NOAA Technical Memorandum NMFS

JULY 1988

REPORT OF A MARINE MAMMAL SURVEY OF THE EASTERN TROPICAL PACIFIC ABOARD THE RESEARCH VESSEL *David Starr Jordan*, AUGUST 8-DECEMBER 10, 1987

File Copy

Rennie S. Holt
Stephanie N. Sexton

NOAA-TM-NMFS-SWFC-117

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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Rennie S. Holt
Stephanie N. Sexton
Southwest Fisheries Center
National Marine Fisheries Service, NOAA
La Jolla, California 92038

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U.S. DEPARTMENT OF COMMERCE
C. William Verity, Jr., Secretary
National Oceanic and Atmospheric Administration
William E. Evans, Under Secretary for Oceans and Atmosphere
National Marine Fisheries Service
James W. Brennan, Assistant Administrator for Fisheries

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Rennie S. Holt
and
Stephanie N. Sexton

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. In 1987, we conducted the second two surveys during the same period of time and used the same ships.

In this report, we describe the experimental procedures used during the surveys and we present summaries of the distance searched and marine mammals encountered from aboard the David Starr Jordan (Cruise 87-06 (210); SWFC Observer Cruise 1081). A separate report of the McArthur cruise has been published by Holt and Jackson (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. calibrate observers' estimates of dolphin school size with counts of school sizes obtained from photographs taken from a ship-based helicopter;

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

4. 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 David Starr Jordan, herein referred to as the Jordan, traversed predetermined tracklines in the ETP from August 8 through December 10, 1987 (Figure 1), with port calls in San Jose, Guatemala; Manzanillo, Mexico and Panama City, Panama. The itinerary of the ship included four segments or effort legs:

Leg 1.			
	Departed	San Diego	August 8, 1987
	Arrived	San Jose	August 28, 1987
Leg 2.			
	Departed	San Jose	September 2, 1987
	Arrived	Panama City	October 1, 1987
Leg 3.			
	Departed	Panama City	October 6, 1987
	Arrived	Manzanillo	November 4, 1987
Leg 4.			
	Departed	Manzanillo	November 9, 1987
	Arrived	San Diego	December 10, 1987

Scientific Personnel

Cruise Leaders	Legs
Jay Barlow, SWFC	1
Doug DeMaster, SWFC	2
Aleta Hohn, SWFC	3
Elizabeth Vetter, SWFC	4
Identification Specialists	
Robert Pitman, SWFC	1-2
Scott Sinclair, SWFC	1-2
Richard LeDuc, SWFC	3-4
Marc Webber, SWFC	3-4
Observers	
Sallie Beavers, SWFC	1-2
Carrie Fried, SWFC	1-2
William Irwin, SWFC	1-2

Keith Rittmaster, SWFC	1-2
Scott Benson, SWFC	3-4
Carla Bisbee, SWFC	3-4
Joe Raffetto, SWFC	3-4
Dave Skordal, SWFC	3-4

Photogrammetry Specialists

Wayne Perryman, NOAA Corps, SWFC	1
Hannah Bernard, SWFC	2,4
Mark Lowry, SWFC	3-4
Morgan Lynn, NOAA Corps, SWFC	1-3

Bird Survey and Oceanographic Specialists

Susan Chivers, SWFC	1
Julie Ellingson, NOAA R/V McArthur	3-4
Karen Bluth, Yale University	2-3
John Gill, Yale University	2-3
Larry O'Brien, SWFC	4
Victoria Thayer, SWFC	1-2
Gregg Thomas, Atl. Oceano. & Meter. Lab.	1-4

Helicopter Support

Carl Anderson, OAO	1,2,4
John Crona, OAO	3
Dave Gardner, OAO	2-3
Don Winters, NOAA Corps, OAO	1,4

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 Jordan, commissioned in 1964, is 52.1 m in length and 11.2 m in breadth, and has a 3.8 m draft. During the survey, 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]

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

binoculars and a variety of hand-held 7-15X binoculars. The 25X 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 sighting angles of the 25X binoculars; a measurement of the relative motion of the ship from a pitch-roll sensor; speed from the speed log (when it was functional); 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 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^{o} 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 transect 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. Two of the other four observers were 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 (1984).[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^{o} 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 their 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.

During suitable sea states (Beaufort states 0 - 4) and visibility conditions, a Hughes[1] 500D helicopter was used to photograph dolphin schools. The photographs will be used to

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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.

calibrate dolphin school size estimates made by shipboard observers. We used high resolution 5" format cameras with image motion compensation, which were designed by the Navy for low altitude reconnaissance. The cameras were forward motion compensated to eliminate loss of resolution caused by the movement of the aircraft. Analyses of the aerial photography data will be reported by Barlow et al. (In prep).

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.

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.

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

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

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 only for all dolphin schools containing at least 15 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, 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 code in Table 4.

During the entire survey, observers searched 13,761 km and detected 636 marine mammal sightings (Table 5). Dolphins were detected in 435 schools and whales were detected in 187 schools (14 schools contained both dolphins and whales). These included 9 species of dolphins and 14 species of whales.

While operating in the searching mode in the study area (Figure 1), observers searched 13,317 km and detected 389 dolphin schools within 11.1 km perpendicular distance of the trackline (Table 6). Searching effort was conducted during Beauforts 0 through 6 conditions, although, because Beaufort 6 seas were very rough, data collected during this condition were omitted from the analysis. During Beauforts 0 through 5, 13,260 km were searched and 389 dolphin schools were detected. Of the 389 dolphin schools, 263 were large schools (i.e., average school size was 15 or more animals). The rate of detecting large schools in the study area was 19.83 schools/1000 km searched (Table 6).

The Jordan conducted approximately 62% of its effort in the inshore area and only 1% of its effort in the south and west areas. Detection rates were much higher in the inshore area than in the west and south areas (Table 6).

Sea conditions in the study area were rough; only 20% of the searching effort was completed in calm seas (Table 6). However, 41% of all large schools were detected during calm seas and the rate of detecting schools during calm seas was almost three times the rate detected during rough seas.

Poor visibility conditions occurred only during 14% of the surveying effort during which 11% of the large schools were detected (Table 6). The rate of detecting schools during good conditions was slightly greater than the rate during poor conditions (20.53 and 15.57 schools/1000 km searched, respectively).

Because observers switched vessels at the end of leg 2, data were recorded for all 12 observers on each vessel. Observers spent approximately equal time searching (Table 6). However, the percent of all schools that were detected by the observers ranged from 3 to 14%. Consequently, rates of detecting dolphin schools also varied greatly (range of 2.87 to 11.83 schools/1000 km).

Both teams spent approximately equal time searching (Table 6). Team 1 had the highest detection rate (18.34 schools/1000 km).

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 Jordan. 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 slightly higher than the rate during poor visibility conditions. The rate was higher in the inshore area than in the south and west areas. Encounter rates for individual observers were variable.

ACKNOWLEDGEMENTS

Because of the work of many dedicated professionals, the cruise aboard the Jordan 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 Jordan who gave their continuous support, and L. Farrar (Jordan Port Captain) who provided liaison with ship support personnel and the scientists. We thank R. Schipper for his contribution to the CAST system. Critical logistical arrangements were completed by P. Stangl. Special efforts were provided in procurement by B. Engstrand and B. Watkins. Many people contributed to training the observers but A. Jackson, H. Bernard, R. Pitman, and P. Stangl provided valuable assistance. The manuscript benefited from critical reviews by Jean 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 David Starr Jordan during August 8 through December 10, 1987.

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	870808	17.59	67	22	05	03	02	3	172			6.16
01	02	870808	17.59	67	22	05	02	02	2	194	32 27 n	117 12 w	1.76
01	03	870808	17.59	22	05	67	02	02	2	194			6.45
01	04	870808	17.59	05	67	22	02	02	2	194			6.45
01	05	870808	17.59	05	67	22	02	03	2	194	32 14 n	117 14 w	0.88
02	01	870808	17.59	68	04	51	02	03	2	194	32 12 n	117 15 w	4.40
02	02	870808	17.59	51	68	04	03	03	2	194			10.56
02	03	870808	17.59	51	68	04	03	03	2	194	32 03 n	117 16 w	0.29
01	01	870809	18.52	51	04	68			3	190	30 19 n	117 49 w	10.19
01	02	870809	18.52	68	51	04			3	190			9.26
01	03	870809	18.52	04	68	51			3	190			4.01
02	01	870809	18.52	04	68	51			3	190	30 04 n	117 52 w	5.25
03	01	870809	18.52	22	05	67			3	190			6.17
03	02	870809	18.52	05	67	22			3	187			1.85
03	03	870809	18.52	67	22	05			3	187			6.17
03	04	870809	18.52	67	22	05			3	155			4.63
03	05	870809	18.52	22	05	67			3	155			6.17
03	06	870809	18.52	05	67	22			3	155			6.17
03	07	870809	18.52	67	22	05			2	155			3.70
03	08	870809	18.52	51	68	04			3	155	29 44 n	117 49 w	6.79
03	09	870809	18.52	51	68	04	11	01	3	155			3.09
04	01	870809	18.52	04	51	68	11	12	3	155	29 40 n	117 44 w	11.73
04	02	870809	18.52	68	04	51	12	12	3	155	29 36 n	117 44 w	12.35
04	03	870809	18.52	22	67	05	12	12	3	155			2.47
05	01	870809	18.52	22	67	05	12	12	3	155	29 26 n	117 38 w	3.40
05	02	870809	18.52	67	05	22	12	12	3	155			6.17
05	03	870809	18.52	05	22	67	12	12	3	155			7.10
05	04	870809	18.52	22	67	05	12	12	3	155	29 18 n	117 35 w	6.17
05	05	870809	18.52	67	05	22	12	01	3	155	29 14 n	117 33 w	1.85
05	06	870809	18.52	51	04	68	12	01	3	155			12.35
05	07	870809	18.52	68	51	04	12	01	3	155			6.79
05	08	870809	18.52	68	51	04	03	01	3	155	29 04 n	117 29 w	5.56
05	09	870809	18.52	04	68	51	03	02	3	155			12.35
05	10	870809	18.52	22	05	67	03	02	3	155	28 58 n	117 26 w	6.17
05	11	870809	18.52	05	67	22	03	02	3	155			2.78
05	12	870809	18.89	05	67	22	03	02	3	154	28 51 n	117 23 w	4.09
05	13	870809	18.89	67	22	05	04	02	3	154			5.67
05	14	870809	18.89	22	05	67	04	02	3	154	28 46 n	117 20 w	5.98
05	15	870809	19.08	05	67	22	04	02	3	154			3.50
05	16	870809	19.08	04	51	68	04	02	3	154	28 41 n	117 18 w	7.63
06	01	870809	19.08	04	51	68	04	02	3	154	28 37 n	117 16 w	5.40
06	02	870809	18.89	68	04	51	04	02	3	154			4.09
06	03	870809	19.08	68	04	51	04	02	3	153	28 31 n	117 14 w	3.50
06	04	870809	19.08	68	04	51	04	03	3	153			6.04
06	05	870809	18.71	51	68	04	04	03	2	153	28 26 n	117 12 w	9.35
06	06	870809	19.45	51	68	04			2	153	28 23 n	117 10 w	4.86

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
01	01	870810	17.96	67	05	22			2	154	26 49 n	116 19 w	5.99
01	02	870810	17.96	05	22	67			2	154			5.99
01	03	870810	17.96	22	67	05			2	154	26 42 n	116 16 w	6.29
01	04	870810	17.96	67	05	22			2	154			5.69
01	05	870810	17.96	05	22	67			2	154			5.69
01	06	870810	19.08	68	51	04			2	154	26 34 n	116 12 w	12.72
01	07	870810	19.08	04	68	51			2	154			12.72
01	08	870810	19.08	51	04	68			2	154			12.72
01	09	870810	18.89	22	67	05			2	154	26 15 n	116 03 w	6.30
01	10	870810	18.89	67	05	22			2	154			6.30
01	11	870810	18.89	05	22	67			2	154			6.30
01	12	870810	18.89	22	67	05			2	154	26 01 n	115 55 w	6.30
01	13	870810	19.45	67	05	22			2	154			6.48
01	14	870810	19.45	05	22	67			2	154			6.48
01	15	870810	19.45	51	68	04			2	154	25 55 n	115 52 w	11.67
01	16	870810	19.45	51	68	04	12	12	3	154			1.30
01	17	870810	19.45	04	51	68	12	12	3	154			9.72
01	18	870810	19.45	04	51	68	12	12	3	154	25 42 n	115 45 w	3.24
01	19	870810	19.45	68	04	51	01	12	3	154			6.16
02	01	870810	19.45	68	04	51	02	12	3	154	25 37 n	115 42 w	2.27
02	02	870810	19.45	22	67	05	02	12	3	154			6.48
02	03	870810	19.45	67	05	22	03	01	3	154			6.16
02	04	870810	19.45	05	22	67	03	01	3	154	25 29 n	115 38 w	6.48
02	05	870810	19.45	22	67	05	03	01	3	154	25 25 n	115 36 w	5.51
03	01	870810	19.45	67	05	22	03	01	3	154	25 20 n	115 33 w	3.24
03	02	870810	19.45	05	22	67	03	01	3	154			6.48
03	03	870810	19.45	51	04	68	03	01	3	154	25 19 n	115 31 w	9.72
03	04	870810	19.45	68	51	04	04	02	3	154	25 14 n	115 30 w	9.72
03	05	870810	19.45	04	68	51	04	02	3	154			10.05
03	06	870810	19.45	22	67	05	04	02	3	154	25 03 n	115 25 w	4.86
04	01	870810	14.82	67	05	22	04	02	3	154	24 58 n	115 22 w	3.95
04	02	870810	14.82	67	05	22	04	03	3	154			1.98
04	03	870810	14.82	05	22	67	04	03	3	154	24 53 n	115 20 w	4.94
04	04	870810	14.82	22	67	05	04	03	3	154			1.23
04	05	870810	19.45	22	67	05	04	03	3	154	24 54 n	115 18 w	5.51
04	06	870810	19.45	67	05	22	04	03	3	154			1.30
04	07	870810	19.45	67	05	22			3	154			1.30
01	01	870811	19.45	68	51	04	09	03	2	154	23 04 n	114 23 w	9.40
01	02	870811	18.89	04	68	51	09	03	2	154			9.76
02	01	870811	18.89	51	04	68	10	02	2	154	22 52 n	114 15 w	3.15
03	01	870811	18.89	51	04	68	10	02	2	154	22 49 n	114 14 w	1.89
04	01	870811	18.89	67	22	05	10	02	2	154	22 47 n	114 13 w	6.30
04	02	870811	18.89	22	05	67	10	02	2	154			6.61
04	03	870811	20.93	05	67	22	10	02	3	154			5.23
05	01	870811	20.93	67	22	05	10	02	3	154	22 33 n	114 06 w	6.98
05	02	870811	20.93	22	05	67	10	02	3	154			6.98
05	03	870811	20.93	68	04	51	10	01	3	154			3.14
06	01	870811	20.93	68	04	51	10	01	3	154	22 23 n	114 01 w	4.19
06	02	870811	20.93	51	68	04	10	01	3	154			5.23
07	01	870811	20.93	51	68	04	11	01	3	154	22 17 n	113 58 w	4.88
07	02	870811	20.93	04	51	68	11	01	3	154			6.28
07	03	870811	20.93	04	51	68	11	12	3	154			6.98

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	870811	20.93	22	67	05	12	12	3	154	22 07 n	113 54 w	6.98
07	05	870811	20.93	67	05	22	12	12	3	154			3.49
08	01	870811	19.45	05	22	67	02	12	3	154			2.27
08	02	870811	19.45	05	22	67	02	12	3	154	22 56 n	113 50 w	0.32
09	01	870811	19.45	22	67	05	03	12	3	154	21 51 n	113 46 w	4.54
09	02	870811	19.45	04	51	68	03	12	3	154	21 49 n	113 45 w	10.05
09	03	870811	19.45	04	51	68	03	01	2	154	21 43 n	113 42 w	0.65
10	01	870811	19.45	04	51	68	03	01	3	154			1.62
10	02	870811	19.45	68	04	51	03	01	3	154	21 41 n	113 42 w	3.57
11	01	870811	19.45	68	04	51	03	01	3	154	21 38 n	113 40 w	4.54
11	02	870811	19.45	51	68	04	03	01	3	154			1.62
12	01	870811	19.45	51	68	04	03	01	3	154	21 31 n	113 38 w	7.78
12	02	870811	19.45	05	22	67	04	02	3	154	21 27 n	113 36 w	6.48
12	03	870811	19.45	22	67	05	04	02	3	154			2.92
13	01	870811	19.45	22	67	05	04	02	3	154	21 00 n	113 27 w	0.97
13	02	870811	19.45	67	05	22	04	02	3	154			6.48
13	03	870811	19.45	05	22	67	04	02	3	154	21 21 n	113 27 w	6.48
13	04	870811	19.45	22	67	05	04	02	3	154			3.24
13	05	870811	19.45	04	51	68	04	02	2	154	21 17 n	113 26 w	1.94
14	01	870811	19.45	04	51	68	04	02	2	154	21 16 n	113 24 w	7.78
15	01	870811	19.45	68	04	51	04	03	2	154	21 03 n	113 26 w	5.51
16	01	870811	19.45	51	68	04			2	149	21 00 n	113 24 w	4.21
01	01	870812	18.52	22	05	67	10	03	2	138	19 19 n	112 25 w	1.54
02	01	870812	19.45	22	05	67	10	03	2	138	19 16 n	112 21 w	2.92
02	02	870812	19.45	05	67	22	10	03	2	138			2.27
03	01	870812	18.52	68	51	04	10	02	3	138	19 14 n	112 19 w	13.58
03	02	870812	18.52	04	51	68	10	02	3	138	19 08 n	112 13 w	0.62
04	01	870812	17.59	68	04	51	10	02	3	138	19 03 n	112 10 w	8.50
05	01	870812	18.52	67	22	05	10	01	3	154	18 58 n	112 05 w	6.79
05	02	870812	18.52	22	05	67	10	01	3	154			3.40
06	01	870812	19.08	05	67	22	10	12	3	154	18 52 n	112 02 w	6.99
06	02	870812	19.08	67	22	05	10	12	3	154			5.40
06	03	870812	19.08	51	04	68	11	12	3	154	18 46 n	111 59 w	12.72
06	04	870812	19.08	68	51	04	03	12	3	154			13.35
06	05	870812	19.08	04	68	51	03	12	3	154			11.13
07	01	870812	19.45	05	67	22	04	01	3	154	18 22 n	111 48 w	6.81
07	02	870812	19.45	67	22	05	04	01	3	154			6.48
07	03	870812	19.45	22	05	67	04	01	3	154			6.48
07	04	870812	19.45	05	67	22	04	01	3	154	18 13 n	111 44 w	2.59
07	05	870812	19.45	05	67	22	04	02	3	154			3.57
07	06	870812	19.45	67	22	05	04	02	3	154			4.54
07	07	870812	19.45	51	68	04	04	02	3	154	18 08 n	111 42 w	12.96
07	08	870812	19.45	04	51	68	04	02	3	154			6.48
07	09	870812	19.45	68	04	51	04	02	3	155	17 58 n	111 38 w	10.70
07	10	870812	19.45	22	05	67	04	02	3	155	17 53 n	111 36 w	6.48
07	11	870812	19.45	05	67	22	04	02	3	155			5.51
08	01	870812	19.82	67	22	05	04	03	3	155	17 44 n	111 31 w	4.62
09	01	870812	19.82	22	05	67	04	03	3	155	17 41 n	111 30 w	4.29
01	01	870813	19.45	51	68	04			2	156	15 54 n	110 40 w	3.57
01	02	870813	19.45	51	68	04	09	03	2	156			7.45
01	03	870813	19.45	04	51	68	09	03	3	156			12.96
01	04	870813	19.45	68	04	51	09	03	3	156			3.24

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	870813	19.45	68	04	51	09	03	3	156	15 36 n	110 33 w	2.59
02	02	870813	19.45	22	67	05	09	02	3	156			5.83
02	03	870813	19.45	67	05	22	09	02	3	156			6.48
02	04	870813	19.45	05	22	67	09	02	3	156			6.48
02	05	870813	19.45	22	67	05	09	02	3	156	15 25 n	110 28 w	1.94
03	01	870813	20.00	22	67	05	10	02	3	156	15 24 n	110 27 w	2.00
03	02	870813	20.00	67	05	22	10	02	3	156			6.67
03	03	870813	20.00	05	22	67	10	01	3	156	15 19 n	110 26 w	7.00
03	04	870813	20.00	51	04	68	10	01	3	156	15 14 n	110 24 w	13.33
03	05	870813	20.00	68	51	04	10	01	3	156			8.00
03	06	870813	20.00	68	51	04	10	01	4	156	15 06 n	110 20 w	5.33
03	07	870813	20.00	04	68	51	10	12	4	156			5.33
04	01	870813	19.45	04	68	51	10	12	4	156	14 57 n	110 15 w	4.54
04	02	870813	19.45	22	67	05	10	12	4	156	14 55 n	110 14 w	6.48
04	03	870813	19.45	67	05	22	12	12	4	156			6.48
04	04	870813	19.45	05	22	67	12	12	4	156			6.81
04	05	870813	19.45	22	67	05	12	12	4	156	14 45 n	110 10 w	6.48
04	06	870813	19.45	67	05	22	04	12	4	156			6.16
04	07	870813	19.45	05	22	67	04	12	4	156			6.81
04	08	870813	19.45	04	68	51	04	12	4	156	14 37 n	110 07 w	5.83
04	09	870813	19.26	04	68	51	04	12	4	148			7.06
04	10	870813	19.26	51	04	68	04	01	4	148			12.52
04	11	870813	19.26	68	51	04	04	01	3	148			12.84
04	12	870813	19.08	22	67	05			3	148	14 18 n	109 56 w	2.86
04	13	870813	19.08	22	67	05	04	02	3	148			3.50
04	14	870813	19.08	67	05	22	04	02	3	148			6.36
04	15	870813	19.08	05	22	67	04	02	3	148			6.36
04	16	870813	19.08	22	67	05	04	02	3	148	14 10 n	109 51 w	6.36
04	17	870813	18.71	67	05	22	04	02	3	148			3.43
04	18	870813	18.71	04	68	51	04	02	3	148	14 05 n	109 48 w	2.81
05	01	870813	18.71	51	04	68	04	03	3	148	13 59 n	109 49 w	4.05
06	01	870813	18.71	51	04	68	04	03	3	148	13 57 n	109 48 w	1.56
06	02	870813	18.71	68	51	04			3	148			4.05
01	01	870814	17.96	22	67	05			4	169	12 02 n	109 25 w	6.29
01	02	870814	17.96	67	05	22			4	169	11 56 n	109 25 w	1.80
01	03	870814	17.96	67	05	22			4	169			4.19
01	04	870814	17.96	05	22	67			4	169	11 54 n	109 24 w	5.99
01	05	870814	17.96	22	67	05			4	169			3.89
01	06	870814	17.96	22	67	05			4	169			2.10
01	07	870814	17.96	67	05	22	09	02	4	169			7.49
01	08	870814	17.96	68	04	51	09	02	4	169	11 45 n	109 23 w	2.40
01	09	870814	17.96	68	04	51			4	169			0.30
02	01	870814	17.96	68	04	51	09	02	5	169	11 40 n	109 22 w	1.50
02	02	870814	17.96	51	68	04	09	02	5	169			1.80
03	01	870814	18.52	51	68	04			4	169			1.54
03	02	870814	18.52	51	68	04			3	169	11 35 n	109 21 w	4.01
03	03	870814	18.52	51	68	04			4	169			2.78
03	04	870814	18.52	04	51	68			4	169			5.56
04	01	870814	18.52	22	05	67			4	172	11 18 n	109 21 w	6.79
04	02	870814	18.52	05	67	22			4	172			2.16
05	01	870814	18.52	05	67	22			5	172			3.70
05	02	870814	18.52	67	22	05			5	172	11 11 n	109 19 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
05	03	870814	18.52	22	05	67			5	172			5.56
05	04	870814	18.52	04	68	51			5	171	11 07 n	109 19 w	12.04
05	05	870814	18.52	51	04	68			5	171			4.32
05	06	870814	18.52	51	04	68			5	171	10 58 n	109 18 w	1.23
06	01	870814	18.52	68	51	04			5	171	10 52 n	109 17 w	8.64
06	02	870814	18.52	05	67	22			5	171	10 48 n	109 16 w	6.17
06	03	870814	18.52	67	22	05			5	171			6.17
06	04	870814	18.52	22	05	67			5	171			2.78
06	05	870814	18.52	22	05	67			5	176			3.70
06	06	870814	18.52	05	67	22			5	176	10 39 n	109 14 w	4.94
06	07	870814	18.52	67	22	05			5	176			6.17
06	08	870814	18.52	22	05	67			4	176			6.17
06	09	870814	18.52	68	51	04			4	176	10 28 n	109 13 w	9.88
01	01	870815	20.19	51	68	04			2	172	09 05 n	109 00 w	3.03
01	02	870815	20.19	51	68	04	09	03	2	172			9.42
01	03	870815	20.19	04	51	68	09	03	2	172			10.09
01	04	870815	20.19	04	51	68	09	02	3	172			3.36
01	05	870815	20.19	68	04	51	09	02	2	172			11.44
02	01	870815	20.19	05	22	67	10	02	3	129	08 40 n	109 00 w	3.70
03	01	870815	19.45	22	67	05	11	01	3	119	08 38 n	108 58 w	1.30
03	02	870815	19.45	22	67	05	07	01	3	263			5.51
03	03	870815	19.45	67	05	22	06	01	3	263			6.16
04	01	870815	18.52	68	51	04	06	12	3	263	08 39 n	109 11 w	10.49
04	02	870815	18.52	04	68	51	05	12	3	263	08 38 n	109 17 w	8.64
04	03	870815	18.52	05	22	67	04	12	3	263	08 38 n	109 20 w	0.93
05	01	870815	18.52	05	22	67	04	12	3	263	08 38 n	109 21 w	2.47
06	01	870815	18.52	22	67	05	01	12	3	259	08 43 n	109 30 w	7.41
06	02	870815	18.52	68	51	04	01	01	3	259	08 41 n	109 31 w	9.26
07	01	870815	18.52	68	51	04	01	01	3	259	08 40 n	109 36 w	2.16
07	02	870815	18.52	04	68	51	01	01	3	259			12.04
07	03	870815	18.52	51	04	68	01	02	3	259			12.35
07	04	870815	18.52	05	22	67	01	02	3	259			4.63
08	01	870815	18.15	22	67	05	01	02	3	259	08 37 n	109 53 w	6.35
08	02	870815	18.15	67	05	22	01	02	3	259			6.05
08	03	870815	18.15	05	22	67	01	02	3	259			7.26
08	04	870815	18.15	04	51	68	01	03	3	259	08 34 n	110 04 w	9.07
08	05	870815	18.15	68	04	51	01	03	3	259	08 33 n	110 10 w	7.56
08	06	870815	18.15	68	04	51	01	03	2	259			4.23
01	01	870816	18.71	05	22	67			1	257	08 11 n	111 55 w	6.24
01	02	870816	18.71	22	67	05	06	03	1	257			6.86
01	03	870816	18.71	67	05	22	06	03	1	257	08 10 n	112 02 w	6.24
01	04	870816	18.71	05	22	67	06	03	1	257			1.56
02	01	870816	18.71	05	22	67	06	03	1	257	08 10 n	112 06 w	1.25
02	02	870816	18.71	22	67	05	06	02	1	257			6.24
02	03	870816	18.71	68	04	51	06	02	1	257	08 08 n	112 11 w	12.47
03	01	870816	19.08	51	68	04	06	02	1	257	08 06 n	112 18 w	11.13
03	02	870816	19.08	04	51	68	06	01	1	257			12.72
03	03	870816	18.52	67	22	05	06	01	1	257	08 03 n	112 30 w	6.17
03	04	870816	18.52	22	05	67	06	01	1	257			6.17
03	05	870816	18.52	05	67	22	06	01	1	255			6.17
03	06	870816	18.52	67	22	05	06	12	1	255	08 01 n	112 39 w	6.17
03	07	870816	18.52	22	05	67	06	12	1	255			6.48

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	08	870816	18.52	05	67	22	06	12	1	255	07 59 n	112 47 w	0.31
04	01	870816	18.52	05	67	22	06	12	1	255			1.23
04	02	870816	18.52	05	67	22	06	12	1	255	07 59 n	112 49 w	2.16
04	03	870816	18.52	04	51	68	06	12	1	255	07 59 n	112 50 w	10.80
05	01	870816	18.52	68	04	51	02	12	1	255	07 54 n	112 57 w	3.40
06	01	870816	18.52	68	04	51	02	12	1	255	07 53 n	112 59 w	4.94
06	02	870816	18.52	51	68	04	02	12	1	255			6.17
07	01	870816	18.52	67	05	22	01	01	1	255	07 48 n	113 05 w	4.94
07	02	870816	18.52	67	05	22	01	01	1	270	07 46 n	113 08 w	1.23
07	03	870816	18.52	05	22	67	01	01	1	270			6.48
07	04	870816	18.52	22	67	05	01	01	1	270			6.17
07	05	870816	18.52	67	05	22	12	01	1	270	07 46 n	113 15 w	5.56
08	01	870816	19.45	51	04	68	12	02	1	270	07 42 n	113 21 w	6.48
08	02	870816	19.45	68	51	04	12	02	1	270	07 44 n	113 24 w	2.27
08	03	870816	17.22	68	51	04	12	02	1	272	07 44 n	113 24 w	2.58
08	04	870816	17.22	04	68	51	12	02	1	272	07 44 n	113 25 w	1.44
09	01	870816	18.52	05	22	67	12	03	1	272	07 42 n	113 28 w	6.17
09	02	870816	18.52	22	67	05	12	03	1	272			4.01
10	01	870816	18.52	67	05	22	12	03	1	272	07 42 n	113 35 w	4.32
01	01	870817	19.82	04	68	51			1	310	08 43 n	115 00 w	9.25
01	02	870817	19.82	51	04	68			2	310			6.28
01	03	870817	19.82	51	04	68	04	03	2	310			1.98
01	04	870817	19.82	51	04	68			2	310			1.65
01	05	870817	19.82	68	51	04	04	03	2	310			0.99
01	06	870817	19.82	68	51	04	04	03	2	310			5.61
02	01	870817	19.08	22	67	05			2	310	08 58 n	115 19 w	5.72
02	02	870817	19.08	22	67	05	04	02	2	310			0.64
02	03	870817	19.08	67	05	22			2	310			3.18
02	04	870817	19.08	67	05	22			2	310	09 02 n	115 23 w	3.18
02	05	870817	19.08	05	22	67	04	02	2	310			6.36
03	01	870817	19.08	04	68	51			2	310	09 10 n	115 32 w	8.27
03	02	870817	19.08	51	04	68	04	12	2	310			8.27
03	03	870817	19.08	51	04	68			2	310	09 16 n	115 39 w	3.82
04	01	870817	19.08	67	22	05	12	12	2	310	09 23 n	115 47 w	2.23
04	02	870817	19.08	67	22	05	12	12	3	310			3.18
04	03	870817	19.08	22	05	67	12	12	3	310			6.36
04	04	870817	19.08	05	67	22	12	12	3	310			6.36
04	05	870817	19.08	67	22	05	12	12	3	310	09 30 n	115 54 w	4.77
05	01	870817	19.08	51	04	68	11	01	2	310	09 35 n	115 57 w	9.54
05	02	870817	19.08	68	51	04			3	310			9.54
05	03	870817	19.08	68	51	04	11	01	3	310			1.91
05	04	870817	19.08	04	68	51	11	01	3	310			10.81
05	05	870817	20.19	22	05	67	11	02	3	310	09 49 n	116 11 w	6.73
05	06	870817	20.19	05	67	22	11	02	3	310			6.73
05	07	870817	20.19	67	22	05			3	310			6.73
05	08	870817	20.19	22	05	67	11	02	3	310	09 55 n	116 18 w	3.36
05	09	870817	20.19	22	05	67			4	310			0.67
06	01	870817	20.19	22	05	67			4	310			1.68
06	02	870817	20.19	68	51	04	11	02	4	310	09 59 n	116 23 w	6.73
01	01	870818	16.85	22	67	05			5	080	10 28 n	114 57 w	2.81
01	02	870818	16.85	22	67	05	12	03	5	080			4.49
01	03	870818	16.85	67	05	22	12	03	5	080	10 29 n	114 53 w	3.37

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	04	870818	16.85	67	05	22			5	080			0.84
01	05	870818	16.85	05	22	67			5	080			5.34
01	06	870818	16.85	04	68	51			6	080	10 31 n	114 49 w	2.53
01	07	870818	16.85	04	68	51			6	080			3.09
02	01	870818	18.52	04	51	68			4	088	10 40 n	114 01 w	15.43
02	02	870818	18.52	22	67	05			4	088	10 41 n	113 53 w	6.79
02	03	870818	17.96	67	05	22			4	091	10 42 n	113 49 w	5.99
02	04	870818	17.96	05	22	67			4	091			2.40
03	01	870818	17.96	68	04	51			4	091	10 47 n	113 52 w	1.50
03	02	870818	17.96	68	04	51			4	091			1.50
03	03	870818	17.96	68	04	51			4	091			3.59
03	04	870818	17.96	51	68	04			5	091			8.98
03	05	870818	17.96	04	51	68			5	091	10 48 n	113 41 w	3.89
03	06	870818	18.33	04	51	68			5	095	10 48 n	113 40 w	5.50
03	07	870818	18.33	22	67	05			4	095	10 46 n	113 37 w	7.33
03	08	870818	18.33	67	05	22			4	095	10 46 n	113 32 w	2.44
01	01	870819	18.52	68	51	04			2	081	10 52 n	111 40 w	1.85
02	01	870819	18.52	68	51	04			1	081	10 53 n	111 38 w	0.93
02	02	870819	18.52	04	68	51			1	081	10 53 n	111 38 w	6.17
02	03	870819	18.52	04	68	51	12	02	1	081			2.16
02	04	870819	18.52	04	68	51			1	081			0.93
02	05	870819	18.52	51	04	68			1	081	10 54 n	111 33 w	7.72
02	06	870819	18.52	51	04	68			1	081			1.54
02	07	870819	18.52	22	05	67			1	081	10 54 n	111 30 w	1.85
03	01	870819	18.52	22	05	67			1	081	10 55 n	111 23 w	5.25
03	02	870819	18.52	05	67	22			1	081	10 55 n	111 20 w	4.01
04	01	870819	18.52	67	22	05			1	081	10 54 n	111 16 w	3.40
05	01	870819	18.52	51	68	04			3	081	10 57 n	111 01 w	7.72
05	02	870819	18.52	04	51	68			3	081	10 57 n	110 56 w	6.79
06	01	870819	18.52	04	51	68			2	081	11 01 n	110 30 w	11.73
07	01	870819	18.52	68	04	51			2	083	11 00 n	110 24 w	2.47
08	01	870819	18.52	51	68	04			3	083	11 02 n	110 17 w	0.31
09	01	870819	18.71	51	68	04			2	083	11 03 n	110 15 w	4.36
09	02	870819	18.71	05	22	67			5	083	11 04 n	110 13 w	7.17
09	03	870819	18.71	22	67	05			5	083			5.92
09	04	870819	18.71	67	05	22			5	083	11 04 n	110 05 w	5.61
09	05	870819	18.71	67	05	22			5	084	11 05 n	110 03 w	0.62
09	06	870819	18.71	05	22	67			5	084			0.94
10	01	870819	18.52	51	04	68			5	084	11 09 n	110 02 w	1.54
10	02	870819	18.52	51	04	68			5	084			4.32
01	01	870820	19.63	05	22	67	12	03	3	086	11 20 n	108 07 w	6.54
01	02	870820	19.63	22	67	05	12	03	3	086	11 21 n	108 04 w	7.20
01	03	870820	19.63	67	05	22	12	03	3	086			4.91
01	04	870820	19.63	67	05	22	12	02	3	086			1.64
01	05	870820	19.63	05	22	67	12	02	3	086			6.54
01	06	870820	19.08	22	67	05	12	02	3	086	11 21 n	107 53 w	8.27
01	07	870820	19.08	68	51	04	12	02	3	086	11 22 n	107 47 w	2.54
02	01	870820	18.89	04	51	68	12	01	3	098	11 29 n	107 53 w	3.78
03	01	870820	18.89	22	05	67	12	01	3	099	11 29 n	107 49 w	6.93
03	02	870820	18.89	05	67	22	12	01	3	099	11 29 n	107 45 w	5.67
03	03	870820	18.89	67	22	05	12	01	3	099			6.30
03	04	870820	18.89	22	05	67	12	12	3	099			5.98

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	05	870820	18.89	05	67	22	12	12	3	099	11 28 n	107 35 w	6.61
03	06	870820	18.89	67	22	05	12	12	3	099			4.41
03	07	870820	18.89	04	68	51	12	12	3	099	11 27 n	107 30 w	13.22
03	08	870820	18.89	51	04	68	12	12	3	099			12.91
03	09	870820	18.89	68	51	04	06	01	3	099	11 25 n	107 15 w	11.33
03	10	870820	18.89	22	05	67	06	01	3	099	11 24 n	107 10 w	6.30
03	11	870820	18.89	05	67	22	06	01	3	099			6.30
03	12	870820	18.89	67	22	05	06	01	3	099			6.30
03	13	870820	18.89	22	05	67	06	01	3	099	11 23 n	106 59 w	6.30
03	14	870820	18.89	05	67	22	06	01	4	099			1.57
03	15	870820	18.89	05	67	22	08	02	4	041			1.89
03	16	870820	18.89	05	67	22	08	02	4	025	11 22 n	106 55 w	2.83
03	17	870820	18.89	67	22	05	08	02	4	025			6.30
03	18	870820	18.89	51	04	68	09	02	3	025	11 27 n	106 52 w	7.24
04	01	870820	18.89	68	51	04	09	02	4	025			5.67
04	02	870820	18.89	22	05	67	09	03	4	025	11 33 n	106 44 w	7.24
04	03	870820	18.89	05	67	22	09	03	4	025	11 38 n	106 42 w	5.67
04	04	870820	18.89	67	22	05	09	03	4	025			3.15
01	01	870821	20.00	04	68	51			3	037	13 07 n	105 34 w	5.00
02	01	870821	20.00	51	04	68	01	03	3	037			6.67
02	02	870821	20.00	51	04	68	01	02	3	037			3.33
02	03	870821	20.00	68	51	04	01	02	3	037			13.33
02	04	870821	20.00	22	67	05	01	02	3	037	13 19 n	105 20 w	7.33
02	05	870821	20.00	67	05	22	01	02	3	037			6.00
02	06	870821	20.00	05	22	67	01	02	3	037			6.67
02	07	870821	20.00	22	67	05	01	02	3	037	13 25 n	105 14 w	7.33
02	08	870821	20.00	67	05	22	01	01	3	037			6.00
02	09	870821	20.00	05	22	67	01	01	3	037			6.67
02	10	870821	20.00	04	51	68	01	01	3	037	13 33 n	105 07 w	13.67
02	11	870821	20.00	68	04	51	01	01	3	037			13.00
02	12	870821	20.00	51	68	04	01	12	3	037			13.33
02	13	870821	20.00	22	67	05	12	12	3	037	13 48 n	104 53 w	7.33
02	14	870821	20.00	67	05	22	09	12	3	037			3.67
03	01	870821	19.45	05	22	67	09	12	3	037			1.62
03	02	870821	19.45	05	22	67	09	12	4	037	13 54 n	104 48 w	5.19
03	03	870821	19.45	22	67	05	09	12	4	037			6.81
03	04	870821	19.45	67	05	22	08	12	4	037	13 58 n	104 44 w	6.48
03	05	870821	19.45	67	05	22	08	01	4	037			1.94
03	06	870821	19.45	68	51	04	08	01	4	037	14 02 n	104 41 w	1.94
04	01	870821	19.45	68	51	04	08	01	3	037	14 04 n	104 39 w	7.13
04	02	870821	19.45	04	68	51	08	01	3	037	14 08 n	104 36 w	5.83
05	01	870821	19.45	04	68	51	08	01	3	037	14 10 n	104 34 w	5.83
05	02	870821	19.45	51	04	68	08	02	3	037			6.48
06	01	870821	19.45	22	67	05	08	02	3	037	14 18 n	104 22 w	2.59
06	02	870821	18.52	22	67	05	08	02	3	037			4.01
06	03	870821	18.52	67	05	22	08	02	3	037			2.47
06	04	870821	19.45	67	05	22	08	02	3	034	14 21 n	104 19 w	3.89
06	05	870821	18.52	05	22	67	08	03	3	034			6.48
06	06	870821	19.45	04	68	51	08	03	3	034	14 25 n	104 15 w	6.81
01	01	870822	20.74	67	05	22			2	048	15 46 n	103 15 w	4.15
01	02	870822	20.74	67	05	22	01	03	2	048	15 49 n	103 12 w	1.04
01	03	870822	20.74	67	05	22	01	03	2	046			1.73

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	04	870822	20.74	05	22	67	01	03	2	046			7.26
01	05	870822	20.74	22	67	05	01	03	2	046	15 52 n	103 08 w	10.72
01	06	870822	19.45	68	04	51	01	02	2	046	15 55 n	103 03 w	12.96
01	07	870822	19.45	51	68	04	01	02	3	046	15 59 n	102 57 w	11.34
02	01	870822	19.45	67	05	22	02	01	3	032	16 09 n	102 52 w	5.19
03	01	870822	19.45	05	22	67	02	01	3	032	16 11 n	102 51 w	6.48
03	02	870822	19.45	22	67	05	02	01	3	032			6.81
03	03	870822	19.45	67	05	22	02	01	3	032			4.21
04	01	870822	19.45	51	04	68	02	12	3	050	16 25 n	102 43 w	7.13
04	02	870822	19.45	51	04	68	01	12	3	104			2.92
04	03	870822	19.45	51	04	68	01	12	3	149	16 26 n	102 37 w	1.30
05	01	870822	19.45	68	51	04	03	12	2	104	16 26 n	102 35 w	11.34
06	01	870822	19.45	04	68	51	04	12	2	104	16 23 n	102 28 w	0.97
07	01	870822	19.45	05	22	67	06	12	2	096	16 17 n	102 23 w	3.57
08	01	870822	20.74	22	67	05	06	01	2	096	16 18 n	102 19 w	6.91
08	02	870822	20.74	67	05	22	06	01	1	096			5.88
09	01	870822	20.74	04	51	05	06	02	1	096	16 17 n	102 09 w	6.22
10	01	870822	20.74	04	51	70	06	02	1	096	16 17 n	102 04 w	4.15
11	01	870822	20.74	05	67	22	06	03	2	096			6.91
11	02	870822	20.74	67	22	05	06	03	1	096	16 11 n	101 54 w	6.91
01	01	870823	18.89	68	51	04	11	03	3	104	16 00 n	101 04 w	8.50
01	02	870823	18.89	04	68	51	11	03	3	104			7.87
01	03	870823	18.89	51	04	68	11	03	3	102			7.56
01	04	870823	20.93	67	22	05	11	02	3	102	15 56 n	100 46 w	6.98
01	05	870823	20.93	22	05	67	12	02	3	102			5.93
01	06	870823	20.93	22	05	67	11	02	3	122			1.05
01	07	870823	20.93	05	67	22	11	02	3	122			6.63
01	08	870823	20.93	67	22	05	11	02	3	122	15 52 n	100 36 w	6.98
01	09	870823	20.93	22	05	67	11	02	3	122			7.67
01	10	870823	20.93	05	67	22	11	02	3	122			7.32
01	11	870823	20.93	04	51	68	11	01	3	122	15 45 n	100 26 w	5.23
01	12	870823	20.93	04	51	68	12	01	3	080			0.70
01	13	870823	20.93	04	51	68	02	01	3	030			2.09
02	01	870823	20.93	04	51	68	12	01	3	080	15 45 n	100 22 w	2.44
02	02	870823	20.93	68	04	51	12	01	3	080			13.95
02	03	870823	20.93	51	68	04	01	01	3	080			14.30
02	04	870823	20.93	67	22	05	01	12	3	080	15 47 n	100 05 w	6.63
02	05	870823	20.93	22	05	67	01	12	3	080			3.49
03	01	870823	20.93	51	04	68	04	12	3	103	15 48 n	099 55 w	13.95
03	02	870823	20.93	68	51	04	05	01	3	103	15 46 n	099 47 w	11.51
04	01	870823	22.41	04	68	51	05	01	3	103	15 45 n	099 38 w	2.61
05	01	870823	22.41	05	67	22	05	02	3	103	15 46 n	099 34 w	7.84
05	02	870823	22.41	67	22	05	05	02	3	103			7.47
05	03	870823	22.41	22	05	67	06	02	3	103	15 44 n	099 25 w	8.59
05	04	870823	22.41	05	67	22	06	02	3	103	15 43 n	099 23 w	2.61
06	01	870823	22.41	05	67	22	06	02	3	103			4.48
06	02	870823	22.41	68	51	04	06	02	3	103	15 39 n	099 18 w	18.30
06	03	870823	20.93	04	68	51	06	03	3	103			3.84
06	04	870823	20.93	04	68	51	05	03	3	115	15 37 n	099 08 w	1.74
01	01	870824	18.52	22	67	05	12	03	2	090	15 21 n	098 56 w	6.17
01	02	870824	18.52	67	05	22	12	03	2	090			1.85
01	03	870824	24.08	67	05	22	11	03	2	110	15 19 n	098 52 w	5.62

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
01	04	870824	24.08	05	22	67	11	03	2	110			8.03
01	05	870824	24.08	22	67	05	11	03	2	110	15 18 n	098 47 w	8.43
01	06	870824	24.08	67	05	22	11	02	2	110			3.21
01	07	870824	24.08	68	04	51	11	02	2	110	15 15 n	098 38 w	15.25
01	08	870824	24.08	51	68	04	11	02	2	110			16.05
02	01	870824	20.00	05	22	67	01	01	2	080	15 04 n	098 27 w	7.33
02	02	870824	20.00	22	67	05	01	01	2	080			5.00
02	03	870824	20.00	67	05	22	01	01	2	080	15 04 n	098 19 w	1.33
02	04	870824	20.00	67	05	22	01	01	2	055			2.33
03	01	870824	20.00	05	22	67	12	12	2	080	15 05 n	098 14 w	6.33
03	02	870824	20.00	22	67	05	12	12	2	080			1.33
04	01	870824	20.00	04	68	51	12	01	2	080	15 03 n	098 06 w	1.33
05	01	870824	19.26	04	68	15	12	12	2	080	15 02 n	098 04 w	4.17
05	02	870824	19.26	15	04	68	12	12	2	080	15 02 n	098 02 w	9.63
05	03	870824	19.26	68	15	04	12	12	2	080			9.63
05	04	870824	19.26	67	05	22	12	12	2	080	15 05 n	097 52 w	4.82
05	05	870824	19.26	67	05	22	05	12	3	080			1.61
05	06	870824	19.26	05	22	67	05	12	3	080			6.74
05	07	870824	19.26	22	67	05	06	12	3	080			0.32
06	01	870824	19.82	22	67	05	06	12	3	080	15 03 n	097 43 w	3.30
06	02	870824	19.82	67	05	22	06	01	2	080			5.94
06	03	870824	19.82	05	22	67	06	01	2	080			2.64
07	01	870824	18.52	04	51	68	06	02	2	080	15 11 n	097 25 w	0.31
08	01	870824	18.52	04	51	68	06	02	2	080	15 11 n	097 26 w	0.31
09	01	870824	18.52	22	67	05	07	03	2	080			2.47
09	02	870824	18.52	22	67	05	06	03	2	104	15 12 n	097 22 w	1.85
01	01	870825	19.08	04	68	51			2	123	15 10 n	097 14 w	2.86
01	02	870825	19.08	04	68	51	10	03	2	123	15 12 n	097 08 w	2.54
02	01	870825	19.08	04	68	51	10	03	2	123	15 10 n	097 06 w	0.95
03	01	870825	18.52	51	04	68	11	03	2	123	15 09 n	097 05 w	0.62
04	01	870825	18.52	51	04	68	11	03	2	123	15 08 n	097 05 w	4.01
05	01	870825	18.52	68	51	04	11	02	3	123	15 06 n	097 00 w	4.32
06	01	870825	18.52	22	67	05	11	02	2	123	15 03 n	096 59 w	4.63
07	01	870825	18.52	67	05	22	11	02	2	123	15 00 n	096 55 w	0.62
08	01	870825	19.26	05	22	67	11	02	3	123	14 54 n	096 53 w	2.25
09	01	870825	19.26	68	04	51	11	01	3	123	14 52 n	096 50 w	4.49
09	02	870825	19.26	68	04	51	12	01	3	090	14 51 n	096 48 w	8.35
09	03	870825	19.26	51	68	04	12	01	3	090			12.84
09	04	870825	19.26	04	51	68	12	12	3	090			6.42
10	01	870825	20.19	22	67	05	12	12	3	090	14 51 n	096 29 w	3.03
11	01	870825	20.19	67	05	22	12	12	3	090	14 51 n	096 25 w	2.69
12	01	870825	20.19	22	05	67	12	01	2	090	14 52 n	096 17 w	6.39
13	01	870825	20.19	51	68	04	06	12	1	090	14 49 n	096 14 w	5.38
14	01	870825	19.45	51	04	68	06	02	1	090	14 51 n	096 10 w	5.19
15	01	870825	19.45	05	67	22	06	02	1	090	14 51 n	096 04 w	4.21
15	02	870825	19.45	05	67	22	06	02	2	090			1.94
15	03	870825	19.45	67	22	05	06	02	2	090			6.48
15	04	870825	19.45	22	05	67	06	02	2	090	14 51 n	095 58 w	3.24
15	05	870825	19.45	22	05	67	06	02	3	090			4.86
15	06	870825	19.45	04	68	51	06	02	3	090	14 51 n	095 55 w	9.40
15	07	870825	19.45	51	04	68	06	03	4	090	14 51 n	095 49 w	3.24
01	01	870826	20.00	05	22	67	11	03	5	105	14 24 n	094 14 w	6.67

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	02	870826	20.00	22	67	05	11	03	5	105			5.00
01	03	870826	20.00	68	51	04	11	03	5	105	14 22 n	094 07 w	8.00
01	04	870826	20.00	68	51	04	11	03	5	130			5.33
01	05	870826	20.00	04	68	51	10	02	5	130			4.33
01	06	870826	20.00	04	68	51	10	02	4	130			9.67
01	07	870826	20.00	51	04	68	11	02	4	130			12.67
01	08	870826	20.00	22	05	67	11	02	4	130	14 09 n	093 48 w	6.67
01	09	870826	20.37	05	67	22	11	02	3	130			7.13
01	10	870826	20.37	67	22	05	12	02	3	090	14 05 n	093 42 w	6.45
01	11	870826	20.37	22	05	67	12	01	3	090	14 05 n	093 38 w	0.68
02	01	870826	20.37	22	05	67	12	01	3	090	14 05 n	093 37 w	0.68
02	02	870826	20.37	05	67	22	12	01	3	090			6.45
02	03	870826	20.37	67	22	05	12	01	3	090			7.47
02	04	870826	20.37	68	04	51	12	12	3	090	14 05 n	093 30 w	6.45
03	01	870826	20.37	51	68	04	01	12	2	090	14 02 n	093 25 w	4.75
04	01	870826	20.37	51	68	04			3	090	14 02 n	093 20 w	1.36
05	01	870826	20.37	51	68	04	02	12	3	090	14 02 n	093 19 w	1.36
05	02	870826	20.37	04	51	68	02	12	3	090			2.38
05	03	870826	20.37	04	51	68	12	12	4	090	14 01 n	093 16 w	11.20
05	04	870826	19.45	22	05	67			4	090	14 01 n	093 12 w	0.65
06	01	870826	19.45	22	05	67			4	090			1.94
06	02	870826	19.45	05	67	22			4	090	14 00 n	093 08 w	0.32
07	01	870826	19.45	05	67	22			4	090	14 00 n	093 06 w	4.86
08	01	870826	19.45	67	22	05			4	090	14 00 n	093 01 w	6.48
08	02	870826	19.45	22	05	67			4	090			6.48
08	03	870826	19.45	05	67	22			4	090			1.30
09	01	870826	19.63	04	51	68			4	090	14 01 n	092 51 w	10.47
09	02	870826	19.63	68	04	51	06	02	4	090	14 01 n	092 46 w	9.16
09	03	870826	19.63	51	68	04	06	02	4	090	14 01 n	092 40 w	10.14
09	04	870826	19.63	67	22	05	06	02	3	090	13 59 n	092 35 w	6.22
09	05	870826	19.63	22	05	67	06	02	3	090			0.65
10	01	870826	19.63	22	05	67	06	02	3	090	13 59 n	092 29 w	1.31
11	01	870826	19.63	22	05	67	06	02	3	090	13 59 n	092 29 w	0.65
12	01	870826	19.63	22	05	67	06	02	3	090			0.33
12	02	870826	19.63	05	67	22	06	03	3	090			2.62
12	03	870826	19.63	05	67	22	06	03	3	090			0.98
12	04	870826	19.63	05	67	22	06	03	2	090	13 59 n	092 24 w	0.65
12	05	870826	19.63	05	67	22	06	03	2	090			1.64
12	06	870826	19.63	05	67	22	06	03	2	090			0.98
12	07	870826	19.63	67	22	05	06	03	2	090			6.22
12	08	870826	19.63	22	05	67	06	03	3	090	14 00 n	092 17 w	7.20
01	01	870827	18.52	04	51	68			3	180	14 00 n	092 23 w	4.01
02	01	870827	18.52	22	67	05			3	180	13 52 n	092 23 w	7.10
02	02	870827	18.52	67	05	22			3	180			2.78
03	01	870827	18.52	05	22	67			3	180	13 43 n	092 28 w	1.54
04	01	870827	18.52	05	22	67			3	180	13 42 n	092 28 w	3.09
04	02	870827	18.52	22	67	05			3	180			6.17
04	03	870827	18.52	68	04	51			3	180	13 39 n	092 28 w	12.35
04	04	870827	18.52	51	68	04	09	01	3	180			12.35
04	05	870827	18.52	51	68	04			3	180			12.96
04	06	870827	18.52	67	05	22	10	12	3	180			5.56
04	07	870827	18.52	05	22	67	11	12	3	180	13 14 n	092 30 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
05	01	870827	18.89	22	67	05			3	180	13 11 n	092 31 w	6.93
05	02	870827	18.89	67	05	22	01	12	3	180			5.67
05	03	870827	18.89	05	22	67	01	12	3	180			6.30
05	04	870827	18.89	04	68	51	02	12	3	180	13 01 n	092 32 w	12.59
05	05	870827	18.89	51	04	68			3	180	12 53 n	092 34 w	4.41
05	06	870827	18.89	51	04	68			4	180	12 51 n	092 34 w	8.19
05	07	870827	18.89	68	51	04			5	155			8.19
05	08	870827	18.89	68	51	04			5	155	12 43 n	092 32 w	4.41
01	01	870828	18.52	68	04	51			5	060	12 48 n	092 15 w	11.73
01	02	870828	18.52	22	05	67			4	060	12 52 n	092 10 w	4.01
01	03	870828	18.52	05	67	22			4	060			5.86
01	04	870828	18.52	05	67	22			5	060			0.93
01	05	870828	18.52	67	22	05			5	060			6.17
01	06	870828	18.52	22	05	67			5	060	12 57 n	092 01 w	1.23
01	07	870828	18.52	22	05	67			5	060			0.93
02	01	870828	18.52	05	67	22			4	060	12 59 n	091 57 w	5.25
02	02	870828	18.52	67	22	05			4	060			4.32
02	03	870828	18.52	51	68	04			3	060	13 02 n	091 53 w	1.85
03	01	870828	18.52	51	68	04			2	060	13 04 n	091 51 w	4.32
03	02	870828	18.52	04	51	68			3	060			2.16
03	03	870828	18.52	04	51	68			3	060			10.19
03	04	870828	18.52	68	04	51			3	060			12.35
03	05	870828	18.52	22	05	67			3	060	13 11 n	091 36 w	6.17
03	06	870828	18.52	05	67	22			3	060			6.17
03	07	870828	18.52	67	22	05	07	12	3	060			3.70
04	01	870828	18.52	51	04	68	07	02	2	060			4.01
04	02	870828	18.52	68	51	04	07	02	2	060	13 12 n	091 21 w	4.01
04	03	870828	18.52	04	68	51	07	02	2	060			3.09
05	01	870828	18.52	22	05	67	07	02	2	060	13 14 n	091 15 w	3.40
06	01	870828	21.30	22	05	67	07	02	2	060	13 17 n	091 12 w	3.55
06	02	870828	21.30	05	67	22	07	02	2	060	13 17 n	091 11 w	7.10
06	03	870828	21.30	67	22	05	07	03	2	060	13 19 n	091 07 w	7.10
06	04	870828	21.30	22	05	67	07	03	2	060			8.16
06	05	870828	21.30	05	67	22	07	03	2	060	13 22 n	091 01 w	2.84
01	01	870905	19.63	51	68	04			5	275	13 44 n	090 59 w	8.83
01	02	870905	19.63	04	51	68			5	275			6.54
01	03	870905	20.19	22	67	05			6	275	13 45 n	091 08 w	6.06
01	04	870905	20.19	22	67	05			6	270			1.01
01	05	870905	20.19	67	05	22			6	270			6.39
01	06	870905	20.19	05	22	67			6	270			7.74
01	07	870905	20.19	22	67	05			6	270	13 46 n	091 20 w	6.73
01	08	870905	20.19	67	05	22			6	270			5.72
01	09	870905	20.19	05	22	67			6	270			6.73
01	10	870905	20.93	51	04	68			6	270	13 46 n	091 32 w	10.46
01	11	870905	20.93	68	51	04			5	270	13 46 n	091 37 w	10.46
01	12	870905	20.93	04	68	51			5	270	13 46 n	091 43 w	10.46
01	13	870905	20.93	22	67	05			5	270	13 47 n	091 48 w	7.67
01	14	870905	20.93	67	05	22			5	270			6.98
01	01	870906	19.45	51	68	04			4	273	13 54 n	093 49 w	5.19
02	01	870906	19.45	04	51	68			4	293	13 55 n	093 55 w	1.30
03	01	870906	19.63	04	51	68			4	273	13 55 n	093 58 w	2.62
04	01	870906	19.63	68	04	51			4	273	13 55 n	094 02 w	3.93

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
05	01	870906	19.63	68	04	51			4	273	13 56 n	094 03 w	3.27
05	02	870906	19.63	22	67	05			4	273			7.20
05	03	870906	19.63	67	05	22			4	273			3.27
06	01	870906	18.89	05	22	67			4	273	13 58 n	094 13 w	6.93
06	02	870906	18.89	22	67	05			4	273			6.61
06	03	870906	18.89	67	05	22			4	273			3.15
07	01	870906	18.52	51	04	68			4	273	14 00 n	094 26 w	12.35
07	02	870906	18.52	68	51	04	07	02	4	273			12.35
07	03	870906	18.52	04	68	51			4	273			12.35
07	04	870906	16.30	05	22	67			4	273	14 01 n	094 42 w	5.70
07	05	870906	16.30	22	67	05			4	273			5.70
07	06	870906	16.30	67	05	22			3	273			4.89
07	07	870906	16.30	05	22	67			3	273			5.43
07	08	870906	16.30	22	67	05			3	273			5.70
07	09	870906	16.30	67	05	22			3	275			5.16
07	10	870906	16.67	04	51	68			3	275	14 00 n	095 01 w	11.11
07	11	870906	16.67	68	04	51			3	275			4.44
07	12	870906	16.67	68	04	51			3	275			2.22
08	01	870906	16.67	04	68	12			3	280	14 00 n	095 16 w	6.39
08	02	870906	16.67	05	22	67	12	02	3	280			5.56
08	03	870906	16.67	22	67	05	12	02	3	280			3.61
08	04	870906	16.67	22	67	05			3	280			1.94
08	05	870906	16.67	67	05	22	12	02	3	280			5.56
08	06	870906	18.33	05	22	67			3	280	14 01 n	095 31 w	6.11
08	07	870906	18.33	22	67	05			3	280			3.06
08	08	870906	18.33	68	04	51	12	03	2	280			6.11
08	09	870906	18.33	51	68	04	12	03	2	280			6.11
08	10	870906	18.33	04	51	68	12	03	2	280			1.22
01	01	870907	20.00	67	22	05			2	272	14 16 n	097 48 w	6.67
01	02	870907	20.00	22	05	67			2	272			5.67
01	03	870907	20.00	22	05	67	06	03	2	272			2.00
01	04	870907	20.00	05	67	22	06	03	2	272			0.67
01	05	870907	20.00	05	67	22	06	03	3	272	14 17 n	097 56 w	2.33
01	06	870907	20.00	05	67	22			3	272			4.00
01	07	870907	20.00	67	22	05			3	272			4.00
01	08	870907	20.00	67	22	05	06	02	3	272			3.00
01	09	870907	20.00	22	05	67	06	02	3	272			3.33
01	10	870907	20.00	22	05	67	06	02	3	272			3.33
01	11	870907	19.63	04	51	68			3	272	14 18 n	098 07 w	13.09
01	12	870907	19.63	04	51	68			3	272			1.64
02	01	870907	19.63	51	68	04			3	272	14 19 n	098 24 w	9.82
02	02	870907	19.63	22	67	05			3	272			2.29
03	01	870907	19.63	05	67	22			3	272	14 18 n	098 32 w	7.53
03	02	870907	19.63	67	22	05			3	272			5.89
03	03	870907	19.63	22	05	67	06	12	3	272			6.87
03	04	870907	19.63	05	67	22	07	12	3	272			6.22
03	05	870907	19.63	67	22	05	07	12	3	272			6.54
03	06	870907	19.63	51	68	04	09	12	3	272	14 18 n	098 51 w	4.91
03	07	870907	19.63	51	68	04	09	12	3	276			8.18
03	08	870907	19.63	04	51	68	11	12	3	276			12.43
04	01	870907	19.63	68	04	51	11	12	3	276	14 18 n	099 02 w	10.80
04	02	870907	19.63	22	05	67	11	01	3	276			4.25

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	01	870907	17.59	05	67	22	12	02	2	275	14 22 n	099 16 w	2.05
05	02	870907	17.59	05	67	22	11	02	2	305			5.86
05	03	870907	17.59	04	51	68	11	02	2	305			7.92
06	01	870907	18.15	68	04	51	11	02	2	307	14 28 n	099 27 w	6.05
06	02	870907	18.15	51	68	04	11	02	3	307			3.63
06	03	870907	18.15	51	68	04	11	02	2	307			1.21
06	04	870907	18.15	67	22	05	11	02	2	307			5.75
06	05	870907	16.48	22	05	67	11	03	1	307	14 34 n	099 35 w	1.10
01	01	870908	18.15	51	68	12			2	270	14 37 n	100 58 w	1.21
01	02	870908	18.15	51	68	04			2	270			9.38
02	01	870908	18.89	04	51	68			2	262	14 44 n	101 05 w	2.83
03	01	870908	17.78	67	22	05	07	02	2	250	14 47 n	101 12 w	5.93
03	02	870908	17.78	22	05	67	07	02	2	250			5.93
03	03	870908	17.78	05	67	22	07	01	2	250			3.85
04	01	870908	17.78	05	67	22	07	01	1	250	14 44 n	101 22 w	0.89
05	01	870908	18.89	68	04	51	07	01	1	260	14 41 n	101 25 w	11.02
05	02	870908	18.89	51	68	04	08	12	1	260			5.04
06	01	870908	18.89	67	22	05	09	12	2	260	14 45 n	101 40 w	4.09
06	02	870908	18.89	22	05	67	10	12	2	260	14 45 n	101 43 w	4.72
07	01	870908	18.89	05	67	22	12	12	2	260	14 46 n	101 52 w	6.93
07	02	870908	18.89	67	22	05	12	12	1	213			1.89
08	01	870908	9.26	51	04	68	01	01	1	213	14 45 n	101 58 w	0.62
09	01	870908	18.52	68	51	04	01	01	1	213	14 41 n	102 00 w	0.00
10	01	870908	19.82	04	68	51	01	02	1	213	14 37 n	102 03 w	1.32
10	02	870908	19.82	04	68	51	01	02	1	210			4.95
10	03	870908	19.82	22	05	67	02	02	1	210	14 35 n	102 05 w	6.94
10	04	870908	19.82	05	67	22	02	02	1	210			6.61
10	05	870908	19.82	67	22	05	02	02	2	210			0.66
11	01	870908	18.71	22	05	67	02	02	2	210	14 27 n	102 09 w	6.24
11	02	870908	18.71	04	68	51	02	02	1	210	14 25 n	102 09 w	4.68
11	03	870908	18.71	04	68	51	02	02	1	213			6.86
01	01	870909	18.71	67	22	05			3	210	12 48 n	103 12 w	2.18
01	02	870909	18.71	67	22	05			3	210			0.31
02	01	870909	18.71	22	05	67			3	210	12 44 n	103 15 w	8.42
02	02	870909	18.71	04	68	51			3	210			11.85
02	03	870909	18.71	51	04	68			3	210			2.18
03	01	870909	18.52	68	51	04			4	210	12 05 n	103 39 w	10.49
03	02	870909	18.52	04	68	51			4	210			12.35
03	03	870909	18.52	51	04	68			4	210			6.17
03	04	870909	18.52	51	04	68			4	213			5.56
04	01	870909	18.89	05	22	67			4	213	11 44 n	103 56 w	7.24
04	02	870909	18.89	22	67	05			4	213			6.61
04	03	870909	18.89	67	05	22			4	213			2.20
05	01	870909	18.71	51	04	68			4	213	11 30 n	103 59 w	5.30
05	02	870909	18.71	68	51	04			4	213			6.24
05	03	870909	18.71	04	68	51			4	213			5.61
05	04	870909	18.89	05	22	67			4	213	11 24 n	104 06 w	7.87
05	05	870909	18.89	22	67	05			4	213			3.15
01	01	870912	15.93	68	04	51			3	266	05 59 n	108 39 w	6.37
01	02	870912	15.93	51	68	04			4	266			10.62
01	03	870912	15.93	04	51	68			4	266			2.65
01	04	870912	17.59	04	51	68			4	266			9.38

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	05	870912	17.59	22	67	05			4	266			5.57
01	06	870912	17.59	67	05	22			4	266			5.57
01	07	870912	17.59	05	22	67			4	266			6.74
01	08	870912	17.59	22	67	05			4	266			6.16
01	09	870912	17.59	67	05	22			4	266			4.69
01	10	870912	17.59	05	22	67			4	266			5.86
01	11	870912	17.59	51	68	04			4	266	05 58 n	109 16 w	11.73
01	12	870912	17.59	04	51	68			5	266			11.73
01	13	870912	17.59	68	04	51			4	266			11.73
01	14	870912	17.59	22	67	05			4	266			6.45
01	15	870912	17.59	67	05	22			4	266			5.28
01	16	870912	17.59	05	22	67	12	12	4	266			6.45
01	17	870912	17.59	22	67	05	12	12	4	266			6.16
01	18	870912	17.59	67	05	22			4	266			4.11
01	19	870912	17.59	67	05	22	12	01	4	266			0.88
01	20	870912	17.59	05	22	67	12	01	4	266			5.86
01	21	870912	17.59	04	51	68	12	01	4	266	05 57 n	109 55 w	11.73
01	22	870912	17.59	68	04	51	12	01	4	266			7.33
01	23	870912	17.59	68	04	51	12	01	5	266			4.40
01	24	870912	17.59	51	68	04			5	266			5.28
01	25	870912	17.59	51	68	04			5	263			6.45
01	26	870912	17.59	67	22	05	12	02	5	263			5.86
01	27	870912	17.59	22	05	67			5	263			6.16
01	28	870912	17.59	05	67	22			5	263			4.11
01	29	870912	17.59	05	67	22	12	02	5	263			1.47
01	30	870912	17.59	67	22	05			5	263			6.16
02	01	870912	17.96	68	04	51	12	03	5	263	05 57 n	110 34 w	5.99
01	01	870913	20.19	05	22	67			4	263	05 47 n	112 22 w	3.36
01	02	870913	20.19	05	22	67			4	263			3.36
01	03	870913	20.19	22	67	05	06	03	4	263			6.73
01	04	870913	20.19	67	05	22	06	03	4	263			3.36
01	05	870913	20.19	67	05	22			4	263			0.34
02	01	870913	20.00	05	22	67	06	02	5	263	05 45 n	112 32 w	6.67
02	02	870913	20.00	04	68	12	06	02	5	263			2.33
02	03	870913	20.00	04	68	51	06	02	5	263			11.00
02	04	870913	20.00	51	04	68	07	02	5	263			13.33
02	05	870913	20.00	68	51	04			5	263			13.33
02	06	870913	20.00	22	67	05	06	01	5	263			7.33
02	07	870913	20.00	67	05	22	06	01	5	263			6.00
02	08	870913	20.00	05	22	67	07	12	5	263			7.00
02	09	870913	20.00	22	67	05	07	12	5	263			7.00
02	10	870913	20.00	67	05	22	07	12	5	263			2.00
01	01	870914	12.96	51	68	04			4	170	03 43 n	113 13 w	1.08
01	02	870914	16.67	51	68	04	09	03	4	170	03 43 n	113 13 w	8.33
01	03	870914	16.67	04	51	68			4	170			8.33
01	04	870914	16.67	68	04	51	10	03	4	170			8.33
01	05	870914	16.67	67	22	05	09	02	4	170			5.56
01	06	870914	16.67	22	05	67	09	02	4	170			5.83
01	07	870914	16.67	05	67	22	09	02	4	170			2.78
01	08	870914	16.67	05	67	22	01	02	4	062			2.78
01	09	870914	16.67	67	22	05	01	02	4	062			5.28
01	10	870914	16.67	22	05	67	01	02	4	062			5.56

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	11	870914	16.67	05	67	22	01	01	4	062			5.56
01	12	870914	16.67	04	51	68	01	01	4	062	03 27 n	113 02 w	4.17
01	13	870914	16.67	04	51	68	01	01	5	062			6.94
01	14	870914	16.67	68	04	51	01	01	4	062			11.11
01	15	870914	16.67	51	68	04	01	01	4	062			5.00
01	16	870914	16.67	51	68	04	09	12	4	243			6.67
01	17	870914	15.37	67	22	05	12	12	4	243	03 33 n	112 51 w	5.12
01	18	870914	15.37	22	05	67	12	12	4	243			5.12
01	19	870914	15.37	05	67	22	12	12	5	243			4.87
01	20	870914	15.37	67	22	05	12	12	5	243			4.87
01	21	870914	15.37	22	05	67	01	12	5	243			3.07
01	22	870914	18.71	22	05	67	01	12	5	241	03 27 n	113 07 w	3.12
01	23	870914	18.71	05	67	22	01	01	5	241			0.94
01	24	870914	18.71	05	67	22	01	01	5	241			1.87
02	01	870914	18.71	68	51	04			4	241	03 24 n	113 12 w	9.98
02	02	870914	18.71	04	68	51			4	241			12.47
02	03	870914	18.71	51	04	68			4	241			7.79
02	04	870914	18.71	51	04	68			4	241			4.68
02	05	870914	20.00	67	22	05			4	241	03 14 n	113 31 w	4.33
02	06	870914	20.00	67	22	05			3	241			2.33
02	07	870914	20.00	22	05	67			3	241			5.33
02	08	870914	20.00	22	05	67			3	241			1.67
02	09	870914	20.00	05	67	22			3	241			6.67
02	10	870914	20.00	67	22	05			3	241			6.33
02	11	870914	20.00	22	05	67			3	241			3.33
02	12	870914	20.00	04	68	51			3	241			6.67
02	13	870914	20.00	51	04	68			3	241			6.67
02	14	870914	20.00	68	51	04			4	241			6.33
02	15	870914	20.00	68	04	67			3	241			3.67
01	01	870915	22.22	22	67	05			4	246	02 18 n	115 52 w	1.48
01	02	870915	22.22	22	67	05	07	03	4	246			6.30
01	03	870915	22.22	67	05	22	07	03	4	246			4.07
02	01	870915	22.22	05	22	67			4	244	02 16 n	116 06 w	4.82
02	02	870915	22.22	04	68	51			4	244			7.41
03	01	870915	22.22	51	04	57	07	02	4	244	02 11 n	116 18 w	9.26
03	02	870915	22.22	68	51	04	07	02	5	244			15.56
03	03	870915	22.22	22	67	05	07	01	5	244			1.48
03	04	870915	22.22	22	67	05	07	01	5	230			5.93
03	05	870915	22.22	67	05	22	07	01	5	230			6.67
03	06	870915	22.22	05	22	67			5	230			7.78
03	07	870915	22.22	22	67	05			5	230	02 03 n	116 38 w	7.41
03	08	870915	22.22	67	05	22			5	230			7.04
03	09	870915	22.22	05	22	67	07	12	5	230			7.41
03	10	870915	22.22	68	51	04	07	12	5	230			14.82
03	11	870915	22.22	04	68	51	12	12	4	230			14.82
03	12	870915	22.22	51	04	68	12	12	4	230			6.30
04	01	870915	20.93	51	04	68	02	12	4	230	01 47 n	117 04 w	0.35
05	01	870915	20.74	22	67	05	01	01	4	230	01 47 n	117 07 w	6.22
05	02	870915	20.74	67	05	22	01	01	4	230			6.57
05	03	870915	20.74	05	22	67	01	01	4	230			8.30
05	04	870915	20.74	22	67	05			4	230			6.57
05	05	870915	20.74	67	05	22			4	230			6.57

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	06	870915	20.74	05	22	67			4	230			6.22
05	07	870915	20.74	04	51	68			4	230			10.37
05	08	870915	20.74	68	04	51	01	02	4	230			1.38
05	09	870915	20.74	68	04	51	02	02	4	200			8.99
05	10	870915	20.74	51	68	04	02	02	4	200			2.77
06	01	870915	21.48	67	22	05			4	200	01 24 n	117 44 w	7.16
06	02	870915	21.48	22	05	67			4	200			7.16
06	03	870915	21.48	05	67	22			4	200			2.15
01	01	870916	16.85	51	04	68			3	080	01 13 n	118 04 w	6.46
01	02	870916	16.85	68	51	04			3	080			6.46
01	03	870916	12.96	04	68	51			3	080			1.94
02	01	870916	12.96	22	67	05			3	080	01 18 n	117 55 w	2.59
02	02	870916	12.96	22	67	05	12	02	3	080			2.16
02	03	870916	12.96	67	05	22	12	02	3	090			4.32
02	04	870916	12.96	05	22	67	11	02	4	110			4.54
02	05	870916	12.96	22	67	05	11	02	4	110			4.54
02	06	870916	12.96	67	05	22	11	02	4	110			4.97
02	07	870916	12.96	68	51	04			4	110			8.86
02	08	870916	12.96	04	68	51			4	083			4.54
02	09	870916	16.67	04	68	51	12	01	4	083	01 14 n	117 30 w	5.00
02	10	870916	16.67	51	04	68			4	083			9.72
02	11	870916	16.67	51	04	68	12	12	5	083			1.39
02	12	870916	16.67	67	22	05	12	12	5	083			5.56
02	13	870916	16.67	22	05	67	12	12	4	083			5.83
02	14	870916	16.67	05	67	22			5	083			5.28
02	15	870916	16.67	67	22	05			5	083			5.56
02	16	870916	16.67	22	05	67	06	12	5	083			4.17
02	17	870916	16.67	05	67	22	06	12	5	083			6.95
02	18	870916	15.74	68	04	51	06	12	5	083	01 21 n	117 07 w	9.71
02	19	870916	16.67	68	04	51			5	083	01 22 n	117 03 w	1.39
02	20	870916	16.67	51	68	04			4	083			2.22
02	21	870916	16.67	51	68	04			4	083			5.28
02	22	870916	16.67	51	68	04			5	083			3.06
02	23	870916	16.67	04	51	68	06	01	5	083			11.67
02	24	870916	15.56	67	22	05	06	01	5	083	01 25 n	116 50 w	4.67
02	25	870916	15.56	22	05	67	06	01	5	083			2.85
02	26	870916	15.56	22	05	67	06	01	5	085			2.59
02	27	870916	15.56	05	67	22	06	02	5	085			5.19
02	28	870916	15.56	67	22	05	06	02	5	085			4.93
02	29	870916	15.56	22	05	67	06	02	5	085			2.59
02	30	870916	15.56	04	68	51	06	02	4	085			7.78
02	31	870916	15.56	51	04	68			4	085			3.63
02	32	870916	15.56	51	04	68			4	105			4.15
01	01	870917	16.11	22	67	05			4	085	01 43 n	115 00 w	5.37
01	02	870917	16.11	67	05	22			4	085			2.69
01	03	870917	16.11	67	05	22	12	03	4	085			2.69
01	04	870917	16.11	05	22	67	12	03	4	085			5.37
01	05	870917	16.11	22	67	05	12	03	4	081			5.37
01	06	870917	16.11	68	51	04	12	03	4	081			11.01
01	07	870917	16.11	04	68	51	12	02	4	081			10.47
01	08	870917	16.11	51	04	68	12	02	4	081			5.10
02	01	870917	16.11	67	05	22	12	01	4	081	01 44 n	114 35 w	4.03

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	870917	16.11	67	05	22	01	01	4	070			0.27
02	03	870917	16.11	05	22	67	01	01	4	070			5.37
02	04	870917	16.11	22	67	05	01	01	4	070			3.22
03	01	870917	9.26	51	04	68	12	12	4	070	01 37 n	114 22 w	0.62
04	01	870917	9.26	51	04	68	12	12	4	070			3.24
04	02	870917	18.15	68	51	04	12	12	4	070	01 38 n	114 20 w	10.59
04	03	870917	18.15	04	68	51	12	12	4	070			10.28
04	04	870917	18.15	04	68	51			4	070			1.81
04	05	870917	17.78	67	05	22	06	12	4	070	01 45 n	114 08 w	5.93
04	06	870917	17.78	05	22	67	06	12	4	070			4.74
04	07	870917	17.78	05	22	67	06	01	4	070			2.07
04	08	870917	17.78	22	67	05	06	01	4	070			5.63
04	09	870917	17.78	67	05	22	06	01	4	070			5.33
04	10	870917	17.78	05	22	67			4	070			6.52
04	11	870917	17.78	22	67	05			4	070			5.33
04	12	870917	17.59	04	68	51			4	070	01 52 n	113 49 w	12.02
04	13	870917	17.59	51	04	68			4	070			7.04
04	14	870917	17.59	68	51	04			4	070			7.62
04	15	870917	17.59	67	05	22			4	070			5.57
04	16	870917	17.59	05	22	67			4	070			6.74
04	17	870917	17.59	22	67	05			4	070			5.57
01	01	870918	17.96	04	68	51	12	03	4	088	02 08 n	111 46 w	9.58
01	02	870918	17.96	51	04	68	12	03	4	088			8.98
01	03	870918	17.96	68	51	04	12	02	4	088			8.98
01	04	870918	17.96	22	67	05	12	02	4	088			6.29
01	05	870918	17.96	67	05	22	12	02	4	088			5.69
01	06	870918	17.96	05	22	67	12	02	4	088			4.19
01	07	870918	17.96	05	22	67	12	02	5	088			1.80
01	08	870918	17.96	22	67	05	12	02	5	088			6.29
01	09	870918	17.96	67	05	22	12	02	5	088			5.99
01	10	870918	17.96	05	22	67	12	02	5	088			5.69
01	11	870918	17.96	68	51	04	12	01	5	088			11.98
01	12	870918	17.96	04	68	51	12	01	5	088			2.69
02	01	870918	17.59	04	68	51	12	01	5	084	02 07 n	111 04 w	7.33
02	02	870918	17.59	51	04	68	12	12	5	084			11.73
02	03	870918	17.04	22	67	05	12	12	5	084	02 08 n	110 55 w	5.96
02	04	870918	17.04	67	05	22	12	12	5	084			5.40
02	05	870918	17.04	05	22	67	12	12	5	084			5.68
02	06	870918	17.04	22	67	05	12	12	5	084			5.96
02	07	870918	17.04	67	05	22	06	12	5	084			5.40
02	08	870918	17.04	05	22	67	06	12	4	084			5.68
02	09	870918	17.04	51	04	68	06	12	4	084			3.69
03	01	870918	17.04	51	04	68	06	12	4	088	02 11 n	110 34 w	5.40
03	02	870918	17.04	68	51	04	06	01	4	088			11.36
03	03	870918	17.04	04	68	51	06	01	4	088			7.10
01	01	870919	16.67	67	22	05			3	175	00 59 n	110 14 w	6.11
01	02	870919	16.67	22	05	67			3	175			6.11
01	03	870919	16.67	05	67	22	09	03	3	175			2.50
01	04	870919	16.67	05	67	22	09	02	4	175			2.78
01	05	870919	16.67	67	22	05	09	02	4	175			5.28
01	06	870919	19.63	22	05	67	09	02	4	175			6.54
01	07	870919	19.45	51	04	68	09	02	4	175	00 37 n	110 14 w	7.45

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	01	870919	19.45	68	51	04	09	02	4	175	00 27 n	110 19 w	0.97
03	01	870919	19.08	68	51	04	09	01	4	175	00 25 n	110 20 w	2.54
03	02	870919	19.08	04	68	51	09	01	4	175			2.86
04	01	870919	18.89	05	67	22	10	01	4	172	00 17 n	110 11 w	6.61
04	02	870919	18.89	67	22	05	10	01	4	172			5.98
04	03	870919	18.89	22	05	67	10	12	4	172			6.30
04	04	870919	18.89	68	04	51	12	12	4	172			12.59
04	05	870919	18.89	51	68	04	12	12	4	172			0.63
05	01	870919	16.67	05	67	22	03	01	4	172	00 04 s	110 12 w	4.17
05	02	870919	16.67	67	22	05	03	01	4	172			5.28
05	03	870919	16.67	22	05	67	03	01	4	172			5.56
05	04	870919	16.67	05	67	22	03	01	4	172			4.17
05	05	870919	16.67	05	67	22	03	02	4	172			1.67
05	06	870919	16.67	67	22	05	03	02	4	172			5.56
05	07	870919	16.67	22	05	67	03	02	4	172			5.28
05	08	870919	16.67	51	04	68			4	172			8.33
06	01	870919	18.71	05	67	22			3	155	00 38 s	110 19 w	3.74
01	01	870920	16.11	22	67	05	01	02	3	064	02 02 s	109 56 w	4.03
01	02	870920	16.11	67	05	22	01	02	3	064			4.83
01	03	870920	16.11	05	22	67	01	02	4	064			5.64
01	04	870920	16.11	22	67	05			4	064			5.10
01	05	870920	16.11	67	05	22			4	064			5.37
01	06	870920	16.11	05	22	67			4	064			4.03
01	07	870920	16.11	05	22	67			4	064			1.88
01	08	870920	16.11	68	04	51	01	01	4	064			4.57
01	09	870920	16.11	68	04	51	01	01	4	058			5.64
01	10	870920	16.11	51	68	04	01	01	4	058			6.18
01	11	870920	16.67	51	68	04	01	01	3	058	01 52 s	109 29 w	3.33
01	12	870920	16.67	51	68	04			3	058			1.39
01	13	870920	16.67	04	51	68			3	058			5.56
01	14	870920	16.67	04	51	68	12	12	3	058			4.17
02	01	870920	9.26	67	22	05	12	12	3	058	01 48 s	109 21 w	2.93
02	02	870920	16.67	67	05	22	12	12	4	058	01 47 s	109 19 w	5.56
02	03	870920	16.67	05	22	67	12	12	4	058			5.56
02	04	870920	16.67	22	67	05	12	12	4	058			5.56
02	05	870920	16.67	67	05	22	07	12	4	058			5.56
02	06	870920	16.67	05	22	67	07	12	4	058			5.56
02	07	870920	16.67	51	68	04	07	01	4	058			4.17
03	01	870920	16.85	51	68	04	07	01	4	058	01 39 s	109 02 w	5.34
03	02	870920	16.85	04	51	68	07	01	4	058			11.24
03	03	870920	16.85	68	04	51	07	02	4	058			1.12
03	04	870920	16.85	68	04	51	07	02	4	052			10.11
03	05	870920	16.85	22	67	05	07	02	4	052			5.62
03	06	870920	16.85	67	05	22	07	02	4	052			5.62
03	07	870920	16.85	05	22	67	07	02	4	052			5.62
03	08	870920	16.85	22	67	05	07	02	4	052	01 26 s	108 44 w	5.62
03	09	870920	16.85	67	05	22	07	02	4	052			2.81
03	10	870920	16.85	04	51	68	08	03	3	052			5.90
03	11	870920	16.85	68	04	51	07	03	3	052			5.34
03	12	870920	16.85	68	04	51			3	064			2.81
01	01	870921	15.19	05	67	22			2	065			3.04
01	02	870921	15.19	05	67	22			2	065	00 43 s	107 18 w	2.28

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	870921	15.19	67	22	05			2	065			6.33
01	04	870921	15.19	22	05	67			2	065			4.81
01	05	870921	15.19	05	67	22			3	065			5.32
01	06	870921	15.19	67	22	05	01	02	3	065			1.77
01	07	870921	15.19	67	22	05	01	02	3	067			3.29
01	08	870921	15.19	51	68	04	01	02	3	067			10.12
01	09	870921	15.19	04	51	68	01	02	3	067			10.38
01	10	870921	15.19	68	04	51	01	02	3	067			1.27
02	01	870921	15.74	68	04	51	01	01	3	067	00 28 s	106 57 w	2.36
03	01	870921	15.74	22	05	67	01	01	3	067	00 28 s	106 56 w	1.31
04	01	870921	15.74	05	67	22	01	01	3	067	00 30 s	106 53 w	5.51
05	01	870921	15.56	67	22	05	12	12	3	067	00 26 s	106 49 w	5.19
05	02	870921	15.56	22	05	67	12	12	3	067			3.89
05	03	870921	15.56	04	51	68	12	12	3	067			10.37
05	04	870921	15.56	68	04	51	07	12	3	067			2.59
05	05	870921	15.56	68	04	51	06	12	3	072			7.78
05	06	870921	15.56	51	68	04	06	12	3	072			5.44
06	01	870921	16.11	05	67	22	07	01	3	072	00 15 s	106 24 w	5.91
06	02	870921	16.11	67	22	05	07	01	3	072			5.37
06	03	870921	16.11	22	05	67	07	02	3	072			5.37
06	04	870921	16.11	05	67	22	07	02	3	072			2.69
06	05	870921	16.11	68	51	04	07	02	3	072			8.06
06	06	870921	16.67	04	68	51	07	02	2	072	00 08 s	106 12 w	8.33
06	07	870921	16.67	51	04	68	07	02	2	072			8.89
06	08	870921	16.67	67	22	05	07	03	2	072			5.00
06	09	870921	16.67	22	05	67	07	03	2	072			4.72
01	01	870922	18.15	70	68	04			3	074	00 40 n	104 26 w	8.47
02	01	870922	17.96	70	68	04	01	03	4	074	00 42 n	104 22 w	1.80
02	02	870922	17.96	70	68	04	01	03	4	064			2.40
02	03	870922	17.96	04	70	68	01	03	4	064			7.49
02	04	870922	17.96	04	70	68	01	02	4	064			4.49
02	05	870922	17.96	68	04	70	01	02	4	064			8.98
03	01	870922	17.78	68	04	70	01	02	4	064	00 47 n	104 08 w	0.59
04	01	870922	17.96	04	68	51	01	02	4	064	00 57 n	103 48 w	0.00
05	01	870922	17.96	70	04	68	12	12	4	064	01 02 n	103 48 w	2.99
05	02	870922	17.04	51	04	68	12	12	4	064	01 02 n	103 47 w	1.99
05	03	870922	17.04	67	22	05	12	12	4	064			5.11
05	04	870922	17.04	22	05	67	12	12	4	064			1.42
05	05	870922	17.04	22	05	67	12	12	4	068			4.54
05	06	870922	17.04	05	67	22	06	12	4	068			5.96
05	07	870922	17.04	67	22	05	06	12	4	068			5.68
05	08	870922	17.04	22	05	67	06	12	4	068			5.11
05	09	870922	17.04	05	67	22	06	.01	4	068			3.41
05	10	870922	17.04	05	67	22			4	068			2.27
06	01	870922	17.04	04	51	68			4	068	01 08 n	103 30 w	4.54
07	01	870922	17.04	68	04	51			4	068	01 09 n	103 22 w	9.37
07	02	870922	17.04	51	68	04			3	068	01 11 n	103 17 w	0.28
08	01	870922	17.04	51	68	04	06	02	3	068	01 12 n	103 16 w	5.68
08	02	870922	17.04	67	22	05			3	068			3.41
09	01	870922	17.04	22	05	67	07	02	3	064	01 14 n	103 07 w	5.68
09	02	870922	17.04	05	67	22	07	03	3	064			4.26
09	03	870922	17.04	68	04	51			3	064			4.54

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
10	01	870922	17.04	68	04	51			3	064	01 17 n	103 00 w	0.85
01	01	870923	17.96	04	22	67	12	03	2	064	02 03 n	101 36 w	2.40
01	02	870923	17.96	04	22	67			2	064			2.69
01	03	870923	17.96	22	67	12			2	064			6.89
01	04	870923	17.96	67	70	22			2	064			2.40
01	05	870923	17.96	67	70	22			3	064			2.69
01	06	870923	17.96	70	22	67			3	064			2.10
01	07	870923	17.96	70	22	67			3	064			2.40
02	01	870923	18.15	51	68	04	11	01	3	064	02 09 n	101 23 w	7.56
02	02	870923	18.15	51	68	04	02	02	4	034			1.21
02	03	870923	18.15	04	51	68	02	02	3	034			8.77
03	01	870923	18.15	68	04	51			3	064	02 17 n	101 14 w	2.12
03	02	870923	18.15	68	04	51			3	054			2.42
04	01	870923	18.15	68	04	51			3	064	02 18 n	101 12 w	2.12
04	02	870923	18.15	68	04	51			3	064			0.91
04	03	870923	18.15	67	22	70			3	064			0.91
05	01	870923	17.78	68	04	51			4	068	02 29 n	100 51 w	10.37
05	02	870923	17.78	51	68	04	12	12	4	068			5.93
06	01	870923	19.82	04	51	68	06	12	4	068	02 35 n	100 38 w	10.24
06	02	870923	19.82	70	22	67	06	12	4	068			3.96
07	01	870923	19.82	22	67	70	06	12	4	068	02 38 n	100 29 w	6.61
07	02	870923	19.82	67	70	22	06	01	3	068			6.61
07	03	870923	19.82	70	22	67	06	01	3	068			6.28
07	04	870923	19.82	22	67	70	06	01	3	068			6.94
07	05	870923	19.82	67	70	22	07	01	3	068			2.64
07	06	870923	17.96	04	68	51	07	02	3	068	02 44 n	100 20 w	11.38
07	07	870923	17.96	51	04	68			3	068			7.49
07	08	870923	17.96	68	51	04	07	02	3	068			8.08
07	09	870923	17.96	70	22	67	07	02	3	068			8.08
07	10	870923	17.96	22	67	70	07	03	3	068			5.39
01	01	870924	18.33	68	51	04			4	055	03 27 n	098 22 w	3.97
01	02	870924	18.33	68	51	04	01	03	4	055			6.72
01	03	870924	18.33	04	68	51	01	03	4	055			9.17
01	04	870924	18.33	51	04	68	01	03	4	055			9.47
01	05	870924	18.33	67	22	05	01	02	4	055			6.11
01	06	870924	18.33	22	05	67	01	02	4	055			6.42
01	07	870924	18.33	05	67	22	01	02	4	055			5.50
01	08	870924	18.33	67	22	05	01	02	4	055			6.11
01	09	870924	18.33	22	05	67	01	02	4	055			4.28
02	01	870924	18.33	51	68	04	01	01	4	060	03 47 n	097 54 w	4.28
03	01	870924	18.33	04	51	68	01	01	4	060	03 50 n	097 50 w	0.31
04	01	870924	18.33	68	04	51	02	12	4	055	03 55 n	097 43 w	5.50
04	02	870924	18.33	05	67	22	12	12	4	055			4.28
04	03	870924	18.33	05	67	22			4	055			1.53
04	04	870924	18.33	67	22	05			4	055			6.11
04	05	870924	18.33	22	05	67			4	055			7.03
04	06	870924	18.33	05	67	22	12	12	4	055			5.19
04	07	870924	18.33	67	22	05	07	12	4	055			6.11
04	08	870924	18.33	22	05	67	07	12	4	055			6.42
04	09	870924	18.33	68	04	51	07	12	4	055			13.45
04	10	870924	18.33	51	68	04	07	01	4	055			5.19
05	01	870924	18.89	05	67	22			4	055	04 20 n	097 12 w	6.30

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	870924	18.89	67	22	05			4	055			6.30
05	03	870924	18.89	22	05	67			4	055			6.61
05	04	870924	18.89	05	67	22			4	055			5.67
05	05	870924	19.63	04	51	68			4	055	04 28 n	096 59 w	8.18
05	06	870924	19.63	68	04	51			3	055			8.51
01	01	870925	20.74	67	22	05	01	03	3	063	05 28 n	095 06 w	6.91
01	02	870925	20.74	22	05	67	01	03	3	063			0.69
02	01	870925	21.11	05	67	22			3	063	05 33 n	094 58 w	6.33
03	01	870925	20.56	04	51	68			3	063	05 30 n	094 51 w	4.11
03	02	870925	20.56	04	51	68	02	02	3	063			6.85
03	03	870925	20.56	68	04	51			3	063			4.11
04	01	870925	20.56	68	04	51	01	02	3	058	05 34 n	094 43 w	4.80
04	02	870925	20.56	51	68	04	01	02	3	058			11.99
04	03	870925	20.56	67	22	05	01	01	2	058			2.06
04	04	870925	20.56	67	22	05			2	058			4.80
04	05	870925	20.56	22	05	67	01	01	2	058			4.11
05	01	870925	20.74	05	67	22			3	058	05 43 n	094 25 w	6.57
05	02	870925	20.74	67	22	05			3	058			6.91
05	03	870925	20.74	22	05	67			3	058			5.53
05	04	870925	21.30	51	68	04			3	058	05 49 n	094 16 w	2.84
05	05	870925	21.30	51	68	04			3	054			11.36
05	06	870925	21.30	04	51	68			3	054			2.84
06	01	870925	21.48	04	51	68	07	12	3	054	05 55 n	094 06 w	8.24
06	02	870925	21.48	68	04	51	06	12	3	054			14.32
06	03	870925	21.48	05	67	22	07	01	3	054			7.16
06	04	870925	21.48	67	22	05	07	01	3	054			7.16
06	05	870925	21.48	22	05	67	07	01	3	054			8.59
06	06	870925	21.48	05	67	22	07	02	3	054			3.22
07	01	870925	21.85	67	22	05	07	02	3	050	06 11 n	093 42 w	3.28
08	01	870925	21.48	67	22	05	07	02	3	050	06 12 n	093 47 w	0.72
09	01	870925	21.48	22	05	67	07	02	3	050	06 13 n	093 40 w	6.80
09	02	870925	21.48	04	68	51	07	02	3	050			10.74
09	03	870925	21.48	51	04	68			3	050			3.58
09	04	870925	21.48	51	04	68			3	050			7.16
09	05	870925	21.48	68	51	04			3	050			5.73
01	01	870926	20.37	68	04	51			2	058	07 24 n	091 37 w	0.68
02	01	870926	20.37	68	04	51			2	058	07 25 n	091 35 w	4.07
03	01	870926	18.15	51	68	04	01	03	2	058	07 28 n	091 33 w	6.65
03	02	870926	18.15	51	68	04	01	03	2	058			3.93
03	03	870926	18.15	04	51	68	01	02	3	058			4.54
04	01	870926	20.00	22	67	05	01	02	3	058	07 38 n	091 22 w	7.33
04	02	870926	20.00	67	05	22	01	02	3	058			2.67
05	01	870926	20.37	67	05	22	01	02	3	058	07 42 n	091 16 w	1.36
05	02	870926	20.37	05	22	67	01	02	3	058			2.38
06	01	870926	20.37	05	22	67	01	02	3	058	07 44 n	091 12 w	0.68
07	01	870926	20.37	22	67	05	01	01	3	058	07 45 n	091 10 w	2.04
07	02	870926	20.37	04	51	68	01	01	3	058			1.36
08	01	870926	20.37	04	51	68	02	01	3	058	07 47 n	091 08 w	6.45
09	01	870926	20.37	68	04	51	02	01	3	058	07 49 n	091 02 w	5.09
10	01	870926	20.37	68	04	51	02	01	3	058	07 46 n	091 08 w	3.40
10	02	870926	20.37	51	68	04	02	12	2	058	07 52 n	090 57 w	13.58
10	03	870926	20.37	67	22	05	12	12	2	058			6.79

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
10	04	870926	20.37	22	05	67	12	12	2	058			2.72
11	01	870926	21.67	05	67	22	06	01	2	058	08 00 n	090 42 w	5.42
11	02	870926	21.67	51	68	04	06	01	2	058			1.08
11	03	870926	21.67	51	68	04	06	01	2	057			13.36
12	01	870926	20.37	04	51	68	07	02	2	057	08 05 n	090 29 w	10.19
01	01	870927	22.59	22	67	05			1	150	08 50 n	088 51 w	3.77
02	01	870927	18.52	67	05	22	10	03	1	150	08 47 n	088 49 w	3.09
03	01	870927	18.52	67	05	22	10	03	1	150	08 45 n	088 46 w	0.93
03	02	870927	18.52	05	22	67	10	03	1	150			5.56
03	03	870927	18.52	22	67	05	10	02	1	150			3.09
03	04	870927	18.52	68	51	04	10	02	1	150			6.48
04	01	870927	17.78	04	68	51	10	02	1	150	08 33 n	088 39 w	5.04
05	01	870927	17.78	04	68	51	10	02	1	150	08 30 n	088 37 w	3.26
05	02	870927	17.78	51	04	68	10	02	1	150			6.52
05	03	870927	17.78	22	05	67	10	02	1	150			5.63
05	04	870927	17.78	05	67	22	10	01	1	150			6.22
06	01	870927	17.78	67	22	05	12	12	0	150	08 15 n	088 35 w	5.93
07	01	870927	18.89	51	04	68	12	12	1	150	08 12 n	088 31 w	0.31
08	01	870927	17.78	51	04	68			0	150	08 11 n	088 30 w	4.74
08	02	870927	17.78	68	51	04	12	12	0	150			6.22
08	03	870927	17.96	68	51	04	12	12	1	150	08 07 n	088 26 w	6.29
08	04	870927	17.96	04	68	51	02	12	1	150			8.08
09	01	870927	18.52	22	05	67	03	01	1	152	08 04 n	088 25 w	1.85
09	02	870927	18.52	22	05	67	03	01	1	152			1.85
10	01	870927	18.52	05	67	22			1	152	07 51 n	088 18 w	0.62
10	02	870927	18.52	05	67	22			2	152			4.63
10	03	870927	18.52	67	22	05			2	152			6.48
10	04	870927	18.52	22	05	67	03	02	2	152			3.09
10	05	870927	18.52	04	51	68	03	02	2	152			9.26
10	06	870927	18.52	68	04	51	03	02	1	152			1.54
11	01	870927	18.52	51	68	04	03	02	1	152	07 37 n	088 10 w	5.56
12	01	870927	18.52	51	68	04	03	02	1	152	07 33 n	088 08 w	1.54
12	02	870927	18.52	51	22	05	03	03	1	152			0.62
13	01	870927	18.52	67	22	05			1	152	07 30 n	088 06 w	2.78
13	02	870927	18.52	22	05	67			1	152			5.56
13	03	870927	18.52	22	05	67	04	03	1	152			1.54
13	04	870927	18.52	05	67	22			1	152			2.47
13	05	870927	18.52	05	67	22	04	03	1	152			0.62
01	01	870928	18.52	51	68	04	05	02	2	106	05 26 n	087 03 w	9.26
01	01	870929	21.11	67	22	05			3	106	05 01 n	085 02 w	7.74
01	02	870929	21.11	22	05	67			3	106			7.04
01	03	870929	21.11	05	67	22			3	106			6.69
01	04	870929	21.11	67	22	05			3	106			4.93
02	01	870929	21.11	51	68	04	12	02	4	106	04 56 n	084 46 w	8.80
02	02	870929	21.11	04	51	68			4	106			1.76
03	01	870929	20.37	04	51	68			4	106	04 54 n	084 38 w	5.43
03	02	870929	20.37	68	04	51			4	106			1.70
03	03	870929	20.37	68	04	51			5	106			6.45
03	04	870929	20.37	05	22	67			5	106			6.79
04	01	870929	20.19	22	67	05			5	112	04 53 n	084 30 w	6.73
04	02	870929	20.19	67	05	22			5	112			5.05
04	03	870929	20.19	67	05	22			5	112			1.68

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	870929	20.19	05	22	67			5	112			6.73
04	05	870929	20.19	04	51	68			4	112			13.46
04	06	870929	20.19	68	04	51			4	112			1.68
05	01	870929	19.63	68	04	51			4	112	04 49 n	084 13 w	1.64
06	01	870929	19.45	68	51	04			2	113	04 36 n	083 45 w	6.48
07	01	870929	19.45	12	68	51			2	113	04 32 n	083 36 w	2.92
07	02	870929	19.45	04	68	51			2	113			1.62
08	01	870929	19.45	05	22	67			2	113	04 30 n	083 32 w	7.13
08	02	870929	19.45	22	67	05			2	113			6.48
08	03	870929	19.45	67	05	22			2	113			0.35
08	04	870929	19.45	67	05	22			3	113			1.94
01	01	870930	21.30	67	22	05			3	028	04 08 n	081 29 w	0.35
01	02	870930	21.30	67	22	05			3	028			4.61
02	01	870930	20.74	04	68	70	02	01	3	028	04 13 n	081 26 w	13.14
02	02	870930	20.74	70	04	68	02	01	3	028			13.83
02	03	870930	20.74	68	70	04	02	12	4	028			4.15
02	04	870930	20.74	68	04	70	03	12	4	028			9.68
02	05	870930	20.74	22	05	67	12	12	4	028			6.91
02	06	870930	20.74	05	67	22			4	028			6.91
02	07	870930	20.74	67	22	05	12	12	3	028			6.91
02	08	870930	20.74	22	05	67	07	12	3	028			1.04
03	01	870930	20.00	05	67	22			3	028	04 43 n	081 03 w	4.67
04	01	870930	19.45	68	04	51			3	028	04 46 n	081 02 w	0.97
04	02	870930	19.45	68	04	51			3	037			7.78
04	03	870930	19.45	68	04	51			3	037			1.94
04	04	870930	19.45	51	68	04			3	037			7.45
04	05	870930	19.45	04	51	68			3	037			7.13
04	06	870930	19.45	67	22	05	08	02	3	037			1.94
05	01	870930	19.63	22	05	67			5	037	04 59 n	080 51 w	6.87
06	01	870930	19.63	67	05	22			5	037	05 00 n	080 48 w	2.62
07	01	870930	19.45	51	04	68			5	030	05 04 n	080 46 w	4.86
01	01	871001	19.82	67	22	05	02	03	3	030	06 49 n	079 46 w	1.32
02	01	871001	19.08	22	05	67			3	030	06 53 n	079 42 w	6.68
02	02	871001	19.08	05	67	22			3	030			5.09
02	03	871001	19.08	05	67	22	02	02	3	030			1.27
02	04	871001	19.08	67	22	05	02	02	3	030			6.99
02	05	871001	19.08	22	05	67	02	02	3	030			2.23
02	06	871001	19.08	68	51	04	02	02	3	030	07 02 n	079 36 w	12.72
02	07	871001	19.08	04	68	51			3	030			13.35
02	08	871001	19.08	51	04	68			3	030			2.54
02	09	871001	19.08	51	04	68	02	01	3	030			10.49
02	10	871001	19.08	05	67	22	02	01	3	030			6.04
02	11	871001	19.08	67	22	05	02	01	3	030			4.77
03	01	871001	19.08	22	05	67			4	030			7.31
03	02	871001	19.08	05	67	22	03	12	4	030	07 30 n	079 18 w	0.32
04	01	871001	19.08	05	67	22	03	12	4	030	07 31 n	079 17 w	3.50
04	02	871001	19.08	67	22	05	03	12	5	030			8.90
04	03	871001	19.08	51	04	68	12	12	5	030			3.18
04	04	871001	19.08	51	04	68			5	030			0.32
05	01	871001	18.52	51	68	04			4	030	07 46 n	079 10 w	8.33
05	02	871001	18.52	04	68	51			4	030			9.26
06	01	871001	19.08	22	05	67	07	01	4	030	07 55 n	079 05 w	6.36

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	02	871001	19.08	05	67	22	07	01	4	030			6.36
06	03	871001	17.78	67	22	05	07	01	4	030	08 01 n	079 01 w	2.37
06	04	871001	17.78	67	22	05	07	01	4	325			4.44
06	05	871001	17.78	22	05	67			3	325			3.56
06	06	871001	17.78	22	05	67			3	320			1.48
01	01	871009	18.52	55	63	56			2	114	08 43 n	079 04 w	4.32
01	02	871009	18.52	55	63	56			2	130			0.93
02	01	871009	18.52	55	63	56			2	130	08 41 n	079 59 w	2.78
03	01	871009	18.52	63	56	55			2	130	08 39 n	078 58 w	1.85
04	01	871009	18.52	63	56	55			2	130	08 37 n	078 57 w	3.70
04	02	871009	18.52	56	55	63			2	130			6.79
04	03	871009	18.52	56	55	63			2	126			4.63
04	04	871009	18.52	31	64	69			2	126	08 31 n	078 51 w	12.35
04	05	871009	18.52	64	69	31			3	126			10.49
05	01	871009	18.52	69	31	64			2	126	08 23 n	078 40 w	2.47
05	02	871009	18.52	69	31	64			2	180	08 22 n	078 39 w	7.72
05	03	871009	18.52	69	31	64			2	180			1.54
05	04	871009	18.52	55	63	56			2	180			4.01
05	05	871009	18.52	55	63	56			2	180			5.25
06	01	871009	18.52	63	56	55			2	180			3.40
06	02	871009	18.52	63	56	55			3	180	08 08 n	078 41 w	6.79
07	01	871009	18.52	63	56	55	11	12	1	180	08 03 n	078 42 w	0.62
07	02	871009	18.52	56	55	63	11	12	1	180			9.26
07	03	871009	18.52	56	55	63	12	12	1	180			3.09
07	04	871009	18.52	31	64	69	12	12	2	195	07 56 n	078 43 w	9.26
07	05	871009	18.52	31	64	69	12	12	1	195	07 50 n	078 44 w	3.40
07	06	871009	18.52	64	69	31			1	195			3.70
08	01	871009	18.52	64	69	31			1	195	07 45 n	078 46 w	2.47
08	02	871009	18.52	64	69	31			2	195	07 44 n	078 46 w	2.78
09	01	871009	18.52	55	63	56			2	195	07 37 n	078 48 w	4.01
10	01	871009	18.52	55	63	56			3	195	07 33 n	078 49 w	3.70
11	01	871009	18.52	63	56	55			3	195	07 29 n	078 50 w	3.09
11	02	871009	18.52	63	56	55			4	195			4.01
11	03	871009	18.52	63	56	55			4	195			3.09
11	04	871009	18.52	56	55	63			4	195	07 24 n	078 51 w	3.40
11	05	871009	18.52	56	55	63			4	195			6.17
11	06	871009	18.52	31	64	69			4	195	07 19 n	078 53 w	4.63
11	07	871009	18.52	31	64	69	02	02	4	195			4.63
11	08	871009	18.52	64	69	31	02	02	3	195	07 15 n	078 54 w	9.26
11	09	871009	18.52	69	31	64	02	02	3	195	07 10 n	078 56 w	9.26
11	10	871009	18.52	55	63	56			3	193	07 13 n	079 00 w	7.41
11	11	871009	18.52	55	63	56			3	193	07 08 n	079 01 w	0.31
01	01	871010	18.52	64	69	31			2	192	05 29 n	079 26 w	6.48
02	01	871010	18.52	69	31	64			3	192	05 28 n	079 27 w	10.19
02	02	871010	18.52	31	64	69			3	192			10.80
02	03	871010	18.52	56	55	63			3	192			8.03
02	04	871010	18.52	56	55	63			3	192			0.93
02	05	871010	17.59	56	55	63	09	02	3	192	05 13 n	079 31 w	3.23
02	06	871010	17.59	55	63	56	09	02	3	192			3.23
03	01	871010	17.78	55	63	56	09	01	3	192	05 06 n	079 30 w	0.30
03	02	871010	17.78	63	56	55	09	01	3	192			11.85
03	03	871010	17.59	64	69	31	09	01	2	192	04 59 n	079 32 w	11.73

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	871010	17.59	69	31	64	10	01	2	192			6.16
04	01	871010	17.78	56	55	63	12	12	2	192	04 44 n	079 39 w	10.96
05	01	871010	17.78	55	63	56	10	01	2	311	04 35 n	079 43 w	10.07
05	02	871010	17.78	64	69	31	10	01	3	311			10.67
05	03	871010	17.78	69	31	64	10	01	3	311			3.56
06	01	871010	18.52	69	31	64	10	01	3	311	04 47 n	079 53 w	1.54
06	02	871010	18.52	31	64	69	10	01	3	311			6.17
06	03	871010	18.52	31	64	69	10	02	3	311	04 50 n	079 56 w	9.26
06	04	871010	18.15	56	55	63	10	02	3	306	04 53 n	079 58 w	9.07
06	05	871010	18.15	55	63	56	10	02	3	306	04 56 n	080 02 w	6.96
01	01	871011	17.78	63	56	55			3	245	04 01 n	080 53 w	10.96
01	02	871011	17.78	56	55	63	07	03	3	245			6.22
01	03	871011	17.78	56	55	63	07	02	3	245			5.33
01	04	871011	17.78	55	63	56	07	02	3	245			1.19
01	05	871011	17.78	55	63	56	07	02	3	245	03 56 n	081 05 w	0.30
02	01	871011	18.15	55	63	56	07	02	3	245	03 54 n	081 04 w	6.35
02	02	871011	18.15	69	31	64	07	02	3	245	03 53 n	081 07 w	12.10
02	03	871011	18.15	31	64	69	07	01	3	245			9.07
03	01	871011	17.96	63	56	55	08	01	3	244	03 51 n	081 22 w	11.08
03	02	871011	17.96	56	55	63	08	01	3	244			8.08
03	03	871011	17.96	56	55	63	08	12	3	244			3.89
03	04	871011	17.96	55	63	56			3	244			1.50
03	05	871011	18.33	55	63	56			3	244	03 46 n	081 35 w	4.58
03	06	871011	18.33	55	63	56			2	244			4.58
03	07	871011	18.33	69	31	64			2	244	03 44 n	081 39 w	12.22
03	08	871011	18.33	31	64	69			2	244			12.22
03	09	871011	18.33	64	69	31			3	244			12.22
03	10	871011	18.52	63	56	55	12	01	3	244	03 35 n	081 57 w	12.35
03	11	871011	18.52	56	55	63	12	01	3	244			12.35
03	12	871011	18.52	55	63	56	12	02	3	244			3.09
03	13	871011	18.52	55	63	56	12	02	3	244	03 28 n	082 10 w	9.26
03	14	871011	18.33	69	31	64	12	02	3	244	03 25 n	082 15 w	4.28
04	01	871011	18.33	31	64	69	01	02	3	244	03 26 n	082 18 w	8.56
04	02	871011	18.33	64	69	31	01	02	3	244			5.50
05	01	871011	18.15	63	56	55			3	239	03 24 n	082 28 w	1.21
05	02	871011	18.15	63	56	55	12	03	3	239			1.21
05	03	871011	18.15	63	56	55			3	240	03 23 n	082 28 w	5.14
05	04	871011	18.15	63	56	55			3	240	03 23 n	082 29 w	0.30
01	01	871012	19.26	31	64	69			3	301	03 43 n	084 12 w	3.85
01	02	871012	19.08	31	64	69	05	03	3	301	03 44 n	084 13 w	6.36
01	03	871012	19.08	64	69	31	05	03	3	301			11.13
01	04	871012	19.08	69	31	64	05	02	3	301			1.91
01	05	871012	19.08	69	31	64	05	02	3	310	03 50 n	084 22 w	5.40
01	06	871012	19.08	69	31	64			3	310			3.82
01	07	871012	18.71	55	63	56			3	310	03 54 n	084 26 w	12.47
01	08	871012	18.71	63	56	55			3	310			4.36
01	09	871012	18.71	63	56	55			4	310	03 59 n	084 32 w	3.12
01	10	871012	18.71	63	56	55	05	02	3	310	04 00 n	084 33 w	1.56
01	11	871012	18.71	63	56	55	05	02	3	310			1.56
01	12	871012	18.71	63	56	55			2	310			1.87
01	13	871012	18.71	56	55	63	05	01	2	310			12.47
01	14	871012	18.71	31	64	69	05	01	2	310			13.72

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	15	871012	18.33	64	69	31	06	01	3	310	04 11 n	084 46 w	10.70
02	01	871012	18.15	69	31	64			3	310	04 18 n	084 50 w	2.72
03	01	871012	18.15	55	63	56			3	297	04 29 n	085 02 w	2.72
04	01	871012	18.15	31	64	69			3	297	04 35 n	085 11 w	6.96
05	01	871012	18.15	55	63	56	11	02	4	297	04 38 n	085 19 w	7.56
05	02	871012	18.15	55	63	56	11	02	3	297			1.51
05	03	871012	17.96	63	56	55	11	02	3	297	04 41 n	085 23 w	8.98
05	04	871012	18.15	56	55	63	11	02	3	297	04 43 n	085 26 w	7.86
06	01	871012	17.78	31	64	69			3	296	04 46 n	085 32 w	1.19
07	01	871012	17.41	64	69	31	11	03	3	294	04 49 n	085 34 w	4.06
07	02	871012	17.04	64	69	31	11	03	3	294	04 50 n	085 36 w	0.28
01	01	871013	18.52	56	55	63	09	01	2	348	05 36 n	087 04 w	3.09
02	01	871013	18.15	55	63	56	09	01	2	348	05 40 n	087 03 w	5.14
03	01	871013	18.52	64	69	31	09	02	2	346	05 41 n	087 04 w	1.54
01	01	871014	19.63	69	31	64			2	347	07 31 n	087 27 w	4.25
01	02	871014	19.63	69	31	64	03	03	2	347	07 33 n	087 28 w	5.56
02	01	871014	21.11	31	64	69			1	347	07 41 n	087 30 w	3.52
02	02	871014	21.11	31	64	69	03	03	1	347	07 43 n	087 30 w	5.28
02	03	871014	21.11	64	69	31	03	02	1	347			5.28
02	04	871014	21.11	63	56	55	04	02	1	347	07 48 n	087 32 w	4.93
03	01	871014	20.00	56	55	63			1	345	07 51 n	087 30 w	6.00
04	01	871014	18.15	69	31	64			1	345	07 52 n	087 33 w	4.54
04	02	871014	18.15	69	31	64			2	345	07 55 n	087 34 w	6.05
04	03	871014	18.15	31	64	69			1	345			11.19
04	04	871014	18.15	64	69	31	05	01	1	345			2.72
05	01	871014	21.11	64	69	31	05	12	1	345	08 10 n	087 38 w	5.28
05	02	871014	21.11	63	56	55	05	12	1	345	08 13 n	087 38 w	14.08
06	01	871014	20.56	56	55	63	06	12	1	345	08 20 n	087 40 w	11.31
06	02	871014	20.56	56	55	63			1	345			1.03
06	03	871014	20.56	55	63	56			2	345			2.40
06	04	871014	19.82	55	63	56	08	12	3	345	08 28 n	087 42 w	9.25
06	05	871014	19.82	55	63	56			3	345			1.65
06	06	871014	19.82	69	31	64			3	224	08 34 n	087 43 w	4.62
06	07	871014	19.82	69	31	64	01	01	3	224			5.28
06	08	871014	17.78	69	31	64	01	01	3	224	08 29 n	087 47 w	2.96
06	09	871014	17.78	31	64	69	01	01	3	224			2.07
07	01	871014	17.78	64	69	31	01	01	3	224	08 26 n	087 51 w	10.07
07	02	871014	17.96	63	56	55	01	02	3	224	08 24 n	087 53 w	8.98
07	03	871014	17.96	56	55	63	01	02	3	224	08 20 n	087 57 w	1.50
07	04	871014	17.96	56	55	63	01	02	3	224			7.49
07	05	871014	17.96	55	63	56			2	224	08 17 n	088 01 w	1.20
07	06	871014	17.96	55	63	56			1	224			7.78
07	07	871014	17.96	69	31	64			2	224	08 14 n	088 04 w	2.99
08	01	871014	17.96	31	64	69			2	224	08 09 n	088 07 w	6.59
01	01	871015	17.78	55	63	56			3	220	06 58 n	089 28 w	10.37
01	02	871015	17.78	63	56	55			3	220			4.15
02	01	871015	17.78	56	55	63			3	220	06 51 n	089 35 w	0.89
03	01	871015	17.41	55	63	56			4	212	06 30 n	089 51 w	2.61
03	02	871015	17.41	55	63	56	09	01	4	212			3.77
03	03	871015	17.41	55	63	56	09	01	4	212	06 26 n	089 53 w	0.29
04	01	871015	17.41	63	56	55	10	01	4	212	06 23 n	089 55 w	5.80
04	02	871015	17.41	56	55	63	10	01	4	212			4.06

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	01	871015	16.67	31	64	69			4	220	06 19 n	089 59 w	8.33
05	02	871015	16.67	64	69	31			4	220	06 16 n	090 01 w	5.83
05	03	871015	16.67	64	69	31	11	12	4	220			2.50
05	04	871015	16.67	69	31	64			4	220	06 13 n	090 04 w	2.78
05	05	871015	16.67	69	31	64	12	01	5	220			1.39
05	06	871015	16.67	69	31	64	12	01	5	220	06 10 n	090 06 w	0.28
01	01	871016	19.45	64	69	31			4	019	05 54 n	091 24 w	6.81
01	02	871016	19.45	64	69	31			4	019			4.21
01	03	871016	19.45	69	31	64			4	019			3.89
01	04	871016	19.45	69	31	64			4	019			5.83
01	05	871016	19.45	56	55	63			4	019	06 03 n	091 18 w	12.96
01	06	871016	19.45	55	63	56			4	019			3.89
02	01	871016	17.78	64	69	31			3	010	06 35 n	091 05 w	6.82
02	02	871016	17.78	56	55	63			3	010			1.48
02	03	871016	17.78	56	55	63			3	010			10.37
02	04	871016	17.78	55	63	56			3	010			5.93
02	05	871016	17.96	55	63	56			3	010	06 47 n	091 01 w	5.99
02	06	871016	17.96	63	56	55			3	010			7.78
02	07	871016	17.96	63	56	55			3	010			4.19
03	01	871016	17.96	64	69	31			3	015	07 06 n	090 56 w	7.49
03	02	871016	17.96	69	31	64			3	015			7.49
03	03	871016	17.96	31	64	69			3	015	07 15 n	090 53 w	0.60
04	01	871016	19.08	56	55	63			3	015	07 20 n	090 50 w	7.31
04	02	871016	19.08	55	63	56			3	015			4.13
05	01	871016	18.89	63	56	55			3	015	07 28 n	090 47 w	2.52
05	02	871016	18.89	63	56	55			3	015			2.20
06	01	871016	18.52	64	69	31			3	015	07 35 n	090 47 w	13.27
01	01	871017	17.22	63	56	55			2	016	09 14 n	090 13 w	4.02
01	02	871017	17.22	63	56	55	03	03	2	016	09 16 n	090 13 w	2.87
01	03	871017	17.22	56	55	63	03	03	2	016			4.02
01	04	871017	17.22	55	63	56	03	03	3	016			9.76
01	05	871017	17.22	69	31	64	03	02	3	016	09 25 n	090 10 w	4.31
02	01	871017	18.15	31	64	69	03	02	3	015	09 29 n	090 06 w	3.93
03	01	871017	17.41	64	69	31	03	02	2	015	09 32 n	090 05 w	7.54
04	01	871017	17.78	63	56	55	03	01	2	015	09 37 n	090 06 w	4.44
05	01	871017	17.78	56	55	63	03	01	2	030	09 46 n	090 09 w	7.41
05	02	871017	17.78	56	55	63	03	12	2	030			2.37
06	01	871017	17.22	69	31	64	12	12	2	030	09 49 n	090 08 w	4.31
07	01	871017	17.22	31	64	69	12	12	2	033	09 54 n	090 06 w	0.57
08	01	871017	17.22	63	56	55	12	01	2	033	09 57 n	090 03 w	11.20
08	02	871017	17.22	56	55	63	07	01	2	033			7.75
08	03	871017	9.26	56	55	63	07	01	2	033	10 05 n	089 58 w	0.46
09	01	871017	17.22	55	63	56	07	01	3	027	10 05 n	089 58 w	2.01
10	01	871017	17.22	55	63	56	07	02	3	027	10 06 n	089 58 w	2.87
10	02	871017	16.85	69	31	64	07	02	3	027	10 07 n	089 57 w	7.02
01	01	871018	20.19	31	64	69			2	218	08 58 n	091 14 w	0.67
02	01	871018	19.45	64	69	31	08	03	2	218	08 54 n	091 16 w	4.86
02	02	871018	19.45	64	69	31			2	218			2.92
03	01	871018	19.26	55	63	56	08	02	2	218	08 49 n	091 17 w	10.27
03	02	871018	19.26	63	56	55	08	02	2	218			4.82
04	01	871018	19.26	56	55	63	08	01	2	218	08 39 n	091 23 w	3.21
04	02	871018	19.26	31	64	69	08	01	3	218			11.24

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	01	871018	19.26	64	69	31	09	01	3	218	08 31 n	091 32 w	8.99
05	02	871018	19.26	69	31	64	09	01	3	218	08 27 n	091 35 w	0.32
06	01	871018	19.26	69	31	64	09	12	3	218	08 26 n	091 37 w	3.21
06	02	871018	19.26	55	63	56	09	12	2	218	08 25 n	091 37 w	9.63
07	01	871018	19.45	63	56	55	11	01	2	218	08 19 n	091 39 w	11.34
08	01	871018	19.45	31	64	69	01	01	2	218	08 10 n	091 52 w	5.19
09	01	871018	19.45	31	64	69	01	01	2	218	08 05 n	091 51 w	1.94
10	01	871018	18.71	64	69	31	01	01	2	224	08 04 n	091 52 w	3.43
11	01	871018	20.56	55	63	56	01	02	2	224	07 54 n	091 58 w	4.45
12	01	871018	20.56	63	56	55	01	02	2	227	07 50 n	092 02 w	5.48
13	01	871018	19.26	31	64	69	01	03	2	227	07 52 n	092 12 w	5.46
13	02	871018	19.82	31	64	69	01	03	2	227	07 50 n	092 16 w	0.33
01	01	871019	18.15	64	69	31			3	222	06 15 n	093 42 w	8.77
01	02	871019	17.78	69	31	64			3	222	06 12 n	093 45 w	5.93
01	03	871019	17.78	56	55	63			3	222	06 09 n	093 48 w	11.85
01	04	871019	17.78	55	63	56			3	222			11.85
01	05	871019	17.78	63	56	55			4	222			5.04
02	01	871019	17.96	64	69	31			5	222	05 53 n	094 03 w	8.38
02	02	871019	17.96	64	69	31			5	222	05 49 n	094 06 w	0.30
01	01	871020	17.59	69	31	64			5	225	04 01 n	095 47 w	8.80
01	02	871020	17.59	63	56	55			5	225	03 57 n	095 52 w	3.52
01	03	871020	17.59	63	56	55	08	03	5	225			3.81
01	04	871020	17.59	63	56	55	08	02	5	225			4.40
01	05	871020	17.59	56	55	63	08	02	5	225			11.73
01	06	871020	17.59	55	63	56	08	02	5	225			4.11
01	07	871020	17.59	55	63	56			5	225	03 47 n	096 01 w	2.35
01	08	871020	17.59	55	63	56	08	02	5	225			0.88
01	09	871020	17.59	55	63	56			5	225			4.40
01	10	871020	17.59	69	31	64			5	225	03 44 n	096 04 w	1.76
01	11	871020	17.59	69	31	64	03	02	5	015	03 44 n	096 04 w	9.97
01	12	871020	17.59	31	64	69	03	02	5	015			2.93
02	01	871020	18.33	31	64	69			5	015	03 53 n	096 02 w	7.64
02	02	871020	18.33	64	69	31			5	015			6.11
02	03	871020	18.33	64	69	31	04	01	5	015			5.50
02	04	871020	18.33	63	56	55			5	015	04 03 n	096 00 w	9.47
02	05	871020	18.33	63	56	55	04	12	5	015	04 07 n	095 57 w	2.75
02	06	871020	18.33	56	55	63	04	12	5	015			15.58
02	07	871020	19.08	55	63	56	06	12	5	012	04 17 n	095 52 w	9.22
02	08	871020	19.08	69	31	64	07	12	5	012	04 22 n	095 51 w	2.54
02	09	871020	19.08	69	31	64	07	12	5	005	04 24 n	095 50 w	10.17
02	10	871020	19.08	31	64	69	08	01	5	005			13.03
02	11	871020	19.08	64	69	31			5	005			7.31
02	12	871020	19.08	64	69	31			5	005			5.09
02	13	871020	19.08	63	56	55			5	005	04 43 n	095 45 w	4.77
02	14	871020	18.89	63	56	55	08	01	5	000	04 46 n	095 44 w	5.35
02	15	871020	19.08	56	55	63	08	02	5	000	04 48 n	095 44 w	8.90
02	16	871020	18.89	55	63	56	08	02	5	000	04 54 n	095 43 w	9.45
02	17	871020	18.89	69	31	64	08	02	4	000	04 58 n	095 42 w	7.87
02	18	871020	18.89	31	64	69			4	000	05 02 n	095 42 w	8.50
02	19	871020	18.89	64	69	31			4	000			8.50
02	20	871020	18.89	64	69	31			4	000	05 12 n	095 42 w	0.31
01	01	871021	19.63	55	63	56			1	015	06 43 n	095 23 w	7.53

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	871021	19.63	63	56	55	03	03	1	015	06 49 n	095 21 w	6.54
02	02	871021	19.63	31	64	69	03	03	1	015			6.54
02	03	871021	19.63	31	64	69	03	02	2	015			6.87
02	04	871021	19.63	64	69	31	03	02	2	015			6.87
03	01	871021	19.63	64	69	31	03	02	2	015	07 03 n	095 16 w	3.60
03	02	871021	22.04	69	31	64	03	02	2	015	07 05 n	095 15 w	12.86
04	01	871021	21.30	55	63	56	03	02	1	015	07 14 n	095 06 w	5.32
04	02	871021	21.30	55	63	56	03	01	1	015			8.16
04	03	871021	21.30	63	56	55	03	01	1	015			6.03
04	04	871021	20.93	63	56	55	03	01	1	010	07 24 n	095 01 w	5.58
05	01	871021	20.19	56	55	63	04	01	1	010	07 26 n	095 02 w	2.36
05	02	871021	20.19	31	64	69	04	12	2	010	07 27 n	095 01 w	13.79
05	03	871021	20.19	64	69	31	04	12	2	010	07 34 n	094 58 w	5.38
06	01	871021	18.52	55	63	56			2	010	07 36 n	094 58 w	6.17
07	01	871021	20.00	63	56	55			2	018	07 41 n	094 58 w	6.33
08	01	871021	20.00	56	55	63	08	01	2	010	07 47 n	094 56 w	8.00
09	01	871021	18.52	31	64	69	08	02	1	010	07 53 n	094 53 w	4.63
09	02	871021	18.52	31	64	69	08	02	2	010			3.09
09	03	871021	18.52	31	64	69	08	02	3	010			1.54
09	04	871021	18.71	64	69	31	08	02	3	010	07 58 n	094 52 w	1.56
10	01	871021	18.52	55	63	56	08	02	3	010	08 02 n	094 50 w	4.63
11	01	871021	18.52	63	56	55	08	02	3	010	08 05 n	094 48 w	1.54
12	01	871021	19.08	56	55	63			3	005	08 09 n	094 47 w	5.40
13	01	871021	19.08	56	55	63	08	03	3	005			1.91
13	02	871021	19.45	56	55	63	08	03	3	005	08 14 n	094 46 w	0.32
01	01	871022	19.26	64	69	31			3	016	09 46 n	094 39 w	3.21
02	01	871022	19.26	69	31	64	03	03	3	016	09 52 n	094 40 w	3.21
02	02	871022	19.26	56	55	63	03	03	3	016	10 01 n	094 34 w	4.82
03	01	871022	19.26	55	63	56	03	02	3	025	10 06 n	094 35 w	5.14
03	02	871022	19.26	55	63	56	03	02	4	025			7.06
03	03	871022	19.26	63	56	55	03	02	4	025			12.20
03	04	871022	21.30	64	69	31	03	02	4	025	10 18 n	094 28 w	14.20
03	05	871022	21.30	69	31	64	03	02	4	025			7.81
04	01	871022	18.71	31	64	69	03	01	4	025	10 28 n	094 23 w	7.79
04	02	871022	18.71	56	55	63	04	01	4	025	10 32 n	094 22 w	10.91
04	03	871022	18.71	56	55	63	04	12	4	025			1.56
04	04	871022	18.71	55	63	56	04	01	4	025			2.49
05	01	871022	18.52	55	63	56	05	01	4	025	10 40 n	094 18 w	1.85
05	02	871022	18.52	55	63	56	05	01	4	015	10 41 n	094 17 w	6.79
05	03	871022	18.52	63	56	55	05	12	4	015			12.35
05	04	871022	18.52	64	69	31	06	01	4	015	10 49 n	094 14 w	2.78
06	01	871022	17.78	64	69	31	06	01	4	015	10 52 n	094 14 w	7.11
06	02	871022	17.78	69	31	64	07	01	4	015			11.85
06	03	871022	17.78	31	64	69	07	01	4	015			11.85
06	04	871022	17.04	56	55	63	07	02	4	015	11 07 n	094 10 w	8.52
06	05	871022	17.04	55	63	56	08	02	4	015			8.52
06	06	871022	17.04	63	56	55	08	02	4	015	11 16 n	094 08 w	8.52
06	07	871022	17.04	64	69	31	08	02	4	015			8.52
06	08	871022	17.04	69	31	64	08	03	4	015			8.52
06	09	871022	16.48	31	64	69	08	03	4	015	11 29 n	094 06 w	2.75
01	01	871023	17.78	63	56	55			2	216	12 49 n	093 48 w	0.59
02	01	871023	17.59	56	55	63	08	03	2	216	12 47 n	093 50 w	7.04

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	871023	17.59	69	31	64	08	03	2	216	12 43 n	093 53 w	3.81
03	01	871023	17.78	69	31	64	08	03	2	216	12 40 n	093 55 w	2.96
03	02	871023	17.78	31	64	69	08	02	2	216			11.85
03	03	871023	17.78	64	69	31	08	02	3	216			7.11
03	04	871023	17.78	64	69	31	09	02	3	216			4.74
03	05	871023	18.15	63	56	55	09	01	3	216	12 27 n	094 03 w	12.10
03	06	871023	18.15	56	55	63	09	01	3	216			7.56
04	01	871023	19.63	55	63	56			3	216	12 16 n	094 06 w	1.64
04	02	871023	18.33	55	63	56			3	225	12 15 n	094 06 w	0.92
05	01	871023	18.33	69	31	64	10	01	3	225	12 12 n	094 07 w	9.17
05	02	871023	18.33	31	64	69	10	01	3	225			9.17
05	03	871023	18.33	31	64	69			3	225			3.36
05	04	871023	18.33	64	69	31			3	225			0.61
06	01	871023	18.33	64	69	31			3	225	12 03 n	094 15 w	4.58
07	01	871023	18.33	63	56	55			3	225	11 59 n	094 18 w	7.33
08	01	871023	18.33	56	55	63			3	225	11 55 n	094 22 w	10.08
08	02	871023	18.33	55	63	56			3	225			10.39
08	03	871023	18.52	69	31	64			3	225	11 47 n	094 30 w	3.09
08	04	871023	18.52	69	31	64	01	02	3	225			5.56
09	01	871023	18.52	31	64	69	01	02	3	225	11 44 n	094 33 w	0.93
10	01	871023	18.52	64	69	31	01	02	3	225	11 40 n	094 34 w	4.01
10	02	871023	18.52	63	56	55	01	02	3	225	11 40 n	094 37 w	9.26
10	03	871023	18.52	56	55	63	01	02	3	225	11 37 n	094 41 w	4.63
10	04	871023	18.33	56	55	63			3	216	11 35 n	094 43 w	1.53
11	01	871023	18.52	56	55	63			3	216	11 33 n	094 47 w	2.16
11	02	871023	18.52	56	55	63			3	216	11 32 n	094 48 w	0.31
01	01	871024	17.22	31	64	69	08	03	3	213	10 28 n	095 45 w	2.87
01	02	871024	16.67	31	64	69	08	03	3	209	10 27 n	095 46 w	6.94
01	03	871024	16.67	64	69	31	08	03	3	209			6.11
01	04	871024	16.67	64	69	31	08	02	3	209			3.61
01	05	871024	16.67	69	31	64	08	02	3	209	10 21 n	095 51 w	8.33
01	06	871024	16.67	55	63	56	09	02	3	209			5.83
01	07	871024	15.19	55	63	56	10	02	3	185	10 14 n	095 55 w	0.51
02	01	871024	15.37	55	63	56	10	02	3	185	10 13 n	095 54 w	1.79
02	02	871024	15.37	63	56	55			3	185			10.25
02	03	871024	15.37	56	55	63			3	185			9.22
02	04	871024	15.37	56	55	63			3	216			1.54
02	05	871024	16.30	31	64	69			3	209	10 01 n	095 57 w	6.25
02	06	871024	16.30	31	64	69	10	01	3	209			1.36
02	07	871024	16.11	31	64	69			3	203	09 57 n	096 00 w	0.54
03	01	871024	16.30	64	69	31			3	209	09 56 n	096 01 w	1.36
04	01	871024	16.48	69	31	64	10	01	4	209	09 57 n	096 02 w	8.24
05	01	871024	16.11	55	63	56	11	01	4	209	09 50 n	096 05 w	6.44
05	02	871024	16.11	55	63	56	12	01	4	209			2.42
05	03	871024	16.11	63	56	55			4	209			2.95
05	04	871024	16.11	63	56	55	12	01	4	209			5.64
05	05	871024	16.11	56	55	63	12	01	4	209			3.22
05	06	871024	16.11	56	55	63			4	209			5.37
05	07	871024	16.30	31	64	69			4	209	09 38 n	096 13 w	11.41
05	08	871024	16.30	64	69	31	01	01	2	209			4.62
06	01	871024	16.30	69	31	64			2	209	09 29 n	096 20 w	3.53
06	02	871024	16.30	69	31	64	01	02	2	209			1.36

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	871024	16.30	69	31	64			2	209			3.26
06	04	871024	16.30	55	63	56			3	209			6.25
06	05	871024	16.30	55	63	56			3	214			1.90
06	06	871024	16.30	63	56	55			3	214	09 22 n	096 25 w	5.16
06	07	871024	16.30	63	56	55			3	214			2.99
01	01	871025	17.04	56	55	63			3	216	08 06 n	097 20 w	1.99
01	02	871025	17.04	56	55	63	08	03	3	216	08 03 n	097 23 w	1.70
01	03	871025	18.33	56	55	63			3	216			3.36
01	04	871025	18.33	55	63	56			3	216			6.42
01	05	871025	18.33	63	56	55			3	216			7.03
01	06	871025	17.96	64	69	31			3	216	07 55 n	097 28 w	1.80
02	01	871025	17.78	64	69	31			4	216	07 44 n	097 36 w	6.82
02	02	871025	17.78	64	69	31	09	01	4	216			2.07
02	03	871025	17.78	56	55	63	09	01	4	216	07 40 n	097 39 w	8.89
03	01	871025	18.15	55	63	56	10	01	4	216	07 26 n	097 43 w	2.12
03	02	871025	17.78	55	63	56	10	01	4	232	07 25 n	097 44 w	5.33
03	03	871025	17.78	64	69	31	10	12	4	232	07 23 n	097 46 w	11.85
03	04	871025	17.78	69	31	64	11	01	3	232			11.85
03	05	871025	17.78	31	64	69	12	01	2	232			3.85
04	01	871025	17.78	31	64	69			2	232	07 12 n	097 57 w	2.96
04	02	871025	17.78	56	55	63	12	01	2	232	07 11 n	097 58 w	11.85
04	03	871025	17.78	55	63	56	12	01	2	232			1.48
04	04	871025	17.78	55	63	56			2	232			8.00
04	05	871025	17.78	55	63	56			2	232			2.07
04	06	871025	17.96	55	63	56			2	225	07 03 n	098 07 w	0.30
04	07	871025	17.96	63	56	55			2	225			2.69
04	08	871025	17.96	63	56	55			2	225	07 01 n	098 08 w	0.30
01	01	871026	21.11	69	31	64			3	002	06 52 n	098 49 w	9.50
01	02	871026	20.37	31	64	69			3	002	06 57 n	098 49 w	6.79
01	03	871026	20.37	31	64	69			3	002			3.40
02	01	871026	18.52	69	31	64			3	345	07 30 n	098 50 w	5.56
02	02	871026	18.52	69	31	64			4	345			2.78
02	03	871026	18.71	69	31	64			4	002	07 34 n	098 51 w	2.49
02	04	871026	18.71	31	64	69			4	002			3.12
03	01	871026	18.71	63	56	55			4	002	07 41 n	098 50 w	3.43
03	02	871026	18.71	63	56	55			5	002			1.25
01	01	871027	22.22	55	63	56			3	010	10 20 n	098 46 w	3.33
01	02	871027	22.22	55	63	56	03	03	3	010			9.26
01	03	871027	19.63	63	56	55	03	03	4	010	10 29 n	098 43 w	9.16
01	04	871027	22.22	56	55	63	03	02	4	010	10 35 n	098 42 w	11.11
01	05	871027	20.93	31	64	69	03	02	3	010	10 39 n	098 41 w	1.74
01	06	871027	20.93	31	64	69	03	02	3	355	10 40 n	098 41 w	12.56
01	07	871027	20.93	64	69	31	04	02	3	355			13.60
01	08	871027	20.93	69	31	64	04	01	3	355			4.19
01	09	871027	20.56	69	31	64	04	01	3	005	10 55 n	098 41 w	9.59
01	10	871027	15.74	55	63	56	04	01	3	005	10 55 n	098 44 w	2.89
02	01	871027	19.26	63	56	55	04	01	3	005	11 02 n	098 42 w	12.20
02	02	871027	19.26	56	55	63	04	01	3	005			5.46
02	03	871027	19.26	56	55	63	05	01	2	005	11 12 n	098 41 w	2.57
03	01	871027	18.52	31	64	69	05	01	2	005	11 15 n	098 41 w	4.63
04	01	871027	18.52	64	69	31	06	01	2	005	11 20 n	098 42 w	3.40
05	01	871027	18.52	64	69	31	07	01	2	005	11 22 n	098 42 w	4.01

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	871027	18.52	69	31	64	07	01	2	005			6.17
06	01	871027	19.82	55	63	56	01	02	1	206	11 28 n	098 57 w	5.94
06	02	871027	19.82	31	64	69	01	02	1	206	11 25 n	098 59 w	9.91
06	03	871027	19.82	64	69	31	01	02	1	206	11 20 n	099 02 w	2.64
07	01	871027	19.45	69	31	64	02	03	2	206	11 24 n	099 05 w	1.30
07	02	871027	19.45	69	31	64	02	03	2	200	11 23 n	099 05 w	4.86
01	01	871028	17.96	64	69	31	09	03	2	206	09 36 n	099 42 w	8.68
01	02	871028	18.33	69	31	64	09	03	2	206	09 32 n	099 44 w	10.70
01	03	871028	18.33	31	64	69	09	02	1	206			3.97
02	01	871028	18.33	56	55	63			1	206	09 21 n	099 50 w	4.28
03	01	871028	18.33	55	63	56	09	02	2	206	09 18 n	099 53 w	3.36
04	01	871028	18.52	63	56	55	09	01	2	206	09 14 n	099 57 w	1.54
04	02	871028	18.52	64	69	31	09	01	2	206			6.48
05	01	871028	18.89	69	31	64	10	01	1	206	09 04 n	100 02 w	5.35
06	01	871028	18.89	31	64	69	11	01	1	206	08 57 n	100 02 w	0.31
07	01	871028	18.52	56	55	63	11	01	1	206	08 56 n	100 03 w	11.42
07	02	871028	18.52	55	63	56	12	01	1	206			12.04
07	03	871028	18.52	63	56	55	12	01	1	206			11.42
07	04	871028	18.52	64	69	31	01	01	1	206	08 38 n	100 09 w	12.04
07	05	871028	18.52	69	31	64	01	01	1	206			4.32
07	06	871028	18.52	69	31	64	01	01	2	206			7.10
08	01	871028	18.52	63	55	69	01	02	2	206	08 19 n	100 16 w	3.40
09	01	871028	18.89	55	56	63	01	02	2	209	08 12 n	100 15 w	6.61
09	02	871028	18.89	63	56	55	01	02	3	209			6.61
09	03	871028	18.89	64	69	31	01	03	3	209	08 05 n	100 18 w	6.30
09	04	871028	18.89	69	31	64	01	03	3	209			2.52
09	05	871028	18.89	69	31	64			3	209	08 01 n	100 19 w	3.15
09	06	871028	18.15	69	31	64			3	209	09 00 n	100 21 w	0.30
01	01	871029	17.22	63	56	55			3	210	06 36 n	101 09 w	8.32
01	02	871029	17.22	56	55	63	08	03	3	210	06 31 n	101 11 w	0.86
01	03	871029	17.22	56	55	63			3	210			4.59
02	01	871029	16.67	55	63	56			3	210	06 26 n	101 13 w	3.61
02	02	871029	16.67	64	31	56	09	02	3	210	06 24 n	101 14 w	2.78
02	03	871029	16.67	69	31	64			3	210			2.22
03	01	871029	16.67	31	64	69			3	215	06 15 n	101 09 w	5.56
03	02	871029	16.67	64	69	31			3	215			5.56
03	03	871029	16.67	63	56	55			3	215			6.67
03	04	871029	16.11	63	56	55			3	245	06 06 n	101 13 w	4.30
03	05	871029	16.11	56	55	63			3	245			10.74
03	06	871029	16.11	55	63	56			3	245			10.74
03	07	871029	16.30	69	31	64			3	245	06 00 n	101 26 w	1.36
03	08	871029	17.04	69	31	64			3	215	05 59 n	101 27 w	2.56
04	01	871029	17.22	64	69	31			3	210	05 57 n	101 31 w	6.60
04	02	871029	17.22	64	69	31			3	210			2.58
04	03	871029	17.22	63	56	55			3	210	05 52 n	101 33 w	8.61
04	04	871029	17.22	63	56	55			4	210	05 48 n	101 34 w	2.87
04	05	871029	17.22	56	55	63			4	210			11.48
04	06	871029	17.22	55	63	56			4	210			2.87
04	07	871029	17.22	55	63	56			4	210	05 39 n	101 37 w	8.61
04	08	871029	17.22	69	31	64			4	210	05 35 n	101 40 w	8.61
04	09	871029	17.22	31	64	69			4	210	05 30 n	101 41 w	8.61
04	10	871029	17.22	64	69	31			3	210	05 26 n	101 42 w	8.61

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	11	871029	17.22	63	56	55			3	210	05 22 n	101 44 w	8.61
04	12	871029	17.96	56	55	63			3	210	05 16 n	101 50 w	2.99
04	13	871029	17.96	56	55	63	02	03	3	210			2.99
04	14	871029	17.96	56	55	63			3	210			1.50
04	15	871029	17.96	56	55	63			3	210	05 12 n	101 51 w	0.30
01	01	871030	18.71	31	64	69			3	000	05 50 n	102 01 w	6.24
01	02	871030	18.71	31	64	69	03	03	3	000			1.56
01	03	871030	18.71	64	69	31	03	03	3	000			9.35
01	04	871030	17.96	69	31	64	03	03	3	356	05 58 n	102 00 w	5.99
01	05	871030	17.96	69	31	64			3	356			1.50
01	06	871030	17.96	69	31	64	04	02	3	356			1.50
01	07	871030	17.78	55	63	56	04	02	2	356	06 03 n	102 00 w	1.48
01	08	871030	17.78	55	63	56			2	356			1.48
02	01	871030	17.22	63	56	55	04	02	2	356	06 09 n	101 59 w	0.86
02	02	871030	17.22	63	56	55	04	02	2	345	06 10 n	101 59 w	7.18
02	03	871030	17.22	63	56	55	04	02	3	345			2.01
02	04	871030	17.22	56	55	63	04	02	3	345			5.45
02	05	871030	17.22	56	55	63	04	01	3	345			6.32
02	06	871030	17.22	31	64	69	04	01	3	345			3.44
02	07	871030	16.85	31	64	69	04	01	3	003	06 22 n	102 02 w	7.86
02	08	871030	16.85	64	69	31	04	01	3	003			4.21
02	09	871030	16.85	64	69	31	04	01	4	003			7.02
02	10	871030	16.85	69	31	64	04	01	4	003			2.81
02	11	871030	16.30	69	31	64	04	01	4	003	06 33 n	102 00 w	1.63
03	01	871030	16.30	55	63	56			4	003	06 38 n	101 59 w	1.63
03	02	871030	16.30	55	63	56	05	01	4	003			4.07
03	03	871030	16.67	55	63	56	06	01	4	003	06 42 n	101 59 w	2.78
03	04	871030	16.67	55	63	56	06	12	3	003			2.22
03	05	871030	16.67	63	56	55	06	12	3	003			9.17
03	06	871030	16.67	63	56	55	06	12	3	003			0.56
03	07	871030	16.67	56	55	63	07	01	3	003			2.78
04	01	871030	15.56	56	55	63			3	003	06 50 n	101 58 w	1.04
04	02	871030	15.56	56	55	63	07	01	3	003			3.63
04	03	871030	15.56	31	64	69	07	01	3	003	06 52 n	101 57 w	0.78
05	01	871030	16.67	64	69	31	08	01	3	003	06 54 n	101 57 w	4.17
05	02	871030	16.67	64	69	31			3	003			2.22
05	03	871030	16.67	64	69	31	08	01	3	003			4.72
05	04	871030	16.67	69	31	64	08	01	3	003			2.78
05	05	871030	16.67	69	31	64	08	01	3	003	07 01 n	101 56 w	5.56
05	06	871030	16.67	69	31	64	08	02	3	003			2.78
05	07	871030	16.67	55	63	56	08	02	3	003	07 08 n	101 59 w	4.17
06	01	871030	16.67	55	63	56			3	003	07 10 n	101 59 w	2.78
06	02	871030	16.67	63	56	55			3	003			8.33
06	03	871030	18.15	56	55	63	08	02	3	003	07 19 n	101 58 w	4.54
07	01	871030	18.15	31	64	69			3	003	07 27 n	101 58 w	5.14
01	01	871031	20.56	56	55	63			3	004	09 32 n	101 50 w	2.74
01	02	871031	20.56	56	55	63	03	03	3	004			6.85
01	03	871031	20.56	55	63	56	03	03	3	004	09 37 n	101 49 w	1.71
01	04	871031	20.56	55	63	56	03	03	4	004			8.57
01	05	871031	20.00	63	56	55	03	03	4	004	09 42 n	101 49 w	9.33
01	06	871031	20.00	64	69	31	04	02	4	004			13.00
01	07	871031	20.00	69	31	64	04	02	4	004			13.33

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
01	08	871031	20.00	31	64	69	04	02	4	004			13.33
01	09	871031	19.26	56	55	63	04	01	4	004	10 08 n	101 47 w	6.42
02	01	871031	19.08	55	63	56	05	01	4	358	10 16 n	101 42 w	6.04
02	02	871031	19.08	64	69	31	05	01	4	358	10 19 n	101 42 w	9.54
02	03	871031	19.08	64	69	31	05	01	4	358	10 23 n	101 42 w	2.54
03	01	871031	19.08	69	31	64	06	01	4	358	10 26 n	101 42 w	4.77
03	02	871031	19.08	69	31	64	07	01	4	358	10 28 n	101 42 w	6.36
03	03	871031	19.08	31	64	69	07	01	4	358			6.99
04	01	871031	17.59	56	55	63	08	01	4	358	10 35 n	101 46 w	12.02
04	02	871031	17.59	55	63	56	08	01	4	358			6.16
04	03	871031	19.26	55	63	56	08	01	4	004	10 47 n	101 48 w	5.46
04	04	871031	19.26	63	56	55	08	01	4	004	10 49 n	101 48 w	12.84
04	05	871031	19.26	64	69	31	08	01	4	004	10 56 n	101 48 w	0.64
05	01	871031	19.26	64	69	31	08	02	4	004	10 56 n	101 49 w	5.78
05	02	871031	19.26	64	69	31	08	02	4	004	11 00 n	101 48 w	0.32
01	01	871101	21.85	69	31	64	05	03	5	302	12 16 n	102 53 w	12.75
01	02	871101	21.85	31	64	69	05	03	5	302			10.93
01	03	871101	21.85	63	56	55	05	02	5	302	12 23 n	103 04 w	14.57
01	04	871101	21.85	56	55	63	06	02	5	302			7.28
01	05	871101	22.22	56	55	63	06	02	5	302	12 30 n	103 15 w	7.41
01	06	871101	22.22	55	63	56	06	02	5	302			5.93
01	07	871101	22.22	55	63	56			5	302			3.33
01	08	871101	22.22	55	63	56	06	01	5	302			1.85
01	09	871101	22.96	55	63	56	06	01	5	300	12 36 n	103 24 w	3.83
01	10	871101	22.96	69	31	64			5	300			2.30
01	11	871101	22.96	69	31	64	06	01	5	300			8.04
02	01	871101	22.78	31	64	69			4	300	12 42 n	103 35 w	4.56
03	01	871101	22.78	64	69	31			4	300	12 45 n	103 40 w	5.69
03	02	871101	22.78	64	69	31			4	300			4.18
04	01	871101	23.89	63	56	55	08	01	5	300	12 56 n	103 52 w	3.58
05	01	871101	24.08	56	55	63			5	300	13 02 n	104 00 w	4.82
05	02	871101	24.08	69	31	64			4	300			12.04
05	03	871101	24.08	69	31	64			4	300			4.01
05	04	871101	24.08	31	64	69	10	01	4	300			16.05
05	05	871101	24.08	64	69	31	10	02	4	300			16.05
05	06	871101	24.45	63	56	55	10	02	4	300	13 18 n	104 27 w	12.22
05	07	871101	24.45	56	55	63	10	02	4	300			13.04
05	08	871101	24.45	55	63	56	10	02	4	300			11.41
05	09	871101	22.22	69	31	64	10	03	4	300	13 26 n	104 40 w	4.44
06	01	871101	22.22	69	31	64	10	03	4	300	13 27 n	104 42 w	7.41
06	02	871101	22.22	31	64	69	10	03	4	300			8.52
01	01	871102	20.93	55	63	56			2	290	14 27 n	106 19 w	5.23
01	02	871102	20.93	55	63	56	06	03	2	290			6.98
01	03	871102	20.93	63	56	55	06	03	2	290	14 29 n	106 24 w	10.46
01	04	871102	20.93	31	64	69	06	02	2	290	14 32 n	106 31 w	14.65
01	05	871102	19.63	64	69	31	06	02	2	290	14 34 n	106 36 w	5.56
01	06	871102	19.45	64	69	31	06	02	3	290	14 35 n	106 39 w	6.81
01	07	871102	19.45	69	31	64	06	02	3	290			4.86
01	08	871102	19.08	69	31	64	07	02	3	272	14 38 n	106 45 w	6.99
02	01	871102	19.08	55	63	56	04	01	3	032	14 40 n	106 49 w	8.27
02	02	871102	18.52	31	64	69	04	01	3	032	14 43 n	106 47 w	7.10
03	01	871102	18.52	55	63	56	06	01	2	032	14 49 n	106 47 w	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
03	02	871102	19.82	63	56	55	06	01	2	032	14 55 n	106 45 w	10.24
03	03	871102	19.82	56	55	63	07	01	2	032	15 01 n	106 43 w	8.59
03	04	871102	19.82	56	55	63	07	02	2	032			1.65
03	05	871102	21.11	31	64	69	07	02	2	032	15 04 n	106 32 w	10.56
03	06	871102	20.93	56	69	25	07	02	3	032	15 09 n	106 31 w	3.84
03	07	871102	20.93	64	69	25	07	02	3	032			3.14
03	08	871102	20.93	64	69	31	07	02	3	032			3.49
03	09	871102	20.93	69	31	64	07	02	3	032	15 14 n	106 28 w	10.46
03	10	871102	20.93	55	63	56	07	02	3	032	15 19 n	106 25 w	5.23
03	11	871102	20.93	55	63	56	07	03	3	032			5.23
03	12	871102	18.89	63	56	55	07	03	3	032	15 21 n	106 22 w	5.35
03	13	871102	18.89	63	56	55	07	03	3	032	15 24 n	106 21 w	0.31
01	01	871103	20.00	64	69	31			2	028	17 10 n	105 23 w	2.00
01	02	871103	20.00	64	69	31	02	03	2	028			7.00
01	03	871103	20.00	69	31	64	02	03	2	028			4.00
02	01	871103	19.82	56	55	63	03	02	2	023	17 18 n	105 14 w	2.31
02	02	871103	19.82	64	69	31	03	02	3	023	17 19 n	105 14 w	13.21
02	03	871103	19.82	69	31	64	04	01	2	023			11.56
03	01	871103	19.63	31	64	69	04	01	3	028	17 35 n	105 08 w	0.98
04	01	871103	19.63	56	55	63	05	01	3	023	17 37 n	105 06 w	10.47
04	02	871103	19.63	55	63	56	05	01	3	023			5.56
04	03	871103	19.63	55	63	56	05	01	3	023			4.58
05	01	871103	19.82	64	69	31	06	01	3	023	17 51 n	105 02 w	2.64
06	01	871103	19.63	69	31	64	07	01	3	023	17 52 n	105 02 w	9.82
06	02	871103	19.63	31	64	69	07	02	3	023			9.82
06	03	871103	20.19	56	55	63	02	02	3	023	18 01 n	104 57 w	10.09
06	04	871103	20.19	55	63	56	07	02	3	023			4.71
07	01	871103	20.19	55	63	56	07	02	3	023	18 09 n	104 51 w	3.36
07	02	871103	20.19	63	56	55	07	02	3	023			9.76
08	01	871103	18.89	64	69	31	07	03	3	023	18 14 n	104 50 w	5.67
01	01	871109	19.08	55	56	63			3	190	17 08 n	104 56 w	5.40
01	02	871109	19.08	55	56	63	09	03	3	190	17 05 n	104 56 w	4.77
01	03	871109	19.08	56	63	55	09	03	3	190	17 02 n	104 57 w	8.90
01	04	871109	19.08	69	31	64	09	03	3	190			2.23
02	01	871109	18.15	69	31	64	09	02	3	193	16 56 n	104 59 w	3.02
02	02	871109	18.15	31	64	69	09	02	3	193			13.31
02	03	871109	18.15	64	69	31	09	02	3	193			1.81
02	04	871109	18.15	64	69	31	09	02	3	193	16 47 n	105 02 w	9.07
02	05	871109	18.15	55	56	63	09	02	3	193	16 41 n	105 04 w	2.42
03	01	871109	18.15	55	56	63	09	02	3	193	16 40 n	105 04 w	7.86
03	02	871109	18.15	56	63	55	10	01	3	193			12.10
03	03	871109	18.15	63	55	56	11	01	3	193			12.10
03	04	871109	18.52	69	31	64	11	01	3	193	16 23 n	105 11 w	4.94
03	05	871109	18.52	69	31	64	11	01	3	193			7.41
03	06	871109	18.71	31	64	69	12	01	3	193	16 16 n	105 13 w	4.36
04	01	871109	18.71	64	69	31	12	01	2	193	16 11 n	105 18 w	3.74
04	02	871109	18.71	64	69	31			2	193			2.49
04	03	871109	18.71	55	56	63	12	01	2	193	16 07 n	105 19 w	6.24
04	04	871109	18.71	55	56	63	01	01	2	193			6.24
04	05	871109	18.71	56	63	55	01	01	2	193			5.61
05	01	871109	18.52	63	55	56	01	02	2	193	15 59 n	105 21 w	3.70
05	02	871109	18.52	63	55	56	02	02	2	187			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
06	01	871109	17.78	69	31	64	02	02	1	187	15 54 n	105 22 w	10.67
07	01	871109	17.78	31	64	69	02	02	1	187	15 50 n	105 23 w	2.07
08	01	871109	17.78	31	64	69	02	03	1	187	15 49 n	105 21 w	5.04
08	02	871109	17.78	55	56	63	02	03	1	187	15 46 n	105 21 w	5.93
08	03	871109	17.78	56	63	55	02	03	1	187			3.85
08	04	871109	17.78	56	63	55	02	03	0	187			0.89
08	05	871109	17.78	56	63	55	02	03	0	187	15 40 n	105 21 w	0.30
01	01	871110	18.52	31	64	69	12	03	2	110	14 15 n	105 18 w	5.25
01	02	871110	18.52	31	64	69	12	03	3	110			1.54
01	03	871110	18.52	64	69	31	12	03	3	110			9.26
01	04	871110	18.52	63	55	56	12	03	3	110	14 12 n	105 09 w	6.17
01	05	871110	18.52	63	55	56	12	02	3	110			6.17
01	06	871110	18.52	55	56	63	12	02	4	110			9.26
01	07	871110	18.52	55	56	63	02	02	4	050	14 09 n	104 58 w	3.09
01	08	871110	18.52	56	63	55	02	02	4	050			12.35
01	09	871110	19.45	31	64	69	02	01	4	050	14 16 n	104 47 w	11.34
01	10	871110	19.45	31	64	69	12	01	4	114			1.62
01	11	871110	19.45	64	69	31	02	01	4	050			12.96
01	12	871110	19.45	69	31	64	02	01	4	050			4.54
01	13	871110	19.45	69	31	64	01	01	4	115	14 22 n	104 36 w	8.43
01	14	871110	19.45	63	55	56	02	01	4	115			6.48
01	15	871110	19.45	63	55	56	01	01	4	138			4.21
02	01	871110	20.74	55	56	63	02	01	4	138	14 12 n	104 24 w	10.37
02	02	871110	20.74	56	63	55	02	01	4	138			10.37
02	03	871110	20.74	31	64	69	02	01	4	138			8.64
02	04	871110	20.74	31	64	69	03	01	4	138			5.88
02	05	871110	20.74	64	69	31	03	01	4	138			13.14
02	06	871110	20.74	69	31	64	03	02	4	138			5.19
03	01	871110	20.56	69	31	64	04	02	4	110	13 49 n	104 03 w	4.80
03	02	871110	20.56	63	55	56	04	02	4	110			10.28
03	03	871110	18.15	55	56	63	04	02	4	110	13 45 n	103 57 w	8.17
04	01	871110	18.33	56	63	55	05	03	4	110	13 44 n	103 54 w	1.53
04	02	871110	18.33	31	64	69	05	03	4	110			7.64
04	03	871110	18.15	64	69	31			4	110	13 41 n	103 49 w	6.96
01	01	871111	18.15	56	63	55			2	112	13 08 n	102 00 w	3.02
01	02	871111	18.15	56	63	55	12	03	2	112			4.23
02	01	871111	18.15	63	55	56	12	03	3	112	13 08 n	101 56 w	3.93
02	02	871111	17.96	63	55	56			3	112	13 08 n	101 55 w	2.99
02	03	871111	17.96	63	55	56	12	03	3	112			0.90
02	04	871111	17.96	64	69	31	12	02	3	112	13 07 n	101 52 w	1.80
03	01	871111	19.26	64	69	31	01	02	3	070	13 06 n	101 50 w	8.03
03	02	871111	19.26	69	31	64	01	02	3	070			12.20
04	01	871111	19.45	31	64	69	02	02	3	070	13 13 n	101 38 w	6.48
04	02	871111	19.45	56	63	55	02	01	4	070	13 15 n	101 35 w	12.96
04	03	871111	19.45	63	55	56	02	01	4	070			2.27
04	04	871111	18.52	63	55	56	12	01	4	140	13 18 n	101 27 w	10.19
04	05	871111	18.52	55	56	63	12	01	4	140			12.35
04	06	871111	17.59	64	69	31	01	01	4	140	13 09 n	101 18 w	11.73
04	07	871111	17.59	69	31	64	01	01	3	140			11.73
05	01	871111	17.59	31	64	69	02	01	4	140	13 01 n	101 07 w	4.98
05	02	871111	16.30	56	63	55	02	01	4	140	13 01 n	101 05 w	10.05
06	01	871111	16.30	63	55	56	03	01	4	140	12 57 n	101 01 w	6.79

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	02	871111	16.30	63	55	56	03	02	4	140			2.72
06	03	871111	16.30	55	56	63	03	02	4	140	12 55 n	100 58 w	10.87
07	01	871111	16.30	64	69	31	03	02	4	140			5.70
07	02	871111	15.74	69	31	64	03	02	4	140	12 48 n	100 51 w	2.62
07	03	871111	15.74	69	31	64			4	140			2.62
07	04	871111	15.74	69	31	64	03	02	4	140			1.31
08	01	871111	15.74	31	64	69			4	140			3.94
08	02	871111	15.56	56	63	55			4	140	12 43 n	100 46 w	4.41
09	01	871111	15.74	63	55	56			4	140	12 44 n	100 43 w	3.41
09	02	871111	15.74	63	55	56			4	140	12 42 n	100 42 w	0.26
01	01	871113	16.30	55	56	63			3	110	10 08 n	100 07 w	4.07
01	02	871113	16.30	55	56	63	12	03	3	110			3.53
01	03	871113	16.30	56	63	55	12	03	3	110			1.36
02	01	871113	17.04	56	63	55			3	140	10 06 n	100 00 w	2.27
02	02	871113	17.04	56	63	55	11	03	3	140	10 05 n	099 59 w	1.14
02	03	871113	17.04	63	55	56	11	03	3	140			4.54
02	04	871113	17.04	63	55	56	11	03	4	140			2.84
02	05	871113	17.04	64	31	56	11	03	4	140	10 01 n	099 57 w	2.56
02	06	871113	17.04	69	31	64	11	02	4	140			5.96
02	07	871113	17.04	69	31	64	11	02	4	140	09 57 n	099 54 w	2.84
02	08	871113	17.04	31	64	69	11	02	4	140			0.85
03	01	871113	16.85	64	69	31	11	02	4	140	09 55 n	099 51 w	5.90
03	02	871113	16.67	64	69	31	01	01	4	090	09 52 n	099 48 w	1.11
03	03	871113	16.67	55	56	63	01	01	4	090			11.11
03	04	871113	16.67	56	63	55	02	01	4	090			11.11
03	05	871113	16.67	63	55	56	02	01	4	090			3.61
03	06	871113	16.67	63	55	56			4	090	09 53 n	099 34 w	4.72
03	07	871113	16.67	63	55	56	02	01	4	090			2.78
03	08	871113	17.22	69	31	64			4	090	09 52 n	099 29 w	2.30
03	09	871113	17.22	69	31	64	03	01	4	090			3.44
03	10	871113	17.22	69	31	64	03	01	4	090			2.87
03	11	871113	17.22	69	31	64	03	01	4	090	09 52 n	099 24 w	2.87
03	12	871113	17.22	31	64	69	03	01	4	090			12.34
03	13	871113	17.22	64	69	31	03	01	4	110	09 52 n	099 16 w	10.62
03	14	871113	17.22	55	56	63	04	01	4	110	09 50 n	099 10 w	11.48
03	15	871113	17.22	56	63	55	04	01	4	110			11.48
03	16	871113	17.22	63	55	56	04	02	4	110			10.62
04	01	871113	17.59	69	31	64	05	02	4	110	09 40 n	098 54 w	2.93
04	02	871113	17.59	69	31	64	05	02	4	110	09 39 n	098 51 w	2.93
04	03	871113	17.59	31	64	69	05	02	4	110			7.62
04	04	871113	17.59	64	69	31	05	02	4	110	09 37 n	098 46 w	0.29
05	01	871113	17.78	55	56	63			4	110	09 35 n	098 44 w	7.70
05	02	871113	17.96	55	56	63			4	110	09 34 n	098 40 w	0.30
01	01	871114	17.59	63	55	56	09	01	3	228	08 15 n	096 47 w	2.35
01	02	871114	17.59	63	55	56			3	228			1.17
01	03	871114	17.59	63	55	56	09	01	3	228			5.28
01	04	871114	17.59	31	64	69	09	01	3	228	08 42 n	096 50 w	8.80
02	01	871114	17.59	64	69	31			3	228	08 37 n	096 52 w	0.88
03	01	871114	16.67	69	31	64			3	290	08 33 n	096 54 w	2.78
04	01	871114	19.26	63	55	56			3	251	08 43 n	097 08 w	5.46
05	01	871114	19.26	55	56	63			3	251	08 43 n	097 13 w	10.27
05	02	871114	19.26	56	63	55			3	251			8.99

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	03	871114	18.71	31	64	69			3	251	08 39 n	097 21 w	4.68
05	04	871114	18.71	31	64	69	11	01	3	251			6.55
06	01	871114	18.71	64	69	31	11	01	3	251	08 37 n	097 28 w	9.04
06	02	871114	18.71	64	69	31	11	02	2	251			2.49
06	03	871114	18.71	69	31	64	11	02	3	251			3.12
06	04	871114	18.33	69	31	64	11	02	3	251	08 36 n	097 35 w	9.17
06	05	871114	18.33	63	55	56			3	251	08 34 n	097 40 w	2.44
07	01	871114	18.33	63	55	56	12	02	3	251	08 35 n	097 42 w	1.83
07	02	871114	18.33	63	55	56			3	251			1.53
01	01	871115	17.22	56	63	55			2	255	07 58 n	099 10 w	4.31
02	01	871115	17.04	63	55	56			2	255	07 56 n	099 17 w	4.54
03	01	871115	16.85	64	69	31			2	255	07 51 n	099 23 w	8.71
03	02	871115	16.85	69	31	64			2	255			2.53
04	01	871115	16.67	69	31	64			2	255	07 49 n	099 29 w	4.17
05	01	871115	16.67	56	63	55	08	01	3	255	07 50 n	099 33 w	10.00
05	02	871115	16.67	63	55	56	08	01	3	255			10.00
05	03	871115	16.67	55	56	63			3	255			2.78
05	04	871115	16.67	55	56	63	09	01	3	255	07 46 n	099 45 w	7.22
05	05	871115	16.67	64	69	31			2	255			9.72
05	06	871115	16.67	64	69	31	10	01	2	255	07 43 n	099 54 w	1.39
05	07	871115	16.67	69	31	64	10	01	2	255			9.17
06	01	871115	16.67	31	64	69	11	01	2	255	07 42 n	100 01 w	9.17
07	01	871115	16.67	56	63	55	11	01	2	255	07 41 n	100 05 w	3.61
07	02	871115	16.67	56	63	55			2	255			6.94
07	03	871115	16.67	63	55	56			3	255			1.39
08	01	871115	16.67	63	55	56	11	02	3	255	07 41 n	100 12 w	0.83
09	01	871115	16.48	64	69	31			3	255	07 45 n	100 19 w	1.65
10	01	871115	17.04	64	69	31			3	250	07 44 n	100 21 w	1.14
11	01	871115	17.22	56	63	55			2	250	07 47 n	100 29 w	2.87
11	02	871115	17.22	56	63	55			2	250			2.87
11	03	871115	17.22	63	55	56			2	250			0.86
11	04	871115	17.04	63	55	56	12	03	2	250	07 46 n	100 32 w	4.26
11	05	871115	17.04	63	55	56			2	250			1.42
11	06	871115	17.04	63	55	56			2	250	07 44 n	100 35 w	0.28
01	01	871116	17.78	69	31	64			2	250	07 06 n	101 57 w	1.48
01	02	871116	17.78	69	31	64			2	250			1.19
02	01	871116	17.59	31	64	69			2	280	07 02 n	102 05 w	2.93
02	02	871116	17.59	55	56	63	06	02	2	280			1.47
03	01	871116	17.59	55	56	63	07	02	2	250	07 04 n	102 10 w	0.59
03	02	871116	17.59	55	56	63			2	250			0.88
03	03	871116	17.59	55	56	63	07	02	2	250			1.76
03	04	871116	17.59	56	63	55	07	02	3	250			11.73
03	05	871116	17.59	63	55	56			3	250			1.47
03	06	871116	17.59	63	55	56	08	02	3	250			4.40
03	07	871116	17.22	63	55	56			3	250	07 01 n	102 22 w	0.86
04	01	871116	17.22	69	31	64			3	250	07 02 n	102 25 w	5.45
04	02	871116	17.22	69	31	64	03	01	3	250			4.31
04	03	871116	17.22	31	64	69			3	250			5.74
04	04	871116	17.96	31	64	69			3	200	06 58 n	102 32 w	1.50
04	05	871116	17.96	31	64	69			3	230			1.50
05	01	871116	17.59	64	69	31			3	250	06 57 n	102 35 w	1.76
06	01	871116	17.59	55	56	63			3	240	06 51 n	102 50 w	8.50

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	02	871116	17.59	56	63	55			4	240			4.40
06	03	871116	17.59	56	63	55			4	240			3.23
06	04	871116	17.22	69	31	64			4	240	06 46 n	102 58 w	7.18
06	05	871116	17.22	69	31	64			4	240			2.87
06	06	871116	17.22	69	31	64	12	01	4	240	06 44 n	103 02 w	1.44
06	07	871116	17.22	31	64	69	12	01	4	240			1.44
06	08	871116	17.22	31	64	69			4	240			8.04
06	09	871116	17.22	31	64	69			4	240			2.01
07	01	871116	17.04	64	69	31			4	240	06 40 n	103 10 w	1.99
07	02	871116	17.04	64	69	31			4	240			4.83
07	03	871116	17.04	55	56	63			4	240			5.68
07	04	871116	17.04	55	56	63	12	02	4	240			2.84
07	05	871116	16.67	56	63	55	12	02	4	240	06 35 n	103 16 w	5.00
07	06	871116	17.41	56	63	55	01	02	4	210	06 34 n	103 19 w	3.48
07	07	871116	17.41	63	55	56	01	02	4	210			1.16
07	08	871116	17.41	63	55	56			4	210			5.80
07	09	871116	17.41	63	55	56			4	210			1.74
07	10	871116	16.48	69	31	64			4	250	06 28 n	103 21 w	8.24
07	11	871116	16.48	31	64	69			5	250	06 27 n	103 26 w	4.12
07	12	871116	16.48	31	64	69			5	250			1.37
01	01	871117	17.22	63	55	56			4	249	06 02 n	104 54 w	1.44
01	02	871117	17.22	63	55	56	07	03	4	249			5.17
01	03	871117	17.22	63	55	56			4	249			4.59
01	04	871117	17.22	55	56	63			4	249			10.62
01	05	871117	17.04	31	64	69			4	249	05 58 n	105 05 w	11.64
01	06	871117	17.04	64	69	31			4	249			2.84
02	01	871117	17.04	64	69	31			4	249			1.70
02	02	871117	17.41	69	31	64			4	249	05 56 n	105 14 w	7.54
03	01	871117	17.41	63	55	56			4	249	05 56 n	105 19 w	10.74
03	02	871117	17.41	55	56	63			4	249			6.96
03	03	871117	17.41	55	56	63	09	01	4	249			4.93
03	04	871117	17.96	56	63	55			4	249	05 51 n	105 31 w	5.39
03	05	871117	17.96	56	63	55	09	01	4	249			4.49
03	06	871117	17.96	31	64	69	09	01	4	249	05 49 n	105 36 w	12.28
03	07	871117	17.96	64	69	31	10	01	4	249			3.89
04	01	871117	18.33	64	69	31			4	249	05 45 n	105 45 w	2.14
04	02	871117	18.33	69	31	64			4	249			3.97
04	03	871117	18.33	69	31	64			4	249	05 44 n	105 48 w	8.25
04	04	871117	17.78	63	55	56			4	249	05 43 n	105 52 w	4.44
04	05	871117	17.78	63	55	56			4	249			1.19
05	01	871117	17.78	63	55	56			4	249	05 41 n	105 57 w	1.19
05	02	871117	17.78	55	56	63			4	249			11.85
05	03	871117	17.78	56	63	55			4	249			6.22
06	01	871117	17.78	56	63	55			4	249	05 37 n	106 08 w	2.96
06	02	871117	17.59	31	64	69			4	249	05 37 n	106 10 w	8.50
07	01	871117	18.33	64	69	31			4	176	05 34 n	106 14 w	1.83
08	01	871117	18.15	63	55	56			4	176	05 21 n	106 13 w	3.02
01	01	871118	18.15	64	69	31			4	176	03 40 n	106 05 w	9.38
01	02	871118	18.15	69	31	64			4	176			9.07
01	03	871118	17.78	56	63	55			4	176	03 30 n	106 06 w	6.82
01	04	871118	17.78	56	63	55	10	02	4	176			5.04
01	05	871118	17.78	63	55	56	10	02	4	176			2.96

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	06	871118	17.78	63	55	56			4	176			2.07
01	07	871118	17.78	63	55	56	10	02	4	176	03 20 n	106 05 w	3.26
01	08	871118	17.78	63	55	56			4	176			1.19
01	09	871118	17.78	63	55	56	10	02	4	176			2.37
01	10	871118	17.78	55	56	63	10	02	4	176			1.48
02	01	871118	18.52	55	56	63			4	176	03 13 n	106 09 w	2.16
03	01	871118	18.52	64	69	31			5	176	03 11 n	106 10 w	3.40
04	01	871118	18.52	64	69	31			5	176	03 06 n	106 10 w	2.47
04	02	871118	18.52	69	31	64			5	176			3.09
04	03	871118	18.52	69	31	64	11	01	5	176			3.09
04	04	871118	18.52	69	31	64			5	176			4.63
04	05	871118	18.52	31	64	69			5	176	02 59 n	106 10 w	6.17
05	01	871118	18.15	31	64	69			5	164	02 55 n	106 11 w	4.54
05	02	871118	18.15	56	63	55			5	164			7.86
05	03	871118	18.15	56	63	55	12	01	5	164			4.23
05	04	871118	18.15	63	55	56	12	01	5	164			6.05
05	05	871118	18.15	63	55	56	01	01	5	164	02 43 n	106 09 w	6.05
05	06	871118	18.15	55	56	63	01	01	5	164			12.10
01	01	871119	21.30	55	56	63			4	281	01 25 n	106 51 w	1.06
02	01	871119	21.30	55	56	63			4	281	01 26 n	106 53 w	5.68
03	01	871119	21.11	56	63	55			4	281	01 26 n	106 59 w	0.70
04	01	871119	20.93	56	63	55			4	281	01 27 n	107 02 w	2.09
05	01	871119	21.30	69	31	64			4	281	01 31 n	107 03 w	9.58
05	02	871119	21.11	31	64	69	07	02	4	281	01 31 n	107 08 w	10.56
05	03	871119	21.11	64	69	31	07	02	4	281	01 32 n	107 14 w	6.33
05	04	871119	21.11	64	69	31	07	01	5	281			4.22
05	05	871119	21.11	55	56	63	07	01	5	281	01 33 n	107 19 w	14.08
05	06	871119	21.11	56	63	55	07	01	5	281			14.08
05	07	871119	21.11	63	55	56	07	01	5	281			8.80
05	08	871119	21.11	63	55	56	08	01	5	281			5.28
05	09	871119	21.85	69	31	64	08	01	5	281	01 37 n	107 43 w	1.82
06	01	871119	21.85	69	31	64	08	01	5	281	01 38 n	107 46 w	6.56
07	01	871119	22.41	31	64	69	09	12	5	281	01 37 n	107 53 w	4.86
08	01	871119	22.41	64	69	31	09	01	5	281	01 39 n	108 01 w	5.60
08	02	871119	22.41	55	56	63	10	01	5	281			7.47
09	01	871119	22.41	56	63	55	11	01	5	281	01 45 n	108 11 w	6.35
09	02	871119	22.04	56	63	55	11	01	5	279	01 45 n	108 14 w	4.78
09	03	871119	22.04	63	55	56	11	01	5	279	01 46 n	108 17 w	11.02
09	04	871119	22.04	69	31	64	11	02	5	279	01 46 n	108 22 w	11.02
09	05	871119	22.59	31	64	69	11	02	5	279	01 48 n	108 30 w	11.30
09	06	871119	22.41	64	69	31	11	02	5	279	01 49 n	108 35 w	11.20
09	07	871119	22.59	55	56	63	11	02	5	279	01 50 n	108 41 w	11.30
09	08	871119	22.78	56	63	55	11	03	5	279	01 51 n	108 47 w	11.39
09	09	871119	23.15	63	55	56	11	03	4	279	01 52 n	108 54 w	11.58
09	10	871119	23.15	63	55	56	11	03	4	279	01 53 n	108 59 w	0.39
01	01	871120	23.34	31	64	69	06	03	4	294	02 13 n	110 29 w	7.78
02	01	871120	23.34	64	69	31	06	02	4	294	02 21 n	110 35 w	6.22
02	02	871120	23.34	69	31	64	06	02	4	294			13.61
02	03	871120	23.15	63	55	56	06	02	4	294	02 25 n	110 44 w	7.72
03	01	871120	23.15	55	56	63	06	02	4	294	02 27 n	110 50 w	8.49
03	02	871120	23.15	55	56	63	06	01	4	294			5.79
04	01	871120	23.52	31	64	69	07	01	4	290	02 38 n	110 56 w	9.41

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	02	871120	23.52	64	69	31	07	01	4	290			15.29
04	03	871120	23.52	69	31	64	08	01	4	290			13.72
04	04	871120	23.71	63	55	56	09	01	4	290	02 47 n	111 15 w	9.09
05	01	871120	23.89	55	56	63	09	01	4	290	02 47 n	111 24 w	1.19
05	02	871120	23.89	55	56	63	09	01	4	293	02 48 n	111 24 w	2.79
06	01	871120	23.89	55	56	63	09	01	4	293	02 47 n	111 27 w	3.19
06	02	871120	23.89	56	63	55	09	01	4	293			2.39
07	01	871120	23.89	56	63	55	10	01	3	293	02 48 n	111 31 w	3.19
07	02	871120	23.89	31	64	69	10	01	3	293			16.33
07	03	871120	23.89	64	69	31	10	01	3	293			5.97
08	01	871120	23.89	64	69	31	10	02	3	293	02 55 n	111 44 w	7.17
08	02	871120	23.89	69	31	64	10	02	3	293			3.19
09	01	871120	24.63	63	55	56	10	02	3	293	03 01 n	111 50 w	6.16
10	01	871120	24.08	55	56	63	10	02	3	293	03 07 n	111 54 w	8.83
11	01	871120	23.89	31	64	69	11	03	3	293	03 13 n	112 00 w	11.15
01	01	871121	20.56	56	63	55			4	293	03 56 n	113 49 w	9.59
01	02	871121	20.37	63	55	56	06	03	4	293	03 58 n	113 53 w	6.79
01	03	871121	20.37	63	55	56			4	293			3.40
01	04	871121	20.37	55	56	63	06	02	4	293	04 00 n	113 58 w	10.19
01	05	871121	20.37	64	69	31			4	293	04 05 n	114 03 w	10.87
01	06	871121	20.37	64	69	31	06	02	4	293	04 05 n	114 08 w	1.36
01	07	871121	20.37	64	69	31			4	293			1.36
01	08	871121	20.37	69	31	64			4	293			13.58
01	09	871121	20.37	31	64	69	06	01	4	293			13.58
01	10	871121	19.26	56	63	55			4	293	04 10 n	114 21 w	11.24
01	11	871121	19.26	56	63	55	07	01	4	293			1.61
01	12	871121	19.26	63	55	56	07	01	4	293			12.84
01	13	871121	19.26	55	56	63			4	293			2.57
01	14	871121	19.82	55	56	63	07	01	4	293	04 17 n	114 37 w	8.59
01	15	871121	19.82	55	56	63	08	01	4	293			2.64
01	16	871121	19.82	64	69	31	08	01	5	293	04 19 n	114 42 w	0.99
01	17	871121	19.82	64	69	31	08	01	5	288	04 20 n	114 42 w	11.56
01	18	871121	19.82	69	31	64	09	01	5	288			13.21
01	19	871121	19.82	31	64	69	09	01	5	288			13.21
01	20	871121	19.82	56	63	55	10	01	5	288	04 27 n	115 01 w	13.21
01	21	871121	19.82	63	55	56	10	01	5	288			3.30
02	01	871121	19.82	63	55	56	10	02	5	288	04 31 n	115 10 w	7.27
02	02	871121	19.82	55	56	63	10	02	5	288			5.61
02	03	871121	19.45	55	56	63	11	02	5	285	04 31 n	115 16 w	7.78
02	04	871121	19.45	64	69	31			5	285	04 32 n	115 20 w	3.57
02	05	871121	19.45	64	69	31	11	02	5	285			5.83
02	06	871121	19.45	64	69	31	11	02	5	285	04 34 n	115 25 w	0.32
01	01	871122	18.71	69	31	64			3	274	05 04 n	117 04 w	8.42
02	01	871122	19.08	31	64	69			3	274	05 03 n	117 09 w	3.82
03	01	871122	19.08	64	69	31			3	274	05 04 n	117 11 w	2.86
03	02	871122	19.08	64	69	31			3	274			1.59
03	03	871122	19.08	64	56	63			3	274			1.27
04	01	871122	19.08	55	56	63			3	274	05 03 n	117 15 w	5.72
05	01	871122	19.08	56	63	55			3	274	05 03 n	117 21 w	4.13
06	01	871122	19.08	56	63	55			3	274	05 03 n	117 24 w	5.72
06	02	871122	19.08	63	55	56			4	274			2.54
07	01	871122	19.08	63	55	56			4	274	05 02 n	117 29 w	7.31

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
07	02	871122	19.08	69	31	64			4	274			4.77
07	03	871122	19.08	69	31	64			4	274			2.86
07	04	871122	19.08	69	31	64	07	01	4	274			5.09
07	05	871122	19.08	31	64	69			4	274			4.13
08	01	871122	18.71	31	64	69	08	01	4	274	05 01 n	117 43 w	2.49
08	02	871122	18.71	64	69	31	08	01	4	274			8.73
08	03	871122	17.78	64	69	31	08	01	4	280	05 01 n	117 48 w	3.26
08	04	871122	17.78	55	56	63	08	01	4	280	05 01 n	117 50 w	7.41
08	05	871122	17.78	55	56	63	08	01	4	290	05 01 n	117 54 w	4.44
08	06	871122	17.78	56	63	55	08	01	4	290			11.85
08	07	871122	17.78	63	55	56			4	290			1.19
09	01	871122	17.41	63	55	56			4	290	05 05 n	117 04 w	4.35
09	02	871122	17.41	64	31	64			4	290			4.35
09	03	871122	17.41	64	31	64	10	01	4	290			3.48
10	01	871122	17.41	31	64	69			4	290	05 07 n	118 12 w	2.90
11	01	871122	16.85	55	56	63			4	290	05 08 n	118 25 w	8.43
11	02	871122	16.85	56	63	55	10	02	4	290			7.86
11	03	871122	17.96	69	31	64			4	290	05 11 n	118 36 w	4.49
11	04	871122	17.96	69	31	64			4	290			4.49
11	05	871122	17.96	31	64	69			4	290	05 12 n	118 41 w	5.39
01	01	871124	17.96	64	69	31			5	355	07 25 n	120 59 w	3.89
02	01	871124	17.96	63	55	56			3	002	08 53 n	120 43 w	9.58
02	02	871124	17.96	55	56	63			3	002			10.48
02	03	871124	18.33	64	69	31			3	002	09 04 n	120 41 w	9.17
02	04	871124	18.33	69	31	64			3	002			7.33
02	05	871124	18.33	69	31	64			3	002	09 13 n	120 40 w	0.31
01	01	871125	18.89	56	63	55			3	020	10 49 n	120 01 w	9.76
01	02	871125	18.52	63	55	56			3	020	10 53 n	119 59 w	9.26
01	03	871125	18.52	69	31	64			3	020	10 58 n	119 57 w	12.35
01	04	871125	18.52	31	64	69			3	020			3.09
01	05	871125	18.52	31	64	69			3	020			2.16
02	01	871125	17.78	64	69	31	03	02	3	020	11 12 n	119 50 w	1.48
02	02	871125	17.78	56	63	55			3	020			4.44
03	01	871125	18.89	63	55	56			3	024	11 17 n	119 47 w	7.87
03	02	871125	18.89	55	56	63			3	024	11 22 n	119 45 w	7.56
03	03	871125	18.89	55	56	63			3	024			1.26
03	04	871125	18.15	69	31	64			3	024	11 25 n	119 44 w	4.84
04	01	871125	18.15	69	31	64			3	024	11 28 n	119 42 w	4.84
04	02	871125	18.15	31	64	69			3	024			12.40
04	03	871125	18.15	64	69	31			3	024			11.80
04	04	871125	17.41	56	63	55			3	024	11 41 n	119 35 w	2.90
04	05	871125	17.41	56	63	55			3	018	11 43 n	119 34 w	10.16
04	06	871125	17.41	63	55	56			3	018			10.16
04	07	871125	17.41	55	56	63			3	018			4.35
04	08	871125	17.41	55	56	63			3	018			7.25
04	09	871125	17.41	69	31	64			3	018	12 00 n	119 29 w	8.70
04	10	871125	17.96	31	64	69			3	018	12 04 n	119 27 w	6.59
04	11	871125	17.96	31	64	69	07	02	3	018			2.40
05	01	871125	17.59	56	63	55			3	018	12 09 n	119 27 w	7.33
01	01	871126	17.96	31	64	69	03	03	3	028	13 42 n	118 50 w	8.98
01	02	871126	17.96	64	69	31	03	03	3	028			8.98
01	03	871126	17.96	55	56	63	03	03	3	028	13 51 n	118 45 w	2.99

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	871126	17.96	56	63	55	03	02	3	028	13 55 n	118 43 w	12.58
02	02	871126	17.96	63	55	56	03	02	3	028			8.98
02	03	871126	17.96	63	55	56	03	02	4	028			2.99
02	04	871126	15.74	31	64	69	03	02	4	028	14 01 n	118 37 w	6.82
03	01	871126	18.52	31	64	69	03	01	4	028	14 10 n	118 36 w	1.85
03	02	871126	18.52	64	69	31	04	01	4	028			12.04
03	03	871126	18.52	69	31	64	04	01	4	028			12.35
03	04	871126	17.96	55	56	63	04	01	4	028	14 22 n	118 31 w	7.49
03	05	871126	17.96	55	56	63	05	01	4	028			1.50
03	06	871126	17.96	55	56	63			4	028			1.80
03	07	871126	17.96	55	56	63	05	01	4	028	14 27 n	118 28 w	1.20
03	08	871126	17.96	56	63	55	05	01	4	028			2.99
04	01	871126	17.04	56	63	55	05	01	4	028	14 30 n	118 27 w	3.98
04	02	871126	18.33	56	63	55	06	01	4	020	14 31 n	118 23 w	3.67
04	03	871126	18.33	63	55	56			4	020			1.53
04	04	871126	18.33	63	55	56			4	020			2.44
05	01	871126	18.33	63	55	56			4	020	14 35 n	118 21 w	6.72
05	02	871126	18.33	31	64	69	06	01	4	020	14 39 n	118 19 w	9.17
06	01	871126	18.33	31	64	69	06	01	4	020	14 43 n	118 17 w	2.14
06	02	871126	18.33	64	69	31	07	01	4	020			11.92
06	03	871126	18.33	69	31	64	07	02	4	020			11.31
07	01	871126	18.33	55	56	63	07	02	4	020	14 57 n	118 10 w	2.14
07	02	871126	18.33	55	56	63	07	02	4	020			2.44
07	03	871126	18.33	55	56	63			4	020			2.14
07	04	871126	18.33	56	63	55			4	020	15 01 n	118 09 w	9.17
01	01	871127	17.59	63	55	56			4	012	16 46 n	117 34 w	7.33
01	02	871127	17.59	55	56	63			4	012			1.47
01	03	871127	17.41	55	56	63	03	03	4	012	16 50 n	117 33 w	5.80
01	04	871127	17.41	64	69	31	03	03	4	012	16 55 n	117 32 w	4.06
02	01	871127	17.41	64	69	31	03	03	4	012	16 56 n	117 31 w	1.16
03	01	871127	18.52	31	64	69			5	127	16 56 n	117 32 w	2.16
01	01	871128	17.78	69	31	64	11	03	2	128	15 03 n	115 08 w	2.07
02	01	871128	17.78	69	31	64			2	128	15 01 n	115 07 w	2.07
02	02	871128	17.78	31	64	69			2	128	15 00 n	115 06 w	5.93
02	03	871128	17.78	31	64	69			2	128			0.89
03	01	871128	18.15	56	63	55			3	128	14 58 n	114 55 w	6.65
03	02	871128	18.15	63	55	56			4	128			6.65
03	03	871128	18.15	55	56	63			4	128			6.65
03	04	871128	17.78	69	31	64			4	128	14 52 n	114 46 w	2.37
03	05	871128	17.78	69	31	64	12	02	4	128			2.96
04	01	871128	18.15	31	64	69			4	128	14 51 n	114 41 w	9.98
05	01	871128	17.59	64	69	31	01	01	4	128	14 45 n	114 36 w	2.64
05	02	871128	17.59	64	69	31			4	128			4.40
05	03	871128	17.59	56	63	55			4	128	14 43 n	114 32 w	1.47
05	04	871128	17.59	56	63	55			4	134	14 42 n	114 32 w	10.26
05	05	871128	17.59	63	55	56			4	134			7.33
05	06	871128	17.59	63	55	56	02	01	4	134			4.40
05	07	871128	17.59	55	56	63	02	01	4	134	14 34 n	114 23 w	2.93
06	01	871128	18.71	69	31	64	02	01	4	134	14 29 n	114 17 w	11.53
06	02	871128	18.71	31	64	69	03	02	3	134	14 24 n	114 11 w	9.35
06	03	871128	18.71	64	69	31	03	02	3	134			3.12
06	04	871128	18.15	64	69	31			3	136	14 21 n	114 07 w	1.51

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	05	871128	18.15	64	69	31	03	02	3	136	14 20 n	114 06 w	21.48
01	01	871129	18.89	55	56	63			3	128	12 58 n	112 43 w	2.52
01	02	871129	18.89	55	56	63	11	03	3	128			6.30
01	03	871129	18.89	56	63	55	11	03	3	128			8.19
01	04	871129	18.89	63	55	56	11	03	3	128	12 52 n	112 37 w	2.52
02	01	871129	18.71	31	64	69	01	02	3	089	12 44 n	112 35 w	12.16
02	02	871129	18.71	64	69	31	01	02	3	089			8.11
02	03	871129	17.96	55	56	63			3	106	12 44 n	112 25 w	1.20
02	04	871129	17.96	55	56	63	01	02	3	106			4.79
02	05	871129	17.78	55	56	63	03	01	3	049	12 43 n	112 22 w	1.48
03	01	871129	17.78	55	56	63	03	01	3	049	12 44 n	112 21 w	3.26
03	02	871129	17.78	56	63	55	03	01	3	049			4.44
04	01	871129	17.78	56	63	55	03	01	3	049	12 46 n	112 18 w	5.04
04	02	871129	17.78	63	55	56	03	01	3	049			11.85
04	03	871129	17.04	31	64	69	04	01	3	049	12 51 n	112 12 w	11.64
04	04	871129	17.04	64	69	31	05	01	3	049			11.07
04	05	871129	18.33	69	31	64	05	01	2	049	12 58 n	112 01 w	12.22
04	06	871129	18.52	55	56	63	06	01	2	049	13 04 n	111 55 w	2.78
04	07	871129	18.52	55	56	63			2	049			2.16
04	08	871129	18.52	55	56	63	06	01	2	049			5.25
05	01	871129	18.52	56	63	55	06	01	2	049	13 08 n	111 51 w	10.80
05	02	871129	18.52	63	55	56	06	02	2	049			0.93
05	03	871129	18.52	63	55	56			2	049			0.93
05	04	871129	18.52	63	55	56	06	02	2	049	13 12 n	111 45 w	8.95
05	05	871129	17.96	31	64	69	06	02	2	049	13 15 n	111 43 w	8.98
05	06	871129	17.96	64	69	31	06	02	2	049	13 18 n	111 39 w	8.98
05	07	871129	17.96	69	31	64	06	03	2	049	13 22 n	111 35 w	7.49
06	01	871129	17.96	55	56	63			2	049	13 26 n	111 32 w	4.19
06	02	871129	17.96	55	56	63			2	049	13 28 n	111 30 w	0.30
01	01	871130	18.33	64	69	31	02	03	2	049	14 39 n	110 04 w	7.33
02	01	871130	18.89	63	55	56	02	02	2	049	14 45 n	109 55 w	12.59
02	02	871130	18.89	55	56	63	02	02	2	049			12.59
02	03	871130	18.89	56	63	55	03	02	2	049			12.59
03	01	871130	19.26	64	69	31	03	01	3	049	14 59 n	109 41 w	8.35
03	02	871130	19.26	69	31	64	03	01	3	049			4.17
03	03	871130	19.26	69	31	64	04	01	3	000			2.25
04	01	871130	18.71	31	64	69	04	01	2	049	15 06 n	109 34 w	9.98
05	01	871130	18.71	63	55	56	04	01	2	049	15 10 n	109 29 w	11.85
05	02	871130	18.71	55	56	63	05	01	2	049			3.43
06	01	871130	18.33	56	63	55	05	01	2	049	15 16 n	109 21 w	3.36
06	02	871130	18.33	56	63	55	05	01	1	049			7.64
06	03	871130	18.71	64	69	31	05	01	2	049	15 21 n	109 16 w	12.47
06	04	871130	18.71	69	31	64	06	02	1	049			9.35
06	05	871130	18.71	69	31	64			2	049			3.12
06	06	871130	18.71	31	64	69	06	02	2	049			7.79
06	07	871130	18.71	31	64	69	08	02	2	350			4.05
07	01	871130	17.78	63	55	56	07	03	1	049	15 31 n	109 03 w	6.82
07	02	871130	17.78	64	69	31	07	03	1	049			2.07
01	01	871201	18.71	56	63	55			2	285	16 21 n	110 37 w	7.17
02	01	871201	18.71	63	55	56			2	285	16 24 n	110 40 w	7.79
02	02	871201	18.71	55	56	63	06	02	2	285			1.56
02	03	871201	18.71	55	56	63			2	285			4.99

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	04	871201	18.33	69	31	64			2	285	16 26 n	110 48 w	7.64
03	01	871201	18.52	31	64	69			2	285	16 34 n	110 59 w	3.09
04	01	871201	18.52	56	63	55			2	285	16 34 n	111 02 w	6.17
04	02	871201	18.52	63	55	56	07	01	3	285			6.17
04	03	871201	18.15	63	55	56	08	01	3	285	16 36 n	111 09 w	6.05
05	01	871201	18.15	55	56	63	08	01	3	285	16 38 n	111 12 w	8.77
05	02	871201	19.08	69	31	64	09	01	3	285	16 39 n	111 18 w	12.72
05	03	871201	19.08	31	64	69	09	01	3	285			3.18
05	04	871201	19.08	31	64	69	09	01	3	285			9.86
05	05	871201	19.08	64	69	31			3	285			7.63
05	06	871201	19.08	64	69	31	10	01	3	285			4.77
06	01	871201	19.08	56	63	55			3	285	16 45 n	111 40 w	10.49
06	02	871201	19.08	63	55	56			3	285			0.64
06	03	871201	19.08	63	55	56	10	02	3	285			0.95
06	04	871201	20.37	63	55	56			3	285	16 47 n	111 49 w	0.34
07	01	871201	20.37	63	55	56			3	285	16 49 n	111 51 w	0.68
07	02	871201	20.37	63	55	56	10	02	4	285			0.68
08	01	871201	20.19	55	56	63	10	02	4	285	16 50 n	111 51 w	3.36
09	01	871201	20.37	55	56	63	10	02	4	285	16 50 n	111 55 w	5.09
09	02	871201	20.37	69	31	64			4	285	16 51 n	111 59 w	10.19
09	03	871201	20.19	31	64	69			4	285	16 52 n	112 03 w	10.43
09	04	871201	20.37	69	64	31			4	285	16 53 n	112 09 w	7.13
09	05	871201	19.45	63	64	31			4	285	16 54 n	112 12 w	0.97
01	01	871202	19.63	31	64	69			5	289	17 29 n	114 19 w	10.80
01	02	871202	19.63	64	69	31			5	289			9.82
01	03	871202	19.45	55	56	63			5	289	17 33 n	114 30 w	6.81
01	04	871202	19.45	55	56	63	06	02	5	289			6.16
01	05	871202	19.45	56	63	55	07	02	5	289			13.61
01	06	871202	19.45	63	55	56	07	02	5	289			5.83
01	07	871202	19.45	63	55	56			5	289			6.48
01	08	871202	19.63	31	64	69			5	289	17 40 n	114 50 w	1.96
02	01	871202	19.63	31	64	69			5	289	17 42 n	114 53 w	1.64
03	01	871202	19.45	64	69	31			5	289	11 42 n	115 00 w	9.40
03	02	871202	19.45	69	31	64	08	01	5	289			4.86
03	03	871202	19.45	69	31	64			5	289			2.92
03	04	871202	19.45	69	31	64			5	291			1.94
03	05	871202	20.37	55	56	63			5	291	17 44 n	115 12 w	8.83
04	01	871202	19.08	56	63	55			5	291	17 41 n	115 23 w	7.31
04	02	871202	19.08	63	55	56			5	291			2.54
04	03	871202	19.08	63	55	56	09	01	5	291			4.45
04	04	871202	19.08	31	64	69	09	01	5	291	17 43 n	115 31 w	1.59
04	05	871202	19.08	31	64	69	09	01	5	291			1.59
04	06	871202	19.08	31	64	69			5	291			9.86
04	07	871202	19.08	64	69	31			5	291			2.86
05	01	871202	19.82	69	31	64	10	02	5	297	17 46 n	115 41 w	8.26
05	02	871202	19.82	55	56	63			5	297			1.32
05	03	871202	19.82	55	56	63	10	02	5	297			3.30
05	04	871202	19.82	55	56	63			5	297			5.28
05	05	871202	19.63	56	63	55			5	297	17 50 n	115 50 w	5.89
06	01	871202	19.63	31	64	69			5	297	17 49 n	115 58 w	10.14
01	01	871203	19.26	63	55	56			4	287	18 38 n	117 59 w	3.53
02	01	871203	19.08	63	55	56			4	287	18 36 n	118 02 w	1.59

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	871203	19.08	63	55	56	06	03	4	287	18 37 n	118 03 w	2.86
02	03	871203	19.08	55	56	63	06	03	4	287			12.08
02	04	871203	19.08	56	63	55	06	02	4	287			11.76
02	05	871203	18.71	64	69	31	06	02	4	287	18 42 n	118 18 w	12.16
02	06	871203	18.71	69	31	64	06	02	4	287			1.56
03	01	871203	18.71	69	31	64	07	02	4	287	18 46 n	118 21 w	3.12
03	02	871203	18.71	31	64	69	07	01	4	287			12.47
03	03	871203	19.63	63	55	56	07	01	4	287	18 49 n	118 29 w	3.93
04	01	871203	19.63	63	55	56	08	01	4	287	18 49 n	118 34 w	7.20
04	02	871203	19.63	55	56	63	08	01	4	287			13.09
04	03	871203	19.63	56	63	55	08	01	4	287			9.82
04	04	871203	19.63	56	63	55	03	01	4	096			3.27
04	05	871203	17.78	64	69	31	03	01	4	096	18 53 n	118 48 w	11.85
04	06	871203	17.78	69	31	64	03	01	4	096			1.48
05	01	871203	17.78	69	31	64	03	01	4	096	18 52 n	118 40 w	9.48
05	02	871203	17.78	31	64	69	03	01	4	096			11.85
05	03	871203	17.78	63	55	56	04	02	4	096	18 51 n	118 28 w	8.00
06	01	871203	17.59	63	55	56	04	02	4	096	18 50 n	118 23 w	2.64
06	02	871203	17.59	55	56	63	04	02	4	096			11.73
06	03	871203	17.59	56	63	55	05	02	4	096	18 49 n	118 15 w	11.73
06	04	871203	18.89	64	69	31	05	02	3	096	18 46 n	118 07 w	6.93
06	05	871203	18.89	64	69	31	05	03	3	096			2.52
06	06	871203	18.89	69	31	64	05	03	3	096	18 46 n	118 01 w	9.45
06	07	871203	18.89	31	64	69	05	03	3	096	18 45 n	117 56 w	2.52
01	01	871204	18.71	69	31	64	01	03	3	099	18 31 n	115 58 w	1.87
02	01	871204	18.71	69	31	64	01	03	3	099	18 30 n	115 57 w	5.61
02	02	871204	18.71	31	64	69	01	03	3	099			14.34
02	03	871204	18.71	64	69	31	01	02	3	099			11.53
02	04	871204	18.89	56	63	55	01	02	4	099	18 28 n	115 38 w	5.04
02	05	871204	18.89	64	63	55	01	02	4	099			7.56
02	06	871204	18.89	63	55	56	01	02	4	099			12.59
02	07	871204	18.89	55	56	63	01	02	4	099			8.50
02	08	871204	18.89	55	69	63	01	02	4	099			4.09
02	09	871204	18.52	69	31	64	01	01	4	099	18 24 n	115 19 w	8.03
03	01	871204	18.52	69	31	64	02	01	4	095	18 21 n	115 13 w	2.47
03	02	871204	18.52	31	64	69	02	01	4	095			12.04
04	01	871204	18.89	56	63	55			4	105	18 27 n	115 07 w	6.93
04	02	871204	18.89	56	63	55	03	01	4	105			3.15
04	03	871204	18.89	63	55	56			4	105			6.30
04	04	871204	18.89	63	55	56	04	02	4	105			3.15
04	05	871204	18.33	55	56	63	04	02	4	105	18 24 n	114 57 w	1.83
04	06	871204	18.33	55	31	63	04	02	4	105			1.22
04	07	871204	18.33	55	56	63	04	02	4	105			6.11
04	08	871204	18.33	69	31	64	04	02	3	105	18 22 n	114 52 w	3.67
01	01	871205	19.08	55	56	63	01	03	3	072	18 51 n	112 33 w	2.54
02	01	871205	19.08	55	56	63			2	072	18 53 n	112 31 w	1.91
02	02	871205	19.08	55	56	63	01	03	2	072			5.72
02	03	871205	19.08	56	63	55	01	03	2	072			5.40
02	04	871205	19.08	56	63	55			2	072			2.23
02	05	871205	18.89	56	63	55	01	03	2	072	18 55 n	112 22 w	3.46
03	01	871205	19.08	63	55	56	02	02	2	076	18 56 n	112 17 w	5.72
03	02	871205	18.89	31	64	69	02	02	2	076	18 57 n	112 12 w	10.39

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	871205	18.89	31	64	69	02	02	2	063			3.78
03	04	871205	18.89	31	64	69	02	02	3	063			1.57
04	01	871205	18.15	55	56	63	06	01	4	355	19 00 n	112 05 w	4.84
05	01	871205	18.15	55	56	63	06	01	4	355	19 04 n	112 05 w	0.60
06	01	871205	18.15	56	63	55	06	01	4	355	19 08 n	112 04 w	0.91
07	01	871205	17.96	31	64	69	07	01	4	355	19 11 n	112 05 w	3.59
08	01	871205	17.96	31	64	69	07	01	4	355	19 14 n	112 05 w	2.99
08	02	871205	17.96	64	69	31	07	01	4	355	19 14 n	112 05 w	11.98
08	03	871205	17.96	69	31	64	08	01	4	355			3.59
09	01	871205	17.96	55	56	63	08	02	4	355	19 26 n	112 05 w	11.08
09	02	871205	17.96	56	63	55	08	02	4	355			10.78
09	03	871205	17.96	63	55	56	08	02	4	355			11.08
09	04	871205	17.96	63	55	56	08	02	4	355	19 44 n	112 06 w	0.30

Table 3. Marine mammal sightings, classified by species code groups, encountered in the eastern tropical Pacific during August 8 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
870813	04	18	04	04	02	3	04	1.5	14 05 n	109 48 w	56.7	202.0	163.0
870815	01	05	01	09	02	2	04	3.9	08 47 n	108 56 w	100.0	14.0	11.0
870815	03	03	02	06	01	3	05	1.9	08 36 n	109 04 w	100.0	52.0	42.0
870815	04	02	03	05	12	3	04	1.5	08 38 n	109 17 w	79.5	228.0	171.0
870817			01			2	99	4.6	09 19 n	115 42 w	54.0	232.0	189.0
870817	06	02	03	11	02	4	51	2.9	10 01 n	116 25 w	10.0	0.0*	27.0
870818	02	04	02			4	05	3.8	10 42 n	113 45 w	62.5	93.0	48.0
870819	01	01	01			2	68	0.6	10 52 n	111 39 w	100.0	19.0	16.0
870819	09	04	07			5	67	0.5	11 04 n	110 05 w	47.0	267.0	166.0
870820	01	07	01	12	02	3	68	7.0	11 22 n	107 47 w	1.7	250.0	78.0
870820	03	18	03	09	02	3	04	3.0	11 29 n	106 51 w	100.0	210.0	155.0
870821	01	01	01			3	68	3.8	13 09 n	105 32 w	23.3	48.0	37.0
870821	02	14	04	09	12	3	67	0.4	13 52 n	104 49 w	46.7	62.0	53.0
870821	05	02	07	08	02	3	04	3.3	14 14 n	104 30 w	48.0	37.0	25.0
870821	06	04	08	08	02	3	67	2.7	14 23 n	104 18 w	100.0	31.0	25.0
870822			11			1	05	4.1	16 10 n	101 50 w	100.0	35.0	25.0
870822	01	07	01	01	02	3	51	6.1	16 02 n	102 55 w	15.0	42.0	29.0
870822	03	02	03	02	01	3	67	0.8	16 16 n	102 47 w	100.0	30.0	24.0
870822	06	01	05	04	12	2	68	1.5	16 23 n	102 28 w	100.0	54.0	40.0
870822	10	01	10	06	02	1	04	0.7	16 17 n	102 02 w	100.0	14.0	11.0
870824			05	06	01	2	05	9.2	15 04 n	097 35 w	100.0	13.0	8.0
870824	01	08	01	11	02	2	68	6.2	15 11 n	098 29 w	64.7	71.0	54.0
870824	03	02	02	12	12	2	67	0.9	15 05 n	098 13 w	58.2	119.0	92.0
870824	06	03	04	06	01	2	05	3.6	15 04 n	097 36 w	100.0	20.0	18.0
870824	08	01	07	06	02	2	04	2.4	15 11 n	097 26 w	100.0	90.0	63.0
870824	09	02	08	06	03	2	22	0.7	15 11 n	097 21 w	28.0	271.0	220.0
870825	01	02	02	10	03	2	68	1.4	15 12 n	097 07 w	45.0	21.0	16.0
870825	02	01	03	10	03	2	04	2.5	15 10 n	097 05 w	58.3	194.0	135.0
870825	05	01	06	11	02	3	51	5.4	15 05 n	096 58 w	76.5	147.0	118.0
870825	07	01	08	11	02	2	05	1.7	15 00 n	096 55 w	79.7	112.0	92.0
870825	09	04	10	12	12	3	51	1.4	14 51 n	096 31 w	53.0	294.0	235.0
870825	11	01	12	12	12	3	67	2.5	14 51 n	096 23 w	35.0	287.0	201.0
870825	14	01	14	06	02	1	51	1.5	14 51 n	096 07 w	40.0	160.0	120.0
870905			01			5	04	0.3	13 44 n	090 51 w	100.0	5.0	4.0
870906	03	01	03			4	04	0.1	13 55 n	094 00 w	100.0	25.0	19.0
870906	05	03	05			4	05	0.6	13 58 n	094 11 w	86.2	107.0	86.0
870907	04	02	02	11	01	3	05	8.9	14 17 n	099 14 w	62.3	80.0	74.0
870908	02	01	03			2	51	4.9	14 44 n	101 05 w	91.5	28.0	24.0
870908	03	03	04	07	01	2	05	0.5	14 44 n	101 20 w	100.0	12.0	10.0
870908	04	01	06	07	01	1	67	0.3	14 44 n	101 22 w	100.0	38.0	31.0

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
870908	05	02	08	08	12	1	68	8.3	14 40 n	101 34 w	100.0	43.0	36.0
870908	06	02	11	10	12	2	05	2.2	14 45 n	101 44 w	75.5	60.0	50.0
870908	07	01	13	12	12	2	05	9.9	14 46 n	101 55 w	100.0	27.0	23.0
870908	07	02	14	12	12	1	22	1.6	14 45 n	101 56 w	100.0	9.0	7.0
870908	09	01	15	01	01	1	68	0.3	14 41 n	102 00 w	71.8	112.0	85.0
870908	10	05	16	02	02	2	67	0.4	14 29 n	102 08 w	100.0	33.0	28.0
870908	11	02	17	02	02	1	04	1.1	14 23 n	102 10 w	100.0	31.0	26.0
870909	02	02	01			3	04	2.1	12 35 n	103 21 w	26.7	34.0	24.0
870909	03	04	02			4	04	6.9	11 49 n	103 48 w	78.8	117.0	89.0
870909	04	03	03			4	67	3.8	11 38 n	104 00 w	100.0	187.0	124.0
870915	02	02	01			4	68	0.8	02 14 n	116 13 w	100.0	125.0	93.0
870917	01	08	01	12	02	4	04	1.0	01 47 n	114 35 w	100.0	11.0	9.0
870919			03	09	02	4	04	0.8	00 29 n	110 18 w	100.0	545.0	452.0
870919			06			4	04	1.8	00 20 n	110 12 w	100.0	77.0	54.0
870919	02	01	04	09	02	4	68	0.2	00 27 n	110 19 w	100.0	48.0	37.0
870921	04	01	05	01	01	3	05	0.2	00 28 s	106 50 w	100.0	64.0	53.0
870922	04	01	03	01	02	4	04	3.4	00 57 n	103 48 w	65.0	575.0	400.0
870922	06	01	05			4	04	1.1	01 08 n	103 26 w	94.7	495.0	407.0
870924	04	10	04	07	01	4	51	2.9	04 14 n	097 18 w	16.0	682.0	566.0
870925	01	02	01	01	03	3	05	0.2	05 32 n	094 53 w	100.0	52.0	36.0
870925	02	01	03			3	67	4.2	05 34 n	094 55 w	100.0	52.0	37.0
870925	04	05	05	01	01	2	05	0.7	05 41 n	094 31 w	100.0	62.0	48.0
870925	05	06	07			3	51	0.0	05 54 n	094 08 w	100.0	22.0	15.0
870926	03	03	03	01	02	3	04	3.6	07 33 n	091 23 w	100.0	209.0	165.0
871013	03	01	05	09	02	2	69	0.6	05 42 n	087 04 w	16.2	437.0	399.0
871014	02	04	04	04	02	1	56	4.6	07 51 n	087 33 w	98.8	312.0	286.0
871022	05	04	06	06	01	4	31	0.2	10 51 n	094 14 w	100.0	10.0	9.0
871023	03	06	03	09	01	3	56	3.3	12 18 n	094 09 w	35.0	86.0	71.0
871025	02	03	01	09	01	4	56	1.0	07 36 n	097 42 w	47.5	62.0	47.0
871027			08			2	56	0.6	11 29 n	098 42 w	100.0	114.0	101.0
871027	05	02	07	07	01	2	69	0.7	11 29 n	098 42 w	100.0	64.0	54.0
871028	02	01	05			1	55	1.3	09 21 n	099 50 w	100.0	42.0	37.0
871028	04	02	12	09	01	2	64	0.5	09 10 n	099 59 w	54.3	85.0	73.0
871030	06	02	04			3	56	2.9	07 13 n	101 59 w	100.0	349.0	279.0
871031	01	09	01	04	01	4	55	4.0	10 11 n	101 46 w	37.5	208.0	177.0
871031	04	05	05	08	01	4	31	0.0	10 57 n	101 48 w	100.0	78.0	63.0
871101	03	02	02			4	69	2.3	12 49 n	103 45 w	38.3	137.0	110.0
871102	02	01	02	04	01	3	55	0.4	14 42 n	106 47 w	100.0	47.0	41.0
871102	03	12	04	07	03	3	63	5.0	15 23 n	106 21 w	100.0	63.0	43.0
871103	01	02	01	02	03	2	64	0.5	17 11 n	105 25 w	100.0	165.0	141.0
871103	02	03	03	04	01	2	69	2.1	17 26 n	105 11 w	100.0	50.0	42.0
871103	04	03	05	05	01	3	55	7.5	17 46 n	105 00 w	100.0	42.0	35.0
871109	03	06	02	12	01	3	64	5.9	16 16 n	105 13 w	87.8	116.0	102.0

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
871110	01	15	01	01	01	4	55	1.9	14 17 n	104 27 w	95.0	152.0	137.0
871115	10	01	10			3	69	3.3	07 43 n	100 22 w	63.3	293.0	262.0
871116	01	02	01			2	31	3.4	07 06 n	101 59 w	97.3	317.0	290.0
871119	02	01	01			4	55	0.4	01 26 n	106 55 w	100.0	88.0	75.0
871119	04	01	02			4	63	2.8	01 27 n	107 03 w	100.0	67.0	57.0
871119	06	01	05	08	01	5	69	1.1	01 38 n	107 47 w	40.0	230.0	185.0
871119	07	01	06	09	12	5	64	0.3	01 38 n	107 56 w	57.5	542.0	450.0
871119	08	02	07	10	01	5	56	3.2	01 39 n	108 05 w	80.0	128.0	113.0
871120	01	01	02	06	03	4	69	0.0	02 15 n	110 33 w	75.0	57.0	47.0
871120	03	02	05	06	01	4	56	3.2	02 31 n	110 57 w	100.0	278.0	245.0
871120	09	01	11	10	02	3	55	4.6	03 03 n	111 53 w	36.7	170.0	152.0
871120	10	01	12	10	02	3	56	3.5	03 09 n	111 59 w	55.0	250.0	217.0
871125	05	01	05			3	56	0.0	12 11 n	119 24 w	5.7	467.0	410.0
871128	05	07	05	02	01	4	55	2.7	14 34 n	114 23 w	44.2	289.0	257.0
871128	06	04	07			3	64	3.5	14 20 n	114 07 w	100.0	380.0	329.0
871129	01	04	02	11	03	3	55	5.0	12 51 n	112 35 w	40.8	153.0	122.0
871130	01	01	01	02	03	2	64	5.1	14 42 n	110 00 w	100.0	318.0	288.0
871201	02	04	02			2	31	4.2	16 27 n	110 52 w	100.0	127.0	105.0
871202	03	05	04			5	55	2.7	17 46 n	115 17 w	100.0	22.0	17.0
871202	04	06	05			5	31	6.9	17 47 n	115 37 w	7.7	1058.0	933.0
871202	05	05	06			5	56	6.3	17 52 n	115 53 w	26.7	650.0	547.0
871204	02	09	03	01	01	4	69	5.5	18 22 n	115 14 w	30.0	410.0	362.0

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
870817	06	02	03	11	02	4	51	2.9	10 01 n	116 25 w	3.3	0.0*	27.0
870818	02	04	02			4	05	3.8	10 42 n	113 45 w	12.5	93.0	48.0
870819	09	04	07			5	67	0.5	11 04 n	110 05 w	3.0	267.0	166.0
870828	03	07	05	07	12	3	67	3.1	13 16 n	091 29 w	100.0	332.0	278.0
871116	01	02	01			2	31	3.4	07 06 n	101 59 w	2.7	317.0	290.0

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
870808	01	02	01	02	02	2	22	6.1	32 27 n	117 12 w	100.0	0.0*	32.0
870808	01	04	03	02	02	2	67	0.3	32 16 n	117 14 w	100.0	250.0	210.0
870808	02	01	06	02	03	2	04	0.0	32 11 n	117 15 w	100.0	110.0	75.0
870809	01	03	01			3	68	2.4	30 08 n	117 50 w	100.0	14.0	29.0
870811	01	02	01	09	03	2	68	1.1	22 55 n	114 17 w	100.0	75.0	50.0
870811	04	03	04	10	02	3	05	0.2	22 36 n	114 08 w	100.0	108.0	80.0
870811	14	01	14	04	02	2	04	1.1	21 09 n	113 28 w	100.0	111.0	91.0
870812	03	02	05	10	02	3	51	1.8	19 08 n	112 13 w	100.0	47.0	39.0
870828	02	03	02			3	51	0.9	13 02 n	091 52 w	100.0	157.0	125.0
870926	08	01	09	02	01	3	04	0.6	07 48 n	091 04 w	100.0	56.0	41.0
870926	11	03	12	06	01	2	68	3.1	08 05 n	090 38 w	100.0	412.0	341.0
870926	12	01	15	07	02	2	04	1.5	08 05 n	090 29 w	100.0	1350.0	1058.0
870927			03	10	03	1	05	6.2	08 46 n	088 48 w	100.0	0.0*	20.0
870927	01	01	01			1	22	0.7	08 49 n	088 50 w	100.0	82.0	71.0
870927	03	04	07	10	02	1	68	3.4	08 37 n	088 41 w	100.0	422.0	315.0
871015	04	02	01	10	01	4	55	3.3	06 19 n	089 58 w	100.0	206.0	184.0
871016	03	03	02			3	69	1.3	07 15 n	090 53 w	100.0	29.0	26.0
871018			18	02	01	2	69	0.1	08 00 n	091 54 w	100.0	111.0	97.0
871018	07	01	13	11	01	2	56	5.7	08 15 n	091 43 w	100.0	662.0	577.0
871018	12	01	22	01	02	2	56	6.7	07 47 n	092 04 w	100.0	514.0	487.0
871022	01	01	01			3	64	3.7	09 47 n	094 38 w	100.0	217.0	188.0
871022	02	02	02	03	03	3	55	1.6	10 05 n	094 33 w	100.0	155.0	138.0
871113	03	16	05	04	02	4	55	3.9	09 42 n	098 54 w	100.0	35.0	30.0
871208			03	09	01	5	56	0.2	28 22 n	115 23 w	100.0	12.0	10.0
871209			01		01	5	55	0.7	30 35 n	116 18 w	100.0	60.0	55.0
871209			02			5	64	0.1	30 43 n	116 25 w	100.0	42.0	35.0

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
871001			12			2	22	0.0	n	w	100.0	0.0*	0.0*
871009			06			2	25	0.1	08 30 n	078 49 w	100.0	20.0	15.0
871009	03	01	03			2	56	1.4	08 39 n	078 57 w	100.0	38.0	32.0
871009	06	02	09			3	55	0.3	08 04 n	078 41 w	100.0	9.0	7.0
871009	08	02	13			2	64	0.0	07 42 n	078 47 w	100.0	157.0	142.0
871108			01			1	31	0.0	19 08 n	104 17 w	100.0	50.0	40.0

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
870813	04	18	04	04	02	3	04	1.5	14 05 n	109 48 w	43.3	202.0	163.0
870819	06	01	04			2	51	1.6	11 01 n	110 24 w	100.0	36.0	27.0
870819	07	01	05			2	04	2.1	11 00 n	110 22 w	100.0	42.0	32.0
870820	01	07	01	12	02	3	68	7.0	11 22 n	107 47 w	10.0	250.0	78.0
870821	01	01	01			3	68	3.8	13 09 n	105 32 w	76.7	48.0	37.0
870821	02	14	04	09	12	3	67	0.4	13 52 n	104 49 w	53.3	62.0	53.0
870821	05	02	06	08	02	3	04	1.1	14 13 n	104 31 w	100.0	39.0	32.0
870821	05	02	07	08	02	3	04	3.3	14 14 n	104 30 w	2.0	37.0	25.0
870822	01	07	01	01	02	3	51	6.1	16 02 n	102 55 w	0.0*	42.0	29.0
870822	09	01	09	06	02	1	04	2.1	16 17 n	102 09 w	100.0	39.0	30.0
870824	01	08	01	11	02	2	68	6.2	15 11 n	098 29 w	33.5	71.0	54.0
870824	03	02	02	12	12	2	67	0.9	15 05 n	098 13 w	41.8	119.0	92.0
870824	04	01	03	12	01	2	68	0.8	15 03 n	098 06 w	100.0	69.0	42.0
870824	09	02	08	06	03	2	22	0.7	15 11 n	097 21 w	52.0	271.0	220.0
870825	01	02	01	10	03	2	68	0.5	15 12 n	097 08 w	100.0	4.0	5.0
870825	01	02	02	10	03	2	68	1.4	15 12 n	097 07 w	55.0	21.0	16.0
870825	02	01	03	10	03	2	04	2.5	15 10 n	097 05 w	41.7	194.0	135.0
870825	04	01	05	11	03	2	04	0.9	15 07 n	097 02 w	100.0	20.0	16.0
870825	05	01	06	11	02	3	51	5.4	15 05 n	096 58 w	23.5	147.0	118.0
870825	07	01	08	11	02	2	05	1.7	15 00 n	096 55 w	20.3	112.0	92.0
870825	09	04	10	12	12	3	51	1.4	14 51 n	096 31 w	45.0	294.0	235.0
870825	11	01	12	12	12	3	67	2.5	14 51 n	096 23 w	65.0	287.0	201.0
870825	14	01	14	06	02	1	51	1.5	14 51 n	096 07 w	60.0	160.0	120.0
870826	02	04	02	12	12	3	04	3.2	14 06 n	093 28 w	100.0	25.0	22.0
870906	01	01	01			4	68	3.3	13 54 n	093 51 w	90.0	24.0	18.0
870906	02	01	02			4	04	4.3	13 56 n	093 56 w	100.0	18.0	14.0
870906	05	03	05			4	05	0.6	13 58 n	094 11 w	13.8	107.0	86.0
870906	08	10	06	12	03	2	51	0.0	14 02 n	095 47 w	29.3	0.0*	71.0
870907	04	02	02	11	01	3	05	8.9	14 17 n	099 14 w	33.8	80.0	74.0
870908	02	01	03			2	51	4.9	14 44 n	101 05 w	8.5	28.0	24.0
870908	06	02	11	10	12	2	05	2.2	14 45 n	101 44 w	24.5	60.0	50.0
870908	09	01	15	01	01	1	68	0.3	14 41 n	102 00 w	28.2	112.0	85.0
870909	02	02	01			3	04	2.1	12 35 n	103 21 w	73.3	34.0	24.0
870909	03	04	02			4	04	6.9	11 49 n	103 48 w	0.8	117.0	89.0
871013	03	01	05	09	02	2	69	0.6	05 42 n	087 04 w	83.7	437.0	399.0
871014	02	04	04	04	02	1	56	4.6	07 51 n	087 33 w	1.2	312.0	286.0
871014	07	07	09			2	69	0.0	08 13 n	088 05 w	100.0	327.0	297.0
871023	03	06	03	09	01	3	56	3.3	12 18 n	094 09 w	65.0	86.0	71.0
871025	02	03	01	09	01	4	56	1.0	07 36 n	097 42 w	2.5	62.0	47.0
871027			09			1	56	1.3	11 28 n	098 57 w	100.0	34.0	29.0
871028	04	02	12	09	01	2	64	0.5	09 10 n	099 59 w	45.7	85.0	73.0
871031	01	09	01	04	01	4	55	4.0	10 11 n	101 46 w	62.5	208.0	177.0
871101	03	02	02			4	69	2.3	12 49 n	103 45 w	61.7	137.0	110.0

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
871115	10	01	10			3	69	3.3	07 43 n	100 22 w	36.7	293.0	262.0
871125	05	01	05			3	56	0.0	12 11 n	119 24 w	94.3	467.0	410.0
871128	02	02	02			2	31	8.4	14 59 n	115 04 w	100.0	370.0	335.0
871128	04	01	03			4	64	0.2	14 50 n	114 40 w	100.0	188.0	163.0
871128	05	07	05	02	01	4	55	2.7	14 34 n	114 23 w	55.8	289.0	257.0
871129	01	04	02	11	03	3	55	5.0	12 51 n	112 35 w	9.2	153.0	122.0
871202	04	06	05			5	31	6.9	17 47 n	115 37 w	92.3	1058.0	933.0
871202	05	05	06			5	56	6.3	17 52 n	115 53 w	73.3	650.0	547.0
871204	02	09	03	01	01	4	69	5.5	18 22 n	115 14 w	70.0	410.0	362.0

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
870815	04	02	03	05	12	3	04	1.5	08 38 n	109 17 w	20.5	228.0	171.0
870817			01			2	99	4.6	09 19 n	115 42 w	26.0	232.0	189.0
870922	04	01	03	01	02	4	04	3.4	00 57 n	103 48 w	35.0	575.0	400.0
870922	06	01	05			4	04	1.1	01 08 n	103 26 w	5.3	495.0	407.0
870924	04	10	04	07	01	4	51	2.9	04 14 n	097 18 w	84.0	682.0	566.0
871119	07	01	06	09	12	5	64	0.3	01 38 n	107 56 w	42.5	542.0	450.0
871119	08	02	07	10	01	5	56	3.2	01 39 n	108 05 w	20.0	128.0	113.0
871120	06	02	09	09	01	4	55	0.3	02 49 n	111 29 w	100.0	36.0	30.0
871120	09	01	11	10	02	3	55	4.6	03 03 n	111 53 w	63.3	170.0	152.0
871120	10	01	12	10	02	3	56	3.5	03 09 n	111 59 w	45.0	250.0	217.0

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
870811	15	01	15	04	03	2	04	4.3	21 02 n	113 25 w	100.0	26.0	20.0
870812	02	02	02	10	03	2	05	5.9	19 14 n	112 20 w	100.0	29.0	24.0
870815	04	02	04	05	12	3	04	0.6	08 38 n	109 20 w	100.0	16.0	12.0
870816	08	04	08	12	02	1	04	0.2	07 44 n	113 26 w	100.0	101.0	83.0
870819	08	01	06			3	51	1.0	11 02 n	110 17 w	100.0	27.0	21.0
870913			01	11	12	6	04	1.5	05 37 n	113 23 w	100.0	20.0	10.0
870917	02	04	03	01	01	4	22	0.4	01 45 n	114 27 w	100.0	120.0	95.0
870918	01	12	01	12	01	5	68	0.5	02 08 n	111 05 w	100.0	13.0	9.0
870919			05	09	01	4	99	1.8	00 23 n	110 19 w	100.0	174.0	155.0
870919	01	07	01	09	02	4	04	6.4	00 34 n	110 14 w	100.0	202.0	178.0
870921			07	06	12	2	04	3.0	00 17 s	106 29 w	100.0	0.0*	25.0
870921	01	10	01	01	02	3	68	1.3	00 30 s	106 55 w	100.0	43.0	35.0
870921	03	01	02	01	01	3	22	0.2	00 28 s	106 55 w	100.0	34.0	27.0
870922	08	02	07			3	22	6.4	01 13 n	103 11 w	100.0	32.0	27.0
870924	01	09	01	01	02	4	05	0.8	03 43 n	097 56 w	100.0	68.0	51.0
870924	03	01	03	01	01	4	51	0.0	03 50 n	097 51 w	100.0	41.0	29.0
870925	05	05	06			3	04	0.0	05 52 n	094 11 w	100.0	18.0	13.0
870925	06	06	08	07	02	3	67	1.9	06 10 n	093 44 w	100.0	25.0	10.0
870926	01	01	01			2	04	0.7	07 24 n	091 37 w	100.0	36.0	28.0
870926	09	01	10	02	01	3	04	0.2	07 50 n	091 01 w	100.0	41.0	31.0
870927	05	04	11	10	01	1	67	7.5	08 20 n	088 31 w	100.0	118.0	101.0
870927	10	06	18	03	02	1	68	0.8	07 39 n	088 12 w	100.0	14.0	10.0
870927	13	05	26	04	03	1	05	1.4	07 23 n	088 04 w	100.0	33.0	28.0
870930	06	01	02			5	05	0.8	05 01 n	080 48 w	100.0	38.0	28.0
871001	01	01	01	02	03	3	22	0.1	06 50 n	079 45 w	100.0	46.0	32.0
871010	01	01	01			2	31	0.9	05 27 n	079 27 w	100.0	39.0	33.0
871010	02	06	03	09	02	3	56	3.0	05 09 n	079 32 w	100.0	114.0	97.0
871010	03	04	05	10	01	2	31	4.9	04 50 n	079 34 w	100.0	60.0	52.0
871010	06	05	11	10	02	3	55	0.3	04 58 n	080 04 w	100.0	37.0	30.0
871011	02	03	02	07	01	3	69	3.0	03 50 n	081 18 w	100.0	39.0	31.0
871011	04	02	07	01	02	3	69	0.2	03 23 n	082 25 w	100.0	47.0	35.0
871012	02	01	03			3	31	0.4	04 19 n	084 51 w	100.0	45.0	39.0
871012	04	01	04			3	31	0.9	04 36 n	085 13 w	100.0	27.0	20.0
871012	06	01	08			3	31	2.9	04 46 n	085 33 w	100.0	25.0	20.0
871013	01	01	02	09	01	2	55	2.0	05 37 n	087 04 w	100.0	27.0	24.0
871014	03	01	05			1	56	3.8	07 54 n	087 31 w	100.0	18.0	16.0
871017	03	01	03	03	02	2	31	3.7	09 35 n	090 05 w	100.0	36.0	31.0
871017	04	01	04	03	01	2	63	5.0	09 39 n	090 06 w	100.0	110.0	100.0
871017	08	03	12	07	01	2	56	1.8	10 05 n	089 58 w	100.0	57.0	48.0
871017	10	02	15	07	02	3	31	4.6	10 10 n	089 55 w	100.0	145.0	132.0
871018			04			2	64	0.0	08 49 n	091 17 w	100.0	15.0	12.0
871018	01	01	01			2	31	0.9	08 58 n	091 14 w	100.0	25.0	20.0
871018	03	02	06	08	02	2	63	1.8	08 42 n	091 23 w	100.0	44.0	39.0

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
871018	06	02	12	09	12	2	63	3.0	08 19 n	091 39 w	100.0	36.0	30.0
871018	08	01	14	01	01	2	31	0.0	08 06 n	091 50 w	100.0	12.0	10.0
871021	04	04	04	03	01	1	63	4.5	07 26 n	095 00 w	100.0	82.0	72.0
871021	06	01	05			2	55	3.9	07 38 n	094 57 w	100.0	45.0	40.0
871021	12	01	10			3	55	3.5	08 12 n	094 47 w	100.0	30.0	26.0
871022	03	05	03	03	02	4	31	1.5	10 28 n	094 23 w	100.0	46.0	41.0
871023	06	01	05			3	64	1.3	12 01 n	094 17 w	100.0	31.0	27.0
871023	09	01	08	01	02	3	31	1.8	11 43 n	094 33 w	100.0	78.0	70.0
871024	01	07	01	10	02	3	55	0.5	10 14 n	095 55 w	100.0	12.0	10.0
871024	04	01	03	10	01	4	69	0.5	09 53 n	096 04 w	100.0	34.0	30.0
871027	01	10	02	04	01	3	55	3.1	10 57 n	098 44 w	100.0	69.0	59.0
871028	01	03	03	09	02	1	64	1.4	09 24 n	099 47 w	100.0	106.0	92.0
871028	03	01	10	09	02	2	63	5.1	09 16 n	099 54 w	100.0	48.0	41.0
871028	05	01	13	10	01	1	69	2.4	09 02 n	100 03 w	100.0	54.0	47.0
871028	06	01	14	11	01	1	64	2.5	08 57 n	100 02 w	100.0	35.0	31.0
871028	07	06	21	01	01	2	69	1.8	08 26 n	100 13 w	100.0	74.0	66.0
871028	08	01	24	01	02	2	63	2.6	08 17 n	100 16 w	100.0	39.0	35.0
871029	01	03	01			3	55	0.5	06 29 n	101 12 w	100.0	107.0	98.0
871029	02	03	02			3	69	6.4	06 22 n	101 15 w	100.0	91.0	70.0
871030	01	08	01			2	55	2.3	06 04 n	102 00 w	100.0	24.0	20.0
871030	02	11	02	04	01	4	69	0.3	06 34 n	101 59 w	100.0	44.0	33.0
871031			02	04	01	4	55	0.9	10 11 n	101 46 w	100.0	15.0	12.0
871031	03	03	04	07	01	4	31	1.4	10 33 n	101 44 w	100.0	18.0	16.0
871109	01	04	01	09	03	3	31	0.4	16 58 n	104 57 w	100.0	16.0	12.0
871109	07	01	05	02	02	1	69	1.1	15 49 n	105 23 w	100.0	38.0	35.0
871113			04	11	02	4	99	1.2	09 55 n	099 53 w	100.0	47.0	40.0
871113	04	04	06	05	02	4	64	0.8	09 37 n	098 46 w	100.0	30.0	26.0
871114	02	01	02			3	69	0.6	08 37 n	096 52 w	100.0	162.0	143.0
871114	03	01	04			3	69	1.7	08 34 n	096 55 w	100.0	58.0	50.0
871114	07	02	06			3	63	1.6	08 35 n	097 44 w	100.0	58.0	52.0
871115	01	01	01			2	56	0.1	07 57 n	099 13 w	100.0	30.0	22.0
871115	08	01	08	11	02	3	55	6.7	07 41 n	100 13 w	100.0	66.0	57.0
871118	01	10	01	10	02	4	56	1.6	03 17 n	106 06 w	100.0	23.0	20.0
871118	02	01	02			4	56	1.8	03 12 n	106 09 w	100.0	61.0	52.0
871122	01	01	01			3	31	0.5	05 04 n	117 02 w	100.0	36.0	29.0
871128	01	01	01	11	03	2	31	2.6	15 02 n	115 07 w	100.0	26.0	24.0
871129	03	02	04	03	01	3	63	0.7	12 46 n	112 18 w	100.0	25.0	20.0
871129	04	08	05	06	01	2	55	0.0	13 07 n	111 52 w	100.0	19.0	17.0
871130	02	03	02	03	02	2	55	2.1	14 59 n	109 38 w	100.0	17.0	14.0
871201	01	01	01			2	63	1.1	16 22 n	110 41 w	100.0	19.0	16.0
871201	06	04	05			3	55	1.4	16 47 n	111 49 w	100.0	42.0	38.0
871204	01	01	01	01	03	3	64	0.1	18 31 n	115 57 w	100.0	12.0	11.0
871205	01	01	01	01	03	3	55	0.1	18 52 n	112 32 w	100.0	16.0	12.0

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
871205	05	01	04	06	01	4	55	1.8	19 04 n	112 05 w	100.0	69.0	60.0
871205	06	01	05	06	01	4	63	2.6	19 09 n	112 04 w	100.0	40.0	33.0

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
870816	07	05	06	12	01	1	67	3.0	07 45 n	113 18 w	100.0	17.0	14.0
870821			09	08	03	3	04	2.1	14 28 n	104 15 w	100.0	6.0	5.0
870908			07	07	01	1	05	8.2	14 42 n	101 24 w	100.0	2.0	1.0
870916	02	10	02			4	04	1.1	01 16 n	117 24 w	100.0	10.0	8.0
870929	08	01	05			2	05	0.6	04 29 n	083 31 w	100.0	5.0	5.0
871009	10	01	16			3	55	0.3	07 31 n	078 49 w	100.0	10.0	9.0
871013	02	01	03	09	01	2	63	6.4	05 41 n	087 03 w	100.0	87.0	76.0
871018	05	02	11	09	01	3	31	0.1	08 27 n	091 35 w	100.0	34.0	31.0
871027	07	02	11	02	03	2	69	4.8	11 23 n	099 05 w	100.0	8.0	7.0
871103	05	01	06	06	01	3	69	4.2	17 52 n	105 02 w	100.0	15.0	14.0
871103	07	02	07	07	02	3	55	0.1	18 13 n	104 50 w	100.0	5.0	5.0
871117	02	02	02			4	31	1.9	05 55 n	105 18 w	100.0	27.0	24.0
871117	03	07	04	10	01	4	69	2.2	05 45 n	105 44 w	100.0	13.0	12.0
871122	02	01	02			3	64	0.9	05 03 n	117 11 w	100.0	13.0	12.0
871122	03	03	03			3	64	0.5	05 03 n	117 14 w	100.0	2.0	2.0
871126	01	03	01	03	03	3	63	0.0	13 51 n	118 45 w	100.0	18.0	14.0

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
870811	08	02	06	02	12	3	22	1.1	22 56 n	113 50 w	10.0	17.0	14.0
870812			07	10	02	3	68	0.9	19 00 n	112 05 w	100.0	11.0	10.0
870812	03	01	04	10	02	3	04	0.1	19 11 n	112 16 w	100.0	9.0	7.0
870812	06	05	10	03	12	3	04	7.3	18 26 n	111 51 w	100.0	47.0	36.0
870812	07	09	12	04	02	3	51	0.3	17 56 n	111 37 w	100.0	0.0*	5.0
870812	08	01	14	04	03	3	67	0.6	17 44 n	111 31 w	100.0	15.0	11.0
870813	01	04	01	09	03	3	04	0.2	15 40 n	110 35 w	100.0	91.0	67.0
870814			01			3	68	0.0	10 20 n	109 10 w	100.0	9.0	8.0
870817	04	05	02	12	12	3	67	0.7	09 31 n	115 55 w	100.0	22.0	18.0
870819	03	02	03			1	05	0.6	10 55 n	111 18 w	70.0	22.0	17.0
870823	04	01	04	05	01	3	04	2.3	15 45 n	099 38 w	57.5	70.0	57.0
870824	01	08	01	11	02	2	68	6.2	15 11 n	098 29 w	1.8	71.0	54.0
870824	07	01	06	06	02	2	51	0.4	15 11 n	097 25 w	100.0	0.0*	2.0
870825	08	01	09	11	02	3	05	0.1	14 53 n	096 52 w	100.0	7.0	6.0
870825	09	04	10	12	12	3	51	1.4	14 51 n	096 31 w	2.0	294.0	235.0
870826			01	12	01	3	29	0.0	14 05 n	093 38 w	25.0	50.0	40.0
870826			11	06	03	3	04	0.0	14 00 n	092 17 w	100.0	20.0	0.0*
870826	06	02	06			4	67	0.1	14 00 n	093 08 w	73.0	101.0	94.0
870826	09	02	09	06	02	4	68	1.4	14 01 n	092 43 w	100.0	0.0*	6.0
870826	11	01	10	06	02	3	05	0.1	13 59 n	092 29 w	45.0	20.0	18.0
870827	01	01	01			3	04	2.3	14 00 n	092 23 w	100.0	63.0	0.0*
870827	02	02	02			3	05	4.8	13 46 n	092 24 w	50.0	13.0	9.0
870827	04	07	03	11	12	3	22	1.0	13 14 n	092 30 w	50.0	18.0	0.0*
870828	01	01	01			5	51	0.0	12 50 n	092 13 w	100.0	0.0*	2.0
870828	03	03	04			3	04	1.0	13 07 n	091 45 w	29.0	0.0*	4.0
870909	03	04	02			4	04	6.9	11 49 n	103 48 w	3.7	117.0	89.0
870926			14			3	04	2.8	08 05 n	090 32 w	100.0	22.0	19.0
870927	03	04	06	10	02	1	68	3.4	08 37 n	088 41 w	41.0	70.0	58.0
870927	08	02	14	12	12	0	68	3.4	08 08 n	088 28 w	46.7	31.0	23.0
870928	01	01	01	05	02	2	51	0.3	05 26 n	087 03 w	100.0	0.0*	15.0
870929	06	01	02			2	51	0.2	04 34 n	083 42 w	100.0	14.0	11.0
870929	07	01	03			2	68	0.2	04 32 n	083 36 w	100.0	5.0	4.0
871001	03	02	06	03	12	4	67	0.1	07 30 n	079 17 w	14.7	23.0	20.0
871001	04	03	07	12	12	5	04	2.7	07 36 n	079 14 w	100.0	75.0	42.0
871001	05	02	09			4	04	2.8	07 50 n	079 07 w	100.0	0.0*	2.0
871009	01	01	01			2	55	1.2	08 42 n	079 03 w	100.0	9.0	8.0
871009	02	01	02			2	55	0.0	08 41 n	079 59 w	100.0	16.0	14.0
871009	07	03	10	12	12	1	55	0.0	07 56 n	078 43 w	100.0	8.0	7.0
871011	03	13	06	12	02	3	55	0.4	03 26 n	082 14 w	100.0	2.0	2.0
871012	05	04	06	11	02	3	56	0.0	04 44 n	085 28 w	50.0	25.0	18.0
871013			01	12	12	2	31	0.1	05 31 n	087 04 w	100.0	13.0	13.0
871014	01	01	01			2	69	1.0	07 31 n	087 27 w	70.0	42.0	39.0
871016	05	02	03			3	63	2.9	07 31 n	090 46 w	100.0	20.0	19.0

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
871017			10	12	12	2	69	0.5	09 55 n	090 05 w	77.5	25.0	22.0
871017	05	02	07	03	12	2	56	2.7	09 47 n	090 09 w	66.7	42.0	39.0
871017	06	01	08	12	12	2	69	3.6	09 51 n	090 07 w	100.0	79.0	72.0
871017	10	01	14	07	02	3	56	0.6	10 06 n	089 57 w	40.0	13.0	10.0
871018			19			2	63	1.1	07 56 n	091 55 w	57.5	18.0	17.0
871018	09	01	16	01	01	2	64	4.4	08 05 n	091 51 w	50.0	29.0	25.0
871018	11	01	20	01	02	2	55	1.0	07 52 n	092 00 w	100.0	56.0	56.0
871021	11	01	09	08	02	3	56	2.9	08 07 n	094 49 w	37.7	17.0	15.0
871023	01	01	01			2	56	0.2	12 49 n	093 48 w	100.0	13.0	13.0
871101			04	10	02	4	55	0.1	13 26 n	104 40 w	100.0	2.0	2.0
871110	01	15	01	01	01	4	55	1.9	14 17 n	104 27 w	5.0	152.0	137.0
871111	04	02	05	02	01	4	55	0.0	13 15 n	101 34 w	100.0	6.0	6.0
871115			02			2	63	0.0	07 57 n	099 14 w	47.3	25.0	21.0
871127	01	04	01	03	03	4	31	0.0	16 55 n	117 32 w	100.0	8.0	7.0
871202	02	01	03			5	31	2.2	17 43 n	114 54 w	100.0	38.0	34.0

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
870813	03	07	02	10	12	4	68	0.0	14 58 n	110 16 w	50.0	2.0	2.0
870819	03	02	03			1	05	0.6	10 55 n	111 18 w	5.0	22.0	17.0
870823	04	01	04	05	01	3	04	2.3	15 45 n	099 38 w	42.5	70.0	57.0
870826			01	12	01	3	29	0.0	14 05 n	093 38 w	75.0	50.0	40.0
870826	04	01	04			3	68	0.1	14 02 n	093 20 w	100.0	6.0	6.0
870826	06	02	06			4	67	0.1	14 00 n	093 08 w	27.0	101.0	94.0
870826	08	03	08			4	05	5.7	14 00 n	092 53 w	75.0	15.0	14.0
870826	11	01	10	06	02	3	05	0.1	13 59 n	092 29 w	55.0	20.0	18.0
870827	02	02	02			3	05	4.8	13 46 n	092 24 w	50.0	13.0	9.0
870827	04	07	03	11	12	3	22	1.0	13 14 n	092 30 w	50.0	18.0	0.0*
870907	03	08	01	11	12	3	04	0.4	14 17 n	99 05 w	100.0	5.0	4.0
870908			05	07	01	1	04	0.1	14 44 n	101 21 w	100.0	6.0	4.0
870920	02	07	03	07	01	4	04	0.2	01 39 s	109 03 w	100.0	5.0	4.0
870927			24	04	03	1	99	0.3	07 27 n	088 04 w	100.0	1.0	1.0
870927	12	02	23	03	03	1	51	0.3	07 32 n	088 07 w	100.0	10.0	8.0
870929	04	06	01			4	68	1.3	04 48 n	084 14 w	100.0	7.0	5.0
870929	07	02	04			2	04	0.2	04 32 n	083 35 w	100.0	9.0	7.0
871012	01	15	02	06	01	3	64	0.3	04 15 n	084 50 w	100.0	19.0	18.0
871012	05	04	06	11	02	3	56	0.0	04 44 n	085 28 w	50.0	25.0	18.0
871021	10	01	08	08	02	3	63	0.3	08 05 n	094 49 w	100.0	8.0	7.0
871021	11	01	09	08	02	3	56	2.9	08 07 n	094 49 w	6.0	17.0	15.0
871023	02	02	02	08	03	2	31	0.5	12 42 n	093 54 w	100.0	5.0	5.0
871024	05	08	04	01	01	2	64	1.2	09 31 n	096 18 w	100.0	15.0	14.0
871027			06	06	01	2	99	0.0	11 22 n	098 42 w	100.0	9.0	8.0
871114	04	01	05			3	55	0.2	08 43 n	097 10 w	100.0	13.0	11.0
871117	01	06	01			4	69	2.2	05 56 n	105 12 w	100.0	8.0	7.0
871130	05	02	04	05	01	2	55	3.2	15 15 n	109 22 w	100.0	14.0	12.0

Table 3. (continued)

Sightings by Species

species: PACIFIC WHITE-SIDED DOLPHIN (LAGENORHYNCHUS OBLIQUIDENS) species code: 22

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
871208			01	04	03	4	31	0.0	27 48 n	115 06 w	100.0	12.0	11.0
871208			02	09	01	5	63	0.1	28 19 n	115 16 w	100.0	4.0	4.0

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
870921	05	06	06	06	12	3	68	2.2	00 16 s	106 32 w	100.0	162.0	138.0

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
870822	08	02	08	06	01	1	67	0.8	16 16 n	102 11 w	100.0	11.0	9.0
870916	01	03	01			3	04	2.0	01 13 n	117 57 w	100.0	12.0	9.0
870923	02	03	02	02	02	3	04	0.5	02 15 n	101 16 w	100.0	29.0	22.0
871017	01	05	01	03	02	3	31	0.1	09 27 n	090 09 w	100.0	28.0	25.0
871021	08	01	06	08	01	2	56	0.2	07 50 n	094 55 w	100.0	25.0	21.0
871101	04	01	03	08	01	5	56	0.1	12 57 n	103 54 w	100.0	17.0	15.0

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
871016			01			3	99	0.4	06 21 n	091 09 w	100.0	8.0	8.0
871025	03	05	02	12	01	2	64	0.3	07 13 n	097 57 w	100.0	11.0	11.0
871120	04	04	06	09	01	4	63	2.0	02 49 n	111 19 w	100.0	13.0	8.0

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
870810	03	06	02	04	02	3	22	0.2	25 01 n	115 24 w	100.0	9.0	7.0
870920			01	01	02	3	68	1.3	02 02 s	109 56 w	51.7	0.0*	6.0
870922	02	05	02	01	02	4	68	2.1	00 46 n	104 09 w	100.0	0.0*	9.0
870924	02	01	02	01	01	4	51	1.0	03 48 n	097 52 w	100.0	19.0	14.0
870925	07	01	09	07	02	3	67	1.9	06 12 n	093 41 w	100.0	13.0	9.0
870926			13			3	51	0.1	08 06 n	090 32 w	100.0	0.0*	8.0
870926	04	02	05	01	02	3	05	0.5	07 41 n	091 17 w	100.0	8.0	6.0
870926	06	01	07	01	02	3	05	0.7	07 44 n	091 12 w	100.0	16.0	13.0
870926	09	01	11	02	01	3	68	1.0	07 50 n	091 01 w	100.0	19.0	15.0
870927	03	04	06	10	02	1	68	3.4	08 37 n	088 41 w	59.0	70.0	58.0
870927	08	02	14	12	12	0	68	3.4	08 08 n	088 28 w	53.3	31.0	23.0
871001	03	02	06	03	12	4	67	0.1	07 30 n	079 17 w	85.3	23.0	20.0
871017			10	12	12	2	69	0.5	09 55 n	090 05 w	22.5	25.0	22.0
871017	02	01	02	03	02	3	31	0.8	09 31 n	090 05 w	100.0	14.0	14.0
871017	05	02	07	03	12	2	56	2.7	09 47 n	090 09 w	33.3	42.0	39.0
871017	07	01	09	12	12	2	31	0.1	09 54 n	090 06 w	100.0	11.0	10.0
871017	10	01	14	07	02	3	56	0.6	10 06 n	089 57 w	60.0	13.0	10.0
871018			19			2	63	1.1	07 56 n	091 55 w	42.5	18.0	17.0
871021	11	01	09	08	02	3	56	2.9	08 07 n	094 49 w	56.3	17.0	15.0
871030	04	03	03	07	01	3	31	1.0	06 53 n	101 57 w	100.0	17.0	16.0
871114			01			3	99	0.0	08 50 n	096 43 w	100.0	8.0	7.0
871115			02			2	63	0.0	07 57 n	099 14 w	52.7	25.0	21.0
871115	05	07	06	10	01	2	31	4.0	07 41 n	099 59 w	100.0	9.0	8.0
871115	09	01	09			3	69	2.2	07 43 n	100 20 w	100.0	10.0	9.0
871122	08	07	05			4	63	0.2	05 04 n	117 03 w	100.0	12.0	10.0

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
871014	06	09	07	01	01	3	31	4.3	08 27 n	087 48 w	100.0	5.0	5.0
871018	04	02	08	08	01	3	31	0.7	08 35 n	091 27 w	100.0	4.0	4.0
871110	03	03	03	04	02	4	55	0.9	13 44 n	103 54 w	100.0	5.0	5.0
871115	04	01	04			2	31	5.0	07 48 n	099 32 w	100.0	9.0	8.0
871120			10			3	31	0.1	02 57 n	111 49 w	100.0	5.0	5.0
871125	02	02	02			3	63	3.0	11 14 n	119 49 w	100.0	6.0	5.0

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
870821	03	06	05	08	01	4	68	0.6	14 03 n	104 40 w	100.0	3.0	3.0
870926	05	02	06	01	02	3	05	6.4	07 43 n	091 14 w	100.0	3.0	3.0
870930	02	08	01	07	12	3	05	0.4	04 40 n	081 06 w	100.0	11.0	9.0
871001	02	11	05	02	01	3	67	1.6	07 24 n	079 22 w	100.0	5.0	4.0
871009	10	01	15			3	63	4.2	07 33 n	078 49 w	100.0	8.0	8.0
871011	03	13	05	12	02	3	55	1.4	03 26 n	082 13 w	100.0	20.0	18.0
871014	01	01	01			2	69	1.0	07 31 n	087 27 w	30.0	42.0	39.0
871016	06	01	04			3	64	1.0	07 35 n	090 47 w	100.0	5.0	5.0
871018			21	01	02	2	55	0.3	07 52 n	092 00 w	100.0	28.0	28.0
871018	09	01	16	01	01	2	64	4.4	08 05 n	091 51 w	50.0	29.0	25.0
871028	01	01	02	09	03	2	64	0.2	09 34 n	099 43 w	60.0	14.0	13.0
871028	01	03	04	09	02	1	64	5.7	09 24 n	099 47 w	100.0	6.0	5.0
871029	03	08	06			3	31	5.3	05 59 n	101 27 w	100.0	15.0	14.0
871103	02	02	02	03	02	3	69	0.0	17 22 n	105 12 w	100.0	3.0	3.0
871109	03	06	02	12	01	3	64	5.9	16 16 n	105 13 w	12.2	116.0	102.0
871115	05	05	05			2	69	7.9	07 44 n	099 50 w	100.0	7.0	6.0
871125	04	10	04			3	31	0.5	12 06 n	119 27 w	100.0	10.0	10.0
871202	01	05	01	07	02	5	63	1.2	17 38 n	114 43 w	100.0	2.0	2.0

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
870816			07	12	01	1	05	0.2	07 45 n	113 18 w	100.0	2.0	2.0
870816	06	01	05	02	12	1	04	0.8	07 53 n	113 01 w	100.0	2.0	1.0
870920	01	14	02	12	12	3	04	0.6	01 49 s	109 21 w	100.0	2.0	2.0
870927	05	04	10	10	01	1	05	4.1	08 22 n	088 32 w	100.0	6.0	4.0
870927	11	01	21	03	02	1	68	0.7	07 36 n	088 09 w	100.0	2.0	1.0
870927	11	01	22	03	02	1	51	0.3	07 34 n	088 08 w	100.0	2.0	2.0
871027	03	01	04	05	01	2	31	0.5	11 15 n	098 41 w	100.0	2.0	2.0
871121	01	21	01	10	01	5	55	0.4	04 30 n	115 10 w	100.0	1.0	1.0

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
870816			10			1	67	0.5	07 42 n	113 37 w	100.0	1.0	1.0
870822			12			1	04	0.6	16 06 n	101 48 w	100.0	2.0	2.0
870823	02	02	02	12	01	3	04	0.3	15 46 n	100 14 w	100.0	1.0	1.0
870907			03	11	03	2	04	0.0	14 25 n	099 22 w	100.0	2.0	2.0
870926			04	01	02	3	68	0.5	07 33 n	091 24 w	100.0	2.0	2.0
870927	10	05	16	03	02	2	04	5.0	07 40 n	088 12 w	100.0	3.0	2.0
870927	10	05	17	03	02	2	04	0.0	07 39 n	088 12 w	100.0	1.0	1.0
871001	02	10	04	02	01	3	67	0.1	07 20 n	079 23 w	100.0	2.0	2.0
871029	04	01	07			3	64	1.0	05 57 n	101 31 w	100.0	1.0	1.0
871110	02	06	02	03	02	4	69	0.7	13 50 n	104 04 w	100.0	1.0	1.0
871111	03	02	03	01	02	3	31	1.7	13 11 n	101 42 w	100.0	2.0	2.0
871128	05	04	04			4	63	1.4	14 39 n	114 29 w	100.0	1.0	1.0
871129	02	01	03	01	02	3	31	3.4	12 43 n	112 32 w	100.0	1.0	1.0
871130	06	02	05	05	01	1	56	2.3	15 19 n	109 18 w	100.0	3.0	3.0

Table 3. (continued)

Sightings by Species

species: SOUTHERN BOTTLENOSED WHALE (HYPEROODON PLANIFRONS) species code: 50

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			09			1	04	0.0	14 41 n	101 36 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
870908	07	01	12	12	12	2	05	0.8	14 46 n	101 52 w	100.0	3.0	3.0
870917	04	07	05	06	01	4	05	0.1	01 47 n	114 02 w	100.0	3.0	3.0
870925	03	03	04			3	04	0.7	05 34 n	094 45 w	100.0	3.0	2.0
870927			12	10	01	1	70	0.0	08 20 n	088 31 w	100.0	1.0	1.0
870927	06	01	13	12	12	0	67	1.7	08 12 n	088 33 w	100.0	3.0	3.0
871010	05	01	08	10	01	2	63	1.3	04 39 n	079 47 w	100.0	3.0	3.0
871010	05	03	09	10	01	3	31	0.9	04 45 n	079 53 w	100.0	5.0	5.0
871011	03	05	03			3	63	1.5	03 45 n	081 35 w	100.0	2.0	2.0
871011	03	08	04			2	64	4.1	03 38 n	081 50 w	100.0	3.0	3.0
871027	02	03	03	05	01	2	55	0.2	11 13 n	098 41 w	100.0	2.0	2.0
871027	06	02	10	01	02	1	31	1.0	11 24 n	099 00 w	100.0	1.0	1.0
871028			15	11	01	1	31	0.6	08 56 n	100 03 w	100.0	1.0	1.0
871028	02	01	06			1	55	0.9	09 20 n	099 51 w	100.0	1.0	1.0
871029	03	05	04			3	55	0.7	06 05 n	101 17 w	100.0	2.0	2.0
871103	02	03	04	04	01	2	64	2.9	17 30 n	105 09 w	100.0	3.0	3.0
871113	02	06	02	11	02	4	31	0.5	09 57 n	099 54 w	100.0	2.0	2.0
871204	02	09	02	01	01	4	31	0.6	18 22 n	115 14 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
870826	05	04	05			4	05	0.0	14 01 n	093 12 w	100.0	1.0	1.0
870918	02	09	02	06	12	4	51	0.3	02 10 n	110 35 w	100.0	1.0	1.0
870921	06	07	09	07	02	2	51	0.4	00 05 s	106 05 w	100.0	2.0	2.0
870927	10	04	15	03	02	2	22	0.0	07 37 n	088 10 w	100.0	3.0	3.0
870927	13	02	25			1	05	2.0	07 27 n	088 04 w	100.0	1.0	1.0
871018	09	01	15	01	01	2	31	2.7	08 05 n	091 51 w	100.0	3.0	3.0
871022	06	03	07	07	01	4	31	1.1	11 07 n	094 10 w	100.0	1.0	1.0
871029	03	05	05			3	56	0.5	06 04 n	101 18 w	100.0	1.0	1.0

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
870808	01	04	04	02	02	2	05	0.3	32 15 n	117 14 w	100.0	3.0	3.0
870811			16	04	03	2	04	4.0	21 02 n	113 25 w	100.0	1.0	1.0
870813			03	04	02	3	29	0.4	14 12 n	109 52 w	100.0	1.0	1.0
870818			03	01	01	4	29	0.2	10 47 n	113 51 w	100.0	1.0	1.0
870826	07	01	07			4	05	1.1	14 00 n	093 06 w	100.0	1.0	1.0
870919	04	04	07	12	12	4	04	2.5	00 05 n	110 10 w	100.0	1.0	1.0
870923	02	01	01	11	01	3	68	2.9	02 10 n	101 20 w	100.0	1.0	1.0
870923	03	02	03			3	04	0.5	02 18 n	101 13 w	100.0	1.0	1.0
870927	03	04	05	10	02	1	51	1.8	08 38 n	088 41 w	100.0	0.0*	1.0
871009	06	01	08			2	55	3.9	08 08 n	078 41 w	100.0	1.0	1.0
871009	09	01	14			2	55	2.9	07 36 n	078 48 w	100.0	1.0	1.0
871011	01	03	01	07	02	3	63	0.2	03 56 n	081 04 w	100.0	1.0	1.0
871012			09	09	03	3	31	0.0	04 48 n	085 34 w	100.0	1.0	1.0
871012	01	08	01			3	56	10.3	03 59 n	084 32 w	100.0	1.0	1.0
871013			06	09	02	2	69	2.1	05 46 n	087 05 w	100.0	1.0	1.0
871018	05	01	09	09	01	3	31	2.5	08 30 n	091 33 w	100.0	1.0	1.0
871020	01	12	01	03	02	5	64	0.2	03 53 n	096 02 w	100.0	1.0	1.0
871027	01	06	01	03	02	3	31	2.2	10 41 n	098 40 w	100.0	1.0	1.0
871028			22			2	25	0.0	08 25 n	100 14 w	100.0	1.0	1.0
871111	02	04	02	12	02	3	64	7.2	13 07 n	101 51 w	100.0	1.0	1.0
871119	05	09	04	08	01	5	31	2.9	01 37 n	107 44 w	100.0	1.0	1.0
871120	06	01	08	09	01	4	56	2.2	02 48 n	111 27 w	100.0	1.0	1.0
871128			06	03	01	4	31	0.1	14 31 n	114 18 w	100.0	1.0	1.0
871129	06	01	06			2	55	5.3	13 27 n	111 32 w	100.0	1.0	1.0
871201	05	02	04	09	01	3	31	3.1	16 40 n	111 23 w	100.0	1.0	1.0
871203	06	07	02	05	03	3	69	0.4	18 44 n	117 54 w	100.0	2.0	2.0
871204	03	02	04	02	01	4	31	4.0	18 21 n	115 07 w	100.0	1.0	1.0
871205	03	04	03	02	02	3	31	9.3	18 59 n	112 06 w	100.0	2.0	2.0

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
870812	07	11	13	04	02	3	22	1.4	17 47 n	111 32 w	100.0	2.0	2.0
870923	06	01	05	06	12	4	51	0.8	02 35 n	100 37 w	100.0	2.0	2.0
871111	01	02	01	12	03	2	56	2.3	13 07 n	101 56 w	100.0	2.0	2.0

Table 3. (continued)

Sightings by Species

species: BLUE WHALE (B. MUSCULUS) species code: 75

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	06	01			2	51	0.8	26 32 n	116 11 w	100.0	2.0	1.0
871018	02	02	03			2	64	4.8	08 51 n	091 18 w	100.0	1.0	1.0
871024	02	07	02			3	64	1.8	09 57 n	096 00 w	100.0	2.0	2.0
871205	02	05	02	01	03	2	55	1.8	18 56 n	112 20 w	100.0	1.0	1.0
871205	08	03	06	08	01	4	31	2.1	19 24 n	112 06 w	100.0	1.0	1.0

Table 3. (continued)

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
870905			02			5	04	4.5	13 43 n	090 53 w	100.0	1.0	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
870808	02	01	05	02	03	2	04	2.9	32 12 n	117 15 w	100.0	0.0*	25.0
870811			02	09	03	2	04	1.3	22 54 n	114 16 w	100.0	0.0*	1.0
870811	02	01	03	10	02	2	04	0.4	22 52 n	114 15 w	100.0	28.0	18.0
870811	06	02	05	10	01	3	51	3.4	22 18 n	113 58 w	100.0	30.0	20.0
870811	08	02	06	02	12	3	22	1.1	22 56 n	113 50 w	90.0	17.0	14.0
870811	09	02	07	03	12	3	04	1.0	21 45 n	113 43 w	100.0	0.0*	1.0
870811	09	03	08	03	01	2	51	6.3	21 43 n	113 42 w	100.0	0.0*	20.0
870811	10	02	09	03	01	3	68	8.1	21 40 n	113 42 w	100.0	0.0*	15.0
870811	11	02	10	03	01	3	68	1.8	21 32 n	113 39 w	100.0	0.0*	5.0
870811	12	03	11	04	02	3	67	4.0	21 01 n	113 27 w	100.0	20.0	13.0
870811	13	05	12	04	02	2	51	4.9	21 16 n	113 25 w	100.0	0.0*	15.0
870811	14	01	13	04	02	2	04	3.9	21 09 n	113 28 w	100.0	0.0*	30.0
870812			01	10	03	2	04	3.4	19 17 n	112 23 w	100.0	0.0*	10.0
870812	04	01	06	10	02	3	68	0.5	19 01 n	112 07 w	100.0	4.0	3.0
870812	05	02	08	10	01	3	05	4.0	18 53 n	112 02 w	100.0	50.0	35.0
870813	03	07	02	10	12	4	68	0.0	14 58 n	110 16 w	50.0	2.0	2.0
870813	05	01	05	04	03	3	04	3.2	13 57 n	109 48 w	100.0	0.0*	5.0
870816	04	03	03	06	12	1	04	6.0	07 57 n	112 56 w	100.0	7.0	4.0
870816	05	01	04	02	12	1	68	4.7	07 53 n	112 58 w	100.0	15.0	11.0
870817	06	02	03	11	02	4	51	2.9	10 01 n	116 25 w	20.0	0.0*	27.0
870819	10	02	08			5	51	0.6	11 09 n	110 00 w	100.0	2.0	1.0
870820	01	07	01	12	02	3	68	7.0	11 22 n	107 47 w	21.7	250.0	78.0
870821			03	01	01	3	29	0.9	13 35 n	105 05 w	100.0	0.0*	0.0*
870822	01	07	01	01	02	3	51	6.1	16 02 n	102 55 w	0.0*	42.0	29.0
870822	02	01	02	02	01	3	05	0.1	16 11 n	102 51 w	100.0	3.0	2.0
870822	03	03	04	02	01	3	05	0.2	16 19 n	102 45 w	100.0	0.0*	1.0
870825	03	01	04	11	03	2	04	5.2	15 09 n	097 05 w	100.0	0.0*	4.0
870825	06	01	07	11	02	2	67	0.1	15 01 n	096 57 w	100.0	0.0*	5.0
870825	13	01	13	06	12	1	51	1.5	14 49 n	096 11 w	100.0	0.0*	2.0
870826	02	04	03	12	12	3	68	0.7	14 04 n	093 27 w	100.0	0.0*	1.0
870826	08	03	08			4	05	5.7	14 00 n	092 53 w	25.0	15.0	14.0
870828	03	02	03			3	51	1.5	15 05 n	091 47 w	100.0	0.0*	1.0
870828	03	03	04			3	04	1.0	13 07 n	091 45 w	71.0	0.0*	4.0
870828	05	01	06	07	02	2	05	4.1	13 17 n	091 12 w	100.0	0.0*	2.0
870906	01	01	01			4	68	3.3	13 54 n	093 51 w	10.0	24.0	18.0
870906	04	01	04			4	68	0.4	13 56 n	094 04 w	100.0	0.0*	2.0
870906	08	10	06	12	03	2	51	0.0	14 02 n	095 47 w	70.7	0.0*	71.0
870907	04	02	02	11	01	3	05	8.9	14 17 n	099 14 w	3.8	80.0	74.0
870908	01	02	01			2	68	0.7	14 37 n	101 04 w	100.0	4.0	3.0
870908	01	02	02			2	68	0.8	14 37 n	101 04 w	100.0	8.0	4.0
870912	01	30	01			5	22	2.4	05 55 n	110 27 w	100.0	1.0	1.0
870916			03	06	01	5	12	0.0	01 24 n	116 52 w	100.0	1.0	1.0
870916	02	31	04			4	04	1.8	01 25 n	116 50 w	100.0	0.0*	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
870917	03	01	04	12	12	4	51	0.5	01 38 n	114 21 w	100.0	3.0	3.0
870919			02	09	02	4	51	0.0	00 32 n	110 15 w	100.0	1.0	1.0
870920			01	01	02	3	68	1.3	02 02 s	109 56 w	15.0	0.0*	6.0
870921			03	01	01	3	70	1.3	00 27 s	106 54 w	100.0	100.0	75.0
870922	07	02	06			3	51	0.5	01 11 n	103 17 w	100.0	1.0	1.0
870923	05	02	04	12	12	4	68	0.8	02 35 n	100 40 w	100.0	18.0	10.0
870923	07	10	06	07	03	3	67	0.2	02 55 n	100 00 w	100.0	10.0	8.0
870925	02	01	02			3	05	0.0	05 33 n	094 56 w	100.0	0.0*	15.0
870926	02	01	02			2	68	3.2	07 26 n	091 33 w	100.0	36.0	28.0
870926	07	02	08	01	01	3	04	4.4	07 47 n	091 08 w	100.0	0.0*	75.0
870927	02	01	02	10	03	1	67	4.2	08 46 n	088 48 w	100.0	0.0*	5.0
870927	04	01	08	10	02	1	04	8.9	08 30 n	088 37 w	100.0	0.0*	35.0
870927	10	06	19	03	02	1	04	7.9	07 39 n	088 12 w	100.0	0.0*	1.0
871001	05	01	08			4	51	0.5	07 48 n	079 08 w	100.0	3.0	3.0
871001	05	02	10			4	04	1.3	07 51 n	079 06 w	100.0	0.0*	2.0
871001	06	02	11	07	01	4	05	1.1	07 58 n	079 01 w	100.0	0.0*	11.0
871009			12			1	19	0.0	07 44 n	078 46 w	100.0	2.0	2.0
871009	04	02	04			2	56	7.0	08 35 n	078 54 w	100.0	1.0	1.0
871009	04	04	05			2	31	6.1	08 31 n	078 50 w	100.0	20.0	15.0
871009	11	08	17	02	02	3	69	3.2	07 12 n	078 55 w	100.0	2.0	2.0
871010			07	12	12	2	55	5.0	04 35 n	079 43 w	100.0	7.0	5.0
871010	04	01	06	12	12	2	56	0.1	04 38 n	079 39 w	100.0	22.0	13.0
871010	06	01	10	10	01	3	31	4.8	04 47 n	079 53 w	100.0	1.0	1.0
871012	06	01	07			3	64	1.0	04 46 n	085 33 w	100.0	2.0	2.0
871014			08			1	25	0.6	08 16 n	088 02 w	100.0	2.0	2.0
871014	01	02	02	03	03	2	69	5.1	07 34 n	087 28 w	100.0	8.0	8.0
871014	02	02	03	03	03	1	31	5.4	07 44 n	087 31 w	100.0	1.0	1.0
871014	04	04	06	05	01	1	69	7.9	08 05 n	087 37 w	100.0	12.0	10.0
871017	09	01	13	07	01	3	55	7.7	10 05 n	089 58 w	100.0	3.0	3.0
871018	02	01	02	08	03	2	64	0.3	08 53 n	091 16 w	100.0	1.0	1.0
871018	10	01	17	01	01	2	31	4.7	08 02 n	091 53 w	100.0	12.0	10.0
871021	01	01	01			1	55	0.5	06 46 n	095 22 w	100.0	4.0	4.0
871021	04	03	03	03	01	1	56	3.6	07 22 n	095 02 w	100.0	3.0	2.0
871021	09	04	07	08	02	3	69	0.6	07 58 n	094 52 w	100.0	7.0	7.0
871022			04	03	02	4	69	1.3	10 30 n	094 21 w	100.0	3.0	3.0
871022	04	04	05	04	01	4	55	5.4	10 39 n	094 18 w	100.0	10.0	7.0
871023	04	02	04			3	55	2.1	12 15 n	094 06 w	100.0	1.0	1.0
871023	08	04	06	01	02	3	69	4.6	11 45 n	094 32 w	100.0	3.0	3.0
871023	08	04	07	01	02	3	69	0.6	11 43 n	094 34 w	100.0	7.0	7.0
871023	10	04	09			3	55	1.9	11 35 n	094 43 w	100.0	4.0	4.0
871028			08			1	55	3.2	09 19 n	099 51 w	100.0	6.0	5.0
871028			11	04	02	2	55	0.8	09 15 n	099 54 w	100.0	7.0	6.0
871028	01	01	01	09	03	2	64	7.9	09 35 n	099 43 w	100.0	20.0	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
871028	01	01	02	09	03	2	64	0.2	09 34 n	099 43 w	40.0	14.0	13.0
871028	02	01	07			1	56	1.2	09 19 n	099 51 w	100.0	6.0	5.0
871028	03	01	09	09	02	2	55	5.4	09 16 n	099 54 w	100.0	15.0	12.0
871028	07	01	17	11	01	1	56	3.7	08 51 n	100 05 w	100.0	1.0	1.0
871028	07	02	18	12	01	1	55	7.7	08 46 n	100 07 w	100.0	15.0	12.0
871028	07	03	19	12	01	1	56	8.5	08 43 n	100 08 w	100.0	3.0	3.0
871028	07	04	20	01	01	1	69	6.5	08 33 n	100 11 w	100.0	1.0	1.0
871028	08	01	23	01	02	2	63	0.4	08 18 n	100 16 w	100.0	15.0	2.0
871031	02	03	03	05	01	4	69	0.1	10 25 n	101 42 w	100.0	1.0	1.0
871101	01	11	01	06	01	5	69	2.0	12 40 n	103 30 w	100.0	2.0	2.0
871102	01	04	01	06	02	2	31	9.3	14 34 n	106 36 w	100.0	30.0	20.0
871102	03	08	03	07	02	3	69	8.8	15 13 n	106 28 w	100.0	8.0	8.0
871109	08	04	06	02	03	0	63	3.0	15 40 n	105 21 w	100.0	15.0	10.0
871111	03	02	04	01	02	3	69	7.9	13 11 n	101 42 w	100.0	8.0	8.0
871111	07	04	07	03	02	4	31	0.0	12 45 n	100 48 w	100.0	6.0	4.0
871111	08	01	08			4	64	0.5	12 44 n	100 47 w	100.0	5.0	5.0
871113	01	03	01	12	03	3	56	0.9	10 06 n	100 02 w	100.0	1.0	1.0
871113	02	08	03	11	02	4	64	0.5	09 56 n	099 53 w	100.0	2.0	2.0
871114			03			3	99	0.5	08 37 n	096 52 w	100.0	0.0*	10.0
871115	03	02	03			2	31	7.7	07 49 n	099 29 w	100.0	30.0	30.0
871115	07	03	07			3	55	0.4	07 39 n	100 11 w	100.0	1.0	1.0
871116	02	02	02	06	02	2	56	0.3	07 03 n	102 07 w	100.0	1.0	1.0
871116	03	07	03			3	55	6.1	07 01 n	102 22 w	100.0	5.0	4.0
871118	03	01	03			5	64	0.1	03 09 n	106 10 w	100.0	8.0	6.0
871118	05	06	04	01	01	5	56	8.9	02 56 n	106 11 w	100.0	7.0	5.0
871119	06	01	05	08	01	5	69	1.1	01 38 n	107 47 w	60.0	230.0	185.0
871120	01	01	01	06	03	4	69	0.0	02 14 n	110 32 w	100.0	11.0	9.0
871120	01	01	02	06	03	4	69	0.0	02 15 n	110 33 w	25.0	57.0	47.0
871120	03	01	04	06	02	4	56	3.7	02 27 n	110 50 w	100.0	3.0	1.0
871120	05	02	07	09	01	4	55	2.8	02 48 n	111 25 w	100.0	1.0	1.0
871122	11	05	06			4	31	0.9	05 13 n	118 43 w	100.0	1.0	1.0
871125	01	02	01			3	56	0.1	10 56 n	119 58 w	100.0	1.0	1.0
871129	01	02	01	11	03	3	55	0.9	12 57 n	112 42 w	100.0	3.0	3.0
871130	04	01	03	04	01	2	31	7.6	15 10 n	109 30 w	100.0	2.0	2.0
871201	03	01	03			2	31	0.0	16 34 n	110 59 w	100.0	8.0	5.0
871202	01	07	02			5	55	2.2	17 40 n	114 50 w	100.0	2.0	2.0
871204	04	03	05			4	55	5.6	18 25 n	114 59 w	100.0	10.0	8.0
871204	04	07	06	04	02	4	56	1.5	18 22 n	114 52 w	100.0	1.0	1.0

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
870808	01	04	02	02	02	2	05	0.0	32 18 n	117 13 w	100.0	1.0	1.0
870812	06	01	09	10	12	3	05	0.9	18 51 n	112 02 w	100.0	1.0	1.0
870812	07	03	11	04	01	3	05	3.3	18 16 n	111 45 w	100.0	2.0	2.0
870815	06	01	05	01	12	3	67	0.7	08 41 n	109 29 w	100.0	4.0	3.0
870816	01	02	01	06	03	1	67	4.1	08 10 n	112 01 w	100.0	1.0	1.0
870816	03	08	02	06	12	1	67	2.8	07 59 n	112 47 w	100.0	3.0	3.0
870816	09	02	09	12	03	1	22	0.4	07 42 n	113 35 w	100.0	1.0	1.0
870822			07	06	01	2	70	0.3	16 18 n	102 17 w	100.0	3.0	2.0
870828			07	07	02	2	70	0.0	13 17 n	091 12 w	100.0	0.0*	1.0
870908	06	02	10	10	12	2	05	1.1	14 45 n	101 43 w	100.0	1.0	1.0
870915	03	12	02	12	12	4	04	1.6	01 47 n	117 04 w	100.0	1.0	1.0
870915	04	01	03	02	12	4	51	0.0	01 47 n	117 06 w	100.0	0.0*	1.0
870917	02	04	02	01	01	4	67	0.3	01 45 n	114 28 w	100.0	1.0	1.0
870921	04	01	04	01	01	3	05	0.6	00 28 s	106 50 w	100.0	1.0	1.0
870921	06	06	08	07	02	2	51	0.3	00 08 s	106 11 w	100.0	1.0	1.0
870922	01	01	01			3	70	0.4	00 42 n	104 22 w	100.0	2.0	2.0
870922	09	03	08			3	51	0.0	01 17 n	103 00 w	100.0	1.0	1.0
870927			09	10	02	1	99	0.3	08 27 n	088 36 w	100.0	4.0	4.0
870927			20	03	02	1	04	1.4	07 36 n	088 11 w	100.0	2.0	2.0
870927	03	04	04	10	02	1	51	0.6	08 40 n	088 42 w	100.0	0.0*	1.0
871010	03	03	04	09	01	2	64	5.2	04 59 n	079 32 w	100.0	2.0	2.0
871017	05	01	05	03	01	2	55	0.8	09 43 n	090 10 w	100.0	1.0	1.0
871017	05	01	06	03	01	2	55	5.6	09 43 n	090 10 w	100.0	2.0	2.0
871017	08	02	11	07	01	2	55	0.2	10 05 n	089 58 w	100.0	1.0	1.0
871018			07	08	02	2	56	1.1	08 42 n	091 23 w	100.0	4.0	3.0
871018	05	01	10	09	01	3	64	2.6	08 28 n	091 35 w	100.0	3.0	3.0
871021	03	02	02	03	02	2	31	2.0	07 13 n	095 06 w	100.0	2.0	2.0
871027	03	01	05	05	01	2	31	4.0	11 17 n	098 41 w	100.0	29.0	22.0
871028	07	01	16	11	01	1	55	0.0	08 56 n	100 03 w	100.0	2.0	2.0
871109	05	02	04	02	02	2	63	0.8	15 55 n	105 22 w	100.0	1.0	1.0
871111	05	02	06	02	01	4	55	0.0	12 57 n	101 01 w	100.0	1.0	1.0
871117			03			4	99	0.2	05 52 n	105 28 w	100.0	1.0	1.0
871122	07	05	04			4	69	0.0	05 02 n	117 42 w	100.0	6.0	5.0
871126	05	01	02			4	55	0.8	14 37 n	118 20 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
870809	05	16	02	04	02	3	51	4.2	28 37 n	117 17 w	100.0	1.0	1.0
870812			03	01	03	2	05	0.8	19 15 n	112 18 w	100.0	1.0	1.0
870922	05	09	04	06	01	4	67	7.9	01 09 n	103 31 w	100.0	1.0	1.0
871119			03			4	31	1.5	01 30 n	107 03 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
870822	07	01	06	06	12	2	05	7.9	16 17 n	102 21 w	100.0	0.0*	12.0
870825	10	01	11	12	12	3	22	1.3	14 51 n	096 27 w	100.0	27.0	22.0
870905	01	02	03			5	68	0.2	13 45 n	091 06 w	100.0	1.0	1.0
871009	04	05	07			3	31	0.0	08 26 n	078 43 w	100.0	9.0	9.0

Table 3. (contineud)

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
870819	03	02	02			1	05	0.1	10 55 n	111 20 w	100.0	1.0	1.0
870823			03	05	01	3	15	0.2	15 46 n	099 49 w	100.0	2.0	2.0
870823	01	03	01	11	03	3	51	0.6	15 57 n	100 48 w	100.0	1.0	1.0
871009	07	06	11			1	64	1.9	07 47 n	078 46 w	100.0	2.0	2.0
871012	05	03	05	11	02	3	56	0.1	04 41 n	085 23 w	100.0	1.0	1.0
871013	03	01	04	09	02	2	69	0.0	05 41 n	087 04 w	100.0	1.0	1.0
871029	03	03	03			3	63	0.4	06 09 n	101 12 w	100.0	1.0	1.0
871201	08	01	06	10	02	4	55	0.7	16 50 n	111 53 w	100.0	0.0*	2.0

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
870818	02	01	01			4	51	1.8	10 41 n	114 00 w	100.0	0.0*	1.0
870818	03	06	04			5	04	2.5	10 48 n	113 40 w	100.0	1.0	1.0
870820	03	08	02	12	12	3	51	3.7	11 26 n	107 19 w	100.0	1.0	1.0
870821	02	01	02	01	03	3	04	3.8	13 09 n	105 29 w	100.0	1.0	1.0
871001	02	09	02	02	01	3	04	3.7	07 18 n	079 25 w	100.0	1.0	1.0
871001	02	09	03	02	01	3	51	0.7	07 19 n	079 24 w	100.0	1.0	1.0
871010			02			2	64	1.4	05 27 n	079 27 w	100.0	1.0	1.0
871018	03	01	05	08	02	2	63	1.8	08 45 n	091 20 w	100.0	1.0	1.0
871109	05	01	03	01	02	2	63	2.2	15 59 n	105 21 w	100.0	1.0	1.0
871120			03	02	03	4	64	1.3	02 18 n	110 35 w	100.0	1.0	1.0
871125	04	05	03			3	56	2.3	11 47 n	119 33 w	100.0	1.0	1.0
871203	01	01	01			4	63	1.6	18 38 n	118 00 w	100.0	1.0	1.0

*Denotes that no estimate was made.

Table 4. Marine mammal school size estimates for each observer, classified by species codes, for all sightings encountered in the eastern tropical Pacific during August 8 through December 10, 1987.

			obs 4		obs 5		obs 12		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																	
	870813	04	350	60	325	60			85	75	130	75	235	30	85	40		
	870815	01	10	100	26	100			7	100	12	100	11	100	16	100		
	870815	02	50	100	85	100			44	100	43	100	51	100	40	100		
	870815	03	250	75	450	75			56	98			155	70				
	870818	02	150	80	80	80							50	90				
	870819	01	15	100							12	100			29	100		
	870819	07			300	98							250	90				
	870820	01	250	5														
	870820	03	250	100							120	100			260	100		
	870821	01	50	35							20	20			75	15		
	870821	04			60	30			60	70			67	40				
	870821	07	60	92					15	100								
	870821	08	40	100							18	100			34	100		
	870822	01	50	40											34	35		
	870822	03	45	100	26	100			15	100			41	100	22	100		
	870822	05	60	100	57	100			17	100			73	100	63	100		
	870822	10	20	100	15	100			9	100	18	100	10	100	11	100		
	870824	01	150	65	65	38			39	80	50	60	67	90	55	55		
	870824	02	200	60	130	50			135	86			85	50	45	45		
	870824	04	25	100	15	100			16	100	28	100	25	100	14	100		
	870824	07	225	100	70	100			34	100	73	100	65	100	73	100		
	870824	08	500	20	375	20					120	30	225	70				
	870825	02	30	50							17	55			15	30		
	870825	03	400	70							68	40			115	65		
	870825	06	300	85	250	90			85	89	66	70	120	70	63	55		
	870825	08			145	85			135	74			55	80				
	870825	10	450	59					245	67	350	37			130	49		
	870825	12	400	45					85	25			375	40				
	870825	14	250	50					98	60	225	35	110	30	115	25		
	870906	03	35	100							12	100			28	100		
	870906	05	175	85	110	90			75	90			70	80				
	870907	02			90	75							85	45	65	23		
	870908	03	25	80	35	95			24	93	20	98	27	90	38	93		
	870908	04	12	100	8	100			6	100			22	100	14	100		
	870908	06	100	100	32	100			24	100	30	100	27	100	17	100		
	870908	08	70	100	46	100			31	100	26	100	40	100	46	100		
	870908	11	60	85	75	75			52	88	45	60	65	75	64	70		
	870908	13	40	100	30	100			15	100	25	100	27	100	23	100		
	870908	14	10	100					8	100	8	100			10	100		
	870908	15	150	80	125	80			67	69	75	65			145	65		
	870908	16	35	100	42	100			21	100	21	100	30	100	48	100		
	870908	17	30	100	44	100			18	100	18	100	25	100	52	100		
	870909	01													34	50		
	870909	02	175	98	210	97			85	91	65	94	80	93				
	870909	03	125	100	325	100			150	100			150	100	185	100		

Table 4. (continued)

			obs 4		obs 5		obs 12		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																	
	870915	01	200	100							35	100			140	100		
	870917	01	12	100							10	100	15	100	8	100		
	870919	04									22	100			75	100		
	870921	05			55	100			63	100			75	100				
	870922	03	700	65											450	65		
	870922	05	600	98	500	98			320	90	450	95	350	90	750	97		
	870924	04	500	25	1050	15			610	15	350	30	650	5	930	6		
	870925	01	50	100	80	100			29	100			50	100				
	870925	03	60	100	50	100			60	100			35	100	54	100		
	870925	05			75	100			75	100			37	100				
	870925	07	20	100							16	100			30	100		
	870926	03	175	100	250	100			150	100	200	100	180	100	300	100		
species	3																	
	870818	02	150	20	80	20							50	10				
	870819	07			300	2							250	10				
	870828	05	400	100	375	100			480	100	200	100	350	100	185	100		
species	5																	
	870808	03			450	100							50	100				
	870808	06													110	100		
	870809	01													14	100		
	870811	01	75	100														
	870811	04	130	100	185	100			51	100	60	100	100	100	120	100		
	870811	14	200	100	135	100					115	100	65	100	42	100		
	870812	05	45	100	40	100			25	100			95	100	32	100		
	870828	02	200	100							185	100			87	100		
	870926	09	40	100							40	100			88	100	55	100
	870926	12	425	100	450	100			340	100	400	100	590	100	265	100		
	870926	15	750	100	1850	100			1200	100	1300	100	1500	100	1500	100		
	870927	01	75	100	80	100			65	100			75	100	115	100		
	870927	07	325	100	350	100			660	100	450	100	560	100	190	100		
species	10																	
	870813	04	350	40	325	40			85	25	130	25	235	70	85	60		
	870819	04	45	100							25	100			38	100		
	870819	05	50	100							35	100			40	100		
	870820	01	250	30														
	870821	01	50	65							20	80			75	85		
	870821	04			60	70			60	30			67	60				
	870821	06	30	100	55	100			37	100	32	100	38	100	45	100		
	870821	07	60	8														
	870822	09	60	100	30	100			35	100	30	100						
	870824	01	150	34	65	60			39	18	50	38	67	8	55	43		
	870824	02	200	40	130	50			135	14			85	50	45	55		
	870824	03	100	100											38	100		
	870824	08	500	80	375	80					120	70	225	30				
	870825	01													4	100		
	870825	02	30	50							17	45			15	70		

Table 4. (continued)

	date	sight no.	obs 4 best est.	obs 4 pct	obs 5 best est.	obs 5 pct	obs 12 best est.	obs 12 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 10																		
	870825	03	400	30							68	60			115	35		
	870825	05	30	100	18	100			10	100	11	100	37	100	12	100		
	870825	06	300	15	250	10			85	11	66	30	120	30	63	45		
	870825	08			145	15			135	26			55	20				
	870825	10	450	40					245	31	350	60			130	49		
	870825	12	400	55					85	75			375	60				
	870825	14	250	50					98	40	225	65	110	70	115	75		
	870826	02	40	100							19	100			17	100		
	870906	01	25	90							17	88			30	92		
	870906	02	15	100							22	100						
	870906	05	175	15	110	10			75	10			70	20				
	870907	02			90	24							85	50	65	72		
	870908	03	25	20	35	5			24	7	20	2	27	10	38	7		
	870908	11	60	15	75	25			52	12	45	40	65	25	64	30		
	870908	15	150	20	125	20			67	31	75	35			145	35		
	870909	01													34	50		
	870909	02	175	1	210	1			85	1	65	1	80	1				
species 11																		
	870815	03	250	25	450	25			56	2			155	30				
	870922	03	700	35											450	35		
	870922	05	600	2	500	2			320	10	450	5	350	10	750	3		
	870924	04	500	75	1050	85			610	85	350	70	650	95	930	94		
species 13																		
	870811	15	15	100							26	100			38	100		
	870812	02	30	100	50	100			11	100			25	100	30	100		
	870815	04			26	100			11	100			11	100				
	870816	08	100	100	225	100			72	100	70	100	77	100	63	100		
	870819	06	25	100							15	100			40	100		
	870917	03	125	100	140	100			95	100	104	100	115	100	140	100		
	870918	01	15	100											12	100		
	870919	01	200	100	165	100			45	100	150	100	525	100	125	100		
	870921	01	40	100	35	100			28	100	30	100	67	100	58	100		
	870921	02	40	100	28	100			20	100	35	100	45	100	36	100		
	870922	07	40	100	35	100			20	100								
	870924	01			60	100			55	100	60	100	33	100	130	100		
	870924	03	30	100							25	100			68	100		
	870925	06	15	100							15	100			24	100		
	870925	08											25	100				
	870926	01	55	100							18	100			34	100		
	870926	10	35	100							35	100			70	100	25	100
	870927	11	70	100	100	100			80	100	55	100	250	100	155	100		
	870927	18	20	100					9	100					14	100		
	870927	26	35	100	45	100			15	100	30	100	30	100	45	100		
	870930	02	45	100							25	100			45	100		
	871001	01			67	100			40	100			30	100				

Table 4. (continued)

	date	sight no.	obs 4 best est.	obs 4 pct	obs 5 best est.	obs 5 pct	obs 12 best est.	obs 12 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	15																	
	870816	06	20	100	22	100			11	100	12	100	22	100	16	100		
	870916	02			9	100							10	100				
	870929	05							6	100			6	100	4	100		
species	18																	
	870811	06	30	10	13	10			9	10								
	870812	04	10	100											7	100		
	870812	10	50	100	60	100			39	100	30	100			55	100		
	870812	14	15	100									15	100				
	870813	01	150	100							53	100			70	100		
	870817	02	25	100	35	100			9	100	14	100	25	100				
	870819	03	20	100	20	90			9	90								
	870823	04	100	50					15	40	20	75	168	60	48	45		
	870824	01	150	1	65	2			39	2	50	2	67	2	55	2		
	870825	09	6	100									7	100				
	870825	10	450	1					245	2	350	3			130	2		
	870827	02			12	10							15	90				
	870909	02	175	1	210	2			85	8	65	5	80	6				
	870927	06	105	41	65	45			42	50	35	30	45	30	128	50		
	870927	14	40	50							16	40			38	50		
	870929	02	20	100							9	100			14	100		
	870929	03					4	100							6	100		
	871001	06	35	14	21	10							12	20				
	871001	07	75	100														
species	21																	
	870813	02	2	50											2	50		
	870819	03			20	10			9	10								
	870823	04	100	50					15	60	20	25	168	40	48	55		
	870826	04									7	100			4	100		
	870826	08			15	75												
	870827	02			12	90							15	10				
	870907	01	5	100							6	100			4	100		
	870920	03	6	100							5	100			3	100		
	870927	23	15	100	12	100					8	100			9	100	7	100
	870929	01	6	100											7	100		
	870929	04	8	100							7	100			13	100		
species	26																	
	870921	06	225	100	200	100			100	100	150	100	165	100	135	100		
species	32																	
	870822	08	17	100	11	100			7	100	8	100	13	100	8	100		
	870916	01	20	100							8	100			8	100		
	870923	02	50	100							19	100			19	100		
species	34																	
	870810	02	9	100														
	870924	02	35	100					13	100	14	100			14	100		

Table 4. (continued)

			obs 4		obs 5		obs 12		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	34																	
	870925	09			18	100							9	100				
	870926	05			8	100							7	100				
	870926	07	20	100	9	100			14	100	16	100	15	100	23	100		
	870926	11													19	100		
	870927	06	105	59	65	55			42	50	35	70	45	70	128	50		
	870927	14	40	50							16	60			38	50		
	871001	06	35	86	21	90							12	80				
species	46																	
	870821	05													3	100		
	870926	06			3	100												
	870930	01	10	100	8	100			10	100			12	100	13	100		
	871001	05			5	100			4	100			5	100				
species	48																	
	870816	05	2	100														
	870920	02	2	100														
	870927	10			5	100									6	100		
	870927	21	2	100											1	100		
	870927	22	2	100							2	100			2	100		
species	49																	
	870823	02	1	100														
	870927	16	3	100														
	870927	17	1	100														
	871001	04			1	100							2	100				
species	51																	
	870908	12	3	100	3	100							3	100				
	870917	05			3	100					3	100	3	100				
	870925	04	3	100							3	100					3	100
	870927	13	3	100	3	100							3	100				
species	61																	
	870826	05			1	100												
	870918	02	1	100							1	100						
	870921	09	2	100														
	870927	15	3	100					3	100								
	870927	25			1	100			1	100	1	100			1	100		
species	70																	
	870808	04	3	100	3	100												
	870826	07			1	100												
	870919	07	1	100														
	870923	01	1	100							1	100			1	100		
	870923	03	1	100														

Table 4. (continued)

			obs 4		obs 5		obs 12		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	72																	
	870812	13	2	100	2	100			2	100			2	100				
	870923	05	2	100					1	100	2	100	2	100			2	100
species	75																	
	870810	01	2	100							2	100			2	100		
species	77																	
	870811	03	30	100							20	100			35	100		
	870811	05	35	100							25	100						
	870811	06	30	90	13	90			9	90								
	870811	11											20	100				
	870812	06													4	100		
	870812	08			50	100												
	870813	02	2	50											2	50		
	870816	03	6	100											8	100		
	870816	04													15	100		
	870819	08									2	100						
	870820	01	250	65														
	870822	02			3	100												
	870826	08			15	25												
	870906	01	25	10							17	12			30	8		
	870907	02			90	1							85	5	65	5		
	870908	01	4	100														
	870908	02	10	100											5	100		
	870912	01							1	100								
	870917	04									3	100						
	870922	06									1	100						
	870923	04													18	100		
	870923	06	15	100					5	100			12	100	14	100	6	100
	870926	02													36	100		
	871001	08									3	100						
species	78																	
	870808	02			1	100												
	870812	09	1	100	1	100												
	870812	11			2	100												
	870815	05											4	100				
	870816	01											1	100				
	870816	02											3	100				
	870816	09							1	100								
	870908	10			1	100												
	870915	02	1	100														
	870917	02											1	100				
	870921	04			1	100												
	870921	08									1	100						
	870922	01															2	100
	870922	08									1	100						

Table 4. (continued)

			obs 4		obs 5		obs 12		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	79																	
	870809	02									1	100						
	870922	04											1	100				
species	90																	
	870825	11			28	100			19	100			35	100				
	870905	03	1	100											1	100		
species	96																	
	870819	02			1	100												
	870823	01									1	100						
species	98																	
	870818	04	1	100														
	870820	02									1	100						
	870821	02	1	100														
	871001	02	1	100														
	871001	03									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	2													
	871013	05	660	15	400	15	450	15	240	20				
	871014	04	410	99	300	98	400	99	120	99	300	99	340	99
	871022	06	12	100									8	100
	871023	03	120	40	70	50	85	35	30	30	90	25	120	30
	871025	01					50	95						
	871027	07	80	100			75	100	45	100	50	100	70	100
	871028	05			50	100	35	100						
	871028	12	75	61							86	43	95	59
	871030	04			275	100	525	100	120	100			475	100
	871031	01	270	30	250	50	250	50	50	30	190	40	240	25
	871031	05	160	100			100	100	30	100	65	100	35	100
	871101	02			175	40	175	15	60	60				
	871102	02	32	100							75	100	35	100
	871102	04			50	100	100	100	40	100				
	871103	01	222	100	225	100	125	100	60	100	220	100	140	100
	871103	03	50	100	40	100	50	100	40	100	78	100	45	100
	871103	05	40	100	50	100	40	100	25	100	58	100	40	100
	871109	02	166	96	80	87	120	92	35	71	105	86	189	95
	871110	01			200	98	200	97	55	90				
	871115	10	210	60							195	65	475	65
	871116	01	270	95							240	100	440	97
	871119	01			150	100	90	100	25	100				
	871119	02	50	100							72	100	80	100
	871119	05	400	60									60	20
	871119	06									360	55	725	60
	871119	07			250	75	110	90	25	75				
	871120	02	50	70							65	80		
	871120	05	340	100	250	100	400	100	70	100	290	100	320	100
	871120	11			275	30	175	40	60	40				
	871120	12			325	40	325	60	100	65				
	871125	05			700	2	500	5	200	10				
	871128	05	400	40	400	50	200	30	80	60	280	40	375	45
	871128	07	450	100	500	100	500	100	120	100	330	100		
	871129	02	200	80	250	75							150	90
	871130	01	420	100							255	100	280	100
	871201	02	140	100							80	100	160	100
	871202	04			35	100	20	100	10	100				
	871202	05	1400	10							825	5	950	8
	871202	06			950	30	850	20	150	30				
	871204	03	380	20	600	35	275	25	130	30	425	30	650	40
species	3													
	871116	01	270	5									440	3

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 5													
871015	01	210	100	275	100					160	100	180	100
871016	02	28	100							34	100	26	100
871018	13	890	100	425	100	650	100	210	100	950	100	850	100
871018	22	680	100	475	100	525	100					375	100
871022	01	180	100							330	100	140	100
871022	02			175	100	200	100	90	100				
871113	05	28	100	60	100	45	100	18	100	36	100	22	100
species 6													
871009	03			50	100	50	100	13	100				
871009	09			10	100	9	100	8	100				
871009	13	180	100							210	100	80	100
species 10													
871013	05	660	85	400	85	450	85	240	80				
871014	04	410	1	300	2	400	1	120	1	300	1	340	1
871014	09	400	100			300	100					280	100
871023	03	120	60	70	50	85	65	30	70	90	75	120	70
871025	01					50	5						
871028	12	75	39							86	57	95	41
871031	01	270	70	250	50	250	50	50	70	190	60	240	75
871101	02			175	60	175	85	60	40				
871115	10	210	40							195	35	475	35
871125	05			700	98	500	95	200	90				
871128	02	460	100	375	100	400	100	150	100	360	100	475	100
871128	03	230	100	200	100	175	100	70	100	235	100	220	100
871128	05	400	60	400	50	200	70	80	40	280	60	375	55
871129	02	200	20	250	25							150	10
871202	05	1400	90							825	95	950	92
871202	06			950	70	850	80	150	70				
871204	03	380	80	600	65	275	75	130	70	425	70	650	60
species 11													
871119	06									360	45	725	40
871119	07			250	25	110	10	25	25				
871120	09			45	100	45	100	18	100				
871120	11			275	70	175	60	60	60				
871120	12			325	60	325	40	100	35				
species 13													
871010	01	35	100							52	100	30	100
871010	03	110	100	150	100	150	100	45	100				
871010	05	46	100	75	100	80	100	45	100	52	100	60	100
871010	11			50	100	40	100	20	100				
871011	02	55	100	50	100	25	100	20	100	52	100	30	100
871011	07			50	100	60	100	30	100				
871012	03	45	100	60	100	60	100	18	100	50	100	38	100
871012	04	20	100	30	100	25	100	15	100	30	100	40	100
871012	08	20	100							30	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														
	871013	02	24	100	30	100	40	100	16	100			27	100
	871014	05	15	100	20	100	25	100	12	100	18	100	21	100
	871017	03	40	100	50	100	40	100	20	100	30	100	35	100
	871017	04	200	100	125	100	45	100	70	100				
	871017	12			75	100	45	100	40	100	78	100	45	100
	871017	15	160	100							94	100	180	100
	871018	01	30	100							24	100	20	100
	871018	06	50	100	45	100	50	100	30	100				
	871018	12			60	100	30	100	18	100				
	871018	14	12	100							14	100	9	100
	871021	04			90	100	95	100	60	100				
	871021	05			45	100	50	100	40	100				
	871021	10			40	100	25	100	25	100				
	871022	03	50	100							28	100	60	100
	871023	05	30	100	45	100	30	100	20	100	36	100	28	100
	871023	08	80	100							95	100	60	100
	871024	01			15	100	10	100	10	100				
	871024	03			45	100	28	100	30	100				
	871027	02	50	100	70	100	55	100	40	100	92	100	110	100
	871028	03	55	100	115	100	80	100	45	100	235	100	105	100
	871028	10			60	100	45	100	40	100				
	871028	13	36	100							60	100	65	100
	871028	14	32	100	40	100	35	100	16	100	40	100	50	100
	871028	21	75	100	70	100	95	100	35	100	92	100	80	100
	871028	24			50	100	38	100	30	100				
	871029	01			110	100	150	100	60	100				
	871029	02	70	100							62	100	140	100
	871030	01			18	100	25	100	28	100				
	871030	02	50	100			55	100					27	100
	871031	04	14	100			25	100			20	100	15	100
	871109	01	12	100									20	100
	871109	05	35	100							46	100	34	100
	871113	06	30	100					20	100			40	100
	871114	02	110	100							145	100	230	100
	871114	04	70	100	60	100	55	100	30	100	56	100	80	100
	871114	06			60	100	75	100	40	100				
	871115	01			40	100	20	100						
	871115	08	65	100	70	100	75	100	28	100	82	100	75	100
	871118	01			35	100	20	100	15	100				
	871118	02	55	100	50	100	45	100	30	100	66	100	120	100
	871122	01	35	100							28	100	45	100
	871128	01	17	100							24	100	38	100
	871129	04			35	100	20	100	20	100				
	871129	05	17	100	18	100	20	100	12	100	16	100	30	100
	871130	02	8	100	25	100	15	100	8	100	22	100	27	100
	871201	01			30	100	18	100	9	100				
	871201	05			50	100	50	100	27	100				
	871204	01	9	100							16	100	12	100
	871205	01					25	100	8	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													
871205	04	120	100	50	100	60	100			33	100	80	100
871205	05	60	100			40	100	23	100	23	100	55	100
species 15													
871009	16			12	100			8	100				
871013	03	160	100	45	100	60	100	45	100	125	100		
871018	11	42	100							24	100	35	100
871027	11					8	100	6	100			10	100
871103	06	12	100							18	100	16	100
871103	07	6	100	5	100	5	100	3	100			5	100
871117	02	22	100							26	100	32	100
871117	04	16	100							9	100	13	100
871122	02	13	100							13	100	14	100
871122	03									2	100		
871126	01			12	100	22	100	20	100				
species 18													
871009	01	16	100	8	100	7	100	6	100				
871009	02			15	100	19	100	13	100				
871009	10	10	100	6	100								
871011	06			2	100					2	100		
871012	06					25	50						
871014	01	55	80									30	60
871016	03	30	100					18	100	18	100	16	100
871017	07	55	80							40	60	32	60
871017	08	92	100							70	100	75	100
871017	14	13	40										
871018	16	40	70							18	30		
871018	20			56	100								
871021	09			15	28	20	47	17	38				
871023	01					13	100						
871110	01			200	2	200	3	55	10				
871111	05			6	100								
871127	01	10	100							8	100	7	100
871202	03	60	100							21	100	32	100
species 21													
871012	02	17	100							18	100	21	100
871012	06					25	50						
871021	08			10	100	8	100	7	100				
871021	09			15	7	20	5	17	6				
871023	02	6	100									3	100
871024	04	18	100							15	100	12	100
871114	05			12	100	20	100	8	100				
871117	01	7	100							7	100	11	100
871130	04	14	100	18	100	12	100	12	100			12	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 32														
	871017	01	46	100	30	100	25	100	20	100	20	100	28	100
	871021	06			25	100	25	100	25	100				
	871101	03			16	100	25	100	8	100			18	100
species 33														
	871025	02									11	100		
	871120	06			6	100	25	100	8	100				
species 34														
	871017	02	12	100							14	100	16	100
	871017	07	55	20							40	40	32	40
	871017	09	11	100							12	100	9	100
	871017	14	13	60										
	871021	09			15	65	20	48	17	56				
	871030	03	22	100							17	100	13	100
	871115	06	9	100							8	100	10	100
	871115	09	11	100							8	100	10	100
	871122	05			15	100	15	100	7	100				
species 37														
	871014	07	5	100									5	100
	871018	08	4	100							4	100	4	100
	871110	03			5	100	4	100	4	100			5	100
	871115	04	12	100					6	100	9	100	9	100
	871125	02			6	100	8	100	5	100				
species 46														
	871009	15					11	100	5	100				
	871011	05	28	100	25	100			13	100	17	100	16	100
	871014	01	55	20									30	40
	871016	04									4	100	5	100
	871018	16	40	30							18	70		
	871028	02											14	60
	871028	04									6	100		
	871029	06	20	100							13	100	11	100
	871103	02									3	100		
	871109	02	166	4	80	13	120	8	35	29	105	14	189	5
	871115	05											7	100
	871125	04	9	100							11	100	11	100
	871202	01					1	100	3	100				
species 48														
	871027	04	2	100										
	871121	01			1	100	1	100	1	100				
species 49														
	871029	07									1	100		
	871110	02											1	100
	871111	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	49													
	871128	04							1	100				
	871129	03	1	100										
	871130	05					3	100						
species	51													
	871010	08	3	100	2	100	3	100	3	100				
	871010	09	5	100										
	871011	03					2	100	2	100				
	871011	04									3	100		
	871027	03			2	100	2	100						
	871027	10	1	100										
	871028	06			1	100								
	871029	04					2	100						
	871103	04	3	100										
	871113	02	2	100										
	871204	02	2	100										
species	61													
	871018	15	3	100										
	871022	07	1	100										
	871029	05					1	100						
species	70													
	871009	08			1	100								
	871009	14			1	100								
	871011	01			1	100	1	100	1	100				
	871012	01					1	100						
	871018	09	1	100										
	871020	01									1	100		
	871027	01	1	100										
	871111	02									1	100		
	871119	04	1	100										
	871120	08					1	100						
	871129	06			1	100								
	871201	04	1	100										
	871203	02	3	100					1	100	2	100		
	871204	04	1	100										
	871205	03	2	100										
species	72													
	871111	01	2	100	2	100	2	100	2	100				
species	75													
	871018	03	1	100							1	100		
	871024	02	3	100							2	100	2	100
	871205	02	1	100	1	100	1	100	1	100				
	871205	06	1	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													
871009	04					1	100						
871009	05	20	100										
871009	17											2	100
871010	06			15	100	30	100						
871010	10	1	100										
871012	07									2	100		
871014	02											8	100
871014	03	1	100										
871014	06											12	100
871017	13			3	100								
871018	02									1	100		
871018	17									12	100		
871021	01			4	100								
871021	03					3	100						
871021	07											7	100
871022	05			10	100								
871023	04			1	100								
871023	06											3	100
871023	07											7	100
871023	09			4	100								
871028	01									20	100		
871028	02											14	40
871028	07					6	100						
871028	09			15	100								
871028	17					1	100						
871028	18			15	100								
871028	19					3	100						
871028	20											1	100
871028	23							15	100				
871031	03											1	100
871101	01											2	100
871102	01									30	100		
871102	03											8	100
871109	06							15	100				
871111	04											8	100
871111	07									6	100		
871111	08					5	100						
871113	01					1	100						
871113	03									2	100		
871115	03	30	100										
871115	07			1	100								
871116	02					1	100						
871116	03			5	100								
871118	03									8	100		
871118	04					6	100			8	100		
871119	05	400	40									60	80
871120	01	10	100									12	100
871120	02	50	30							65	20		
871120	04					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													
871120	07			1	100								
871122	06	1	100										
871125	01			1	100	1	100	1	100				
871129	01			3	100								
871130	03	2	100										
871201	03							8	100				
871202	02									2	100		
871204	05			10	100								
871204	06					1	100						
species 78													
871010	04									2	100		
871017	05			1	100	1	100						
871017	06			2	100								
871017	11			1	100								
871018	10									3	100		
871021	02	2	100										
871027	05	40	100							16	100	30	100
871028	16			2	100								
871109	04					1	100	1	100				
871111	06			1	100								
871122	04	4	100							5	100	8	100
871126	02			1	100								
species 90													
871009	07	15	100									2	100
species 96													
871009	11									2	100		
871012	05					1	100						
871013	04											1	100
871029	03							1	100				
species 98													
871018	05							1	100				
871109	03							1	100				
871125	03					1	100						
871203	01					1	100						

Table 5. Summary of marine mammal sightings encountered in the eastern tropical Pacific during August 8 through December 10, 1987.

species name (scientific name)	species code	species sightings total	pure	mixed	estimated-mean-school-size low /(n)	high /(n)	best /(n)
OFFSHORE SPOTTED DOLPHIN (STENELLA ATTENUATA)	2	105	51	54	78.58(105)	122.92(104)	97.28(104)
SPINNER DOLPHIN (STENELLA LONGIROSTRIS)	3	5	1	4	59.54(5)	118.35(4)	90.05(4)
COMMON DOLPHIN (DELPHINUS DELPHIS)	5	26	26	0	169.38(26)	262.71(24)	218.21(24)
COASTAL SPOTTED DOLPHIN (S.A. GRAFFMANI)	6	6	6	0	47.20(5)	72.60(5)	54.80(5)
EASTERN SPINNER DOLPHIN (STENELLA LONGIROSTRIS)	10	51	13	38	91.18(51)	131.56(50)	109.09(50)
WHITEBELLY SPINNER DOLPHIN (STENELLA LONGIROSTRIS)	11	10	1	9	115.89(10)	174.50(10)	141.95(10)
STRIPED DOLPHIN (S. COERULEOALBA)	13	88	88	0	41.14(88)	59.72(87)	49.02(87)
ROUGH-TOOTHED DOLPHIN (STENO BREDANENSIS)	15	16	16	0	14.94(16)	19.87(16)	17.00(16)
BOTTLENOSED DOLPHIN (TURSIOPS TRUNCATUS)	18	58	33	25	15.22(55)	25.02(48)	20.61(51)
RISSO'S DOLPHIN (GRAMPUS GRISEUS)	21	27	16	11	9.13(26)	13.76(26)	10.66(27)
PACIFIC WHITE-SIDED DOLPHIN (LAGENORHYNCHUS OBLIQUIDENS)	22	2	2	0	7.50(2)	10.00(2)	8.00(2)
FRASER'S DOLPHIN (LAGENODELPHIS HOSEI)	26	1	1	0	138.00(1)	194.00(1)	162.00(1)
UNIDENTIFIED DOLPHIN	77	123	110	13	8.89(122)	14.91(91)	10.80(91)
SPOTTED DOLPHIN (STENELLA ATTENUATA)	90	4	4	0	11.00(4)	14.67(3)	12.33(3)
totals		522	368				

Table 5. (continued)

species name (scientific name)	species code	species sightings total	pure	mixed	estimated-mean-school-size low /(n)	high /(n)	best /(n)
PYGMY KILLER WHALE (FERESA ATTENUATA)	32	6	6	0	16.83(6)	26.00(6)	20.33(6)
FALSE KILLER WHALE (PSEUDORCA CRASSIDENS)	33	3	3	0	9.00(3)	12.67(3)	10.67(3)
PILOT WHALE (*GLOBICEPHALA SP.*)	34	25	15	10	10.89(25)	16.90(22)	13.65(22)
KILLER WHALE (ORCINUS ORCA)	37	6	6	0	5.33(6)	6.50(6)	5.67(6)
SPERM WHALE (PHYSETER MACROCEPHALUS)	46	18	14	4	9.02(18)	11.30(18)	9.76(18)
DWARF SPERM WHALE (KOGIA SIMUS)	48	8	8	0	1.87(8)	2.37(8)	2.37(8)
BEAKED WHALE (ZIPHIID)	49	14	14	0	1.57(14)	2.14(14)	1.64(14)
SOUTHERN BOTTLENOSED WHALE (HYPEROODON PLANIFRONS)	50	1	1	0	1.00(1)	2.00(1)	1.00(1)
UNID. MESOPLODONT (MESOPLODON SP.)	51	17	17	0	2.29(17)	2.65(17)	2.35(17)
CUVIER'S BEAKED WHALE (ZIPHIUS CAVIROSTRIS)	61	8	8	0	1.62(8)	1.75(8)	1.62(8)
RORQUAL (BALAENOPTERA SP.)	70	28	28	0	1.14(28)	1.30(27)	1.15(27)
BRYDE'S WHALE (B. EDENI)	72	3	3	0	2.00(3)	2.00(3)	2.00(3)
BLUE WHALE (B. MUSCULUS)	75	5	5	0	1.20(5)	1.60(5)	1.40(5)
HUMPBACK WHALE (MEGAPTERA NOVAEANGLIAE)	76	1	1	0	1.00(1)	1.00(1)	1.00(1)
UNIDENTIFIED SMALL WHALE	78	34	34	0	2.29(34)	3.16(31)	2.77(31)
UNIDENTIFIED LARGE WHALE	79	4	4	0	1.00(4)	1.00(4)	1.00(4)
UNIDENTIFIED CETACEAN	96	8	8	0	1.37(8)	1.57(7)	1.29(7)
UNIDENTIFIED WHALE	98	12	12	0	1.00(12)	1.00(11)	1.00(11)
totals		201	187				

Table 6. Summary of distance searched, large dolphin schools detected, and rates of encountering dolphins by observers aboard the Jordan in the eastern tropical Pacific during August 8 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	13260	100	263	100	19.83	2.18	95
Inshore	8270	62	195	74	23.58	3.08	61
Middle	4789	36	68	26	14.20	2.35	34
West	37	<1	0	0	0	0	0
South	164	1	0	0	0	0	0
Sea State Conditions							
Calm	2711	20	108	41	39.84	5.63	51
Rough	10549	80	155	59	14.69	1.56	90
Visibility Conditions							
Good	11397	86	234	89	20.53	2.34	94
Poor	1863	14	29	11	15.57	4.78	67
Observers							
Legs 1 and 2							
4	3212	24	38	14	11.83	2.44	44
5	3134	24	21	8	6.70	1.63	42
22	3140	24	9	3	2.87	0.95	43
51	3176	24	18	7	5.67	1.80	44
67	3143	24	19	7	6.05	1.40	43
68	3205	24	23	9	7.18	1.77	44
Observer							
31	3364	25	25	10	7.43	1.75	51
55	3538	27	31	12	8.76	1.69	51
56	3532	27	22	8	6.23	1.48	51
63	3540	27	17	6	4.80	1.55	51
64	3375	25	17	6	5.04	1.43	51
69	3363	25	23	9	6.84	2.45	51
Teams[2]							
Legs 1 and 2							
Team 1	3206[3]	24	78	30	24.33	4.29	44
Team 2	3128	24	50	19	15.99	2.96	42

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
Teams[2]							
Legs 3 and 4							
Team 3	3359	25	65	25	19.35	3.44	51
Team 4	3527	27	68	26	19.28	3.16	51

[1]Day included in tally of 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]40km of trackline was searched when either both or neither of the team leaders were on duty and is not used for team analysis.

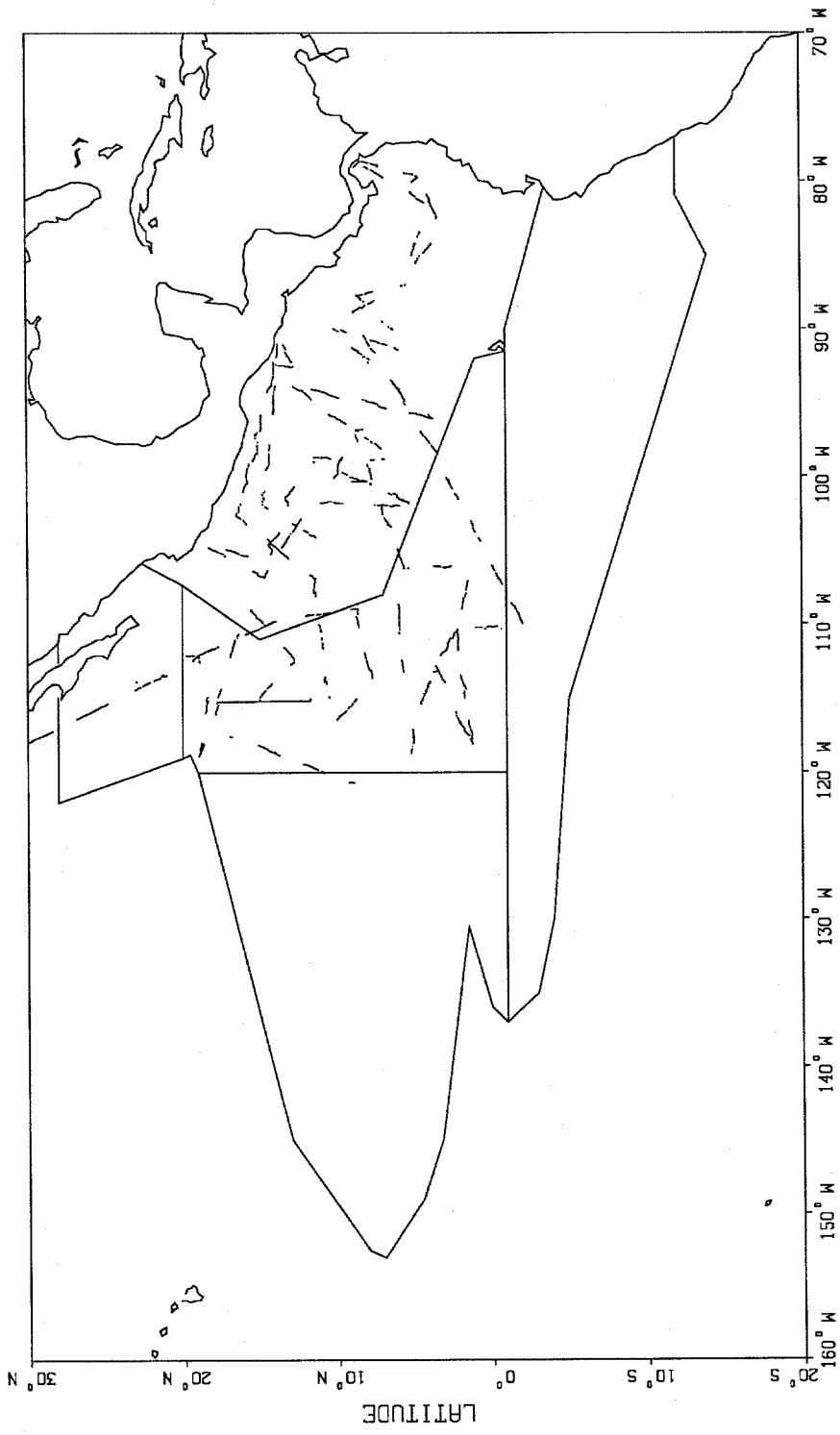


Figure 1. Tracklines surveyed by the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

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.

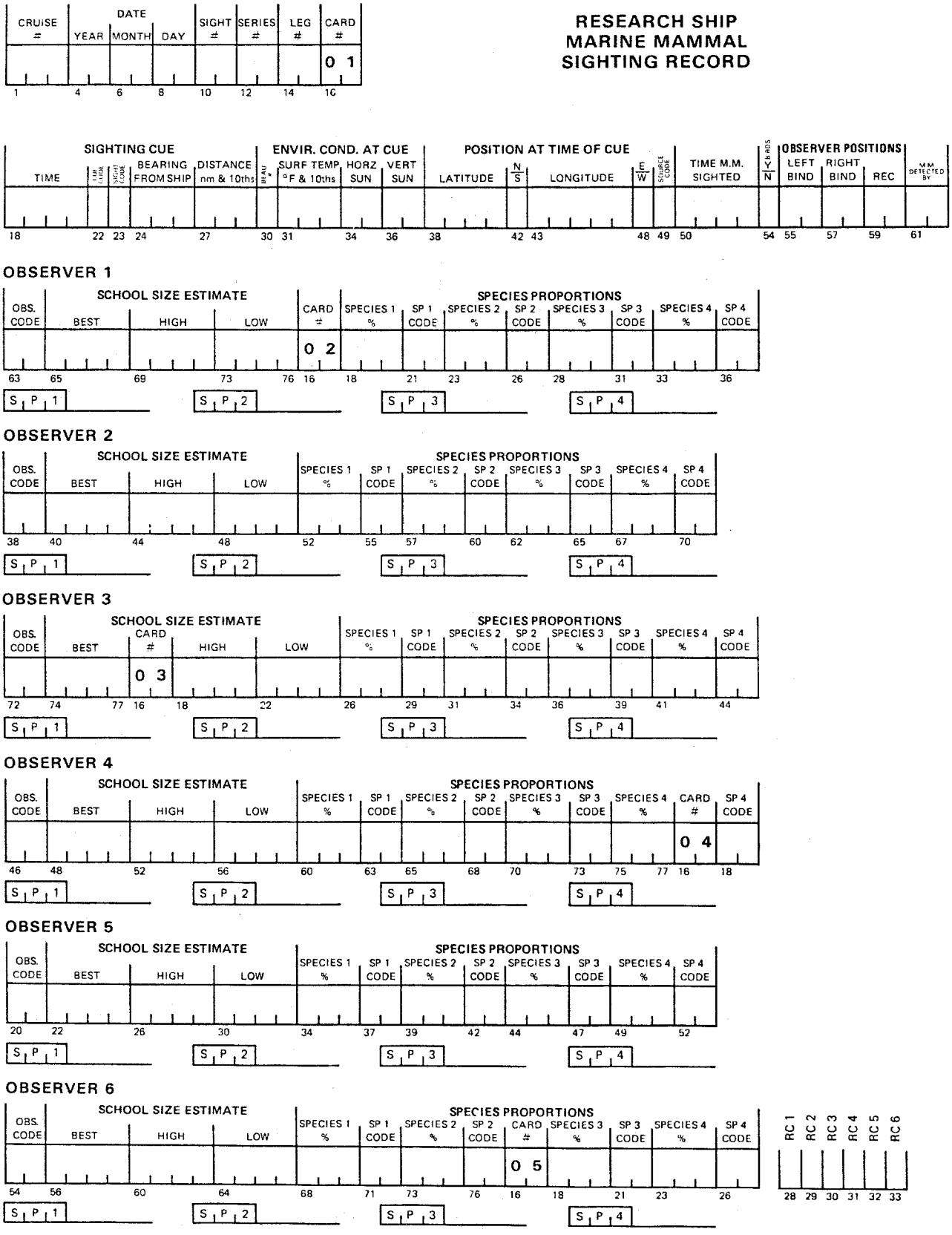
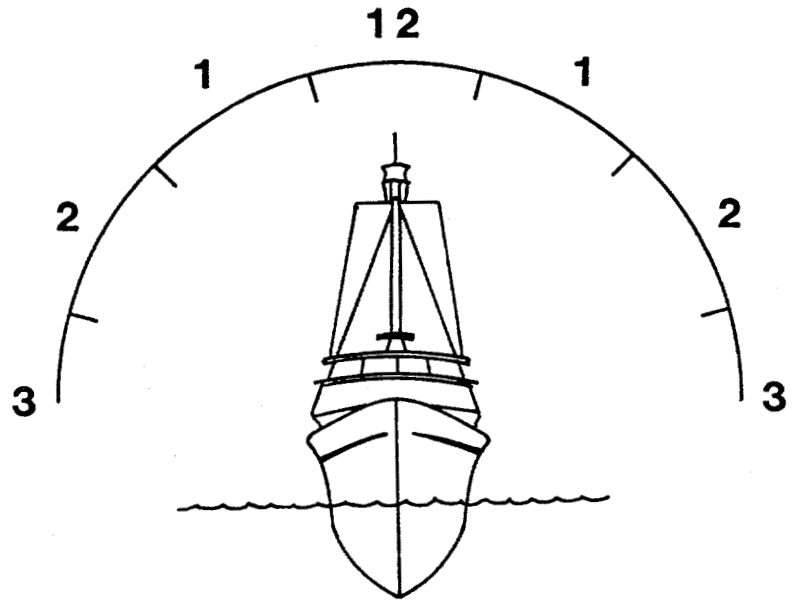
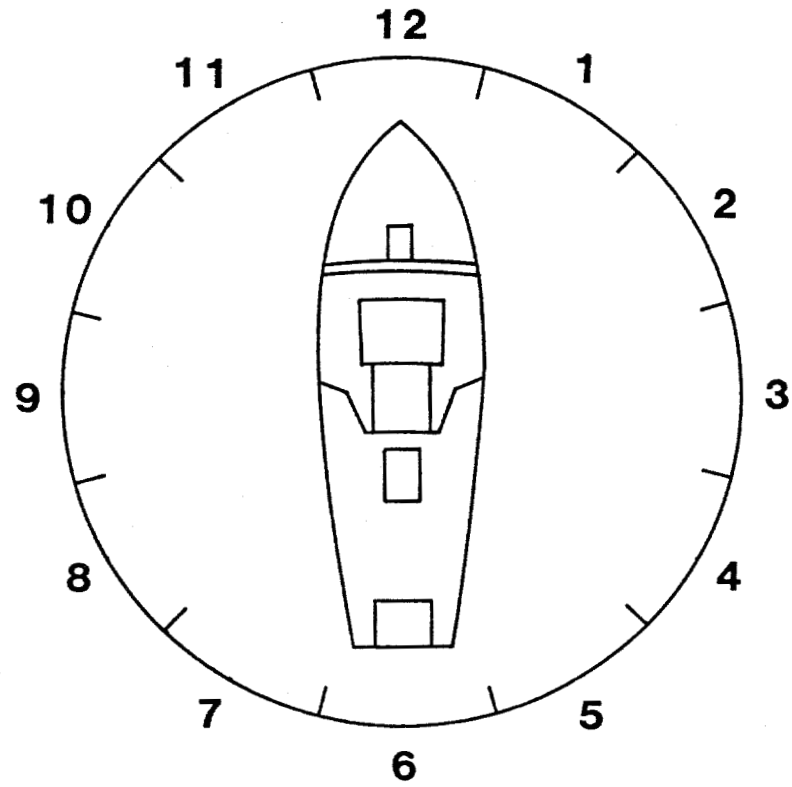


Figure 3. Research ship marine mammal sighting record.



VERTICAL SUN POSITION



HORIZONTAL SUN POSITION

Figure 4. Vertical and horizontal sun position categories.

CRUISE #	DATE YEAR	MONTH	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.

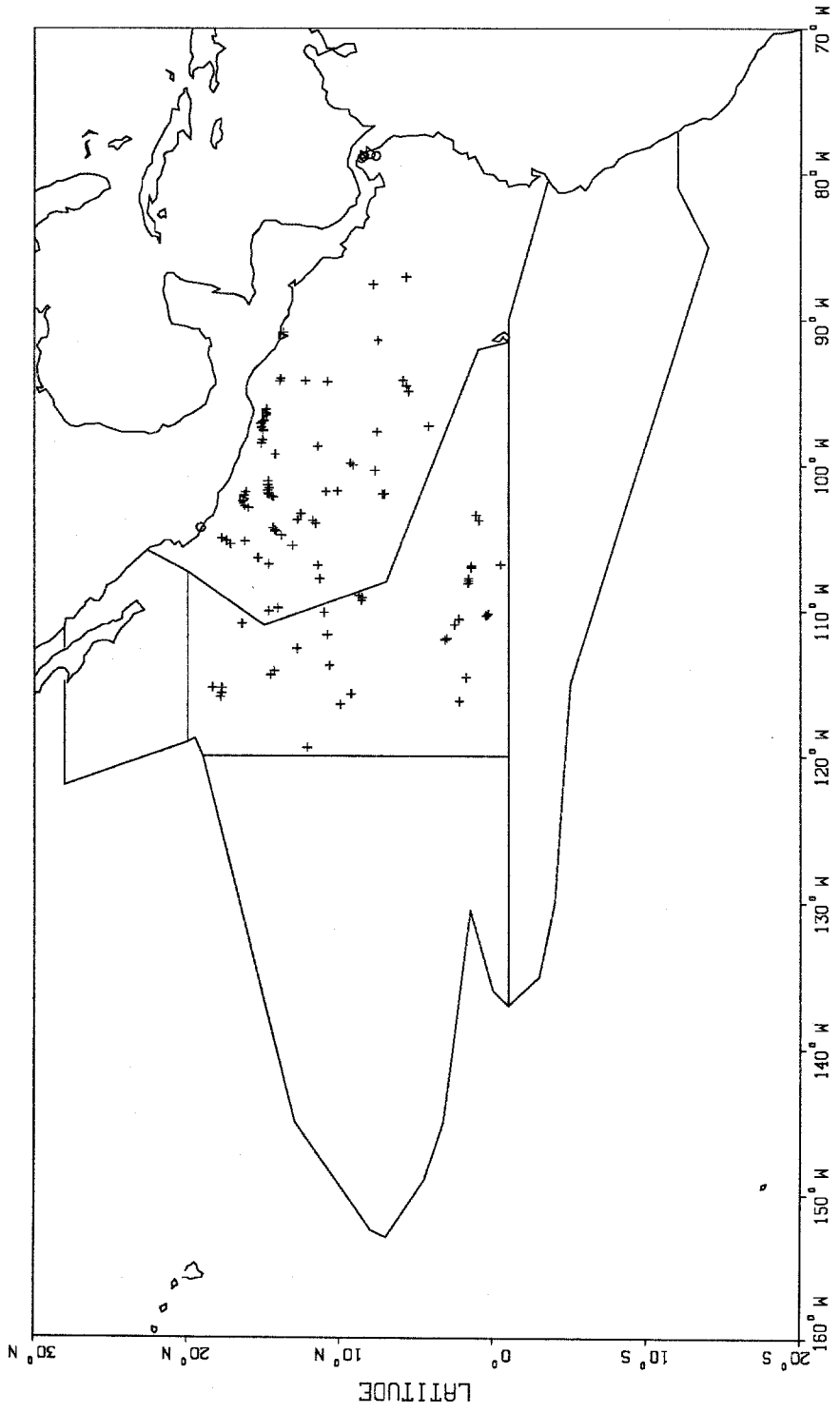


Figure 6. Offshore (+), coastal (o) and unidentified (▽) spotted dolphins detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

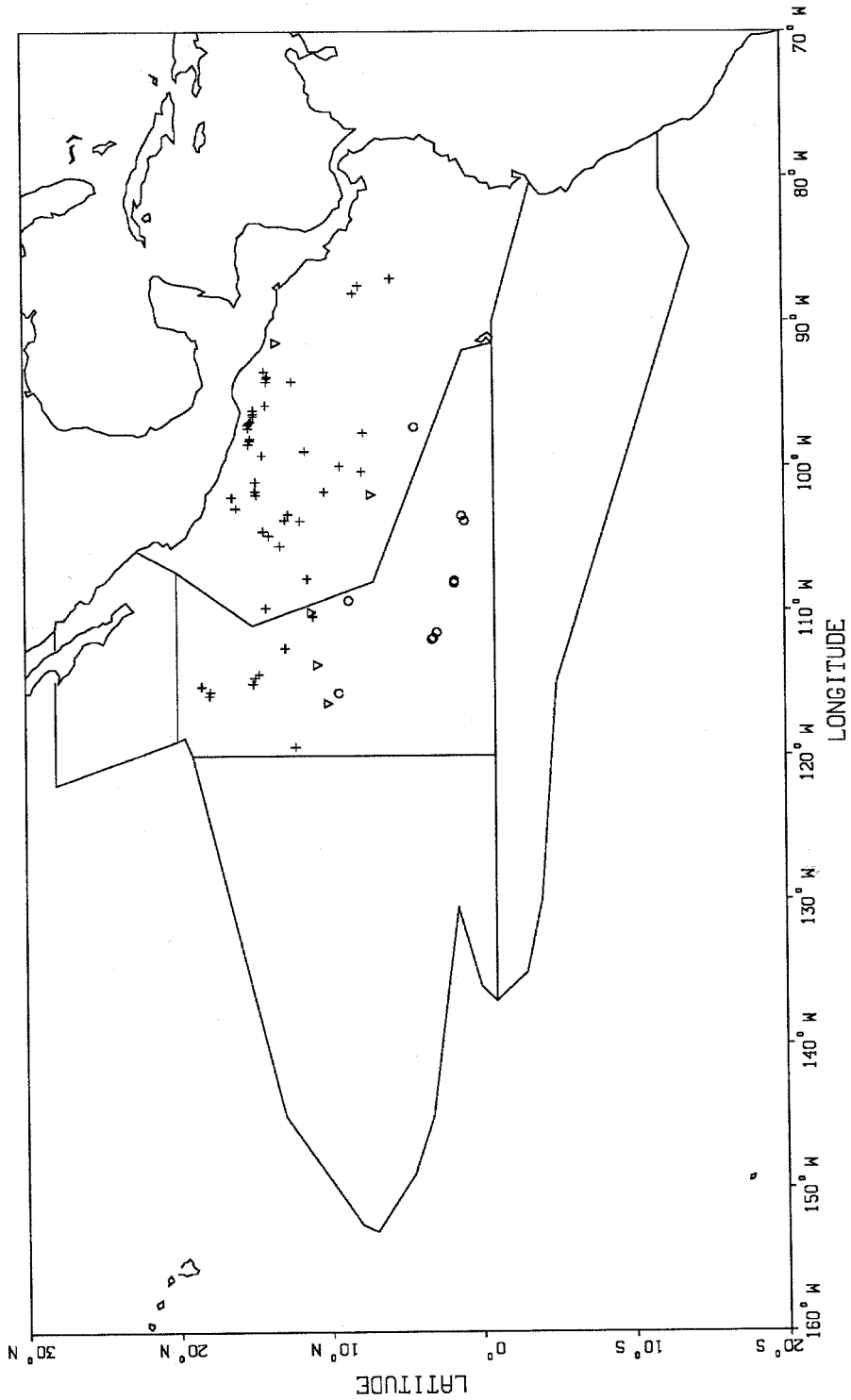


Figure 7. Eastern (+), whitebelly (o) and unidentified (▽) spinner dolphins detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

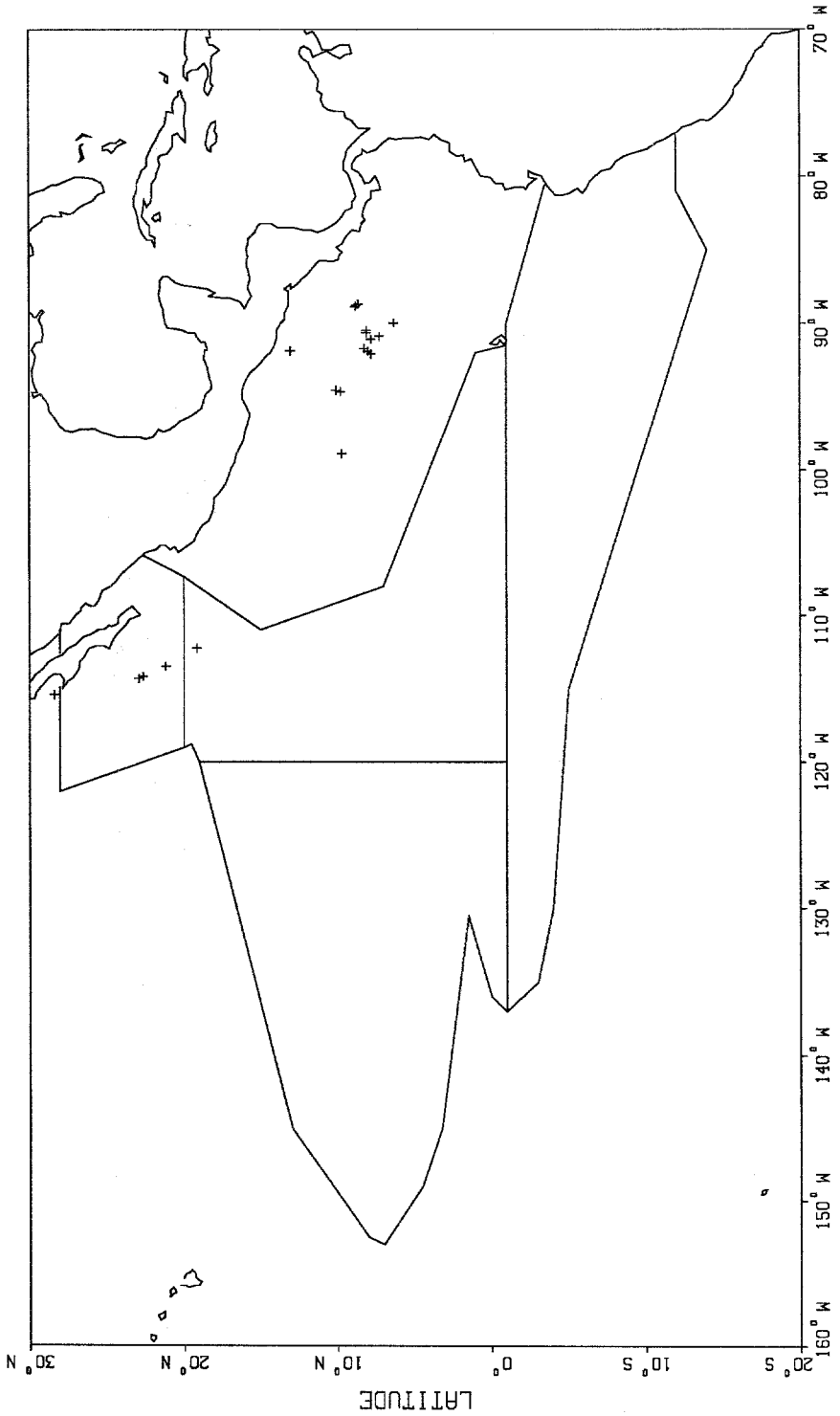


Figure 8. Common dolphins (+) detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

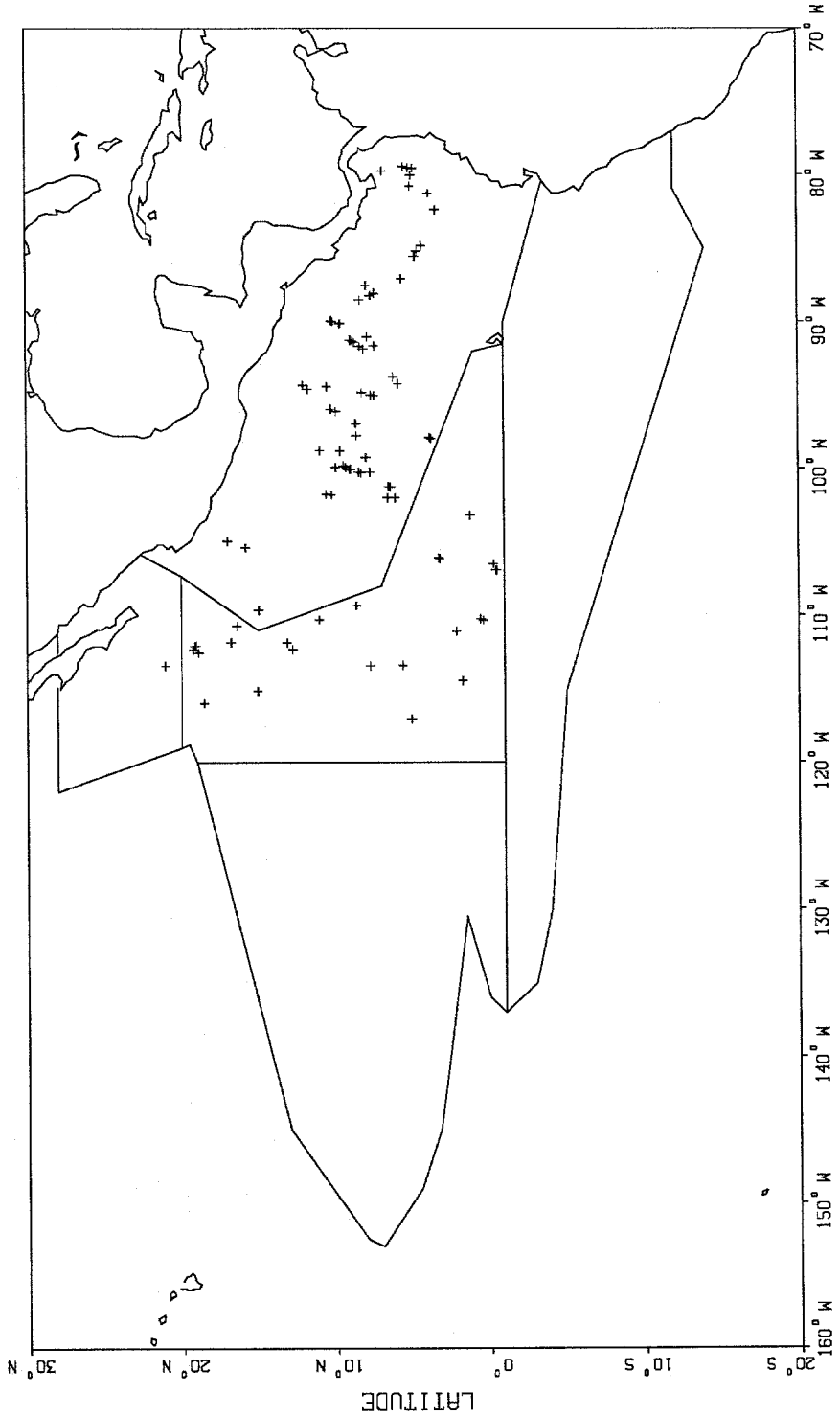


Figure 9. Striped dolphins (+) detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

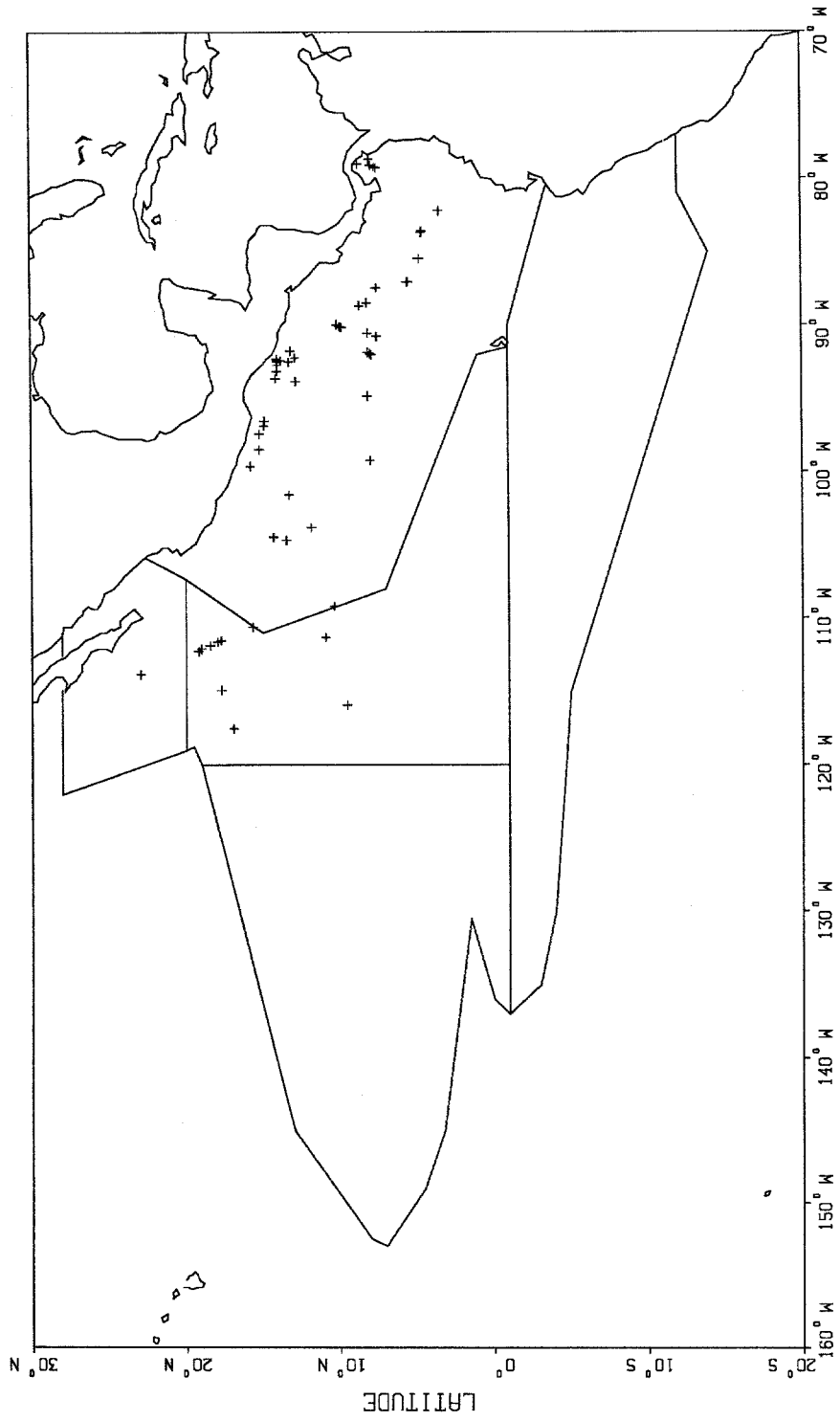


Figure 10. Bottlenose dolphins (+) detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

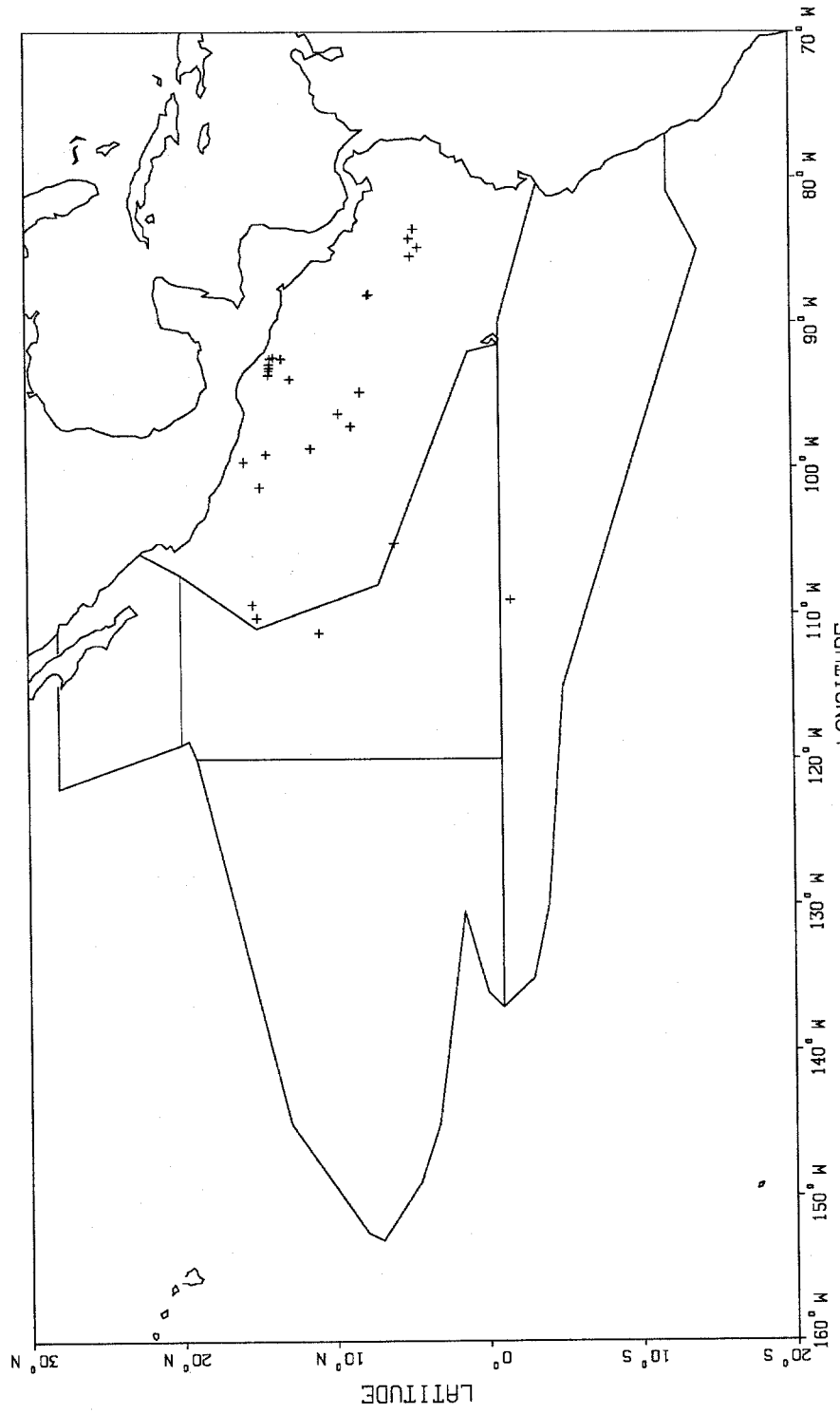


Figure 11. Risso's dolphins (+) detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

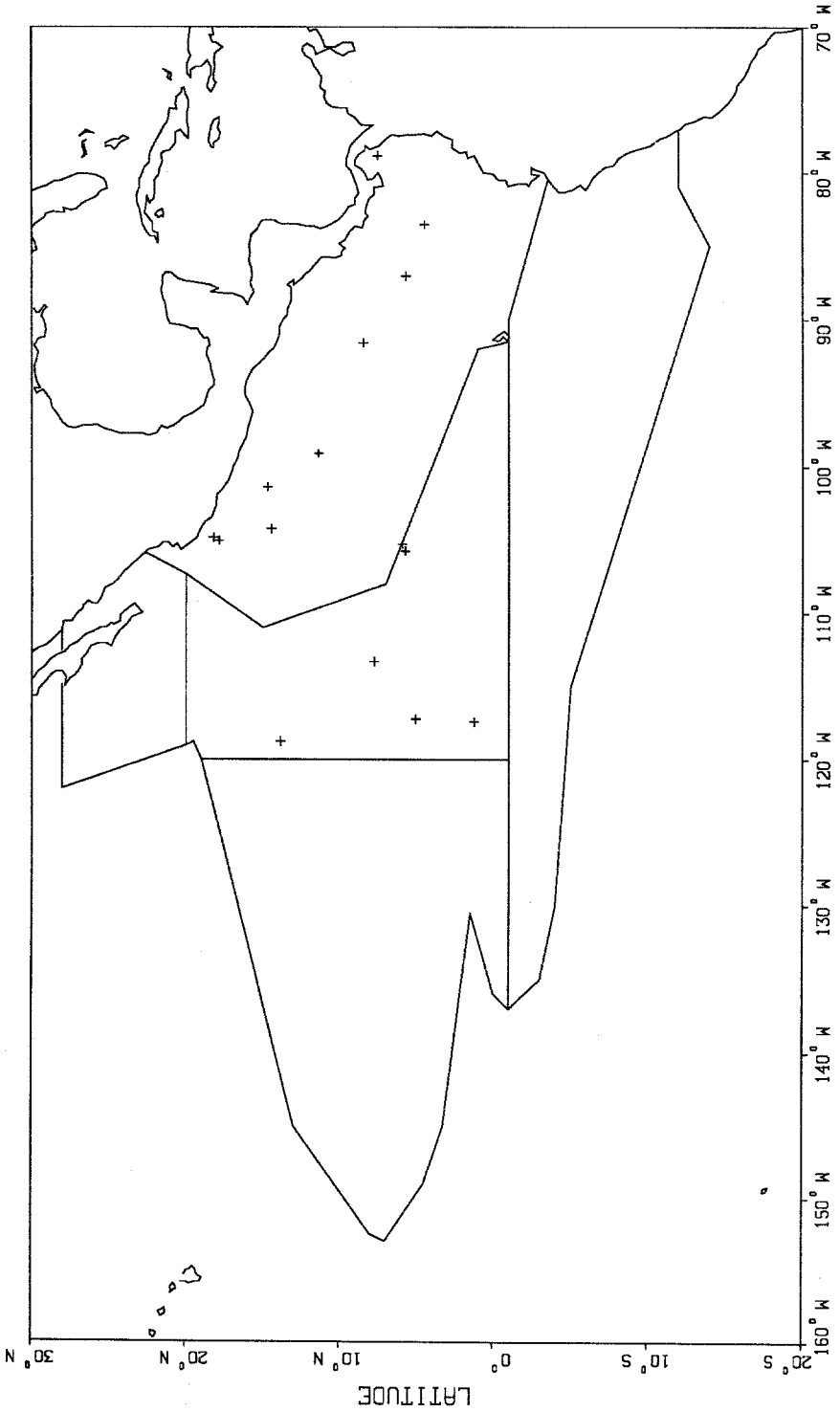


Figure 12. Rough-toothed dolphins (+) detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

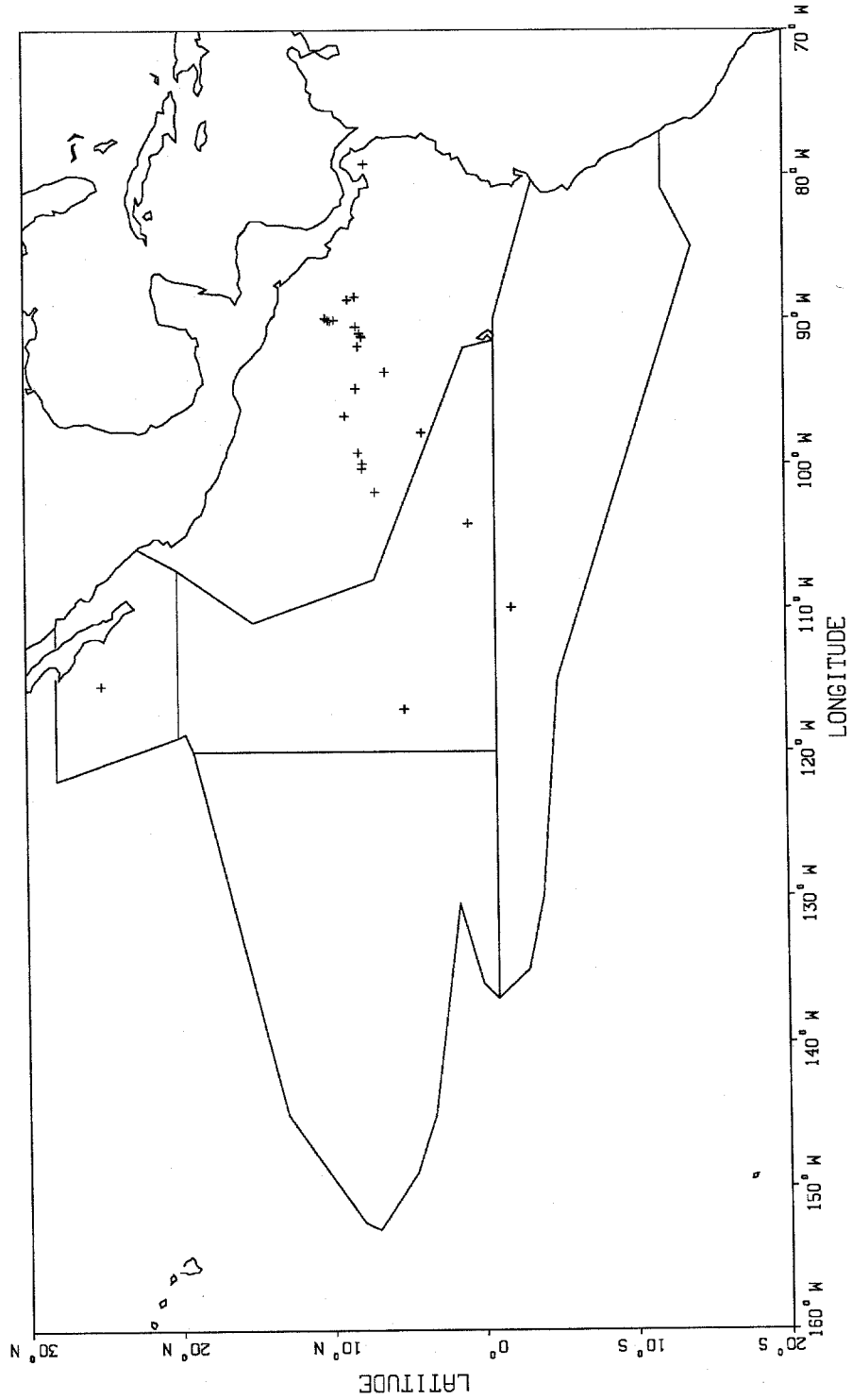


Figure 13. Pilot whales (+) detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

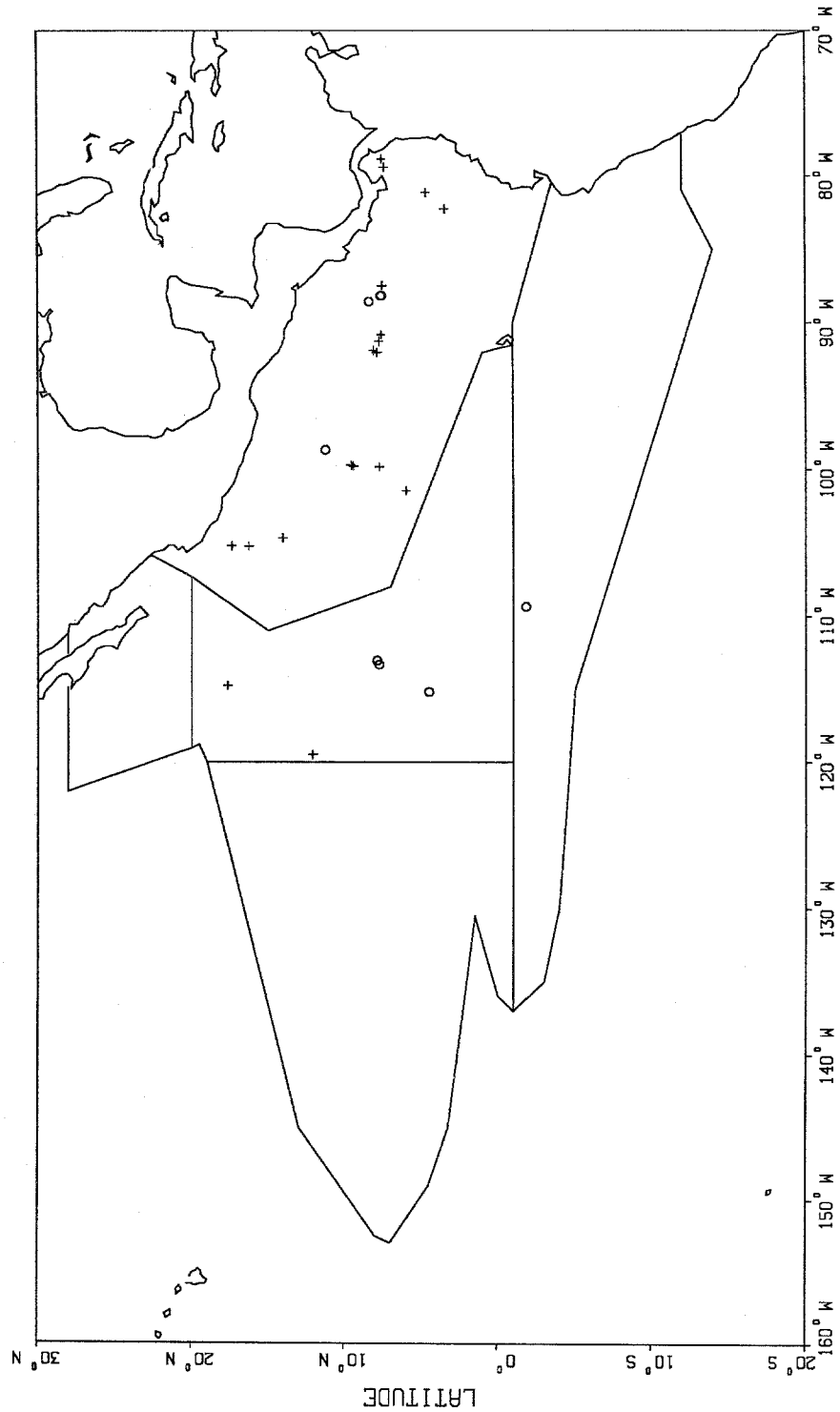


Figure 14. Sperm (+) and dwarf sperm (o) whales detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

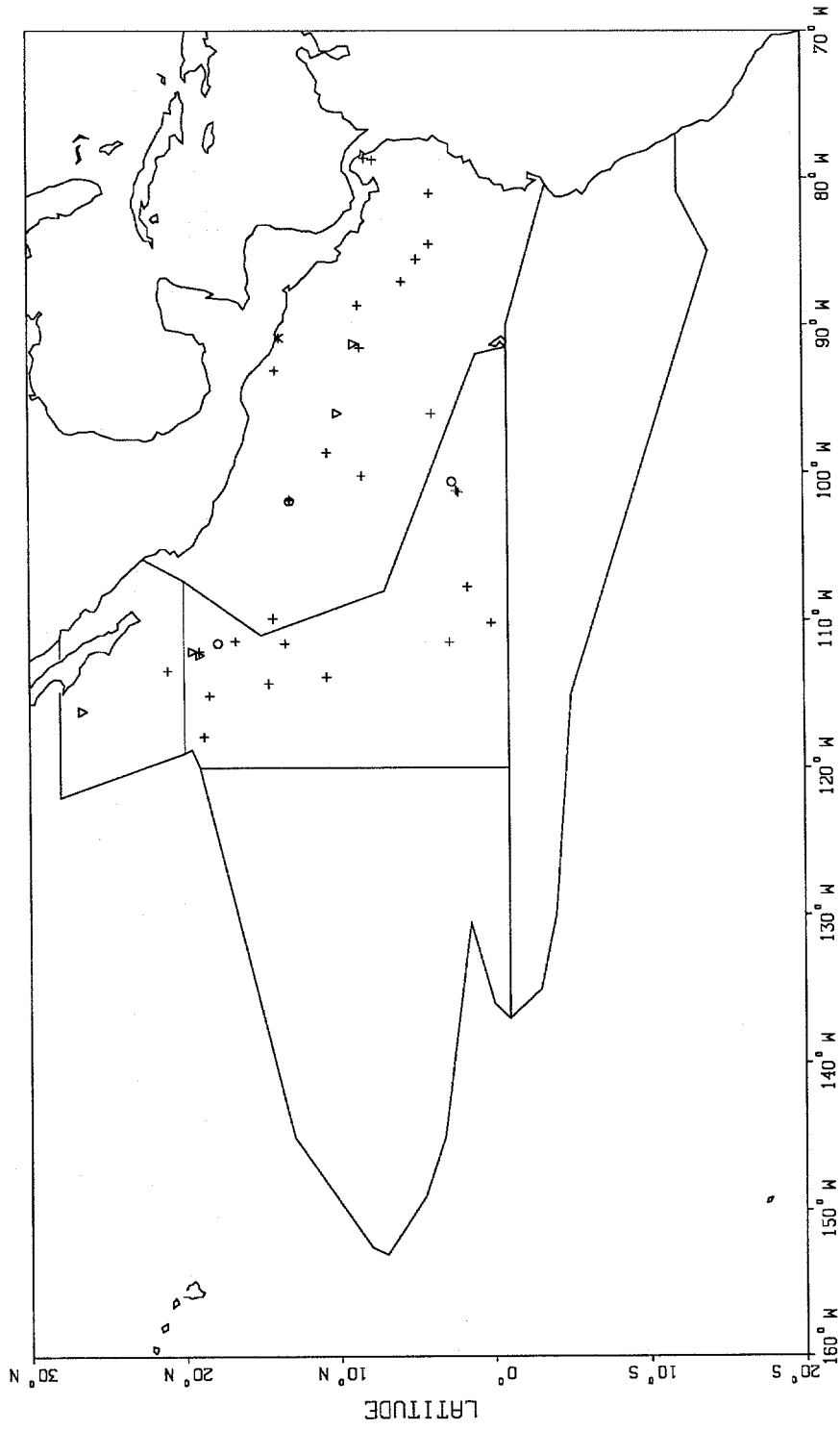


Figure 15. Unidentified rorquals (+), Bryde's (o), blue (▽) and humpback (*) whales detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

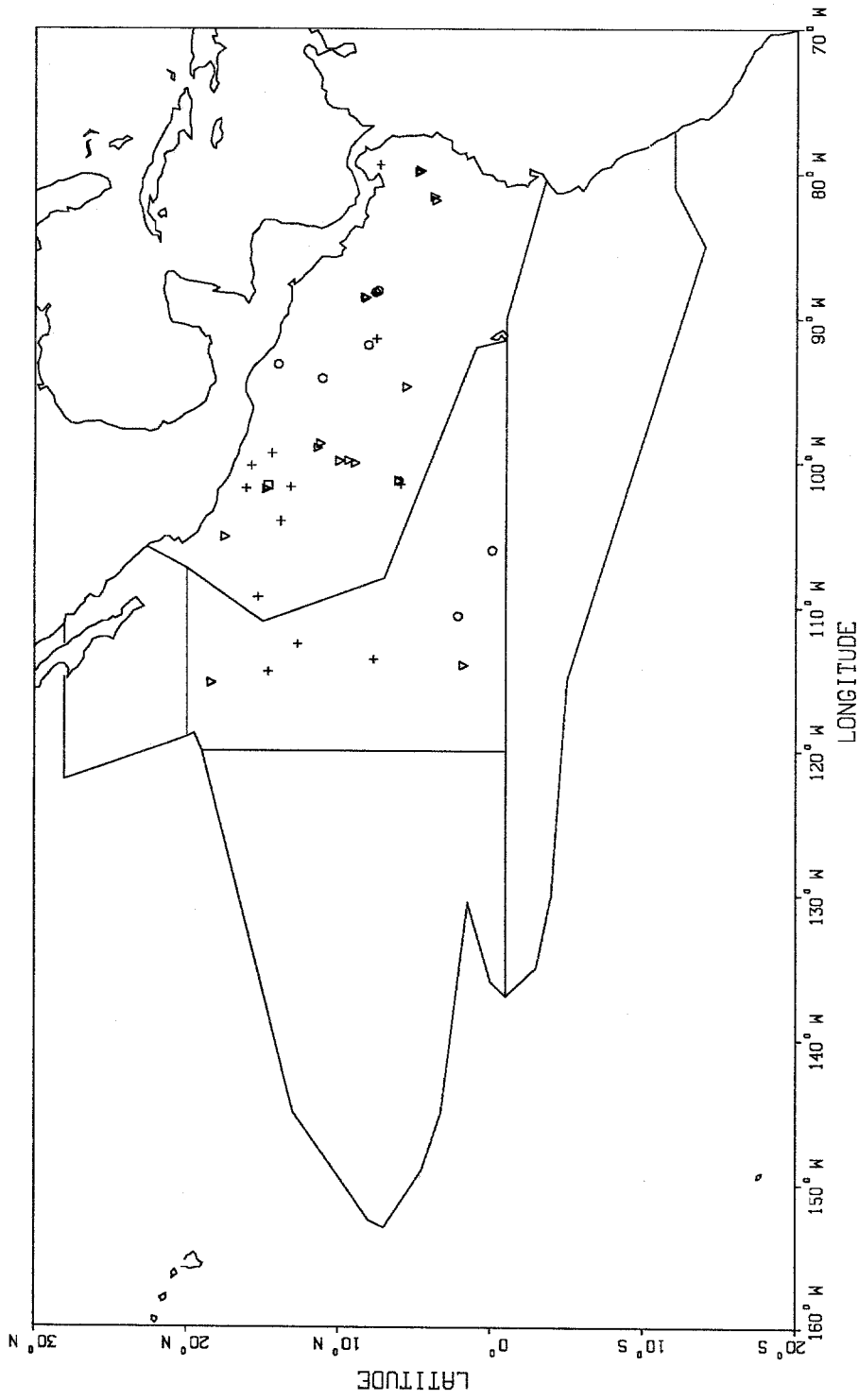


Figure 16. Unidentified beaked (+), Cuvier's beaked (o), mesoplodon (▽) and southern bottlenose (□) whales detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

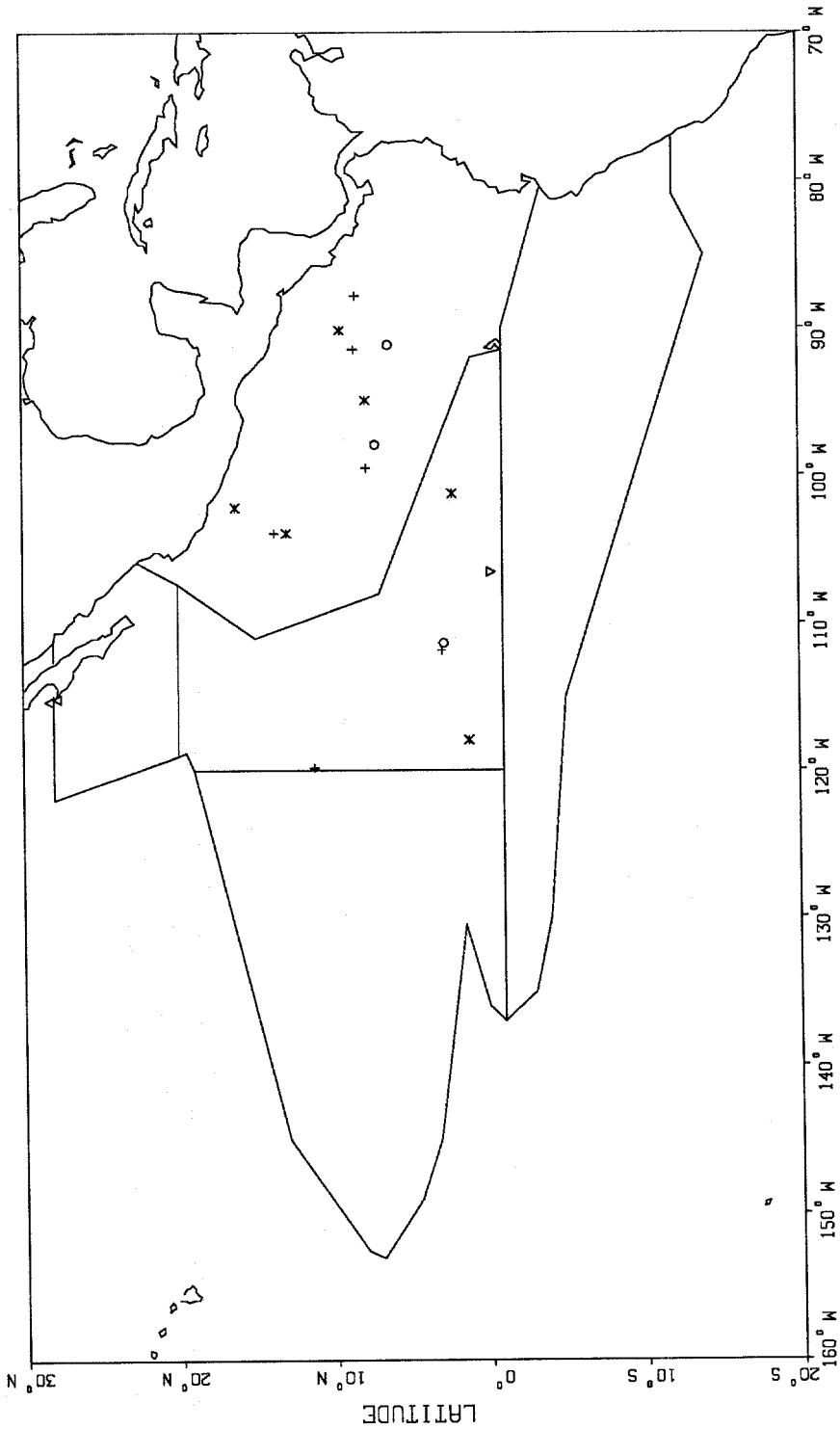


Figure 17. Killer (+) and false killer (o) whales, Fraser's dolphins (▽), pygmy killer (*) whales and Pacific white-sided dolphins (△) detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

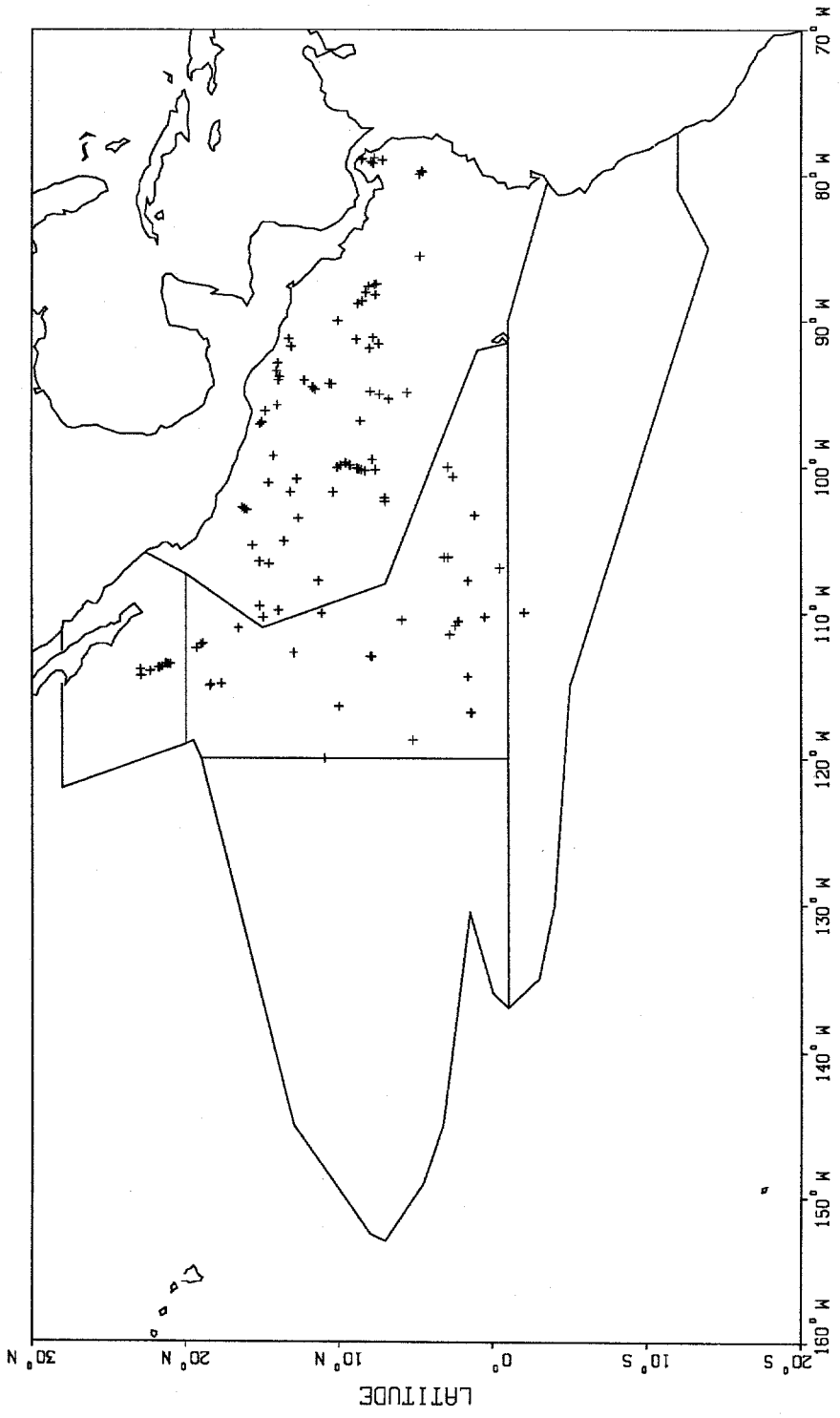


Figure 18. Unidentified dolphins (+) detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

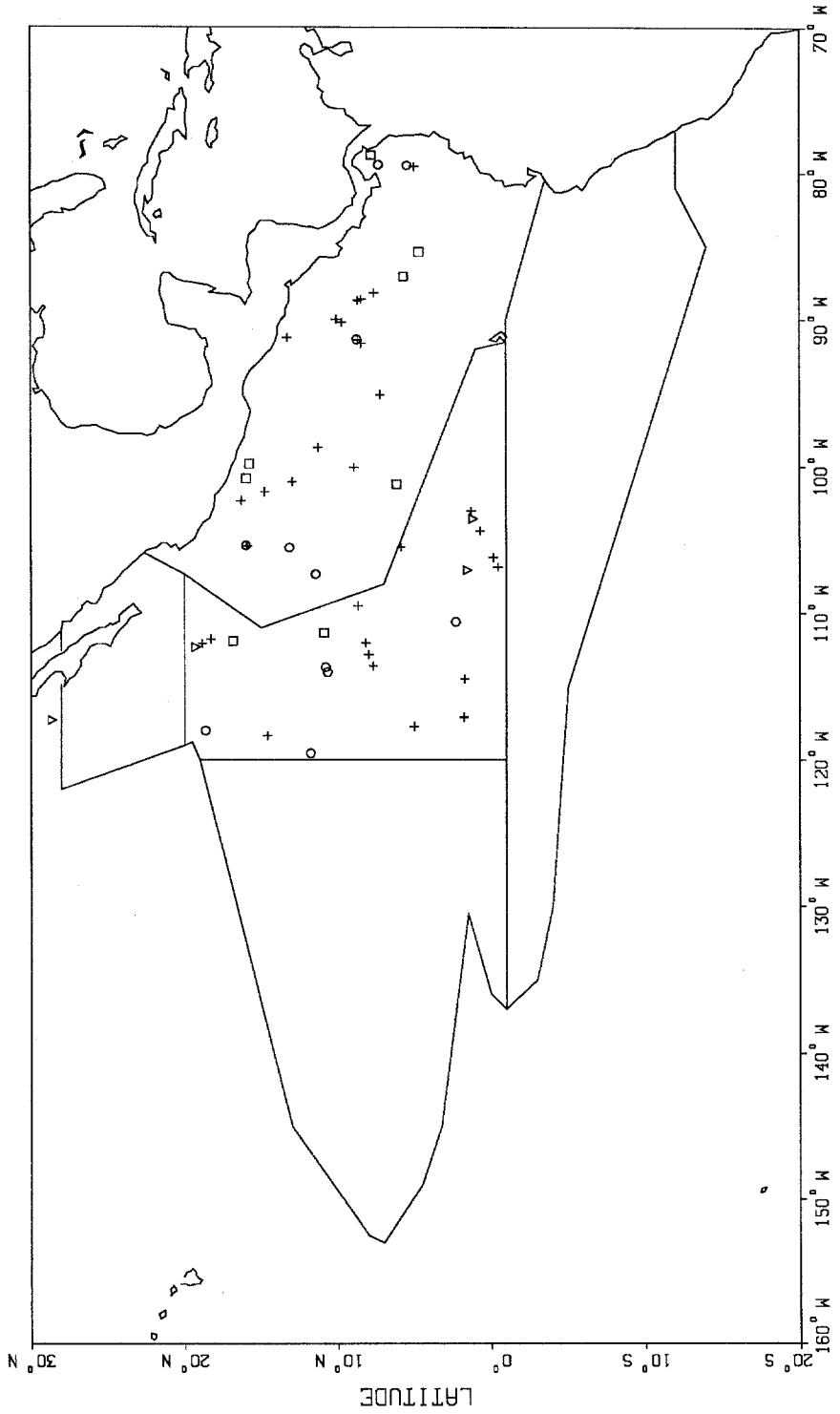


Figure 19. Unidentified small whales (+), unidentified whales (o), unidentified large whales (▽) and unidentified cetaceans (□) detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

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