	01	870806	18.52	64	69	31			2	143			4.94
02	02	870806	18.52	69	31	64			2	143			5.56
02	03	870806	18.52	69	31	64			2	143	13 21 n	117 19 w	0.31
01	01	870807	18.52	55	63	56			2	144	13 15 n	117 19 w	3.09
02	01	870807	18.52	55	63	56			2	144	13 11 n	117 17 w	7.41
02	02	870807	18.52	55	63	56	10	03	2	144			1.85
02	03	870807	18.52	64	69	31	10	03	2	144			5.86
02	04	870807	18.52	64	69	31			3	144			1.85
03	01	870807	18.52	69	31	64	10	02	3	144	13 02 n	117 11 w	6.17
03	02	870807	18.52	69	31	64			4	144	12 59 n	117 09 w	0.62
04	01	870807	18.52	31	64	69			4	144			1.85
04	02	870807	18.52	31	64	69	10	01	4	144	12 55 n	117 05 w	10.49
04	03	870807	18.52	55	63	56	10	01	4	144	12 50 n	117 01 w	9.26
05	01	870807	18.52	63	56	55	10	01	5	142	12 45 n	116 59 w	4.01
06	01	870807	18.52	63	56	55			5	146	12 46 n	116 54 w	0.93
06	02	870807	18.52	64	69	31			5	146	12 45 n	116 54 w	8.95

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
06	03	870807	18.52	64	69	31			4	146	12 41 n	116 51 w	3.09
06	04	870807	18.52	69	31	64			4	146			1.54
06	05	870807	18.52	69	31	64	12	12	4	146			9.26
06	06	870807	18.52	69	31	64	12	12	4	146			1.54
07	01	870807	18.52	55	63	56	05	12	5	146	12 28 n	116 41 w	2.16
07	02	870807	18.52	55	63	56			5	146			4.01
08	01	870807	18.52	63	56	55			4	146	12 21 n	116 36 w	10.19
08	02	870807	18.52	56	55	63	05	02	5	146	12 17 n	116 33 w	2.47
08	03	870807	18.52	56	55	63			5	146			2.16
08	04	870807	18.52	56	55	63	05	02	5	146			4.63
08	05	870807	18.52	64	69	31	04	01	5	146	12 13 n	116 30 w	6.17
09	01	870807	18.52	69	31	64	04	01	5	146	12 10 n	116 30 w	1.54
09	02	870807	18.52	55	56	63	04	02	5	146			6.17
09	03	870807	18.52	69	31	64	05	02	5	146	12 07 n	116 28 w	4.63
09	04	870807	18.52	31	64	69	05	02	5	146			9.26
09	05	870807	18.52	31	64	69	05	02	5	146	12 01 n	116 23 w	0.31
01	01	870808	18.52	69	31	64			3	118	11 30 n	115 32 w	4.01
01	02	870808	18.52	69	31	64	11	03	3	118			8.33
01	03	870808	18.52	31	64	69	11	03	2	118			1.54
02	01	870808	18.52	56	55	63	11	02	2	118	11 23 n	115 25 w	4.32
03	01	870808	18.52	55	63	56	11	02	2	118	11 18 n	115 22 w	7.10
03	02	870808	18.52	63	56	55	11	02	2	118			7.72
03	03	870808	18.52	69	64	55	11	02	2	118			2.78
03	04	870808	18.52	69	64	55			3	118	11 13 n	115 14 w	3.09
03	05	870808	18.52	69	31	64	11	01	3	118			6.48
03	06	870808	18.52	31	64	69	11	01	3	118			9.26
03	07	870808	18.52	31	64	69	11	01	2	118	11 07 n	115 05 w	3.40
03	08	870808	18.52	64	69	31	11	01	3	118			7.10
03	09	870808	18.52	64	69	31			3	118			4.94
03	10	870808	18.52	56	55	63	11	01	3	118			4.63
04	01	870808	18.52	55	63	56	10	12	3	118	11 03 n	114 53 w	8.33
04	02	870808	18.52	55	63	56	12	12	2	118			3.40
04	03	870808	18.52	63	56	55			2	118	11 00 n	114 46 w	10.80
04	04	870808	18.52	69	31	64			2	118	10 57 n	114 40 w	3.09
05	01	870808	18.52	64	31	69	05	02	1	118	10 49 n	114 22 w	6.17
05	02	870808	18.52	56	55	63			1	118			9.88
05	03	870808	18.52	55	63	56			1	118	10 45 n	114 15 w	3.09
06	01	870808	18.52	69	31	64			2	118	10 45 n	114 07 w	1.54
06	02	870808	18.52	31	64	69			2	118			3.70
01	01	870809	18.52	63	56	55			2	118	09 56 n	112 44 w	5.25
01	02	870809	18.52	63	56	55	10	03	2	118			1.54
02	01	870809	18.52	56	55	63	10	03	2	118	09 51 n	112 43 w	3.40
02	02	870809	18.52	31	64	69	10	03	2	118	09 50 n	112 42 w	1.23
03	01	870809	18.52	69	31	64	10	02	2	118	09 46 n	112 31 w	0.93
04	01	870809	18.52	63	56	55	11	02	2	118	09 44 n	112 26 w	12.35
04	02	870809	18.52	56	55	63	11	02	2	118			3.09
04	03	870809	18.52	56	55	63	11	01	2	118			9.26
04	04	870809	18.52	55	63	56	11	01	2	118			8.03
05	01	870809	18.52	31	64	69	12	12	2	118	09 33 n	112 03 w	9.88
06	01	870809	18.52	64	69	31	06	12	2	118			3.09
06	02	870809	18.52	63	56	55	06	12	2	118	09 27 n	111 52 w	12.35
06	03	870809	18.52	56	55	63	06	01	2	118			12.35

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
06	04	870809	18.52	55	63	56	05	01	2	118			9.88
06	05	870809	18.52	55	63	56	05	01	1	145	09 16 n	111 36 w	0.31
07	01	870809	18.52	31	64	69	05	02	2	146	09 13 n	111 35 w	3.70
07	02	870809	18.52	31	64	69	05	02	2	145			2.78
07	03	870809	18.52	63	56	55	05	02	1	145			6.17
07	04	870809	18.52	64	69	31	05	02	1	145	09 06 n	111 31 w	1.54
07	05	870809	18.52	64	69	31			1	145			3.09
07	06	870809	18.52	69	31	64			2	145	09 04 n	111 29 w	3.09
07	07	870809	18.52	69	31	64			2	145	09 02 n	111 28 w	1.54
08	01	870809	18.52	63	56	55			2	145	08 59 n	111 26 w	3.09
08	02	870809	18.52	63	56	55			2	145			3.40
08	03	870809	18.52	56	55	63			3	145			1.54
08	04	870809	18.52	56	55	63			3	145	08 55 n	111 23 w	0.31
01	01	870810	18.52	64	69	31	10	03	3	145	07 30 n	110 24 w	12.04
01	02	870810	18.52	69	31	64	10	02	4	145			6.48
01	03	870810	18.52	55	63	56	10	02	4	145	07 21 n	110 18 w	12.04
01	04	870810	18.52	63	56	55	10	02	4	145			10.80
02	01	870810	18.52	64	69	31	10	01	4	145	07 07 n	110 10 w	9.26
02	02	870810	18.52	69	31	64	10	01	4	145			12.35
02	03	870810	18.52	31	64	69	10	12	4	145			10.19
03	01	870810	18.52	55	63	56	09	12	4	145	06 52 n	109 58 w	11.11
03	02	870810	18.52	63	56	55	09	12	4	145			12.35
03	03	870810	18.52	56	55	63	12	12	4	145			1.23
03	04	870810	18.52	56	55	63	12	12	4	145			2.47
04	01	870810	18.52	56	55	63			4	145	06 38 n	109 47 w	3.09
04	02	870810	18.52	64	69	31	05	12	5	145	06 36 n	109 46 w	5.56
04	03	870810	18.52	64	69	31			5	145	06 34 n	109 44 w	6.79
04	04	870810	18.52	69	31	64	05	01	5	145			5.86
04	05	870810	18.52	69	64	55	05	01	5	145	06 28 n	109 40 w	3.70
04	06	870810	18.52	69	64	55	05	01	5	145			2.47
05	01	870810	18.52	55	63	56			5	150	06 16 n	109 33 w	3.40
06	01	870810	18.52	55	63	56			5	150	06 13 n	109 31 w	2.78
06	02	870810	18.52	31	64	69			5	150			4.63
06	03	870810	18.52	63	56	55			5	150			3.40
06	04	870810	18.52	63	56	55	05	02	5	150			5.86
06	05	870810	18.52	56	55	63	05	02	5	150	06 05 n	109 27 w	2.78
06	06	870810	18.52	56	55	63			5	147	06 04 n	109 26 w	5.86
07	01	870810	18.52	64	69	31			5	147	05 59 n	109 23 w	8.64
07	02	870810	18.52	69	31	64			5	147			5.56
07	03	870810	18.52	69	31	64			5	147	05 52 n	109 19 w	0.31
01	01	870811	18.52	56	55	63			5	296	04 33 n	109 04 w	6.17
01	02	870811	18.52	55	63	56			5	296			6.17
01	03	870811	18.52	63	56	55			5	296			6.17
01	04	870811	18.52	69	31	64			5	296	04 34 n	109 14 w	12.35
01	05	870811	18.52	31	64	69			5	296			2.78
01	06	870811	18.52	31	64	69			5	290			9.57
01	07	870811	18.52	69	64	31			5	290			12.35
01	08	870811	18.52	56	55	63	04	01	5	290	04 49 n	109 29 w	12.35
01	09	870811	18.52	55	63	56	04	01	5	290			12.35
01	10	870811	18.52	63	56	55	04	01	5	290			3.40
01	11	870811	18.52	63	56	55	04	01	5	287			4.32
02	01	870811	18.52	63	56	55	04	12	5	286	04 57 n	109 50 w	3.70

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
02	02	870811	18.52	69	31	64	04	12	5	286			4.01
02	03	870811	18.52	67	31	64	04	12	6	293			6.79
02	04	870811	18.52	31	64	69	04	12	6	293			8.03
03	01	870811	18.52	56	55	63	12	01	5	287	05 02 n	110 03 w	6.17
03	02	870811	18.52	55	63	56	12	01	5	287			6.17
03	03	870811	18.52	63	56	55	12	01	5	287	05 04 n	110 09 w	6.17
03	04	870811	18.52	69	64	56	12	01	5	287	05 05 n	110 14 w	3.09
03	05	870811	18.52	69	31	64	12	02	5	287			9.26
03	06	870811	18.52	31	64	69	12	02	5	287			1.54
04	01	870811	18.52	31	64	69	12	02	5	287			3.40
04	02	870811	18.52	64	69	31	12	02	5	287	05 13 n	110 24 w	12.04
04	03	870811	18.52	56	55	63	12	02	4	287	05 15 n	110 31 w	9.88
04	04	870811	18.52	55	63	56	12	03	4	287	05 17 n	110 36 w	3.70
04	05	870811	18.52	55	63	56			4	287			3.40
04	06	870811	18.52	55	63	56	12	03	4	287			2.78
04	07	870811	18.52	55	63	56			4	287			2.47
04	08	870811	18.52	55	63	56			4	287	05 19 n	110 44 w	0.31
01	01	870812	18.52	31	64	69	05	03	3	288			11.73
01	02	870812	18.52	64	69	31			4	288			4.32
01	03	870812	18.52	64	69	31	05	03	4	288			1.54
01	04	870812	18.52	63	56	55	05	02	5	288	05 29 n	111 53 w	12.35
01	05	870812	18.52	56	55	63	05	02	5	288			7.72
01	06	870812	18.52	56	55	63			5	288	05 34 n	112 06 w	4.63
01	07	870812	18.52	55	63	56			5	288			12.35
01	08	870812	18.52	31	64	69			5	288	05 36 n	112 14 w	13.89
01	09	870812	18.52	64	69	31			5	288			10.80
01	10	870812	18.52	69	31	64	04	01	5	288			10.80
01	11	870812	18.52	69	31	64	04	12	5	288			1.54
01	12	870812	18.52	63	56	55	04	12	5	288	05 44 n	112 36 w	12.35
01	13	870812	18.52	56	55	63	12	12	5	288			3.09
02	01	870812	18.52	56	55	63	12	12	5	288	05 47 n	112 46 w	7.72
03	01	870812	18.52	55	63	56	01	12	5	288	05 48 n	112 50 w	3.70
03	02	870812	18.52	31	64	69	12	12	5	288	05 49 n	112 52 w	13.58
03	03	870812	18.52	64	69	31	12	01	6	288			11.11
03	04	870812	18.52	69	31	64	12	01	6	288			12.35
03	05	870812	18.52	63	56	55	12	01	6	288	05 56 n	113 11 w	6.48
04	01	870812	18.52	63	56	55	12	01	6	288	05 57 n	113 16 w	3.09
04	02	870812	18.52	64	31	69	12	01	6	288			4.63
04	03	870812	18.52	56	55	63	12	02	6	288	05 58 n	113 20 w	9.26
04	04	870812	18.52	55	63	56	12	02	5	288	06 00 n	113 25 w	9.26
04	05	870812	18.52	31	64	69	12	02	5	288	06 01 n	113 30 w	6.48
05	01	870812	18.52	31	64	69	12	03	5	288	06 03 n	113 34 w	3.09
05	02	870812	18.52	64	69	31			5	288			12.35
05	03	870812	18.52	64	69	31			5	288	06 05 n	113 41 w	0.31
01	01	870813	18.52	55	63	56			5	288	06 19 n	114 10 w	9.26
01	02	870813	18.52	63	56	55			5	288	06 21 n	114 15 w	1.23
02	01	870813	18.52	64	69	31			6	288	06 20 n	114 20 w	3.40
02	02	870813	18.52	64	69	31			5	288			7.41
02	03	870813	18.52	69	31	64			5	288			4.63
02	04	870813	18.52	69	31	64			5	288			7.72
02	05	870813	18.52	31	64	69			5	288			1.54
03	01	870813	18.52	31	64	69			5	288	06 24 n	114 33 w	3.09

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
03	02	870813	18.52	31	64	69			5	288			5.56
03	03	870813	18.52	55	63	56			5	288	06 25 n	114 37 w	12.35
03	04	870813	18.52	63	56	55			5	288			3.09
04	01	870813	18.52	63	56	55			5	288	06 26 n	114 45 w	1.54
04	02	870813	18.52	56	55	63			5	288			10.80
04	03	870813	18.52	56	55	63			5	288			1.54
04	04	870813	18.52	64	69	56			5	288			4.63
04	05	870813	18.52	64	69	31			5	288			1.54
05	01	870813	18.52	69	31	64			5	288	06 34 n	114 57 w	6.17
05	02	870813	18.52	31	64	69			5	288			3.40
06	01	870813	18.52	55	63	56			4	288	06 40 n	115 04 w	9.57
06	02	870813	18.52	63	56	55			4	288			9.57
06	03	870813	18.52	56	55	63			5	288			10.80
06	04	870813	18.52	64	69	56			5	288	06 45 n	115 19 w	3.40
06	05	870813	18.52	64	69	31			5	288			10.49
06	06	870813	18.52	55	63	56			4	288			6.17
06	07	870813	18.52	69	31	64			4	288			4.63
06	08	870813	18.52	31	64	69			4	288			12.35
06	09	870813	18.52	55	63	56			4	288	06 52 n	115 38 w	9.26
06	10	870813	18.52	63	56	55			4	288	06 53 n	115 43 w	3.09
01	01	870814	18.52	69	31	64	05	03	4	288	07 15 n	117 09 w	7.72
01	02	870814	18.52	31	64	69	05	03	3	288			6.17
01	03	870814	18.52	56	55	63			3	288	07 17 n	117 15 w	12.35
02	01	870814	18.52	55	63	56			3	288	07 18 n	117 24 w	6.79
02	02	870814	18.52	55	63	56			3	288			0.62
03	01	870814	18.52	63	56	55			3	290	07 19 n	117 31 w	3.70
03	02	870814	18.52	63	56	55			4	290			2.47
03	03	870814	18.52	69	31	64			4	290	07 20 n	117 34 w	12.35
03	04	870814	18.52	31	64	69	05	01	4	290			12.66
03	05	870814	18.52	64	69	31	05	01	4	290			12.04
03	06	870814	18.52	56	55	63	05	12	4	290	07 27 n	117 49 w	12.35
03	07	870814	18.52	55	63	56	04	12	4	290			6.17
03	08	870814	18.52	55	63	56			4	290	07 31 n	117 58 w	3.70
03	09	870814	18.52	55	63	56	12	12	4	290			2.47
03	10	870814	18.52	63	56	55	02	12	4	290			12.35
03	11	870814	18.52	69	31	64	12	01	3	290	07 35 n	118 07 w	4.94
03	12	870814	18.52	69	31	64	12	01	3	285	07 36 n	118 10 w	7.41
03	13	870814	18.52	31	64	69	12	12	3	285			4.63
03	14	870814	18.52	31	64	69	12	12	4	285			4.63
04	01	870814	18.52	56	55	63			4	285	07 30 n	118 18 w	2.78
04	02	870814	18.52	64	69	31			4	301			4.94
04	03	870814	18.52	55	63	56			4	301	07 32 n	118 21 w	0.93
05	01	870814	18.52	63	56	55			4	301	07 34 n	118 24 w	6.48
06	01	870814	18.52	69	31	64			3	301	07 36 n	118 26 w	1.23
06	02	870814	18.52	69	31	64			3	301			3.40
06	03	870814	18.52	69	31	64			3	301	07 38 n	118 28 w	0.31
01	01	870815	18.52	63	56	55			2	300	08 46 n	120 10 w	5.86
01	02	870815	18.52	56	55	63			2	300	08 47 n	120 12 w	1.54
02	01	870815	18.52	55	63	56			2	300	08 48 n	120 14 w	3.70
02	02	870815	18.52	31	64	69			2	300	08 49 n	120 16 w	6.17
03	01	870815	18.52	69	31	64			2	300	08 57 n	120 16 w	1.23
03	02	870815	18.52	69	31	64			2	291	08 57 n	120 17 w	3.09

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
03	03	870815	18.52	69	31	64	12	01	3	291			8.03
03	04	870815	18.52	63	56	55	12	01	2	291	08 59 n	120 22 w	12.35
03	05	870815	18.52	56	55	63	12	01	2	291			4.63
04	01	870815	18.52	56	55	63	12	01	2	291			3.09
04	02	870815	18.52	55	63	56	12	01	2	291			2.78
04	03	870815	18.52	55	63	56	12	01	3	291	09 05 n	120 36 w	1.23
04	04	870815	18.52	55	63	56			3	291			5.56
05	01	870815	18.52	31	64	69			2	291			4.63
05	02	870815	18.52	31	64	69			3	291	09 09 n	120 45 w	1.54
05	03	870815	18.52	31	64	69			3	271	09 09 n	120 46 w	3.09
05	04	870815	18.52	63	56	55			3	271			4.63
06	01	870815	18.52	69	31	64			1	271	09 09 n	120 54 w	5.25
07	01	870815	18.52	69	31	64	12	02	2	271	09 09 n	120 57 w	2.78
07	02	870815	18.52	63	56	55			2	271	09 09 n	120 58 w	3.09
07	03	870815	18.52	63	56	55			2	301	09 09 n	121 00 w	6.17
07	04	870815	18.52	56	55	63			2	301	09 11 n	121 03 w	4.63
07	05	870815	18.52	56	55	63			2	301	09 12 n	121 05 w	0.31
01	01	870816	18.52	64	69	31			1	301	09 50 n	122 31 w	4.63
02	01	870816	18.52	64	69	31			1	301			1.23
02	02	870816	18.52	69	31	64			1	301	09 52 n	122 34 w	1.23
02	03	870816	18.52	69	31	64			2	301			4.94
02	04	870816	18.52	69	31	64	05	02	2	301	09 53 n	122 40 w	0.62
03	01	870816	18.52	31	64	69	04	02	2	301	09 54 n	122 43 w	1.54
04	01	870816	18.52	55	63	56			2	303	09 51 n	122 50 w	4.32
05	01	870816	18.52	64	69	31	04	01	2	304	09 47 n	122 56 w	6.79
06	01	870816	18.52	69	31	64	04	01	2	301	09 53 n	123 01 w	0.93
06	02	870816	18.52	69	31	64	04	01	2	301	09 53 n	123 01 w	4.32
07	01	870816	18.52	55	63	56	12	12	3	301	09 55 n	123 05 w	9.88
07	02	870816	18.52	63	56	55	12	12	3	301			10.49
07	03	870816	18.52	56	55	63	12	12	3	301	10 01 n	123 16 w	3.09
08	01	870816	18.52	64	69	31	11	01	2	301	10 03 n	123 19 w	10.80
08	02	870816	18.52	69	31	64	11	01	2	301			12.35
08	03	870816	18.52	31	64	69	11	01	2	301			2.78
09	01	870816	18.52	55	63	56	11	01	2	301	10 16 n	123 38 w	4.32
09	02	870816	18.52	55	63	56	11	02	2	301			6.17
09	03	870816	18.52	64	31	69	11	02	1	301			4.63
09	04	870816	18.52	63	56	55	11	02	1	301	10 21 n	123 46 w	5.25
09	05	870816	18.52	63	56	55	11	02	0	301			4.01
09	06	870816	18.52	56	55	63	11	02	1	301	10 24 n	123 51 w	7.10
09	07	870816	18.52	56	55	63			1	301	10 26 n	123 54 w	0.31
01	01	870817	18.52	56	55	63			2	301			7.72
01	02	870817	18.52	55	63	56			2	301	11 28 n	125 30 w	1.54
02	01	870817	18.52	63	56	55			2	301	11 32 n	125 33 w	1.23
03	01	870817	18.52	69	31	64	05	02	2	301	11 37 n	125 35 w	9.26
03	02	870817	18.52	31	64	69	05	02	2	301	11 40 n	125 40 w	4.63
03	03	870817	18.52	31	64	69	05	01	3	301			4.63
03	04	870817	18.52	64	69	31	05	01	3	301	11 43 n	125 45 w	7.41
04	01	870817	18.52	56	55	63	05	01	3	301	11 46 n	125 50 w	2.47
04	02	870817	18.52	56	55	63	05	01	2	301			9.88
04	03	870817	18.52	55	63	56	05	01	2	301			12.35
04	04	870817	18.52	63	56	55	05	01	2	301	11 53 n	126 04 w	14.20
04	05	870817	18.52	69	64	56	04	12	2	301			1.23

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
04	06	870817	18.52	69	31	64	04	12	2	301			5.86
04	07	870817	18.52	69	31	64	12	12	2	301	11 59 n	126 16 w	3.40
04	08	870817	18.52	31	64	69	12	12	2	301			3.09
04	09	870817	18.52	31	64	69	12	12	3	301			9.57
04	10	870817	18.52	64	69	31	12	12	3	301			12.04
04	11	870817	18.52	56	55	63	11	12	3	301	12 07 n	126 32 w	4.63
05	01	870817	18.52	55	63	56	11	01	2	301	12 13 n	126 37 w	4.01
06	01	870817	18.52	69	31	64	11	02	2	301	12 12 n	126 41 w	9.57
06	02	870817	18.52	56	55	63	11	02	2	301	12 15 n	126 46 w	4.63
07	01	870817	18.52	64	69	31	11	02	2	301	12 19 n	126 51 w	1.85
08	01	870817	18.52	56	55	63	11	03	2	301	12 22 n	126 57 w	8.33
08	02	870817	18.52	55	63	56	11	03	2	301			0.93
08	03	870817	18.52	55	63	56	11	03	2	301	12 25 n	127 02 w	0.31
01	01	870818	18.52	31	64	69	05	03	3	301			4.63
01	02	870818	18.52	31	64	69	05	03	4	301			3.09
01	03	870818	18.52	64	69	31	04	03	4	301	13 20 n	128 46 w	7.41
02	01	870818	18.52	63	56	55	05	02	4	301	13 23 n	128 54 w	4.32
02	02	870818	18.52	63	56	55	05	02	4	301			5.86
02	03	870818	18.52	63	56	55	05	02	4	301	13 25 n	129 00 w	2.16
02	04	870818	18.52	56	55	63	05	02	4	301			4.63
03	01	870818	18.52	56	55	63	05	02	4	301			2.47
03	02	870818	18.52	55	63	56	05	02	4	301	13 26 n	129 07 w	12.35
03	03	870818	18.52	31	64	69	05	01	4	301	13 30 n	129 15 w	3.09
04	01	870818	18.52	31	64	69	05	01	4	301	13 34 n	129 19 w	4.63
04	02	870818	18.52	64	69	31	05	01	4	301			10.80
04	03	870818	18.52	69	31	64	05	01	4	301			9.26
04	04	870818	18.52	69	31	64	05	12	4	301			2.47
04	05	870818	18.52	69	31	64	05	12	4	276	13 42 n	129 34 w	0.62
04	06	870818	18.52	63	56	55	05	12	4	276	13 42 n	129 35 w	11.42
04	07	870818	18.52	63	56	55			4	276			0.93
04	08	870818	18.52	56	55	63			4	276			4.63
04	09	870818	18.52	56	55	63			4	276			1.54
05	01	870818	18.52	55	63	56			4	276	13 43 n	129 50 w	1.23
05	02	870818	18.52	55	63	56	12	12	4	276	13 43 n	129 52 w	0.31
06	01	870818	18.52	31	64	69	12	12	5	276	13 40 n	129 58 w	7.41
06	02	870818	18.52	64	69	31	12	01	5	276			4.94
06	03	870818	18.52	64	69	31	12	01	4	276	13 40 n	130 07 w	6.17
06	04	870818	18.52	69	31	64	12	01	4	276			9.26
07	01	870818	18.52	63	56	55	12	01	4	276	13 41 n	130 17 w	10.80
07	02	870818	18.52	63	56	55	12	02	4	276			3.09
07	03	870818	18.52	31	64	69	12	02	4	276			5.56
07	04	870818	18.52	56	55	63	12	02	4	276	13 42 n	130 29 w	3.70
07	05	870818	18.52	56	55	63	12	02	3	276			4.63
07	06	870818	18.52	55	63	56	12	02	3	276	13 43 n	130 34 w	9.26
07	07	870818	18.52	31	64	69	12	02	3	276	13 43 n	130 40 w	9.26
07	08	870818	18.52	64	69	31	12	03	3	276	13 44 n	130 45 w	9.26
07	09	870818	18.52	69	31	64	12	03	3	276	13 45 n	130 53 w	8.95
07	10	870818	18.52	69	31	64	12	03	3	276	13 45 n	131 00 w	0.31
01	01	870819	18.52	55	63	56			4	226	13 06 n	132 11 w	9.26
01	02	870819	18.52	63	56	55			4	226	13 03 n	132 14 w	9.26
01	03	870819	18.52	64	69	31	07	03	4	226	12 59 n	132 18 w	3.40
01	04	870819	18.52	64	69	31			4	226			2.78

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
02	01	870819	18.52	64	69	31	07	02	4	226	12 57 n	132 24 w	2.78
02	02	870819	18.52	69	31	64	07	02	4	226			9.26
02	03	870819	18.52	69	31	64	02	02	5	226			3.09
02	04	870819	18.52	31	64	69	07	02	5	226			12.35
02	05	870819	18.52	55	63	56	07	01	5	226	12 46 n	132 36 w	12.35
02	06	870819	18.52	63	56	55	07	01	5	226			6.48
02	07	870819	18.52	63	56	55			5	226	12 38 n	132 44 w	5.86
02	08	870819	18.52	56	55	63	07	01	5	226			1.54
03	01	870819	18.52	56	55	63	07	01	5	226	12 35 n	132 48 w	8.33
03	02	870819	18.52	64	69	31	08	01	5	226			4.94
03	03	870819	18.52	64	69	31			5	226			2.78
03	04	870819	18.52	64	69	31	08	12	5	226	12 28 n	132 55 w	4.63
03	05	870819	18.52	69	31	64			5	226			3.09
03	06	870819	18.52	69	31	64	12	12	6	226			6.17
03	07	870819	18.52	69	31	64	12	12	6	226			1.54
03	08	870819	18.52	31	64	69	12	12	6	226			2.47
04	01	870819	18.52	31	64	69	12	12	6	226	12 18 n	133 03 w	4.63
04	02	870819	18.52	55	63	56	12	12	6	226	12 16 n	133 04 w	7.72
04	03	870819	18.52	55	63	56			6	226			4.63
04	04	870819	18.52	63	56	55	01	01	6	226			2.16
05	01	870819	18.52	63	56	55	01	01	6	226	12 09 n	133 12 w	0.93
05	02	870819	18.52	63	56	55	01	01	6	226			0.62
05	03	870819	18.52	56	55	63	01	01	6	226			4.63
06	01	870819	18.52	56	55	63	01	01	5	226	12 04 n	133 17 w	1.54
07	01	870819	18.52	64	69	31	01	01	5	226	12 01 n	133 17 w	9.57
07	02	870819	18.52	55	63	56	02	02	5	226			6.79
07	03	870819	18.52	69	31	64			5	226			1.54
08	01	870819	18.52	31	64	69			5	226	11 50 n	133 30 w	7.72
08	02	870819	18.52	55	63	56			5	226	11 47 n	133 33 w	5.25
08	03	870819	18.52	55	63	56	02	02	5	226	11 46 n	133 34 w	2.47
09	01	870819	18.52	63	56	55	02	03	5	226	11 44 n	133 34 w	0.93
09	02	870819	18.52	63	56	55	02	03	5	226			5.25
09	03	870819	18.52	63	56	55	02	03	5	226	11 41 n	133 37 w	0.31
01	01	870820	18.52	69	31	64			5	258	10 43 n	134 35 w	1.85
02	01	870820	18.52	56	63	64			5	258	10 38 n	134 39 w	0.93
02	02	870820	18.52	56	55	63			5	258			7.10
02	03	870820	18.52	55	63	56			5	258			12.35
02	04	870820	18.52	63	56	55			5	258	10 35 n	134 51 w	12.35
02	05	870820	18.52	69	31	64			6	258	10 32 n	134 58 w	10.80
02	06	870820	18.52	69	31	64			6	258			1.54
03	01	870820	18.52	64	69	31	06	01	5	258	10 27 n	135 14 w	9.26
03	02	870820	18.52	56	55	63	06	01	5	258	10 25 n	135 21 w	9.26
03	03	870820	18.52	56	55	63	12	12	5	265	10 23 n	135 26 w	3.40
03	04	870820	18.52	55	63	56			5	225			0.93
03	05	870820	18.52	55	63	56			5	265	10 22 n	135 29 w	10.80
04	01	870820	18.52	63	56	55			5	265	10 21 n	135 39 w	4.94
04	02	870820	18.52	69	31	64			5	265	10 20 n	135 43 w	4.63
05	01	870820	18.52	69	31	64			5	265	10 18 n	135 48 w	3.09
05	02	870820	18.52	31	64	69			5	265			12.66
05	03	870820	18.52	64	69	31			5	265			2.78
05	04	870820	18.52	64	69	31			4	265	10 16 n	136 00 w	9.26
05	05	870820	18.52	56	55	63			4	265	10 15 n	136 05 w	13.89

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
05	06	870820	18.52	31	64	69			5	265			5.25
05	07	870820	18.52	55	63	56			5	265	10 14 n	136 17 w	8.64
05	08	870820	18.52	63	56	55			5	265	10 14 n	136 22 w	9.26
05	09	870820	18.52	69	31	64			5	265	10 14 n	136 28 w	9.26
05	10	870820	18.52	31	64	69			5	265	10 12 n	136 35 w	6.17
05	11	870820	18.52	31	64	69			5	265			3.09
05	12	870820	18.52	64	69	31			5	265	10 10 n	136 40 w	9.26
05	13	870820	18.52	64	69	31			5	265	10 10 n	136 45 w	0.31
01	01	870821	18.52	63	56	55			5	301	10 01 n	138 12 w	8.64
01	02	870821	18.52	56	55	63			5	301	10 04 n	138 16 w	8.64
01	03	870821	18.52	56	55	63			5	301			0.62
01	04	870821	18.52	55	63	56			5	301			4.01
01	05	870821	18.52	55	63	56			5	301			2.16
01	06	870821	18.52	31	64	69			6	301	10 09 n	138 26 w	3.70
02	01	870821	18.52	64	69	31			6	301			1.85
02	02	870821	18.52	64	69	31			6	301	10 11 n	138 35 w	0.31
03	01	870821	18.52	63	31	64			4	302	10 22 n	139 18 w	9.26
03	02	870821	18.52	63	56	55			4	302	10 25 n	139 23 w	12.35
03	03	870821	18.52	56	55	63			5	302	10 29 n	139 30 w	3.09
01	01	870822	18.52	31	64	69	05	03	3	302	10 27 n	140 54 w	9.57
01	02	870822	18.52	64	69	31	05	03	4	302	10 30 n	140 59 w	8.95
01	03	870822	18.52	55	63	56	05	02	4	302			12.35
01	04	870822	18.52	63	56	55	05	02	4	302			12.35
01	05	870822	18.52	56	55	63	05	02	4	302			12.35
01	06	870822	18.52	31	64	69			4	302	10 45 n	141 23 w	10.80
01	07	870822	18.52	31	64	69			4	302			2.16
01	08	870822	18.52	64	69	31			4	302			5.25
01	09	870822	18.52	64	69	31			4	302	10 51 n	141 33 w	6.48
01	10	870822	18.52	69	31	64	12	12	4	302	10 53 n	141 36 w	3.09
01	11	870822	18.52	69	31	64	12	12	4	302	10 54 n	141 37 w	9.26
01	12	870822	18.52	55	63	56			4	302	10 56 n	141 42 w	6.48
01	13	870822	18.52	55	63	56			4	302			5.86
01	14	870822	18.52	63	56	55			4	302			12.35
01	15	870822	18.52	56	55	63			4	302			10.80
02	01	870822	18.52	69	31	64			3	302	11 17 n	142 17 w	3.09
02	02	870822	18.52	69	31	64			3	302			6.17
02	03	870822	18.52	55	63	56			3	302	11 19 n	142 21 w	0.93
03	01	870822	18.52	55	63	56			3	340	11 22 n	142 26 w	4.32
03	02	870822	18.52	64	69	31	10	02	4	340			6.17
03	03	870822	18.52	63	56	55	10	02	4	340			5.25
03	04	870822	18.52	63	56	55	10	02	4	340			2.47
04	01	870822	18.52	31	64	69			5	340	11 40 n	142 34 w	3.09
04	02	870822	18.52	31	64	69	10	02	5	340			3.09
04	03	870822	18.52	64	69	31	10	03	5	340	11 43 n	142 35 w	9.26
04	04	870822	18.52	64	69	31	10	03	5	340	11 48 n	142 37 w	0.31
01	01	870823	18.52	56	55	63			4	302	12 03 n	142 04 w	7.10
01	02	870823	18.52	55	63	56	05	03	4	302	12 05 n	142 08 w	7.72
01	03	870823	18.52	63	56	55	05	03	4	302			4.01
02	01	870823	18.52	63	56	55	05	02	4	302	12 10 n	142 15 w	3.09
02	02	870823	18.52	64	69	31	05	02	4	302			10.49
02	03	870823	18.52	69	31	64	05	02	4	302			2.47
02	04	870823	18.52	69	31	64			4	302			2.47

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
02	05	870823	18.52	69	31	64	05	02	4	302			7.41
02	06	870823	18.52	31	64	69	05	01	4	302			4.63
02	07	870823	18.52	31	64	69	05	01	4	302			4.63
02	08	870823	18.52	31	64	69	05	01	4	302			3.09
02	09	870823	18.52	56	55	63	05	01	4	302	12 21 n	142 34 w	12.35
02	10	870823	18.52	55	63	56			4	302			0.62
02	11	870823	18.52	55	63	56	05	01	4	302			1.54
02	12	870823	18.52	55	63	56	05	01	4	302			1.54
02	13	870823	18.52	55	63	56			4	302			1.23
03	01	870823	18.52	55	63	56	05	01	4	302	12 28 n	142 45 w	4.63
03	02	870823	18.52	63	56	55	05	01	4	302			5.25
04	01	870823	18.52	63	56	55	08	12	4	240	12 31 n	142 54 w	2.47
04	02	870823	18.52	64	69	31	08	12	4	240			9.57
04	03	870823	18.52	64	69	31			4	240			0.93
04	04	870823	18.52	69	31	64	12	12	4	240			2.16
04	05	870823	18.52	69	31	64	12	12	4	302	12 26 n	143 02 w	2.47
04	06	870823	18.52	69	31	64			4	302			1.54
04	07	870823	18.52	69	31	64	12	12	5	000	12 27 n	143 04 w	4.63
04	08	870823	18.52	69	31	64	12	12	5	302	12 30 n	143 05 w	1.54
04	09	870823	18.52	31	64	69	12	12	5	302			1.54
04	10	870823	18.52	31	64	69	12	12	4	302			10.80
04	11	870823	18.52	56	55	63	12	12	4	302	12 34 n	143 12 w	3.09
04	12	870823	18.52	56	55	63			4	302			1.23
04	13	870823	18.52	56	55	63	12	12	4	302			3.70
04	14	870823	18.52	56	55	63	12	12	4	302			4.32
04	15	870823	18.52	55	63	56	11	01	5	302			1.54
04	16	870823	18.52	55	63	56	11	01	5	302			6.17
05	01	870823	18.52	55	63	56	11	01	5	302	12 41 n	143 26 w	1.23
05	02	870823	18.52	63	56	55	11	01	5	302	12 41 n	143 26 w	12.66
05	03	870823	18.52	64	69	31	11	02	5	302	12 45 n	143 33 w	13.58
05	04	870823	18.52	56	55	63			5	302			3.09
05	05	870823	18.52	56	55	63	11	02	5	302			1.54
05	06	870823	18.52	56	55	63			5	302	12 51 n	143 43 w	1.23
05	07	870823	18.52	69	31	64	11	02	5	302			4.94
05	08	870823	18.52	31	64	69	11	02	5	302			3.09
05	09	870823	18.52	31	64	69	11	02	5	302	12 54 n	143 48 w	0.31
01	01	870827	18.52	56	55	63	04	03	6	303	18 38 n	152 50 w	8.64
01	02	870827	18.52	56	55	63	04	03	6	303	18 42 n	152 56 w	0.31
01	01	870902	18.52	64	69	31			2	050	19 46 n	155 05 w	6.79
02	01	870902	18.52	69	31	64			2	090	19 50 n	154 58 w	6.17
01	01	870903	18.52	55	56	63	10	03	4	142	18 26 n	153 35 w	1.23
01	02	870903	18.52	55	56	63			4	142			1.23
01	03	870903	18.52	55	56	63	10	03	4	142			4.63
01	04	870903	18.52	56	63	55	10	03	4	142	18 23 n	153 32 w	9.26
01	05	870903	18.52	63	55	56	10	03	4	142	18 19 n	153 29 w	0.93
01	06	870903	18.52	63	55	56			4	142			1.54
01	07	870903	18.52	63	55	56			4	142			1.23
01	08	870903	18.52	63	55	56	10	02	4	142			5.56
01	09	870903	18.52	69	31	64			4	142	18 15 n	153 25 w	2.16
01	10	870903	18.52	69	31	64	10	02	4	142			2.47
01	11	870903	18.52	69	31	64			4	142	18 13 n	153 23 w	1.54
01	12	870903	18.52	69	31	64			4	200	18 12 n	153 23 w	6.17

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
02	01	870903	18.52	31	64	69			4	142	18 07 n	153 23 w	1.54
03	01	870903	18.52	31	64	69			4	142	18 06 n	153 22 w	6.17
03	02	870903	18.52	63	69	31	11	02	5	142			12.35
03	03	870903	18.52	55	56	63	11	01	5	142	17 58 n	153 15 w	12.35
03	04	870903	18.52	56	63	55	11	01	5	142			11.73
03	05	870903	18.52	63	55	56	11	01	5	142			8.64
03	06	870903	18.52	63	55	56	11	12	5	142			1.85
03	07	870903	18.52	63	55	56			5	142			1.85
03	08	870903	18.52	63	55	56	12	12	5	142	17 41 n	153 00 w	1.85
03	09	870903	18.52	69	31	64	12	12	5	142			11.11
03	10	870903	18.52	31	64	69	12	12	5	142			12.66
03	11	870903	18.52	64	69	31	03	12	5	142			8.33
03	12	870903	9.26	64	69	31	05	01	5	100			3.40
03	13	870903	18.52	55	56	63	05	01	5	142			9.88
03	14	870903	18.52	56	63	55	04	01	5	142			11.73
03	15	870903	18.52	63	55	56	04	01	5	142			8.64
03	16	870903	18.52	63	55	56	05	01	5	142			3.70
03	17	870903	18.52	69	31	64	04	02	5	142	17 11 n	152 32 w	7.41
03	18	870903	18.52	69	64	56	04	02	5	142			6.48
03	19	870903	18.52	55	56	63			5	142			3.09
03	20	870903	18.52	55	56	63	04	02	5	142			3.09
03	21	870903	18.52	31	64	69	04	02	5	142			5.86
03	22	870903	18.52	63	69	31	05	02	5	142			11.11
03	23	870903	18.52	55	63	56	05	03	5	142	16 54 n	152 19 w	2.16
03	24	870903	18.52	55	56	63			5	142			1.54
03	25	870903	18.52	55	56	63	05	03	5	142			5.56
03	26	870903	18.52	56	63	55	05	03	5	142	16 50 n	152 14 w	1.54
03	27	870903	18.52	56	63	55			4	142			3.40
03	28	870903	18.52	56	63	55			4	142	16 48 n	152 12 w	0.31
01	01	870904	18.52	31	64	69	10	03	4	142	15 06 n	150 54 w	9.26
01	02	870904	18.52	64	69	31	10	03	5	142	15 02 n	150 51 w	9.26
01	03	870904	18.52	69	31	64	10	02	5	142	14 58 n	150 47 w	9.26
01	04	870904	18.52	63	55	56	10	02	5	142	14 53 n	150 44 w	1.85
01	05	870904	18.52	63	55	56			5	142			1.23
01	06	870904	18.52	63	55	56	10	02	5	142			0.62
01	07	870904	18.52	63	55	56			5	142			0.93
02	01	870904	18.52	63	55	56	10	02	5	142	14 50 n	150 42 w	6.17
02	02	870904	18.52	55	56	63	10	02	5	142			12.35
02	03	870904	18.52	56	63	55	10	02	5	142			6.48
02	04	870904	18.52	56	63	55	10	01	5	142			5.86
02	05	870904	18.52	31	64	69	10	01	5	142	14 35 n	150 31 w	12.66
02	06	870904	18.52	64	69	31	11	01	5	142			1.85
02	07	870904	18.52	64	69	31	11	01	5	142			0.93
03	01	870904	18.52	64	69	31	11	01	5	142	14 26 n	150 24 w	5.56
03	02	870904	18.52	69	31	64	11	01	5	142			12.35
03	03	870904	18.52	63	55	56	12	12	5	142	14 18 n	150 18 w	2.16
04	01	870904	18.52	63	55	56	12	12	5	141	14 16 n	150 17 w	4.01
05	01	870904	18.52	55	56	63	04	12	4	141	14 03 n	150 07 w	1.54
06	01	870904	18.52	31	64	69			5	141			6.17
06	02	870904	18.52	31	64	69			5	141	13 57 n	150 03 w	0.31
01	01	870906	18.52	64	69	31			4	140	09 24 n	146 19 w	8.03
02	01	870906	18.52	69	31	64			4	140	09 20 n	146 15 w	3.40

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
03	01	870906	18.52	56	63	55			2	140	09 05 n	146 03 w	1.85
03	02	870906	18.52	56	63	55	10	02	2	140			3.40
03	03	870906	18.52	56	63	55	10	01	2	140			2.47
03	04	870906	18.52	63	55	56	10	01	2	140			4.94
03	05	870906	18.52	63	55	56	10	01	2	140	09 00 n	145 59 w	2.78
03	06	870906	18.52	55	56	63	10	01	2	140			1.54
03	07	870906	18.52	55	56	63			2	140			0.93
04	01	870906	18.52	64	69	31	10	12	3	140	08 46 n	145 47 w	6.48
05	01	870906	18.52	56	63	55			3	140	08 46 n	145 43 w	1.85
05	02	870906	18.52	56	63	55			3	140			4.63
05	03	870906	18.52	56	63	55			4	140			1.54
05	04	870906	18.52	56	63	55	12	12	4	140			1.54
05	05	870906	18.52	63	55	56	12	12	4	140			8.95
05	06	870906	18.52	63	55	56	04	12	4	140			2.47
06	01	870906	18.52	55	56	63			4	140	08 36 n	145 35 w	7.10
06	02	870906	18.52	64	69	31	04	01	4	140	08 33 n	145 31 w	4.63
07	01	870906	18.52	69	31	64			4	147	08 33 n	145 26 w	4.63
07	02	870906	18.52	31	64	69	04	01	4	147			4.63
07	03	870906	18.52	31	64	69	04	01	4	147			3.09
08	01	870906	18.52	56	63	55			4	147	08 25 n	145 21 w	3.09
08	02	870906	18.52	56	63	55			4	147			2.47
08	03	870906	18.52	56	63	55	04	02	4	147			2.16
09	01	870906	18.52	63	55	56			4	147	08 16 n	145 14 w	2.47
10	01	870906	18.52	55	56	63			4	147	08 11 n	145 11 w	8.33
10	02	870906	18.52	64	69	31			4	147	08 08 n	145 09 w	3.70
01	01	870907	18.52	69	31	64			5	090	06 51 n	143 05 w	6.48
01	02	870907	18.52	31	64	69			5	090			1.54
01	03	870907	18.52	31	64	69			5	090	06 51 n	143 00 w	6.17
02	01	870907	18.52	69	31	64			5	140	06 33 n	142 36 w	7.41
02	02	870907	18.52	31	64	69			5	140			3.09
02	03	870907	18.52	31	64	69			5	140	06 29 n	142 31 w	0.31
01	01	870908	18.52	31	64	69			3	116	05 51 n	141 07 w	4.63
02	01	870908	18.52	64	69	31			3	116	05 51 n	141 02 w	1.85
02	02	870908	18.52	64	69	31			3	126			2.47
02	03	870908	18.52	64	69	31	11	02	3	126			3.40
02	04	870908	18.52	55	56	63			3	126	05 49 n	140 59 w	3.09
02	05	870908	18.52	55	56	63	11	02	3	126			7.72
03	01	870908	18.52	56	63	55	11	02	3	126			7.10
03	02	870908	18.52	31	64	69	11	01	3	126	05 43 n	140 50 w	6.17
04	01	870908	18.52	69	64	55	11	01	3	126	05 41 n	140 47 w	2.16
04	02	870908	18.52	69	64	55	11	01	3	116	05 40 n	140 46 w	6.79
04	03	870908	18.52	69	64	55			3	116	05 39 n	140 42 w	3.40
04	04	870908	18.52	64	69	55			3	116			0.93
04	05	870908	18.52	64	69	55			3	120	05 38 n	140 39 w	2.47
04	06	870908	18.52	64	69	55			4	120			2.16
04	07	870908	18.52	64	69	55			4	120			0.62
05	01	870908	18.52	64	69	55			4	120	05 36 n	140 36 w	2.47
06	01	870908	18.52	64	69	31			4	120	05 35 n	140 35 w	4.32
06	02	870908	18.52	55	56	63			4	120	05 34 n	140 33 w	3.40
06	03	870908	18.52	55	56	63	12	12	4	120			6.79
06	04	870908	18.52	55	56	63			4	120	05 32 n	140 28 w	2.16
06	05	870908	18.52	56	63	55			4	120			12.35

Table 2. (continued

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
06	06	870908	18.52	63	55	56			4	120	05 28 n	140 21 w	0.31
07	01	870908	18.52	63	55	31			4	120	05 27 n	140 20 w	0.31
08	01	870908	18.52	63	55	31			4	120	05 26 n	140 19 w	3.40
08	02	870908	18.52	56	64	69	12	12	4	120	05 26 n	140 17 w	6.17
08	03	870908	18.52	31	64	69	12	12	4	120			6.17
08	04	870908	18.52	64	69	31	05	01	4	120			12.35
08	05	870908	18.52	69	31	64			4	120			12.35
08	06	870908	18.52	55	56	63			4	120	05 16 n	139 59 w	5.56
09	01	870908	18.52	69	64	31	05	02	4	120	05 16 n	139 54 w	3.40
10	01	870908	18.52	56	63	55	05	02	4	120	05 17 n	139 51 w	6.48
10	02	870908	18.52	63	55	56	05	02	3	120			4.01
10	03	870908	18.52	63	55	56	05	03	3	120			1.54
10	04	870908	18.52	31	64	69	05	03	3	120	05 14 n	139 45 w	9.26
10	05	870908	18.52	64	69	31			3	120	05 11 n	139 40 w	3.09
10	06	870908	18.52	64	69	31			3	120	05 11 n	139 39 w	0.00
01	01	870909	18.52	63	55	56			3	098	04 56 n	138 21 w	0.93
01	02	870909	18.52	63	55	56	12	03	3	098			4.01
01	03	870909	18.52	63	55	56	12	03	4	098			3.40
01	04	870909	18.52	55	56	63	12	03	4	098			8.33
01	05	870909	18.52	56	63	55	12	03	4	098	04 55 n	138 12 w	8.33
02	01	870909	18.52	64	69	31	12	02	4	098	04 54 n	138 04 w	8.95
02	02	870909	18.52	64	69	31	12	02	4	086	04 54 n	137 59 w	1.85
02	03	870909	18.52	69	31	64	12	02	4	086			10.49
02	04	870909	18.52	31	64	69	12	01	4	086			10.80
02	05	870909	18.52	63	55	56	12	01	4	086	04 55 n	137 48 w	7.10
03	01	870909	18.52	55	56	63	12	01	4	086	04 57 n	137 39 w	9.88
03	02	870909	18.52	55	56	63			4	086			0.93
03	03	870909	18.52	56	63	55			4	086			7.72
03	04	870909	18.52	56	63	55	12	12	4	086			6.17
03	05	870909	18.52	64	69	31	12	12	5	086			10.80
04	01	870909	18.52	69	31	64	12	12	5	086	04 59 n	137 18 w	3.09
04	02	870909	18.52	69	31	64	12	12	5	086			0.93
05	01	870909	18.52	69	31	64			5	086	04 59 n	137 14 w	2.16
05	02	870909	18.52	69	31	64	12	12	5	086			2.47
05	03	870909	18.52	31	64	69	12	12	5	086			7.72
06	01	870909	18.52	31	64	69			5	086			0.93
06	02	870909	18.52	31	64	69			5	086	04 59 n	137 06 w	0.31
07	01	870909	18.52	31	64	69			5	086	04 59 n	137 06 w	1.23
07	02	870909	18.52	63	55	56	06	12	5	086	04 59 n	137 05 w	3.09
07	03	870909	18.52	63	55	56	06	01	5	086			9.26
07	04	870909	18.52	55	56	63	06	01	5	086			9.57
07	05	870909	16.67	55	56	63	06	01	5	086			1.39
07	06	870909	18.52	55	56	63	06	01	5	086			1.23
07	07	870909	18.52	56	63	55			5	086			5.25
07	08	870909	18.52	56	63	55			4	086			7.10
07	09	870909	18.52	64	69	31	06	02	4	086	05 01 n	136 42 w	4.63
07	10	870909	18.52	64	69	31	06	02	4	086			1.54
07	11	870909	18.52	64	69	31			4	086			3.09
07	12	870909	18.52	64	69	31	06	02	5	086	05 01 n	136 39 w	4.63
07	13	870909	18.52	63	55	56			4	086			2.47
07	14	870909	18.52	63	55	56	06	02	4	086			0.93
07	15	870909	18.52	63	55	56			4	086			2.16

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
07	16	870909	18.52	63	55	56	06	02	4	086	05 01 n	136 34 w	1.23
07	17	870909	18.52	69	31	64	06	02	4	086			3.40
07	18	870909	18.52	69	31	64	06	02	4	086			5.25
07	19	870909	18.52	31	64	69	06	02	4	086			3.40
08	01	870909	18.52	63	55	56			4	086	05 02 n	136 22 w	1.85
08	02	870909	18.52	63	55	56	06	03	4	086			0.93
08	03	870909	18.52	63	55	56			4	086			1.85
08	04	870909	18.52	55	56	63			4	086			4.63
08	05	870909	18.52	55	56	63			4	086	05 02 n	136 17 w	0.31
01	01	870910	18.52	69	31	64	12	03	4	086	05 06 n	134 48 w	2.16
02	01	870910	18.52	69	31	64	12	03	3	086	05 05 n	134 45 w	4.32
02	02	870910	18.52	31	64	69	12	03	3	086	05 05 n	134 43 w	10.49
02	03	870910	18.52	64	69	31	12	02	4	086			8.03
02	04	870910	18.52	56	63	55	12	02	4	086	05 05 n	134 32 w	12.35
02	05	870910	18.52	63	55	56	12	02	4	086			11.42
02	06	870910	18.52	63	55	56	12	01	4	086			0.93
02	07	870910	18.52	55	56	63	12	01	4	086			12.35
02	08	870910	18.52	69	31	64	12	01	3	086	05 07 n	134 11 w	4.01
03	01	870910	18.52	69	31	64	12	01	3	086	05 08 n	134 09 w	3.09
03	02	870910	18.52	31	64	69	12	01	3	086			12.35
03	03	870910	18.52	64	69	31			3	086			1.23
04	01	870910	18.52	64	69	31	12	12	3	086	05 10 n	133 59 w	3.09
04	02	870910	18.52	64	69	31			3	086			1.54
05	01	870910	18.52	56	63	55			3	086	05 10 n	133 55 w	3.09
06	01	870910	18.52	56	63	55			3	086	05 10 n	133 53 w	6.79
06	02	870910	18.52	63	55	56			3	086			0.62
06	03	870910	18.52	63	55	56	12	12	3	086			4.01
06	04	870910	18.52	63	55	56			3	086			5.56
06	05	870910	18.52	63	55	56			3	086			1.54
07	01	870910	18.52	55	56	63			3	086			4.32
07	02	870910	18.52	69	31	64			3	086	05 12 n	133 34 w	1.23
01	01	870911	18.52	55	56	63			3	086	05 22 n	131 43 w	10.80
01	02	870911	18.52	56	63	55			3	086			3.40
01	03	870911	18.52	56	63	55			3	086			2.16
01	04	870911	18.52	56	63	55			4	086	05 22 n	131 32 w	1.54
01	05	870911	18.52	56	63	55			4	046	05 22 n	131 32 w	1.23
02	01	870911	18.52	63	55	56			4	046	05 25 n	131 29 w	2.78
02	02	870911	18.52	63	55	56			3	046	05 26 n	131 28 w	4.32
02	03	870911	18.52	63	55	56			3	080			4.63
02	04	870911	18.52	31	64	69			4	080	05 29 n	131 23 w	12.96
03	01	870911	18.52	55	56	63			2	046	05 44 n	131 14 w	3.09
04	01	870911	18.52	55	56	63			2	046	05 48 n	131 10 w	7.41
04	02	870911	18.52	56	63	55			2	046			2.16
04	03	870911	18.52	56	63	55	01	01	2	046			2.16
04	04	870911	18.52	56	63	55	01	01	3	046	05 53 n	131 05 w	4.32
04	05	870911	18.52	56	63	55	01	12	3	046			2.16
04	06	870911	18.52	56	63	55	01	12	4	046			0.62
04	07	870911	18.52	63	55	56	01	12	4	046			3.70
04	08	870911	18.52	63	55	56			4	046	05 57 n	131 01 w	2.47
04	09	870911	18.52	63	55	56			3	046			4.01
04	10	870911	18.52	63	55	56	12	12	4	046			1.85
04	11	870911	18.52	31	64	69	12	12	4	046	06 01 n	130 57 w	9.26

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
04	12	870911	18.52	31	64	69	12	12	3	046	06 05 n	130 53 w	4.01
04	13	870911	18.52	64	69	31	08	12	3	046			7.10
04	14	870911	18.52	64	69	31			3	046			2.78
05	01	870911	18.52	55	56	63			4	046	06 14 n	130 44 w	1.85
05	02	870911	18.52	55	56	63	08	01	4	046			4.32
05	03	870911	18.52	55	56	63			4	046	06 17 n	130 42 w	2.16
06	01	870911	18.52	31	64	69			4	080	06 31 n	130 28 w	6.79
06	02	870911	18.52	31	64	69	07	02	4	080			3.09
06	03	870911	18.52	55	56	63			4	080			4.32
06	04	870911	18.52	55	56	63	07	02	4	080	06 34 n	130 18 w	1.54
06	05	870911	18.52	64	69	31	08	02	4	046			2.16
06	06	870911	18.52	64	69	31	08	02	4	046	06 35 n	130 16 w	0.31
01	01	870912	18.52	64	69	31			1	046	07 44 n	129 04 w	3.09
01	02	870912	18.52	64	69	31	01	03	1	046	07 46 n	129 03 w	2.78
01	03	870912	18.52	64	69	31			1	046	07 47 n	129 01 w	1.54
01	04	870912	18.52	64	69	31	01	03	1	046			3.09
01	05	870912	18.52	69	31	64	01	02	1	046			0.93
02	01	870912	18.52	31	64	69	01	02	1	046	07 55 n	128 55 w	2.16
02	02	870912	18.52	63	56	55	02	02	2	046	07 56 n	128 54 w	1.85
02	03	870912	18.52	63	55	56	01	02	2	046			1.23
02	04	870912	18.52	63	55	56	01	02	2	046			2.16
02	05	870912	18.52	63	55	56	01	02	2	046	07 58 n	128 52 w	3.09
02	06	870912	18.52	63	55	56			2	046	08 00 n	128 50 w	4.01
02	07	870912	18.52	55	56	63			2	046			4.01
02	08	870912	18.52	55	56	63			2	132	08 02 n	128 46 w	5.25
02	09	870912	18.52	55	56	63			1	132			3.09
02	10	870912	18.52	56	63	55	11	01	2	132			2.78
02	11	870912	18.52	56	63	55	11	01	2	132	07 58 n	128 40 w	4.63
02	12	870912	18.52	56	63	55	11	01	3	132			5.25
02	13	870912	18.52	64	69	31	11	01	3	132	07 54 n	128 36 w	11.11
02	14	870912	18.52	64	69	31	11	01	3	135			0.93
02	15	870912	18.52	69	31	64	11	01	3	135	07 49 n	128 30 w	6.17
02	16	870912	18.52	69	31	64	11	12	3	135	07 47 n	128 26 w	4.94
03	01	870912	18.52	31	64	69	12	12	2	135	07 41 n	128 20 w	6.17
03	02	870912	18.52	63	55	56	12	12	2	135	07 39 n	128 17 w	1.54
03	03	870912	18.52	63	55	56			2	135			1.54
03	04	870912	18.52	63	55	56	12	12	2	135			4.94
03	05	870912	18.52	63	55	56			2	135			1.23
03	06	870912	18.52	63	55	56	12	12	2	135	07 35 n	128 13 w	3.09
03	07	870912	18.52	55	56	63	12	12	2	135			5.86
04	01	870912	18.52	56	63	55	04	01	2	135	07 35 n	128 05 w	3.70
04	02	870912	18.52	56	63	55	04	01	2	135			2.47
04	03	870912	18.52	64	69	31	04	01	2	135	07 32 n	128 02 w	0.62
05	01	870912	18.52	69	31	64	04	01	3	135	07 27 n	127 56 w	6.48
05	02	870912	18.52	69	31	64			4	135	07 24 n	127 53 w	4.01
06	01	870912	18.52	31	64	69	04	01	4	135	07 21 n	127 49 w	5.86
07	01	870912	18.52	64	69	31	05	03	4	135	07 26 n	127 32 w	3.70
07	02	870912	18.52	55	56	63	05	03	4	135			2.16
07	03	870912	18.52	55	56	63	05	03	4	135	07 24 n	127 30 w	6.48
07	04	870912	18.52	56	63	55	05	03	3	135			3.70
07	05	870912	18.52	56	63	55			3	135			1.85
07	06	870912	18.52	56	63	55			3	135	07 13 n	127 30 w	0.31

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
01	01	870913	20.37	56	63	55			4	140	06 14 n	126 27 w	7.81
01	02	870913	20.37	63	55	56			4	140			5.77
01	03	870913	20.37	63	55	56			4	140	06 09 n	126 22 w	2.38
01	04	870913	20.37	55	56	63			4	140			7.81
01	05	870913	20.37	55	31	56			4	140	06 05 n	126 18 w	2.04
02	01	870913	20.37	69	31	64			5	140	06 03 n	126 17 w	7.13
03	01	870913	20.37	56	63	55			4	140	05 46 n	126 03 w	6.11
04	01	870913	20.37	56	63	55			4	140	05 42 n	125 59 w	2.04
04	02	870913	20.37	63	55	56			4	140			7.13
04	03	870913	20.37	63	55	56			5	140			5.09
04	04	870913	20.37	55	56	63			5	140			3.73
01	01	870914	18.52	31	64	69	05	02	5	129			1.54
01	02	870914	18.52	55	56	63	05	02	5	129	02 52 n	123 00 w	6.17
01	03	870914	18.52	56	63	55	05	02	4	129			6.17
01	04	870914	18.52	63	55	56	05	02	4	129			4.01
01	05	870914	18.52	63	55	56			4	129			1.23
01	06	870914	18.52	63	55	56	05	03	4	129			0.93
01	07	870914	18.52	31	64	69		03	4	076	02 45 n	122 52 w	12.35
01	08	870914	18.52	31	64	69		03	4	076	02 47 n	122 44 w	0.31
01	01	870915	18.52	63	55	56			4	076	03 07 n	121 22 w	8.03
01	02	870915	18.52	55	56	63			4	076			3.40
01	03	870915	18.52	55	56	63	01	02	4	076			0.93
01	04	870915	18.52	55	56	63			4	076			4.32
01	05	870915	18.52	56	63	55			4	076			2.78
01	06	870915	18.52	56	63	55	12	02	4	076			4.63
01	07	870915	18.52	64	69	31	12	02	4	076	03 11 n	121 11 w	2.47
01	08	870915	18.52	64	69	31	12	02	4	076			1.23
01	09	870915	18.52	64	69	31	12	02	4	076			5.56
01	10	870915	18.52	64	69	31			4	076	03 12 n	121 06 w	3.09
01	11	870915	18.52	69	31	64			4	076			12.35
01	12	870915	18.52	31	64	69			5	076			12.35
01	13	870915	18.52	63	55	56			5	076	03 17 n	120 53 w	4.01
01	14	870915	18.52	63	55	56			5	076			2.16
01	15	870915	18.52	63	55	56			5	076			3.40
01	16	870915	18.52	63	55	56	12	01	4	076	03 18 n	120 48 w	2.78
02	01	870915	18.52	55	56	63			4	076	03 19 n	120 41 w	4.63
02	02	870915	18.52	56	63	55			5	076			1.23
02	03	870915	18.52	56	63	55			5	076			1.85
02	04	870915	18.52	56	63	55	12	12	4	076			0.62
02	05	870915	18.52	64	69	31	12	12	4	076	03 20 n	120 37 w	12.35
02	06	870915	18.52	69	31	64			4	076			1.54
02	07	870915	18.52	69	31	64			4	076			3.70
02	08	870915	18.52	69	31	64			4	076	03 23 n	120 27 w	3.40
02	09	870915	18.52	69	31	64			4	076			1.85
03	01	870915	18.52	31	64	69			4	076	03 24 n	120 22 w	9.26
03	02	870915	18.52	63	55	56			4	076	03 26 n	120 18 w	1.54
03	03	870915	18.52	63	55	56	07	12	4	076	03 26 n	120 17 w	5.56
03	04	870915	18.52	63	55	56	07	01	4	076			0.93
03	05	870915	18.52	63	55	56			4	076			1.23
04	01	870915	18.52	55	56	63	07	01	4	080	03 29 n	120 13 w	9.26
04	02	870915	18.52	56	63	55	07	01	4	080			8.03
04	03	870915	18.52	64	69	31	07	02	4	080	03 31 n	120 04 w	7.41

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
04	04	870915	18.52	64	69	31	07	02	4	080	03 32 n	120 00 w	0.31
05	01	870915	18.52	63	55	56			4	080	03 34 n	119 59 w	2.47
05	02	870915	18.52	63	55	56	07	02	3	080			1.85
05	03	870915	18.52	69	31	64	07	02	3	080			2.78
05	04	870915	18.52	31	64	69	07	02	3	080			4.32
06	01	870915	18.52	31	64	69	07	02	3	080	03 36 n	119 53 w	3.09
06	02	870915	18.52	31	64	69	07	02	3	080	03 36 n	119 51 w	0.31
01	01	870916	18.52	69	31	64	11	03	5	112	03 40 n	118 27 w	7.41
01	02	870916	18.52	31	64	69	11	03	5	112			6.17
01	03	870916	18.52	31	64	69	11	02	4	112			3.40
02	01	870916	18.52	56	63	55			4	112	03 34 n	118 25 w	1.23
03	01	870916	18.52	56	63	55			4	112	03 34 n	118 24 w	9.26
03	02	870916	18.52	63	55	56			3	112			10.19
03	03	870916	18.52	63	55	56	11	01	3	112			1.85
03	04	870916	18.52	55	56	63	11	01	3	112			3.09
03	05	870916	18.52	55	56	63			3	112			3.09
03	06	870916	18.52	55	56	63	11	01	3	112	03 30 n	118 11 w	4.63
03	07	870916	18.52	69	31	64	11	01	3	112	03 30 n	118 09 w	1.54
03	08	870916	18.52	69	31	64	11	01	4	120	03 29 n	118 08 w	1.54
03	09	870916	18.52	69	31	64			4	120			6.17
04	01	870916	18.52	31	64	69			4	120	03 27 n	118 04 w	3.09
04	02	870916	18.52	31	64	69	11	12	4	120			4.63
05	01	870916	18.52	64	69	31	11	12	4	120	03 29 n	117 59 w	6.48
05	02	870916	18.52	56	63	55	11	12	4	120	03 28 n	117 56 w	7.10
06	01	870916	18.52	63	55	56	05	12	4	120	03 30 n	117 51 w	4.01
06	02	870916	18.52	63	55	56			4	120			4.01
06	03	870916	18.52	69	64	56			4	120	03 29 n	117 48 w	2.16
07	01	870916	18.52	31	64	69			5	120	03 24 n	117 40 w	9.26
07	02	870916	18.52	64	69	31			5	120	03 22 n	117 36 w	1.54
08	01	870916	18.52	56	63	55			6	120	03 19 n	117 31 w	4.01
08	02	870916	18.52	56	63	55	05	02	6	120	03 18 n	117 30 w	4.63
08	03	870916	18.52	64	31	69			6	120			3.09
08	04	870916	18.52	64	31	69			6	120			3.70
08	05	870916	18.52	64	31	69			6	120	03 15 n	117 25 w	0.31
01	01	870917	18.52	55	56	63			4	093	02 43 n	116 11 w	10.80
01	02	870917	18.52	56	63	55			4	093	02 43 n	116 06 w	10.19
01	03	870917	18.52	63	55	56			3	093	02 42 n	116 01 w	8.33
01	04	870917	18.52	31	64	69			3	093	02 42 n	115 55 w	12.66
01	05	870917	18.52	64	69	31			4	093			12.04
01	06	870917	18.52	69	31	64	12	02	4	093			1.23
02	01	870917	18.52	69	31	64			4	093	02 42 n	115 41 w	8.03
02	02	870917	18.52	55	56	63			4	093	02 42 n	115 37 w	9.26
02	03	870917	18.52	55	56	63			4	093	02 42 n	115 32 w	1.23
02	04	870917	18.52	55	56	63	12	01	4	093			1.85
02	05	870917	18.52	56	63	55	12	01	4	093			7.72
02	06	870917	18.52	56	63	55			4	093			1.85
02	07	870917	18.52	56	63	55	12	12	4	093			2.78
02	08	870917	18.52	63	55	56	12	12	4	093			5.86
03	01	870917	18.52	63	55	56	12	12	4	093	02 40 n	115 20 w	1.23
03	02	870917	18.52	31	64	69			4	093	02 40 n	115 19 w	4.63
04	01	870917	18.52	31	64	69	12	12	5	093	02 40 n	115 15 w	0.31
05	01	870917	18.52	64	69	31			5	093	02 39 n	115 13 w	0.93

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
06	01	870917	18.52	64	69	31			5	093	02 39 n	115 12 w	0.93
07	01	870917	18.52	69	31	64			5	093	02 39 n	115 11 w	12.04
07	02	870917	18.52	55	56	63			5	093	02 38 n	115 05 w	12.35
07	03	870917	18.52	56	63	55			5	093	02 38 n	114 58 w	2.47
07	04	870917	18.52	56	63	55	06	01	5	093			6.79
07	05	870917	18.52	56	63	55			5	093			3.09
07	06	870917	18.52	63	55	56			5	093			12.35
07	07	870917	18.52	31	64	69			5	093	02 37 n	114 45 w	13.89
07	08	870917	18.52	55	56	63			5	093			4.63
07	09	870917	18.52	64	69	31			5	093	02 37 n	114 35 w	9.26
07	10	870917	18.52	69	31	64			5	093	02 36 n	114 29 w	3.09
07	11	870917	18.52	69	31	64			5	093			5.25
01	01	870918	18.52	64	69	31			5	090			7.41
01	02	870918	18.52	69	31	64	12	03	5	090			3.09
01	03	870918	18.52	69	31	64			5	090			4.63
01	04	870918	18.52	63	55	56			5	090	02 27 n	112 46 w	12.35
01	05	870918	18.52	55	56	63	12	02	5	090			12.35
01	06	870918	18.52	56	63	55	12	02	5	090			9.26
01	07	870918	18.52	56	63	55	12	01	5	090			3.09
01	08	870918	18.52	64	69	31	12	01	5	090	02 26 n	112 25 w	12.35
01	09	870918	18.52	69	31	64	12	01	5	090			12.35
02	01	870918	18.52	63	55	56	12	12	5	090	02 28 n	112 08 w	11.11
02	02	870918	18.52	55	56	63	12	12	5	090			3.09
03	01	870918	18.52	55	56	63	12	12	5	090	02 29 n	111 59 w	7.10
03	02	870918	18.52	56	63	55	06	12	5	090	02 29 n	111 55 w	2.16
03	03	870918	18.52	56	63	55	05	12	5	096			7.72
04	01	870918	18.52	64	69	31	06	01	5	096	02 28 n	111 45 w	0.31
05	01	870918	18.52	31	64	69	06	01	4	096	02 27 n	111 49 w	2.78
06	01	870918	18.52	63	55	56	06	01	4	096	02 27 n	111 47 w	4.94
07	01	870918	18.52	63	55	56	06	02	4	096	02 26 n	111 43 w	1.54
07	02	870918	18.52	63	55	56			4	096	02 26 n	111 43 w	3.09
07	03	870918	18.52	63	55	56	06	02	4	096			1.54
07	04	870918	18.52	64	69	31	06	02	4	096			4.63
07	05	870918	18.52	55	56	63	06	02	4	096	02 26 n	111 38 w	4.94
07	06	870918	18.52	55	56	63			4	096			1.23
07	07	870918	18.52	55	56	63	06	02	4	096			1.23
07	08	870918	18.52	55	56	63			4	096			1.85
07	09	870918	18.52	56	63	55			4	096	02 25 n	111 33 w	9.26
07	10	870918	18.52	64	69	31			4	096	02 25 n	111 27 w	9.26
07	11	870918	18.52	69	31	64			4	096	02 24 n	111 22 w	3.09
07	12	870918	18.52	69	31	64	06	03	4	096			3.09
07	13	870918	18.52	69	31	64	06	03	4	096	02 24 n	111 19 w	0.31
01	01	870919	14.82	64	69	31	12	01	4	086	02 12 n	110 21 w	1.48
01	02	870919	14.82	56	63	55	12	01	4	086	02 12 n	110 19 w	1.98
01	03	870919	18.52	56	63	55	12	01	4	086	02 12 n	110 19 w	5.56
02	01	870919	18.52	56	63	55	12	01	4	086	02 12 n	110 15 w	2.47
02	02	870919	18.52	63	55	56	12	01	4	086			6.17
03	01	870919	18.52	63	55	56	12	01	4	086	02 13 n	110 09 w	4.63
04	01	870919	18.52	55	56	63	12	12	4	086	02 11 n	110 07 w	5.25
04	02	870919	18.52	69	64	56	12	12	4	086	02 12 n	110 05 w	2.78
04	03	870919	18.52	69	64	31	12	12	4	086			1.54
05	01	870919	18.52	64	31	69	12	12	4	087	02 14 n	110 00 w	7.72

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
05	02	870919	18.52	31	69	64			4	087			12.35
05	03	870919	18.52	56	63	55			4	087	02 16 n	109 49 w	10.49
05	04	870919	18.52	56	63	55	06	01	4	087			1.85
05	05	870919	18.52	63	55	56	06	01	4	087			12.35
05	06	870919	18.52	55	56	63	06	01	4	087			3.09
05	07	870919	18.52	55	56	63	06	01	4	095	02 18 n	109 34 w	9.26
05	08	870919	18.52	69	31	64			4	095	02 18 n	109 29 w	9.88
06	01	870919	18.52	56	63	55			4	095	02 19 n	109 25 w	3.09
06	02	870919	18.52	31	64	69	06	02	4	095			7.72
06	03	870919	18.52	64	69	31	06	02	5	095	02 19 n	109 19 w	3.09
07	01	870919	18.52	63	55	56	06	03	5	095	02 19 n	109 15 w	3.70
07	02	870919	18.52	63	55	56	06	03	4	095			1.54
07	03	870919	18.52	55	56	63	06	03	4	095			3.09
07	04	870919	18.52	55	56	63			4	095	02 19 n	109 09 w	2.47
07	05	870919	18.52	55	56	63			4	095	02 19 n	109 08 w	0.31
01	01	870920	18.52	31	64	69	01	03	3	077	02 53 n	107 30 w	6.17
01	02	870920	18.52	31	64	69	01	02	3	077			6.17
01	03	870920	18.52	64	69	31			4	077	02 56 n	107 23 w	6.48
01	04	870920	18.52	64	69	31			4	077			1.54
02	01	870920	18.52	55	56	63			4	077	02 56 n	107 18 w	7.41
02	02	870920	18.52	55	56	63	12	02	5	077	02 57 n	107 15 w	3.70
02	03	870920	18.52	56	63	55	12	02	5	077			11.42
02	04	870920	18.52	63	55	56	12	02	5	077			2.16
02	05	870920	18.52	63	55	56	12	01	5	077	03 00 n	107 05 w	9.26
02	06	870920	18.52	31	64	69	12	01	5	077	03 02 n	106 59 w	12.96
02	07	870920	18.52	64	69	31	12	01	5	077			11.42
03	01	870920	18.52	69	31	64	12	12	5	077	03 02 n	106 44 w	2.16
03	02	870920	18.52	55	56	63	12	12	5	077	03 02 n	106 43 w	12.35
03	03	870920	18.52	56	63	55	12	12	5	077			6.79
03	04	870920	18.52	56	63	55	06	12	5	072	03 05 n	106 32 w	5.56
03	05	870920	18.52	63	55	56	06	12	5	072			3.70
03	06	870920	18.52	63	55	56			5	072	03 07 n	106 27 w	2.47
03	07	870920	18.52	63	55	56	06	12	5	072			6.17
03	08	870920	18.52	31	64	69	07	12	4	072	04 00 n	106 22 w	3.70
04	01	870920	18.52	31	64	69	07	12	4	072	03 11 n	106 19 w	1.23
05	01	870920	18.52	64	69	31	07	01	4	072	03 11 n	106 13 w	4.63
05	02	870920	18.52	69	31	64	07	01	4	072	03 12 n	106 10 w	8.33
06	01	870920	18.52	55	56	63	07	02	4	072	03 15 n	106 02 w	3.70
07	01	870920	18.52	56	63	55			4	072	03 21 n	105 52 w	5.25
07	02	870920	18.52	63	55	56			4	072			2.16
07	03	870920	18.52	63	55	56	07	03	4	072			3.40
07	04	870920	18.52	31	64	69	07	03	4	072	03 23 n	105 46 w	9.26
01	01	870921	20.37	63	55	56			3	101	03 05 n	103 53 w	5.43
01	02	870921	20.37	63	55	56	12	03	3	101			2.04
01	03	870921	20.37	63	55	56			3	101			1.02
01	04	870921	20.37	63	55	56	12	03	3	101	03 04 n	103 48 w	1.36
01	05	870921	20.37	55	56	63	12	03	3	101			10.53
01	06	870921	20.37	56	63	55	12	02	4	101	03 03 n	103 45 w	9.17
01	07	870921	20.37	64	69	31	12	02	4	101	03 02 n	103 40 w	13.58
01	08	870921	20.37	69	31	64	12	02	4	101			6.11
02	01	870921	20.37	69	31	64	12	02	4	101	03 00 n	103 30 w	5.43
02	02	870921	20.37	31	64	69	12	01	4	101			10.19

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
03	01	870921	20.37	63	55	56	12	01	4	101	02 57 n	103 22 w	12.56
03	02	870921	20.37	55	56	63	12	01	5	101			8.15
03	03	870921	20.37	55	56	63	12	12	5	101			5.09
03	04	870921	20.37	56	63	55	12	12	5	101			11.88
04	01	870921	20.37	64	69	31	12	12	5	101	02 52 n	103 00 w	9.85
04	02	870921	20.37	69	31	64	12	12	5	101			13.58
04	03	870921	20.37	31	64	69	12	12	5	101			7.81
05	01	870921	20.37	63	55	56	05	01	5	103	02 52 n	102 35 w	8.83
05	02	870921	20.37	55	56	63	05	01	5	103			8.83
05	03	870921	20.37	56	63	55	06	02	5	103	02 50 n	102 27 w	8.83
05	04	870921	20.37	64	69	31	06	02	5	103	02 49 n	102 22 w	10.19
06	01	870921	21.30	31	64	69	06	03	4	103	02 54 n	102 08 w	0.71
07	01	870921	20.37	31	64	69	06	03	4	103	02 53 n	102 07 w	8.49
01	01	870922	18.52	69	31	64	12	03	3	101	02 23 n	100 14 w	10.80
01	02	870922	18.52	31	64	69	12	03	3	101			7.72
01	03	870922	18.52	31	64	69	12	02	3	101			1.54
02	01	870922	18.52	56	63	55	12	02	3	103	02 28 n	100 05 w	3.09
02	02	870922	18.52	56	63	55	12	02	4	103			6.79
02	03	870922	18.52	63	55	56	12	02	4	103			5.56
02	04	870922	18.52	63	55	56	12	01	4	103	02 28 n	099 57 w	7.72
02	05	870922	18.52	55	56	63	12	01	4	103			10.80
02	06	870922	18.52	69	56	64	12	01	4	103	02 27 n	099 48 w	4.01
02	07	870922	18.52	69	31	64	12	01	4	103			4.94
03	01	870922	18.52	31	64	69	12	12	4	103			10.19
03	02	870922	18.52	64	69	31	12	12	4	103			11.73
03	03	870922	18.52	64	69	31	12	12	4	103	02 24 n	099 30 w	0.31
04	01	870922	18.52	56	63	55	12	12	4	103	02 24 n	099 29 w	1.85
05	01	870922	18.52	56	63	55	06	12	4	105	02 26 n	099 27 w	1.54
06	01	870922	18.52	63	55	56	06	12	4	105	02 26 n	099 24 w	4.01
07	01	870922	18.52	69	56	64			4	107	02 27 n	099 16 w	2.47
07	02	870922	18.52	69	31	64			4	140			1.54
08	01	870922	18.52	31	64	69			3	140	02 26 n	099 12 w	6.17
08	02	870922	18.52	64	69	31			3	140			3.09
08	03	870922	18.52	64	69	31			3	140	02 22 n	099 09 w	9.26
08	04	870922	18.52	56	63	55			3	140	02 17 n	099 06 w	11.73
09	01	870922	18.52	56	63	55			3	140	02 11 n	099 02 w	0.93
09	02	870922	18.52	31	64	69			3	140			5.25
09	03	870922	18.52	63	55	56			3	140	02 08 n	099 00 w	8.64
09	04	870922	18.52	55	56	63			3	140	02 04 n	098 57 w	3.09
09	05	870922	18.52	55	56	63			3	140	02 02 n	098 56 w	0.31
01	01	870923	18.52	55	56	63			4	130	00 23 n	097 37 w	6.17
01	02	870923	18.52	56	63	55			4	130	00 20 n	097 35 w	6.17
01	03	870923	18.52	63	55	56			3	130			6.17
01	04	870923	18.52	31	64	69			3	130	00 12 n	097 29 w	1.85
02	01	870923	18.52	64	69	31			3	130	00 05 n	097 29 w	0.93
03	01	870923	18.52	69	31	64	11	02	4	130	00 03 n	097 24 w	1.23
03	02	870923	18.52	55	56	63			4	130	00 02 n	097 23 w	3.70
04	01	870923	18.52	55	56	63			4	130	00 03 s	097 20 w	1.54
04	02	870923	18.52	56	63	55	11	01	4	130			12.35
04	03	870923	18.52	63	55	56	11	01	4	130			3.09
04	04	870923	18.52	63	55	56	11	12	4	130	00 10 s	097 14 w	3.09
05	01	870923	18.52	31	64	69	12	12	4	130	00 11 s	097 10 w	9.57

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
05	02	870923	18.52	64	69	31	12	12	4	130			5.86
05	03	870923	18.52	64	69	31	12	12	4	130	00 17 s	097 04 w	7.72
05	04	870923	18.52	69	31	64	12	12	4	130			8.95
06	01	870923	18.52	55	56	63	05	12	4	130	00 24 s	096 56 w	7.72
06	02	870923	18.52	55	56	63			4	130			1.54
06	03	870923	18.52	55	56	63	05	01	4	130			2.16
06	04	870923	18.52	56	63	55	05	01	4	130			11.73
06	05	870923	18.52	63	55	56	05	01	4	130			1.54
06	06	870923	18.52	63	55	56	05	01	4	130	00 35 s	096 46 w	4.01
06	07	870923	18.52	63	55	56			4	130			0.62
06	08	870923	18.52	63	55	56	05	01	4	130			4.63
06	09	870923	18.52	31	64	69	05	01	4	130	00 39 s	096 43 w	9.26
07	01	870923	18.52	31	64	69	05	01	4	130	00 43 s	096 38 w	2.16
07	02	870923	18.52	55	56	63	05	02	4	130			4.63
08	01	870923	18.52	69	31	64	05	02	4	130	00 44 s	096 35 w	2.16
08	02	870923	18.52	69	31	64	05	02	4	130	00 45 s	096 34 w	4.32
08	03	870923	18.52	69	31	64	05	02	4	130	00 47 s	096 32 w	0.31
01	01	870924	18.52	63	55	56			4	134	02 59 s	094 00 w	6.17
01	02	870924	18.52	55	56	63			4	134			3.09
01	03	870924	18.52	55	56	63			4	134	03 02 s	093 56 w	3.09
01	04	870924	18.52	56	63	55			4	134			6.17
01	05	870924	18.52	56	69	31			4	134	03 06 s	093 52 w	9.26
01	06	870924	18.52	56	69	31			4	134	03 10 s	093 48 w	1.23
01	07	870924	18.52	56	69	31			4	134	03 10 s	093 47 w	0.31
01	01	870926	18.52	69	31	64			4	074	04 41 s	088 57 w	3.70
01	02	870926	18.52	69	31	64			4	074	04 40 s	088 56 w	5.56
02	01	870926	18.52	31	64	69			4	074	04 35 s	088 52 w	2.47
02	02	870926	18.52	31	64	69			4	074	04 35 s	088 51 w	3.40
02	03	870926	18.52	64	69	31			4	074			2.47
03	01	870926	18.52	55	56	63			4	074	04 30 s	088 44 w	10.19
03	02	870926	18.52	56	63	55			4	074			7.72
03	03	870926	18.52	63	55	56			4	074	04 27 s	088 35 w	6.79
03	04	870926	18.52	63	55	56	12	01	4	074			1.54
03	05	870926	18.52	69	31	64	12	01	4	074	04 26 s	088 30 w	3.70
04	01	870926	18.52	69	31	64	12	01	4	074	04 25 s	088 27 w	6.79
04	02	870926	18.52	31	64	69	12	01	4	074			1.23
05	01	870926	18.52	31	64	69	12	01	4	074	04 23 s	088 22 w	3.09
05	02	870926	18.52	31	64	69	12	01	4	074	04 22 s	088 20 w	1.54
06	01	870926	18.52	64	69	31	12	12	4	074	04 18 s	088 17 w	8.03
06	02	870926	18.52	55	56	63			4	074	04 16 s	088 13 w	5.56
07	01	870926	18.52	55	56	63			4	074	04 14 s	088 10 w	4.63
07	02	870926	18.52	56	63	55			4	074			8.95
07	03	870926	18.52	56	63	55	01	12	4	074			3.40
07	04	870926	18.52	63	55	56			4	074			0.93
08	01	870926	18.52	69	31	64			4	074	04 08 s	087 55 w	10.80
08	02	870926	18.52	31	64	69			4	074	04 06 s	087 50 w	0.31
09	01	870926	18.52	55	56	63			4	051	04 08 s	087 43 w	13.89
10	01	870926	18.52	56	63	55			4	051	04 00 s	087 35 w	8.95
10	02	870926	18.52	63	55	56			4	051			5.86
10	03	870926	18.52	63	55	56			4	051	03 53 s	087 29 w	0.31
01	01	870927	18.52	63	55	56			4	052	02 45 s	086 05 w	4.63
01	02	870927	18.52	63	55	56			4	052	02 44 s	086 04 w	1.54

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
01	03	870927	18.52	63	55	56	02	03	4	052			2.47
01	04	870927	18.52	63	55	56			4	052			2.16
01	05	870927	18.52	55	56	63			4	052			10.80
01	06	870927	18.52	56	63	55			4	052			6.79
01	07	870927	18.52	56	63	55			3	052			4.32
02	01	870927	18.52	31	64	69			3	052	02 27 s	085 49 w	9.57
03	01	870927	18.52	64	69	31			3	052	02 20 s	085 43 w	7.41
03	02	870927	18.52	63	55	56			3	052	02 17 s	085 39 w	9.26
03	03	870927	18.52	63	55	56			3	052	02 13 s	085 35 w	1.23
04	01	870927	18.52	55	56	63			3	052	02 07 s	085 29 w	1.54
04	02	870927	18.52	55	56	63			3	052	02 06 s	085 29 w	0.62
05	01	870927	18.52	31	64	69			3	052	02 07 s	085 27 w	8.03
06	01	870927	18.52	64	69	31			3	052	02 01 s	085 22 w	4.94
06	02	870927	18.52	64	69	31			4	052			2.78
07	01	870927	18.52	69	31	64			4	052	01 55 s	085 14 w	1.85
07	02	870927	18.52	63	55	56			4	052	01 54 s	085 13 w	9.26
07	03	870927	18.52	63	55	56			4	052	01 50 s	085 08 w	3.09
07	04	870927	18.52	55	56	63			3	002	01 49 s	085 07 w	12.35
07	05	870927	18.52	56	63	55			3	002			12.35
07	06	870927	18.52	31	56	69			3	002	01 34 s	085 05 w	1.54
07	07	870927	18.52	31	64	69			3	002			7.72
07	08	870927	18.52	31	64	69			3	002	01 28 s	085 05 w	4.63
08	01	870927	18.52	64	69	31			3	002	01 21 s	085 04 w	6.17
08	02	870927	18.52	64	69	31			3	002	01 17 s	085 04 w	3.09
08	03	870927	18.52	69	31	64			3	002			5.86
08	04	870927	18.52	69	31	64			3	002	01 11 s	085 04 w	0.31
01	01	870928	18.52	64	69	31			4	038	00 33 n	084 42 w	3.40
01	02	870928	18.52	64	69	31	02	03	4	038	00 34 n	084 41 w	6.17
02	01	870928	18.52	69	31	64	02	02	4	038	00 39 n	084 38 w	8.95
02	02	870928	18.52	31	64	69	02	02	4	038	00 44 n	084 35 w	9.26
02	03	870928	18.52	56	63	55	02	02	4	038	00 48 n	084 32 w	12.35
02	04	870928	18.52	63	55	56	02	02	5	038			3.09
02	05	870928	18.52	63	55	56	02	01	5	038			3.09
02	06	870928	18.52	63	55	56	02	01	5	038	00 58 n	084 25 w	4.63
02	07	870928	18.52	63	55	56			5	038			1.54
02	08	870928	18.52	55	56	63			5	038			1.54
02	09	870928	18.52	55	56	63	02	01	5	038			8.33
03	01	870928	18.52	64	69	31			5	038	01 08 n	084 17 w	4.01
03	02	870928	18.52	64	69	31			5	038	01 10 n	084 16 w	6.48
04	01	870928	18.52	69	31	64			5	038	01 13 n	084 12 w	2.16
04	02	870928	18.52	69	31	64			5	038			5.56
05	01	870928	18.52	31	64	69			5	038	01 20 n	084 07 w	6.79
05	02	870928	18.52	56	63	55			4	038	01 23 n	084 05 w	3.09
06	01	870928	18.52	63	55	56	08	12	5	038	01 27 n	083 56 w	7.41
06	02	870928	18.52	63	55	56	08	12	5	038	01 31 n	083 53 w	1.54
06	03	870928	18.52	55	56	63	07	01	5	038			2.16
07	01	870928	18.52	64	69	31	07	01	5	038	01 35 n	083 50 w	5.86
07	02	870928	18.52	64	69	31			5	038			3.40
07	03	870928	18.52	64	69	31			5	038	01 40 n	083 47 w	3.70
07	04	870928	18.52	69	31	64			5	038			5.56
07	05	870928	18.52	69	31	64			5	038	01 44 n	083 43 w	6.17
07	06	870928	18.52	31	64	69			5	038	01 47 n	083 41 w	3.09

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
07	07	870928	18.52	31	64	69			5	038	01 48 n	083 40 w	1.54
07	08	870928	18.52	31	64	69			5	038			7.72
07	09	870928	18.52	56	63	55			4	038	01 53 n	083 36 w	13.89
07	10	870928	18.52	64	69	31			4	038			4.63
07	11	870928	18.52	63	55	56			4	038	02 01 n	083 29 w	2.47
07	12	870928	18.52	63	55	56	08	03	4	038			2.47
07	13	870928	18.52	63	55	56			4	038			4.32
07	14	870928	18.52	55	56	63			4	038			6.17
07	15	870928	18.52	55	56	63			4	038	02 09 n	083 23 w	0.31
01	01	870929	18.52	55	56	63			4	056	03 23 n	082 06 w	0.31
02	01	870929	18.52	55	56	63			4	056	03 24 n	082 05 w	3.40
02	02	870929	18.52	56	63	55			4	056			6.79
02	03	870929	18.52	56	63	55			4	046	03 28 n	082 01 w	0.93
02	04	870929	18.52	63	55	56			4	046			7.41
02	05	870929	18.52	69	31	64			4	046	03 32 n	081 57 w	9.26
02	06	870929	18.52	69	31	64			5	070	03 35 n	081 53 w	4.32
03	01	870929	18.52	64	69	31			5	040	03 39 n	081 48 w	3.09
03	02	870929	18.52	55	56	63			5	040	03 40 n	081 47 w	3.40
04	01	870929	18.52	55	56	63			5	040	03 46 n	081 47 w	1.85
04	02	870929	18.52	56	63	55			5	040			10.49
04	03	870929	18.52	56	63	55			5	030	03 52 n	081 42 w	1.85
04	04	870929	18.52	63	55	56			5	030			1.85
04	05	870929	18.52	63	55	56			5	030	03 53 n	081 41 w	4.63
04	06	870929	18.52	63	55	56			5	030	03 56 n	081 39 w	1.54
04	07	870929	18.52	63	55	56			5	020	03 57 n	081 39 w	0.93
05	01	870929	18.52	69	31	64			5	034	04 34 n	081 14 w	1.23
06	01	870929	18.52	55	56	63			5	031	04 37 n	081 07 w	5.56
06	02	870929	18.52	55	56	63			5	031	04 40 n	081 05 w	0.31
01	01	870930	18.52	31	64	69			3	031	05 19 n	080 37 w	4.63
01	02	870930	18.52	31	64	69			3	031	05 21 n	080 36 w	2.16
02	01	870930	18.52	63	55	56	02	02	3	031	05 23 n	080 29 w	7.10
03	01	870930	18.52	55	56	63	02	01	3	031	05 33 n	080 25 w	3.70
03	02	870930	18.52	56	64	69	02	01	3	031			6.17
03	03	870930	18.52	31	64	69	02	01	3	031			3.09
03	04	870930	18.52	31	64	69	02	01	3	031	05 39 n	080 21 w	3.40
03	05	870930	18.52	64	69	31	02	01	2	031			3.70
04	01	870930	18.52	64	69	31	02	01	2	031	05 45 n	080 17 w	4.63
04	02	870930	18.52	69	31	64			2	031			6.17
04	03	870930	18.52	69	31	64			2	031	05 51 n	080 12 w	3.09
05	01	870930	16.67	63	55	56			4	031	06 38 n	079 44 w	2.50
05	02	870930	16.67	31	64	69			4	031			2.22
06	01	870930	16.67	55	56	63			4	031	06 44 n	079 41 w	4.72
06	02	870930	16.67	56	63	55			4	031			4.17
06	03	870930	16.67	31	64	69			4	031	06 48 n	079 39 w	8.33
06	04	870930	16.67	31	64	69			4	031	06 52 n	079 36 w	0.28
01	01	871007	20.00	22	67	05			4	180	07 10 n	079 34 w	6.33
01	02	871007	20.00	67	05	22			4	180			7.33
01	03	871007	20.00	22	05	67			3	193			1.67
01	04	871007	20.00	22	05	67			3	193			2.33
01	05	871007	20.00	22	05	67			3	193			1.00
01	06	871007	20.00	68	51	04			3	193			2.00
01	07	871007	20.00	68	51	04			3	193			1.00

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
01	08	871007	20.00	68	04	20			3	193			8.67
02	01	871007	20.00	68	04	67			5	193	06 51 n	079 36 w	3.33
02	02	871007	20.00	04	20	68			5	193			10.00
02	03	871007	20.00	68	20	04			4	193			11.67
03	01	871007	20.00	22	67	05			4	193	06 29 n	079 41 w	2.33
04	01	871007	20.00	04	70	68			4	193			2.33
04	02	871007	20.00	04	70	68			4	193	06 05 n	079 46 w	15.00
05	01	871007	20.00	70	68	04			5	193	05 55 n	079 48 w	7.00
06	01	871007	20.00	68	04	70			5	193	05 52 n	079 49 w	4.00
06	02	871007	20.00	68	04	70			5	193			8.00
06	03	871007	20.00	68	04	70			4	193			2.00
06	04	871007	20.00	22	05	67			4	193	05 44 n	079 51 w	4.33
07	01	871007	20.00	67	22	05			3	193	05 21 n	079 57 w	5.67
07	02	871007	20.00	67	22	05	02	02	3	193	05 17 n	079 57 w	3.00
07	03	871007	20.00	70	68	04	02	02	3	193			8.00
08	01	871007	20.00	70	68	04	02	02	3	193	05 11 n	080 00 w	1.33
08	02	871007	20.00	04	51	68			3	193			8.00
08	03	871007	20.00	68	04	51			3	193			11.33
01	01	871008	20.37	51	68	04			3	193			3.06
01	02	871008	20.37	51	68	04			3	193	03 26 n	080 21 w	4.41
01	03	871008	20.37	04	51	68			4	193	03 23 n	080 21 w	5.09
02	01	871008	18.52	22	67	05			4	279	02 55 n	080 56 w	7.10
02	02	871008	18.52	70	05	22			4	279			6.79
02	03	871008	18.52	05	22	67			4	279			2.78
03	01	871008	18.52	68	04	51			3	320	03 02 n	081 20 w	13.58
03	02	871008	18.52	51	68	04			4	320			9.57
04	01	871008	18.52	04	51	68			4	320	03 15 n	081 32 w	0.31
05	01	871008	18.52	04	51	68			4	320	03 19 n	081 34 w	4.01
06	01	871008	18.52	22	67	05			4	320	03 21 n	081 36 w	5.86
06	02	871008	18.52	67	05	22			4	320			4.94
07	01	871008	18.52	05	22	67			4	320	03 27 n	081 42 w	2.16
08	01	871008	18.52	05	22	67			4	320	03 30 n	081 44 w	6.17
01	01	871009	18.52	67	22	05			2	320			5.86
01	02	871009	18.52	22	05	67			2	320	04 31 n	082 42 w	6.17
01	03	871009	18.52	05	67	22			2	320	04 33 n	082 44 w	3.40
02	01	871009	18.52	04	51	68			2	320	04 40 n	082 43 w	0.62
03	01	871009	18.52	68	04	51			2	320	04 41 n	082 46 w	3.09
04	01	871009	18.52	68	04	51			2	320	04 42 n	082 48 w	7.72
04	02	871009	18.52	51	68	04			2	320			14.82
04	03	871009	18.52	67	22	05			2	320	04 52 n	082 57 w	5.25
04	04	871009	18.52	22	05	67			2	320			4.94
04	05	871009	18.52	22	05	67			2	320			2.16
04	06	871009	18.52	05	67	22			3	320			3.70
04	07	871009	18.52	05	67	22			4	320			1.54
04	08	871009	18.52	05	67	22			4	320	05 02 n	083 04 w	1.23
04	09	871009	18.52	67	22	05			4	320			4.01
05	01	871009	18.52	04	68	51			3	322	05 09 n	083 13 w	7.10
05	02	871009	18.52	51	04	68			3	322			3.09
05	03	871009	18.52	51	04	68			3	322	05 14 n	083 16 w	2.16
06	01	871009	18.52	22	05	67			3	322	05 14 n	083 19 w	6.79
06	02	871009	18.52	05	67	22	10	01	3	322			5.56
07	01	871009	18.52	67	22	05	10	01	3	322	05 22 n	083 25 w	4.63

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
07	02	871009	18.52	67	22	05			3	322			0.62
07	03	871009	18.52	22	05	67			3	322			6.79
07	04	871009	18.52	05	67	22			3	322	05 27 n	083 28 w	1.23
01	01	871010	18.52	68	04	51			4	215	04 24 n	084 28 w	3.40
01	02	871010	18.52	68	04	51			4	215			1.54
01	03	871010	18.52	51	68	04	09	03	4	215			5.25
01	04	871010	18.52	04	51	68			4	215			2.47
01	05	871010	18.52	04	51	68			4	215	04 18 n	084 31 w	4.63
01	06	871010	18.52	22	67	05			4	215			6.17
01	07	871010	18.52	67	05	22			4	215			6.17
01	08	871010	18.52	05	22	67	08	02	4	215			6.48
01	09	871010	18.52	22	67	05	08	02	4	215			5.86
01	10	871010	18.52	67	05	22			4	215			3.70
01	11	871010	18.52	67	05	22	08	02	4	215			1.54
01	12	871010	18.52	67	05	22			4	215			0.93
01	13	871010	18.52	05	22	67	08	02	4	215			6.17
01	14	871010	18.52	22	67	05	08	01	4	215			4.63
02	01	871010	18.52	04	51	68			5	215	03 54 n	084 48 w	6.17
02	02	871010	18.52	04	51	68			5	215	03 52 n	084 50 w	6.48
02	03	871010	18.52	68	04	51			5	215			2.78
02	04	871010	18.52	68	04	51	09	01	5	215	03 47 n	084 53 w	9.26
02	05	871010	18.52	51	68	04	09	01	5	215	03 43 n	084 56 w	10.80
02	06	871010	18.52	67	05	22	09	12	5	215			6.17
02	07	871010	18.52	05	22	67	09	12	5	215			1.54
02	08	871010	18.52	05	22	67	09	12	5	215	03 34 n	085 03 w	5.25
02	09	871010	18.52	22	67	05	12	12	5	215			4.01
02	10	871010	18.52	22	67	05	12	12	5	215	03 29 n	085 06 w	1.54
02	11	871010	18.52	67	05	22	12	12	5	215			6.17
02	12	871010	18.52	05	22	67	12	12	5	215			1.54
02	13	871010	18.52	05	22	67	12	12	4	215	03 25 n	085 09 w	5.25
02	14	871010	18.52	22	67	05	01	12	4	215			4.01
02	15	871010	18.52	22	67	05	01	12	4	215	03 21 n	085 12 w	1.54
02	16	871010	18.52	67	05	22	02	01	4	215			1.54
02	17	871010	18.52	67	05	22	02	01	3	215			6.17
02	18	871010	18.52	51	04	68	02	01	3	215	03 17 n	085 16 w	15.43
02	19	871010	18.52	68	51	04	01	01	3	215			3.09
02	20	871010	18.52	68	51	04	01	01	3	215	03 08 n	085 22 w	9.26
02	21	871010	18.52	68	51	04	02	02	3	215	03 03 n	085 27 w	2.16
03	01	871010	18.52	04	68	51	02	02	3	215	03 02 n	085 27 w	4.63
03	02	871010	18.52	04	68	51	02	02	3	215	02 59 n	085 29 w	9.26
03	03	871010	18.52	04	68	51	02	02	3	215	02 55 n	085 32 w	1.54
03	04	871010	18.52	05	22	67	02	02	3	215			6.17
03	05	871010	18.52	22	67	05	02	02	3	215			1.54
03	06	871010	18.52	22	67	05	02	02	3	215	02 50 n	085 35 w	4.63
03	07	871010	18.52	67	05	22	02	02	3	217			4.63
03	08	871010	18.52	67	05	22	02	02	3	217	02 46 n	085 38 w	1.54
03	09	871010	18.52	05	22	67	02	02	3	217			1.54
03	10	871010	18.52	05	22	67	02	02	3	200	02 44 n	085 40 w	4.63
03	11	871010	18.52	22	67	05			3	200			1.54
03	12	871010	18.52	22	67	05			3	200	02 41 n	085 41 w	4.94
03	13	871010	18.52	67	05	22			3	200			3.09
01	01	871011	18.52	22	05	67	03	03	2	007	02 58 n	086 04 w	1.23

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
02	01	871011	18.52	22	05	67	03	03	2	007			0.31
02	02	871011	18.52	05	67	22	03	03	2	007			0.93
02	03	871011	18.52	05	67	22	03	03	2	007	02 59 n	086 01 w	4.63
02	04	871011	18.52	04	51	68	03	03	2	007			5.25
03	01	871011	18.52	68	04	51	03	02	2	007	03 11 n	085 58 w	4.94
03	02	871011	18.52	68	04	51	03	02	2	358			1.85
03	03	871011	18.52	68	04	51	03	02	2	358	03 15 n	085 57 w	1.54
03	04	871011	18.52	68	04	51	03	02	2	007			4.63
03	05	871011	18.52	51	68	04	03	02	2	007			3.09
03	06	871011	18.52	51	68	04	03	02	2	007	03 20 n	085 57 w	7.41
04	01	871011	18.52	51	68	04	03	02	2	007			1.23
04	02	871011	18.52	51	68	04	03	02	2	007	03 26 n	085 56 w	1.23
04	03	871011	18.52	22	67	05	03	02	2	007			6.17
05	01	871011	18.52	22	05	67	03	01	2	007	03 31 n	085 55 w	1.23
05	02	871011	18.52	22	05	67	03	01	2	007	03 32 n	085 55 w	4.94
05	03	871011	18.52	05	67	22	03	01	2	007			3.40
06	01	871011	18.52	05	67	22	03	01	2	007	03 37 n	085 54 w	2.16
06	02	871011	18.52	67	22	05	03	01	2	007			4.01
07	01	871011	18.52	67	22	05	03	01	2	007	03 43 n	085 54 w	0.62
08	01	871011	18.52	22	05	67	03	12	2	007	03 43 n	085 54 w	4.63
08	02	871011	18.52	22	05	67	04	12	2	007	03 46 n	085 54 w	1.54
08	03	871011	18.52	51	04	68	04	12	2	007			7.72
08	04	871011	18.52	51	04	68	04	12	2	007	03 51 n	085 53 w	6.17
08	05	871011	20.37	68	51	04	04	12	1	007			3.40
08	06	871011	20.37	68	51	04	04	12	1	007			4.07
09	01	871011	20.37	68	51	04	04	12	1	007			4.75
09	02	871011	20.37	68	51	04	04	12	1	007	04 02 n	085 51 w	3.40
09	03	871011	20.37	04	68	51	07	12	1	007			6.11
10	01	871011	20.37	04	68	51	07	12	1	007	04 12 n	085 51 w	2.04
10	02	871011	20.37	05	67	22	08	01	2	007			7.13
10	03	871011	20.37	67	22	05	08	01	2	007			0.68
11	01	871011	20.37	22	05	67	08	02	2	007			6.45
11	02	871011	20.37	05	67	22	08	02	2	007			1.36
11	03	871011	20.37	05	67	22	08	02	2	007	04 27 n	085 48 w	5.43
11	04	871011	20.37	67	22	05	08	02	2	007			6.79
12	01	871011	20.37	04	51	68	08	02	2	007			5.09
12	02	871011	20.37	04	51	68	08	02	2	007	04 39 n	085 46 w	8.49
12	03	871011	20.37	68	04	51	08	02	3	007			1.70
01	01	871012	20.37	68	51	04			2	260	05 41 n	086 06 w	4.07
01	02	871012	20.37	68	51	04			2	260	05 40 n	086 10 w	1.70
01	03	871012	20.37	04	68	51	07	03	2	260			8.49
01	04	871012	20.37	04	68	51	07	03	2	260	05 40 n	086 10 w	5.09
01	05	871012	20.37	05	22	67	07	03	2	260			5.09
01	06	871012	20.37	05	22	67	07	03	2	260	05 39 n	086 15 w	2.38
01	07	871012	20.37	22	67	05	07	03	2	260			6.79
01	08	871012	20.37	67	05	22	07	02	2	260			1.02
01	09	871012	20.37	67	05	22	07	02	2	260	05 38 n	086 20 w	5.09
01	10	871012	20.37	05	22	67	07	02	2	260			2.72
02	01	871012	20.37	22	67	05	07	02	2	260	05 37 n	086 30 w	2.72
02	02	871012	20.37	22	67	05	07	02	2	260	05 36 n	086 31 w	1.70
03	01	871012	20.37	04	51	68	07	02	2	260	05 36 n	086 37 w	10.19
03	02	871012	20.37	04	51	68	07	01	2	260	05 34 n	086 42 w	1.70

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
04	01	871012	20.37	68	04	51	07	01	2	260	05 35 n	086 44 w	2.38
05	01	871012	20.37	68	04	51	07	12	2	260	05 36 n	086 46 w	2.72
06	01	871012	20.37	51	68	04	07	01	4	260	05 35 n	086 51 w	6.79
01	01	871013	20.37	05	22	67			3	260	04 59 n	088 09 w	6.11
01	02	871013	20.37	05	22	67			3	260			1.36
01	03	871013	20.37	22	67	05			3	260			0.34
02	01	871013	20.37	04	68	51			3	260	04 57 n	088 15 w	3.40
02	02	871013	18.52	04	68	51			3	260	04 57 n	088 16 w	9.26
02	03	871013	18.52	04	68	51	07	02	3	260	04 56 n	088 23 w	3.09
02	04	871013	18.52	51	04	68			3	260			6.17
02	05	871013	18.52	51	04	68	07	02	3	260			6.17
02	06	871013	18.52	68	51	04	07	02	3	260			3.09
02	07	871013	18.52	68	51	04	07	02	3	260	04 54 n	088 33 w	2.16
02	08	871013	18.52	68	51	04	07	02	3	251			4.63
02	09	871013	18.52	68	51	04	06	02	3	273			0.31
03	01	871013	18.52	22	05	67	07	02	2	251	04 53 n	088 39 w	1.54
04	01	871013	18.52	05	67	22	07	01	3	251	04 52 n	088 41 w	6.17
04	02	871013	18.52	67	22	05			3	251			2.16
04	03	871013	18.52	67	22	05	07	02	3	251	04 50 n	088 45 w	4.01
04	04	871013	18.52	22	05	67	12	12	3	251			6.79
04	05	871013	18.52	05	67	22	08	12	3	251			1.54
04	06	871013	18.52	05	67	22	08	12	4	251			4.94
04	07	871013	18.52	67	22	05	08	12	4	251			1.23
04	08	871013	18.52	67	22	05	08	12	4	251	04 46 n	088 55 w	1.54
04	09	871013	18.52	51	04	68	08	12	4	251			7.72
04	10	871013	18.52	68	51	04	08	12	4	251	04 44 n	089 00 w	7.72
04	11	871013	18.52	04	68	51	08	12	4	251			1.54
04	12	871013	18.52	04	68	51	10	12	4	251	04 42 n	089 05 w	6.17
04	13	871013	18.52	51	04	68	10	12	4	251			1.54
04	14	871013	18.52	51	04	68			4	251			1.54
04	15	871013	18.52	51	04	68			4	251	04 40 n	089 10 w	1.54
05	01	871013	18.52	22	05	67			4	251	04 29 n	089 38 w	0.93
06	01	871013	18.52	68	51	04	12	02	4	251	04 25 n	089 49 w	2.47
06	02	871013	18.52	68	51	04	12	02	4	251	04 25 n	089 50 w	2.78
07	01	871013	18.52	68	51	04	12	02	4	251	04 24 n	089 53 w	3.70
07	02	871013	18.52	04	68	51	12	02	4	251			1.54
07	03	871013	18.52	04	68	51			4	271			7.72
07	04	871013	18.52	51	04	68			4	271			1.54
07	05	871013	18.52	51	04	68			4	271	04 22 n	090 00 w	6.17
01	01	871014	15.74	04	68	51			5	271	04 19 n	092 08 w	1.84
01	02	871014	15.74	04	51	68			5	251			2.36
01	03	871014	16.67	04	51	68			5	251			8.06
01	04	871014	16.67	22	67	05			5	251			4.44
02	01	871014	16.67	67	05	22			5	251	04 16 n	092 19 w	5.83
02	02	871014	16.67	05	22	67			5	251			0.56
01	01	871016	18.52	68	04	51	09	03	5	204	01 12 n	095 58 w	3.09
01	02	871016	18.52	68	04	51			5	204	01 11 n	095 58 w	5.86
01	03	871016	18.52	67	22	05			5	204			1.85
01	04	871016	18.52	67	22	05	09	03	5	204			1.54
01	05	871016	18.52	67	22	05			5	204			3.40
01	06	871016	18.52	22	05	67			5	204			6.48
01	07	871016	18.52	05	67	22	09	02	5	204	01 01 n	096 05 w	1.23

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
01	08	871016	18.52	05	67	22	0[a]	02	5	204			1.23
01	09	871016	18.52	05	67	22			5	204			3.09
01	10	871016	18.52	67	22	05			5	204			3.09
01	11	871016	18.52	67	22	05			5	204	00 57 n	096 08 w	3.09
01	12	871016	18.52	22	05	67			5	204			4.63
01	13	871016	18.52	22	05	67	09	02	6	204			3.09
01	14	871016	18.52	05	67	22			6	204			7.72
01	15	871016	18.52	68	51	04			5	204			9.26
01	16	871016	18.52	68	51	04			5	204	00 44 n	096 16 w	3.09
01	17	871016	18.52	04	68	51			5	204			6.17
01	18	871016	18.52	04	68	51			5	204	00 40 n	096 18 w	6.17
01	19	871016	18.52	51	04	68			5	204			3.09
01	20	871016	18.52	51	04	68			5	204	00 35 n	096 22 w	3.40
01	21	871016	18.52	51	04	68			5	204			5.86
01	22	871016	18.52	51	04	68			5	204	00 30 n	096 25 w	2.16
01	23	871016	18.52	67	22	05			5	204			7.10
01	24	871016	18.52	22	05	67	12	12	5	204	00 26 n	096 28 w	2.16
01	25	871016	18.52	22	05	67	12	12	5	252			3.40
02	01	871016	18.52	05	67	22			5	252	00 22 n	096 33 w	4.01
02	02	871016	18.52	05	67	22			5	252			1.85
03	01	871016	18.52	67	22	05			5	252			3.70
03	02	871016	18.52	22	05	67	12	01	4	252			3.09
03	03	871016	18.52	51	04	68			4	252	00 19 n	096 45 w	2.16
04	01	871016	18.52	68	51	04			4	252	00 17 n	096 54 w	0.62
05	01	871016	18.52	04	68	51			5	246	00 18 n	096 57 w	4.94
05	02	871016	18.52	04	68	51			5	246	00 17 n	097 00 w	4.32
05	03	871016	18.52	51	04	68			5	246			4.94
05	04	871016	18.52	51	04	68			5	246	00 16 n	097 06 w	2.47
05	05	871016	18.52	68	51	04			5	246			3.40
05	06	871016	18.52	68	51	04			5	246			2.47
06	01	871016	18.52	22	67	05			4	246	00 12 n	097 18 w	6.79
06	02	871016	18.52	67	05	22			4	246			5.56
06	03	871016	18.52	05	22	67			4	246			4.32
01	01	871017	18.52	67	22	05			3	247	00 18 s	098 50 w	3.70
02	01	871017	18.52	22	05	67			3	252			1.85
02	02	871017	18.52	22	05	67			3	252	00 19 s	098 56 w	4.63
02	03	871017	18.52	68	04	51			3	252			4.63
02	04	871017	18.52	68	04	51			3	252	00 20 s	099 01 w	8.03
02	05	871017	18.52	68	04	51			3	252			1.23
02	06	871017	18.52	51	68	04			3	252	00 22 s	099 06 w	3.40
02	07	871017	18.52	51	68	04			4	248			5.86
02	08	871017	18.52	51	68	04			4	248			4.63
02	09	871017	18.52	04	51	68			4	248			4.63
02	10	871017	18.52	04	51	68			4	248	00 25 s	099 16 w	10.49
02	11	871017	18.52	05	67	22			4	248			4.94
02	12	871017	18.52	67	22	05			4	248			4.94
03	01	871017	18.52	22	05	67			4	248			6.17
03	02	871017	18.52	05	67	22			4	248			4.63
03	03	871017	18.52	05	67	22			4	248	00 34 s	099 41 w	1.54
03	04	871017	18.52	67	22	05			4	248			6.17
03	05	871017	18.52	22	05	67			4	248			3.09
03	06	871017	18.52	04	68	51	08	12	4	248			7.72

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
03	07	871017	18.52	51	04	68	12	12	4	248	00 39 s	099 52 w	7.72
03	08	871017	18.52	68	51	04	12	12	4	248			7.72
03	09	871017	18.52	04	68	51	12	12	4	248			1.85
04	01	871017	18.52	04	68	51	12	12	4	248	00 43 s	100 03 w	3.09
04	02	871017	18.52	51	04	68	12	01	4	248			5.86
04	03	871017	18.52	68	51	04	12	01	4	248			5.86
05	01	871017	18.52	05	67	22	01	01	4	248	00 46 s	100 12 w	5.56
05	02	871017	18.52	67	22	05	01	01	4	248			3.09
05	03	871017	18.52	67	22	05	01	01	4	248	00 48 s	100 18 w	3.09
05	04	871017	18.52	22	05	67	01	01	4	248			6.17
05	05	871017	18.52	05	67	22	01	01	4	248			6.17
05	06	871017	18.52	67	22	05	01	02	5	218			3.40
05	07	871017	18.52	67	22	05	01	02	5	218	00 53 s	100 29 w	2.78
05	08	871017	18.52	22	05	67	01	02	4	218			1.85
06	01	871017	18.52	05	67	22	01	02	4	218			4.94
06	02	871017	18.52	67	22	05	01	02	4	218			1.54
06	03	871017	18.52	67	22	05	01	02	4	218	01 02 s	100 36 w	1.54
06	04	871017	18.52	51	68	04	01	02	4	218			7.72
06	05	871017	18.52	51	68	04	01	02	4	218	01 06 s	100 39 w	1.54
06	06	871017	18.52	04	51	68	02	02	4	218			7.72
06	07	871017	18.52	04	51	68	02	03	4	218	01 10 s	100 43 w	3.40
06	08	871017	18.52	68	04	51	02	03	4	218			5.86
06	09	871017	18.52	68	04	51	02	03	4	218	01 16 s	100 47 w	8.33
01	01	871018	18.52	68	04	51			3	252	01 31 s	102 12 w	6.48
01	02	871018	18.52	51	68	04			3	252			6.17
01	03	871018	18.52	67	22	05			3	252			6.17
01	04	871018	18.52	22	05	67			3	252			6.17
01	05	871018	18.52	05	67	22			3	252			0.93
01	06	871018	18.52	05	67	22			3	252	01 36 s	102 26 w	4.63
01	07	871018	18.52	67	22	05			3	252			4.63
01	08	871018	18.52	67	22	05	07	02	3	252			1.54
01	09	871018	18.52	22	05	67	07	02	3	252			6.79
01	10	871018	18.52	05	67	22			3	252			2.16
01	11	871018	18.52	05	67	22			4	252			2.16
01	12	871018	18.52	05	67	22			4	252			1.23
01	13	871018	18.52	67	22	05			5	252			4.63
01	14	871018	18.52	51	68	04			4	252			4.94
01	15	871018	18.52	51	68	04			4	257	01 43 s	102 45 w	0.93
02	01	871018	18.52	51	68	04			4	257	01 42 s	102 47 w	3.70
02	02	871018	18.52	04	51	68			4	257			6.17
02	03	871018	18.52	04	51	68			4	257	01 43 s	102 52 w	2.78
03	01	871018	18.52	68	04	51	07	12	4	257	01 45 s	102 54 w	5.25
04	01	871018	18.52	22	05	67			4	257			6.79
04	02	871018	18.52	05	67	22			4	257			0.93
04	03	871018	18.52	05	67	22			4	257	01 47 s	103 04 w	6.17
04	04	871018	18.52	67	22	05			4	257			2.16
05	01	871018	18.52	22	05	67	12	12	3	257			7.10
05	02	871018	18.52	05	67	22	12	01	3	257			4.94
05	03	871018	18.52	67	22	05			3	257			2.78
05	04	871018	18.52	04	51	68			3	257	01 52 s	103 16 w	3.70
06	01	871018	18.52	04	51	68			3	257	01 53 s	103 19 w	2.78
06	02	871018	18.52	68	04	51			2	257			10.49

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
06	03	871018	18.52	51	68	04			2	257	01 54 s	103 27 w	4.01
07	01	871018	18.52	51	68	04			2	257	01 55 s	103 29 w	3.09
08	01	871018	18.52	67	05	22			3	257			6.17
08	02	871018	18.52	05	22	67			3	257			3.09
08	03	871018	18.52	05	22	67			3	257	01 57 s	103 46 w	4.01
08	04	871018	18.52	22	67	05			3	257			6.79
08	05	871018	18.52	67	05	22			3	257			4.32
01	01	871019	18.52	67	22	05			5	254	02 25 s	105 09 w	6.17
01	02	871019	18.52	22	05	67	07	03	4	254			1.85
02	01	871019	18.52	68	51	04	07	02	4	254	02 31 s	105 19 w	2.78
03	01	871019	18.52	04	68	51	07	02	5	254	02 32 s	105 20 w	10.49
03	02	871019	18.52	51	04	68	07	02	5	254	02 34 s	105 26 w	9.26
03	03	871019	18.52	05	67	22	07	02	5	254			6.17
03	04	871019	18.52	67	22	05	07	02	5	254			3.09
03	05	871019	18.52	67	22	05	07	01	5	254	02 38 s	105 37 w	3.09
03	06	871019	18.52	22	05	67	07	01	5	254			6.48
03	07	871019	18.52	05	67	22	07	01	5	254			1.54
03	08	871019	18.52	22	67		07	01	5	254			1.23
03	09	871019	18.52	05	67	22	07	12	5	254			3.09
03	10	871019	18.52	67	22	05	07	12	5	254			3.09
03	11	871019	18.52	67	22	05	07	12	5	254	02 42 s	105 48 w	3.09
03	12	871019	18.52	22	05	67	07	12	5	254			7.72
03	13	871019	18.52	51	04	68	08	12	5	254			7.72
03	14	871019	18.52	68	51	04	08	12	5	254	02 46 s	105 59 w	7.72
03	15	871019	18.52	04	68	51	09	12	5	254			6.17
04	01	871019	18.52	51	04	68	12	12	5	254	02 51 s	106 10 w	5.25
04	02	871019	18.52	68	51	04	12	12	5	254			3.09
04	03	871019	18.52	68	51	04	12	12	5	254	02 52 s	106 15 w	0.62
04	04	871019	18.52	68	51	04	12	12	5	244			2.47
04	05	871019	18.52	04	68	51	12	12	5	244			6.17
05	01	871019	18.52	05	67	22	05	01	5	097	02 58 s	106 34 w	5.86
05	02	871019	18.52	67	22	05	05	01	5	097			6.48
05	03	871019	18.52	22	05	67	05	02	5	097			0.31
06	01	871019	18.52	22	05	67	05	02	5	097			4.32
06	02	871019	18.52	05	67	22	05	02	5	097			3.40
06	03	871019	18.52	68	51	04	05	02	5	097			7.41
06	04	871019	18.52	04	68	51	05	02	5	097	03 01 s	106 18 w	8.95
06	05	871019	18.52	51	04	68	05	02	5	097	03 01 s	106 13 w	1.85
07	01	871019	18.52	51	04	68	05	02	5	097	03 01 s	106 12 w	4.63
07	02	871019	18.52	68	51	04	05	02	5	097			7.41
01	01	871020	18.52	51	68	04			3	093	03 08 s	104 48 w	5.25
01	02	871020	18.52	51	68	04	12	03	4	093			1.85
01	03	871020	18.52	04	51	68	12	03	4	093			6.48
01	04	871020	18.52	22	67	05	12	03	5	093			4.32
01	05	871020	18.52	22	67	05	12	03	5	093	03 08 s	104 38 w	2.47
01	06	871020	18.52	67	05	22	12	03	5	093			5.25
01	07	871020	18.52	05	22	67	12	02	5	093			6.17
01	08	871020	18.52	22	67	05	12	02	5	093			4.63
01	09	871020	18.52	22	67	05	12	02	5	093	03 08 s	104 29 w	4.63
01	10	871020	18.52	67	05	22	12	02	5	093			6.17
01	11	871020	18.52	05	22	67	12	02	5	093			7.72
01	12	871020	18.52	04	68	51	12	02	5	093			2.78

Table 2. (contiued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
02	01	871020	18.52	04	68	51	10	01	5	160			3.40
02	02	871020	18.52	04	68	51	10	01	5	160	03 11 s	104 15 w	3.09
02	03	871020	18.52	51	04	68	10	01	5	160			6.17
02	04	871020	18.52	51	04	68	10	01	5	160	03 16 s	104 13 w	7.72
02	05	871020	18.52	68	51	04	10	01	5	160			6.17
02	06	871020	18.52	68	04	51	10	01	5	160			6.17
02	07	871020	18.52	22	67	05	10	01	6	160			0.93
03	01	871020	18.52	04	68	51			5	091	03 26 s	103 15 w	7.41
01	01	871021	18.52	22	67	05	01	03	6	091	03 23 s	102 05 w	6.48
01	02	871021	18.52	67	05	22	01	03	6	091			4.32
02	01	871021	18.52	68	04	51			6	097	03 26 s	101 16 w	3.40
02	02	871021	18.52	68	04	51			6	097	03 26 s	101 14 w	10.80
02	03	871021	18.52	51	68	04			6	097			5.25
02	04	871021	18.52	51	68	04			6	065			2.47
02	05	871021	18.52	51	68	04			6	065	03 26 s	101 05 w	4.63
02	06	871021	18.52	04	51	68			6	065			4.63
02	07	871021	18.52	04	51	68			6	095			4.63
02	08	871021	18.52	04	51	68			6	065			0.93
03	01	871021	18.52	68	51	04			6	095	03 23 s	100 34 w	3.09
03	02	871021	18.52	68	51	04			6	095			2.78
03	03	871021	18.52	04	68	51			6	095			4.63
03	04	871021	18.52	04	68	51			6	095			2.47
03	05	871021	18.52	51	04	68			5	095	03 23 s	100 27 w	5.25
01	01	871022	18.52	51	04	68			5	095	03 29 s	099 11 w	4.63
01	02	871022	18.52	51	04	68			5	095			3.09
01	03	871022	18.52	68	51	04	12	03	5	095			3.70
01	04	871022	18.52	68	51	04	12	03	5	095			2.47
01	05	871022	18.52	68	51	04			5	095	03 30 s	099 03 w	4.63
01	06	871022	18.52	05	22	67			5	095			6.79
01	07	871022	18.52	22	67	05			5	095			4.63
01	08	871022	18.52	22	67	05	12	02	5	095			2.47
01	09	871022	18.52	67	05	22			5	095	03 31 s	098 53 w	5.25
01	10	871022	18.52	67	05	22			5	160			0.93
01	11	871022	18.52	05	22	67			4	160			1.54
01	12	871022	18.52	05	22	67			4	095			3.09
01	13	871022	18.52	05	22	67			4	065			1.54
01	14	871022	18.52	22	67	05			4	065			4.01
01	15	871022	18.52	22	67	05			4	095			1.85
01	16	871022	18.52	22	67	05			5	095	03 32 s	098 45 w	3.09
01	17	871022	18.52	67	05	22			5	095			6.48
01	18	871022	18.52	51	68	04	12	02	5	095			9.26
01	19	871022	18.52	51	68	04	12	02	5	095	03 32 s	098 35 w	3.09
01	20	871022	18.52	04	51	68	12	01	5	095			6.17
01	21	871022	18.52	04	51	68	12	01	5	095	03 33 s	098 30 w	6.17
01	22	871022	18.52	68	04	51	01	01	5	095			3.70
01	23	871022	18.52	99	99	68	01	01	5	095			1.23
01	24	871022	18.52	99	99	68	12	01	5	160			5.86
02	01	871022	18.52	05	22	67			5	055			6.17
02	02	871022	18.52	22	67	05			5	095			0.62
02	03	871022	18.52	22	67	05			5	065			0.93
02	04	871022	18.52	22	67	05			5	095			5.56
02	05	871022	18.52	67	05	22			5	095			6.17

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
02	06	871022	18.52	05	22	67	04	12	6	095	03 33 s	098 06 w	5.25
02	07	871022	18.52	22	67	05	04	12	6	095			4.63
02	08	871022	18.52	22	67	05	06	12	6	065			2.16
02	09	871022	18.52	67	05	22	06	12	6	065			4.32
02	10	871022	18.52	67	05	22	07	12	6	040			2.78
02	11	871022	18.52	68	04	51	07	12	6	040	03 31 s	097 59 w	1.85
02	12	871022	18.52	68	04	51	05	01	6	110			5.86
02	13	871022	18.52	51	68	04	05	01	6	110			7.72
02	14	871022	18.52	04	51	68	05	01	6	110			3.09
02	15	871022	18.52	04	51	68	05	01	6	110	03 32 s	097 50 w	4.63
02	16	871022	18.52	68	04	51	05	02	6	110			7.72
02	17	871022	18.52	51	68	04	05	02	6	110			6.17
02	18	871022	18.52	51	68	04	05	02	6	110	03 36 s	097 41 w	3.09
02	19	871022	18.52	04	51	68	05	02	6	110			6.17
02	20	871022	18.52	04	51	68	04	02	6	140			1.54
03	01	871022	18.52	05	22	67	04	02	6	140			5.86
03	02	871022	18.52	22	67	05			5	140	03 42 s	097 34 w	7.41
03	03	871022	18.52	67	05	22	04	03	5	140			5.25
03	04	871022	18.52	05	22	67	04	03	5	140			7.10
03	05	871022	18.52	22	67	05	04	03	5	140	03 51 s	097 28 w	2.16
01	01	871023	18.52	05	22	67			6	132	04 49 s	096 34 w	6.48
01	02	871023	18.52	22	67	05			5	132			5.56
01	03	871023	18.52	22	67	05			5	132			1.23
01	04	871023	18.52	67	05	22			5	132			2.47
01	05	871023	18.52	67	05	22			5	132	04 36 s	096 28 w	4.63
01	06	871023	18.52	51	68	04	11	02	5	132			4.63
01	07	871023	18.52	51	68	04	11	02	5	132	05 00 s	096 24 w	5.56
01	08	871023	18.52	51	68	04			5	132			3.70
01	09	871023	18.52	04	51	68			5	132			9.26
01	10	871023	18.52	04	51	68			5	132	05 07 s	096 16 w	4.63
01	11	871023	18.52	68	04	51			5	132			4.01
01	12	871023	18.52	68	04	51			6	132			4.63
02	01	871023	18.52	68	04	51			6	132	05 13 s	096 10 w	0.31
03	01	871023	18.52	05	22	67			5	132	05 15 s	096 07 w	5.86
03	02	871023	18.52	22	67	05			6	132			6.79
03	03	871023	18.52	67	05	22			6	132			5.25
03	04	871023	18.52	05	22	67			6	132			6.17
03	05	871023	18.52	22	67	05			6	132	05 24 s	095 56 w	2.47
03	06	871023	18.52	22	67	05			6	140			4.63
03	07	871023	18.52	67	05	22			6	140			3.70
03	08	871023	18.52	68	04	51			6	140			7.72
04	01	871023	18.52	51	04	68			5	148	05 45 s	095 37 w	5.25
05	01	871023	18.52	05	22	67			5	148			6.17
05	02	871023	18.52	22	67	05	04	01	5	148	05 52 s	095 33 w	6.79
05	03	871023	18.52	67	05	22	04	01	5	148			3.09
05	04	871023	18.52	67	05	22	04	02	5	148	05 56 s	095 30 w	3.09
05	05	871023	18.52	05	22	67	04	02	5	148			6.17
05	06	871023	18.52	22	67	05	04	02	5	148			6.17
05	07	871023	18.52	67	05	22	04	02	5	148			6.17
05	08	871023	18.52	05	22	67	04	02	5	148			6.48
05	09	871023	18.52	22	67	05	04	02	5	148			3.09
05	10	871023	18.52	68	04	51	04	02	5	148			5.86

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
05	11	871023	18.52	68	04	51	04	02	5	148	06 14 s	095 19 w	3.40
05	12	871023	18.52	51	68	04	04	02	5	148			5.86
05	13	871023	18.52	51	68	04	04	03	5	148	06 18 s	095 16 w	2.47
05	14	871023	18.52	04	51	68	04	03	5	148			7.41
01	01	871024	18.52	68	04	51			5	138			7.10
01	02	871024	18.52	51	68	04			5	138	07 27 s	094 24 w	6.17
01	03	871024	18.52	04	51	68			5	138			8.03
01	04	871024	18.52	67	22	05			5	138			6.17
01	05	871024	18.52	22	05	67			5	138			6.48
01	06	871024	18.52	05	67	22			5	138			0.93
01	07	871024	18.52	05	67	22			5	138	07 39 s	094 14 w	5.25
01	08	871024	18.52	67	22	05	11	02	5	138			4.01
01	09	871024	18.52	67	22	05	11	02	5	138	07 43 s	094 10 w	2.16
01	10	871024	18.52	22	05	67			5	138			6.79
01	11	871024	18.52	05	67	22			6	138			0.31
01	12	871024	18.52	05	67	22			6	138	07 47 s	094 07 w	0.31
01	13	871024	18.52	05	67	22			6	138			2.16
01	14	871024	18.52	05	67	22			5	138			2.78
01	15	871024	18.52	67	22	05			5	138			4.01
01	16	871024	18.52	51	68	04			6	138			5.56
01	17	871024	18.52	51	68	04	11	02	6	138			4.63
02	01	871024	18.52	04	51	68			6	138	07 56 s	093 58 w	2.16
03	01	871024	18.52	68	04	51	12	12	6	138	08 02 s	093 57 w	7.72
03	02	871024	18.52	68	04	51	12	12	6	198			1.85
04	01	871024	18.52	22	05	67	12	12	6	138			6.48
04	02	871024	18.52	05	67	22	12	12	6	138	08 09 s	093 53 w	5.86
04	03	871024	18.52	67	22	05			6	138			5.86
04	04	871024	18.52	22	05	67	04	12	6	138			7.10
04	05	871024	18.52	05	67	22	04	12	6	138			5.25
04	06	871024	18.52	67	22	05	04	12	5	138			3.09
04	07	871024	18.52	67	22	05	04	12	5	138	08 21 s	093 43 w	3.09
04	08	871024	18.52	22	05	67	04	01	5	138			6.17
04	09	871024	18.52	68	51	04	04	01	5	138			7.41
04	10	871024	18.52	04	68	51	04	01	5	138			1.85
04	11	871024	18.52	04	68	51	04	01	5	138	08 29 s	093 36 w	4.32
05	01	871024	18.52	51	04	68	04	02	5	138			4.01
05	02	871024	18.52	51	04	68			5	138	08 31 s	093 31 w	4.63
05	03	871024	18.52	68	51	04	04	02	5	138			4.63
05	04	871024	18.52	68	51	04	04	02	5	138	08 35 s	093 28 w	1.23
05	05	871024	18.52	04	68	51	04	02	5	138			9.57
06	01	871024	18.52	05	67	22	04	02	6	138			6.17
06	02	871024	18.52	67	22	05	04	02	6	138	08 44 s	093 21 w	6.17
06	03	871024	18.52	22	05	67	04	03	6	138			6.17
01	01	871026	18.52	04	68	99			6	014	10 44 s	089 03 w	3.09
01	02	871026	18.52	04	68	99			6	014	10 42 s	089 03 w	7.72
01	03	871026	18.52	68	04	99			6	014			4.63
01	04	871026	18.52	68	04	99			6	014			12.66
01	05	871026	18.52	67	22	05			6	019			5.86
01	06	871026	18.52	22	05	67			6	019			7.10
01	07	871026	18.52	05	67	22			6	019	10 22 s	088 58 w	0.62
01	01	871027	18.52	67	22	05			5	014	09 31 s	087 01 w	2.47
01	02	871027	18.52	67	22	05	03	03	5	014			3.70

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
01	03	871027	18.52	22	05	67	03	03	5	014			3.09
01	04	871027	18.52	22	05	67	03	03	5	014	09 26 s	087 00 w	4.63
01	05	871027	18.52	68	04	51			5	014			4.63
01	06	871027	18.52	68	04	51			4	014	09 19 s	086 58 w	6.17
01	07	871027	18.52	51	68	04			4	014			4.32
02	01	871027	18.52	51	68	04			4	014	09 08 s	086 59 w	0.93
02	02	871027	18.52	04	51	68			4	014			6.17
02	03	871027	18.52	04	51	68			3	014	09 04 s	086 58 w	6.48
03	01	871027	18.52	05	67	22			4	014	08 57 s	086 55 w	7.10
03	02	871027	18.52	67	22	05			4	014			6.17
03	03	871027	18.52	22	05	67	03	01	4	014			6.48
03	04	871027	18.52	05	67	22	03	01	4	014			5.25
03	05	871027	18.52	67	22	05	03	01	4	014			6.79
03	06	871027	18.52	22	05	67	03	12	4	014			2.78
03	07	871027	18.52	68	51	04			5	014			7.72
03	08	871027	18.52	68	51	04			5	014	08 31 s	086 49 w	1.85
03	09	871027	18.52	68	51	99			5	014			2.47
03	10	871027	18.52	68	51	04			5	014			2.47
03	11	871027	18.52	04	68	51	12	12	4	014			8.33
04	01	871027	18.52	51	04	68			4	014	08 20 s	086 45 w	1.85
05	01	871027	18.52	51	99	68			4	014	08 18 s	086 45 w	1.54
06	01	871027	18.52	51	99	68			4	014			3.70
06	02	871027	18.52	51	04	68			4	014			4.32
06	03	871027	18.52	05	67	22			4	014	08 13 s	086 44 w	5.56
06	04	871027	18.52	67	22	05			4	014			1.85
06	05	871027	18.52	67	22	05	08	01	4	014			4.32
06	06	871027	18.52	22	05	67	08	01	4	014			6.17
06	07	871027	18.52	05	67	22	09	01	4	014	08 02 s	086 41 w	6.79
06	08	871027	18.52	67	22	05	09	01	4	014			5.56
06	09	871027	18.52	22	05	67	08	02	4	014			3.09
06	10	871027	18.52	22	05	67	08	02	3	014			3.70
06	11	871027	18.52	05	67	22			3	014	07 51 s	086 39 w	5.56
06	12	871027	18.52	67	22	05			3	014			4.63
06	13	871027	18.52	51	68	04	08	02	4	014			9.26
06	14	871027	18.52	04	51	68	08	03	4	014			9.26
06	15	871027	18.52	68	04	51	08	03	4	014			4.01
06	16	871027	18.52	68	04	51			4	034			6.17
01	01	871028	18.52	04	51	68			2	018			1.85
01	02	871028	18.52	04	51	68			2	018	06 09 s	086 14 w	7.72
01	03	871028	18.52	68	04	51			2	018			6.48
01	04	871028	18.52	22	67	05			2	018			5.86
01	05	871028	18.52	67	05	22			2	018			6.17
01	06	871028	18.52	05	22	67			2	018	05 54 s	086 08 w	1.23
02	01	871028	18.52	22	67	05			2	007	05 51 s	086 04 w	6.79
02	02	871028	18.52	67	05	22			2	007			6.17
02	03	871028	18.52	05	22	67			2	007			4.94
02	04	871028	18.52	04	68	51			2	007	05 41 s	086 03 w	5.56
03	01	871028	18.52	04	68	51			2	007	05 38 s	086 01 w	4.01
03	02	871028	18.52	51	04	68			3	007			5.56
03	03	871028	18.52	51	04	68			3	007	05 32 s	086 00 w	6.17
03	04	871028	18.52	68	51	04			3	007			3.09
03	05	871028	18.52	68	51	04			3	007	05 27 s	085 59 w	3.40

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
04	01	871028	18.52	22	67	05			2	007	05 26 s	085 52 w	1.23
05	01	871028	18.52	67	05	22	12	12	2	008	05 18 s	086 07 w	6.17
05	02	871028	18.52	05	22	67			2	008			6.48
06	01	871028	18.52	22	67	05			2	008	05 09 s	086 07 w	1.23
06	02	871028	18.52	04	51	68	09	01	3	008			9.57
06	03	871028	18.52	68	04	51	09	01	3	008	05 03 s	086 06 w	3.70
07	01	871028	18.52	68	04	51	09	01	3	008	05 00 s	086 05 w	2.47
07	02	871028	18.52	51	68	04	09	02	3	008	04 59 s	086 05 w	13.89
08	01	871028	18.52	68	04	51	09	02	3	008	04 47 s	086 03 w	8.64
09	01	871028	18.52	67	05	22	09	02	3	008	04 39 s	086 01 w	0.93
10	01	871028	18.52	05	22	67	09	02	3	008	04 38 s	086 00 w	5.86
11	01	871028	18.52	22	67	05	08	03	2	008	04 29 s	086 03 w	6.17
01	01	871029	18.52	67	22	05			3	008	03 12 s	085 53 w	6.17
01	02	871029	18.52	22	05	67			3	008			6.17
01	03	871029	18.52	05	67	22			3	008			3.70
01	04	871029	18.52	68	51	04			3	008			4.63
01	05	871029	18.52	68	51	04			3	008	03 01 s	085 51 w	8.33
02	01	871029	18.52	51	04	68			3	008	02 44 s	085 50 w	11.11
02	02	871029	18.52	67	22	05	03	02	3	008			6.17
02	03	871029	18.52	22	05	67	03	01	3	008			2.16
02	04	871029	18.52	22	05	67	03	01	3	008	02 33 s	085 48 w	4.32
02	05	871029	18.52	05	67	22	03	01	3	008			6.48
02	06	871029	18.52	67	22	05			3	008			5.56
02	07	871029	18.52	22	05	67			3	008			6.17
02	08	871029	18.52	05	67	22			3	008			2.78
02	09	871029	18.52	05	67	22			4	008			4.01
02	10	871029	18.52	04	68	51	12	12	4	008			2.16
03	01	871029	18.52	04	68	51	12	12	4	008			2.47
03	02	871029	18.52	51	04	68	12	12	4	008	02 13 s	085 44 w	8.33
03	03	871029	18.52	68	51	04	12	12	4	008			7.10
03	04	871029	18.52	04	68	51	08	12	4	008			7.72
03	05	871029	18.52	51	04	68	09	01	4	008			6.17
03	06	871029	18.52	68	51	04	09	01	4	008			7.72
03	07	871029	18.52	67	22	05	09	01	4	008	01 51 s	085 42 w	6.48
04	01	871029	18.52	22	05	67	09	02	4	008			6.48
04	02	871029	18.52	05	67	22	09	02	4	008	01 41 s	085 41 w	2.47
04	03	871029	18.52	05	67	22	09	02	5	008			3.40
04	04	871029	18.52	67	22	05	09	02	5	008			6.17
04	05	871029	18.52	22	05	67	09	02	5	008			4.01
05	01	871029	18.52	05	67	22	09	02	5	008			4.32
05	02	871029	18.52	04	51	68			4	008	01 26 s	085 38 w	7.72
05	03	871029	18.52	68	04	51			3	008	01 22 s	085 38 w	9.26
05	04	871029	18.52	68	04	51	08	03	3	008	01 16 s	085 37 w	7.72
05	05	871029	18.52	51	68	04			3	008			10.80
01	01	871030	18.52	68	04	20			4	014	00 03 s	085 29 w	3.40
01	02	871030	18.52	68	04	20			4	014	00 01 n	085 29 w	3.09
01	03	871030	18.52	68	04	51			4	014			4.63
01	04	871030	18.52	51	68	04			4	014			6.48
01	05	871030	18.52	67	22	05			5	014			6.17
01	06	871030	18.52	22	05	67			4	014			2.78
01	07	871030	18.52	22	05	67			4	040			3.09
01	08	871030	18.52	05	67	22			4	040			1.54

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
01	09	871030	18.52	05	67	22			4	040	00 15 n	085 25 w	4.63
01	10	871030	18.52	67	22	05			4	040			6.17
01	11	871030	18.52	22	05	67			4	040			6.79
01	12	871030	18.52	05	67	22			4	040			0.93
01	13	871030	18.52	05	67	22			4	040	00 23 n	085 20 w	4.63
01	14	871030	18.52	67	22	05			4	040			6.17
01	15	871030	18.52	51	04	68			4	040			6.17
02	01	871030	18.52	51	04	68			4	005	00 31 n	085 11 w	1.23
02	02	871030	18.52	68	51	04			3	005			3.09
02	03	871030	18.52	68	51	04			2	005	00 34 n	085 11 w	7.41
02	04	871030	18.52	04	68	51			2	005			1.85
03	01	871030	18.52	04	68	51			2	005	00 40 n	085 11 w	3.09
04	01	871030	18.52	04	68	51			2	005	00 44 n	085 11 w	3.70
04	02	871030	18.52	22	05	67			3	005			6.17
04	03	871030	18.52	05	67	22			3	005			1.23
04	04	871030	18.52	05	67	22			3	005	00 50 n	085 12 w	4.32
04	05	871030	18.52	67	22	05			3	005			6.17
04	06	871030	18.52	22	05	67			3	020			8.03
04	07	871030	18.52	22	05	67			3	020	01 00 n	085 10 w	1.54
04	08	871030	18.52	05	67	22			3	020			2.47
05	01	871030	18.52	67	22	05			3	005			4.94
05	02	871030	18.52	68	51	04	09	01	4	005	01 10 n	085 09 w	8.03
05	03	871030	18.52	04	68	51	09	01	4	005			8.03
05	04	871030	18.52	51	04	68	08	01	4	005			8.64
06	01	871030	18.52	68	51	04	09	02	4	006	01 25 n	085 09 w	5.86
07	01	871030	18.52	22	05	67	09	02	4	006	01 29 n	085 09 w	6.17
08	01	871030	18.52	05	67	22	08	03	3	018	01 34 n	085 05 w	5.86
08	02	871030	18.52	67	22	05	08	03	3	018	01 38 n	085 04 w	3.40
01	01	871031	18.52	05	67	22			3	069	02 38 n	085 06 w	2.78
01	02	871031	18.52	05	67	22	01	03	3	069			2.78
01	03	871031	18.52	67	22	05	01	03	3	069			5.86
01	04	871031	18.52	22	05	67	01	03	3	069			3.09
01	05	871031	18.52	51	68	04	02	02	3	049			4.63
01	06	871031	18.52	51	68	04	02	02	3	049	02 42 n	084 56 w	4.63
02	01	871031	18.52	04	51	68	02	02	4	049	02 43 n	084 52 w	10.80
02	02	871031	18.52	04	51	68	05	02	4	320			4.32
02	03	871031	18.52	68	04	51	02	02	4	049			4.01
02	04	871031	18.52	68	04	51	02	02	4	049	02 51 n	084 48 w	9.88
02	05	871031	18.52	22	67	05	02	02	4	049			6.17
02	06	871031	18.52	67	05	22	01	01	4	071			6.17
02	07	871031	18.52	05	22	67	01	01	4	071			6.17
02	08	871031	18.52	22	67	05	01	01	4	071	02 59 n	084 34 w	6.48
02	09	871031	18.52	67	05	22	01	01	4	071			2.16
02	10	871031	18.52	67	05	22	01	01	3	071	03 01 n	084 29 w	3.70
02	11	871031	18.52	05	22	67	02	12	3	071			2.47
03	01	871031	18.52	04	51	68	02	12	4	071	03 03 n	084 24 w	6.17
03	02	871031	18.52	68	04	51	02	12	4	071	03 04 n	084 21 w	7.72
03	03	871031	18.52	51	68	04	02	12	4	071			1.54
04	01	871031	18.52	51	68	04	02	12	4	071	03 05 n	084 15 w	5.25
04	02	871031	18.52	04	51	68	05	12	4	071			3.09
04	03	871031	18.52	04	51	68	05	12	4	071	03 07 n	084 11 w	4.63
04	04	871031	18.52	68	04	51	05	12	4	071			3.09

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
04	05	871031	18.52	68	04	51	05	12	3	071			4.63
04	06	871031	18.52	51	68	04	05	01	3	071			6.17
04	07	871031	18.52	22	67	05	05	01	3	071	03 10 n	084 01 w	4.63
05	01	871031	18.52	67	05	22	06	01	3	071	03 13 n	083 57 w	5.86
05	02	871031	18.52	05	22	67	06	01	3	071			6.48
05	03	871031	18.52	22	67	05	06	02	3	071			6.79
05	04	871031	18.52	67	05	22	06	02	3	071			5.86
05	05	871031	18.52	05	22	67	06	02	3	071			3.40
05	06	871031	18.52	22	67	05	06	02	3	071			6.79
06	01	871031	18.52	68	04	51	06	02	2	071	03 24 n	083 33 w	5.56
06	02	871031	18.52	51	68	04	06	02	2	071			6.17
06	03	871031	18.52	04	51	68	06	03	2	071	03 26 n	083 27 w	6.48
01	01	871101	18.52	68	51	04			2	053	03 21 n	082 27 w	4.01
01	02	871101	18.52	68	51	04	01	03	2	053	03 22 n	082 26 w	1.54
01	03	871101	18.52	04	68	51	01	03	2	053			6.17
01	04	871101	18.52	51	04	68	01	03	2	053			3.40
02	01	871101	18.52	51	04	68	01	03	2	053	03 26 n	082 20 w	0.62
03	01	871101	18.52	22	05	67	02	02	2	053	03 28 n	082 17 w	6.79
03	02	871101	18.52	05	67	22	02	02	1	053			5.86
03	03	871101	18.52	67	22	05	02	02	1	053			6.17
03	04	871101	18.52	22	05	67	02	02	1	053			6.48
03	05	871101	18.52	05	67	22	02	02	1	053	03 38 n	082 05 w	2.47
04	01	871101	18.52	05	67	22	02	01	1	053			2.78
04	02	871101	18.52	67	22	05	02	01	1	053			0.93
04	03	871101	18.52	67	22	05	02	01	1	059			0.93
04	04	871101	18.52	67	22	05	02	01	1	043			0.31
04	05	871101	18.52	67	22	05	02	01	1	053	03 42 n	082 01 w	0.93
04	06	871101	18.52	51	04	68	02	01	1	053			10.80
04	07	871101	18.52	51	04	68	02	01	1	063			1.54
04	08	871101	18.52	51	04	68	02	01	1	053			1.54
04	09	871101	18.52	68	51	04	02	01	1	053			1.85
04	10	871101	18.52	68	51	04	02	01	1	058			2.78
04	11	871101	18.52	68	51	04	02	01	1	058	03 49 n	081 52 w	5.56
05	01	871101	18.52	68	51	04	02	01	1	058	03 51 n	081 50 w	1.54
05	02	871101	18.52	04	68	51	02	01	1	058			0.31
06	01	871101	18.52	67	22	05	09	02	1	343	04 06 n	081 39 w	6.17
06	02	871101	18.52	22	05	67	09	02	2	343			5.56
07	01	871101	18.52	05	67	22	09	03	2	343			5.56
07	02	871101	18.52	05	67	22	09	03	2	343	04 20 n	081 45 w	0.62
01	01	871102	18.52	22	67	05	12	03	2	097	04 39 n	081 02 w	0.31
02	01	871102	18.52	67	05	22	02	03	2	044	04 40 n	080 59 w	0.31
03	01	871102	18.52	67	05	22			2	044	04 41 n	080 59 w	4.32
03	02	871102	18.52	05	22	67	02	02	2	044			4.63
03	03	871102	18.52	51	68	04	02	02	2	044			4.63
03	04	871102	18.52	51	68	04	02	02	2	044	04 47 n	080 53 w	9.26
03	05	871102	18.52	04	68	51			2	044			6.48
04	01	871102	18.52	68	04	51			2	044	04 58 n	080 42 w	1.85
05	01	871102	18.52	68	04	51			2	044	04 59 n	080 40 w	7.10
05	02	871102	18.52	22	67	05			2	044			6.17
05	03	871102	18.52	67	05	22			2	044			4.63
05	04	871102	18.52	67	05	22			2	044			1.54
05	05	871102	18.52	05	22	67			2	044			1.23

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
05	06	871102	18.52	05	22	67			2	044			4.94
05	07	871102	18.52	22	67	05			2	044	05 10 n	080 29 w	2.78
06	01	871102	18.52	67	05	22			2	044			1.85
06	02	871102	18.52	67	05	22			2	044	05 13 n	080 23 w	3.40
06	03	871102	18.52	68	04	51			2	044			4.01
07	01	871102	18.52	68	04	51			2	044	05 17 n	080 20 w	0.00
08	01	871102	18.52	68	04	51			2	044	05 17 n	080 18 w	0.00
09	01	871102	18.52	51	68	04			1	030	05 18 n	080 16 w	1.85
10	01	871102	18.52	04	51	68			1	030	05 21 n	080 13 w	3.09
11	01	871102	18.52	04	51	68			1	026	05 23 n	080 12 w	0.31
12	01	871102	18.52	04	51	68			1	026	05 25 n	080 11 w	0.93
12	02	871102	18.52	68	04	51	08	12	2	026			3.70
13	01	871102	18.52	68	04	51	08	12	2	026	05 28 n	080 10 w	1.85
13	02	871102	18.52	51	68	04	08	01	3	026			6.17
13	03	871102	18.52	05	22	67	08	01	3	021	05 32 n	080 08 w	5.25
14	01	871102	18.52	22	67	05	08	02	3	021	05 36 n	080 05 w	3.70
15	01	871102	18.52	67	05	22	08	02	3	021	05 38 n	080 03 w	5.56
15	02	871102	18.52	05	22	67	08	02	3	021			4.01
16	01	871102	18.52	22	67	05	08	02	3	021	05 46 n	080 00 w	6.79
16	02	871102	18.52	67	05	22	08	02	3	021			1.54
17	01	871102	18.52	05	22	67	08	02	3	021			6.17
17	02	871102	18.52	04	51	68	08	02	4	015	05 55 n	079 56 w	7.10
17	03	871102	18.52	99	51	68			4	015	05 59 n	079 55 w	2.16
17	04	871102	18.52	68	04	51	08	03	4	015			9.26
17	05	871102	18.52	51	68	04	08	03	4	015			0.93
01	01	871103	18.52	68	51	04			3	042	07 36 n	079 06 w	6.79
01	02	871103	18.52	04	68	51			3	042	07 39 n	079 04 w	6.17
01	03	871103	18.52	51	04	68			3	042			1.23
02	01	871103	18.52	67	22	05			3	042	07 46 n	078 59 w	5.86
02	02	871103	18.52	22	05	67			3	042			4.32
02	03	871103	18.52	22	05	67			3	046	07 49 n	078 55 w	1.85
02	04	871103	18.52	05	67	22			3	046			5.86
02	05	871103	18.52	67	22	05			3	046			6.48
02	06	871103	18.52	22	05	67	02	02	3	046			5.86
02	07	871103	18.52	22	05	67	02	02	3	049	07 58 n	078 47 w	0.93
02	08	871103	18.52	05	67	22	02	02	3	049			5.25
02	09	871103	18.52	67	22	05	02	02	3	049			2.16
03	01	871103	18.52	04	68	51			3	049	08 03 n	078 43 w	1.23
04	01	871103	18.52	04	68	51	07	01	3	310	08 05 n	078 39 w	0.62
04	02	871103	18.52	51	04	68	07	01	3	310			1.54
01	01	871110	18.52	05	67	22			3	195	07 08 n	079 18 w	4.01
01	02	871110	18.52	05	67	22			4	195			2.47
01	03	871110	18.52	67	22	05			4	195	07 04 n	079 19 w	6.17
01	04	871110	18.52	22	05	67			4	195			3.09
01	05	871110	18.52	22	05	67			4	195	06 58 n	079 21 w	0.93
02	01	871110	18.52	22	05	67			4	195			3.09
02	02	871110	18.52	68	51	04			5	195			4.63
02	03	871110	18.52	68	51	04			5	195	06 53 n	079 22 w	8.95
03	01	871110	18.52	04	68	51			5	195			7.72
03	02	871110	18.52	04	68	51			4	195			4.63
03	03	871110	18.52	51	04	68			4	195			5.56
03	04	871110	18.52	51	04	68			4	216	06 36 n	079 26 w	2.16

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
04	01	871110	18.52	04	68	51			2	195	06 01 n	079 33 w	6.17
04	02	871110	18.52	51	04	68			3	195			5.86
05	01	871110	18.52	22	67	05			3	195	05 52 n	079 36 w	6.48
05	02	871110	18.52	67	05	22			3	195			3.70
05	03	871110	18.52	67	05	22			2	195			2.16
05	04	871110	18.52	05	22	67			2	195			6.79
05	05	871110	18.52	22	67	05			2	195	05 41 n	079 38 w	6.17
05	06	871110	18.52	67	05	22	02	02	2	195			5.56
05	07	871110	18.52	05	22	67			2	195			6.48
05	08	871110	18.52	22	67	05	02	02	2	195			6.48
05	09	871110	18.52	67	05	22	02	02	2	195			4.01
05	10	871110	18.52	51	04	68	02	02	2	195			7.72
05	11	871110	18.52	68	51	04	02	03	2	195	05 18 n	079 42 w	5.25
06	01	871110	18.52	04	68	51	02	03	2	198	05 12 n	079 42 w	2.16
06	02	871110	18.52	04	68	51	03	03	2	153			3.70
06	03	871110	18.52	04	68	51			2	173			1.23
01	01	871111	18.52	68	04	51			3	239	03 56 n	080 04 w	6.79
01	02	871111	18.52	51	68	04	08	03	3	239			5.56
02	01	871111	18.52	51	68	04	08	03	3	239			0.31
02	02	871111	18.52	04	51	68	08	03	4	239	03 51 n	080 11 w	2.47
03	01	871111	18.52	22	67	05			4	239	03 50 n	080 14 w	4.94
04	01	871111	18.52	67	05	22			3	239			6.17
04	02	871111	18.52	05	22	67			3	239	03 45 n	080 19 w	6.48
04	03	871111	18.52	22	67	05			3	239			6.17
04	04	871111	18.52	67	05	22	08	01	4	239			5.86
04	05	871111	18.52	05	22	67	08	01	4	239			4.01
05	01	871111	18.52	04	68	51			4	239	03 37 n	080 34 w	3.40
05	02	871111	18.52	04	68	51			4	239	03 36 n	080 35 w	2.16
06	01	871111	18.52	04	68	51			4	239	03 35 n	080 39 w	0.93
06	02	871111	18.52	51	04	68			5	239			11.11
06	03	871111	18.52	68	51	04	09	01	5	239	03 31 n	080 45 w	12.04
06	04	871111	18.52	22	67	05	10	12	5	239			3.09
07	01	871111	18.52	67	05	22	10	12	5	239	03 25 n	080 54 w	5.86
07	02	871111	18.52	05	22	67	10	12	5	239			6.79
07	03	871111	18.52	22	67	05	10	12	5	239			6.17
07	04	871111	18.52	67	05	22	10	01	5	239	03 19 n	081 03 w	5.56
07	05	871111	18.52	05	22	67	10	01	5	239			7.10
07	06	871111	18.52	22	67	05	10	01	5	239			5.25
07	07	871111	18.52	68	51	04	12	01	5	239	03 13 n	081 13 w	3.70
07	08	871111	18.52	68	51	04	02	01	5	179			3.40
08	01	871111	18.52	04	68	51	02	01	5	179	03 10 n	081 15 w	4.94
08	02	871111	18.52	51	04	68	02	01	5	179			3.09
08	03	871111	18.52	51	04	68	02	02	5	179	03 06 n	081 14 w	3.09
08	04	871111	18.52	51	04	68	01	02	5	239			1.54
08	05	871111	18.52	68	51	04	01	02	4	239			7.72
08	06	871111	18.52	04	68	51			4	239			5.86
09	01	871111	18.52	51	04	68			4	240	02 59 n	081 25 w	7.41
09	02	871111	18.52	67	22	05			5	240			3.40
10	01	871111	18.52	67	22	05			5	240	02 54 n	081 34 w	3.09
10	02	871111	18.52	22	05	67			5	240			6.17
10	03	871111	18.52	05	67	22			5	240			5.25
10	04	871111	18.52	05	67	22			5	240	02 49 n	081 42 w	0.93

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
01	01	871113	18.52	22	67	05	10	02	3	168	00 50 s	085 06 w	6.17
01	02	871113	18.52	67	05	22	10	02	3	168			6.17
01	03	871113	18.52	05	22	67	10	02	3	168			4.32
01	04	871113	18.52	05	22	67	10	02	2	168			0.62
01	05	871113	18.52	05	22	67	10	02	2	178			3.09
01	06	871113	18.52	68	04	51	10	02	2	178	01 03 s	085 04 w	2.78
02	01	871113	18.52	68	04	51	11	01	2	178	01 07 s	085 04 w	1.54
03	01	871113	18.52	51	68	04	11	01	2	178	01 09 s	085 02 w	6.48
04	01	871113	18.52	04	51	68	11	12	2	178	01 14 s	085 01 w	0.31
05	01	871113	18.52	22	67	05	11	12	2	178	01 17 s	085 02 w	6.17
05	02	871113	18.52	67	05	22	12	01	3	178			6.17
05	03	871113	18.52	05	22	67	12	12	3	178			6.48
05	04	871113	18.52	22	67	05	12	12	3	178	01 29 s	085 02 w	0.31
06	01	871113	18.52	67	05	22	01	01	3	178	01 29 s	084 59 w	5.56
06	02	871113	18.52	05	22	67	01	01	3	178			6.17
06	03	871113	18.52	22	67	05	01	01	3	178			3.09
06	04	871113	18.52	04	51	68	02	01	3	178	01 38 s	084 59 w	8.03
06	05	871113	18.52	68	04	51	02	01	3	178			1.23
06	06	871113	18.52	68	51		02	01	3	178			5.56
06	07	871113	18.52	68	04	51	02	01	3	178			0.62
06	08	871113	18.52	51	68	04	02	01	4	178			3.40
06	09	871113	18.52	51	68	04	02	01	4	185	01 48 s	084 59 w	4.01
06	10	871113	18.52	04	51	68	02	01	4	185			8.64
06	11	871113	18.52	68	04	51	02	02	4	185			4.94
07	01	871113	18.52	51	68	04	02	02	4	185	02 00 s	085 02 w	1.54
08	01	871113	18.52	51	68	04	02	02	4	185	02 02 s	085 01 w	3.09
08	02	871113	18.52	22	05	67	02	02	4	185			8.64
09	01	871113	18.52	05	67	22	02	03	4	185	02 17 s	085 02 w	4.63
01	01	871114	18.52	67	22	20	09	03	4	185	03 39 s	085 15 w	5.56
01	02	871114	18.52	67	22	20			4	185			0.62
01	03	871114	18.52	22	20	67			4	185			6.48
01	04	871114	18.52	20	67	22			4	185			1.85
01	05	871114	18.52	20	67	22			3	185			1.54
01	06	871114	18.52	51	04	68			3	185			6.17
01	07	871114	18.52	51	04	68	10	02	4	185			7.72
01	08	871114	18.52	68	51	04	10	02	4	185			9.26
01	09	871114	18.52	68	51	04	10	02	4	185	04 01 s	085 17 w	4.32
01	10	871114	18.52	04	68	51	10	02	5	185			13.27
01	11	871114	18.52	04	68	51			5	232			0.93
01	12	871114	18.52	67	22	70			5	232			6.17
01	13	871114	18.52	22	70	67	08	01	5	232			6.17
01	14	871114	18.52	70	67	22	08	01	5	232			6.17
01	15	871114	18.52	67	22	70	08	01	5	232	04 17 s	085 28 w	1.54
02	01	871114	18.52	22	70	67	08	12	5	232	04 17 s	085 34 w	6.48
02	02	871114	18.52	70	67	22	08	12	5	232			2.78
02	03	871114	18.52	68	51	04	08	12	5	232			6.17
02	04	871114	18.52	04	68	51	10	12	5	232			8.33
02	05	871114	18.52	51	04	68	11	12	5	232			2.47
02	06	871114	18.52	51	04	68	11	12	5	232	04 26 s	085 46 w	4.63
02	07	871114	18.52	68	51	04	11	12	5	232			4.63
02	08	871114	18.52	68	51	04	11	12	5	232	04 30 s	085 51 w	3.09
02	09	871114	18.52	04	68	51	12	12	5	232			7.72

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
02	10	871114	18.52	51	04	68	12	01	5	232			7.72
02	11	871114	18.52	67	99	70	01	01	5	232			3.09
02	12	871114	18.52	67	99	70	01	01	5	228	04 38 s	086 01 w	3.09
02	13	871114	18.52	99	70	67	01	01	5	228			6.17
02	14	871114	18.52	70	67	99	01	01	5	228			9.26
02	15	871114	18.52	67	99	70	01	01	5	228			6.17
02	16	871114	18.52	99	70	67	01	02	4	228	04 47 s	086 13 w	5.56
02	17	871114	18.52	99	70	67	01	02	4	208			2.16
02	18	871114	18.52	70	67	99	01	02	4	208			6.17
02	19	871114	18.52	67	99	70	01	02	4	208			7.41
02	20	871114	18.52	04	68	51	01	02	4	208			5.25
03	01	871114	18.52	04	68	51	01	02	4	208	05 01 s	086 22 w	6.48
03	02	871114	18.52	51	04	68	01	02	5	208			10.80
03	03	871114	18.52	68	51	04	01	03	5	208	05 10 s	086 28 w	3.40
01	01	871115	18.52	68	51	04			3	232	06 14 s	087 40 w	6.79
01	02	871115	18.52	04	68	51			3	232			3.09
01	03	871115	18.52	04	68	51			3	232	06 17 s	087 44 w	4.63
01	04	871115	18.52	67	20	05			3	232			6.17
01	05	871115	18.52	20	05	67			3	232			6.17
01	06	871115	18.52	05	67	20			3	232			1.54
01	07	871115	18.52	05	67	20			3	232	06 25 s	087 53 w	4.63
01	08	871115	18.52	67	20	05			3	232			6.17
01	09	871115	18.52	20	05	67			3	232			7.72
01	10	871115	18.52	05	67	20			3	232			6.17
01	11	871115	18.52	67	20	05			3	232			3.09
01	12	871115	18.52	51	04	68			3	232			9.26
01	13	871115	18.52	51	04	68			3	232	06 39 s	088 10 w	3.09
01	14	871115	18.52	68	51	04			3	232			6.17
01	15	871115	18.52	68	51	04			3	232	06 43 s	088 15 w	6.17
01	16	871115	18.52	04	68	51			3	232			5.56
02	01	871115	18.52	04	68	51			3	232	06 48 s	088 21 w	0.31
03	01	871115	18.52	04	68	51			3	232	06 48 s	088 22 w	5.25
03	02	871115	18.52	05	70	67			3	232			6.17
03	03	871115	18.52	70	67	05			3	232			6.17
03	04	871115	18.52	67	05	70			3	232			6.17
03	05	871115	18.52	05	70	67			3	232			6.48
03	06	871115	18.52	70	67	05			3	232			6.17
03	07	871115	18.52	67	05	70			3	232			5.25
03	08	871115	18.52	67	05	70	12	12	3	232			0.93
03	09	871115	18.52	05	70	67			3	232			7.41
03	10	871115	18.52	04	68	51			3	232	07 07 s	088 45 w	2.47
04	01	871115	18.52	51	04	68			3	232	07 07 s	088 51 w	1.85
05	01	871115	18.52	68	51	04			3	232	07 11 s	088 54 w	1.54
06	01	871115	18.52	04	68	51	11	02	3	275	07 04 s	089 00 w	2.47
07	01	871115	18.52	20	67	05	11	02	2	275	07 03 s	089 04 w	6.17
07	02	871115	18.52	67	05	20	11	02	2	275			2.16
07	03	871115	18.52	67	05	20	12	02	2	265	07 03 s	089 09 w	3.70
07	04	871115	18.52	05	20	67			2	265			6.17
08	01	871115	18.52	20	67	05			2	265			6.17
08	02	871115	18.52	67	05	20			2	265	07 03 s	089 20 w	4.63
01	01	871116	18.52	20	67	05			3	275	07 05 s	090 55 w	4.94
01	02	871116	18.52	22	67	05			3	275			1.23

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
01	03	871116	18.52	67	05	22	07	03	2	275			7.10
01	04	871116	18.52	05	22	67	07	03	2	275			5.25
01	05	871116	18.52	05	22	67			2	275			1.23
01	06	871116	18.52	22	67	05			2	275			5.86
02	01	871116	18.52	04	51	68			3	275	07 04 s	091 14 w	8.03
02	02	871116	18.52	68	04	51			3	275	07 03 s	091 19 w	3.40
02	03	871116	18.52	68	04	51			4	275			5.86
02	04	871116	18.52	68	04	51			4	275	07 03 s	091 24 w	6.17
02	05	871116	18.52	51	68	04			4	275			3.09
02	06	871116	18.52	51	68	04			4	275	07 02 s	091 30 w	9.88
02	07	871116	18.52	67	05	22			3	275			2.78
02	08	871116	18.52	05	22	67			3	275			5.86
02	09	871116	18.52	05	22	67			3	275	07 02 s	091 41 w	0.62
03	01	871116	18.52	22	67	05			3	275	07 01 s	091 51 w	6.17
03	02	871116	18.52	67	05	22			3	275			3.09
04	01	871116	18.52	67	05	22			3	275	07 00 s	091 59 w	1.54
04	02	871116	18.52	51	68	04			3	275			1.23
05	01	871116	18.52	51	68	04			3	275	06 59 s	092 01 w	3.40
05	02	871116	18.52	04	51	68	12	12	3	275			6.79
06	01	871116	18.52	04	51	68	12	12	3	275			0.62
06	02	871116	18.52	68	04	51			3	275			2.16
06	03	871116	18.52	68	04	51			3	275	06 59 s	092 10 w	4.01
06	04	871116	18.52	68	04	51	11	12	4	275			0.62
06	05	871116	18.52	51	68	04	11	12	4	275			3.70
06	06	871116	18.52	51	68	04	11	12	4	275			4.01
06	07	871116	18.52	04	51	68	11	01	4	275			6.17
06	08	871116	18.52	04	51	68	11	01	4	275	06 57 s	092 21 w	2.47
06	09	871116	18.52	68	04	51	11	01	4	275			6.79
06	10	871116	18.52	05	22	67	11	01	3	275			6.17
06	11	871116	18.52	22	67	05	11	01	3	275			6.17
06	12	871116	18.52	67	05	22			3	275			6.17
06	13	871116	18.52	05	22	67	11	02	3	275	06 55 s	092 39 w	6.17
06	14	871116	18.52	22	67	05	11	02	3	275			4.32
06	15	871116	18.52	22	67	05			3	275			0.93
07	01	871116	18.52	67	05	22	11	02	3	275	06 54 s	092 46 w	6.48
07	02	871116	18.52	05	22	67			3	275			9.88
07	03	871116	18.52	04	51	68	11	02	4	275			5.25
08	01	871116	18.52	68	04	51			4	275	06 50 s	093 02 w	6.79
08	02	871116	18.52	68	04	51			3	275	06 50 s	093 06 w	8.95
01	01	871117	18.52	68	04	51			3	270			7.10
01	02	871117	18.52	51	68	04	07	03	3	270			3.09
01	03	871117	18.52	51	68	04	07	02	3	270	06 42 s	094 40 w	4.63
01	04	871117	18.52	04	51	68	07	02	3	270			4.63
01	05	871117	18.52	04	51	68	07	02	3	270	06 42 s	094 45 w	2.47
02	01	871117	18.52	05	22	67	07	02	3	270	06 42 s	094 49 w	6.17
02	02	871117	18.52	22	67	05	07	02	3	270			6.48
02	03	871117	18.52	67	05	22	07	02	3	270	06 42 s	094 56 w	5.86
02	04	871117	18.52	05	22	67	07	02	3	270			6.17
02	05	871117	18.52	22	67	05	07	02	3	270			0.62
03	01	871117	18.52	22	67	05	07	02	3	270	06 41 s	095 05 w	2.78
03	02	871117	18.52	67	05	22	07	01	3	270			6.17
03	03	871117	18.52	05	22	67	07	01	3	270			3.09

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
03	04	871117	18.52	51	68	04	07	01	4	270			4.63
03	05	871117	18.52	51	68	04	07	01	4	280			4.63
03	06	871117	18.52	51	68	04	07	01	4	280	06 41 s	095 17 w	3.09
03	07	871117	18.52	04	51	68	07	12	4	280			6.17
03	08	871117	18.52	04	51	68	07	12	4	280			2.78
03	09	871117	18.52	04	51	68	07	12	4	325			0.93
03	10	871117	18.52	51	04	68	07	12	4	280			3.40
03	11	871117	18.52	68	04	51	07	12	4	280			13.89
03	12	871117	18.52	22	67	05	07	12	4	280			6.17
03	13	871117	18.52	67	05	22	09	12	4	280	06 36 s	095 39 w	6.17
03	14	871117	18.52	05	22	67	10	12	4	280			6.48
03	15	871117	18.52	22	67	05	10	12	4	280			6.17
03	16	871117	18.52	67	05	22	10	12	4	280	06 34 s	095 50 w	6.48
03	17	871117	18.52	05	22	67	11	12	4	280			2.47
04	01	871117	18.52	22	67	05	11	12	4	280	06 35 s	095 57 w	2.78
04	02	871117	18.52	51	04	68	10	01	4	300			6.79
04	03	871117	18.52	68	51	04	10	01	4	300			4.01
05	01	871117	18.52	04	68	51	10	01	4	300			2.16
05	02	871117	18.52	04	68	51	10	01	4	300	06 28 s	096 07 w	4.63
05	03	871117	18.52	51	04	68	10	02	4	300			3.09
06	01	871117	18.52	68	04	51	10	02	4	300	06 25 s	096 13 w	8.95
07	01	871117	18.52	67	22	05			4	300	06 21 s	096 18 w	3.09
07	02	871117	18.52	67	22	05			4	300			3.09
07	03	871117	18.52	22	05	67			4	300			6.17
07	04	871117	18.52	05	67	22	11	02	4	300			2.47
07	05	871117	18.52	05	67	22			3	300			4.32
07	06	871117	18.52	67	22	05			3	300			6.17
07	07	871117	18.52	22	05	67			3	300	06 12 s	096 32 w	3.40
01	01	871118	18.52	22	67	05			4	270	06 08 s	098 06 w	4.32
02	01	871118	18.52	67	05	22			3	270	06 07 s	098 11 w	6.17
02	02	871118	18.52	05	22	67			3	270			5.25
02	03	871118	18.52	04	68	51			3	270			5.25
03	01	871118	18.52	51	04	68			3	270	06 05 s	098 25 w	8.33
04	01	871118	18.52	51	04	68			3	270	06 06 s	098 32 w	1.54
04	02	871118	18.52	68	51	04			4	270			4.63
04	03	871118	18.52	68	51	04			4	270	06 06 s	098 36 w	9.57
04	04	871118	18.52	22	67	05			4	280			6.17
04	05	871118	18.52	67	05	22			4	280			2.16
04	06	871118	18.52	67	05	22	06	01	4	280			3.70
04	07	871118	18.52	05	22	67	06	01	4	280			6.17
04	08	871118	18.52	22	67	05	06	01	4	280	06 04 s	098 53 w	6.48
04	09	871118	18.52	67	05	22	07	12	4	280			6.17
04	10	871118	18.52	05	22	67	07	12	4	280			7.41
04	11	871118	18.52	51	04	68	08	12	4	280			3.70
05	01	871118	18.52	68	51	04	09	12	4	280	05 59 s	099 12 w	4.01
05	02	871118	18.52	04	68	51	10	12	4	280			9.26
05	03	871118	18.52	51	04	68	10	12	4	280			9.26
05	04	871118	18.52	68	51	04	11	01	5	280			9.26
05	05	871118	18.52	22	67	05	11	01	5	280	05 55 s	099 32 w	6.17
05	06	871118	18.52	67	05	22	11	01	5	280			6.17
05	07	871118	18.52	05	22	67	11	01	5	280			6.17
05	08	871118	18.52	22	67	05	11	01	5	280			6.17

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
05	09	871118	18.52	67	05	22	11	01	5	280			2.47
05	10	871118	18.52	67	05	22	11	02	5	280			3.70
05	11	871118	18.52	05	22	67	11	02	5	280			6.17
05	12	871118	18.52	22	67	05	11	02	5	280	05 51 s	099 56 w	6.17
05	13	871118	18.52	67	05	22	11	02	5	280			4.63
05	14	871118	18.52	04	51	68	10	02	5	320			6.79
06	01	871118	18.52	68	04	51	10	02	5	320	05 44 s	100 07 w	5.56
07	01	871118	18.52	68	04	51	10	02	5	320	05 41 s	100 10 w	3.09
08	01	871118	18.52	51	68	04	10	03	5	320	05 37 s	100 14 w	5.56
08	02	871118	18.52	51	68	04			4	320	05 34 s	100 17 w	2.78
01	01	871119	18.52	51	68	04			5	275	05 31 s	101 43 w	11.11
02	01	871119	18.52	04	51	68			5	275	05 32 s	101 54 w	6.79
03	01	871119	18.52	04	51	68			5	275	05 32 s	101 58 w	0.93
03	02	871119	18.52	68	04	51			5	275			1.23
03	03	871119	18.52	68	04	51	07	02	5	275	05 32 s	102 00 w	4.01
04	01	871119	18.52	22	67	05	07	02	6	275			6.17
04	02	871119	18.52	67	05	22	07	02	6	275			6.17
04	03	871119	18.52	05	22	67	07	02	6	275			5.56
04	04	871119	18.52	05	22	67	07	01	6	275			0.62
04	05	871119	18.52	22	67	05	07	01	6	275			6.17
04	06	871119	18.52	67	05	22	07	01	6	275			6.17
04	07	871119	18.52	05	22	67	07	01	6	275	05 29 s	102 23 w	6.17
04	08	871119	18.52	22	67	05	07	01	6	275			3.70
04	09	871119	18.52	68	04	51	07	01	6	275			8.64
04	10	871119	18.52	68	04	51	07	01	6	275	05 28 s	102 34 w	3.09
04	11	871119	18.52	51	68	04	07	01	6	275			5.56
05	01	871119	18.52	51	68	04	07	01	6	275	05 26 s	102 43 w	1.85
05	02	871119	18.52	04	51	68	07	12	6	275			2.47
05	03	871119	18.52	04	51	68	07	12	6	275	05 26 s	102 46 w	7.10
06	01	871119	18.52	04	51	68	07	12	6	275	05 25 s	102 51 w	1.23
06	02	871119	18.52	04	51	68	12	12	6	320			1.23
06	03	871119	18.52	67	05	22	12	12	6	320			4.01
06	04	871119	18.52	67	05	22	10	12	6	271			1.54
06	05	871119	18.52	05	22	67	10	12	6	271			6.17
06	06	871119	18.52	22	67	05	11	12	6	271			6.17
06	07	871119	18.52	67	05	22	11	12	6	271			6.17
06	08	871119	18.52	05	22	67	11	01	6	271			6.17
06	09	871119	18.52	22	67	05	11	01	6	271			6.17
06	10	871119	18.52	67	05	22	11	01	6	271	05 23 s	103 14 w	7.72
07	01	871119	18.52	51	67	22			4	271	05 16 s	103 55 w	2.16
01	01	871120	18.52	22	67	05			4	272	05 14 s	105 36 w	6.48
01	02	871120	18.52	67	05	22			3	272			5.25
01	03	871120	18.52	67	05	22			4	272			0.62
01	04	871120	18.52	05	22	67			4	272	05 14 s	105 44 w	1.85
01	05	871120	18.52	05	22	67			4	272			2.47
01	06	871120	18.52	05	22	67			5	272			1.85
01	07	871120	18.52	22	67	05			5	272			2.47
02	01	871120	18.52	68	51	04			5	272	05 10 s	105 55 w	1.85
02	02	871120	18.52	68	04	51			5	272			4.94
02	03	871120	18.52	68	04	51			5	272	05 10 s	105 59 w	4.63
02	04	871120	18.52	51	68	04			5	272			4.63
02	05	871120	18.52	51	68	04			5	272	05 09 s	106 05 w	3.09

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
03	01	871120	18.52	04	51	68			5	272	05 09 s	106 14 w	0.62
04	01	871120	18.52	67	05	22			4	272	05 08 s	106 17 w	6.48
04	02	871120	18.52	05	22	67	07	12	4	272			6.17
04	03	871120	18.52	22	67	05	07	12	4	272			1.54
04	04	871120	18.52	22	67	05	07	12	4	272			2.78
04	05	871120	18.52	22	67	05	07	12	4	292	05 08 s	106 27 w	1.85
04	06	871120	18.52	67	05	22			4	292			2.47
04	07	871120	18.52	67	05	22			4	292			3.40
05	01	871120	18.52	51	04	68			4	270	05 03 s	106 42 w	2.47
05	02	871120	18.52	51	04	68			4	270	05 03 s	106 44 w	10.80
05	03	871120	18.52	68	51	04			4	270			7.72
05	04	871120	18.52	68	51	04			4	270	05 03 s	106 56 w	2.47
06	01	871120	18.52	04	68	51	11	01	4	270	05 04 s	107 00 w	4.94
06	02	871120	18.52	04	68	51	10	01	4	295			6.79
06	03	871120	18.52	05	22	67	11	01	4	295			6.48
06	04	871120	18.52	22	67	05	11	01	4	295			6.79
06	05	871120	18.52	67	05	22	11	01	4	295			5.25
06	06	871120	18.52	05	22	67	11	02	4	295	04 57 s	107 18 w	6.48
06	07	871120	18.52	22	67	05	11	02	4	295			5.86
06	08	871120	18.52	67	05	22	11	02	4	295			5.56
07	01	871120	18.52	05	22	67	11	02	4	295			7.72
07	02	871120	18.52	51	68	04	11	02	4	295	04 51 s	107 33 w	9.26
07	03	871120	18.52	04	51	68	11	03	4	295			9.57
07	04	871120	18.52	68	04	51	11	03	4	295			5.86
01	01	871121	16.67	68	04	20			4	264	05 00 s	109 28 w	2.22
01	02	871121	18.52	68	04	20			4	264			1.54
01	03	871121	18.52	68	04	51			4	264			4.94
01	04	871121	18.52	51	68	04			5	264			7.72
01	05	871121	18.52	04	51	68			5	264			2.78
01	06	871121	18.52	04	51	68			5	264	05 02 s	109 40 w	4.63
01	07	871121	18.52	22	67	05	07	02	5	264			6.17
01	08	871121	18.52	67	05	22			5	264			1.85
02	01	871121	18.52	04	68	51			5	316	05 02 s	109 50 w	6.79
02	02	871121	18.52	04	68	51			4	286	05 00 s	109 53 w	1.54
02	03	871121	18.52	51	04	68			4	286			2.47
03	01	871121	18.52	51	04	68			4	286	04 59 s	109 56 w	3.09
03	02	871121	18.52	68	51	04			5	286			5.86
04	01	871121	18.52	05	22	67	07	12	4	286	04 57 s	110 04 w	6.17
04	02	871121	18.52	22	67	05	07	12	4	316	04 57 s	110 08 w	1.23
04	03	871121	18.52	22	67	05			4	316			4.94
04	04	871121	18.52	67	05	22	12	12	4	316			6.17
04	05	871121	18.52	05	22	67	08	12	4	316			6.17
04	06	871121	18.52	22	67	05	09	12	4	316			6.48
04	07	871121	18.52	67	05	22	10	12	4	316			5.86
04	08	871121	18.52	05	22	67	10	12	4	316			6.17
04	09	871121	18.52	04	51	68	10	01	4	316	04 42 s	110 24 w	7.72
04	10	871121	18.52	68	04	51	10	01	4	316			7.72
04	11	871121	18.52	51	68	04	10	01	4	316			3.09
04	12	871121	18.52	51	68	04	10	01	4	316	04 35 s	110 33 w	4.63
04	13	871121	18.52	04	51	68	10	02	4	316			1.54
05	01	871121	18.52	04	51	68	10	02	4	316	04 31 s	110 36 w	2.16
05	02	871121	18.52	04	51	68	10	02	4	316	04 30 s	110 37 w	3.09

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	observer codes right	observer codes rec.	sun position horz.	sun position vert.	beauf. no.	course (deg.)	position latitude	position longitude	km in leg
05	03	871121	18.52	68	04	51	10	02	4	316			7.72
05	04	871121	18.52	51	68	04	10	02	4	316	04 26 s	110 42 w	8.33
06	01	871121	18.52	22	67	05	10	02	4	316	04 21 s	110 48 w	5.25
06	02	871121	18.52	22	67	05			4	285			1.23
06	03	871121	18.52	67	05	22			4	285			2.78
06	04	871121	18.52	67	05	22	11	03	4	285			3.40
06	05	871121	18.52	05	22	67	11	03	4	285			6.79
06	06	871121	18.52	22	67	05	11	03	4	285	04 17 s	110 59 w	2.78
01	01	871122	18.52	05	22	20			4	290	03 58 s	112 29 w	3.70
01	02	871122	18.52	05	22	20	06	03	4	290			2.47
01	03	871122	18.52	22	67	05	06	03	5	290			6.17
01	04	871122	18.52	67	05	22	06	03	5	290			4.01
01	05	871122	18.52	67	05	22	06	02	5	290	03 56 s	112 38 w	0.62
01	06	871122	18.52	67	05	22	05	02	5	310			1.23
02	01	871122	18.52	67	05	22	06	02	5	290			0.93
02	02	871122	18.52	51	68	04	06	02	5	290			4.63
02	03	871122	18.52	51	68	04			5	290	03 53 s	112 44 w	9.26
02	04	871122	18.52	04	51	68			4	290			9.26
02	05	871122	18.52	04	51	68			4	270			3.09
02	06	871122	18.52	04	70	68			4	270			1.54
02	07	871122	18.52	68	04	70			4	250			1.54
02	08	871122	18.52	68	04	51			4	250			9.88
02	09	871122	18.52	68	04	51			4	290			2.47
02	10	871122	18.52	05	22	67			5	290	03 52 s	113 07 w	6.17
02	11	871122	18.52	22	67	05			5	290			6.17
02	12	871122	18.52	67	05	22	06	01	5	290			6.17
02	13	871122	18.52	05	22	67	06	01	5	290			6.48
02	14	871122	18.52	22	67	05	06	01	5	290			5.86
02	15	871122	18.52	67	05	22	07	12	5	290			7.72
02	16	871122	18.52	68	04	70	08	01	5	290			3.70
02	17	871122	18.52	68	20	70	08	01	5	290			4.01
02	18	871122	18.52	70	68	04	08	01	5	290	03 44 s	113 35 w	7.72
02	19	871122	18.52	04	70	68	09	01	5	290			7.72
02	20	871122	18.52	68	04	70	10	12	5	290			3.09
02	21	871122	18.52	68	04	70	10	12	5	290	03 41 s	113 46 w	4.63
02	22	871122	18.52	70	68	04	10	12	5	290			4.63
02	23	871122	18.52	70	68	04	09	12	5	310			3.09
02	24	871122	18.52	04	70	68	09	12	5	310			4.32
03	01	871122	18.52	05	22	67	10	12	5	310	03 36 s	113 57 w	4.63
03	02	871122	18.52	05	22	67	10	01	5	310			1.54
03	03	871122	18.52	22	67	05	10	01	5	310			6.17
03	04	871122	18.52	67	05	22	10	01	5	310			6.17
03	05	871122	18.52	05	22	67	10	01	5	310			6.17
03	06	871122	18.52	22	67	05	10	02	5	310			6.17
03	07	871122	18.52	67	05	22	10	02	5	310			6.17
03	08	871122	18.52	05	22	67	10	02	5	310	03 23 s	114 16 w	6.17
03	09	871122	18.52	22	67	05	10	02	5	310			4.63
04	01	871122	18.52	04	68	51	11	02	4	310	03 18 s	114 23 w	4.01
05	01	871122	18.52	04	68	51	11	02	4	310	03 16 s	114 29 w	2.47
05	02	871122	18.52	51	04	68	10	02	4	310			10.80
05	03	871122	18.52	68	70	04	10	03	4	310	03 11 s	114 36 w	4.01
05	04	871122	18.52	68	70	04			4	310			7.72

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
01	01	871123	18.52	51	04	68			3	278	03 00 s	116 07 w	3.70
01	02	871123	18.52	51	04	68	07	03	4	278			5.25
01	03	871123	18.52	68	51	04	07	03	4	278			4.01
01	04	871123	18.52	68	51	04	07	03	4	278	03 00 s	116 15 w	2.47
02	01	871123	18.52	22	67	05			5	279	03 00 s	116 18 w	4.32
02	02	871123	18.52	22	67	05	07	03	5	279			1.85
02	03	871123	18.52	67	05	22	06	02	5	279			5.86
02	04	871123	18.52	05	22	67			5	279			5.25
02	05	871123	18.52	05	22	67			5	279			1.23
02	06	871123	18.52	22	67	05			5	279			6.17
02	07	871123	18.52	67	05	22	07	02	5	279			2.16
02	08	871123	18.52	67	05	22	07	02	5	279			3.70
02	09	871123	18.52	05	22	67	07	02	5	279			6.48
02	10	871123	18.52	22	67	05	07	02	5	279			4.32
02	11	871123	18.52	68	51	04	07	02	5	279			9.26
02	12	871123	18.52	68	51	04	07	02	5	279	02 56 s	116 49 w	3.09
02	13	871123	18.52	04	68	51	07	01	5	279			6.17
02	14	871123	18.52	04	68	51	07	01	5	279	02 56 s	116 55 w	7.72
02	15	871123	18.52	51	04	68	07	12	5	279			13.27
02	16	871123	18.52	67	05	22	08	12	5	279			5.25
02	17	871123	18.52	05	22	67	08	12	5	279			3.09
02	18	871123	18.52	05	22	70	08	12	5	279	02 54 s	117 13 w	3.09
02	19	871123	18.52	22	70	05	09	12	5	279			6.17
02	20	871123	18.52	70	05	22	09	12	5	279			0.62
03	01	871123	18.52	70	05	22	09	12	5	279	02 52 s	117 22 w	2.47
03	02	871123	18.52	05	22	70	11	12	5	279			6.48
03	03	871123	18.52	22	67	05	11	12	5	279			6.17
03	04	871123	18.52	67	05	22	11	12	5	279			4.01
03	05	871123	18.52	67	05	22		01	5	189			2.78
03	06	871123	18.52	04	68	51	10	01	5	299	02 52 s	117 35 w	7.72
03	07	871123	18.52	51	04	68	10	01	5	299			7.72
03	08	871123	18.52	68	51	04	10	01	5	299			3.09
03	09	871123	18.52	68	51	04	10	01	5	299	02 47 s	117 45 w	4.01
03	10	871123	18.52	68	51	04	10	01	5	325			0.93
03	11	871123	18.52	04	68	51	10	01	5	325			4.32
03	12	871123	18.52	04	68	51	10	01	5	325	02 44 s	117 49 w	3.09
03	13	871123	18.52	51	04	68	10	02	5	325			6.17
03	14	871123	18.52	51	04	68	10	02	5	325	02 40 s	117 53 w	2.16
03	15	871123	18.52	68	51	04	10	02	5	325			8.64
03	16	871123	18.52	05	22	67	10	02	5	325			6.48
03	17	871123	18.52	22	67	05	10	02	5	325			6.17
03	18	871123	18.52	67	05	22	10	02	5	325			5.86
03	19	871123	18.52	05	22	67	10	02	5	325			6.48
03	20	871123	18.52	22	67	05	10	03	5	325	02 21 s	118 08 w	6.17
03	21	871123	18.52	67	05	22	10	03	5	325			5.86
03	22	871123	18.52	05	22	67	10	03	4	325			1.54
01	01	871124	18.52	22	67	05			4	260	02 23 s	119 44 w	5.56
01	02	871124	18.52	67	05	22	07	03	4	260			6.17
01	03	871124	18.52	05	22	67			4	260			6.17
01	04	871124	18.52	22	67	05			4	260			6.17
01	05	871124	18.52	67	05	22			4	260			4.94
01	06	871124	18.52	68	04	51			4	260			4.32

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
01	07	871124	18.52	68	04	51			4	260	02 27 s	120 06 w	9.26
01	08	871124	18.52	51	68	04			4	260			9.26
01	09	871124	18.52	51	68	04			4	260	02 29 s	120 18 w	4.63
01	10	871124	18.52	04	51	68			4	260			4.63
01	11	871124	18.52	04	51	68			4	260	02 30 s	120 24 w	2.78
02	01	871124	18.52	04	51	68			4	260	02 31 s	120 27 w	3.09
03	01	871124	18.52	05	22	67			4	260	02 33 s	120 30 w	4.63
04	01	871124	18.52	22	67	05	08	12	4	260	02 38 s	120 40 w	3.70
05	01	871124	18.52	67	05	22	09	12	4	260	02 37 s	120 44 w	4.01
05	02	871124	18.52	67	05	22			3	260			2.16
05	03	871124	18.52	05	22	67	09	12	3	260			4.63
05	04	871124	18.52	51	68	04			3	260	02 38 s	120 50 w	3.09
06	01	871124	18.52	04	51	68			3	260	02 37 s	120 58 w	6.79
07	01	871124	18.52	68	04	51	12	12	3	260			3.09
07	02	871124	18.52	68	04	51	11	01	3	260	02 40 s	121 05 w	5.25
08	01	871124	18.52	51	68	04	11	01	3	260			3.09
08	02	871124	18.52	51	68	04	11	01	3	260	02 40 s	121 11 w	3.09
08	03	871124	18.52	04	51	68	12	01	3	260			6.79
08	04	871124	18.52	22	67	05	12	01	3	260	02 41 s	121 17 w	5.56
08	05	871124	18.52	67	05	22	12	01	3	260			4.01
09	01	871124	18.52	05	22	67	12	02	3	260	02 45 s	121 26 w	6.79
09	02	871124	18.52	22	67	05	12	02	3	260			5.86
10	01	871124	18.52	67	05	22	12	02	3	260			7.10
10	02	871124	18.52	04	68	51	12	02	3	260			7.72
10	03	871124	18.52	04	68	51	12	03	3	260	02 50 s	121 48 w	2.47
10	04	871124	18.52	51	04	68	12	03	3	260			8.03
10	05	871124	18.52	68	51	04	12	03	3	260			8.03
01	01	871125	18.52	68	04	51	07	03	4	274	02 44 s	123 23 w	0.31
02	01	871125	18.52	68	04	51	07	03	4	274			6.17
02	02	871125	18.52	51	68	04	07	03	4	274	02 44 s	123 28 w	2.47
03	01	871125	18.52	04	51	68	07	02	4	274	02 45 s	123 33 w	4.01
04	01	871125	18.52	22	67	05	07	02	4	274	02 45 s	123 38 w	6.17
04	02	871125	18.52	67	05	22	07	02	4	274			6.17
04	03	871125	18.52	05	22	67	07	02	4	274			6.48
04	04	871125	18.52	22	67	05	07	02	4	274			5.86
04	05	871125	18.52	67	05	22	07	02	4	274			6.17
04	06	871125	18.52	05	22	67	07	01	4	274	02 44 s	123 57 w	6.17
04	07	871125	18.52	22	67	05	07	01	4	274			3.09
04	08	871125	18.52	68	51	04	07	01	4	274			4.94
05	01	871125	18.52	68	51	04	07	01	4	274	02 44 s	124 09 w	1.23
05	02	871125	18.52	04	68	51	07	01	4	274			2.78
05	03	871125	18.52	04	68	51	07	12	4	274			3.40
05	04	871125	18.52	04	68	51	08	12	4	274	02 44 s	124 14 w	6.17
05	05	871125	18.52	51	04	68	08	12	4	274			4.63
06	01	871125	18.52	51	04	68	08	12	4	274	02 44 s	124 24 w	4.63
06	02	871125	18.52	67	05	22	08	12	4	274			4.94
07	01	871125	18.52	05	22	67	08	12	4	274	02 43 s	124 30 w	6.48
07	02	871125	18.52	22	67	05	10	12	4	274			6.79
08	01	871125	18.52	67	05	22	11	12	4	274	02 42 s	124 40 w	6.17
08	02	871125	18.52	05	22	67	11	12	4	274			6.79
08	03	871125	18.52	22	67	05	11	01	4	274			6.17
08	04	871125	18.52	67	05	22	11	01	4	274			2.78

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
08	05	871125	18.52	51	04	68	11	01	4	274			3.70
08	06	871125	18.52	51	04	68	11	01	4	287			4.01
08	07	871125	18.52	68	51	04	11	01	4	290			7.72
08	08	871125	18.52	04	68	51	10	01	4	310			3.09
08	09	871125	18.52	04	68	51	10	01	4	310	02 38 s	125 05 w	4.63
08	10	871125	18.52	51	04	68	10	02	4	310			4.63
08	11	871125	18.52	51	04	68	10	02	4	310			3.09
08	12	871125	18.52	68	51	04	10	02	4	310			6.17
09	01	871125	18.52	05	22	67	10	02	4	310	02 25 s	125 17 w	4.63
10	01	871125	18.52	22	67	05	10	03	4	310	02 22 s	125 19 w	1.85
10	02	871125	15.74	22	67	05	10	03	4	310			0.52
10	03	871125	18.52	22	67	05	10	03	4	310			3.70
10	04	871125	18.52	67	05	22	10	03	4	310			4.63
01	01	871126	18.52	22	67	05			4	270	02 21 s	126 48 w	6.17
01	02	871126	18.52	67	05	22	07	03	4	270			6.17
01	03	871126	18.52	05	22	67	07	03	4	270			6.17
01	04	871126	18.52	22	67	05	07	03	4	270	02 21 s	127 00 w	1.85
02	01	871126	18.52	04	51	68	07	02	4	269	02 19 s	127 05 w	3.70
02	02	871126	18.52	04	51	68	07	02	4	249			9.88
02	03	871126	18.52	68	04	51	07	02	4	271			4.94
02	04	871126	18.52	68	04	51	07	02	4	271	02 21 s	127 16 w	6.17
02	05	871126	18.52	51	68	04	07	02	4	271			3.09
02	06	871126	18.52	51	68	04	07	02	4	271	02 21 s	127 22 w	3.70
03	01	871126	18.52	51	68	04	07	01	4	271	02 21 s	127 26 w	3.40
03	02	871126	18.52	67	05	22	07	01	4	271			5.86
03	03	871126	18.52	05	22	67	07	01	4	271			6.17
03	04	871126	18.52	22	67	05	07	01	4	271			7.10
03	05	871126	18.52	67	05	22	07	01	4	271			3.09
03	06	871126	18.52	67	05	22	07	12	4	271			2.16
03	07	871126	18.52	05	22	67	07	12	4	271			6.17
03	08	871126	18.52	22	67	05	08	12	4	271			7.72
03	09	871126	18.52	68	51	04	08	12	4	271			7.72
03	10	871126	18.52	04	68	51	09	12	4	271	02 21 s	127 59 w	5.56
04	01	871126	18.52	04	68	51	09	12	4	271	02 21 s	127 03 w	1.54
04	02	871126	18.52	51	04	68	10	12	5	271			6.79
04	03	871126	18.52	68	51	04	10	12	5	271			2.47
05	01	871126	18.52	68	51	04	10	12	5	271	02 21 s	128 10 w	4.32
05	02	871126	18.52	04	68	51	11	12	5	271			4.32
05	03	871126	18.52	04	68	51	11	12	5	271	02 20 s	128 16 w	3.09
05	04	871126	18.52	51	04	68	11	01	5	271			7.10
05	05	871126	18.52	67	22	05	11	01	5	271			5.25
05	06	871126	18.52	22	05	67	11	01	5	271			6.17
05	07	871126	18.52	05	67	22	11	01	4	271			1.85
06	01	871126	18.52	05	67	22	11	01	4	271	02 19 s	128 33 w	4.01
06	02	871126	18.52	67	22	05	11	01	4	271			6.17
06	03	871126	18.52	22	05	67	11	02	4	271			6.17
06	04	871126	18.52	05	67	22	11	02	4	271			6.17
06	05	871126	18.52	67	22	05	11	02	4	271	02 19 s	128 48 w	6.17
06	06	871126	18.52	22	05	67	09	02	4	000			3.40
07	01	871126	18.52	04	68	51	09	02	4	000	02 16 s	128 52 w	12.35
07	02	871126	18.52	51	04	68	08	02	4	000			3.09
07	03	871126	18.52	51	04	68	08	03	4	000	02 07 s	128 54 w	7.72

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
07	04	871126	18.52	68	51	04	08	03	4	000			11.73
01	01	871127	12.04	68	04	51			2	065	02 02 s	127 57 w	0.40
01	02	871127	18.52	68	04	51			2	065			6.79
01	03	871127	18.52	51	68	04	02	03	2	065	02 00 s	127 54 w	7.72
01	04	871127	18.52	04	51	68	02	03	3	065			3.40
02	01	871127	18.52	22	67	05	02	02	3	065	01 56 s	127 47 w	6.48
02	02	871127	18.52	67	05	22	02	02	5	065			5.56
02	03	871127	18.52	05	22	67	02	02	5	065	01 53 s	127 42 w	6.17
02	04	871127	18.52	22	67	05	02	02	5	065			6.48
02	05	871127	18.52	67	05	22	02	02	5	065			3.70
03	01	871127	18.52	04	51	68	03	01	4	045	01 48 s	127 32 w	2.16
04	01	871127	18.52	04	51	68	03	01	4	045	01 47 s	127 31 w	8.03
04	02	871127	18.52	68	04	51	03	01	4	045			7.41
05	01	871127	18.52	51	68	04	02	01	4	067	01 39 s	127 28 w	6.17
05	02	871127	18.52	05	22	67	02	01	4	067			6.48
05	03	871127	18.52	22	67	05	03	12	4	067			6.48
05	04	871127	18.52	67	05	22	04	12	5	067			5.86
05	05	871127	18.52	05	22	67	04	12	5	067			6.17
05	06	871127	18.52	22	67	05	04	12	5	067	01 31 s	127 10 w	6.17
05	07	871127	18.52	67	05	22	05	12	5	067			5.86
05	08	871127	18.52	05	22	67	05	12	5	067			7.72
05	09	871127	18.52	51	04	68	05	01	4	067	01 29 s	127 01 w	7.72
06	01	871127	18.52	68	51	04	05	01	4	067	01 29 s	126 53 w	2.47
07	01	871127	18.52	68	51	04	06	01	4	067	01 28 s	126 52 w	4.63
07	02	871127	18.52	04	68	51	06	02	4	067	01 27 s	126 50 w	10.80
07	03	871127	18.52	51	04	68	06	02	4	067			4.63
08	01	871127	18.52	22	67	05	06	02	4	067	01 23 s	126 34 w	6.17
08	02	871127	18.52	67	05	22	06	03	4	067			6.17
08	03	871127	18.52	05	22	67			4	067			1.85
01	01	871128	18.52	67	22	05			3	055	00 29 s	125 15 w	2.16
01	02	871128	18.52	67	22	05	02	03	3	055			3.09
02	01	871128	18.52	51	04	68	02	02	3	049	00 27 s	125 05 w	3.40
02	02	871128	18.52	51	04	68	02	02	3	049	00 26 s	125 03 w	2.78
03	01	871128	18.52	68	51	04	02	02	3	049	00 21 s	124 58 w	7.72
03	02	871128	18.52	04	68	51	02	02	3	049			7.72
03	03	871128	18.52	22	05	67	02	02	3	049			6.17
03	04	871128	18.52	05	67	22	03	01	3	049			6.17
03	05	871128	18.52	67	22	05	03	01	3	049			6.17
03	06	871128	18.52	22	05	67	03	01	3	049	00 08 s	124 43 w	0.31
04	01	871128	18.52	22	05	67	03	01	3	050	00 08 s	124 43 w	3.70
04	02	871128	18.52	05	67	22	03	01	3	050			2.47
05	01	871128	18.52	05	67	22	03	01	3	050	00 05 s	124 40 w	2.47
05	02	871128	18.52	67	22	05	03	01	3	050			7.72
05	03	871128	18.52	04	68	51	03	12	3	050			1.54
06	01	871128	18.52	04	51	68	04	12	3	054	00 01 n	124 34 w	0.93
06	02	871128	18.52	68	04	51	04	12	3	054	00 02 n	124 34 w	7.72
07	01	871128	18.52	51	68	04	04	01	3	057	00 06 n	124 28 w	3.70
07	02	871128	18.52	51	68	20			3	070			1.85
08	01	871128	18.52	22	67	05	09	02	3	330	00 11 n	124 24 w	4.94
09	01	871128	18.52	67	05	22	09	02	4	330	00 14 n	124 25 w	6.17
09	02	871128	18.52	51	68	04	09	02	4	330			3.40
10	01	871128	18.52	04	51	68	09	03	3	330	00 21 n	124 30 w	2.16

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
11	01	871128	18.52	68	04	51	09	03	3	330	00 23 n	124 33 w	11.42
01	01	871129	18.52	68	51	04			4	356	01 41 n	125 18 w	8.33
01	02	871129	18.52	04	68	51	04	03	4	356			4.32
01	03	871129	18.52	04	68	51	04	03	5	356			3.70
01	04	871129	18.52	51	04	68	04	03	5	356			2.78
01	05	871129	18.52	51	04	68	04	02	5	356	01 52 n	125 19 w	5.56
01	06	871129	18.52	22	20	05	04	02	5	356			5.25
01	07	871129	18.52	67	05	22	04	02	5	356			6.17
01	08	871129	18.52	05	22	67	04	02	5	356			6.17
01	09	871129	18.52	22	67	05	04	02	5	356			1.54
02	01	871129	18.52	67	05	22	04	02	5	352			6.17
02	02	871129	18.52	05	22	67	04	02	5	352			5.25
02	03	871129	18.52	68	04	51	04	01	5	352	02 19 n	125 26 w	3.40
02	04	871129	18.52	68	04	51	04	01	5	012			5.86
02	05	871129	18.52	68	04	51	04	01	5	012	02 24 n	125 26 w	4.63
02	06	871129	18.52	51	68	04	04	01	5	012			1.23
02	07	871129	18.52	51	68	04	05	01	5	352			3.40
02	08	871129	18.52	51	68	04	05	01	5	352	02 30 n	125 26 w	6.17
02	09	871129	18.52	04	51	68	04	01	5	352			3.09
02	10	871129	18.52	04	51	68	04	01	5	012			11.42
02	11	871129	18.52	22	67	05			5	032			2.16
02	12	871129	18.52	22	67	05			5	032			4.01
02	13	871129	18.52	67	05	22			5	032	02 46 n	125 24 w	4.63
03	01	871129	18.52	05	22	67	04	12	5	032	02 49 n	125 23 w	6.17
03	02	871129	18.52	22	67	05	04	12	5	052			2.16
04	01	871129	18.52	67	05	22	07	12	5	355	02 55 n	125 20 w	5.56
04	02	871129	18.52	05	22	67	07	12	5	355			6.17
04	03	871129	18.52	64	68	51	08	01	5	355			8.33
04	04	871129	18.52	51	04	68	08	01	5	355			2.78
04	05	871129	18.52	51	04	68	07	01	5	015			4.32
04	06	871129	18.52	68	51	04	07	02	5	015			3.09
04	07	871129	18.52	68	51	04	07	02	5	015	03 13 n	125 22 w	4.63
04	08	871129	18.52	04	68	51	07	02	5	015			4.63
04	09	871129	18.52	04	68	51	07	02	5	015	03 19 n	125 21 w	3.09
04	10	871129	18.52	51	04	68	08	02	5	015			6.17
04	11	871129	18.52	51	04	68	08	02	5	015	03 24 n	125 20 w	1.54
04	12	871129	18.52	68	51	04	08	02	5	015			9.26
05	01	871129	18.52	22	67	05			4	354	03 35 n	125 19 w	5.25
06	01	871129	18.52	67	05	22	09	03	4	353	03 46 n	125 19 w	7.10
01	01	871130	18.52	67	22	05			4	350	05 28 n	125 45 w	6.17
01	02	871130	18.52	22	05	67			4	350			6.17
01	03	871130	18.52	05	67	22			4	350	05 35 n	125 46 w	0.93
01	04	871130	18.52	05	67	22			4	350			2.16
01	05	871130	18.52	04	51	68			4	350			2.47
02	01	871130	18.52	04	51	68			4	350	05 40 n	125 47 w	3.40
02	02	871130	18.52	04	51	68			4	330			6.17
02	03	871130	18.52	68	04	51	03	02	4	025			9.26
02	04	871130	18.52	68	04	51	03	02	4	025	05 51 n	125 47 w	4.63
02	05	871130	18.52	51	68	04	03	02	4	025			13.89
02	06	871130	18.52	67	22	05			4	025			6.17
02	07	871130	18.52	22	05	67	03	01	4	025			6.48
02	08	871130	18.52	05	67	22	03	01	4	025			5.86

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	observer codes right	observer codes rec.	sun position horz.	sun position vert.	beauf. no.	course (deg.)	position latitude	position longitude	km in leg
02	09	871130	18.52	67	22	05	03	01	4	054	06 12 n	125 37 w	6.17
02	10	871130	18.52	22	05	67	03	01	4	054			6.17
02	11	871130	18.52	05	67	22	03	01	4	054			8.03
02	12	871130	18.52	68	04	51	03	01	4	054			6.17
03	01	871130	18.52	51	68	04			4	054	06 24 n	125 23 w	6.79
03	02	871130	18.52	04	51	68			4	054			1.54
04	01	871130	18.52	68	04	51	04	01	4	054	06 31 n	125 18 w	2.78
04	02	871130	18.52	68	04	51			4	054			4.63
04	03	871130	18.52	51	68	04			4	054			1.85
04	04	871130	18.52	51	68	04			4	027			2.78
04	05	871130	18.52	51	68	04			4	027	06 37 n	125 13 w	3.09
04	06	871130	18.52	04	51	68			4	027			6.17
04	07	871130	18.52	67	22	05			4	027			6.17
04	08	871130	18.52	22	05	67			4	027			5.56
05	01	871130	18.52	05	67	22			4	054	06 51 n	125 05 w	5.86
05	02	871130	18.52	67	22	05			4	054			6.17
05	03	871130	18.52	22	05	67			4	054			5.86
05	04	871130	18.52	05	67	22			5	054			1.54
06	01	871130	18.52	04	68	51			4	054			7.72
06	02	871130	18.52	04	68	51			4	054	07 08 n	124 33 w	6.17
01	01	871201	18.52	68	51	20	02	03	3	049	07 56 n	123 02 w	2.47
01	02	871201	18.52	68	51	04	02	03	4	049			3.70
01	03	871201	18.52	04	68	51	02	03	4	049			3.09
01	04	871201	18.52	04	68	51			4	049			2.47
01	05	871201	18.52	51	04	68			4	049			6.17
02	01	871201	18.52	67	22	05			4	049	08 04 n	122 53 w	6.17
02	02	871201	18.52	22	05	67			4	049			6.17
02	03	871201	18.52	05	67	22			4	049	08 08 n	122 47 w	6.48
02	04	871201	18.52	67	22	05			4	049			1.54
02	05	871201	18.52	67	22	05			4	049			2.47
03	01	871201	18.52	22	05	67			3	049	08 13 n	122 41 w	6.17
03	02	871201	18.52	05	67	22			3	070			9.26
03	03	871201	18.52	68	04	70			3	070			2.16
04	01	871201	18.52	68	04	70	02	01	3	070			3.09
04	02	871201	18.52	68	04	70	02	01	3	070	08 18 n	122 28 w	1.23
04	03	871201	18.52	68	04	51	02	01	3	070			3.09
04	04	871201	18.52	51	68	04			4	070			4.94
04	05	871201	18.52	51	68	04			4	070			7.72
04	06	871201	18.52	04	51	68	03	01	4	070			13.27
04	07	871201	18.52	67	22	05			4	070			1.54
04	08	871201	18.52	67	22	05			4	070			4.63
04	09	871201	18.52	22	05	67			3	070	08 25 n	122 06 w	6.48
04	10	871201	18.52	05	67	22			3	070			2.47
04	11	871201	18.52	05	67	22			3	046			4.01
04	12	871201	18.52	67	22	05			3	046			6.17
05	01	871201	18.52	51	04	68			5	046	08 55 n	121 29 w	1.85
01	01	871202	18.52	67	22	05			3	036	11 05 n	119 56 w	6.17
01	02	871202	18.52	22	05	67			3	036			6.79
01	03	871202	18.52	05	67	22	03	03	3	036			7.10
01	04	871202	18.52	04	51	68	03	03	3	036			4.63
01	05	871202	18.52	04	51	68	03	02	3	036	11 17 n	119 48 w	4.63
02	01	871202	18.52	68	04	51	03	02	3	045	11 25 n	119 46 w	2.16

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
02	02	871202	18.52	68	04	51	03	02	3	045			4.01
03	01	871202	18.52	68	04	51	03	02	3	045	11 30 n	119 43 w	1.85
03	02	871202	18.52	51	68	04	03	02	3	045			9.26
03	03	871202	18.52	67	05	22	03	02	2	045	11 34 n	119 39 w	2.78
03	04	871202	18.52	67	05	22	03	02	2	055			3.40
03	05	871202	18.52	05	22	67	03	01	2	055			6.79
03	06	871202	18.52	22	67	05	03	01	2	055			0.93
03	07	871202	18.52	22	67	05	02	01	2	075			4.32
04	01	871202	18.52	67	22	05	07	02	2	021	11 23 n	119 42 w	6.17
04	02	871202	18.52	22	05	67	07	02	3	021			6.17
04	03	871202	18.52	05	67	22	07	02	3	021			3.09
04	04	871202	18.52	04	68	51	07	02	3	021			6.17
04	05	871202	18.52	51	04	68			3	021	11 34 n	119 38 w	10.80
01	01	871203	18.52	04	68	51			1	021	13 16 n	118 58 w	4.63
01	02	871203	18.52	04	68	51			2	021	13 19 n	118 57 w	1.85
02	01	871203	18.52	67	22	05			2	245	13 15 n	119 05 w	6.17
02	02	871203	18.52	22	05	67			2	245			1.54
02	03	871203	18.52	22	05	67	08	02	2	245	13 13 n	119 10 w	0.93
02	04	871203	16.67	22	05	67	08	02	2	245			3.61
02	05	871203	16.67	05	67	22	08	02	3	245			4.72
02	06	871203	18.52	05	67	22	08	02	3	245			1.23
02	07	871203	18.52	67	22	05	08	02	3	245			6.17
02	08	871203	18.52	22	05	67	08	02	3	245	13 09 n	119 19 w	6.79
02	09	871203	18.52	05	67	22	08	01	3	245			3.40
02	10	871203	18.52	51	68	04	08	01	3	245	13 07 n	119 24 w	8.95
03	01	871203	18.52	04	51	68	09	01	3	245			11.11
03	02	871203	18.52	68	04	51			3	245	12 59 n	119 39 w	10.49
04	01	871203	18.52	67	22	05	10	01	3	245	12 55 n	119 46 w	5.86
04	02	871203	18.52	22	05	67	10	01	3	245	12 54 n	119 50 w	6.17
04	03	871203	18.52	05	67	22	10	01	3	245			3.09
04	04	871203	18.52	05	67	22	10	01	4	245	12 51 n	119 55 w	3.09
04	05	871203	18.52	67	22	05			4	245			6.17
04	06	871203	18.52	22	05	67			3	245	12 49 n	120 00 w	6.17
04	07	871203	18.52	05	67	22			3	245			6.17
04	08	871203	18.52	67	22	05	12	01	3	245			6.17
04	09	871203	18.52	68	04	51			3	245	12 45 n	120 11 w	7.72
04	10	871203	18.52	51	68	04			3	245			1.54
04	11	871203	18.52	51	68	04			3	245			0.93
05	01	871203	18.52	51	68	04			2	245	12 40 n	120 22 w	1.23
06	01	871203	18.52	04	51	68	12	02	2	245	12 38 n	120 28 w	6.17
07	01	871203	18.52	68	04	51	12	02	2	245	12 33 n	120 33 w	3.09
08	01	871203	18.52	22	67	05			2	245	12 30 n	120 37 w	6.17
08	02	871203	18.52	67	05	22			2	245			2.78
08	03	871203	18.52	67	05	22			2	245			3.09
08	04	871203	18.52	05	22	67			2	245			3.40
01	01	871204	18.52	67	22	05			5	019			2.16
01	02	871204	18.52	67	22	05			5	014	11 54 n	122 53 w	4.32
01	03	871204	18.52	51	68	04	03	02	5	020			12.66
02	01	871204	18.52	04	51	68	03	02	5	020	12 09 n	122 48 w	9.26
02	02	871204	18.52	68	04	51	03	02	5	020	12 14 n	122 46 w	3.70
03	01	871204	18.52	68	04	51	03	02	5	020	12 18 n	122 45 w	3.40
03	02	871204	18.52	22	05	67	03	02	5	020			6.17

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
03	03	871204	18.52	05	67	20	04	02	5	020			6.17
03	04	871204	18.52	67	20	05	04	02	6	020			6.17
03	05	871204	18.52	20	05	67	04	02	6	020	12 30 n	122 41 w	6.17
03	06	871204	18.52	05	67	20	04	01	6	020			6.17
03	07	871204	18.52	67	20	05	04	01	6	020			7.72
03	08	871204	18.52	68	04	51	05	01	5	020			7.72
03	09	871204	18.52	51	68	04	05	01	5	020	12 46 n	122 37 w	7.72
03	10	871204	18.52	04	51	68			5	020			4.94
04	01	871204	18.52	68	04	51			5	025	12 57 n	122 36 w	4.32
04	02	871204	18.52	68	04	51	06	01	5	025			2.47
04	03	871204	18.52	51	68	04	06	01	5	025			3.09
04	04	871204	18.52	51	68	04	06	01	4	025			3.09
04	05	871204	18.52	04	51	68	07	01	4	025			6.17
04	06	871204	18.52	22	05	67	07	01	4	025	13 07 n	122 32 w	6.17
04	07	871204	18.52	05	67	22	07	01	4	025			6.17
04	08	871204	18.52	67	22	05	07	02	4	025			4.63
04	09	871204	18.52	67	22	05	07	02	4	025			1.54
05	01	871204	18.52	22	05	67			4	025	13 20 n	122 29 w	6.48
05	02	871204	18.52	05	67	22	07	02	4	025			5.86
05	03	871204	18.52	67	22	05	07	02	5	025			6.17
05	04	871204	18.52	22	05	67	07	02	4	025			6.17
05	05	871204	18.52	04	51	68	07	02	4	025			6.17
05	06	871204	18.52	68	04	51	08	03	4	025	13 37 n	122 23 w	6.17
05	07	871204	18.52	51	68	04	08	03	4	025			4.63
05	08	871204	18.52	51	68	04			4	025			1.54
01	01	871205	18.52	68	51	04			5	032	15 27 n	121 18 w	6.17
01	02	871205	18.52	04	68	51	03	03	5	032			6.17
01	03	871205	18.52	51	04	68	03	03	5	032			6.17
01	04	871205	18.52	67	22	05	03	03	6	032			6.17
01	05	871205	18.52	22	05	67	03	03	6	032			6.17
01	06	871205	18.52	05	67	22	03	02	6	032			1.54
01	07	871205	18.52	05	67	22	03	02	6	020	15 43 n	121 09 w	4.63
01	08	871205	18.52	67	22	05	03	02	6	020			5.56
01	09	871205	18.52	67	22	05	03	02	5	020			0.62
01	10	871205	18.52	22	05	67	03	02	5	020			6.17
01	11	871205	18.52	05	67	22	03	02	6	020			6.48
01	12	871205	18.52	67	22	05	03	02	6	020			4.94
02	01	871205	18.52	04	51	68	03	02	6	020			8.03
02	02	871205	18.52	04	51	68	04	01	6	020	16 05 n	121 03 w	5.25
02	03	871205	18.52	68	04	51	04	01	6	020			8.64
02	04	871205	18.52	68	04	70	04	01	6	020			1.54
01	01	871206	18.52	67	22	05			6	024	19 22 n	119 46 w	6.17
01	02	871206	18.52	22	05	67	03	03	6	024			6.48
01	03	871206	18.52	05	67	22	03	03	6	024			3.09
01	04	871206	18.52	51	68	04	03	03	6	024			13.89
01	05	871206	18.52	04	51	68	03	02	6	024	19 37 n	119 40 w	4.94

1 total distance travelled on effort: 14849.97 km.

Table 3. Marine mammal sightings, classified by species code groups encountered in the eastern tropical Pacific during July 30 through December 10, 1987.

Sightings by Species

species: OFFSHORE SPOTTED DOLPHIN (STENELLA ATTENUATA) species code: 2

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870803	03	02	03			3	56	1.1	21 11 n	118 23 w	100.0	45.0	34.0
870803	10	01	10			3	55	0.9	20 11 n	119 37 w	100.0	323.0	275.0
870807	04	03	01	10	01	4	55	0.1	12 49 n	117 00 w	100.0	20.0	15.0
870808	05	02	04			1	56	3.9	10 45 n	114 15 w	100.0	66.0	52.0
870808	06	01	05			2	31	2.3	10 45 n	114 07 w	100.0	42.0	38.0
870809	02	02	02	10	03	2	31	2.2	09 50 n	112 42 w	40.0	112.0	97.0
870809	04	04	07	11	01	2	55	3.0	09 35 n	112 10 w	88.3	145.0	130.0
870809	05	01	09	12	12	2	31	0.6	09 30 n	111 57 w	100.0	27.0	25.0
870814	03	14	03	12	12	4	31	6.5	07 38 n	118 18 w	31.7	152.0	125.0
870815	02	02	02			2	64	6.1	08 50 n	120 17 w	100.0	77.0	69.0
870816	02	04	03	05	02	2	69	1.7	09 53 n	122 40 w	27.5	97.0	80.0
870816	04	01	04			2	55	5.6	09 51 n	122 51 w	85.0	343.0	297.0
870816	05	01	05	04	01	2	69	1.9	09 49 n	123 01 w	76.7	122.0	103.0
870816	08	03	10	11	01	2	64	2.3	10 11 n	123 33 w	100.0	63.0	52.0
870817	01	02	01			2	63	1.8	11 28 n	125 31 w	31.0	122.0	106.0
870818	03	03	02	05	01	4	69	0.0	13 31 n	129 16 w	22.5	132.0	111.0
870820	01	01	01			5	31	0.0	10 43 n	134 36 w	60.0	23.0	17.0
870820	03	05	04			5	63	0.1	10 21 n	135 35 w	100.0	22.0	17.0
870906	06	02	03	04	01	4	64	3.0	08 30 n	145 29 w	46.7	92.0	77.0
870912	01	05	01	01	02	1	31	0.9	07 49 n	129 59 w	28.3	130.0	97.0
870915	01	15	01			5	55	1.4	03 18 n	120 49 w	95.0	135.0	112.0
870920	04	01	04	07	12	4	64	0.7	03 11 n	106 19 w	68.3	777.0	698.0
870920	06	01	06	07	02	4	55	0.4	03 15 n	106 01 w	60.0	307.0	275.0
870921	04	03	05	12	12	5	31	4.5	02 49 n	102 45 w	48.7	397.0	350.0
870922	06	01	08	06	12	4	63	4.4	02 26 n	099 22 w	91.2	415.0	364.0
870922	07	02	09			4	69	1.0	02 25 n	099 15 w	100.0	23.0	21.0
870923	02	01	02			3	64	4.4	00 05 n	097 29 w	23.3	138.0	125.0
870930	01	02	02			3	64	9.0	05 21 n	080 36 w	100.0	290.0	260.0
871016	01	25	02	12	12	5	05	0.3	00 24 n	096 30 w	73.3	130.0	92.0
871016	03	03	03			4	04	0.5	00 19 n	096 47 w	100.0	85.0	62.0
871018	04	04	05			4	67	3.0	01 49 s	103 09 w	100.0	667.0	525.0
871019	01	02	01	07	03	4	22	0.8	02 27 s	105 13 w	12.0	308.0	172.0
871019	02	01	02	07	02	4	68	0.9	02 32 s	105 20 w	35.0	237.0	178.0
871020	03	01	02			5	04	1.3	03 26 s	103 02 w	33.0	80.0	50.0
871023	02	01	01			6	68	1.3	05 13 s	096 10 w	100.0	27.0	21.0
871027	02	03	02			3	04	1.1	09 00 s	086 57 w	100.0	103.0	78.0
871027	03	11	04	12	12	4	04	0.8	08 26 s	086 48 w	100.0	348.0	267.0
871029	01	05	04			3	68	2.6	02 59 s	085 51 w	100.0	42.0	33.0
871029	03	07	10	09	01	4	67	0.1	01 47 s	085 42 w	100.0	31.0	24.0
871115	05	01	11			3	51	3.5	07 12 s	088 55 w	61.7	170.0	140.0

Table 3. (continued)

Sightings by Species

species: OFFSHORE SPOTTED DOLPHIN (STENELLA ATTENUATA) species code: 2

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
871120	01	07	01			5	67	0.2	05 13 s	105 49 w	3.0	32.0	37.0
871120	02	05	02			5	68	1.9	05 09 s	106 07 w	100.0	88.0	62.0
871124	08	05	07	12	01	3	05	0.9	02 42 s	121 23 w	100.0	216.0	163.0
871127	07	03	09	06	02	4	04	0.6	01 24 s	126 42 w	12.2	305.0	235.0
871129	01	09	02	04	02	5	22	0.7	02 08 n	125 21 w	35.0	67.0	53.0
871129	05	01	03			4	67	3.7	03 38 n	125 19 w	30.0	484.0	390.0
871202	01	04	03	03	03	3	04	1.4	11 17 n	119 48 w	100.0	20.0	7.0
871203	05	01	03			2	68	2.8	12 39 n	120 23 w	100.0	282.0	211.0
871204	01	03	01	03	02	5	68	1.2	12 03 n	122 51 w	100.0	97.0	62.0
871206			01			6	04	0.1	19 42 n	119 38 w	100.0	0.0*	50.0

Table 3. (continued)

Sightings by Species

species: SPINNER DOLPHIN (STENELLA LONGIROSTRIS) species code: 3

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870814	04	03	04			4	55	0.1	07 32 n	118 22 w	100.0	5.0	4.0
870820	01	01	01			5	31	0.0	10 43 n	134 36 w	6.7	23.0	17.0
871016	01	25	02	12	12	5	05	0.3	00 24 n	096 30 w	26.7	130.0	92.0

Table 3. (continued)

Sightings by Species

species: COMMON DOLPHIN (DELPHINUS DELPHIS) species code: 5

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870730			01	02	03	3	31	0.6	32 29 n	117 17 w	100.0	350.0	300.0
870807	08	05	03	04	01	5	69	0.3	12 10 n	116 29 w	100.0	26.0	21.0
870808	03	10	03	11	01	3	56	3.9	11 02 n	114 55 w	100.0	41.0	36.0
870926	01	02	01			4	69	2.7	04 40 s	088 53 w	100.0	15.0	14.0
870926	05	02	05	12	01	4	31	2.1	04 22 s	088 19 w	100.0	72.0	53.0
870927	01	07	01			3	56	4.3	02 34 s	085 52 w	100.0	224.0	190.0
870927	06	02	08			4	69	1.2	01 58 s	085 18 w	100.0	310.0	260.0
871028	01	06	03			2	05	0.4	05 54 s	086 08 w	100.0	319.0	253.0
871028	04	01	09			2	22	1.7	05 26 s	085 52 w	100.0	33.0	27.0
871102	17	05	19	08	03	4	68	1.7	06 06 n	079 53 w	100.0	103.0	83.0
871113	01	05	01	10	02	2	05	3.4	01 03 s	085 04 w	80.0	123.0	93.0
871113	08	02	10	02	02	4	05	0.8	02 08 s	085 02 w	58.3	364.0	280.0
871203	06	01	04	12	02	2	04	4.6	12 36 n	120 31 w	100.0	50.0	37.0
871203	07	01	05	12	02	2	68	2.0	12 32 n	120 34 w	100.0	136.0	113.0

Table 3. (continued)

Sightings by Species

species: COASTAL SPOTTED DOLPHIN (S.A. GRAFFMANI) species code: 6

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
871103	01	03	01			3	51	1.1	07 42 n	079 01 w	100.0	49.0	39.0
871103	03	01	04			3	68	1.7	08 04 n	078 42 w	100.0	33.0	28.0

Table 3. (continued)

Sightings by Species

species: EASTERN SPINNER DOLPHIN (STENELLA LONGIROSTRIS) species code: 10

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870805	03	12	04	06	02	4	69	0.9	14 01 n	119 43 w	30.3	59.0	47.0
870808	01	03	01	11	03	2	64	0.6	11 26 n	115 25 w	100.0	50.0	41.0
870808	02	01	02	11	02	2	56	0.1	11 22 n	115 21 w	100.0	86.0	73.0
870809	02	02	02	10	03	2	31	2.2	09 50 n	112 42 w	60.0	112.0	97.0
870814	03	14	03	12	12	4	31	6.5	07 38 n	118 18 w	1.7	152.0	125.0
870817	01	02	01			2	63	1.8	11 28 n	125 31 w	69.0	122.0	106.0

Table 3. (continued)

Sightings by Species

species: WHITEBELLY SPINNER DOLPHIN (STENELLA LONGIROSTRIS) species code: 11

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870809	04	04	07	11	01	2	55	3.0	09 35 n	112 10 w	11.7	145.0	130.0
870813	06	10	05			4	56	2.3	06 54 n	115 44 w	81.7	47.0	35.0
870816	02	04	03	05	02	2	69	1.7	09 53 n	122 40 w	72.5	97.0	80.0
870816	04	01	04			2	55	5.6	09 51 n	122 51 w	15.0	343.0	297.0
870816	05	01	05	04	01	2	69	1.9	09 49 n	123 01 w	23.3	122.0	103.0
870817	05	01	04	11	01	2	55	3.9	12 14 n	126 39 w	100.0	99.0	87.0
870817	08	02	07	11	03	2	63	0.3	12 25 n	127 02 w	100.0	80.0	69.0
870818	02	04	01	05	02	4	63	0.2	13 28 n	129 05 w	100.0	75.0	62.0
870818	03	03	02	05	01	4	69	0.0	13 31 n	129 16 w	77.5	132.0	111.0
870818	05	02	05	12	12	4	55	0.2	13 43 n	129 52 w	100.0	52.0	47.0
870822	02	03	01			3	55	1.3	11 19 n	142 21 w	100.0	32.0	25.0
870823	04	16	02	11	01	5	63	0.1	12 40 n	143 23 w	100.0	52.0	45.0
870906	04	01	01	10	12	3	64	5.1	08 45 n	145 47 w	100.0	40.0	36.0
870906	06	02	03	04	01	4	64	3.0	08 30 n	145 29 w	53.3	92.0	77.0
870912	01	05	01	01	02	1	31	0.9	07 49 n	129 59 w	71.7	130.0	97.0
870915	01	15	01			5	55	1.4	03 18 n	120 49 w	5.0	135.0	112.0
870920	04	01	04	07	12	4	64	0.7	03 11 n	106 19 w	31.7	777.0	698.0
870920	06	01	06	07	02	4	55	0.4	03 15 n	106 01 w	6.7	307.0	275.0
870921	04	03	05	12	12	5	31	4.5	02 49 n	102 45 w	51.2	397.0	350.0
870922	06	01	08	06	12	4	63	4.4	02 26 n	099 22 w	8.7	415.0	364.0
870923	02	01	02			3	64	4.4	00 05 n	097 29 w	76.7	138.0	125.0
871019	01	02	01	07	03	4	22	0.8	02 27 s	105 13 w	48.0	308.0	172.0
871019	02	01	02	07	02	4	68	0.9	02 32 s	105 20 w	65.0	237.0	178.0
871020	03	01	02			5	04	1.3	03 26 s	103 02 w	33.7	80.0	50.0
871115	05	01	11			3	51	3.5	07 12 s	088 55 w	38.3	170.0	140.0
871127	01	04	01	02	03	3	68	0.1	01 57 s	127 48 w	100.0	256.0	203.0
871127	07	03	09	06	02	4	04	0.6	01 24 s	126 42 w	87.8	305.0	235.0
871129	01	09	02	04	02	5	22	0.7	02 08 n	125 21 w	65.0	67.0	53.0
871129	05	01	03			4	67	3.7	03 38 n	125 19 w	10.0	484.0	390.0

Table 3. (continued)

Sightings by Species

species: STRIPED DOLPHIN (S. COERULEOALBA) species code: 13

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870803			08	02	02	3	56	3.8	20 26 n	119 03 w	100.0	114.0	95.0
870803	06	04	05	02	12	3	56	1.9	20 41 n	118 53 w	100.0	72.0	62.0
870806	01	23	02			2	31	4.0	13 28 n	117 28 w	100.0	46.0	40.0
870809	06	05	10	05	01	1	63	0.6	09 16 n	111 36 w	100.0	18.0	15.0
870809	07	07	12			2	31	4.1	09 02 n	111 28 w	100.0	50.0	43.0
870813	01	02	01			5	63	0.1	06 21 n	114 15 w	100.0	59.0	47.0
870813	03	04	02			5	63	0.3	06 28 n	114 45 w	100.0	32.0	28.0
870813	04	05	03			5	69	2.0	06 29 n	114 59 w	100.0	18.0	16.0
870813	05	02	04			5	64	5.5	06 36 n	115 02 w	100.0	63.0	52.0
870815	01	01	01			2	56	0.5	08 47 n	120 12 w	100.0	64.0	55.0
870817	06	02	05	11	02	2	55	0.2	12 16 n	126 49 w	100.0	7.0	6.0
870819	03	08	02	12	12	6	31	1.1	12 21 n	133 02 w	100.0	40.0	32.0
870821	01	06	02			6	31	1.9	10 10 n	138 28 w	100.0	38.0	31.0
870910	03	03	03			3	31	0.0	05 09 n	134 00 w	100.0	14.0	12.0
870912	03	07	03	12	12	2	55	4.6	07 32 n	128 10 w	100.0	58.0	39.0
870912	06	01	04	04	01	4	31	5.2	07 18 n	127 46 w	100.0	70.0	59.0
870919	06	03	05	06	02	5	31	2.8	02 19 n	109 17 w	100.0	9.0	8.0
870920	02	07	02	12	01	5	69	1.4	03 05 n	106 45 w	100.0	58.0	53.0
870921	05	04	06	06	02	5	64	2.1	02 47 n	102 17 w	100.0	32.0	26.0
870922			07	12	12	4	63	2.0	02 25 n	099 28 w	100.0	137.0	110.0
870922	01	03	01	12	02	3	64	2.3	02 25 n	100 07 w	100.0	64.0	56.0
870923	01	04	01			3	64	1.8	00 11 n	097 28 w	100.0	93.0	84.0
870923	03	02	03			4	55	0.2	00 01 n	097 22 w	100.0	38.0	32.0
870923	04	04	04	11	12	4	55	0.1	00 11 s	097 12 w	100.0	45.0	35.0
870923	05	01	05	12	12	4	64	0.7	00 12 s	097 09 w	100.0	15.0	11.0
870926	02	03	02			4	64	4.7	04 34 s	088 48 w	100.0	32.0	28.0
870926	07	04	08			4	63	1.5	04 10 s	088 00 w	100.0	123.0	113.0
870926	08	02	09			4	31	0.3	04 06 s	087 50 w	100.0	192.0	178.0
870927			05			3	63	3.3	02 12 s	085 33 w	100.0	55.0	47.0
870927	03	03	04			3	63	0.8	02 13 s	085 34 w	100.0	21.0	18.0
870927	04	02	06			3	56	2.0	02 06 s	085 29 w	100.0	57.0	48.0
870928	02	09	03	02	01	5	55	1.4	01 06 n	084 19 w	100.0	11.0	9.0
870928	05	02	06			4	63	5.0	01 24 n	084 04 w	100.0	153.0	130.0
870929	02	06	02			5	69	3.2	03 36 n	081 51 w	100.0	94.0	77.0
870930	01	02	04			3	31	1.8	05 22 n	080 35 w	100.0	15.0	14.0
871008	03	02	02			4	51	1.5	03 08 n	081 25 w	100.0	0.0*	6.0
871008	04	01	03			4	04	1.0	03 15 n	081 32 w	100.0	28.0	20.0
871011	01	01	01	03	03	2	05	1.1	02 58 n	086 04 w	100.0	65.0	56.0
871011	02	04	02	03	03	2	51	0.4	03 05 n	086 01 w	100.0	47.0	30.0
871011	09	03	11	07	12	1	04	2.2	04 08 n	085 51 w	100.0	67.0	55.0
871011	10	03	13	08	01	2	67	0.1	04 18 n	085 50 w	100.0	55.0	42.0
871012			04	07	02	2	05	0.8	05 37 n	086 26 w	100.0	13.0	10.0
871012	01	10	03	07	02	2	22	1.0	05 38 n	086 25 w	100.0	13.0	10.0

Table 3. (continued)

Sightings by Species

species: STRIPED DOLPHIN (S. COERULEOALBA) species code: 13

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
871012	04	01	08	07	01	2	04	2.7	05 34 n	086 45 w	100.0	69.0	54.0
871016	04	01	04			4	51	0.1	00 17 n	096 54 w	100.0	40.0	20.0
871017	01	01	01			3	22	0.2	00 19 s	098 52 w	100.0	18.0	12.0
871017	05	08	07	01	02	4	22	1.1	00 56 s	100 31 w	100.0	69.0	53.0
871019	03	15	03	09	12	5	04	0.2	02 48 s	106 07 w	100.0	48.0	37.0
871027	01	07	01			4	51	2.4	09 14 s	086 57 w	100.0	95.0	75.0
871028	07	02	13	09	02	3	68	2.0	04 54 s	086 04 w	100.0	68.0	52.0
871029			05			3	51	1.1	02 57 s	085 51 w	100.0	82.0	64.0
871029	04	05	11	09	02	5	05	4.0	01 31 s	085 41 w	100.0	52.0	45.0
871029	05	04	12	08	03	3	04	1.4	01 15 s	085 37 w	100.0	0.0*	5.0
871030	01	15	03			4	04	0.8	00 30 n	085 14 w	100.0	44.0	29.0
871030	02	04	04			2	04	1.3	00 39 n	085 11 w	100.0	26.0	21.0
871101	02	01	02	01	03	2	04	1.6	03 27 n	082 20 w	100.0	29.0	20.0
871102	03	05	03			2	68	2.5	04 54 n	080 47 w	100.0	136.0	102.0
871102	05	07	04			2	67	4.6	05 12 n	080 28 w	100.0	160.0	137.0
871102	08	01	07			2	68	0.7	05 17 n	080 18 w	100.0	73.0	60.0
871102	09	01	08			1	68	1.9	05 18 n	080 16 w	100.0	32.0	23.0
871102	10	01	09			1	04	1.1	05 21 n	080 13 w	100.0	15.0	12.0
871102	14	01	15	08	02	3	67	1.1	05 38 n	080 04 w	100.0	33.0	25.0
871110	05	11	02	02	03	2	68	3.6	05 15 n	079 43 w	100.0	9.0	6.0
871111	02	02	02	08	03	4	51	2.4	03 50 n	080 12 w	100.0	67.0	52.0
871111	03	01	03			4	05	1.1	03 48 n	080 17 w	100.0	0.0*	3.0
871113	01	05	01	10	02	2	05	3.4	01 03 s	085 04 w	20.0	123.0	93.0
871113	02	01	03	11	01	2	68	1.1	01 08 s	085 04 w	100.0	92.0	65.0
871113	03	01	04	11	01	2	04	2.8	01 13 s	085 02 w	100.0	52.0	42.0
871113	04	01	05	11	12	2	04	0.3	01 14 s	085 01 w	100.0	101.0	85.0
871113	05	04	06	12	12	3	05	1.4	01 29 s	085 02 w	100.0	90.0	70.0
871113	06	11	08	02	02	4	68	0.4	01 58 s	085 00 w	100.0	65.0	47.0
871113	08	02	10	02	02	4	05	0.8	02 08 s	085 02 w	8.3	364.0	280.0
871115	07	04	13			2	05	1.9	07 03 s	089 15 w	100.0	85.0	72.0
871116	03	02	02			3	67	0.2	07 01 s	091 57 w	100.0	54.0	42.0
871117	03	17	05	11	12	4	67	0.7	06 33 s	095 56 w	100.0	92.0	76.0
871117	04	02	06	10	01	4	04	6.9	06 33 s	096 03 w	100.0	277.0	203.0
871118	02	03	03			3	68	3.7	06 07 s	098 21 w	100.0	28.0	23.0
871118	03	01	04			3	04	0.1	06 06 s	098 30 w	100.0	39.0	32.0
871118	04	11	06	08	12	4	04	0.8	06 02 s	099 08 w	100.0	148.0	113.0
871118	05	14	10	10	02	5	04	0.4	05 47 s	100 06 w	100.0	32.0	23.0
871118	06	01	11	10	02	5	04	1.4	05 42 s	100 09 w	100.0	27.0	19.0
871118	07	01	12	10	02	5	68	1.3	05 40 s	100 11 w	100.0	60.0	45.0
871119			09	11	03	4	04	0.3	05 16 s	103 56 w	100.0	22.0	18.0
871119	04	11	05	07	01	6	04	1.0	05 27 s	102 40 w	100.0	27.0	27.0
871120	01	07	01			5	67	0.2	05 13 s	105 49 w	97.0	32.0	37.0
871124	03	01	02			4	05	2.6	02 33 s	120 33 w	100.0	103.0	87.0

Table 3. (continued)

Sightings by Species

species: STRIPED DOLPHIN (S. COERULEOALBA) species code: 13

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
871124	04	01	03	08	12	4	67	0.7	02 38 s	120 43 w	100.0	0.0*	14.0
871124	05	04	04			3	68	4.1	02 38 s	120 53 w	100.0	147.0	112.0
871125	03	01	03	07	02	4	04	1.0	02 45 s	123 36 w	100.0	0.0*	1.0
871125	04	08	05	07	01	4	68	0.0	02 43 s	124 06 w	100.0	62.0	40.0
871125	06	02	08	08	12	4	05	0.1	02 43 s	124 30 w	100.0	24.0	18.0
871125	10	04	12	10	03	4	05	0.9	02 17 s	125 24 w	100.0	135.0	75.0
871126	01	04	01	07	03	4	67	2.2	02 21 s	127 01 w	100.0	0.0*	5.0
871127	05	09	07	05	01	4	04	2.7	01 28 s	127 59 w	100.0	171.0	131.0
871128	09	02	08	09	02	4	51	0.9	00 19 n	124 28 w	100.0	49.0	38.0
871203	02	10	02	08	01	3	51	3.9	13 05 n	119 30 w	100.0	16.0	12.0

Table 3. (continued)

Sightings by Species

species: ROUGH-TOOTHED DOLPHIN (STENO BREDANENSIS) species code: 15

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870804	04	02	05			3	69	0.9	17 37 n	120 45 w	100.0	26.0	21.0
870816	09	07	13			1	55	0.3	10 27 n	123 55 w	25.0	17.0	15.0
870819	02	08	01	07	01	5	55	0.2	12 35 n	132 47 w	100.0	8.0	6.0
871011			08	03	01	2	99	0.2	03 43 n	085 54 w	100.0	33.0	25.0
871011			12	07	12	1	51	1.2	04 10 n	085 50 w	100.0	51.0	41.0
871011	12	03	18	08	02	3	68	4.2	04 44 n	085 45 w	22.2	371.0	292.0
871018	03	01	03	07	12	4	04	1.8	01 46 s	102 58 w	56.7	31.0	27.0
871111	04	05	05	08	01	4	05	0.6	03 37 n	080 31 w	85.0	105.0	76.0
871121	02	03	02			4	04	0.3	04 59 s	109 55 w	100.0	9.0	7.0
871127	02	05	02	02	02	5	05	0.3	01 48 s	127 33 w	100.0	5.0	4.0

Table 3. (continued)

Sightings by Species

species: BOTTLENOSED DOLPHIN (TURSIOPS TRUNCATUS) species code: 18

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870816	06	02	07	04	01	2	64	1.6	09 54 n	123 03 w	40.0	23.0	21.0
870816	08	03	11	11	01	2	31	2.6	10 11 n	123 33 w	43.3	20.0	17.0
870816	09	07	13			1	55	0.3	10 27 n	123 55 w	8.3	17.0	15.0
870819	05	03	04	01	01	6	56	0.1	12 06 n	133 15 w	100.0	10.0	9.0
870926	09	01	12			4	55	4.8	04 03 s	087 37 w	26.7	18.0	16.0
870929			06			5	31	5.7	04 36 n	081 13 w	100.0	3.0	3.0
870929	04	05	04			5	55	0.3	03 56 n	081 39 w	100.0	19.0	17.0
870930	05	01	09			4	63	0.1	06 38 n	079 44 w	38.3	15.0	14.0
871018	07	01	08			2	51	0.9	01 55 s	103 31 w	66.7	53.0	47.0
871024	03	02	05	12	12	6	04	1.3	08 01 s	093 55 w	100.0	31.0	26.0
871028	10	01	15	09	02	3	05	2.5	04 33 s	085 59 w	38.0	325.0	250.0
871031			03	07	02	2	68	0.2	03 22 n	083 35 w	71.7	0.0*	29.0
871031	06	03	04	06	03	2	51	3.8	03 28 n	083 23 w	100.0	27.0	21.0
871101			08			1	99	0.0	04 06 n	081 39 w	100.0	100.0	85.0
871101	05	02	07	02	01	1	04	0.5	03 51 n	081 49 w	80.0	0.0*	125.0
871102			18	08	02	3	05	3.0	05 51 n	079 58 w	100.0	1.0	1.0
871103			02			4	04	0.6	07 42 n	079 01 w	100.0	20.0	15.0
871111	01	02	01	08	03	3	51	2.2	03 52 n	080 09 w	53.3	14.0	14.0
871111	04	05	05	08	01	4	05	0.6	03 37 n	080 31 w	5.0	105.0	76.0
871115	02	01	06			3	68	0.0	06 48 s	088 21 w	100.0	14.0	9.0
871115	03	10	09			3	68	6.4	07 08 s	088 47 w	48.7	35.0	29.0
871115	06	01	12	11	02	3	04	0.5	07 04 s	089 01 w	37.0	14.0	11.0
871118	01	01	01			4	67	1.6	06 08 s	098 09 w	61.7	26.0	23.0
871119	05	02	06	07	12	6	04	2.3	05 26 s	102 44 w	100.0	10.0	7.0
871121	05	04	04	10	02	4	51	1.1	04 22 s	110 46 w	30.0	22.0	17.0

Table 3. (continued)

Sightings by Species

species: RISSO'S DOLPHIN (GRAMPUS GRISEUS) species code: 21

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870804	02	02	03	08	01	2	31	1.4	18 17 n	120 30 w	100.0	6.0	5.0
870814	06	01	05			3	31	0.1	07 36 n	118 26 w	100.0	20.0	16.0
870816	01	01	01			1	64	1.3	09 51 n	122 33 w	100.0	5.0	5.0
870908	09	01	05	05	02	4	69	2.3	05 15 n	139 52 w	100.0	7.0	7.0
870915	04	04	03	07	02	4	64	0.0	03 32 n	120 00 w	100.0	4.0	4.0
870915	05	04	05	07	02	3	69	0.1	03 36 n	119 53 w	100.0	3.0	3.0
870916			04	11	02	4	64	0.6	03 37 n	118 19 w	100.0	1.0	1.0
870921	06	01	07	06	03	4	64	0.0	02 53 n	102 08 w	100.0	10.0	8.0
870922	09	04	12			3	55	1.7	02 02 n	098 56 w	25.0	15.0	12.0
870928	01	02	01	02	03	4	64	0.0	00 38 n	084 39 w	100.0	5.0	5.0
871009			03			2	05	0.5	04 35 n	082 46 w	100.0	9.0	7.0
871009	02	01	04			2	04	5.2	04 41 n	082 44 w	100.0	10.0	8.0
871009	03	01	05			2	68	2.6	04 42 n	082 47 w	100.0	7.0	5.0
871009	05	03	08			3	51	2.0	05 15 n	083 17 w	89.3	12.0	8.0
871011	12	02	17	08	02	2	04	0.2	04 40 n	085 46 w	100.0	9.0	7.0
871013	06	02	03	12	02	4	51	3.1	04 24 n	089 52 w	100.0	8.0	6.0
871023	05	01	02			5	05	0.6	05 50 s	095 34 w	100.0	0.0*	1.0
871023	05	04	03	04	02	5	67	0.6	05 57 s	095 29 w	100.0	0.0*	1.0
871026			01	01	01	6	05	0.2	10 16 s	088 13 w	100.0	0.0*	1.0
871028			12	09	01	3	99	0.8	05 04 s	086 06 w	100.0	8.0	6.0
871028	02	04	06			2	68	2.2	05 38 s	086 03 w	100.0	7.0	5.0
871101	04	06	06	02	01	1	04	1.1	03 44 n	081 58 w	100.0	0.0*	11.0
871102	01	01	01	12	03	2	67	0.4	04 39 n	081 02 w	100.0	29.0	0.0*
871102	03	04	02	02	02	2	04	0.0	04 47 n	080 53 w	100.0	9.0	8.0
871111	01	02	01	08	03	3	51	2.2	03 52 n	080 09 w	46.7	14.0	14.0
871111	04	05	05	08	01	4	05	0.6	03 37 n	080 31 w	10.0	105.0	76.0
871116	05	02	05	12	12	3	51	0.1	06 59 s	092 07 w	100.0	11.0	8.0
871117	07	02	07			4	05	0.0	06 19 s	096 21 w	100.0	5.0	4.0
871124			10			3	68	1.1	02 52 s	121 58 w	100.0	4.0	3.0
871124	07	02	06	11	01	3	04	0.8	02 40 s	121 09 w	100.0	4.0	4.0
871126	02	06	03	07	02	4	68	0.0	02 21 s	127 23 w	100.0	5.0	4.0
871126	03	05	05	07	01	4	05	0.5	02 20 s	127 43 w	100.0	1.0	1.0
871126	04	03	07	10	12	5	04	1.1	02 21 s	128 10 w	100.0	0.0*	4.0
871127	03	01	03	03	01	4	51	0.3	01 47 s	127 32 w	100.0	9.0	7.0
871204	04	03	03	06	01	5	51	0.0	13 01 n	122 34 w	100.0	0.0*	2.0

Table 3. (continued)

Sightings by Species

species: FRASER'S DOLPHIN (LAGENODELPHIS HOSEI) species code: 26

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870911	06	05	03	08	02	4	64	2.2	06 35 n	130 16 w	99.0	101.0	71.0
870916	05	02	08	11	12	4	56	1.8	03 26 n	117 53 w	100.0	42.0	37.0
870918	01	09	01	12	01	5	31	4.2	02 26 n	112 11 w	100.0	492.0	442.0
870918	04	01	02	06	01	5	64	0.0	02 28 n	111 45 w	63.0	332.0	282.0
871125	08	12	10	10	02	4	51	0.0	02 31 s	125 14 w	100.0	375.0	255.0
871127	08	03	10			4	05	2.0	01 20 s	126 27 w	68.0	573.0	476.0
871128	01	02	01	02	03	3	22	0.0	00 28 s	125 13 w	98.5	436.0	359.0

Table 3. (continued)

Sightings by Species

species: MELON-HEADED WHALE (PEPONOCEPHALA ELECTRA) species code: 31

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870930	02	01	06	02	02	3	55	1.2	05 26 n	080 27 w	100.0	255.0	227.0
871011	12	03	18	08	02	3	68	4.2	04 44 n	085 45 w	77.8	371.0	292.0
871124			09	12	02	3	67	1.8	02 48 s	121 37 w	100.0	180.0	138.0
871127	08	03	10			4	05	2.0	01 20 s	126 27 w	32.0	573.0	476.0

Table 3. (continued)

Sightings by Species

species: PYGMY KILLER WHALE (FERESA ATTENUATA) species code: 32

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870810	01	04	01	10	02	4	55	0.1	07 10 n	110 10 w	100.0	34.0	30.0
871127	06	01	08	05	01	4	68	0.9	01 29 s	126 52 w	100.0	9.0	6.0
871128	02	02	02	02	02	3	04	0.3	00 25 s	125 02 w	100.0	36.0	29.0
871128	06	02	07	04	12	3	68	2.0	00 04 n	124 31 w	100.0	35.0	28.0

Table 3. (continued)

Sightings by Species

species: FALSE KILLER WHALE (PSEUDORCA CRASSIDENS) species code: 33

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870819	06	01	05	01	01	5	56	2.2	12 03 n	133 18 w	100.0	2.0	2.0
870909	04	02	03	12	12	5	31	1.6	04 59 n	137 15 w	75.0	8.0	6.0
870915	06	01	07	07	02	3	64	0.2	03 36 n	119 51 w	100.0	8.0	7.0
870917	04	01	05	12	12	5	64	0.8	02 40 n	115 18 w	100.0	1.0	1.0
870917	06	01	06			5	64	1.1	02 38 n	115 12 w	100.0	2.0	2.0
871126			08	11	01	4	20	1.0	02 20 s	128 31 w	100.0	4.0	4.0
871127			05	03	01	4	04	0.1	01 40 s	127 26 w	100.0	0.0*	3.0
871128	01	02	01	02	03	3	22	0.0	00 28 s	125 13 w	1.5	436.0	359.0
871201	03	02	01			3	67	0.4	08 16 n	122 33 w	100.0	1.0	1.0
871202	03	05	06	03	01	2	67	0.8	11 38 n	119 34 w	100.0	2.0	2.0

Table 3. (continued)

Sightings by Species

species: PILOT WHALE (GLOBICEPHALA SP.) species code: 34

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870803	05	04	04			3	64	2.7	21 00 n	118 34 w	100.0	14.0	13.0
870816	06	02	07	04	01	2	64	1.6	09 54 n	123 03 w	60.0	23.0	21.0
870816	07	02	08	12	12	3	56	1.7	10 00 n	123 16 w	100.0	33.0	32.0
870816	08	03	11	11	01	2	31	2.6	10 11 n	123 33 w	56.7	20.0	17.0
870908	06	05	02			4	63	0.3	05 28 n	140 22 w	100.0	12.0	10.0
870916			05			4	31	0.4	03 35 n	118 23 w	100.0	15.0	13.0
870922	02	01	02	12	02	3	56	4.7	02 28 n	100 04 w	100.0	7.0	6.0
870923	07	02	08	05	02	4	63	1.3	00 45 s	096 35 w	100.0	4.0	4.0
870926	09	01	12			4	55	4.8	04 03 s	087 37 w	73.3	18.0	16.0
871007			03			4	99	2.8	06 39 n	079 38 w	100.0	14.0	10.0
871007	02	02	02			5	20	1.6	06 46 n	079 37 w	100.0	0.0*	10.0
871018	07	01	08			2	51	0.9	01 55 s	103 31 w	33.2	53.0	47.0
871021			01			5	99	0.2	03 22 s	100 35 w	50.0	19.0	16.0
871022			01			4	99	0.4	03 32 s	098 45 w	100.0	0.0*	0.0*
871028	08	01	14	09	02	3	04	4.3	04 42 s	086 03 w	51.5	9.0	8.0
871028	10	01	15	09	02	3	05	2.5	04 33 s	085 59 w	38.0	325.0	250.0
871115	01	16	05			3	68	1.1	06 47 s	088 20 w	100.0	0.0*	6.0
871115	03	10	09			3	68	6.4	07 08 s	088 47 w	51.3	35.0	29.0
871115	06	01	12	11	02	3	04	0.5	07 04 s	089 01 w	63.0	14.0	11.0
871118	01	01	01			4	67	1.6	06 08 s	098 09 w	38.3	26.0	23.0
871121	05	04	04	10	02	4	51	1.1	04 22 s	110 46 w	70.0	22.0	17.0
871124	09	02	08	12	02	3	67	0.0	02 47 s	121 34 w	100.0	13.0	11.0
871128	05	03	05	03	12	3	04	2.9	00 01 s	124 35 w	100.0	65.0	50.0
871128	10	01	09	09	03	3	04	4.6	00 22 n	124 31 w	100.0	57.0	42.0

Table 3. (continued)

Sightings by Species

species: KILLER WHALE (ORCINUS ORCA) species code: 37

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870817	07	01	06	11	02	2	64	0.3	12 20 n	126 52 w	100.0	2.0	2.0
870916	04	02	07	11	12	4	31	2.5	03 25 n	118 00 w	100.0	6.0	5.0
870917	03	02	04			4	31	0.7	02 40 n	115 18 w	100.0	3.0	2.0
870927	05	01	07			3	64	0.5	02 04 s	085 22 w	100.0	6.0	6.0
871028	05	02	11			2	05	1.0	05 11 s	086 05 w	100.0	4.0	4.0
871028	08	01	14	09	02	3	04	4.3	04 42 s	086 03 w	48.5	9.0	8.0

Table 3. (continued)

Sightings by Species

species: SPERM WHALE (PHYSETER MACROCEPHALUS) species code: 46

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870812	01	13	01	12	12	5	55	10.3	05 47 n	112 44 w	100.0	1.0	1.0
870812	02	01	02	12	12	5	55	0.1	05 48 n	112 49 w	100.0	6.0	5.0
870909	07	19	04	06	02	4	64	3.2	05 02 n	136 24 w	100.0	5.0	3.0
870913	01	02	01			4	56	4.1	06 09 n	126 23 w	100.0	2.0	2.0
870915			04	07	02	3	31	2.1	03 32 n	119 59 w	100.0	7.0	6.0
870915			06	07	02	3	31	3.8	03 36 n	119 54 w	100.0	3.0	3.0
870916	01	01	01	11	03	5	31	0.3	03 39 n	118 25 w	100.0	9.0	9.0
870916	07	01	09			5	31	6.2	03 24 n	117 36 w	100.0	1.0	1.0
870929	05	01	05			5	31	1.9	04 34 n	081 14 w	100.0	8.0	7.0
870930	01	01	01			3	31	3.6	05 21 n	080 36 w	100.0	5.0	5.0
870930	05	01	09			4	63	0.1	06 38 n	079 44 w	61.7	15.0	14.0
871007	02	03	04			4	04	1.9	06 38 n	079 39 w	100.0	2.0	2.0
871007	06	01	08			5	04	5.0	05 49 n	079 50 w	100.0	2.0	0.0*
871007	07	03	10	02	02	3	68	4.3	05 12 n	079 59 w	100.0	10.0	6.0
871009	04	01	06			2	68	0.0	04 45 n	082 50 w	100.0	3.0	2.0
871009	05	03	08			3	51	2.0	05 15 n	083 17 w	10.7	12.0	8.0
871010	01	08	01	08	02	4	67	0.4	04 09 n	084 37 w	100.0	1.0	1.0
871011	06	02	07	03	01	2	22	4.5	03 42 n	085 54 w	100.0	1.0	1.0
871013	02	08	01	07	02	3	51	2.5	04 53 n	088 37 w	100.0	8.0	7.0
871013	04	10	02	08	12	4	68	0.9	04 42 n	089 03 w	100.0	0.0*	24.0
871024	02	01	03			6	51	1.8	07 57 s	093 58 w	100.0	7.0	4.0
871031			03	07	02	2	68	0.2	03 22 n	083 35 w	28.3	0.0*	29.0
871101	03	01	04	02	02	2	05	2.6	03 29 n	082 15 w	100.0	0.0*	0.0*
871101	05	02	07	02	01	1	04	0.5	03 51 n	081 49 w	20.0	0.0*	125.0
871110	02	03	01			5	51	2.9	06 49 n	079 23 w	100.0	10.0	10.0
871111	04	04	04	08	01	4	67	2.4	03 39 n	080 28 w	100.0	11.0	10.0
871114	01	14	02	08	01	5	67	3.5	04 16 s	085 28 w	100.0	0.0*	0.0*
871115	01	09	01			3	20	3.8	06 31 s	088 01 w	100.0	2.0	2.0
871116			08	11	01	4	70	1.6	06 57 s	092 25 w	100.0	1.0	1.0
871117	02	05	02	07	02	3	67	2.5	06 41 s	095 04 w	100.0	3.0	2.0
871119	03	03	03	07	02	5	51	0.2	05 31 s	102 03 w	100.0	1.0	1.0
871125	04	01	04	07	02	4	67	7.3	02 45 s	123 39 w	100.0	10.0	9.0

Table 3. (continued)

Sightings by Species

species: DWARF SPERM WHALE (KOGIA SIMUS) species code: 48

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870810	02	03	02	10	12	4	31	0.3	06 53 n	109 59 w	100.0	2.0	2.0
870816	09	04	12	11	02	1	56	0.7	10 22 n	123 48 w	100.0	1.0	1.0
870921	02	02	02	12	01	4	31	0.1	02 57 n	103 23 w	100.0	5.0	5.0
871102	10	01	10			1	04	1.4	05 22 n	080 13 w	100.0	1.0	1.0
871116	06	07	06	11	01	4	04	1.8	06 58 s	092 15 w	100.0	2.0	2.0

Table 3. (continued)

Sightings by Species

species: BEAKED WHALE (ZIPHIID) — species code: 49

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870908			04			4	99	0.0	05 19 n	140 04 w	100.0	2.0	2.0
870922	02	07	04	12	01	4	31	4.5	02 26 n	099 44 w	100.0	1.0	1.0
871007	01	08	01			3	04	0.6	06 52 n	079 35 w	50.0	2.0	2.0
871017	02	10	03			4	51	0.1	00 27 s	099 20 w	100.0	2.0	2.0
871102	11	01	11			1	51	1.1	05 23 n	080 12 w	100.0	2.0	2.0
871113			07	01	01	3	70	0.0	01 32 s	084 59 w	100.0	0.0*	0.0*
871114			09	01	02	4	04	0.1	05 00 s	086 22 w	100.0	1.0	1.0
871116	06	15	09			3	67	0.7	06 54 s	092 46 w	100.0	0.0*	0.0*
871117			03	07	01	4	99	0.2	06 41 s	095 12 w	100.0	1.0	1.0

Table 3. (continued)

Sightings by Species

species: UNID. MESOPLODONT (MESOPLODON SP.) species code: 51

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870809	03	01	04	10	02	2	69	0.1	09 46 n	112 30 w	100.0	3.0	3.0
870811	01	11	01	04	01	5	55	0.3	04 56 n	109 48 w	100.0	2.0	2.0
870906	05	06	02	04	12	4	55	0.1	08 37 n	145 35 w	100.0	2.0	2.0
870910	04	02	04			3	64	0.2	05 10 n	133 58 w	100.0	3.0	3.0
870913	01	05	02			4	56	0.0	06 04 n	126 17 w	100.0	5.0	5.0
870921	01	08	01	12	02	4	31	0.0	03 00 n	103 30 w	100.0	3.0	3.0
870927	02	01	03			3	31	0.9	02 21 s	085 44 w	100.0	2.0	2.0
871007	01	08	01			3	04	0.6	06 52 n	079 35 w	50.0	2.0	2.0
871011	08	06	10	04	12	1	51	0.7	03 59 n	085 52 w	100.0	2.0	2.0
871012			05	07	02	2	99	0.5	05 36 n	086 31 w	100.0	1.0	1.0
871017	04	03	06	12	01	4	68	0.7	00 46 s	100 12 w	100.0	1.0	1.0
871028	02	03	05			2	05	0.3	05 41 s	086 03 w	100.0	2.0	2.0
871101	01	04	01	01	03	2	04	0.6	03 27 n	082 21 w	100.0	2.0	2.0
871102	07	01	06			2	51	1.7	05 17 n	080 20 w	100.0	3.0	3.0
871120	06	08	05	11	02	4	67	0.1	04 53 s	107 29 w	100.0	3.0	3.0
871123	02	20	03	09	12	5	70	0.1	02 53 s	117 20 w	100.0	5.0	3.0
871125	07	02	09	10	12	4	67	0.5	02 43 s	124 39 w	100.0	6.0	5.0
871127			06	03	12	4	99	0.7	01 36 s	127 20 w	100.0	0.0*	0.0*
871130	02	12	03	03	01	4	04	1.0	06 23 n	125 24 w	100.0	2.0	2.0

Table 3. (continued)

Sightings by Species

species: CUVIER'S BEAKED WHALE (ZIPHIUS CAVIROSTRIS) species code: 61

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870817	03	04	02	05	01	3	69	0.1	11 45 n	125 48 w	100.0	2.0	2.0
870823	01	03	01	05	03	4	55	0.1	12 09 n	142 14 w	100.0	2.0	2.0
870909	03	05	02	12	12	5	69	0.4	04 59 n	137 18 w	100.0	1.0	1.0
870910	02	08	02	12	01	3	64	0.0	05 07 n	134 09 w	100.0	3.0	3.0
870911	04	12	02	12	12	3	31	2.1	06 05 n	130 53 w	100.0	1.0	1.0
870919	07	04	06			4	55	0.2	02 19 n	109 08 w	100.0	1.0	1.0
870923	05	04	06	12	12	4	69	1.8	00 24 s	096 57 w	100.0	6.0	5.0
871031			02	02	12	4	99	0.2	03 05 n	084 16 w	100.0	2.0	2.0
871102	13	03	14	08	01	3	22	1.4	05 36 n	080 06 w	100.0	5.0	4.0

Table 3. (continued)

Sightings by Species

species: RORQUAL (BALAENOPTERA SP.) species code: 70

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870919	05	08	04			4	64	2.7	02 18 n	109 23 w	100.0	1.0	1.0
870920	05	02	05	07	01	4	31	0.5	03 13 n	106 06 w	100.0	1.0	1.0
870922	02	04	03	12	01	4	56	2.7	02 28 n	099 54 w	100.0	2.0	1.0
870923	06	09	07	05	01	4	31	4.5	00 41 s	096 41 w	100.0	1.0	1.0
870929			07			5	55	0.7	04 35 n	081 10 w	100.0	1.0	1.0
870929	03	02	03			5	55	0.2	03 42 n	081 45 w	100.0	2.0	2.0
871009	01	01	01			2	05	0.1	04 31 n	082 42 w	100.0	1.0	1.0
871009	01	03	02			2	67	9.8	04 35 n	082 46 w	100.0	1.0	1.0
871010	02	01	02			5	51	1.0	03 54 n	084 49 w	100.0	1.0	1.0
871011			15	08	02	2	99	0.4	04 31 n	085 47 w	100.0	1.0	1.0
871011	04	03	05	03	02	2	67	5.1	03 31 n	085 55 w	100.0	3.0	2.0
871011	12	03	19	08	02	3	04	4.7	04 44 n	085 45 w	100.0	1.0	1.0
871016	05	02	05			5	04	4.2	00 17 n	097 02 w	100.0	1.0	1.0
871018			09			3	99	0.3	01 57 s	103 46 w	100.0	1.0	1.0
871024	04	11	07	04	01	5	51	1.0	08 30 s	093 34 w	100.0	1.0	1.0
871026			02			5	99	1.4	10 05 s	088 04 w	100.0	1.0	1.0
871029			08			4	99	0.5	02 16 s	085 46 w	100.0	0.0*	0.0*
871029	01	03	03			3	67	4.6	03 04 s	085 51 w	100.0	1.0	1.0
871103	03	01	03			3	04	2.8	08 03 n	078 42 w	100.0	1.0	1.0
871123	03	18	04	10	02	5	05	2.6	02 28 s	118 04 w	100.0	1.0	1.0

Table 3. (continued)

Sightings by Species

species: BRYDE'S WHALE (B. EDENI) species code: 72

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870919	04	03	01	12	12	4	69	3.8	02 12 n	110 01 w	100.0	2.0	2.0
870925			01			6	99	0.0	04 41 s	091 14 w	100.0	1.0	1.0
871010	02	21	03	02	02	3	04	0.1	03 02 n	085 27 w	100.0	1.0	1.0
871011			14	08	01	2	05	0.3	04 n	085 w	100.0	10.0	7.0
871011	11	04	16	08	02	2	67	0.9	04 33 n	085 47 w	100.0	1.0	1.0
871204	02	02	02	03	02	5	04	1.9	12 16 n	122 46 w	100.0	1.0	1.0

Table 3. (continued)

Sightings by Species

species: FIN WHALE (B. PHYSALUS) species code: 74

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
871130	03	02	05			4	04	2.1	06 27 n	125 20 w	100.0	0.0*	0.0*

Table 3. (contined)

Sightings by Species

species: HUMPBACK WHALE (MEGAPTERA NOVAEANGLIAE) species code: 76

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
871101			09			1	99	0.0	04 06 n	081 39 w	100.0	2.0	2.0

Table 3. (continued)

Sightings by Species

species: UNIDENTIFIED DOLPHIN species code: 77

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870803	08	03	07	02	02	3	63	1.8	20 27 n	119 01 w	100.0	5.0	3.0
870803	09	02	09	02	02	3	56	3.1	20 15 n	119 12 w	100.0	3.0	3.0
870804	01	04	01	07	02	2	55	5.9	18 31 n	120 22 w	100.0	1.0	1.0
870804	01	05	02	07	02	2	63	3.1	18 25 n	120 26 w	100.0	10.0	8.0
870805	01	02	01	08	03	2	55	10.3	14 59 n	120 50 w	100.0	2.0	2.0
870805	01	03	02	09	02	2	69	1.0	14 55 n	120 50 w	100.0	8.0	8.0
870805	02	08	03	11	01	3	56	2.7	14 16 n	120 46 w	100.0	2.0	1.0
870805	03	12	04	06	02	4	69	0.9	14 01 n	119 43 w	3.0	59.0	47.0
870809	01	02	01	10	03	2	56	5.4	09 54 n	112 40 w	100.0	6.0	4.0
870809	03	01	03	10	02	2	69	0.4	09 46 n	112 30 w	100.0	5.0	5.0
870809	04	04	06	11	01	2	55	7.4	09 35 n	112 12 w	100.0	3.0	3.0
870809	04	04	08	11	01	2	55	4.5	09 35 n	112 10 w	100.0	5.0	4.0
870812	03	05	03	12	01	6	63	0.5	05 57 n	113 15 w	100.0	3.0	3.0
870813	06	10	05			4	56	2.3	06 54 n	115 44 w	18.3	47.0	35.0
870814	01	03	01			3	56	1.2	07 19 n	117 21 w	100.0	2.0	2.0
870814	02	01	02			3	55	1.4	07 18 n	117 24 w	100.0	3.0	3.0
870815			05			2	99	0.2	09 09 n	120 57 w	100.0	2.0	2.0
870815	03	03	03	12	01	3	31	10.4	08 58 n	120 21 w	100.0	1.0	1.0
870815	03	05	04	12	01	2	55	3.9	09 03 n	120 31 w	100.0	20.0	15.0
870816			14			1	31	0.2	10 27 n	123 55 w	100.0	1.0	1.0
870816	02	03	02			2	31	6.5	09 53 n	122 38 w	100.0	4.0	4.0
870817	04	11	03	11	12	3	55	3.5	12 09 n	126 34 w	100.0	3.0	3.0
870818	04	09	04			4	55	0.9	13 43 n	129 47 w	100.0	5.0	5.0
870818	06	04	06	12	01	4	69	0.9	13 41 n	130 17 w	100.0	3.0	3.0
870819	08	02	07			5	55	0.4	11 46 n	133 33 w	100.0	1.0	1.0
870820	02	03	02			5	63	0.6	10 35 n	134 51 w	100.0	2.0	2.0
870820	02	04	03			5	56	3.5	10 33 n	134 57 w	100.0	6.0	5.0
870820	04	02	05			5	69	1.5	10 20 n	135 45 w	100.0	3.0	3.0
870821	01	01	01			5	63	3.1	10 04 n	138 16 w	100.0	1.0	1.0
870903	03	04	01	11	01	5	63	2.3	17 49 n	153 07 w	100.0	3.0	1.0
870908	10	05	06			3	31	0.1	05 11 n	139 39 w	100.0	12.0	10.0
870909	02	05	01	12	01	4	55	0.2	04 56 n	137 42 w	100.0	3.0	3.0
870909	04	02	03	12	12	5	31	1.6	04 59 n	137 15 w	25.0	8.0	6.0
870911	04	04	01	01	01	3	56	3.4	05 53 n	131 05 w	100.0	3.0	3.0
870912	07	04	05	05	03	3	56	3.4	07 15 n	127 31 w	100.0	1.0	1.0
870915	03	05	02			4	63	0.6	03 27 n	120 13 w	100.0	8.0	6.0
870916	01	03	03	11	02	4	64	4.1	03 37 n	118 19 w	100.0	125.0	100.0
870916	07	02	10			5	69	0.7	03 22 n	117 36 w	100.0	1.0	1.0
870917			01			3	99	0.2	02 42 n	115 52 w	100.0	3.0	3.0
870919	05	03	03			4	56	6.6	02 16 n	109 46 w	100.0	1.0	1.0
870920	01	01	01	01	03	3	31	7.6	02 54 n	107 29 w	100.0	1.0	1.0
870921	03	04	03	12	12	5	63	0.7	02 54 n	103 08 w	100.0	10.0	8.0
870921	03	04	04	12	12	5	63	1.0	02 53 n	103 03 w	100.0	25.0	20.0

Table 3. (continued)

Sightings by Species

species: UNIDENTIFIED DOLPHIN species code: 77

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870922	08	04	10			3	63	5.8	02 15 n	099 04 w	100.0	20.0	15.0
870922	09	04	12			3	55	1.7	02 02 n	098 56 w	25.0	15.0	12.0
870926			10			4	31	1.1	04 05 s	087 45 w	100.0	20.0	15.0
870926	03	01	03			4	56	2.6	04 29 s	088 40 w	100.0	3.0	3.0
870926	04	02	04	12	01	4	64	1.9	04 23 s	088 23 w	100.0	1.0	1.0
870926	09	01	11			4	55	0.5	04 06 s	087 40 w	100.0	1.0	1.0
870927	01	07	02			3	63	0.1	02 33 s	085 51 w	100.0	15.0	12.0
870928			04	02	01	5	55	0.2	01 07 n	084 18 w	100.0	1.0	1.0
870928	06	03	07	07	01	5	55	1.3	01 33 n	083 52 w	100.0	8.0	6.0
870928	07	05	08			5	31	8.8	01 47 n	083 41 w	100.0	1.0	1.0
870929	01	01	01			4	55	0.1	03 23 n	082 06 w	100.0	1.0	1.0
870930			07	02	01	3	99	0.2	05 34 n	080 24 w	100.0	12.0	10.0
870930	01	02	03			3	31	4.3	05 22 n	080 35 w	100.0	1.0	1.0
871007			05			4	20	0.0	06 05 n	079 46 w	100.0	1.0	1.0
871007	04	02	06			4	68	0.2	06 06 n	079 46 w	100.0	3.0	2.0
871007	06	04	09			4	22	6.3	05 42 n	079 52 w	100.0	0.0*	0.0*
871007	08	03	11			3	04	0.7	05 02 n	080 02 w	100.0	0.0*	1.0
871009	06	02	09	10	01	3	05	1.8	05 20 n	083 24 w	100.0	3.0	2.0
871011			03	03	02	2	04	1.8	03 06 n	086 01 w	100.0	12.0	8.0
871011	03	06	04	03	02	2	51	10.3	03 25 n	085 56 w	100.0	0.0*	0.0*
871011	05	03	06	03	01	2	67	6.9	03 37 n	085 54 w	100.0	0.0*	0.0*
871011	08	04	09	04	12	2	04	9.8	03 54 n	085 53 w	100.0	0.0*	1.0
871012			10	07	01	3	68	2.8	05 34 n	086 55 w	100.0	8.0	5.0
871012	01	03	01	07	03	2	68	0.0	05 40 n	086 10 w	100.0	5.0	3.0
871012	02	02	06	07	02	2	22	0.6	05 36 n	086 32 w	100.0	46.0	35.0
871012	03	01	07	07	02	2	04	0.2	05 34 n	086 41 w	100.0	0.0*	8.0
871012	06	01	09	07	01	4	51	6.4	05 34 n	086 54 w	100.0	0.0*	0.0*
871017			05	12	12	4	70	0.1	00 42 s	100 03 w	100.0	10.0	7.0
871017	02	04	02			3	68	5.6	00 21 s	099 06 w	100.0	0.0*	2.0
871017	02	11	04			4	67	0.4	00 29 s	099 25 w	100.0	0.0*	4.0
871018	01	15	01			4	68	0.5	01 43 s	102 45 w	100.0	2.0	3.0
871018	03	01	03	07	12	4	04	1.8	01 46 s	102 58 w	43.3	31.0	27.0
871018	04	03	04			4	67	0.5	01 48 s	103 07 w	100.0	1.0	1.0
871019			04	12	12	5	04	2.3	02 51 s	106 10 w	100.0	0.0*	25.0
871019	06	05	06	05	02	5	51	0.2	03 01 s	106 12 w	100.0	0.0*	5.0
871020			01			6	70	0.4	03 27 s	103 52 w	100.0	0.0*	1.0
871021			01			5	99	0.2	03 22 s	100 35 w	50.0	19.0	16.0
871022	01	17	02			5	67	0.7	03 32 s	098 42 w	100.0	7.0	6.0
871027	06	15	06	08	03	4	04	2.9	07 32 s	086 35 w	100.0	0.0*	1.0
871027	06	16	07			4	68	3.2	07 30 s	086 33 w	100.0	120.0	30.0
871028			07			3	99	2.9	05 29 s	086 00 w	100.0	0.0*	1.0
871028			10			3	99	0.1	05 13 s	086 06 w	100.0	0.0*	0.0*
871028	01	02	01			2	51	0.2	06 06 s	086 12 w	100.0	0.0*	1.0

Table 3. (continued)

Sightings by Species

species: UNIDENTIFIED DOLPHIN species code: 77

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
871028	02	01	04			2	22	4.2	05 49 s	086 04 w	100.0	0.0*	0.0*
871028	03	04	08			3	68	3.6	05 27 s	085 59 w	100.0	24.0	17.0
871028	10	01	15	09	02	3	05	2.5	04 33 s	085 59 w	24.0	325.0	250.0
871029	01	02	01			3	05	2.6	03 07 s	085 52 w	100.0	0.0*	3.0
871029	01	02	02			3	22	1.1	03 07 s	085 52 w	100.0	1.0	1.0
871029	02	01	07			3	04	3.2	02 41 s	085 49 w	100.0	0.0*	1.0
871030	08	02	06	08	03	3	67	4.3	01 40 n	085 03 w	100.0	0.0*	30.0
871031	01	06	01	02	02	3	68	1.1	02 44 n	084 54 w	100.0	14.0	7.0
871101			03	01	03	2	04	3.6	03 27 n	082 20 w	100.0	0.0*	2.0
871101	03	05	05	02	02	1	67	8.0	03 39 n	082 04 w	100.0	0.0*	0.0*
871101	06	02	10	09	02	2	22	2.4	04 13 n	081 42 w	100.0	0.0*	0.0*
871102	15	02	16	08	02	3	05	1.4	05 45 n	080 00 w	100.0	0.0*	1.0
871102	16	02	17	08	02	3	05	3.1	05 51 n	079 58 w	100.0	0.0*	200.0
871111			07	02	01	5	70	0.1	03 10 n	081 14 w	100.0	12.0	7.0
871111	05	02	06			4	68	2.0	03 35 n	080 36 w	100.0	0.0*	4.0
871111	08	06	08			4	68	3.6	02 59 n	081 23 w	100.0	0.0*	8.0
871113	07	01	09	02	02	4	51	4.3	02 01 s	085 02 w	100.0	0.0*	0.0*
871114			03	08	01	5	22	0.2	04 17 s	085 29 w	100.0	0.0*	20.0
871114	02	04	04	10	12	5	04	6.9	04 25 s	085 44 w	100.0	0.0*	2.0
871114	02	19	07	01	02	4	99	0.3	04 55 s	086 19 w	100.0	0.0*	0.0*
871114	02	20	08	01	02	4	04	0.5	05 00 s	086 22 w	100.0	0.0*	4.0
871115	04	01	10			3	04	1.6	07 08 s	088 52 w	100.0	0.0*	30.0
871116	06	08	07	11	01	4	04	8.0	06 57 s	092 22 w	100.0	0.0*	1.0
871116	07	03	10	11	02	4	51	6.9	06 53 s	092 58 w	100.0	0.0*	0.0*
871117	01	05	01	07	02	3	04	4.7	06 42 s	094 46 w	100.0	0.0*	1.0
871118			07			4	04	1.0	06 02 s	099 09 w	100.0	45.0	28.0
871118	02	02	02			3	05	1.8	06 06 s	098 17 w	100.0	0.0*	2.0
871119			11	11	03	4	51	0.5	05 16 s	104 01 w	100.0	0.0*	150.0
871119	01	01	01			5	51	0.5	05 29 s	101 51 w	100.0	0.0*	14.0
871119	02	01	02			5	51	1.7	05 32 s	101 58 w	100.0	0.0*	2.0
871119	07	01	10			4	51	0.2	05 16 s	103 56 w	100.0	15.0	10.0
871120	03	01	03			5	51	2.1	05 08 s	106 24 w	100.0	0.0*	5.0
871120	05	03	04			4	68	0.9	05 03 s	106 52 w	100.0	7.0	5.0
871120	07	04	06	11	03	4	04	1.2	04 45 s	107 48 w	100.0	0.0*	4.0
871121	04	13	03	10	02	4	04	5.4	04 32 s	110 36 w	100.0	0.0*	1.0
871122	04	01	03	11	02	4	04	2.0	03 17 s	114 25 w	100.0	0.0*	4.0
871124	02	01	01			4	04	5.7	02 31 s	120 28 w	100.0	10.0	6.0
871124	06	01	05			3	04	0.8	02 38 s	121 00 w	100.0	0.0*	1.0
871125	02	02	01	07	03	4	51	3.0	02 44 s	123 29 w	100.0	20.0	10.0
871125	05	02	06	07	01	4	04	1.8	02 44 s	124 11 w	100.0	0.0*	0.0*
871125	05	05	07	08	12	4	51	6.8	02 44 s	124 18 w	100.0	0.0*	2.0
871126	02	01	02	07	02	4	51	0.8	02 19 s	127 05 w	100.0	0.0*	1.0
871128			04	02	01	3	20	0.7	00 08 s	124 43 w	100.0	12.0	10.0

Table 3. (continued)

Sightings by Species

species: UNIDENTIFIED DOLPHIN species code: 77

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
871128			10	09	03	3	67	1.8	00 22 n	124 31 w	100.0	0.0*	15.0
871128	06	01	06	04	12	3	51	0.2	00 01 n	124 34 w	100.0	2.0	2.0
871130	02	05	02	03	02	4	51	0.7	05 59 n	125 43 w	100.0	1.0	1.0
871202	02	02	04	03	02	3	68	1.0	11 27 n	119 45 w	100.0	4.0	3.0

Table 3. (continued)

Sightings by Species

species: UNIDENTIFIED SMALL WHALE species code: 78

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870804	06	09	06	03	03	3	69	0.8	16 56 n	120 46 w	100.0	3.0	3.0
870806	01	09	01	11	01	4	56	5.8	13 43 n	118 33 w	100.0	1.0	1.0
870807	05	01	02	10	01	5	63	2.5	12 43 n	116 57 w	100.0	7.0	5.0
870809			05	11	02	2	69	0.1	09 45 n	112 29 w	100.0	3.0	3.0
870809	07	07	11			2	31	3.2	09 02 n	111 28 w	100.0	1.0	1.0
870812	04	05	04	12	02	5	69	0.1	06 03 n	113 34 w	100.0	1.0	1.0
870816	06	01	06	04	01	2	69	0.4	09 53 n	123 01 w	100.0	2.0	2.0
870816	08	02	09	11	01	2	69	1.5	10 10 n	123 31 w	100.0	2.0	2.0
870819	04	04	03	01	01	6	63	0.3	12 10 n	133 11 w	100.0	3.0	3.0
870904	03	03	01	12	12	5	55	0.3	14 16 n	150 17 w	100.0	1.0	1.0
870908	07	01	03			4	55	0.2	05 27 n	140 20 w	100.0	1.0	1.0
870911	06	05	03	08	02	4	64	2.2	06 35 n	130 16 w	1.0	101.0	71.0
870912	03	06	02	12	12	2	55	1.9	07 35 n	128 13 w	100.0	1.0	1.0
870916	03	01	06			4	56	2.5	03 34 n	118 23 w	100.0	1.0	1.0
870918	04	01	02	06	01	5	64	0.0	02 28 n	111 45 w	3.7	332.0	282.0
870919	05	01	02	12	12	4	64	2.8	02 14 n	109 59 w	100.0	1.0	1.0
870920	03	08	03	07	12	4	31	0.0	03 10 n	106 20 w	100.0	3.0	2.0
870922	08	04	11			3	63	0.6	02 11 n	099 02 w	100.0	1.0	1.0
870926	06	02	07			4	55	0.5	04 15 s	088 10 w	100.0	1.0	1.0
870926	10	01	13			4	63	1.3	03 59 s	087 35 w	100.0	1.0	1.0
870928	02	06	02	02	01	5	55	0.3	00 59 n	084 25 w	100.0	1.0	1.0
870930	03	05	08	02	01	2	64	0.2	05 43 n	080 18 w	100.0	1.0	1.0
871009	04	02	07			2	51	0.4	04 52 n	082 57 w	100.0	1.0	1.0
871018	06	03	07			2	68	1.1	01 55 s	103 29 w	100.0	0.0*	3.0
871021	03	05	02			5	68	0.8	03 23 s	100 27 w	100.0	1.0	1.0
871024			01			5	68	1.7	07 24 s	094 28 w	100.0	7.0	5.0
871028	01	06	02			2	05	2.1	05 54 s	086 08 w	100.0	1.0	1.0
871029	02	10	09	12	12	4	68	2.2	02 14 s	085 46 w	100.0	4.0	3.0
871030	01	11	01			4	05	1.4	00 19 n	085 23 w	100.0	1.0	1.0
871030	01	13	02			4	67	0.7	00 24 n	085 19 w	100.0	1.0	1.0
871030	06	01	05	09	02	4	04	0.2	01 28 n	085 09 w	100.0	1.0	1.0
871102	06	03	05			2	04	0.8	05 16 n	080 20 w	100.0	3.0	2.0
871114			05	11	12	5	99	0.0	04 26 s	085 46 w	100.0	1.0	1.0
871115	01	16	04			3	68	3.0	06 46 s	088 19 w	100.0	0.0*	1.0
871115	03	05	07			3	05	1.0	06 58 s	088 34 w	100.0	1.0	1.0
871123	03	21	05	10	03	5	05	0.4	02 17 s	118 11 w	100.0	1.0	1.0
871126	03	02	04	07	01	4	05	1.4	02 21 s	127 20 w	100.0	1.0	1.0
871202	03	02	05	03	02	3	68	1.6	11 33 n	119 41 w	100.0	1.0	1.0
871203	02	07	01	08	02	3	67	0.4	13 10 n	119 18 w	100.0	1.0	1.0

Table 3. (continued)

Sightings by Species

species: UNIDENTIFIED LARGE WHALE — species code: 79

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870803	02	04	02			3	69	0.3	21 21 n	118 14 w	100.0	1.0	1.0
871008	02	01	01			4	67	3.0	02 55 n	080 56 w	100.0	1.0	1.0
871019	05	03	05	05	02	5	05	0.8	02 59 s	106 27 w	100.0	1.0	1.0
871024	01	17	02	11	02	6	51	1.6	07 55 s	094 00 w	100.0	3.0	3.0
871024	03	01	04	12	12	6	04	5.6	08 05 s	093 55 w	100.0	0.0*	2.0
871024	04	01	06	12	12	6	22	5.4	08 08 s	093 54 w	100.0	0.0*	1.0
871112			02			6	68	1.3	01 15 n	084 17 w	100.0	0.0*	1.0
871119	04	06	04	07	01	6	05	3.7	05 29 s	102 21 w	100.0	1.0	1.0
871119	06	05	07	10	12	6	05	2.7	05 23 s	102 57 w	100.0	1.0	1.0
871125	03	01	02	07	02	4	51	7.4	02 45 s	123 35 w	100.0	2.0	2.0
871127			04	04	02	4	70	3.7	01 40 s	127 26 w	100.0	1.0	1.0
871128			03	02	02	3	70	2.2	00 13 s	124 49 w	100.0	1.0	1.0
871130	03	01	04			4	51	0.9	06 25 n	125 22 w	100.0	2.0	2.0
871205	01	01	01			5	51	1.0	15 29 n	121 17 w	100.0	1.0	1.0

Table 3. (continued)

Sightings by Species

species: SPOTTED DOLPHIN (STENELLA ATTENUATA) species code: 90

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870803	01	02	01	07	02	3	63	0.7	21 36 n	118 03 w	100.0	142.0	126.0
870902	02	01	02			2	31	4.4	19 50 n	154 54 w	100.0	31.0	25.0
871103	04	02	05	07	01	3	04	0.4	08 07 n	078 40 w	100.0	18.0	16.0

Table 3. (continued)

Sightings by Species

species: UNIDENTIFIED CETACEAN species code: 96

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870803	07	02	06	02	01	3	64	0.9	20 35 n	118 54 w	100.0	2.0	2.0
870818	07	06	07	12	02	3	55	0.4	13 43 n	130 34 w	100.0	1.0	1.0
870902	01	01	01			2	64	2.7	19 49 n	155 00 w	100.0	2.0	2.0
870908	01	01	01			3	31	5.7	05 50 n	141 05 w	100.0	1.0	1.0
870910	01	01	01	12	03	4	31	1.8	05 06 n	134 47 w	100.0	1.0	1.0
870916	01	01	02	11	03	5	69	4.6	03 39 n	118 24 w	100.0	2.0	2.0
870917	01	06	02	12	02	4	69	0.5	02 42 n	115 42 w	100.0	3.0	3.0
870917	02	08	03	12	12	4	55	0.7	02 41 n	115 21 w	100.0	5.0	5.0
870922	03	02	05	12	12	4	69	0.5	02 24 n	099 30 w	100.0	1.0	1.0
870922	04	01	06	12	12	4	56	0.7	02 24 n	099 28 w	100.0	6.0	5.0
870926			06	12	01	4	64	0.6	04 22 s	088 19 w	100.0	6.0	6.0
870926	10	01	14			4	63	0.6	03 57 s	087 32 w	100.0	1.0	1.0
870928	03	02	05			5	69	2.1	01 13 n	084 13 w	100.0	2.0	2.0
870930	06	03	10			4	31	0.1	06 51 n	079 37 w	100.0	1.0	1.0
871018	02	03	02			4	04	2.1	01 44 s	102 54 w	100.0	2.0	2.0
871018	05	04	06			3	04	0.6	01 52 s	103 18 w	100.0	1.0	1.0
871027			05	12	12	4	99	0.2	08 26 s	086 48 w	100.0	0.0*	2.0
871029			06			3	51	1.0	02 57 s	085 51 w	100.0	1.0	1.0
871102			12			1	51	1.1	05 24 n	080 11 w	100.0	1.0	1.0
871102	12	02	13	08	12	2	68	3.8	05 28 n	080 10 w	100.0	0.0*	3.0
871115			03			3	51	1.0			100.0	1.0	1.0
871115	03	09	08			3	05	3.0	07 06 s	088 44 w	100.0	20.0	15.0
871116	02	04	01			4	04	6.6	07 03 s	091 26 w	100.0	0.0*	1.0
871116	04	02	03			3	68	4.6	07 00 s	092 00 w	100.0	0.0*	1.0
871121	01	06	01			5	51	1.5	05 02 s	109 42 w	100.0	1.0	1.0
871122	02	04	01			4	04	0.5	03 51 s	112 50 w	100.0	0.0*	2.0
871125	10	04	11	10	03	4	05	1.2	02 19 s	125 22 w	100.0	0.0*	2.0
871126	03	10	06	09	12	4	04	1.4	02 20 s	127 02 w	100.0	1.0	1.0
871129	01	06	01	04	02	5	20	0.2	01 56 n	125 20 w	100.0	2.0	2.0
871130	01	05	01			4	68	5.1	05 39 n	125 47 w	100.0	3.0	2.0
871202	04	04	07	07	02	3	51	0.4	11 34 n	119 38 w	100.0	1.0	1.0

Table 3. (continued)

Sightings by Species

species: UNIDENTIFIED OBJECT species code: 97

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
871012			02	07	02	2	99	1.8	05 37 n	086 24 w	100.0	0.0*	0.0*
871123	02	05	02			5	22	0.1	02 59 s	116 29 w	100.0	2.0	0.0*

Table 3. (continued)

Sightings by Species

species: UNIDENTIFIED WHALE species code: 98

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
870804	03	07	04	10	12	3	56	0.6	17 55 n	120 45 w	100.0	2.0	2.0
870818	04	06	03	05	12	4	63	0.7	13 43 n	129 42 w	100.0	1.0	1.0
870819	07	03	06			5	31	0.7	11 53 n	133 25 w	100.0	1.0	1.0
870924			01	11	01	5	64	2.7	02 10 s	094 55 w	100.0	1.0	1.0
870930	02	01	05	02	02	3	55	1.8	05 25 n	080 28 w	100.0	1.0	1.0
871007	05	01	07			5	04	6.4	05 52 n	079 49 w	100.0	0.0*	1.0
871016	01	17	01			5	04	1.8	00 42 n	096 17 w	100.0	1.0	1.0
871027			03			5	99	1.6	08 31 s	086 49 w	100.0	1.0	1.0
871112			01			6	51	0.5	01 58 n	083 06 w	100.0	0.0*	1.0
871113	01	06	02	10	02	2	04	4.9	01 04 s	085 04 w	100.0	0.0*	4.0
871114	01	03	01			4	22	1.0	03 44 s	085 16 w	100.0	0.0*	0.0*
871114	02	17	06	01	02	4	70	0.6	04 49 s	086 15 w	100.0	0.0*	0.0*
871115	01	14	02			3	51	3.9	06 42 s	088 14 w	100.0	1.0	1.0
871116	05	02	04	12	12	3	04	1.3	06 59 s	092 04 w	100.0	0.0*	2.0
871117	03	07	04	07	12	4	04	0.5	06 40 s	095 22 w	100.0	0.0*	1.0
871118	04	02	05			4	68	5.3	06 06 s	098 35 w	100.0	0.0*	1.0
871118	05	04	08	11	01	5	51	6.7	05 56 s	099 28 w	100.0	1.0	1.0
871118	05	14	09	10	02	5	51	0.0	05 49 s	100 04 w	100.0	1.0	1.0
871119			08	11	02	6	68	1.7	05 18 s	103 33 w	100.0	0.0*	1.0
871122			02			4	51	0.2	03 48 s	113 22 w	100.0	1.0	1.0
871123	01	04	01	07	03	4	04	2.0	02 59 s	116 17 w	100.0	1.0	1.0
871202	01	03	01	03	03	3	67	4.4	11 13 n	119 51 w	100.0	6.0	6.0
871202	01	03	02	03	03	3	05	0.7	11 14 n	119 50 w	100.0	0.0*	1.0

* Denotes that no estimate was made.

Table 4. Marine mammal school size estimates for each observer, classified by species code, for all sightings encountered in the eastern tropical Pacific during July 30 through December 10, 1987.

			obs 31		obs 55		obs 56		obs 63		obs 64		obs 69	
	date	sight no.	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct
species	2													
	870803	03	40	100	100	100	45	100	25	100	14	100		
	870803	10	500	100	500	100	225	100	110	100	230	100	375	100
	870807	01			25	100	15	100						
	870808	04	80	100	90	100	60	100	40	100	85	100	40	100
	870808	05	40	100			50	100					35	100
	870809	02	100	50							115	30	120	40
	870809	07	110	85	200	90	125	90						
	870809	09	26	100			20	100			40	100	24	100
	870814	03	250	95										
	870815	02	80	100							86	100	65	100
	870816	03	125	20	100	25	85	25	35	30	165	40	75	25
	870816	04			500	80	400	90	130	85				
	870816	05	100	75							105	75	160	80
	870816	10	60	100							58	100	70	100
	870817	01			170	30	160	20	60	35	125	30	95	40
	870818	02	120	30			105	20			165	25	140	15
	870820	01	30	90									30	90
	870820	04			30	100	25	100	10	100				
	870906	03	100	30							92	40	85	70
	870912	01	150	30							90	30	150	25
	870915	01			150	95	120	95						
	870920	04	1200	60							480	65	650	80
	870920	06			400	85	400	95						
	870921	05	450	40	400	55	600	40	140	60				
	870922	08	500	95	350	90	650	95	160	85				
	870922	09	26	100							24	100	18	100
	870923	02	160	25							115	20	140	25
	870930	02	340	100			300	100			300	100	220	100
species	3													
	870814	04			5	100								
	870820	01	30	10									30	10
species	5													
	870807	03	30	100							22	100	25	100
	870808	03	30	100	75	100	55	100	35	100			12	100
	870926	01	14	100							16	100	16	100
	870926	05	100	100							46	100	70	100
	870927	01	180	100	300	100			80	100	235	100	325	100
	870927	08	240	100							265	100	425	100
species	10													
	870805	04					55	90					55	92
	870808	01	40	100	60	100	45	100	35	100	72	100	50	100
	870808	02	100	100	90	100	110	100	65	100			65	100

Table 4. (continued)

		obs 31		obs 55		obs 56		obs 63		obs 64		obs 69	
date	sight no.	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct
species 10													
870809	02	100	50							115	70	120	60
870814	03	250	5										
870817	01			170	70	160	80	60	65	125	70	95	60
species 11													
870809	07	110	15	200	10	125	10						
870813	05			45	75	50	80					45	90
870816	03	125	80	100	75	85	75	35	70	165	60	75	75
870816	04			500	20	400	10	130	15				
870816	05	100	25							105	25	160	20
870817	04			160	100	100	100	45	100			90	100
870817	07	120	100	60	100	100	100	38	100				
870818	01			70	100	115	100	40	100				
870818	02	120	70			105	80			165	75	140	85
870818	05	45	100	40	100	80	100	35	100	48	100	65	100
870822	01			45	100	30	100	20	100				
870823	02			80	100	45	100	30	100				
870906	01			55	100	30	100	25	100	52	100		
870906	03	100	70							92	60	85	30
870912	01	150	70							90	70	150	75
870915	01			150	5	120	5						
870920	04	1200	40							480	35	650	20
870920	06			400	15	400	5						
870921	05	450	60	400	45	600	60	140	40				
870922	08	500	5	350	10	650	5	160	15				
870923	02	160	75							115	80	140	75
species 13													
870803	05			130	100	60	100	25	100				
870806	02	60	100			45	100			36	100	45	100
870809	10	25	100	15	100	25	100	15	100			11	100
870809	12	60	100							62	100	28	100
870813	01	50	100	100	100	60	100	25	100				
870813	02			35	100	40	100	20	100				
870813	03	30	100							18	100	7	100
870813	04	55	100			75	100			64	100	60	100
870815	01	70	100	100	100	50	100	35	100				
870817	05			10	100	6	100			4	100		
870819	02	40	100							30	100	50	100
870821	02	50	100							24	100	40	100
870910	03	12	100							14	100	15	100
870912	03	70	100	45	100	100	100	18	100				
870912	04	70	100	65	100	120	100	40	100			55	100
870919	05	11	100							8	100	7	100
870920	02	55	100							65	100	55	100
870921	06	40	100							34	100	23	100
870922	01	60	100							68	100	65	100
870923	01	70	100							105	100	105	100
870923	03			50	100	40	100	23	100				

Table 4. (continued)

			obs 31		obs 55		obs 56		obs 63		obs 64		obs 69	
	date	sight no.	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct
species	13													
	870923	04					65	100	25	100				
	870923	05	15	100							16	100		
	870926	02			40	100	40	100	23	100	26	100		
	870926	08			160	100	140	100	70	100				
	870926	09	200	100							195	100	180	100
	870927	04					35	100	7	100				
	870927	06			50	100	70	100	50	100				
	870928	03	7	100	12	100	15	100	6	100			13	100
	870928	06			200	100	200	100	60	100				
	870929	02	120	100							52	100	110	100
	870930	04	17	100							14	100	15	100
species	15													
	870804	05	25	100			25	100			18	100	35	100
	870816	13			20	75								
	870819	01			5	100	10	100						
species	18													
	870816	07	22	40							24	40	22	40
	870816	11	30	40							18	45	11	45
	870816	13			20	25								
	870819	04			6	100	15	100						
	870926	12	25	20	12	30	18	30						
	870929	04	20	100	18	100								
	870930	09	13	35	18	40			14	40				
species	21													
	870804	03	7	100									5	100
	870814	05	25	100									15	100
	870816	01	7	100							4	100	4	100
	870908	05					7	100					7	100
	870915	03									4	100		
	870915	05											3	100
	870921	07	10	100							12	100	8	100
	870922	12			15	50								
	870928	01	4	100							6	100		
species	26													
	870911	03	100	99	50	99	40	99			115	99	200	99
	870916	08			45	100	50	100	30	100			45	100
	870918	01	500	100							425	100	550	100
	870918	02	350	90									400	99
species	31													
	870930	06	500	100	175	100	350	100	160	100	215	100	130	100
species	32													
	870810	01	24	100	50	100	40	100	28	100	38	100	25	100

Table 4. (continued)

		obs 31		obs 55		obs 56		obs 63		obs 64		obs 69	
date	sight no.	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct
species 33													
870819	05					2	100						
870909	03	8	75										
870915	07	8	100			8	100			10	100	7	100
870917	05	1	100							1	100	1	100
870917	06	2	100							2	100		
species 34													
870803	04	20	100							12	100	9	100
870816	07	22	60							24	60	22	60
870816	08			37	100	35	100	28	100				
870816	11	30	60							18	55	11	55
870908	02	8	100	20	100	11	100	8	100				
870922	02					7	100						
870923	08	3	100			6	100	3	100				
870926	12	25	80	12	70	18	70						
species 37													
870817	06			3	100	2	100			2	100	1	100
870916	07	6	100										
870917	04	3	100							2	100		
870927	07	6	100							6	100	5	100
species 46													
870812	01			1	100								
870812	02			7	100	5	100						
870909	04									5	100		
870913	01			2	100								
870916	01	9	100										
870916	09	1	100										
870929	05	8	100										
870930	01	5	100										
870930	09	13	65	18	60			14	60				
species 48													
870810	02	2	100										
870816	12					1	100						
870921	02	5	100							4	100		
species 49													
870922	04	1	100										
species 51													
870809	04	3	100									3	100
870811	01					2	100						
870906	02			2	100								
870910	04	4	100							3	100	3	100
870913	02					5	100						
870921	01	3	100										
870927	03	2	100										

Table 4. (continued)

	date	sight no.	obs 31 best est.	obs 31 pct	obs 55 best est.	obs 55 pct	obs 56 best est.	obs 56 pct	obs 63 best est.	obs 63 pct	obs 64 best est.	obs 64 pct	obs 69 best est.	obs 69 pct
species 61														
	870817	02	2	100			2	100			2	100	2	100
	870823	01	2	100	2	100	2	100	2	100				
	870909	02	1	100									1	100
	870910	02	3	100							3	100	3	100
	870911	02	1	100										
	870919	06			1	100	1	100	1	100				
	870923	06	6	100			6	100					6	100
species 70														
	870919	04							1	100	1	100	1	100
	870920	05	1	100										
	870922	03					2	100	2	100				
	870923	07	1	100									1	100
	870929	03	2	100	2	100	2	100	2	100				
species 72														
	870919	01	2	100					2	100	2	100	2	100
species 77														
	870803	07							5	100				
	870803	09					3	100						
	870804	01			1	100								
	870804	02							10	100				
	870805	01			2	100								
	870805	02											8	100
	870805	03					2	100						
	870805	04					55	10					55	8
	870809	01					6	100						
	870809	03									5	100		
	870809	06			3	100								
	870809	08			5	100								
	870812	03							3	100				
	870813	05			45	25	50	20					45	10
	870814	01					2	100						
	870814	02			3	100								
	870815	03	1	100										
	870815	04			20	100								
	870816	02	4	100										
	870817	03			3	100								
	870818	04			6	100	4	100						
	870818	06											3	100
	870819	07			1	100								
	870820	02							2	100				
	870820	03					6	100						
	870820	05											3	100
	870821	01							1	100				
	870903	01							3	100				
	870908	06	6	100									18	100
	870909	01			3	100								

Table 4. (continued)

		obs 31		obs 55		obs 56		obs 63		obs 64		obs 69	
date	sight no.	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct
species 77													
870909	03	8	25										
870911	01					3	100						
870912	05					1	100						
870915	02			3	100			12	100				
870916	03									125	100		
870916	10											1	100
870919	03					1	100						
870920	01	1	100										
870921	03							10	100				
870921	04							25	100				
870922	10							20	100				
870922	12			15	50								
870926	03					3	100						
870926	04									1	100		
870926	11			1	100								
870927	02	10	100					20	100				
870928	07			8	100								
870928	08	1	100										
870929	01			1	100	1	100						
870930	03	1	100										
species 78													
870804	06											3	100
870806	01					1	100						
870807	02							7	100				
870809	11	1	100										
870812	04											1	100
870816	06											2	100
870816	09											2	100
870819	03							3	100				
870904	01			1	100								
870908	03	1	100										
870911	03	100	1	50	1	40	1			115	1	200	1
870912	02			1	100								
870916	06					1	100						
870918	02	350	10									400	1
870919	02									1	100		
870920	03	3	100										
870922	11							1	100				
870926	07			1	100								
870926	13							1	100				
870928	02			1	100								
870930	08									1	100		
species 79													
870803	02											1	100

Table 4. (continued)

	date	sight no.	obs 31 best est.	obs 31 pct	obs 55 best est.	obs 55 pct	obs 56 best est.	obs 56 pct	obs 63 best est.	obs 63 pct	obs 64 best est.	obs 64 pct	obs 69 best est.	obs 69 pct
species 90														
	870803	01	180	100	250	100	100	100	40	100				
	870902	02	40	100					28	100			25	100
species 96														
	870803	06									2	100		
	870818	07			1	100								
	870902	01							2	100				
	870908	01	1	100										
	870910	01	1	100									2	100
	870916	02											3	100
	870917	02												
	870917	03			5	100			5	100			1	100
	870922	05												
	870922	06					6	100						
	870926	14							1	100				
	870928	05											2	100
	870930	10	1	100										
species 98														
	870804	04					2	100						
	870818	03							1	100				
	870819	06	1	100										
	870930	05			1	100								

Table 4. (continued)

		obs 4		obs 5		obs 20		obs 22		obs 51		obs 67		obs 68		obs 70	
date	sight no.	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct
species 2																	
871016	02			225	75			100	75			65	70				
871016	03	75	100							50	100			130	100		
871018	05	300	100	550	100			950	100	600	100	1100	100	500	100		
871019	01	300	10											225	15	400	35
871019	02	150	30							250	10			200	50	350	50
871020	02	60	10											100	89		
871023	01	25	100							11	100			45	100		
871027	02	100	100							80	100			130	100		
871027	04	400	100							300	100			345	100		
871029	04	50	100							25	100			50	100		
871029	10			28	100			25	100	20	100	30	100			50	100
871115	11	100	60							200	70			210	55		
871120	01	46	2	20	5			36	3			25	4				
871120	02	100	100							50	100			115	100		
871124	07	200	100	325	100			135	100	300	100	120	100				
871127	09	300	15							375	40			230	6		
871129	02			75	25			85	40			40	40				
871129	03							200	90					1100	60		
871202	03	20	100														
871203	03	400	100							140	100			340	100	250	100
871204	01	75	100							35	100			180	100		
species 3																	
871016	02			225	25			100	25			65	30				
species 5																	
871028	03			450	100			175	100			200	100			450	100
871028	09			30	100			8	100			60	100				
871102	19	150	100							40	100			120	100		
871113	01	100	85							150	80			120	75		
871113	10			450	90							350	90	195	80	150	90
871203	04	75	100							25	100			51	100		
871203	05			150	100			66	100			55	100	190	100	220	100
species 6																	
871103	01	50	100							30	100			85	100	30	100
871103	04	45	100							20	100			34	100		
species 11																	
871019	01	300	90											225	85	400	65
871019	02	150	70							250	90			200	50	350	50
871020	02	60	90											100	11		
871115	11	100	40							200	30			210	45		
871127	01	350	100	250	100			380	100	200	100	250	100	105	100		
871127	09	300	85					420	100	375	60			230	94	200	100

Table 4. (continued)

			obs 4		obs 5		obs 20		obs 22		obs 51		obs 67		obs 68		obs 70	
	date	sight no.	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct
species 11																		
	871129	02			75	75			85	60			40	60				
	871129	03							200	10					1100	40		
species 13																		
	871008	03	40	100							25	100			20	100		
	871011	01			90	100			70	100			35	100				
	871011	02	60	100							35	100			24	100	70	100
	871011	11	50	100							35	100			115	100		
	871011	13	30	100	55	100			80	100			55	100				
	871012	03			18	100			12	100			10	100				
	871012	08	50	100							40	100			115	100	70	100
	871016	04	40	100														
	871017	01			25	100			20	100			10	100				
	871017	07	60	100	85	100			50	100	65	100	85	100				
	871019	03	40	100							20	100			85	100		
	871027	01	80	100							74	100			130	100		
	871028	13	35	100							55	100			115	100		
	871029	11			70	100			53	100			34	100				
	871030	03	40	100											48	100		
	871030	04	25	100							18	100			35	100		
	871101	02	30	100	40	100			18	100			27	100				
	871102	03	75	100							45	100	125	100	300	100		
	871102	04			95	100			175	100					210	100		
	871102	07	50	100							30	100			140	100		
	871102	08	30	100											34	100		
	871102	09	15	100														
	871102	15			30	100			22	100			40	100	40	100		
	871110	02	6	100											12	100	10	100
	871111	02	80	100							40	100			95	100	55	100
	871113	01	100	15							150	20			120	25		
	871113	03	80	100							95	100			100	100		
	871113	04	45	100					24	100	50	100			95	100	45	100
	871113	05	75	100					90	100	130	100			120	100	90	100
	871113	06			150	100			65	100			55	100				
	871113	08	45	100							55	100			95	100		
	871113	10			450	10							350	10	195	20	150	10
	871115	13	90	100	80	100							78	100	90	100	85	100
	871116	02			60	100			47	100			55	100				
	871117	05	80	100	80	100			154	100	48	100	100	100				
	871117	06	150	100							400	100			280	100		
	871118	03	25	100							25	100			3[illegible]	100		
	871118	04	30	100							30	100			58	100		
	871118	06	225	100							98	100			120	100		
	871118	10	30	100							17	100			48	100		
	871118	11	30	100											25	100		
	871118	12	75	100							50	100			55	100		
	871119	05													20	100	35	100
	871120	01	46	98	20	95			36	97			25	96				
	871124	02			175	100			65	100			70	100				

Table 4. (continued)

		obs 4		obs 5		obs 20		obs 22		obs 51		obs 67		obs 68		obs 70	
date	sight no.	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct
species 13																	
871124	04	80	100							95	100			215	100	200	100
871125	05									60	100			65	100		
871125	08			20	100			12	100			40	100				
871125	12			135	100												
871127	07	75	100							210	100			225	100	175	100
871128	08	50	100							40	100			56	100		
871203	02	15	100							20	100			14	100		
species 15																	
871011	18	445	10	350	10					130	30			380	11	550	50
871018	03	30	60							18	45			45	65		
871111	05			150	85							60	85				
871121	02	12	100							10	100			6	100		
871127	02	6	100	8	100			7	100	3	100					2	100
species 18																	
871018	08	65	62							38	75			55	60		
871024	05	45	100							15	100			33	100		
871028	15			325	38												
871031	04	30	100							20	100			31	100		
871111	01									12	50			16	60		
871111	05			150	5							60	5				
871115	06													14	100		
871115	09	45	56							23	60			37	30		
871115	12	14	14														
871118	01			30	55			19	63			30	67				
871119	06	12	100							10	100			8	100		
871121	04			20	20					20	30			26	40		
species 21																	
871009	04	8	100							12	100						
871009	05	6	100											7	100		
871009	08	14	86							13	92			8	90		
871011	17	15	100							3	100						
871013	03	10	100							6	100						
871028	06	5	100											8	100		
871102	01											29	100				
871102	02	15	100							5	100			8	100		
871111	01									12	50			16	40		
871111	05			150	10							60	10				
871116	05									4	100			12	100	18	100
871117	07			6	100			3	100								
871124	06	4	100							6	100			4	100	3	100
871126	03									5	100			5	100		
871126	05			1	100												
871127	03	10	100							8	100						

Table 4. (continued)

			obs 4		obs 5		obs 20		obs 22		obs 51		obs 67		obs 68		obs 70	
	date	sight no.	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct
species	26																	
	871125	10	400	100	300	100					600	100			200	100		
	871127	10			600	75			740	75			700	60	375	60	450	70
	871128	01	500	99	481	98			380	99			354	99	400	97	500	99
species	31																	
	871011	18	445	90	350	90					130	70			380	89	550	50
	871127	10			600	25			740	25			700	40	375	40	450	30
species	32																	
	871127	08	12	100							6	100			9	100		
	871128	02	30	100							45	100			33	100		
	871128	07	50	100							25	100			31	100		
species	33																	
	871128	01	500	1	481	2			380	1			354	1	400	3	500	1
	871201	01											1	100				
	871202	06			2	100							2	100				
species	34																	
	871018	08	65	38							38	25			55	40		
	871028	14			10	60							7	43				
	871028	15			325	38												
	871115	09	45	44							23	40			37	70		
	871115	12	14	86														
	871118	01			30	45			19	37			30	33				
	871121	04			20	80					20	70			26	60		
	871124	08	10	100	19	100			10	100			12	100				
	871128	05	65	100														
	871128	09	75	100							40	100						
species	37																	
	871028	11			5	100			4	100	4	100	4	100	5	100	5	100
	871028	14			10	40							7	57				
species	46																	
	871007	04	2	100														
	871007	08	2	100														
	871007	10	15	100											7	100	7	100
	871009	06													4	100	2	100
	871009	08	14	14							13	8			8	10		
	871010	01											1	100				
	871011	07							1	100								
	871013	01	8	100	7	100			7	100	9	100			9	100		
	871024	03	8	100							5	100						
	871110	01									10	100						
	871111	04			13	100							10	100				
	871115	01					2	100					2	100				
	871117	02							3	100			2	100				
	871119	03	1	100							1	100						

Table 4. (continued)

	date	sight no.	obs 4 best est.	obs 4 pct	obs 5 best est.	obs 5 pct	obs 20 best est.	obs 20 pct	obs 22 best est.	obs 22 pct	obs 51 best est.	obs 51 pct	obs 67 best est.	obs 67 pct	obs 68 best est.	obs 68 pct	obs 70 best est.	obs 70 pct
species	46																	
	871125	04											10	100				
species	48																	
	871102	10	1	100														
	871116	06	2	100							2	100					2	100
species	49																	
	871007	01	2	50														
	871017	03									2	100						
	871102	11									2	100						
species	51																	
	871007	01	2	50														
	871011	10	2	100							2	100						
	871017	06	1	100														
	871028	05			2	100												
	871101	01	2	100							2	100						
	871102	06	3	100							3	100			3	100		
	871120	05	2	100									3	100				
	871123	03							5	100								
	871125	09			6	100							5	100				
	871130	03															2	100
species	61																	
	871102	14			5	100			4	100								
species	70																	
	871009	01			1	100												
	871009	02			1	100							1	100				
	871010	02									1	100						
	871011	05											3	100				
	871011	19	1	100														
	871016	05	1	100														
	871024	07	1	100							1	100						
	871029	03											1	100				
	871103	03	1	100														
	871123	04			1	100												
species	72																	
	871010	03	1	100							1	100					1	100
	871011	16											1	100				
	871204	02	1	100											1	100	1	100
species	77																	
	871007	06													3	100		
	871009	09			3	100												
	871012	01													5	100		
	871012	06							25	100			65	100	48	100		
	871018	01	2	100														

Table 4. (continued)

			obs 4		obs 5		obs 20		obs 22		obs 51		obs 67		obs 68		obs 70	
	date	sight no.	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct
species 77																		
	871018	03	30	40							18	55			45	35		
	871018	04											1	100				
	871022	02											7	100				
	871027	07													120	100		
	871028	08											20	100	28	100		
	871028	15			325	24												
	871029	02							1	100								
	871031	01													14	100		
	871119	10									15	100						
	871120	04													7	100		
	871124	01	10	100														
	871125	01									20	100						
	871128	06									2	100						
	871130	02									1	100						
	871202	04													4	100		
species 78																		
	871009	07									1	100						
	871021	02													1	100		
	871028	02			1	100												
	871029	09													4	100		
	871030	01			1	100												
	871030	02											1	100				
	871030	05	1	100														
	871102	05													3	100		
	871115	07			1	100												
	871123	05			1	100												
	871126	04			1	100												
	871202	05															1	100
	871203	01											1	100				
species 79																		
	871008	01											1	100				
	871019	05			1	100												
	871024	02									3	100						
	871119	04			1	100												
	871119	07			1	100												
	871125	02									2	100						
	871130	04									2	100						
	871205	01									1	100						
species 90																		
	871103	05	15	100							18	100			22	100		
species 96																		
	871018	02	2	100														
	871018	06	1	100														
	871115	08			20	100												
	871121	01									1	100						

Table 4. (continued)

	date	sight no.	obs 4 best est.	obs 4 pct	obs 5 best est.	obs 5 pct	obs 20 best est.	obs 20 pct	obs 22 best est.	obs 22 pct	obs 51 best est.	obs 51 pct	obs 67 best est.	obs 67 pct	obs 68 best est.	obs 68 pct	obs 70 best est.	obs 70 pct
species	96																	
	871126	06	1	100														
	871129	01					2	100										
	871130	01													3	100		
	871202	07									1	100						
species	97																	
	871123	02							2	100								
species	98																	
	871016	01	1	100														
	871115	02									1	100						
	871118	08									1	100						
	871118	09									1	100						
	871123	01	1	100														
	871202	01											6	100				

Table 5. Summary of marine mammal sightings encountered in the eastern tropical Pacific during July 30 through December 10, 1987.

species name (scientific name)	species code	species total	sightings pure	sightings mixed	estimated-mean-school-size low /(n)	high /(n)	best /(n)
OFFSHORE SPOTTED DOLPHIN (STENELLA ATTENUATA)	2	50	24	26	95.99(50)	150.44(49)	118.33(49)
SPINNER DOLPHIN (STENELLA LONGIROSTRIS)	3	3	1	2	9.90(3)	18.78(3)	13.75(3)
COMMON DOLPHIN (DELPHINUS DELPHIS)	5	14	12	2	116.05(14)	175.49(14)	142.12(14)
COASTAL SPOTTED DOLPHIN (S.A. GRAFFMANI)	6	2	2	0	33.50(2)	53.50(2)	41.00(2)
EASTERN SPINNER DOLPHIN (STENELLA LONGIROSTRIS)	10	6	2	4	43.62(6)	60.63(6)	51.31(6)
WHITEBELLY SPINNER DOLPHIN (STENELLA LONGIROSTRIS)	11	29	8	21	70.40(29)	106.57(29)	86.51(29)
STRIPED DOLPHIN (S. COERULEOALBA)	13	96	93	3	46.43(96)	79.22(90)	61.60(90)
ROUGH-TOOTHED DOLPHIN (STENO BREDANENSIS)	15	10	6	4	25.25(10)	41.91(10)	32.54(10)
BOTTLENOSED DOLPHIN (TURSIOPS TRUNCATUS)	18	25	10	15	20.62(25)	27.48(23)	20.92(23)
RISSO'S DOLPHIN (GRAMPUS GRISEUS)	21	35	31	4	5.33(34)	9.86(28)	7.84(29)
FRASER'S DOLPHIN (LAGENODELPHIS HOSEI)	26	7	3	4	237.03(7)	365.81(7)	291.04(7)
UNIDENTIFIED DOLPHIN	77	133	126	7	9.76(121)	16.03(81)	10.62(84)
SPOTTED DOLPHIN (STENELLA ATTENUATA)	90	3	3	0	55.67(3)	79.33(3)	63.67(3)
totals		413	321				

Table 5. (continued)

species name (scientific name)	species code	species sightings total	pure	mixed	estimated-mean-school-size low /(n)	high /(n)	best /(n)
MELON-HEADED WHALE (PEPONOCEPHALA ELECTRA)	31	4	2	2	186.12(4)	271.00(4)	226.75(4)
PYGMY KILLER WHALE (FERESA ATTENUATA)	32	4	4	0	23.25(4)	39.75(4)	28.50(4)
FALSE KILLER WHALE (PSEUDORCA CRASSIDENS)	33	10	8	2	3.19(10)	4.50(9)	3.62(9)
PILOT WHALE (GLOBICEPHALA SP.)	34	24	13	11	17.66(23)	30.01(21)	22.84(21)
KILLER WHALE (ORCINUS ORCA)	37	6	5	1	3.81(6)	5.14(6)	4.23(6)
SPERM WHALE (PHYSETER MACROCEPHALUS)	46	32	28	4	5.75(29)	6.09(26)	4.80(27)
DWARF SPERM WHALE (KOGIA SIMUS)	48	5	5	0	2.20(5)	2.40(5)	2.20(5)
BEAKED WHALE (ZIPHIID)	49	9	8	1	1.43(7)	1.57(7)	1.43(7)
UNID. MESOPLODONT (MESOPLODON SP.)	51	19	18	1	2.50(18)	2.72(18)	2.67(18)
CUVIER'S BEAKED WHALE (ZIPHIUS CAVIROSTRIS)	61	9	9	0	2.33(9)	2.67(9)	2.56(9)
RORQUAL (BALAENOPTERA SP.)	70	20	20	0	1.11(19)	1.37(19)	1.21(19)
BRYDE'S WHALE (B. EDENI)	72	6	6	0	2.17(6)	3.17(6)	2.67(6)
FIN WHALE (B. PHYSALUS)	74	1	1	0	0.00(0)	0.00(0)	0.00(0)
HUMPBACK WHALE (MEGAPTERA NOVAEANGLIAE)	76	1	1	0	2.00(1)	2.00(1)	2.00(1)
UNIDENTIFIED SMALL WHALE	78	39	37	2	1.80(39)	2.40(35)	2.03(37)
UNIDENTIFIED LARGE WHALE	79	14	14	0	1.36(14)	1.64(11)	1.36(11)
UNIDENTIFIED CETACEAN	96	31	31	0	2.32(31)	3.24(25)	2.72(25)
UNIDENTIFIED OBJECT	97	2	2	0	0.00(0)	0.00(0)	2.00(1)
UNIDENTIFIED WHALE	98	23	23	0	1.48(21)	1.69(13)	1.46(13)
totals		259	235				

Table 6. Summary of distance searched, large dolphin schools detetected, and rates of encountering dolphins by observers aboard the McArthur in the eastern tropical Pacific during July 30 through December 10, 1987.

	Distance Searched (km)	Percent km Searched	Number Schools Detected	Percent All Schools Detected	Detection Rate (Schools/ 1000 km)	S.E. Detection Rate	Number[1] Days Searched
All Data	13259	100	188	100	14.78	1.53	97
Inshore	2875	22	49	26	17.05	4.04	24
Middle	3184	24	48	26	15.07	2.79	23
West	3492	26	36	19	10.31	2.70	28
South	3708	28	55	29	14.83	2.63	29
Sea State Conditions							
Calm	1504	11	52	28	34.57	5.67	30
Rough	11755	89	136	72	11.57	1.49	96
Visibility Conditions							
Good	11465	86	108	89	14.65	1.55	97
Poor	1794	14	20	11	11.15	3.35	64
Observers							
Legs 1 and 2							
31	2990	23	16	9	5.35	1.91	47
55	3429	26	16	9	4.67	1.18	46
56	3461	26	10	5	2.89	1.31	46
63	3404	26	17	9	4.99	1.31	46
64	3061	23	18	10	5.30	1.73	47
69	3047	23	12	6	3.94	1.20	46
Legs 3 and 4							
4	3435	26	27	14	7.86	1.87	50
5	3325	25	16	9	4.81	1.42	47
22	3263	25	7	4	2.15	0.94	48
51	3411	26	14	7	4.10	1.18	50
67	3337	25	12	6	3.60	1.73	47
68	3453	26	23	12	6.66	1.10	49
Teams[2]							
Legs 1 and 2							
Team 3	2968[3]	23	46	25	15.50	3.18	46
Team 4	3438	26	43	23	12.51	2.25	46

Table 6. (continued)

	Distance Searched (km)	Percent km Searched	Number Schools Detected	Percent All Schools Detected	Detection Rate (Schools/ 1000 km)	S.E. Detection Rate	Number[1] Days Searched
Legs 2 and 3							
Team 1	3435	26	63	34	18.34	3.51	50
Team 2	3325	25	35	19	10.53	2.04	47

[1]Day included in tally if searching effort for variable occurred during any part of the day.

[2]Team 1 members were observers 4,51,68; Team 2 members were observers 5,22,67; Team 3 members were observers 31,64,69; and Team 4 members were observers 55,56,63.

[3]93km of trackline was searched when either both or neither of the team leaders were on duty and is not used for team analysis.

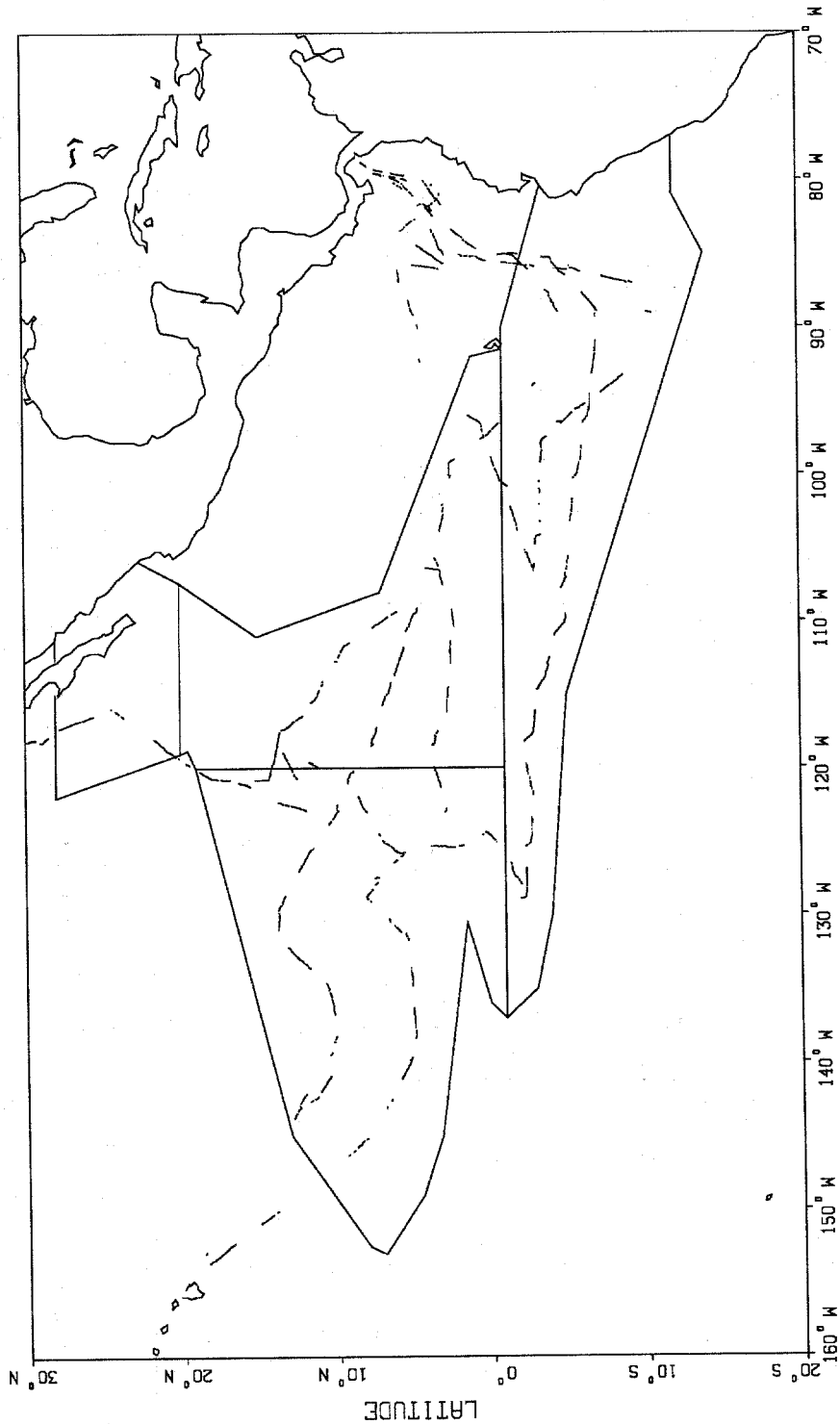


Figure 1. Tracklines surveyed by the NOAA Ship McArthur from July 30 through December 10, 1987, in the eastern tropical Pacific.

CRUISE #	YEAR	MONTH	DAY
1	4	6	8

RESEARCH SHIP MARINE MAMMAL DAILY EFFORT RECORD

		START OF LEG									POSITION: ONE OR MORE PER SERIES				OBSERVER POSITION			
SERIES #	LEG #	TIME	SURFACE TEMP. °F & 10ths	BEAU #	FOG/RAIN	HORZ SUN	VERT SUN	END OF LEG TIME	COMPASS COURSE °T	VESSEL SPEED KTS & 10ths	LATITUDE	N/S	LONGITUDE	E/W	LEFT BIND.	RIGHT BIND.	REC.	END LEG CODE
10	12	14	18	22	23	24	26	28	32	35	38	42	43	48	49	51	53	55

FOG/RAIN CODES

NO FOG OR RAIN = 1
FOG = 2
RAIN = 3
FOG AND RAIN = 4

ENDING CODES

1 = COURSE CHANGE
2 = SPEED CHANGE
4 = EFFORT TERMINATED
5 = LEG ENDS TO RECORD POSITION IN FOLLOWING LEG
8 = LEG ENDS DUE TO CHANGE IN ENVIRONMENTAL CONDITIONS

Figure 2. Research ship marine mammal daily effort record.

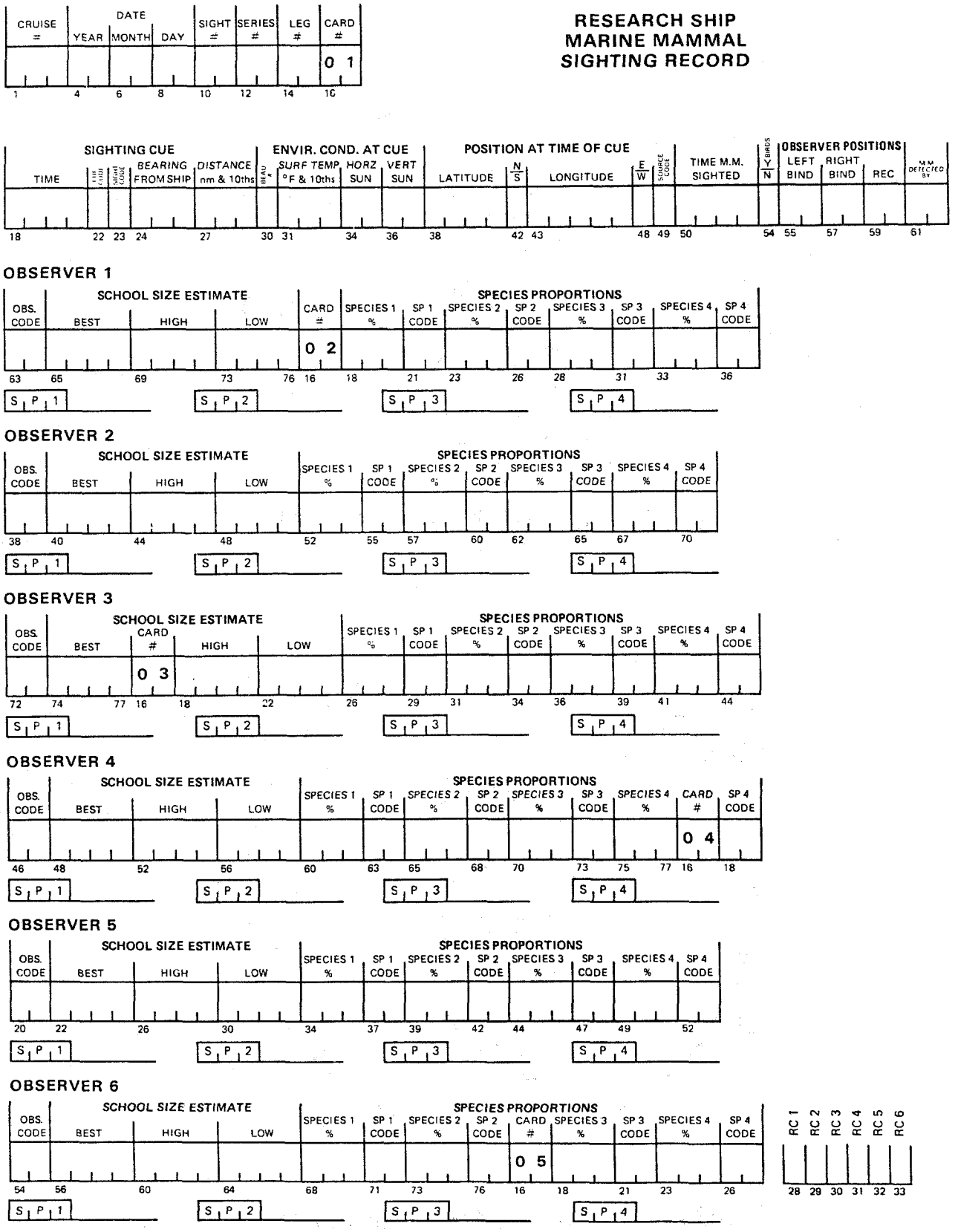
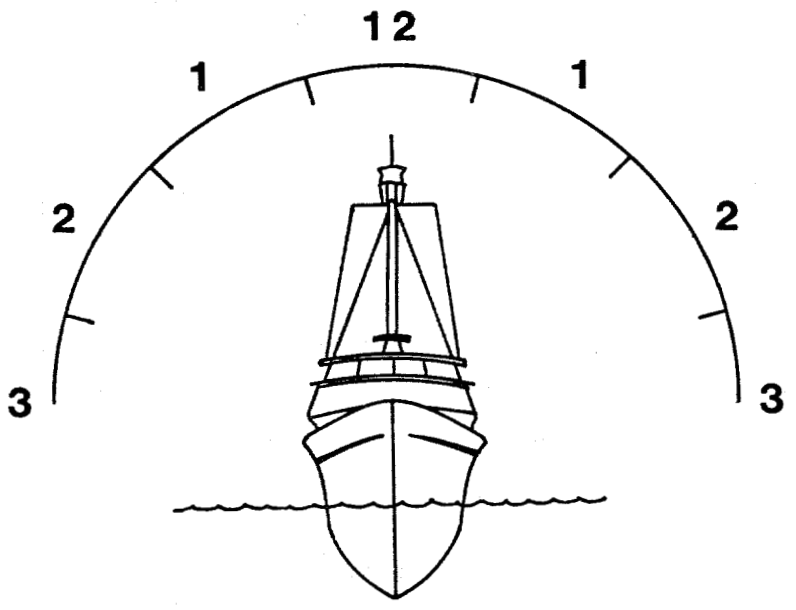
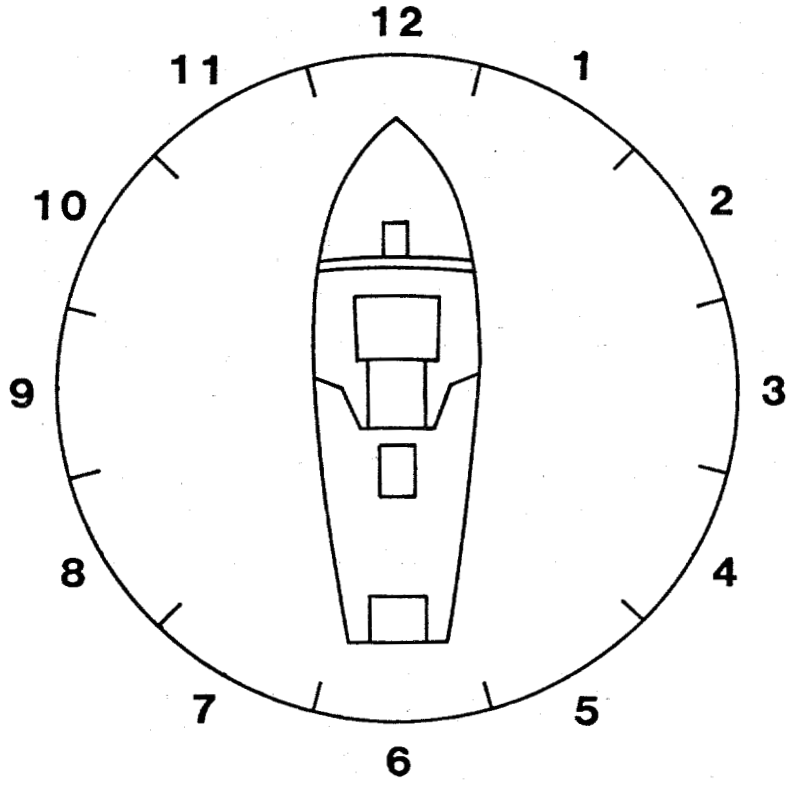


Figure 3. Research ship marine mammal sighting record.



VERTICAL SUN POSITION



HORIZONTAL SUN POSITION

Figure 4. Vertical and horizontal sun position categories.

CRUISE #	DATE YEAR	DATE MONTH	DATE DAY	SIGHT #	SERIES #	LEG #	OBS. CODE
1	4	6	8	10	12	14	16

SIGHTING SUMMARY

LIST ALL DIAGNOSTIC FEATURES OBSERVED
(INCLUDING ESTIMATED BODY LENGTH)

SKETCH FEATURES OF ANIMALS SIGHTED

BEHAVIOR – (DESCRIBE AGGREGATION, MOVEMENT, BOW AND STERN RIDING, BLOWS, ETC.)

ASSOCIATED ANIMALS – (INCLUDE NUMBER AND SPECIES OF BIRDS)

PHOTOS: ROLL # _____

FRAME(S): # _____

TOTAL TIME OF OBSERVATION	_____	ENVIR. COND. (RAIN, OVERCAST, FOG, CHOPPY)	_____	CLOSEST DISTANCE OF OBSERVATION	_____
AMT. OF TIME AT CLOSEST DISTANCE	_____	TAGS ASSOCIATED WITH SIGHTING	_____	METHOD OF OBSERVATION (EYE, 7x, 10x, 25x)	_____

Figure 5. Research ship marine mammal sighting record continuation sheet.

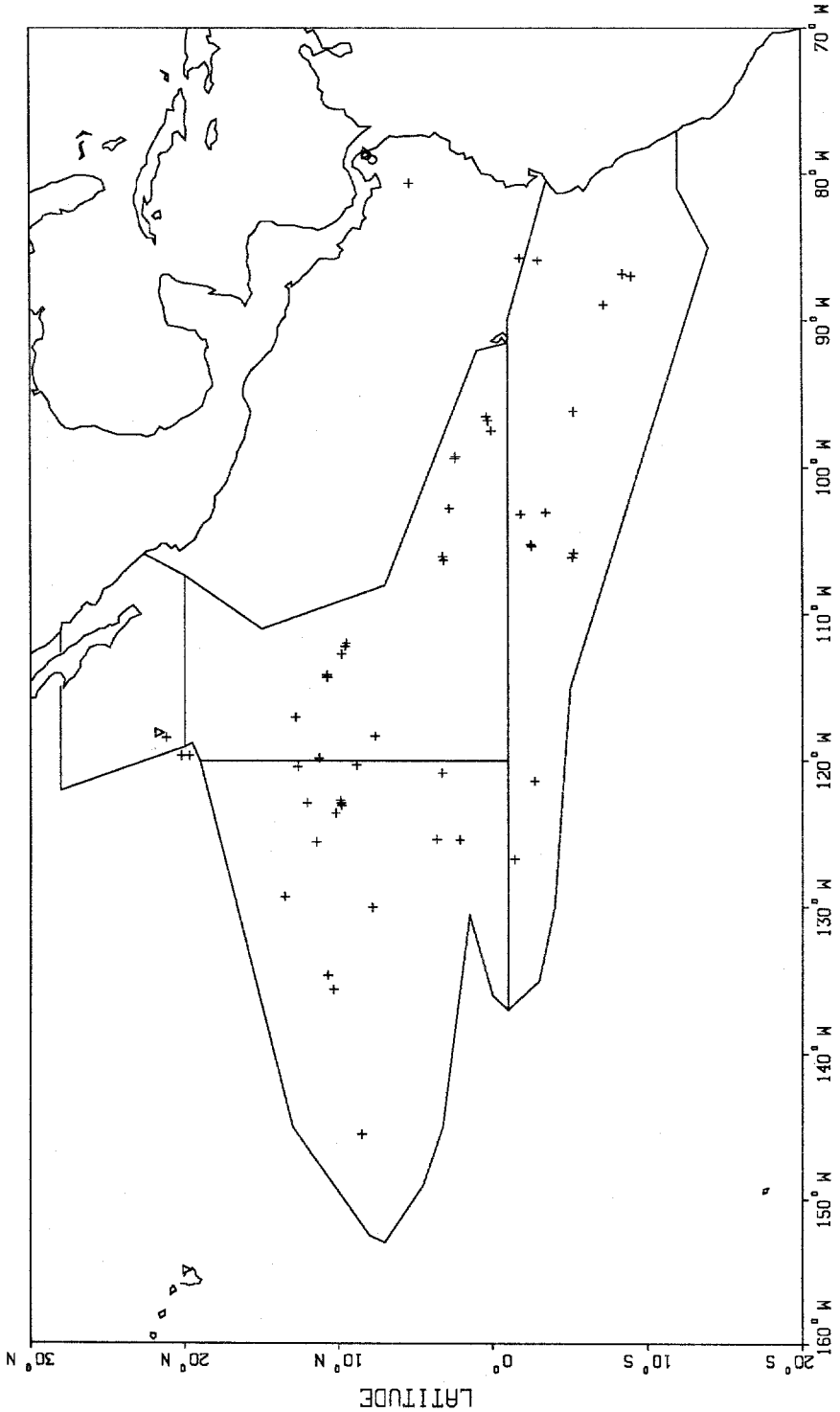


Figure 6. Offshore (+), coastal (o) and unidentified (▽) spotted dolphins detected from aboard the NOAA ship McArthur from July 30 through December 10, 1987, in the eastern tropical Pacific.

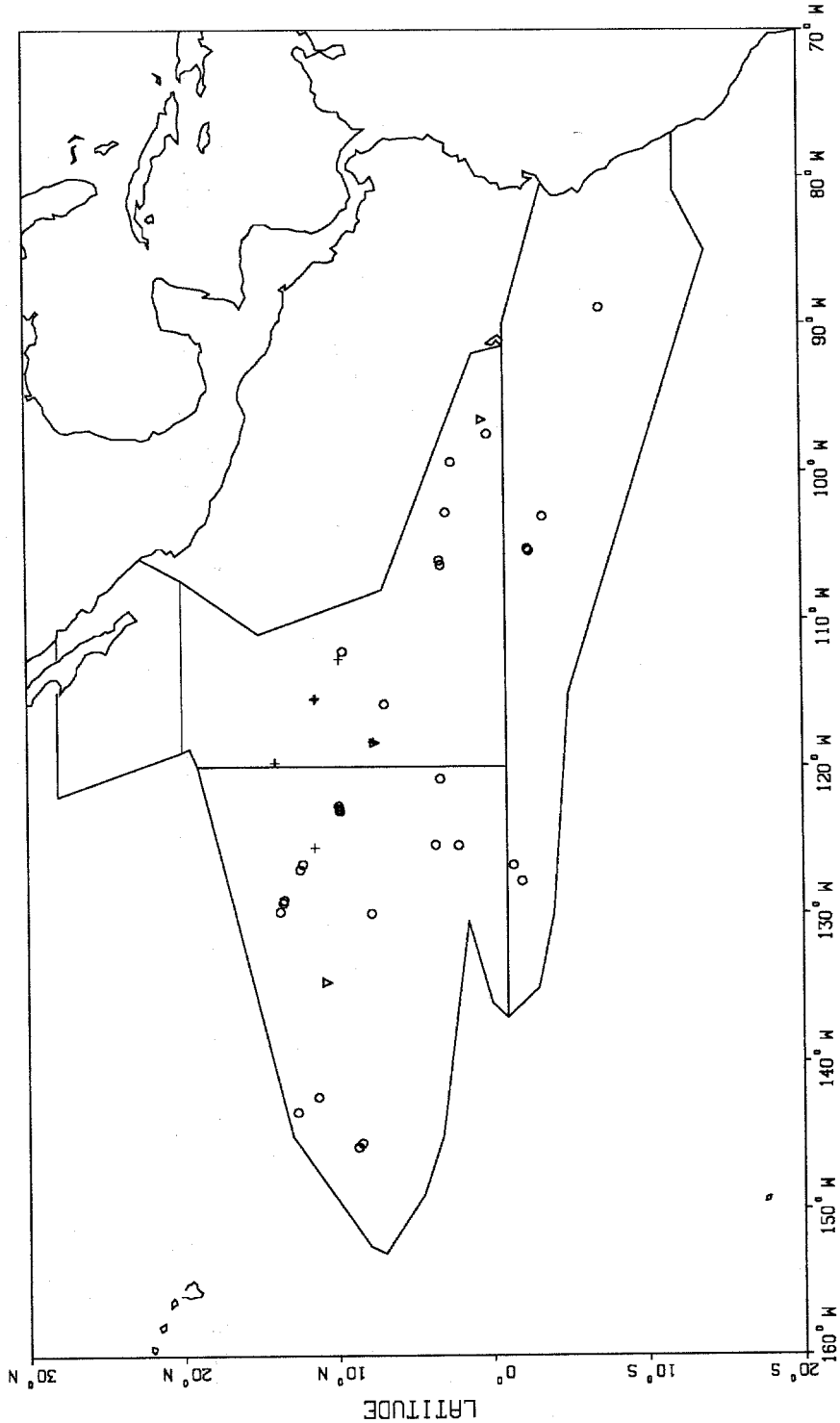


Figure 7. Eastern (+), whitebelly (o) and unidentified (▽) spinner dolphins detected from aboard the NOAA Ship McArthur from July 30 through December 10, 1987, in the eastern tropical Pacific.

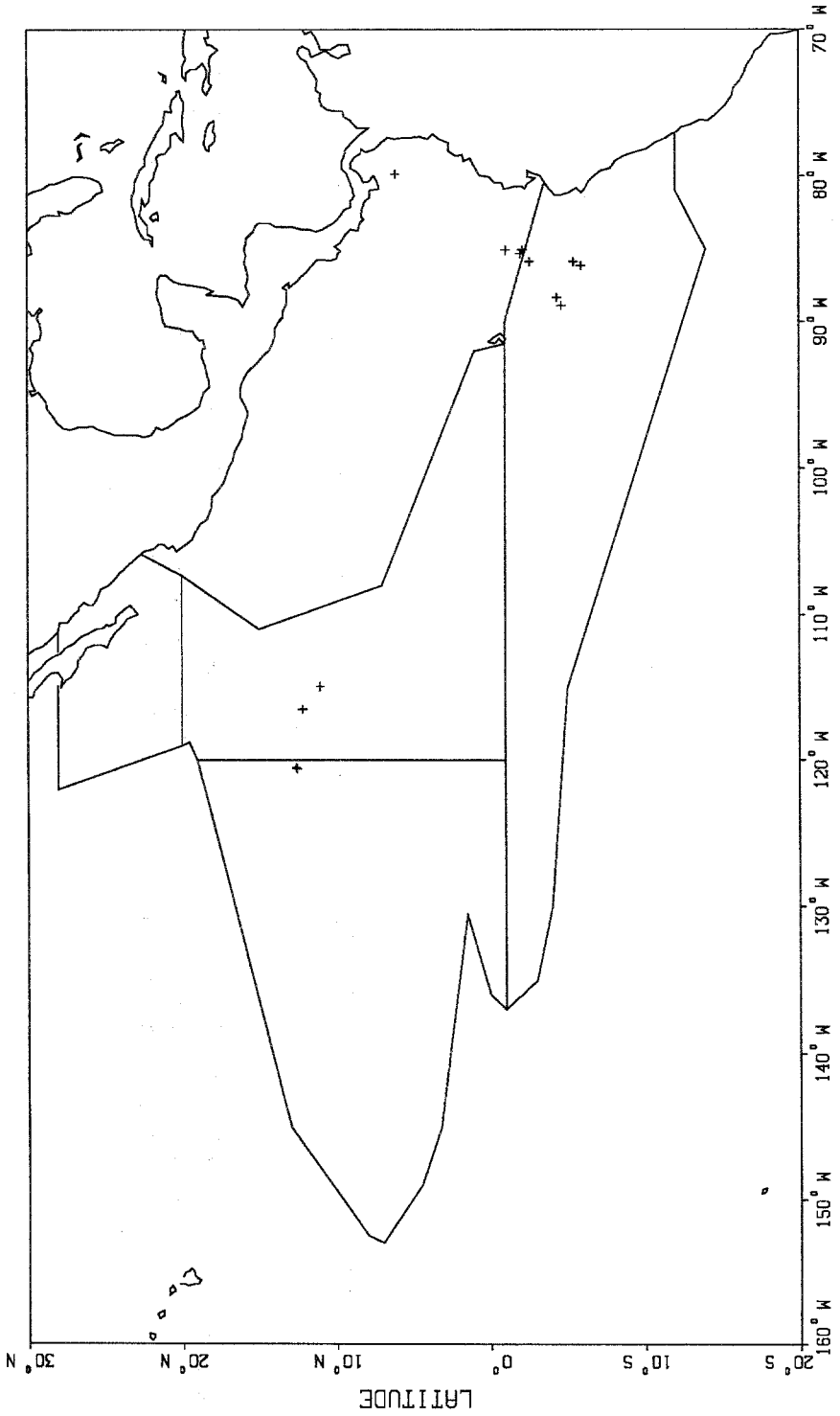


Figure 8. Common dolphins (+) detected from aboard the NOAA Ship McArthur from July 30 through December 10, 1987, in the eastern tropical Pacific.

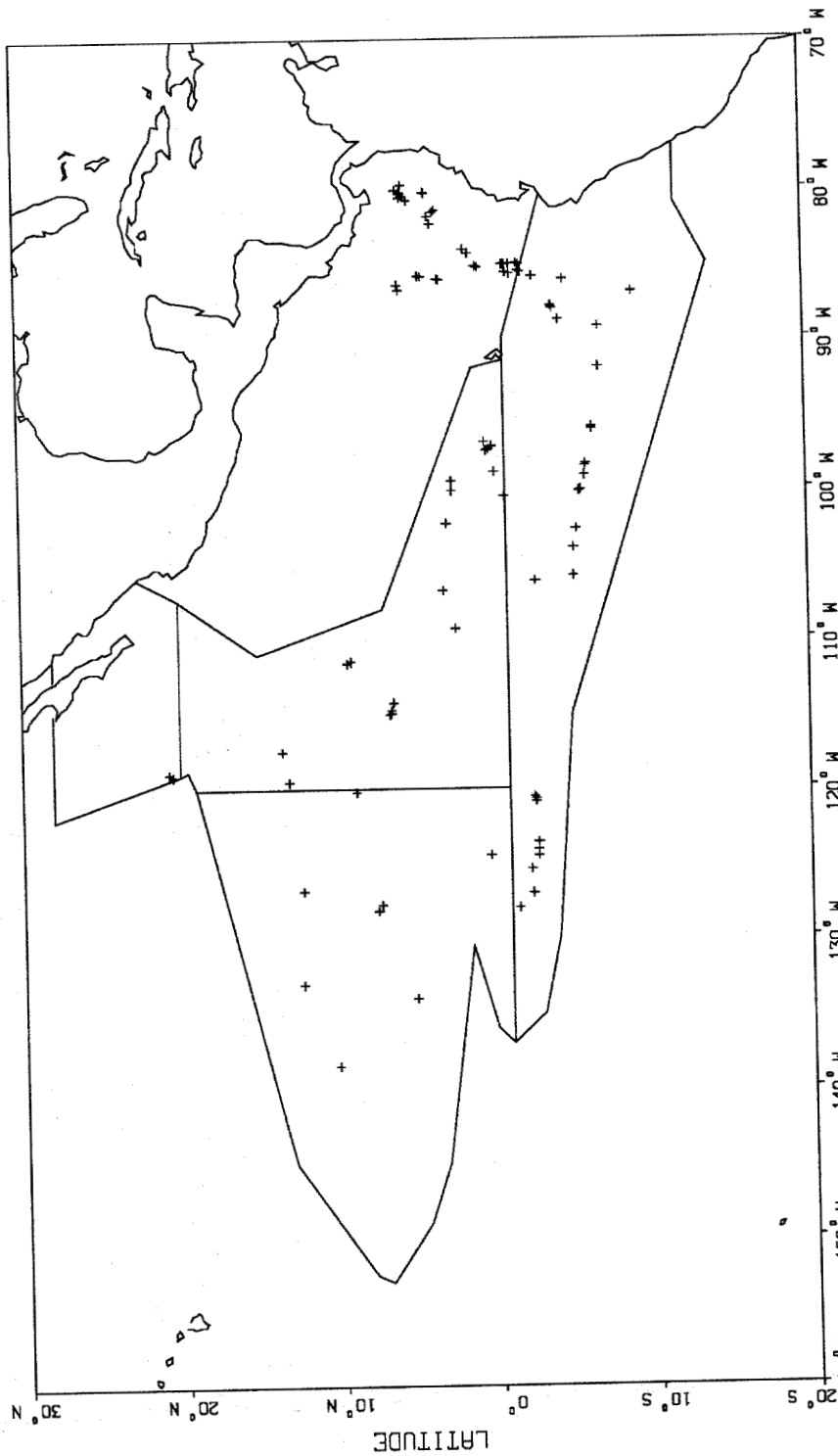


Figure 9. Striped dolphins (+) detected from aboard the NOAA Ship McArthur from July 30 through December 10, 1987, in the eastern tropical Pacific.

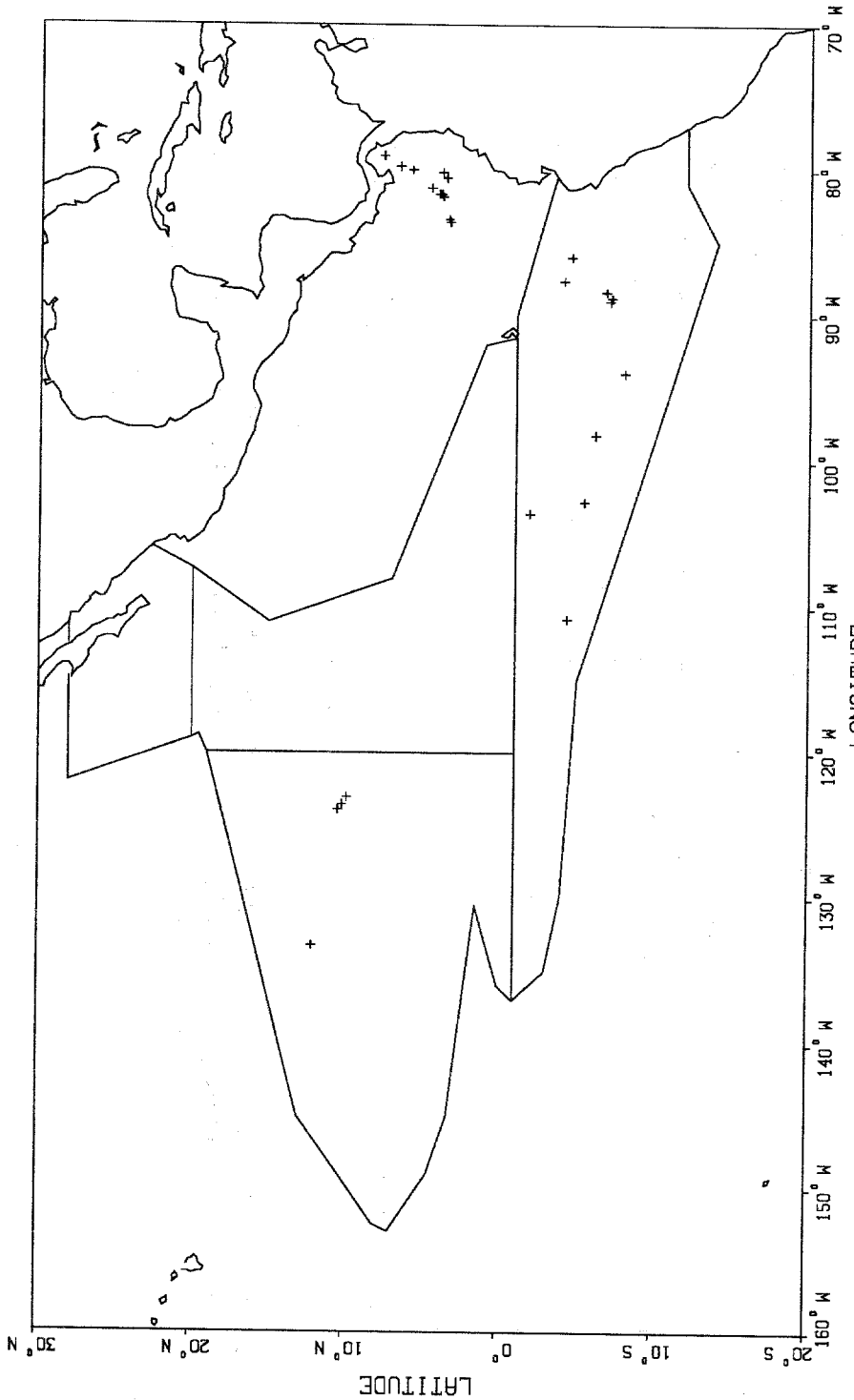


Figure 10. Bottlenose dolphins (+) detected from aboard the NOAA Ship McArthur from July 30 through December 10, 1987, in the eastern tropical Pacific.

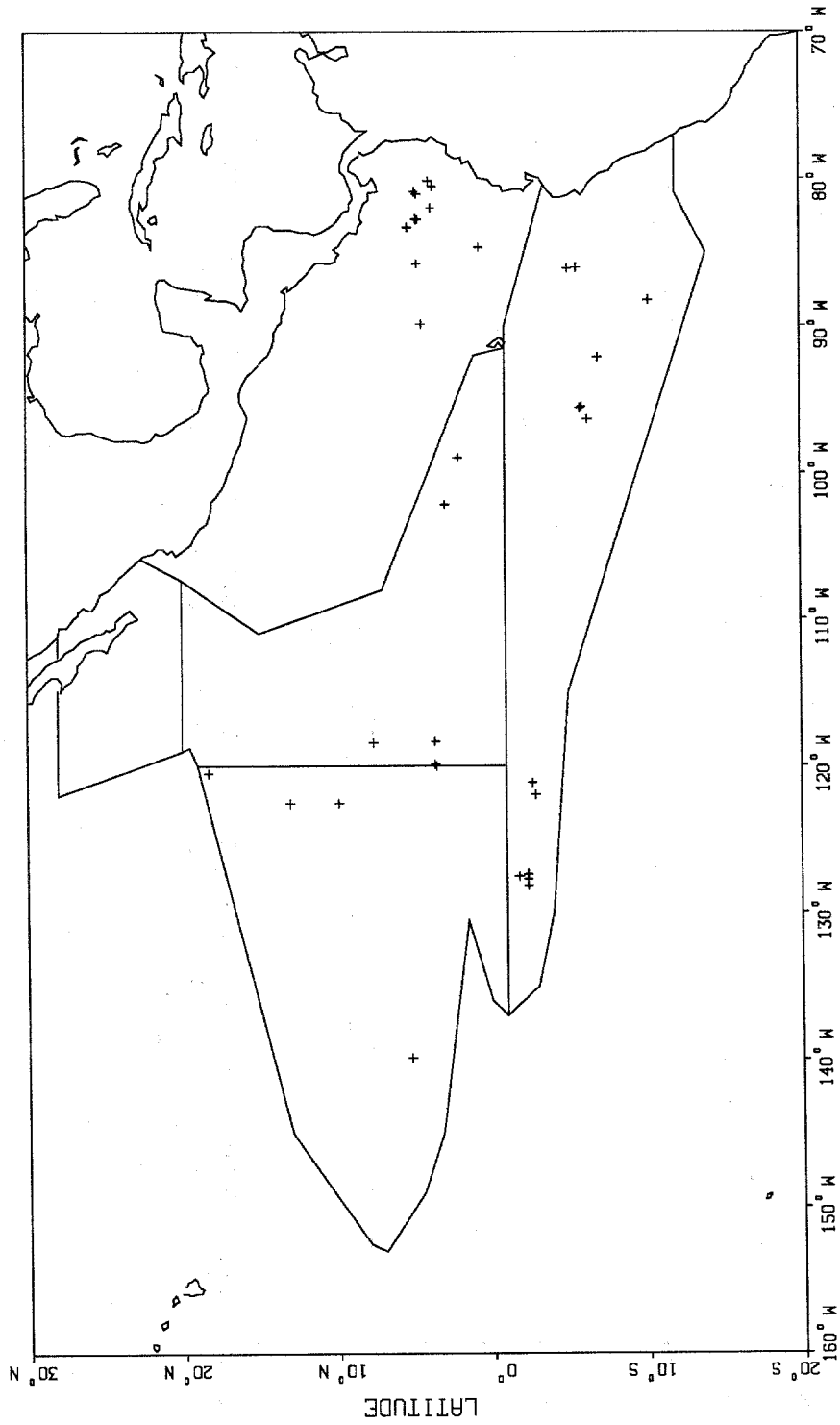


Figure 11. Risso's dolphins (+) detected from aboard the NOAA Ship McArthur from July 30 through December 10, 1987, in the eastern tropical Pacific.

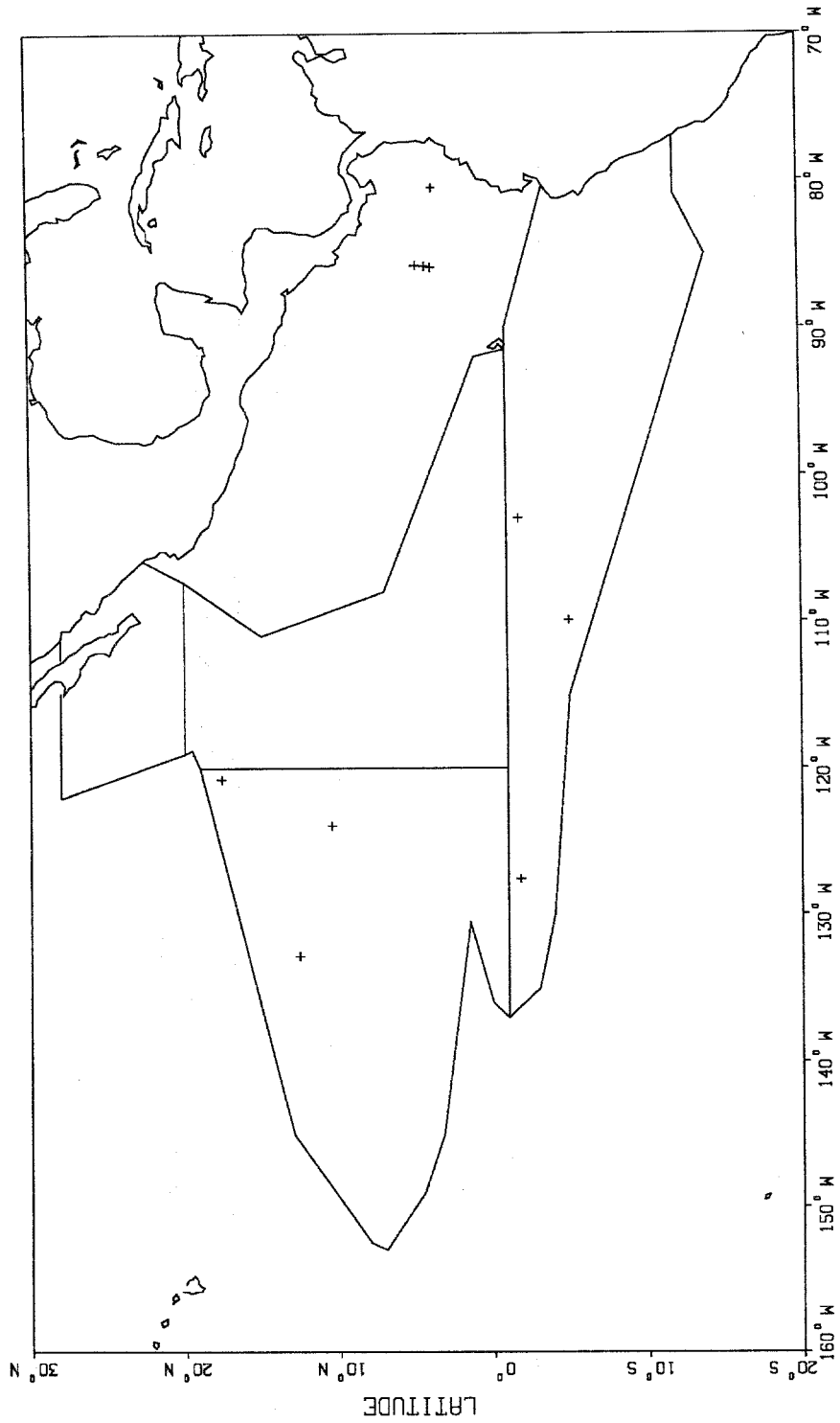


Figure 12. Rough-toothed dolphins (+) detected from aboard the NOAA Ship McArthur from July 30 through December 10, 1987, in the eastern tropical Pacific.

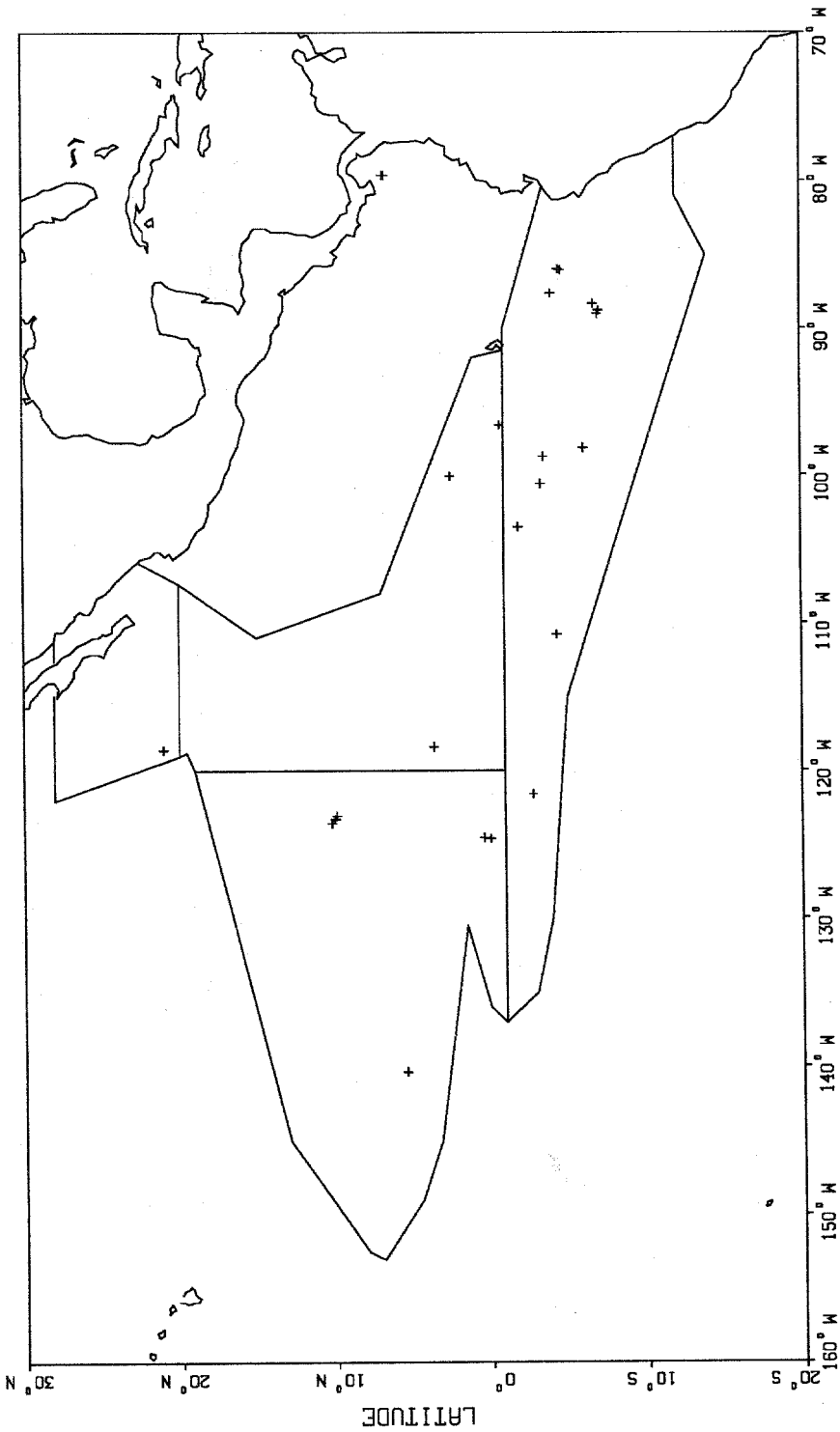


Figure 13. Pilot whales (+) detected from aboard the NOAA Ship McArthur from July 30 through December 10, 1987, in the eastern tropical Pacific.

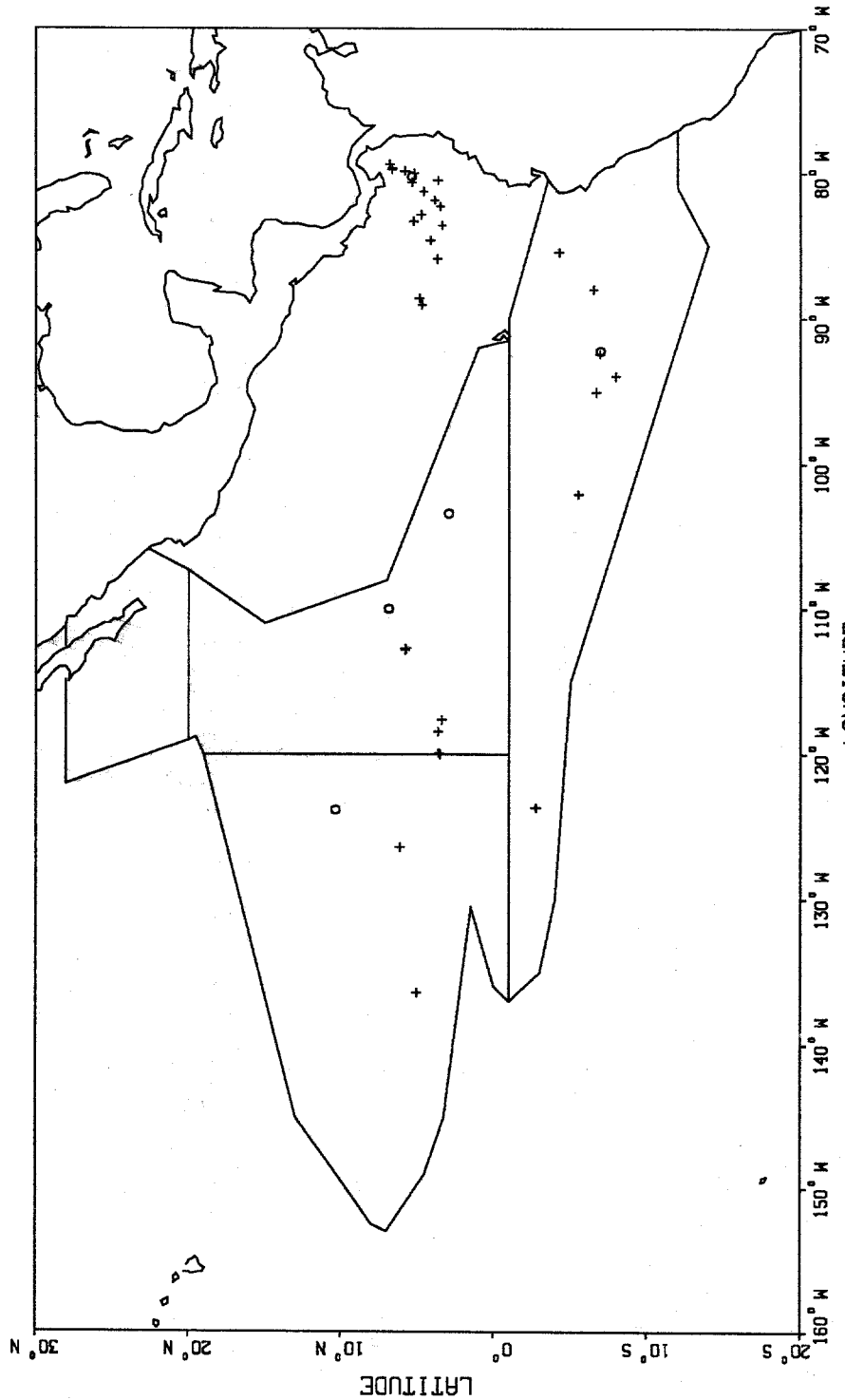


Figure 14. Sperm (+) and dwarf sperm (o) whales detected from aboard the NOAA Ship McArthur from July 30 through December 10, 1987, in the eastern tropical Pacific.

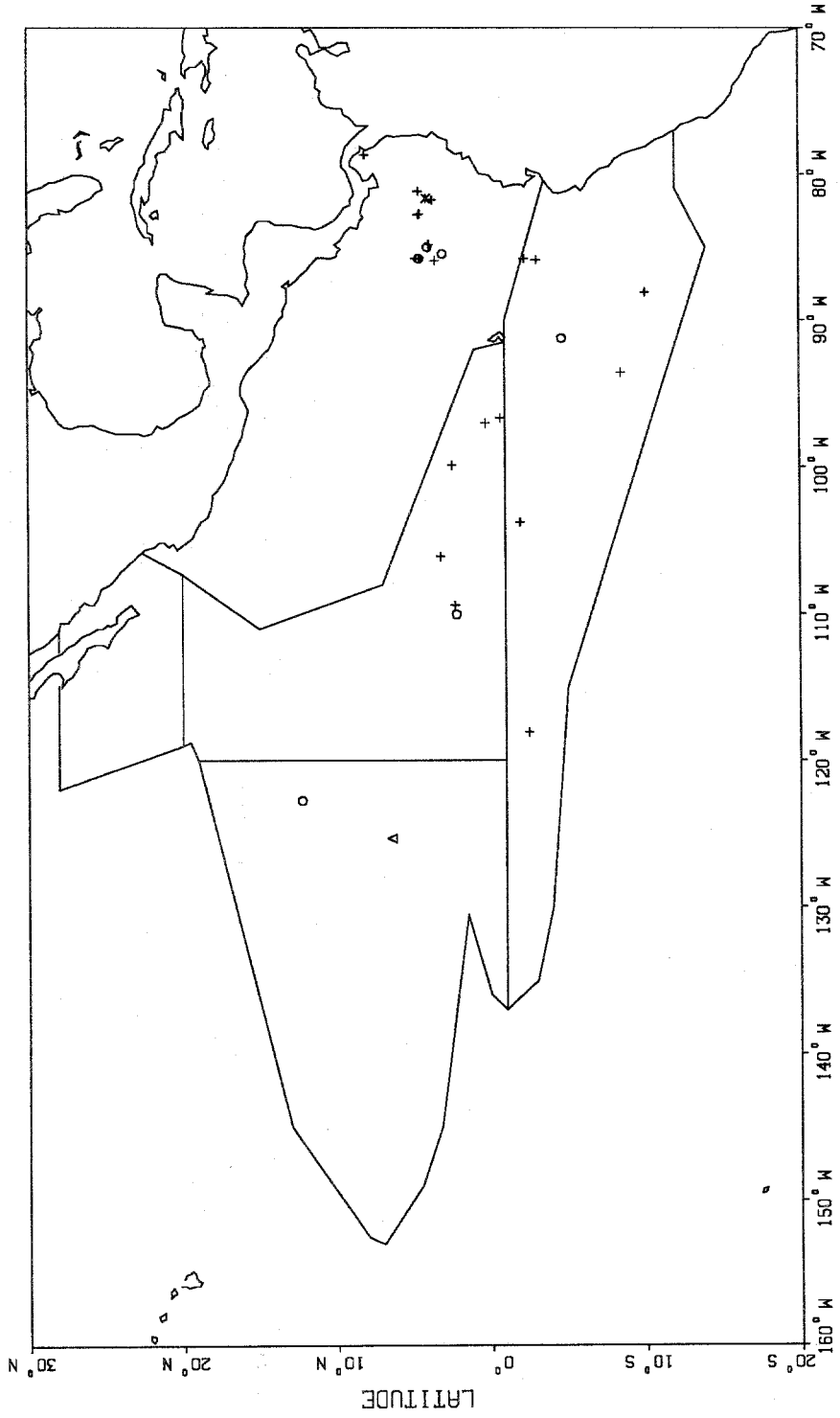


Figure 15. Unidentified rorquals (+), Bryde's (o), Humpback (*) and fin (△) whales detected from aboard the NOAA Ship McArthur from July 30 through December 10, 1987, in the eastern tropical Pacific.

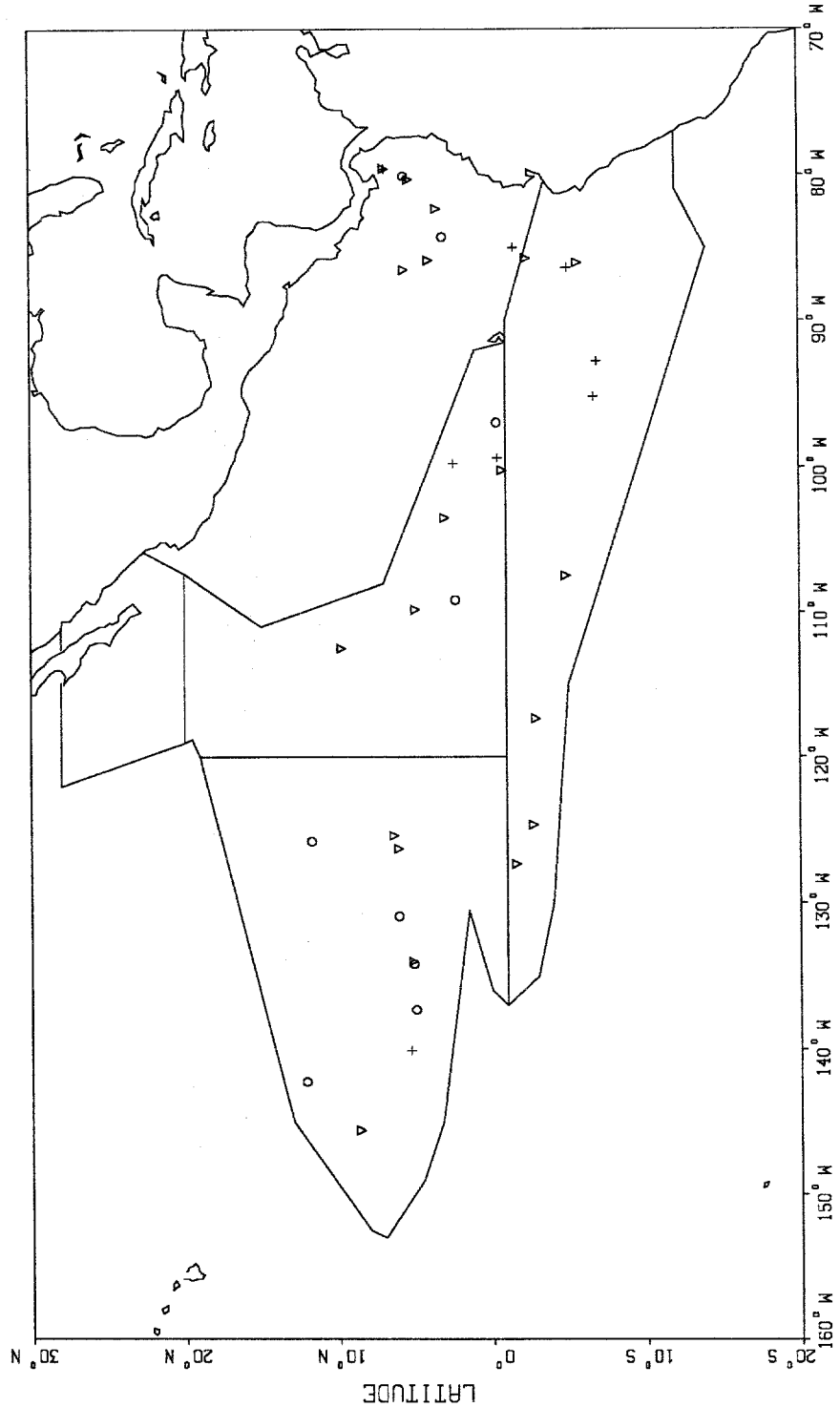


Figure 16. Unidentified beaked (+), Cuvier's beaked (o) and mesoplodon (▽) whales detected from aboard the NOAA Ship McArthur from July 30 through December 10, 1987, in the eastern tropical Pacific.

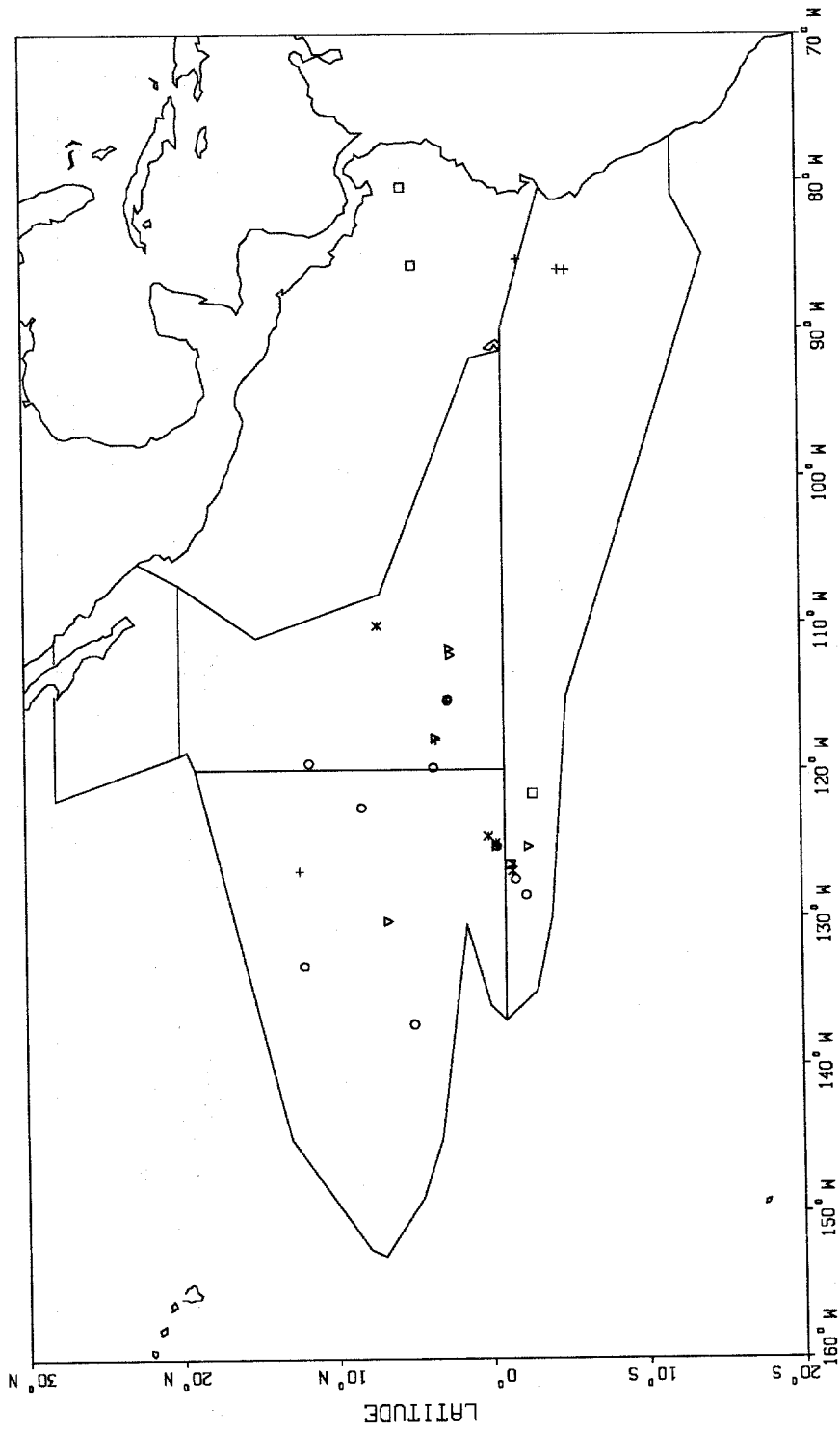


Figure 17. Killer (+) and false killer (o) whales, Fraser's dolphins (▽) and melon-headed (□) and pygmy killer (*) whales detected from aboard the NOAA Ship McArthur from July 30 through December 10, 1987, in the eastern tropical Pacific.

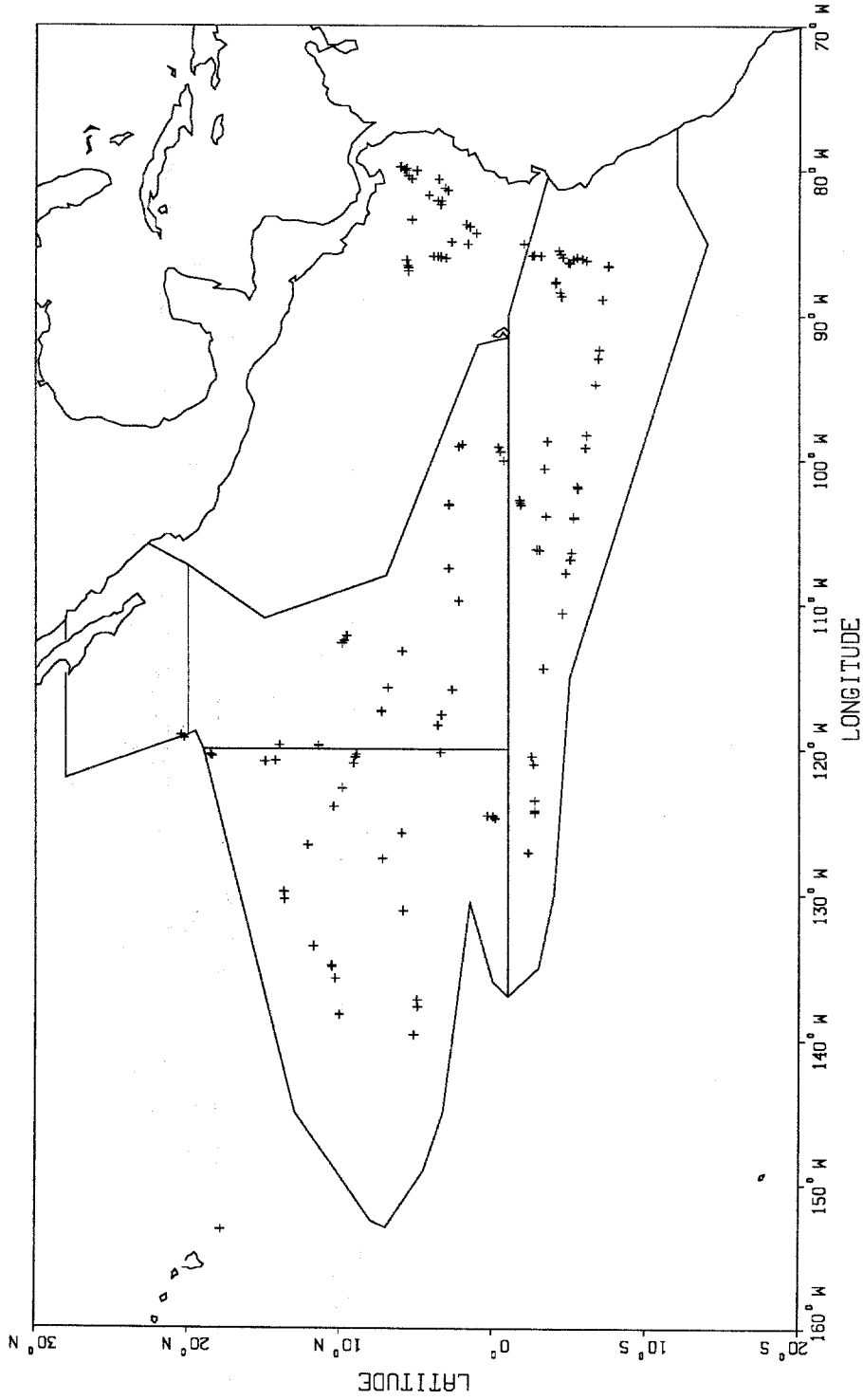


Figure 18. Unidentified dolphins (+) detected from aboard the NOAA Ship McArthur from July 30 through December 10, 1987, in the eastern tropical Pacific.

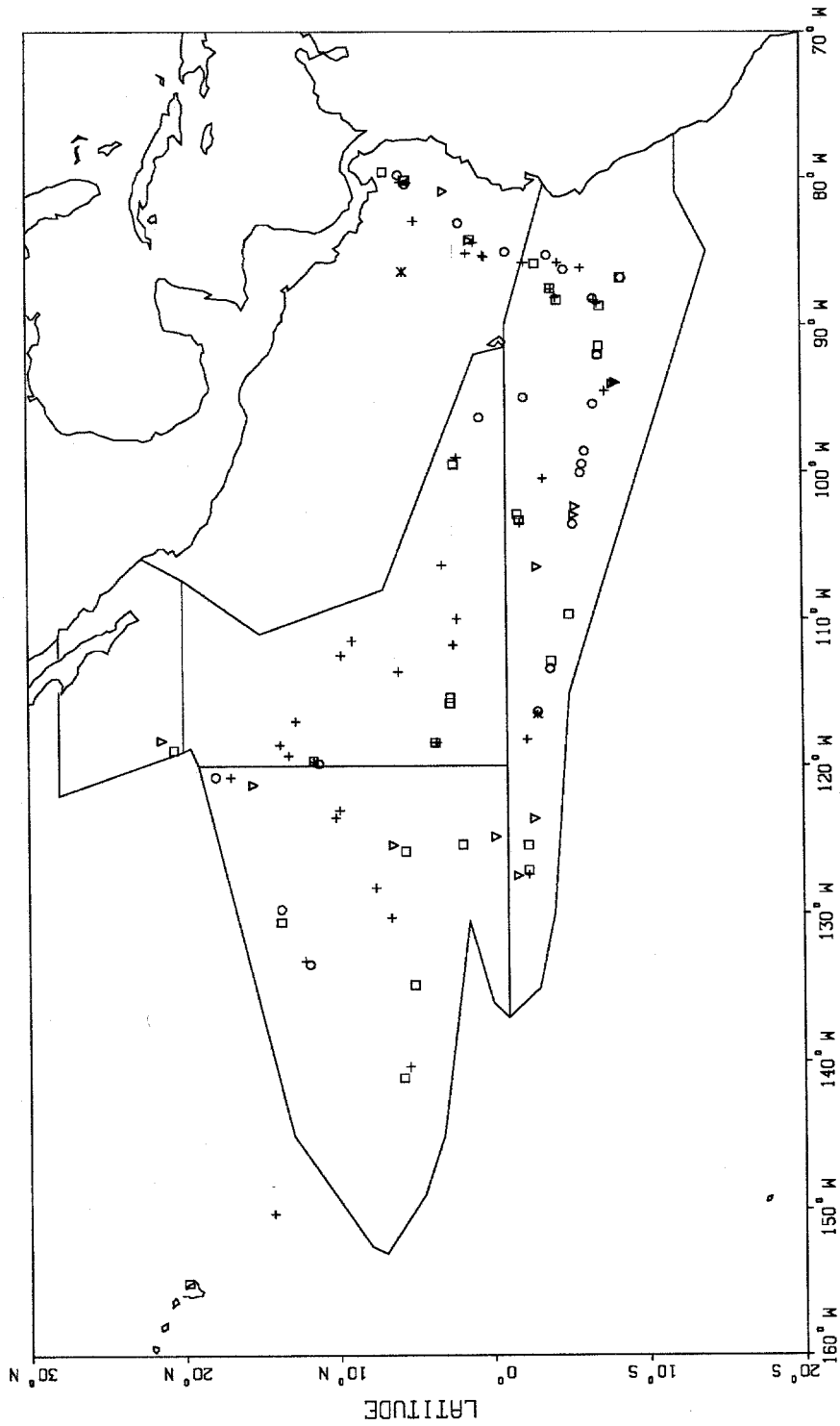


Figure 19. Unidentified small whales (+), unidentified whales (o), unidentified large whales (▽), unidentified cetaceans (□) and possible cetaceans (*) detected from aboard the NOAA Ship McArthur from July 30 through December 10, 1987, in the eastern tropical Pacific.

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