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REPORT OF A MARINE MAMMAL SURVEY OF THE EASTERN TROPICAL PACIFIC ABOARD THE RESEARCH VESSEL DAVID STARR JORDAN JULY 28 - DECEMBER 6, 1988

Rennie S. Holt
Stephanie N. Sexton

NOAA-TM-NMFS-SWFC-129

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
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U.S. DEPARTMENT OF COMMERCE
Robert A. Mosbacher, 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 six-year program to monitor these stocks of dolphins. In the first two years of the program (1986 and 1987), two surveys of marine mammal populations in the ETP were conducted concurrently each year aboard the National Oceanic and Atmospheric Administration vessels the David Starr Jordan and the McArthur. The surveys lasted 120 days each. In 1988, we conducted the third two surveys during the same period of time and used the same vessels.

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 88-07 (217); SWFC Observer Cruise 1164). A separate report of the McArthur cruise has been published by Sexton, Holt and Jackson (1989). A report of environmental data collected during the survey is reported by Lierheimer et al. (1989).

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 July 28 through December 6, 1988 (Figure 1), with port calls in Porto Quetzal, Guatemala; Manzanillo, Mexico and Rodman Naval Station, Republic of Panama. The itinerary of the vessel included four segments or effort legs:

Leg 1.			
	Departed	San Diego	July 28
	Arrived	Porto Quetzal	August 26
Leg 2.			
	Departed	Porto Quetzal	September 1
	Arrived	Rodman NS	September 30
Leg 3.			
	Departed	Rodman NS	October 4
	Arrived	Manzanillo	November 2
Leg 4.			
	Departed	Manzanillo	November 7
	Arrived	San Diego	December 6

The Jordan also conducted bird censuses on the Isla del Coco (Costa Rica), Isla de Malpelo (Columbia), Ile Clipperton (France), and the Isla San Benedicto (Mexico).

Scientific Personnel

Cruise Leaders	Legs
Alan Jackson, SWFC	1
Rennie Holt, SWFC	2
Aleta Hohn, SWFC	3
Elizabeth Edwards, SWFC	4
Identification Specialists	
Richard LeDuc, SWFC	1-2
Marc Webber, SWFC	1-2

Michael Newcomer, SWFC	3
Scott Sinclair, SWFC	3-4

Observers

Scott Benson, SWFC	1-2
Carrie Fried, SWFC	1-2
Joe Raffetto, SWFC	1-2
Dave Skordal, SWFC	1-2
Sallie Beavers, SWFC	3-4
Peter Boveng, SWFC	4
William Irwin, SWFC	3-4
Keith Rittmaster, SWFC	3-4
Victoria Thayer, SWFC	3-4

Photogrammetry Specialists

Jay Barlow, SWFC	1
James Gilpatrick, SWFC	2-3
Mark Lowry, SWFC	3-4
Morgan Lynn, NOAA Corps, SWFC	1-2,4

Bird Survey and Oceanographic Specialists

Lisa Ballance, SWFC	1
Robert Pitman, SWFC	1-2
James Gilardi, Contractor	2-4
James Caretta, Contractor	3-4
Lisa Lierheimer, SWFC	1-3
Paul Fiedler, SWFC	4
Gregg Thomas, Atl. Oceano. & Meter. Lab.	1-4

Helicopter Support

Dave Gardner, NOAA Corps, OAO	1
Carl Anderson, OAO	1,3
Bud Christman, NOAA Corps, OAO	2
John Crona, OAO	2,4
Bill Hines, NOAA Corps, OAO	3-4

Marine Mammal Species Surveyed

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

Equipment

The 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 vessel's Satellite Navigation System (SAT NAV). Marine mammals were detected with port and starboard pedestal mounted 25X Fuginon[1] 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 vessel 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 vessel's course from the gyroscope; the electronically encoded sighting angles of the 25X binoculars; a measurement of the relative motion of the vessel 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 vessel 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 vessel, which were recorded by the observers using a 360° graduated washer attached to the base of the 25X binoculars and graduated reticles enclosed in the right eye piece of the binoculars.

A 35 mm F-1 Canon[1] camera with motor drive was used to photograph animals to aid in stock and species identification. The system included 400 mm, 75-210 mm zoom, and 28 mm lens. Some observers used 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.

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

1. Left Binocular - The port-side observer used a 25X binocular, mounted on the port side of the vessel 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 vessel, to search from the midpoint of the trackline to abeam the right side of the vessel; 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 vessel 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 two-hour shifts. During each shift members spent approximately equal time occupying each duty station. Two of the six observers were experts in identifying marine mammals. These two identification specialists were assigned to separate teams so that one would always be on duty. The other four observers were systematically assigned to a team. With one exception, 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 switched vessels after the second leg. As mentioned above, there was one unscheduled personnel change. One of the identification specialists (team #3) left the survey between the third and fourth legs. The specialist was replaced with an experienced observer. The specialist from the other team (#4) was available during all sightings from team #3 for species identification.

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 vessel traversed a predetermined trackline at a constant speed of approximately 18.5 km/hr. Except

for approximately two to three hours per night when oceanographic data were collected, the vessel 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 vessel 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 vessel. After approximately eight minutes the vessel was directed towards the cue and the tracking continued for another eight 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 forms (Figure 3). Definition of each data element is given by Ralston[2]. Criteria for assigning sun position and sea state conditions are given in Figure 4 and Table 1, respectively. Observers recorded bearing and range for schools using the 360° washer and reticle increments. The reticle measurements were converted to km using

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

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

Each observer who had a good view of the school independently recorded in his or her logbook an estimate of school size and a

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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.

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 Forms (Figure 5) 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 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 study area was divided into four strata, with the sum of the four strata comprising the total study area (Figure 1). The sum of the three northern most strata (inshore, middle and west) constitutes the northern stratum and represents the range of the northern offshore stock of spotted dolphins (species most critically impacted by the fishery). Data were analysed using information by stratum, summed over strata and pooled over strata.

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 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 11,020 km and detected 569 marine mammal sightings (Table 5). Dolphins were detected in 417 schools and whales were detected in 177 schools (25 schools contained both dolphins and whales). These included 13 species of dolphins and 16 species of whales.

While operating in the searching mode in the study area (Figure 1), observers searched 10,941 km and detected 367 dolphin schools within 11.1 km perpendicular distance of the trackline. 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, 10,922 km were searched and 367 dolphin schools were detected. The rate of detecting large schools in the study area was 33.60 schools/1000 km searched (Table 6).

The Jordan conducted approximately 59% of its effort in the inshore area and only 5% 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 14% of the searching effort was completed in calm seas (Table 6). However, 34% of all schools were detected during calm seas and the rate of detecting schools during calm seas was more than three times the rate detected during rough seas.

Poor visibility conditions occurred during 11% of the

surveying effort during which 10% of the schools were detected (Table 6). The rate of detecting schools during good conditions was slightly greater than the rate during poor conditions (34.00 and 30.48 schools/1000 km searched, respectively).

Because observers switched vessels at the end of leg 2, data were recorded for all 13 observers on each vessel. Observers #38 and #46 each participated for only one leg of the survey. Except for these two observers, the other observers spent approximately equal time searching (Table 6). However, the percent of all schools that were detected by the observers ranged from 5 to 12%. Consequently, rates of detecting dolphin schools also varied greatly (range of 6.31 to 17.16 schools/1000 km).

Teams were identified by the identification specialist on effort. Teams 2 and 4 were on legs 1 and 2 of the survey; teams 1 and 3 were on legs 3 and 4 of the survey. The team leader for team 3 only participated for the third leg. Although a replacement observer was used for the fourth leg, the observer was not an identification specialist. The data, therefore, presented for Team 3 is summarized over only 1 leg and is not comparable to the results presented for Teams 1, 2 and 4. Teams 2 and 4 had similar detection rates (24.04 and 26.84).

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. William Irwin provided essential technical assistance with logistical preparations. Special efforts were provided in procurement by B. Engstrand and B. Watkins. Part of

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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 July 28 through December 6, 1988.

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	880730	19.82	67	55	56			2	163	27 57 n	121 32 w	12.22
01	02	880730	19.82	55	56	67			2	163			11.56
01	03	880730	19.82	56	67	55			2	163			7.60
01	04	880730	19.82	56	67	55			1	163			3.96
01	05	880730	19.82	31	64	69			2	163	27 39 n	121 26 w	14.53
01	06	880730	19.82	64	69	31			2	163			5.28
01	07	880730	19.82	64	69	31			1	163	27 29 n	121 23 w	7.93
01	08	880730	19.82	69	31	64			1	163			4.62
02	01	880730	18.52	67	55	56			1	125	27 00 n	121 22 w	2.16
02	02	880730	18.52	67	55	56	05	01	1	125			2.16
02	03	880730	18.52	67	55	56			2	125			1.54
02	04	880730	18.52	67	55	56			2	163			0.93
02	05	880730	18.52	67	55	56	04	02	2	163			2.47
02	06	880730	18.52	55	56	67	04	02	2	163			10.80
02	07	880730	18.52	31	64	69			2	163	26 49 n	121 14 w	0.62
02	08	880730	18.52	31	64	69			2	125			12.35
02	09	880730	18.52	64	69	31			2	125			3.09
02	10	880730	18.52	64	69	31	04	02	2	163	26 42 n	121 08 w	3.70
02	11	880730	18.52	64	69	31			1	163			4.94
02	12	880730	18.52	69	31	64			1	163			3.09
02	13	880730	18.52	69	31	64			2	163			9.26
02	14	880730	18.52	31	64	69			1	163	26 31 n	121 03 w	3.70
01	01	880731	19.82	56	67	55			1	163	24 49 n	120 32 w	9.91
01	02	880731	19.63	67	55	56			2	163	24 44 n	120 30 w	9.82
01	03	880731	19.45	55	56	67			2	163	24 40 n	120 28 w	4.86
01	04	880731	19.45	55	56	67			3	163			4.86
02	01	880731	19.08	64	69	31			2	163	24 29 n	120 23 w	3.50
02	02	880731	19.08	64	69	31			3	163			5.09
02	03	880731	19.26	69	31	64			3	163	24 24 n	120 21 w	3.85
03	01	880731	19.26	56	67	55			2	163	24 18 n	120 22 w	11.56
03	02	880731	19.26	67	55	56			2	163			10.91
03	03	880731	20.37	55	56	67			2	163	24 03 n	120 15 w	7.13
04	01	880731	21.30	64	69	31			2	163	23 58 n	120 10 w	7.10
04	02	880731	21.30	69	31	64			2	163			10.29
05	01	880731	17.22	56	67	55			2	161	23 46 n	120 19 w	8.61
05	02	880731	17.04	64	69	31			2	161	23 41 n	120 18 w	8.52
05	03	880731	17.04	69	31	64			3	161	23 36 n	120 16 w	8.52
05	04	880731	16.67	31	64	69	04	02	3	161	23 31 n	120 14 w	8.33
05	05	880731	17.22	56	67	55			3	161	23 26 n	120 13 w	6.89
05	06	880731	17.22	56	67	55	04	02	3	161			4.59
05	07	880731	17.22	67	55	56			3	161			4.59
05	08	880731	17.04	67	55	56	04	02	4	161			1.14
05	09	880731	17.04	67	55	56			4	161	23 16 n	120 10 w	5.68
05	10	880731	17.04	55	56	67			4	161			11.36
05	11	880731	17.22	55	56	67			4	161	23 07 n	120 06 w	0.29
01	01	880801	17.04	69	31	64			4	135	21 33 n	119 27 w	5.68

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
01	02	880801	17.04	69	31	64			5	135			1.42
01	03	880801	17.04	31	64	69			5	135			5.68
01	04	880801	17.04	31	64	69			5	161			1.70
01	05	880801	17.04	64	69	31			5	161			6.82
01	06	880801	16.85	55	56	67			5	161	21 22 n	119 19 w	11.24
01	07	880801	16.85	56	67	55			5	161			2.53
02	01	880801	16.85	56	67	55			5	161	21 12 n	119 16 w	7.30
02	02	880801	16.85	67	55	56			5	161			6.74
02	03	880801	16.85	67	55	56			4	161			4.21
02	04	880801	16.85	69	31	64			4	161	21 03 n	119 13 w	11.24
02	05	880801	16.85	31	64	69			5	161			7.58
02	06	880801	16.85	31	64	69	10	01	5	161			3.93
02	07	880801	16.85	64	69	31	10	01	5	161			8.43
02	08	880801	16.85	64	69	31			5	161			2.53
02	09	880801	16.85	55	56	67			4	161	20 43 n	119 08 w	9.83
02	10	880801	16.85	55	56	67	11	12	4	161			1.40
02	11	880801	16.85	56	67	55	11	12	4	161			9.83
02	12	880801	16.85	56	67	55			4	161			1.40
02	13	880801	16.85	67	55	56			4	161			11.24
02	14	880801	16.85	69	31	64			4	161			11.24
02	15	880801	16.85	31	64	69			4	161			11.24
02	16	880801	16.85	64	69	31	04	01	4	161			9.83
02	17	880801	16.85	64	69	31			4	161			1.40
02	18	880801	16.85	55	56	67			4	161	20 02 n	118 54 w	8.43
02	19	880801	16.85	56	67	55			4	161			8.43
02	20	880801	16.85	67	55	56	04	02	4	161			2.25
02	21	880801	16.85	67	55	56			4	161			6.18
02	22	880801	16.85	69	31	64			4	161			2.81
02	23	880801	16.85	69	31	64	04	02	4	161			5.62
02	24	880801	16.85	69	31	64			4	161	19 43 n	118 48 w	2.81
02	25	880801	16.85	31	64	69			4	161			11.52
02	26	880801	16.85	64	69	31			4	161			7.30
01	01	880802	17.22	67	55	56			4	249	18 07 n	118 47 w	7.46
01	02	880802	17.22	55	56	67			4	249			7.46
01	03	880802	17.22	56	67	55			4	249			7.46
01	04	880802	17.22	31	64	20			4	249	18 03 n	119 01 w	11.77
01	05	880802	17.22	64	20	31			4	249			11.20
01	06	880802	17.22	20	31	64			4	249	17 59 n	119 16 w	1.72
02	01	880802	17.22	67	55	56			4	249	17 54 n	119 20 w	10.91
02	02	880802	17.22	55	56	67			4	249			10.91
02	03	880802	17.22	56	67	55			4	249			10.91
02	04	880802	17.22	31	64	69			5	249	17 47 n	119 38 w	12.34
02	05	880802	17.22	64	69	31			4	249	17 45 n	119 45 w	4.88
02	06	880802	17.41	64	69	31	12	12	5	249	17 44 n	119 48 w	3.77
03	01	880802	17.59	69	31	64	12	12	5	249	17 42 n	119 53 w	1.17
04	01	880802	17.22	67	55	56	01	01	5	249	17 44 n	119 56 w	10.33
04	02	880802	17.22	55	56	67	01	01	5	249			1.72
05	01	880802	16.67	55	56	67	01	01	5	249	17 42 n	120 05 w	5.28
05	02	880802	16.67	56	67	55	01	01	5	249			10.00
05	03	880802	17.04	31	64	69			5	249	17 39 n	120 14 w	8.80
05	04	880802	17.41	64	69	31	01	02	4	249	17 37 n	120 19 w	8.41
05	05	880802	17.41	69	31	64	01	02	4	249	17 36 n	120 24 w	7.25

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	06	880802	17.41	69	31	64			4	249			1.45
05	07	880802	17.22	67	55	56			4	249	17 34 n	120 29 w	11.48
05	08	880802	17.22	55	56	67			4	249			11.48
05	09	880802	17.22	56	67	55	01	03	4	249			8.04
05	10	880802	17.22	56	67	55			4	249			2.87
05	11	880802	17.41	56	67	55			4	249	17 28 n	120 49 w	0.29
01	01	880803	17.22	64	69	31			4	248	16 53 n	122 21 w	8.61
02	01	880803	17.22	69	31	64	06	03	4	248			2.30
02	02	880803	17.22	69	31	64			4	248			5.74
02	03	880803	17.22	69	31	64	06	02	4	248			1.44
02	04	880803	16.85	56	67	55	06	02	4	248	16 50 n	122 34 w	11.24
02	05	880803	16.85	67	55	56	06	02	4	248			4.21
02	06	880803	16.85	67	55	56			4	248			1.69
02	07	880803	17.22	67	55	56			4	248	16 46 n	122 44 w	5.45
02	08	880803	17.22	55	56	67	06	02	4	248			11.48
02	09	880803	17.04	64	69	31	06	01	4	248	16 43 n	122 52 w	11.36
02	10	880803	17.04	69	31	64	07	01	4	248			11.36
02	11	880803	17.04	31	64	69	07	01	4	248			1.99
03	01	880803	17.41	56	67	55	06	12	4	248	16 33 n	123 12 w	10.45
03	02	880803	17.41	67	55	56	06	12	4	248			2.03
03	03	880803	17.41	67	55	56			4	248			1.74
03	04	880803	17.41	67	55	56	06	12	4	248			3.19
03	05	880803	17.41	67	55	56			4	248	16 31 n	123 19 w	2.90
03	06	880803	17.41	67	55	56	06	12	4	248			2.03
04	01	880803	17.22	64	69	31	01	01	5	248	16 32 n	123 27 w	11.48
04	02	880803	17.22	69	31	64	01	01	5	248			7.18
04	03	880803	17.22	69	31	64	01	01	5	244	16 29 n	123 38 w	4.31
04	04	880803	17.22	31	64	69	01	01	5	244			4.31
05	01	880803	17.22	56	67	55	01	01	5	241	16 29 n	123 48 w	2.01
05	02	880803	17.22	56	67	55	02	02	5	210			3.44
06	01	880803	17.04	67	55	56	02	02	5	210	16 28 n	123 53 w	10.22
06	02	880803	17.41	64	69	31	02	02	4	210	16 23 n	123 56 w	9.86
07	01	880803	16.67	69	31	64	02	03	4	210	16 13 n	124 03 w	5.56
07	02	880803	16.67	31	64	69	03	03	4	210			6.67
01	01	880804	16.85	55	56	67	08	03	3	205	15 10 n	125 14 w	7.86
01	02	880804	17.04	56	67	55	08	03	3	205	15 06 n	125 16 w	7.67
01	03	880804	17.04	69	31	64	08	03	3	205	15 00 n	125 19 w	10.79
02	01	880804	16.85	31	64	69	08	02	3	205	14 55 n	125 21 w	10.39
02	02	880804	16.85	64	69	31	08	02	3	205			3.37
03	01	880804	16.67	55	56	67	08	01	3	205	14 44 n	125 30 w	6.94
03	02	880804	16.67	55	56	67			3	205			2.78
03	03	880804	16.67	56	67	55			3	205			9.45
03	04	880804	16.67	67	55	56			3	205			8.06
04	01	880804	16.67	69	31	64			3	205			9.45
04	02	880804	17.04	31	64	69			3	205	14 20 n	125 45 w	8.52
04	03	880804	17.04	64	69	31	12	12	3	205			2.84
04	04	880804	17.04	64	69	31			3	205			5.68
04	05	880804	17.22	55	56	67			3	205	14 11 n	125 50 w	1.44
05	01	880804	16.67	55	56	67			3	201	14 08 n	125 54 w	0.83
06	01	880804	17.04	56	67	55			2	201	14 07 n	125 54 w	1.70
07	01	880804	16.67	56	67	55			2	201	14 05 n	125 56 w	2.22
07	02	880804	16.67	67	55	56			3	201			3.89

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
07	03	880804	16.67	67	55	56			3	201	14 02 n	125 58 w	6.67
07	04	880804	16.85	69	31	64			3	201	13 58 n	126 00 w	1.40
08	01	880804	16.30	31	64	69	03	02	2	201	13 50 n	126 04 w	3.26
08	02	880804	16.67	31	64	69	03	02	2	201	13 48 n	126 06 w	0.28
01	01	880805	16.30	31	64	69			3	185	11 56 n	126 32 w	4.07
02	01	880805	15.93	64	69	31	08	03	3	185	11 54 n	126 33 w	3.45
02	02	880805	15.93	67	55	56	08	03	3	185			2.65
02	03	880805	15.93	67	55	56			4	185			4.51
02	04	880805	15.93	67	55	56			4	185			3.45
02	05	880805	15.93	55	56	67			4	185			2.39
02	06	880805	15.93	55	56	67			4	185			8.23
02	07	880805	15.93	56	67	55			4	185			10.62
02	08	880805	16.30	31	64	69			4	185	11 32 n	126 34 w	4.07
02	09	880805	16.30	31	64	69			5	185			7.06
02	10	880805	16.30	64	69	31			5	185			10.59
02	11	880805	16.30	69	31	64			5	185			10.87
02	12	880805	16.48	67	55	56			4	185	11 10 n	126 34 w	10.99
02	13	880805	16.48	55	56	67			4	185			5.22
03	01	880805	16.67	56	67	55			4	185	10 58 n	126 37 w	6.67
03	02	880805	16.67	56	67	55			4	185			2.78
03	03	880805	16.67	31	64	69			3	185	10 52 n	126 37 w	6.94
03	04	880805	16.67	31	64	69			3	185			2.78
03	05	880805	16.67	31	64	69			3	185			1.67
03	06	880805	16.67	64	69	31			3	185			2.22
04	01	880805	16.48	31	64	69	03	02	5	185	10 15 n	126 35 w	3.30
04	02	880805	15.93	31	64	69	03	02	5	195	10 13 n	126 35 w	2.65
04	03	880805	15.93	31	64	69			5	195			2.65
04	04	880805	15.93	64	69	31			5	195			10.09
04	05	880805	15.93	69	31	64			5	195			1.33
01	01	880806	16.48	56	67	55			4	130	08 48 n	125 35 w	6.32
01	02	880806	16.48	67	55	56			4	130			6.59
01	03	880806	16.48	64	69	31	10	03	4	130	08 43 n	125 28 w	7.14
01	04	880806	16.48	64	69	31	10	02	4	130			5.22
01	05	880806	16.48	69	31	64	10	02	5	130			9.61
01	06	880806	16.48	31	64	69			5	130			5.49
01	07	880806	16.48	31	64	69	10	02	5	130			5.49
01	08	880806	16.11	56	67	55			5	130	08 29 n	125 10 w	3.49
01	09	880806	16.11	56	67	55	10	02	5	130			2.15
01	10	880806	16.11	56	67	55			5	130			5.10
01	11	880806	16.11	67	55	56			5	130			10.74
01	12	880806	16.11	55	56	67			5	130			2.42
01	13	880806	15.93	55	56	67	10	01	5	130	08 19 n	125 57 w	1.59
01	14	880806	15.93	55	56	67			5	130			2.12
01	15	880806	15.93	55	56	67	10	01	5	130			2.65
01	16	880806	15.93	55	56	67			5	130			2.39
01	17	880806	16.11	64	69	31			5	130	08 16 n	125 54 w	10.20
01	18	880806	16.11	69	31	64			4	130			3.22
02	01	880806	15.56	31	64	69			4	130	08 08 n	125 43 w	8.30
02	02	880806	16.48	56	67	55			4	130	08 04 n	124 38 w	2.20
02	03	880806	16.48	56	67	55	05	12	4	130			5.77
02	04	880806	16.11	56	67	55			4	130	08 00 n	124 34 w	2.95
02	05	880806	16.11	67	55	56			4	130			10.74

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
02	06	880806	16.11	55	56	67			4	130			1.34
02	07	880806	16.11	55	56	67			4	130			1.34
03	01	880806	16.67	55	56	67			4	130	07 52 n	124 23 w	4.17
03	02	880806	15.56	64	69	31			4	130	07 50 n	124 21 w	4.67
03	03	880806	15.56	64	69	31	05	02	4	130			3.11
04	01	880806	15.93	56	67	55	05	02	4	130	07 46 n	124 15 w	9.03
04	02	880806	15.56	67	55	56			4	130	07 43 n	124 11 w	3.89
04	03	880806	15.56	67	55	56	05	03	4	130			5.19
04	04	880806	15.56	55	56	67	05	03	4	130			5.19
04	05	880806	16.30	55	56	67	05	03	4	130	07 37 n	124 03 w	0.27
01	01	880808	15.19	55	56	67			5	137			3.80
01	01	880809	17.04	69	31	64			3	132	02 07 n	118 17 w	8.52
01	02	880809	16.30	31	64	69			3	132	02 04 n	118 14 w	4.07
01	03	880809	16.30	31	64	69			4	132			3.80
02	01	880809	16.85	55	56	67			4	132	02 01 n	118 11 w	2.53
02	02	880809	16.85	55	56	67	10	02	4	132			7.58
02	03	880809	16.85	56	67	55	10	02	4	132			8.15
02	04	880809	16.85	56	67	55			4	132			3.37
02	05	880809	16.85	67	55	56			4	132			9.83
03	01	880809	16.30	69	31	64			4	132	01 51 n	117 58 w	9.51
03	02	880809	16.30	31	64	69			4	132			6.79
03	03	880809	16.30	31	64	69	10	01	4	132			4.35
03	04	880809	16.30	64	69	31	10	01	4	132			10.59
03	05	880809	16.67	55	56	67	09	01	4	132	01 39 n	117 47 w	11.11
03	06	880809	16.67	56	67	55	08	12	4	132			7.50
04	01	880809	16.85	67	55	56	06	01	4	132	01 32 n	117 42 w	4.78
04	02	880809	16.85	69	31	64	06	01	4	132			11.24
04	03	880809	16.85	31	64	69	06	01	4	132			11.52
04	04	880809	16.85	64	69	31	05	01	3	132			10.95
04	05	880809	16.85	55	56	67	05	02	3	132	01 18 n	117 28 w	8.43
04	06	880809	16.85	56	67	55	05	02	3	132			4.78
04	07	880809	16.85	56	67	55	06	02	3	092	01 13 n	117 23 w	3.65
04	08	880809	16.85	67	55	56	06	02	3	092			8.43
04	09	880809	17.59	69	31	64	06	02	3	092	01 13 n	117 18 w	8.80
04	10	880809	17.59	31	64	69	06	03	3	092			5.28
01	01	880810	16.85	67	55	56			4	092	01 10 n	115 56 w	7.30
01	02	880810	16.85	55	56	67			4	092			1.69
01	03	880810	16.85	55	56	67			5	092			5.34
01	04	880810	16.85	56	67	55			5	092			7.30
01	05	880810	17.04	31	64	69			5	092	01 09 n	115 46 w	7.67
02	01	880810	16.85	64	69	31	11	02	5	092	01 09 n	115 39 w	9.55
03	01	880810	16.30	67	55	56			5	092	01 13 n	115 35 w	8.42
04	01	880810	16.85	55	56	67			5	092	01 14 n	115 29 w	5.62
04	02	880810	16.85	55	56	67	11	01	5	092			2.81
04	03	880810	16.85	56	67	55	11	01	4	092	01 14 n	115 26 w	8.43
04	04	880810	17.04	31	64	69	10	01	4	092	01 12 n	115 21 w	7.10
05	01	880810	16.67	69	31	64	12	12	4	092	01 11 n	115 23 w	7.50
05	02	880810	17.04	67	55	56	07	01	4	092	01 10 n	115 18 w	10.79
05	03	880810	17.04	67	55	56			4	092			0.57
05	04	880810	17.04	55	56	67			4	092			1.42
05	05	880810	17.04	55	56	67	07	01	4	092			0.85
06	01	880810	15.93	55	56	67	07	01	4	092	01 07 n	115 13 w	5.31

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
06	02	880810	15.93	55	56	67			4	092			1.06
06	03	880810	17.04	56	67	55			4	092	01 07 n	115 10 w	5.96
06	04	880810	17.04	56	67	55	06	02	4	092			1.42
06	05	880810	17.04	31	64	69	06	02	4	092	01 06 n	115 07 w	1.14
07	01	880810	16.85	31	64	69			4	092	01 04 n	115 05 w	1.12
07	02	880810	16.85	64	69	31	06	02	4	092			8.15
07	03	880810	17.22	69	31	64	06	02	4	092	01 03 n	115 01 w	8.61
07	04	880810	17.22	67	55	56	06	02	4	092	01 03 n	114 58 w	7.46
07	05	880810	17.22	55	56	67	06	03	4	092			7.18
07	06	880810	17.22	56	67	55	06	03	4	092			6.60
07	07	880810	17.04	56	67	55	06	03	4	092	01 02 n	114 47 w	0.28
01	01	880811	17.41	64	69	31			4	080	01 05 n	113 38 w	11.32
01	02	880811	17.41	69	31	64			4	080			10.16
01	03	880811	17.41	56	67	55			4	080	01 06 n	113 29 w	3.19
02	01	880811	17.41	67	55	56	12	02	4	080	01 09 n	113 26 w	0.87
02	02	880811	17.41	67	55	56			4	080			9.86
02	03	880811	17.41	55	56	67			4	080			1.74
02	04	880811	17.41	55	56	67			4	088	01 09 n	113 20 w	8.70
02	05	880811	17.04	64	69	31			4	088	01 09 n	113 16 w	7.10
02	06	880811	17.04	64	69	31	11	01	4	088			4.26
02	07	880811	17.04	69	31	64	11	01	4	088			11.36
02	08	880811	17.04	31	64	69			4	088			7.95
03	01	880811	16.67	56	67	55			4	092	01 09 n	113 01 w	11.11
03	02	880811	16.67	67	55	56			4	092			4.17
03	03	880811	16.67	67	55	56	08	12	4	092			6.67
03	04	880811	16.67	55	56	67	08	12	4	092			2.78
03	05	880811	17.41	55	56	67	08	01	4	092	01 07 n	112 49 w	8.70
03	06	880811	17.41	64	69	31	07	01	4	092			11.61
03	07	880811	17.41	69	31	64	07	01	4	092			11.61
03	08	880811	17.41	31	64	69			4	092			2.32
03	09	880811	17.04	31	64	69	07	01	4	092	01 05 n	112 32 w	1.42
04	01	880811	16.48	31	64	69	06	01	4	092	01 04 n	112 30 w	3.30
04	02	880811	16.48	56	67	55	06	02	4	092			8.24
04	03	880811	17.04	67	55	56	06	02	3	092	01 04 n	112 24 w	5.11
05	01	880811	16.67	64	69	31	07	03	3	064	01 03 n	112 16 w	6.39
05	02	880811	16.85	64	69	31			3	064	01 03 n	112 15 w	2.53
01	01	880812	17.59	55	56	67			3	073	01 52 n	110 45 w	2.35
01	02	880812	17.59	55	56	67	12	03	3	073			7.33
01	03	880812	17.59	69	31	64	12	03	3	073	01 55 n	110 40 w	8.80
02	01	880812	17.59	55	56	67	12	02	3	074	01 52 n	110 34 w	11.44
02	02	880812	17.59	56	67	55	12	01	3	074	01 54 n	110 29 w	11.73
02	03	880812	17.59	67	55	56	12	01	4	074			1.17
02	04	880812	17.59	67	55	56			4	074			1.17
02	05	880812	17.78	67	55	56	12	01	4	074	01 57 n	110 22 w	7.41
02	06	880812	17.78	67	55	56			4	074	01 59 n	110 20 w	0.30
03	01	880812	17.22	69	31	64			4	085	02 02 n	110 18 w	4.31
03	02	880812	17.22	69	31	64	11	01	4	085			1.44
03	03	880812	17.22	31	64	69	11	01	4	085			5.74
04	01	880812	17.04	55	56	67			4	105	02 04 n	110 09 w	9.09
05	01	880812	17.04	56	67	55			4	105	02 01 n	110 04 w	3.98
05	02	880812	17.41	56	67	55			4	105	02 01 n	110 02 w	1.45
01	01	880813	16.67	31	64	69	11	03	4	105	01 40 n	108 48 w	6.94

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	880813	16.67	31	64	69			4	105			4.17
01	03	880813	16.85	67	55	56			4	105	01 39 n	108 44 w	5.06
01	04	880813	16.85	67	55	56	11	03	4	105			3.09
01	05	880813	16.85	67	55	56	11	02	4	105			1.12
01	06	880813	16.85	67	55	56			4	105			1.97
01	07	880813	16.85	55	56	67			4	105			2.81
01	08	880813	16.85	55	56	67	11	02	4	105			5.62
01	09	880813	16.85	55	56	67			4	105			2.81
01	10	880813	16.85	56	67	55			4	105			11.24
01	11	880813	17.04	31	64	69			4	105	01 33 n	108 31 w	6.25
01	12	880813	17.04	31	64	69	11	01	4	105			5.40
01	13	880813	17.04	64	69	31	11	01	4	105			8.80
01	14	880813	17.04	64	69	31			4	105			1.70
02	01	880813	17.04	69	31	64	11	01	4	105	01 31 n	108 21 w	8.52
02	02	880813	17.04	67	55	56			4	105			1.42
02	03	880813	17.04	67	55	56	11	01	4	105			4.26
02	04	880813	17.04	67	55	56	10	01	4	105			5.68
02	05	880813	17.04	55	56	67	10	01	4	105			5.68
02	06	880813	17.04	55	56	67	10	12	4	105	01 27 n	108 13 w	5.68
02	07	880813	17.04	56	67	55	09	12	4	105			11.36
02	08	880813	17.04	31	64	69			4	105			1.99
02	09	880813	17.04	31	64	69			4	105			6.53
02	10	880813	17.04	31	64	69	07	01	4	105	01 24 n	108 02 w	3.12
02	11	880813	17.04	64	69	31	06	01	4	105			3.69
02	12	880813	17.04	64	69	31	06	01	4	105			3.12
02	13	880813	17.04	64	69	31			4	105			4.26
02	14	880813	17.04	69	31	64			4	105			14.77
03	01	880813	17.22	31	64	69			3	103	01 21 n	107 54 w	8.04
03	02	880813	17.22	31	64	69			4	103			2.01
03	03	880813	17.22	64	69	31			4	103			13.20
01	01	880814	16.67	56	67	55			5	102	01 02 n	106 42 w	4.44
01	02	880814	16.67	56	67	55			5	102			1.39
01	03	880814	16.67	67	55	56			5	102			2.50
01	04	880814	16.67	67	55	56			5	102			3.33
02	01	880814	16.30	56	67	55			5	061	01 08 n	105 42 w	3.26
02	02	880814	16.30	56	67	55	08	01	5	061			1.36
02	03	880814	17.04	56	67	55			5	061	01 09 n	105 40 w	1.99
02	04	880814	17.04	67	55	56	08	01	5	061			1.42
02	05	880814	17.04	67	55	56			5	061			0.85
03	01	880814	16.67	64	69	31			4	061	01 13 n	105 33 w	9.72
03	02	880814	16.67	69	31	64			4	061			4.72
04	01	880814	16.48	56	67	55			4	065	01 22 n	105 23 w	7.97
04	02	880814	16.48	56	67	55			4	065			1.65
04	03	880814	16.48	67	55	56			4	065			1.37
04	04	880814	16.67	67	55	56			4	065	01 25 n	105 18 w	8.61
04	05	880814	16.67	67	55	56			4	065	01 28 n	105 14 w	0.28
01	01	880815	17.04	69	31	64			4	342	02 27 n	104 20 w	9.37
01	02	880815	17.22	55	56	67			4	342	02 33 n	104 22 w	6.89
02	01	880815	17.22	56	67	55			4	342	02 39 n	104 28 w	7.75
02	02	880815	17.22	67	55	56			4	342			2.30
02	03	880815	17.22	67	55	56	03	02	4	342			2.01
02	04	880815	17.22	67	55	56			4	342			3.16

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
02	05	880815	16.85	69	31	64			4	342	02 48 n	104 31 w	11.24
02	06	880815	16.85	31	64	69			4	342			11.24
02	07	880815	16.85	64	69	31			4	342			4.49
03	01	880815	16.67	55	56	67	02	01	4	342	03 07 n	104 36 w	2.78
03	02	880815	16.67	55	56	67			4	342			5.83
03	03	880815	16.67	55	56	67	02	02	4	342			1.67
03	04	880815	16.67	55	56	67			4	342			0.56
03	05	880815	16.67	56	67	55			4	342			4.17
04	01	880815	16.85	69	31	64			4	343	03 27 n	104 43 w	11.24
04	02	880815	16.85	31	64	69			4	343			7.02
05	01	880815	17.04	55	56	67			4	343	03 42 n	104 49 w	7.10
05	02	880815	17.04	56	67	55			4	343			7.10
05	03	880815	17.04	69	31	64			4	343			8.52
05	04	880815	17.22	31	64	69			4	343	03 55 n	104 53 w	8.90
05	05	880815	17.22	64	69	31			4	343			8.90
01	01	880816	17.41	67	55	56			4	347	05 40 n	105 24 w	3.19
01	02	880816	17.41	67	55	56			5	347			0.87
01	03	880816	16.85	67	55	56			5	037	05 42 n	105 24 w	3.93
01	04	880816	16.85	67	55	56	01	03	5	037			1.12
01	05	880816	17.22	55	56	67	01	03	5	037	05 45 n	105 24 w	5.17
01	06	880816	17.22	55	56	67			5	037			2.30
01	07	880816	16.85	55	56	67	01	03	5	037	05 48 n	105 20 w	0.56
02	01	880816	16.67	31	64	69			5	037	05 51 n	105 18 w	3.33
03	01	880816	17.04	64	69	31			5	037	05 57 n	105 13 w	4.54
03	02	880816	16.67	64	69	31	01	02	5	037	05 59 n	105 11 w	2.22
03	03	880816	16.67	69	31	64	01	02	5	037			6.95
04	01	880816	16.67	67	55	56	01	02	5	037	06 04 n	105 08 w	6.67
04	02	880816	17.22	67	55	56			5	037	06 07 n	105 05 w	2.01
04	03	880816	17.22	67	55	56	01	01	5	037			2.30
04	04	880816	17.04	55	56	67	01	01	5	037	06 09 n	105 04 w	0.28
05	01	880816	16.67	56	67	55	01	01	5	037	06 08 n	105 01 w	6.67
05	02	880816	17.22	31	64	69	01	01	5	037	06 12 n	104 37 w	8.61
05	03	880816	17.78	31	64	69			5	037	06 18 n	104 56 w	2.96
05	04	880816	17.78	64	69	31			5	037			13.33
05	05	880816	17.78	69	31	64			5	037			10.37
05	06	880816	17.22	67	55	56	09	12	5	037	06 30 n	104 47 w	5.17
05	07	880816	17.22	67	55	56			5	037			1.44
05	08	880816	17.22	67	55	56	09	12	5	037			1.15
05	09	880816	17.22	67	55	56			5	037			3.73
05	10	880816	17.22	55	56	67			5	037			3.44
05	11	880816	17.22	55	56	67	08	01	5	037			8.04
05	12	880816	17.22	56	67	55			5	037			5.74
05	13	880816	17.22	56	67	55	08	01	5	037			5.74
05	14	880816	17.22	31	64	69	08	01	5	037	06 47 n	104 33 w	5.74
06	01	880816	17.22	64	69	31			5	037	06 53 n	104 32 w	2.58
06	02	880816	17.41	67	55	56			5	037	06 54 n	104 32 w	4.06
06	03	880816	17.41	67	55	56			4	037			2.03
06	04	880816	17.41	67	55	56			4	037			3.77
06	05	880816	17.41	55	56	67			4	037			6.96
06	06	880816	17.41	55	56	67			4	037	07 02 n	104 25 w	2.61
06	07	880816	17.41	56	67	55			4	037			6.67
06	08	880816	17.41	56	67	55			4	037	07 06 n	104 21 w	0.29

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	880817	17.22	64	69	31			4	027	08 22 n	103 21 w	3.44
02	01	880817	17.22	69	31	64			4	027	08 29 n	103 20 w	3.44
02	02	880817	17.22	56	67	55			4	027			10.05
02	03	880817	17.22	56	67	55	02	02	4	027			1.44
02	04	880817	17.22	67	55	56	02	02	4	027			3.44
02	05	880817	17.22	67	55	56			4	037			8.04
02	06	880817	17.22	55	56	67	02	02	4	037			6.89
03	01	880817	16.85	55	56	67	02	01	4	037	08 47 n	103 07 w	1.40
03	02	880817	16.85	64	69	31	01	01	4	037			12.64
03	03	880817	16.85	69	31	64	01	01	4	037			9.83
03	04	880817	16.85	31	64	69	01	01	4	037			3.93
04	01	880817	17.22	31	64	69			4	037	09 01 n	102 54 w	4.59
04	02	880817	17.22	56	67	55	01	01	4	037			11.48
04	03	880817	17.22	67	55	56	12	12	4	037			5.74
04	04	880817	17.22	67	55	56			4	037			1.72
04	05	880817	17.22	67	55	56	12	12	4	037			4.02
04	06	880817	17.22	55	56	67	12	12	4	037			4.02
04	07	880817	17.41	55	56	67	09	12	4	037	09 17 n	102 44 w	6.09
04	08	880817	17.41	55	56	67	09	01	4	037			1.45
05	01	880817	16.67	64	69	31	08	01	4	037	09 22 n	102 39 w	6.95
05	02	880817	16.67	69	31	64	08	01	4	037			1.67
05	03	880817	16.11	69	31	64	04	01	4	147	09 25 n	102 36 w	6.44
05	04	880817	16.11	31	64	69	04	01	4	147			8.06
05	05	880817	16.11	56	67	55			4	147			2.95
05	06	880817	16.11	56	67	55			4	147			1.61
05	07	880817	16.11	56	67	55			4	147			3.49
05	08	880817	16.48	67	55	56			4	147	09 15 n	102 27 w	8.24
05	09	880817	16.48	55	56	67			4	147			8.24
05	10	880817	16.48	64	69	31			4	147			4.12
06	01	880817	16.67	69	31	64			4	147	09 01 n	102 15 w	5.56
06	02	880817	16.67	69	31	64			4	147	08 58 n	102 13 w	0.28
01	01	880818	16.85	55	56	67			3	147	07 33 n	101 20 w	6.18
01	02	880818	16.85	55	56	67	10	03	3	147			2.81
01	03	880818	16.85	56	67	55	10	03	3	147			7.58
01	04	880818	16.85	56	67	55			3	147			1.12
01	05	880818	16.85	56	67	55	10	03	3	147			1.40
01	06	880818	16.67	69	31	64	10	03	3	147	07 22 n	101 14 w	3.89
01	07	880818	16.67	69	31	64			3	147	07 20 n	101 12 w	4.44
02	01	880818	16.30	31	64	69			3	147	07 17 n	101 10 w	8.15
02	02	880818	16.30	31	64	69	10	02	2	147			2.99
02	03	880818	16.30	64	69	31			2	147			5.43
02	04	880818	16.30	64	69	31			2	147			5.16
02	05	880818	16.85	55	56	67	10	01	3	147	07 05 n	101 01 w	7.02
02	06	880818	16.85	55	56	67			3	147			4.21
02	07	880818	16.85	56	67	55			3	147			3.37
03	01	880818	17.22	67	55	56			3	147	06 52 n	101 01 w	3.16
03	02	880818	17.41	69	31	64			3	147	06 50 n	101 00 w	7.54
04	01	880818	17.22	31	64	69			3	146	06 46 n	100 57 w	2.87
04	02	880818	17.22	31	64	69			3	146	06 44 n	100 56 w	2.87
04	03	880818	16.85	55	56	67			3	146	06 43 n	100 55 w	6.74
04	04	880818	16.85	55	56	67	04	01	3	146			4.49
04	05	880818	16.85	56	67	55			3	146			3.65

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	880818	17.41	56	67	55			3	146	06 33 n	100 47 w	3.77
05	02	880818	17.41	67	55	56			3	146			10.74
05	03	880818	16.67	69	31	64			3	146	06 27 n	100 42 w	9.72
05	04	880818	16.67	31	64	69			3	146			5.56
06	01	880818	16.67	55	56	67			4	146	06 07 n	100 29 w	7.22
06	02	880818	17.04	55	56	67			4	146	06 03 n	100 26 w	0.28
01	01	880819	16.67	31	64	69			5	146	04 48 n	099 33 w	4.17
01	01	880820	17.04	67	55	56			4	023	02 42 n	097 54 w	7.95
01	02	880820	17.04	55	56	67			4	023	02 46 n	097 52 w	3.12
01	03	880820	17.41	55	56	67	01	02	4	023	02 48 n	097 51 w	0.29
02	01	880820	17.22	64	69	31	01	02	5	023	02 50 n	097 51 w	11.48
02	02	880820	17.22	69	31	64			5	023			8.04
02	03	880820	17.22	69	31	64	01	02	5	023			3.44
02	04	880820	17.22	31	64	69	02	02	5	023			4.31
02	05	880820	17.22	31	64	69	02	02	5	023			7.18
02	06	880820	17.41	67	55	56	02	01	5	023	03 08 n	097 45 w	8.12
02	07	880820	17.22	67	55	56			5	023	03 14 n	097 40 w	2.01
02	08	880820	17.22	67	55	56	02	01	5	023			1.44
02	09	880820	17.22	55	56	67	02	01	5	023			7.18
02	10	880820	17.22	55	56	67	01	01	5	023			4.31
02	11	880820	17.22	56	67	55	01	01	5	023			6.89
02	12	880820	17.22	56	67	55			5	023			3.44
02	13	880820	17.22	56	67	55	01	01	5	023			1.15
02	14	880820	17.22	64	69	31	01	12	5	023	03 28 n	097 34 w	10.62
03	01	880820	17.04	67	55	56	09	01	4	023	03 46 n	097 26 w	1.14
03	02	880820	17.04	67	55	56			4	023			1.99
03	03	880820	17.04	67	55	56	09	01	4	023			1.14
03	04	880820	17.04	67	55	56			4	023			1.70
03	05	880820	17.04	67	55	56	09	01	4	023			1.70
03	06	880820	17.59	55	56	67	09	01	4	023	03 51 n	097 24 w	8.21
03	07	880820	17.59	56	67	55	09	01	4	023	03 54 n	097 22 w	6.16
03	08	880820	17.59	56	67	55	09	02	4	023			1.76
03	09	880820	17.41	64	69	31	09	02	4	023	03 59 n	097 19 w	3.77
04	01	880820	17.41	64	69	31	09	02	4	023	04 02 n	097 17 w	1.45
05	01	880820	17.41	67	55	56			4	023	04 04 n	097 16 w	5.51
05	02	880820	17.41	67	55	56			3	023			2.03
05	03	880820	17.22	55	56	67			3	023	04 08 n	097 14 w	4.31
01	01	880821	17.04	69	31	64			4	023	05 38 n	096 37 w	3.41
01	02	880821	17.04	69	31	64	02	03	4	023			5.11
01	03	880821	17.04	31	64	69	02	03	4	023			8.52
01	04	880821	17.41	64	69	31	02	02	4	023	05 47 n	096 32 w	4.06
02	01	880821	17.41	56	67	55	02	02	4	023	06 02 n	096 32 w	1.16
03	01	880821	17.22	69	31	64	02	01	4	023	06 05 n	096 33 w	0.86
04	01	880821	17.04	31	64	69			4	023	06 17 n	096 31 w	2.84
04	02	880821	17.04	31	64	69	02	01	4	023			2.84
05	01	880821	17.41	56	67	55			4	025	06 21 n	096 27 w	11.03
05	02	880821	17.41	67	55	56	09	12	4	025			6.09
05	03	880821	17.41	67	55	56	10	12	4	025			4.93
05	04	880821	17.59	55	56	67	09	12	4	025	06 33 n	096 20 w	1.76
06	01	880821	17.04	55	56	67	09	01	4	025	06 37 n	096 20 w	2.84
06	02	880821	17.04	69	31	64			4	025			9.94
07	01	880821	17.59	31	64	69			4	025	06 53 n	096 11 w	5.57

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
08	01	880821	17.78	56	67	55			4	025	07 04 n	096 05 w	0.89
01	01	880822	16.67	55	56	67			4	020	08 34 n	095 20 w	8.33
01	02	880822	16.67	56	67	55			4	020	08 47 n	095 17 w	2.78
01	03	880822	16.67	56	67	55			3	020			1.94
01	04	880822	16.67	56	67	55	02	02	3	020			3.61
02	01	880822	16.67	67	55	56			3	020	08 53 n	095 14 w	5.00
03	01	880822	16.85	31	64	69	03	02	3	004	09 02 n	095 07 w	11.52
04	01	880822	17.04	64	69	31	03	01	3	004	09 09 n	095 06 w	0.28
05	01	880822	16.85	55	56	67			3	004	09 16 n	095 07 w	4.21
05	02	880822	16.85	55	56	67			3	016			1.40
05	03	880822	16.85	55	56	67	02	01	3	016	09 20 n	095 05 w	1.97
05	04	880822	16.85	56	67	55	02	01	3	016			1.69
06	01	880822	16.30	31	64	69			3	163	09 24 n	095 02 w	1.90
07	01	880822	16.30	31	64	69			3	163			1.90
07	02	880822	15.56	31	64	69			4	163	09 21 n	095 01 w	1.30
08	01	880822	14.63	55	56	67			4	163	09 06 n	094 55 w	0.24
09	01	880822	14.26	55	56	67	04	01	4	161	09 03 n	094 53 w	2.85
09	02	880822	14.26	56	67	55	04	01	4	161			6.89
10	01	880822	15.37	67	55	56			4	160	08 52 n	094 53 w	1.54
10	02	880822	15.37	67	55	56			4	160			1.54
11	01	880822	15.00	64	69	31			5	160	08 49 n	094 49 w	3.50
12	01	880822	15.56	69	31	64			5	160	08 46 n	094 48 w	3.63
13	01	880822	15.37	55	56	67			4	160	08 44 n	094 47 w	5.12
13	02	880822	15.37	55	56	67			4	160	08 41 n	094 45 w	0.26
01	01	880824	16.67	67	55	56			4	023	10 41 n	092 36 w	8.06
01	02	880824	16.67	55	56	67			4	023	10 45 n	092 33 w	0.56
02	01	880824	16.67	55	56	67			4	023	10 46 n	092 32 w	1.39
03	01	880824	16.48	56	67	55			4	023	10 51 n	092 29 w	3.85
03	02	880824	16.30	64	69	31			4	023	10 53 n	092 28 w	2.44
04	01	880824	16.30	64	69	31			4	023	10 55 n	092 27 w	5.43
04	02	880824	16.30	69	31	64			4	023			2.72
04	03	880824	16.30	69	31	64	02	02	4	023			2.72
05	01	880824	16.67	67	55	56			4	023	11 06 n	092 22 w	3.89
05	02	880824	16.67	67	55	56	02	01	4	023			4.44
05	03	880824	16.67	55	56	67	02	01	4	023			0.56
06	01	880824	16.67	55	56	67	02	01	3	023	11 12 n	092 19 w	0.56
07	01	880824	17.04	56	67	55	02	12	3	023	11 16 n	092 17 w	2.27
08	01	880824	16.30	64	69	31			3	023	11 19 n	092 15 w	2.72
08	02	880824	16.30	64	69	31			3	023			5.16
08	03	880824	16.30	69	31	64	12	12	3	023			2.17
08	04	880824	16.30	69	31	64	12	12	3	023			1.63
09	01	880824	16.48	31	64	69	09	12	3	023	11 27 n	092 10 w	9.61
10	01	880824	16.67	67	55	56	08	01	3	029	11 38 n	092 08 w	9.17
10	02	880824	16.67	55	56	67	09	02	3	029	11 43 n	092 05 w	0.56
11	01	880824	15.93	64	69	31	08	02	3	029	11 40 n	091 59 w	2.65
12	01	880824	16.67	31	64	69	09	02	2	029	11 44 n	091 56 w	5.00
12	02	880824	16.67	67	55	56	09	03	2	023	11 46 n	091 55 w	4.44
01	01	880825	17.22	69	31	64			2	030	12 51 n	091 22 w	3.73
02	01	880825	16.48	31	64	69			2	030	12 57 n	091 19 w	7.14
02	02	880825	16.48	64	69	31	02	02	2	030			7.97
02	03	880825	16.85	56	67	55	02	02	2	030	13 04 n	091 14 w	3.93
03	01	880825	17.04	67	55	56			3	030	13 11 n	091 15 w	1.14

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
04	01	880825	17.59	55	56	67	02	01	2	030	13 16 n	091 13 w	0.88
04	02	880825	17.59	55	56	67			2	030			0.29
05	01	880825	17.04	69	31	64			2	135	13 26 n	091 08 w	2.27
06	01	880825	16.67	69	31	64			2	135	13 24 n	091 06 w	3.06
07	01	880825	16.85	56	67	55			2	131	13 21 n	091 03 w	2.81
07	02	880825	16.85	56	67	55			3	131			3.37
08	01	880825	16.67	56	67	55			3	131	13 19 n	091 00 w	1.11
08	02	880825	16.67	67	55	56			3	131			3.89
08	03	880825	16.67	67	55	56	04	01	3	131			1.94
09	01	880825	17.41	69	31	64	09	01	3	008	13 16 n	090 53 w	1.16
10	01	880825	17.22	64	69	31	09	02	2	015	13 21 n	090 56 w	10.05
10	02	880825	17.22	56	67	55	09	02	2	015			5.45
10	03	880825	17.22	56	67	55			2	015			3.16
10	04	880825	17.22	67	55	56	09	02	2	015	13 32 n	090 53 w	1.44
10	05	880825	17.22	67	55	56			2	015			0.86
11	01	880825	17.22	67	55	56			2	015	13 35 n	090 54 w	2.30
11	02	880825	17.22	55	56	67			2	015			8.61
01	01	880904	14.82	55	67	56			5	275	14 19 n	099 00 w	2.47
01	02	880904	15.00	55	67	56			5	275	14 19 n	099 02 w	3.50
01	03	880904	15.00	67	56	55			5	275			3.00
02	01	880904	15.74	69	31	64			4	275	14 19 n	099 19 w	5.25
02	02	880904	15.74	31	64	69			4	275			6.56
03	01	880904	14.82	55	67	56			4	275	14 20 n	099 31 w	1.98
04	01	880904	13.89	67	56	55			4	275	14 20 n	099 33 w	3.47
04	02	880904	13.89	67	56	55			4	275			2.08
05	01	880904	16.30	69	31	64			4	275	14 21 n	099 56 w	8.15
05	02	880904	15.74	55	67	56			4	275	14 21 n	100 01 w	3.94
05	03	880904	15.74	55	67	56			4	275			6.03
06	01	880904	15.56	67	56	55			4	275	14 22 n	100 08 w	9.85
06	02	880904	16.48	56	55	67			4	275	14 22 n	100 13 w	1.65
07	01	880904	15.93	69	31	64			5	275	14 28 n	100 14 w	7.96
07	02	880904	15.00	31	64	69			5	275	14 29 n	100 19 w	2.50
01	01	880905	15.37	31	64	69			5	213	13 55 n	102 21 w	2.56
01	02	880905	14.26	31	64	69			5	213			1.19
01	01	880906	14.82	56	55	67			5	215	11 14 n	104 10 w	0.25
02	01	880906	14.82	56	55	67			5	215	11 13 n	104 11 w	3.70
02	02	880906	14.82	55	67	56			5	215			4.94
02	03	880906	14.82	67	56	55			5	215			5.19
02	04	880906	15.56	64	69	31			5	215	11 07 n	104 16 w	7.78
03	01	880906	15.37	69	31	64			5	215	11 03 n	104 18 w	7.69
03	02	880906	15.74	31	64	69			5	215	10 58 n	104 22 w	3.94
04	01	880906	15.93	56	55	67	08	01	5	215	10 56 n	104 22 w	6.37
05	01	880906	15.37	55	67	56	08	01	5	215	10 52 n	104 25 w	7.17
06	01	880906	15.56	55	67	56	08	01	5	215	10 48 n	104 27 w	1.56
06	02	880906	15.56	67	56	55	08	01	5	215			9.59
06	03	880906	15.37	64	69	31	08	12	4	215	10 43 n	104 32 w	9.99
06	04	880906	15.37	69	31	64	12	12	4	215			10.25
06	05	880906	16.11	31	64	69	12	12	4	215	10 32 n	104 40 w	6.44
06	06	880906	16.11	31	64	69	12	12	4	212			4.30
06	07	880906	16.30	56	55	67	12	12	4	212	10 27 n	104 44 w	10.87
06	08	880906	16.11	55	67	56	01	01	4	212	10 21 n	104 47 w	10.74
06	09	880906	16.11	67	56	55	02	01	4	212			2.15

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	10	880906	16.30	67	56	55	02	01	4	215	10 14 n	104 51 w	8.69
07	01	880906	16.11	31	64	69	02	02	4	215	10 03 n	104 54 w	2.15
08	01	880906	15.93	56	55	67	02	02	4	215	10 00 n	104 54 w	7.70
08	02	880906	16.30	55	67	56	02	02	4	215	09 55 n	104 56 w	3.80
08	03	880906	16.30	55	67	56	02	03	4	215			2.17
08	04	880906	15.93	55	67	56	02	03	4	215	09 52 n	104 58 w	0.27
01	01	880907	16.67	69	31	64	07	03	3	219	08 33 n	105 51 w	8.33
01	02	880907	16.85	31	64	69	07	03	3	219	08 29 n	105 54 w	8.43
01	03	880907	17.04	67	56	55	08	03	3	219	08 25 n	105 57 w	11.36
01	04	880907	17.04	56	55	67	08	02	3	219			11.36
01	05	880907	16.85	55	67	56	08	02	4	219	08 14 n	106 06 w	7.02
01	06	880907	16.85	55	67	56	08	01	4	219			4.21
01	07	880907	17.04	69	31	64	08	01	4	219	08 08 n	106 10 w	11.36
01	08	880907	17.04	31	64	69	08	01	3	219			11.64
01	09	880907	17.04	64	69	31	08	01	3	219	07 55 n	106 20 w	3.69
01	10	880907	17.04	64	69	31	08	01	4	219			7.38
01	11	880907	17.04	67	56	55	08	12	4	219	07 52 n	106 22 w	11.36
01	12	880907	17.04	56	55	67	12	12	4	219			11.36
01	13	880907	17.04	55	67	56	12	12	4	219			11.36
01	14	880907	17.04	69	31	64	01	01	3	219			7.38
02	01	880907	17.04	69	31	64	01	01	3	219	07 32 n	106 37 w	3.69
02	02	880907	17.04	31	64	69	01	01	3	219			11.93
02	03	880907	16.48	64	69	31	02	01	3	190	07 25 n	106 42 w	9.61
02	04	880907	16.85	67	56	55	02	01	3	190	07 19 n	106 44 w	3.65
03	01	880907	16.85	67	56	55			3	218	07 15 n	106 44 w	2.25
03	02	880907	16.85	56	55	67	02	01	3	218	07 14 n	106 44 w	2.81
03	03	880907	16.85	56	55	67	02	02	3	218			5.62
03	04	880907	17.04	55	67	56	02	02	3	218	07 10 n	106 47 w	8.24
03	05	880907	17.04	55	67	56	02	02	3	218	07 05 n	106 50 w	0.28
01	01	880908	16.30	55	67	56			4	265	06 19 n	108 06 w	3.53
01	02	880908	16.30	55	67	56	06	03	4	265			4.35
01	03	880908	16.67	67	56	55	06	03	4	265	06 18 n	108 12 w	7.22
02	01	880908	16.48	31	64	69	06	03	4	265	06 18 n	108 19 w	1.37
03	01	880908	16.11	64	69	31	06	02	4	265	06 17 n	108 21 w	11.55
03	02	880908	17.04	69	31	64	06	02	4	265	06 17 n	108 28 w	7.67
03	03	880908	17.04	55	67	56	06	01	4	265	06 16 n	108 33 w	11.36
03	04	880908	17.04	67	56	55	06	01	4	265			9.37
04	01	880908	16.67	56	55	67	06	01	4	265	06 14 n	108 47 w	1.39
05	01	880908	17.04	56	55	67	06	12	4	265	06 14 n	108 50 w	5.40
05	02	880908	16.85	31	64	69	06	12	4	265	06 13 n	108 54 w	11.24
05	03	880908	16.85	64	69	31	06	12	4	265			11.24
05	04	880908	16.85	69	31	64	12	12	4	265			10.39
06	01	880908	16.30	55	67	56	12	01	4	267	06 09 n	109 16 w	6.79
06	02	880908	16.30	67	56	55	11	01	4	297			6.79
06	03	880908	16.30	56	55	67	11	01	4	297			3.53
07	01	880908	17.04	31	64	69	11	01	4	297	06 10 n	109 26 w	9.66
07	02	880908	17.04	64	69	31	11	02	4	297			7.38
07	03	880908	17.04	69	31	64	11	02	4	297	06 14 n	109 34 w	1.42
08	01	880908	17.04	55	67	56	01	03	4	250	06 21 n	109 33 w	0.85
08	02	880908	17.04	55	67	56			4	250			6.53
08	03	880908	17.04	67	56	55			4	250			1.70
08	04	880908	16.67	67	56	55			4	250	06 20 n	109 38 w	0.28

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	01	880909	16.67	64	69	31			4	260	06 14 n	111 15 w	6.11
01	02	880909	16.67	64	69	31	06	03	4	260			3.89
01	03	880909	16.67	69	31	64	06	03	4	260			8.33
01	04	880909	16.67	31	64	69	06	03	4	260			5.56
01	05	880909	16.67	31	64	69			4	260			2.78
01	06	880909	16.67	56	55	67			4	260	06 11 n	111 31 w	2.78
01	07	880909	16.67	56	55	67	06	02	4	260			8.33
01	08	880909	16.67	55	67	56			4	260			0.83
01	09	880909	16.67	55	67	56	06	02	4	260			5.00
01	10	880909	16.67	55	67	56	06	01	4	260	06 10 n	111 42 w	1.11
02	01	880909	17.04	64	69	31	06	01	4	260	06 11 n	111 45 w	4.83
02	02	880909	17.04	64	69	31			4	260			3.41
02	03	880909	17.04	69	31	64			4	260			2.84
02	04	880909	17.04	69	31	64	07	01	4	260			8.52
02	05	880909	16.67	31	64	69	07	01	4	260	06 10 n	111 57 w	1.94
03	01	880909	16.48	31	64	69	07	01	4	260	06 11 n	111 58 w	5.49
03	02	880909	16.48	56	55	67	07	12	4	260			10.99
03	03	880909	16.48	55	67	56	03	12	4	260			4.40
04	01	880909	17.04	67	56	55	12	01	4	260	06 11 n	112 19 w	2.56
04	02	880909	17.04	64	69	31	12	01	4	260			3.12
05	01	880909	16.67	31	64	69			4	260	06 07 n	112 24 w	2.78
05	02	880909	16.67	31	64	69	12	01	4	260			9.72
05	03	880909	16.67	56	55	67			4	260	06 07 n	112 29 w	1.39
05	04	880909	16.67	56	55	67	01	02	4	240			5.56
06	01	880909	16.67	55	67	56	01	02	4	240			8.33
06	02	880909	16.67	64	69	31	01	03	4	240			8.33
06	03	880909	16.67	69	31	64	01	03	4	240	05 57 n	112 45 w	10.00
01	01	880912	16.67	67	56	55			4	116	03 54 n	112 29 w	2.22
01	02	880912	16.67	67	56	55	10	03	4	116	03 53 n	112 27 w	6.94
01	03	880912	16.67	56	55	67	10	03	4	116	03 53 n	112 24 w	6.39
01	04	880912	16.48	56	55	67	10	03	4	116	03 52 n	112 21 w	0.27
02	01	880912	15.93	31	64	69	10	02	4	116	03 54 n	112 17 w	3.98
02	02	880912	16.67	31	64	69			4	116	03 53 n	112 15 w	5.00
02	03	880912	16.67	64	69	31	10	02	4	116			9.72
02	04	880912	16.30	69	31	64			4	116	03 51 n	112 08 w	1.36
03	01	880912	16.30	69	31	64			4	116			2.72
03	02	880912	16.48	67	56	55			4	116	03 49 n	112 04 w	2.47
03	03	880912	16.48	67	56	55			4	116			1.65
04	01	880912	16.67	67	56	55			4	116	03 47 n	112 01 w	1.39
05	01	880912	16.67	67	56	55			4	116			0.83
05	02	880912	16.30	56	55	67			4	116	03 47 n	112 00 w	2.44
05	03	880912	16.30	56	55	67	10	01	4	116			8.42
05	04	880912	16.30	55	67	56			4	116			1.36
05	05	880912	16.30	55	67	56			4	116			1.36
06	01	880912	15.74	55	67	56			4	125	03 45 n	111 49 w	2.10
06	02	880912	15.74	55	67	56	12	12	4	125			0.52
06	03	880912	16.67	51	64	69	12	12	4	125	03 44 n	111 48 w	6.94
06	04	880912	16.67	31	64	69	12	12	5	125			1.94
06	05	880912	16.67	31	64	69			5	125	03 42 n	111 44 w	2.50
06	06	880912	16.67	64	69	31			4	125			12.22
06	07	880912	16.67	69	31	64			5	125			5.56
06	08	880912	16.67	69	31	64	04	01	5	125			4.17

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
06	09	880912	16.67	67	56	55	04	01	5	125	03 36 n	111 34 w	11.11
06	10	880912	16.67	56	55	67	04	01	5	125			11.11
06	11	880912	16.67	55	67	56	05	01	5	125			3.89
06	12	880912	16.30	55	67	56	05	01	5	117	03 30 n	111 23 w	3.53
06	13	880912	16.30	55	67	56	05	02	5	117			0.81
06	14	880912	16.30	55	67	56			5	117			2.72
07	01	880912	16.67	31	64	69			5	117	03 28 n	111 18 w	4.17
07	02	880912	16.67	31	64	69			4	117			3.33
07	03	880912	16.67	64	69	31	05	02	4	117			6.39
07	04	880912	16.67	69	31	64	05	02	4	117			4.17
07	05	880912	16.67	69	31	64			4	117			1.39
07	06	880912	16.85	67	56	55			4	117	03 24 n	111 10 w	7.58
07	07	880912	16.85	56	55	67			4	117	03 22 n	111 06 w	3.93
07	08	880912	16.67	56	55	67			4	117	03 22 n	111 05 w	0.00
01	01	880913	15.74	64	69	31			4	163	02 34 n	110 11 w	7.35
01	02	880913	15.74	64	69	31	10	03	4	163			1.57
01	03	880913	15.74	69	31	64	10	03	4	163			3.94
01	04	880913	15.74	69	31	64			4	163			3.94
01	05	880913	15.74	31	64	69			4	163			7.87
01	06	880913	15.93	55	67	56			4	163	02 21 n	110 10 w	10.62
01	07	880913	15.93	67	56	55			4	163			8.23
01	08	880913	16.11	67	56	55			4	168	02 10 n	110 09 w	2.42
01	09	880913	16.11	56	55	67			4	168			4.83
02	01	880913	15.74	64	69	31			5	163	01 59 n	110 10 w	2.89
01	01	880914	16.30	56	55	67			2	166	00 16 s	110 01 w	0.54
02	01	880914	16.67	56	55	67			2	166	00 17 s	110 01 w	6.11
02	02	880914	16.30	55	67	56			2	166	00 20 s	110 01 w	9.78
02	03	880914	16.30	67	56	55			2	166			2.44
02	04	880914	16.30	67	56	55			1	166			5.43
02	05	880914	16.30	67	56	55	09	02	1	166			1.36
02	06	880914	16.67	69	31	64	09	02	1	166	00 32 s	109 59 w	11.11
02	07	880914	16.67	31	64	69	09	02	2	166			3.06
03	01	880914	16.67	64	69	31	09	02	2	166	00 45 s	109 57 w	5.28
04	01	880914	16.48	64	69	31	09	02	2	166	00 49 s	109 57 w	3.02
04	02	880914	16.85	56	55	67	09	01	2	166	00 50 s	109 56 w	1.12
05	01	880914	16.67	55	67	56	09	12	2	166	00 54 s	109 59 w	1.67
06	01	880914	16.67	55	67	56	09	12	2	166	00 56 s	109 58 w	1.94
06	02	880914	17.22	55	67	56	12	12	1	172	00 57 s	109 58 w	1.72
06	03	880914	17.22	55	67	56			1	172			2.01
06	04	880914	17.22	55	67	56			1	172			2.01
07	01	880914	16.48	69	31	64	12	12	2	170	01 04 s	110 02 w	9.07
08	01	880914	16.67	31	64	69	12	12	2	170	01 09 s	110 01 w	6.95
09	01	880914	16.85	64	69	31	03	01	2	170	01 15 s	110 00 w	2.81
10	01	880914	17.04	56	55	67	03	02	2	165	01 23 s	110 07 w	6.82
10	02	880914	17.04	55	67	56	03	02	2	165			4.54
10	03	880914	16.67	55	67	56	04	02	2	165	01 28 s	110 06 w	1.94
10	04	880914	16.67	67	56	55	04	02	2	165			6.39
10	05	880914	16.67	69	31	64	04	02	2	165	01 35 s	110 05 w	1.39
10	06	880914	16.48	69	31	64	04	02	2	156	01 36 s	110 05 w	0.27
11	01	880914	15.74	31	64	69	04	02	2	150	01 41 s	110 04 w	4.72
12	01	880914	15.74	31	64	69	04	03	3	150	01 45 s	110 03 w	5.25
12	02	880914	16.30	56	55	67	04	03	3	150	01 47 s	110 02 w	5.16

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
12	03	880914	16.67	56	55	67	04	03	3	150	01 50 s	110 01 w	0.28
01	01	880915	16.85	31	64	69			3	052	03 04 s	109 42 w	2.81
02	01	880915	16.85	31	64	69			3	052			2.25
02	02	880915	16.30	64	69	31	01	03	3	052	02 58 s	109 37 w	8.15
02	03	880915	16.30	69	31	64	01	02	3	052			8.15
02	04	880915	16.67	67	56	55	01	02	3	052	02 54 s	109 30 w	9.72
02	05	880915	16.67	67	56	55			3	052			1.39
02	06	880915	16.67	56	55	67			3	052			5.28
03	01	880915	16.30	56	55	67			3	052	02 47 s	109 21 w	1.63
03	02	880915	16.30	55	67	56			3	052			2.44
04	01	880915	16.30	55	67	56			3	052	02 45 s	109 18 w	5.98
04	02	880915	16.30	31	64	69			3	052			1.09
05	01	880915	16.48	64	69	31	01	01	3	052	02 42 s	109 10 w	0.82
06	01	880915	16.67	64	69	31	01	01	3	052	02 40 s	109 09 w	6.95
06	02	880915	16.67	69	31	64	01	01	3	052			11.11
07	01	880915	16.30	67	56	55	12	12	3	065	02 36 s	109 02 w	5.43
07	02	880915	16.30	67	56	55	12	12	4	065			2.72
07	03	880915	16.30	56	55	67	12	12	4	065			3.26
07	04	880915	16.30	56	55	67	07	01	4	065			4.07
07	05	880915	16.30	31	64	69	07	01	4	065			6.79
07	06	880915	16.30	31	64	69			4	065			1.90
07	07	880915	16.67	31	64	69			4	059	02 22 s	108 50 w	2.22
07	08	880915	16.67	64	69	31			4	059			7.50
07	09	880915	16.67	64	69	31	07	02	4	059			3.61
08	01	880915	16.48	67	56	55	07	02	4	058	02 30 s	108 32 w	5.77
08	02	880915	16.67	31	64	69	07	03	4	058	02 29 s	108 30 w	4.72
01	01	880916	16.85	55	67	56			3	063	01 35 s	107 07 w	6.46
01	02	880916	16.67	55	67	56			4	063	01 33 s	107 04 w	4.17
01	03	880916	16.67	67	56	55	01	02	4	063			6.11
02	01	880916	14.82	64	69	31			4	085	01 25 s	106 54 w	3.95
02	02	880916	16.67	64	69	31	01	02	4	085	01 23 s	106 53 w	4.44
02	03	880916	16.67	69	31	64			4	085			3.61
02	04	880916	16.67	69	31	64	01	02	4	085	01 21 s	106 49 w	5.56
02	05	880916	16.67	31	64	69	01	01	4	085	01 20 s	106 46 w	11.11
02	06	880916	16.85	55	67	56	01	01	4	085	01 17 s	106 41 w	8.43
02	07	880916	16.67	55	67	56	12	01	4	085	01 14 s	106 36 w	0.83
03	01	880916	16.67	67	56	55	12	01	4	085			8.33
03	02	880916	16.67	67	56	55	12	01	3	085	01 12 s	106 31 w	2.78
03	03	880916	16.67	56	55	67	12	01	3	085			5.28
03	04	880916	16.67	56	55	67	12	12	3	085			2.22
04	01	880916	16.30	56	55	67	12	12	3	063	01 08 s	106 25 w	1.09
04	02	880916	16.85	64	69	31	12	12	3	063	01 08 s	106 25 w	8.71
04	03	880916	16.67	64	69	31	12	12	3	053	01 06 s	106 20 w	2.50
05	01	880916	16.67	69	31	64	07	01	3	063	01 05 s	106 18 w	9.72
05	02	880916	16.67	31	64	69	07	01	3	063			1.39
06	01	880916	14.63	31	64	69	07	01	3	063	01 00 s	106 14 w	6.10
06	02	880916	16.67	55	67	56	07	01	3	063	00 59 s	106 10 w	2.78
07	01	880916	16.67	55	67	56	07	01	3	063	00 58 s	106 08 w	5.56
07	02	880916	16.67	55	67	56			3	063			1.39
07	03	880916	17.04	67	56	55	07	01	3	063	00 56 s	106 05 w	5.11
08	01	880916	17.04	55	56	67			3	061	00 51 s	106 00 w	4.26
08	02	880916	17.04	56	55	67	07	02	3	061			3.12

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
08	03	880916	17.04	64	69	31	07	02	3	061	00 50 s	105 56 w	1.99
08	01	880916	16.30	64	69	31	07	02	3	061	00 47 s	105 54 w	1.09
09	02	880916	16.30	69	31	64	07	02	3	061	00 47 s	105 53 w	8.15
09	03	880916	16.48	31	64	69	07	03	3	061	00 45 s	105 49 w	8.24
09	04	880916	16.48	55	67	56	07	03	3	061	00 43 s	105 45 w	4.12
09	05	880916	16.85	55	67	56	07	03	3	061	00 42 s	105 43 w	0.28
01	01	880917	16.67	69	31	64	01	03	2	055	00 02 n	104 25 w	1.67
02	01	880917	16.67	69	31	64	01	01	3	058	00 08 n	104 21 w	9.72
03	01	880917	16.67	31	64	69	01	12	3	058	00 13 n	104 17 w	6.39
03	02	880917	16.67	64	69	31	01	12	4	058			8.33
03	03	880917	16.85	56	55	67	12	12	4	058	00 17 n	104 09 w	11.24
03	04	880917	16.85	55	67	56	07	12	4	058			11.24
03	05	880917	16.85	67	56	55	07	01	4	058			1.40
04	01	880917	17.96	67	56	55			4	058	00 26 n	103 57 w	3.59
04	02	880917	17.04	69	31	64	07	01	4	061	00 30 n	103 52 w	11.36
04	03	880917	17.04	31	64	69	07	01	4	061			4.26
04	04	880917	17.04	31	64	69	07	02	4	061			7.95
04	05	880917	17.04	64	69	31	07	02	4	061			10.51
04	06	880917	17.41	56	55	67	07	02	4	061	00 37 n	103 40 w	8.70
04	07	880917	17.41	56	55	67	07	02	4	061			0.00
01	01	880918	17.04	67	56	55			3	070	01 24 n	102 25 w	6.53
01	02	880918	17.04	67	56	55			4	070			2.56
01	03	880918	17.04	56	55	67			4	070			7.38
01	04	880918	17.04	31	64	69			4	070	01 27 n	102 18 w	11.64
01	05	880918	17.04	64	69	31			4	070			12.49
01	06	880918	17.04	69	31	64			4	070			9.94
01	07	880918	17.41	67	56	55			4	070	01 34 n	102 04 w	11.61
01	08	880918	17.41	56	55	67			4	070			11.61
01	09	880918	17.41	55	67	56			4	070			11.61
02	01	880918	17.41	31	64	69			5	070	01 39 n	101 46 w	11.61
02	02	880918	17.41	64	69	31	12	12	5	070			5.22
02	03	880918	17.41	64	69	31			5	070			4.93
02	04	880918	17.41	67	56	55			5	070	01 43 n	101 37 w	2.03
02	05	880918	17.41	67	56	55	06	01	5	070			5.51
02	06	880918	17.41	67	56	55			5	070			4.06
02	07	880918	17.41	56	55	67	06	01	5	070			1.45
02	08	880918	17.41	56	55	67			5	070			5.22
02	09	880918	17.04	56	55	67			5	064	01 47 n	101 28 w	4.83
02	10	880918	17.04	55	67	56			5	064			11.36
02	11	880918	17.41	31	64	69			5	064	01 51 n	101 20 w	4.93
02	12	880918	17.41	31	64	69	07	02	5	064			3.48
03	01	880918	15.93	64	69	31			5	064	02 00 n	101 18 w	1.59
03	02	880918	17.04	67	56	55			5	064	02 01 n	101 17 w	8.52
03	03	880918	17.04	56	55	67			5	064	02 03 n	101 13 w	8.52
03	04	880918	17.04	56	55	67			5	064	02 05 n	101 10 w	0.28
01	01	880919	17.59	64	69	31			4	058	02 53 n	099 38 w	5.57
02	01	880919	17.04	69	31	64			4	058	02 57 n	099 32 w	1.99
03	01	880919	16.85	55	67	56			4	058	02 59 n	099 31 w	10.11
03	02	880919	16.85	67	56	55			4	058			5.34
03	03	880919	16.85	67	56	55			4	058			3.93
03	04	880919	16.85	56	55	67			4	058			8.43
03	05	880919	16.85	64	69	31	01	02	4	058			1.69

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	06	880919	17.41	64	69	31			4	053	03 07 n	099 16 w	9.86
03	07	880919	17.41	69	31	64			4	053			11.61
04	01	880919	17.59	31	64	69			4	053	03 16 n	099 04 w	7.33
04	02	880919	17.59	55	67	56			4	053			7.33
04	03	880919	17.59	55	67	56	12	12	4	053			4.40
04	04	880919	17.59	67	56	55			4	053			4.11
04	05	880919	17.59	67	56	55	12	12	4	053	03 25 n	098 51 w	6.16
04	06	880919	17.59	67	56	55			4	053			1.47
04	07	880919	17.59	56	55	67			4	053			11.73
04	08	880919	17.59	64	69	31			4	053			0.88
05	01	880919	17.22	64	69	31			4	053	03 31 n	098 43 w	2.58
05	02	880919	17.22	64	69	31	07	01	4	053			3.16
05	03	880919	17.22	64	69	31			4	053			2.30
05	04	880919	17.22	69	31	64			4	053			11.48
05	05	880919	17.96	31	64	69			4	053			11.98
05	06	880919	17.96	55	67	56			4	053	03 41 n	098 23 w	5.39
06	01	880919	16.30	67	56	55			4	053	03 46 n	098 20 w	1.09
07	01	880919	16.48	67	56	55			4	049	03 48 n	098 19 w	3.85
08	01	880919	17.41	64	69	31			4	049	03 50 n	098 16 w	9.57
08	02	880919	17.41	69	31	64			4	049			4.06
01	01	880920	17.22	56	55	67			4	049	04 52 n	096 51 w	9.19
01	02	880920	17.41	55	67	56			5	049	04 56 n	096 47 w	2.03
01	03	880920	17.41	55	67	56	01	03	5	049			6.96
01	04	880920	17.04	67	56	55	01	03	5	049	04 59 n	096 43 w	4.26
01	05	880920	17.04	67	56	55			5	049			4.54
01	06	880920	17.22	69	64	31	01	02	5	049	05 02 n	096 37 w	0.86
02	01	880920	16.67	69	31	64	01	02	5	049	05 04 n	096 36 w	6.94
02	02	880920	16.67	31	64	69	01	02	5	049			11.11
02	03	880920	16.67	64	69	31	01	02	5	049			11.11
02	04	880920	17.22	56	55	67	01	01	5	049	05 14 n	096 19 w	2.87
01	01	880921	17.41	31	64	69	01	03	4	055	07 08 n	093 44 w	8.70
01	02	880921	17.41	67	56	55	01	02	4	055			11.61
01	03	880921	17.41	56	55	67	01	02	4	055			11.61
01	04	880921	17.41	55	67	56	01	02	4	055			2.61
02	01	880921	17.41	55	67	56	02	01	4	055	07 22 n	093 25 w	4.35
02	02	880921	17.41	31	64	69	02	01	4	055			11.61
02	03	880921	17.96	64	69	31	02	01	4	055	07 29 n	093 17 w	0.60
03	01	880921	17.41	64	69	31	02	01	4	055	07 32 n	093 13 w	5.51
03	02	880921	17.41	69	31	64	03	01	4	055			8.70
04	01	880921	17.78	67	56	55	06	12	3	055	07 41 n	093 07 w	8.30
04	02	880921	17.78	56	55	67			3	055			2.96
04	03	880921	17.78	56	55	67	06	01	3	055			5.33
04	04	880921	18.15	55	67	56	06	01	4	055	07 47 n	093 59 w	5.44
05	01	880921	17.59	64	69	31			4	055	07 57 n	092 51 w	1.17
06	01	880921	17.41	64	69	31			4	055	07 57 n	092 50 w	5.51
06	02	880921	17.41	67	56	55	07	02	3	055			8.70
06	03	880921	17.96	56	55	67			3	055	08 02 n	092 43 w	3.89
07	01	880921	16.67	56	55	67			3	055	08 03 n	092 40 w	2.78
01	01	880922	17.22	55	67	56	01	03	2	054	09 13 n	091 03 w	5.17
01	02	880922	17.22	55	67	56	01	03	3	054			4.88
01	03	880922	17.22	55	67	56	01	03	4	054			1.44
01	04	880922	17.22	67	56	55	01	03	4	054			11.48

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
01	05	880922	17.22	56	55	67	01	02	4	054			11.48
01	06	880922	17.41	64	69	31	01	02	4	054	09 26 n	090 46 w	4.35
02	01	880922	17.41	64	69	31	01	02	4	054	09 28 n	090 43 w	7.54
02	02	880922	17.41	69	31	64	01	02	4	054			3.19
03	01	880922	17.41	69	31	64	01	02	4	054	09 34 n	090 36 w	2.90
04	01	880922	17.22	69	31	64	01	02	4	054	09 35 n	090 36 w	1.15
04	02	880922	17.22	31	64	69	01	01	4	054			5.74
04	03	880922	17.22	31	64	69			4	054			2.87
05	01	880922	17.22	31	64	69			3	054	09 39 n	090 30 w	1.44
05	02	880922	17.59	55	67	56			3	054	09 40 n	090 29 w	4.40
06	01	880922	17.41	67	56	55	02	01	3	054	09 43 n	090 24 w	8.41
06	02	880922	17.41	67	56	55	02	01	4	054			1.74
06	03	880922	17.41	56	55	67	02	01	4	054			1.16
07	01	880922	17.41	56	55	67	12	12	4	054	09 48 n	090 17 w	4.35
07	02	880922	17.04	64	69	31	12	12	4	054	09 50 n	090 15 w	5.96
08	01	880922	17.59	64	69	31	12	12	4	054	09 53 n	090 11 w	2.93
08	02	880922	17.59	69	31	64	12	12	4	054			11.73
09	01	880922	17.22	55	67	56			4	051	09 54 n	090 04 w	2.58
09	02	880922	17.22	55	67	56	07	02	4	051			5.45
09	03	880922	17.22	67	56	55			4	051			1.72
09	04	880922	16.67	67	56	55	07	02	4	051	09 58 n	089 59 w	1.94
10	01	880922	17.04	64	69	31	07	02	4	051	09 58 n	089 56 w	8.24
11	01	880922	15.00	55	67	56	07	03	3	047	10 00 n	089 45 w	6.00
11	02	880922	16.48	55	67	56	07	03	3	047	10 03 n	089 42 w	0.27
01	01	880923	17.04	69	31	64			3	175	10 09 n	088 16 w	3.12
02	01	880923	15.19	31	64	69			3	175	10 03 n	088 17 w	1.77
02	02	880923	15.19	31	64	69			3	175			3.29
02	03	880923	17.22	56	55	67			3	175	10 58 n	088 17 w	4.31
02	04	880923	17.22	56	55	67	09	02	3	175			1.15
03	01	880923	16.85	56	55	67	09	02	3	175	10 56 n	088 17 w	4.21
03	02	880923	16.85	55	67	56	09	02	3	175			3.37
04	01	880923	16.85	67	56	55			3	170	10 48 n	088 17 w	3.93
05	01	880923	17.22	69	31	64			3	170	10 40 n	088 17 w	7.18
05	02	880923	17.22	69	31	64	10	01	3	170			2.87
05	03	880923	17.22	31	64	69	10	01	3	170			9.47
06	01	880923	16.85	64	69	31	11	01	3	170	10 27 n	088 16 w	5.34
06	02	880923	16.85	56	55	67	11	01	3	170			4.78
07	01	880923	16.85	56	55	67	11	12	3	170			0.56
07	02	880923	17.04	55	67	56	12	12	3	170	10 18 n	088 16 w	5.68
07	03	880923	17.04	55	67	56	01	12	3	170			5.68
07	04	880923	17.04	67	56	55	02	01	3	163			11.36
07	05	880923	17.41	69	31	64	03	01	3	163	09 04 n	088 15 w	8.70
08	01	880923	18.33	31	64	69	03	01	3	163	08 58 n	088 14 w	3.06
08	02	880923	18.33	31	64	69			2	163			9.78
08	03	880923	18.33	64	69	31			2	163			3.06
08	04	880923	17.41	64	69	31			2	163	08 49 n	088 13 w	4.06
08	05	880923	17.04	64	69	31			2	215	08 46 n	088 12 w	3.41
09	01	880923	15.19	56	55	67			2	163	08 41 n	088 14 w	0.76
10	01	880923	15.19	56	55	67			2	163	08 40 n	088 13 w	1.52
10	02	880923	15.19	56	55	67	03	02	2	163			3.54
10	03	880923	15.19	56	55	67			2	163			1.01
10	04	880923	15.19	55	67	56			2	165			0.51

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
10	05	880923	17.41	55	67	56			2	165	08 40 n	088 12 w	2.61
01	01	880924	15.19	67	56	55			5	169	06 45 n	087 41 w	3.04
01	02	880924	15.19	67	56	55	09	03	5	169			1.27
01	03	880924	15.19	67	56	55			5	169			1.52
01	04	880924	15.19	56	55	67			5	169			5.82
01	05	880924	15.19	55	67	56			5	169			5.32
01	06	880924	15.56	31	64	69			5	169	06 33 n	087 38 w	2.59
01	07	880924	15.56	31	64	69	09	02	5	169			8.04
01	08	880924	15.56	64	69	31	09	02	5	169			12.70
01	09	880924	15.74	69	31	64	10	02	4	144	06 17 n	087 34 w	4.72
01	10	880924	15.74	69	31	64	10	02	4	144			3.15
01	11	880924	16.30	67	56	55			4	144	06 13 n	087 31 w	1.36
02	01	880924	16.30	67	56	55	11	01	5	144	06 09 n	087 28 w	2.72
02	02	880924	16.30	56	55	67	11	01	5	144			10.87
02	03	880924	16.30	55	67	56			5	144			1.36
02	04	880924	16.30	55	67	56	11	01	5	144			1.63
03	01	880924	17.59	55	67	56	11	01	5	148	06 00 n	087 20 w	3.52
03	02	880924	17.59	31	64	69	11	01	5	148	05 58 n	087 19 w	2.93
03	03	880924	17.41	31	64	69	11	01	5	148	05 57 n	087 18 w	3.48
04	01	880924	17.59	64	69	31	02	12	5	146	05 52 n	087 16 w	6.74
04	02	880924	17.59	64	69	31	02	12	5	141	05 49 n	087 14 w	2.93
04	03	880924	17.59	69	31	69			5	141			8.80
04	04	880924	17.59	69	31	69	03	01	5	141			2.93
04	05	880924	17.78	67	56	55	03	01	5	141	05 41 n	087 07 w	11.85
04	06	880924	16.30	67	56	55	03	01	5	141	05 38 n	087 03 w	0.27
01	01	880926	17.59	55	67	56			5	076	02 46 n	086 37 w	4.11
02	01	880926	17.59	67	56	55			5	076	02 47 n	086 34 w	4.69
03	01	880926	17.78	56	55	67			5	076	02 48 n	086 29 w	6.22
03	02	880926	17.78	64	69	31			5	076			7.41
03	03	880926	17.78	64	69	31			5	076	02 50 n	086 21 w	2.67
03	04	880926	17.78	69	31	64			5	076			11.85
03	05	880926	17.78	31	64	69			5	076			2.37
03	06	880926	17.96	31	64	69	01	02	5	076	02 51 n	086 11 w	9.58
03	07	880926	17.78	55	67	56	01	01	5	076	02 52 n	086 06 w	5.04
04	01	880926	17.96	55	67	56			5	074	03 03 n	085 18 w	8.68
04	02	880926	18.33	67	56	55			5	074	03 04 n	085 14 w	9.47
04	03	880926	18.33	56	55	67			5	074			7.64
04	04	880926	18.15	64	69	31			5	074	03 07 n	085 04 w	1.81
04	05	880926	18.15	64	69	31	06	02	5	074			5.44
04	06	880926	18.15	64	69	31	06	02	4	074			3.33
04	07	880926	18.15	69	31	64			4	074			7.56
04	08	880926	17.59	31	64	69			4	074	03 10 n	084 54 w	8.80
04	09	880926	17.96	55	67	56			4	074	03 11 n	084 50 w	8.98
04	10	880926	18.15	67	56	55			4	074	03 12 n	084 44 w	6.05
04	11	880926	18.15	67	56	55			4	074	03 13 n	084 40 w	0.30
01	01	880927	17.96	69	31	64			4	074	03 43 n	082 51 w	11.08
01	02	880927	17.96	31	64	69			4	074			3.89
02	01	880927	16.11	56	55	67			4	074	03 44 n	082 40 w	7.52
02	02	880927	17.96	56	55	67	01	02	4	074	03 45 n	082 35 w	2.10
02	03	880927	17.96	56	55	67			4	074			1.50
03	01	880927	17.78	55	67	56			4	074	03 46 n	082 31 w	8.30
03	02	880927	17.78	67	56	55			4	074			3.26

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
03	03	880927	17.78	67	56	55			4	074			1.48
03	04	880927	17.78	67	56	55			4	074			2.96
03	05	880927	18.33	69	31	64	01	01	4	074	03 48 n	082 22 w	12.22
03	06	880927	18.33	31	64	69	01	01	4	074			8.56
03	07	880927	18.33	31	64	69			4	069			4.89
03	08	880927	18.33	64	69	31			4	069			0.61
04	01	880927	16.67	64	69	31			4	069	03 50 n	082 04 w	7.50
04	02	880927	16.67	56	55	67			4	069			4.17
04	03	880927	16.67	56	55	67	03	12	4	069			6.94
04	04	880927	16.67	55	67	56	04	12	4	069			5.56
04	05	880927	18.33	55	67	56	05	12	5	069	03 55 n	081 50 w	4.58
04	06	880927	18.33	55	67	56	08	01	5	020			1.53
04	07	880927	18.33	67	56	55	08	01	5	020			12.22
04	08	880927	18.52	69	31	64			4	020	04 02 n	081 42 w	0.31
05	01	880927	17.78	31	64	69			4	020	04 06 n	081 38 w	6.22
06	01	880927	18.52	31	64	69			4	020	04 11 n	081 35 w	0.62
01	01	880928	19.26	67	56	55			3	052	04 56 n	080 09 w	7.70
01	02	880928	19.26	67	56	55	01	03	3	052			0.96
02	01	880928	17.41	56	55	67			3	052	04 59 n	080 05 w	1.16
02	02	880928	17.41	56	55	67	01	03	3	052			9.28
02	03	880928	17.41	55	67	56	01	02	3	052			10.74
02	04	880928	18.52	31	64	69	01	02	3	052	05 05 n	079 54 w	7.41
03	01	880928	18.52	64	69	31	01	02	3	052	05 07 n	079 51 w	0.93
04	01	880928	18.52	69	31	64	02	01	3	052	05 06 n	079 49 w	7.72
04	02	880928	18.89	67	56	55	02	01	3	052	05 08 n	079 45 w	12.59
04	03	880928	18.89	56	55	67	02	01	3	052			9.45
05	01	880928	18.52	56	55	67	02	01	3	052	05 16 n	079 33 w	1.54
05	02	880928	18.52	55	67	56	03	01	3	027	05 16 n	079 33 w	0.93
05	03	880928	18.52	55	67	56	03	01	3	037			1.85
06	01	880928	18.52	55	67	56	03	12	3	055	05 18 n	079 31 w	4.32
06	02	880928	18.33	31	64	69	03	12	3	055	05 19 n	079 29 w	1.83
07	01	880928	19.08	64	69	31	06	01	3	052	05 18 n	079 27 w	4.77
08	01	880928	18.52	64	69	31	06	01	3	051	05 19 n	079 25 w	4.94
08	02	880928	18.71	67	56	55			3	051	05 21 n	079 23 w	2.18
08	03	880928	18.71	67	56	55	07	01	3	051			2.49
09	01	880928	19.08	56	55	67			3	051	05 26 n	079 18 w	3.18
09	02	880928	19.08	56	55	67	07	02	3	051			7.95
09	03	880928	19.08	55	67	56	07	02	4	051			4.77
09	04	880928	19.08	55	67	56			4	051			6.36
09	05	880928	18.71	31	64	69			4	051	05 33 n	079 08 w	2.18
09	06	880928	18.71	31	64	69			4	051			7.17
09	07	880928	18.71	64	69	31			4	051	05 37 n	079 03 w	3.12
09	08	880928	18.71	64	69	31	09	02	4	001			4.68
10	01	880928	17.96	69	31	64			4	062	05 42 n	079 01 w	4.49
10	02	880928	17.96	67	56	55			4	062	05 43 n	078 59 w	6.89
10	03	880928	18.52	67	56	55			4	062	05 45 n	078 55 w	0.31
01	01	881005	17.96	38	68	51	09	02	3	194	06 56 n	079 01 w	1.20
02	01	881005	17.59	38	68	51	09	01	3	194	06 54 n	079 01 w	3.81
02	02	881005	17.59	38	68	51	09	01	2	194			3.81
02	03	881005	17.96	22	70	05			2	194			8.08
02	04	881005	17.96	38	70	05			2	194			0.90
02	05	881005	17.96	22	70	05			2	194			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	06	881005	17.96	70	05	22			2	194			6.29
02	07	881005	17.96	70	05	22			3	194			5.99
02	08	881005	17.96	05	22	70	11	01	3	194			10.48
03	01	881005	17.96	51	38	68			3	194	06 28 n	079 09 w	8.98
03	02	881005	17.96	68	51	38			3	194			3.89
04	01	881005	17.96	38	68	51			3	194	06 17 n	079 13 w	7.49
05	01	881005	17.96	22	70	05	02	01	3	194	06 11 n	079 14 w	8.98
05	02	881005	17.78	70	05	22			3	194			2.96
05	03	881005	17.78	70	05	22			4	194			1.19
06	01	881005	17.59	70	05	22			4	194	06 04 n	079 15 w	5.86
06	02	881005	17.59	05	22	70			4	194			6.74
06	03	881005	17.59	05	22	70			5	194			4.69
06	04	881005	17.59	68	51	38			5	194			8.80
06	05	881005	17.59	38	68	51			5	194			9.09
07	01	881005	17.59	51	38	68			5	194	05 42 n	079 20 w	6.45
07	02	881005	17.59	70	22	05			5	194			4.69
07	03	881005	17.59	22	05	70	02	03	4	194			4.69
01	01	881006	15.74	51	68	38			5	265	04 09 n	080 03 w	6.30
01	02	881006	15.74	51	68	38			5	265			2.10
01	03	881006	16.67	38	51	68			5	265			6.95
01	04	881006	16.67	38	51	68			5	265			2.22
01	05	881006	16.85	68	38	51			5	265			8.99
02	01	881006	16.85	68	38	51	07	01	5	265	04 09 n	080 42 w	1.40
01	01	881007	17.04	05	70	22			5	299	04 52 n	083 07 w	2.27
01	02	881007	17.04	05	70	22			5	299			5.68
01	03	881007	17.41	70	22	05			5	299	04 54 n	083 10 w	9.57
01	04	881007	17.41	22	05	70			5	299			6.09
02	01	881007	17.59	51	68	38	05	02	5	299	05 00 n	083 20 w	10.85
02	02	881007	17.59	38	51	68	05	02	5	299			9.68
02	03	881007	17.59	68	38	51	05	01	5	299			9.38
02	04	881007	18.52	05	70	22	05	01	6	299	05 09 n	083 34 w	12.66
02	05	881007	17.59	70	22	05	05	01	6	299			2.05
02	06	881007	17.59	70	22	05	03	01	5	014			4.11
02	07	881007	17.96	70	22	05	03	01	5	011	05 15 n	083 39 w	5.69
02	08	881007	17.96	22	05	70			5	011			11.68
02	09	881007	18.15	38	51	68	12	12	5	011	05 24 n	083 37 w	12.10
02	10	881007	18.15	68	38	51	12	12	5	011			12.10
02	11	881007	18.15	38	68	51	08	01	5	011			2.42
03	01	881007	18.15	38	68	51			5	011	05 35 n	083 32 w	8.77
03	02	881007	18.15	05	70	22	08	01	5	011			12.10
03	03	881007	18.33	70	22	05	08	02	5	011			1.83
04	01	881007	18.33	70	22	05	08	02	5	011	05 54 n	083 26 w	3.67
04	02	881007	18.33	22	05	70			5	011			2.75
04	03	881007	18.33	22	05	70			5	011			3.97
05	01	881007	18.33	22	05	70			5	011			1.22
05	02	881007	18.71	38	68	51			5	011	06 02 n	083 24 w	9.35
05	03	881007	18.33	51	38	68			5	011			9.17
05	04	881007	18.71	68	51	38			5	011	06 12 n	083 27 w	9.35
05	05	881007	17.78	05	70	22			4	011			5.33
05	06	881007	17.78	70	22	05			4	011			4.15
05	07	881007	18.15	22	05	70			4	011			3.93
05	08	881007	18.15	22	05	70			4	011	06 25 n	083 18 w	0.30

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
01	01	881008	17.78	38	68	51			5	291	07 30 n	083 05 w	8.59
01	02	881008	17.04	51	38	68			5	291			8.24
01	03	881008	17.04	68	51	38			5	291			5.11
01	04	881008	17.04	68	51	38			5	291			1.14
02	01	881008	17.41	05	70	22			4	291	07 35 n	083 20 w	9.28
02	02	881008	17.41	70	22	05			4	291			1.74
03	01	881008	17.59	70	22	05			4	291	07 37 n	083 26 w	9.38
03	02	881008	17.41	22	05	70			4	291			9.57
03	03	881008	17.96	38	51	68			5	291			11.98
03	04	881008	17.59	68	38	51	06	01	4	291			4.11
03	05	881008	17.59	68	38	51			4	291			2.64
03	06	881008	17.59	68	38	51			4	291			0.88
04	01	881008	17.59	51	68	38			4	291	07 45 n	083 49 w	9.38
04	02	881008	17.59	51	68	38			4	291			1.76
05	01	881008	17.59	05	70	22			4	291	07 48 n	083 56 w	5.86
06	01	881008	17.59	05	70	22			5	291	07 48 n	084 00 w	1.17
06	02	881008	17.59	70	22	05			5	291			10.26
06	03	881008	17.59	22	05	70			5	291			7.33
06	04	881008	17.59	22	05	70	10	01	5	291			2.35
06	05	881008	17.59	68	51	38	10	01	5	291			4.40
06	06	881008	17.59	68	51	38			5	291			1.76
06	07	881008	17.59	68	51	38			5	291			2.64
07	01	881008	17.59	38	68	51			5	291	07 55 n	084 16 w	3.52
01	01	881009	17.59	22	70	05			3	273	08 46 n	086 23 w	6.16
01	02	881009	17.59	70	05	22			3	273			6.16
01	03	881009	17.59	05	22	70			3	273			3.23
02	01	881009	17.59	38	51	68			3	273	08 46 n	086 36 w	9.97
02	02	881009	17.59	68	38	51			3	273			9.97
02	03	881009	17.59	51	68	38			3	273			2.35
02	04	881009	17.59	51	68	38	07	02	3	273			6.45
02	05	881009	17.59	22	70	05	07	02	3	273	08 46 n	086 54 w	12.32
02	06	881009	17.59	70	05	22	07	01	3	273			6.45
02	07	881009	17.59	70	05	22			3	273			4.98
02	08	881009	17.59	05	22	70	07	01	3	273			2.35
02	09	881009	17.59	05	22	70	07	01	3	282			9.09
02	10	881009	17.59	38	68	51	08	01	3	282			3.52
03	01	881009	17.59	38	68	51	08	01	3	282	08 47 n	087 17 w	2.64
04	01	881009	17.59	38	68	51	09	01	3	282	08 47 n	087 20 w	1.47
04	02	881009	17.59	51	38	68	09	01	3	282			0.59
05	01	881009	17.59	51	38	68	09	01	3	282	08 47 n	087 22 w	1.47
06	01	881009	17.59	68	51	38	10	01	3	282	08 48 n	087 23 w	5.57
07	01	881009	17.59	68	51	38	10	01	3	282	08 48 n	087 27 w	3.23
07	02	881009	17.59	22	70	05	10	01	3	282			8.80
07	03	881009	17.59	22	70	05			3	282			2.93
07	04	881009	17.59	70	05	22			3	282			9.38
07	05	881009	17.59	70	05	22	11	02	3	282			1.76
08	01	881009	17.59	05	22	70	11	02	3	282	08 54 n	087 43 w	0.88
09	01	881009	17.59	38	68	51	11	02	4	281	08 55 n	087 42 w	4.40
09	02	881009	17.59	70	22	05			4	281			6.16
09	03	881009	17.59	22	05	70			4	281			5.28
01	01	881010	16.67	68	51	38			3	181	08 48 n	089 13 w	6.67
01	02	881010	16.67	38	68	51			3	181			4.44

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	881010	16.67	38	68	51			3	181			2.22
01	04	881010	16.67	51	38	68			3	181			5.00
02	01	881010	16.67	70	22	05			3	181	08 35 n	089 13 w	9.45
02	02	881010	16.67	22	05	70			3	181			9.45
02	03	881010	16.67	05	70	22			3	181			9.72
02	04	881010	16.67	51	38	68			3	181			3.33
03	01	881010	16.67	51	38	68			3	181	08 13 n	089 13 w	6.67
03	02	881010	16.67	68	51	38			3	181			5.56
03	03	881010	16.67	68	51	38	10	01	3	181			4.44
03	04	881010	16.67	38	68	51	10	01	3	181			6.94
04	01	881010	16.67	70	22	05	12	12	3	181	07 45 n	089 11 w	6.67
04	02	881010	16.67	22	05	70	01	01	3	181			5.00
04	03	881010	16.67	05	70	22	01	01	3	181			5.56
04	04	881010	16.67	68	38	51	01	01	3	181	07 33 n	089 11 w	11.11
04	05	881010	16.67	51	68	38	02	01	3	181			11.11
04	06	881010	16.67	38	51	68	02	02	3	181			25.56
05	01	881010	16.67	70	22	05			3	181	07 02 n	089 08 w	3.61
06	01	881010	16.67	38	68	51			3	181	06 56 n	089 04 w	8.89
01	01	881012	17.04	68	51	38			5	012	05 01 n	091 30 w	7.10
01	02	881012	17.04	38	68	51			5	012			7.95
01	03	881012	17.04	51	38	68			5	012			4.54
01	04	881012	17.04	51	38	68			5	012	05 14 n	091 27 w	0.28
01	01	881013	17.22	38	68	51			4	010	07 14 n	090 48 w	10.91
01	02	881013	17.22	22	70	05	03	02	4	010			9.76
02	01	881013	17.22	70	05	22	04	02	4	010	06 30 n	090 43 w	8.32
02	02	881013	17.22	05	22	70	04	01	4	010			4.31
03	01	881013	17.22	51	38	68	05	02	4	010	06 39 n	090 42 w	6.89
04	01	881013	17.22	68	51	38	12	12	4	010	06 43 n	090 38 w	6.89
04	02	881013	17.22	38	68	51	07	01	4	010			3.44
05	01	881013	17.22	22	70	05	07	01	4	010	06 48 n	090 35 w	10.62
05	02	881013	17.22	70	05	22	08	01	4	010			9.47
06	01	881013	17.22	22	05	70	11	02	4	010	07 58 n	090 34 w	9.47
07	01	881013	17.22	68	51	38			3	008	08 05 n	090 31 w	0.29
08	01	881013	17.22	22	70	05			3	008	08 13 n	090 30 w	1.44
08	02	881013	17.22	22	70	05	08	03	3	008			5.17
08	03	881013	17.22	70	05	22	08	03	3	008			6.60
01	01	881014	17.59	51	38	68	04	01	3	008	10 50 n	090 06 w	7.62
01	02	881014	17.59	68	51	38	04	01	3	008			7.33
01	03	881014	17.59	38	68	51	04	01	3	008			2.35
02	01	881014	17.59	05	22	70	05	01	3	008	11 02 n	090 03 w	10.26
02	02	881014	17.59	22	70	05	06	01	3	008			4.11
03	01	881014	17.59	70	05	22	07	01	3	008	11 14 n	089 58 w	2.35
04	01	881014	17.59	68	51	38	08	01	2	008	11 20 n	090 02 w	3.52
05	01	881014	17.59	05	22	70	08	01	2	008	11 29 n	090 06 w	3.23
01	01	881015	16.85	05	22	70			2	206	11 57 n	090 20 w	7.58
01	02	881015	16.85	22	70	05	09	03	2	206			6.74
01	03	881015	16.85	70	05	22	09	03	2	206			3.93
01	04	881015	16.85	38	68	51	09	02	2	206			5.62
02	01	881015	16.85	38	68	51	09	02	2	206	11 45 n	090 28 w	3.65
03	01	881015	16.85	05	22	70	09	02	2	206	11 37 n	090 36 w	10.95
03	02	881015	16.85	22	70	05	09	02	1	204			6.46
03	03	881015	16.85	22	05	68	09	02	1	204			3.65

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	881015	16.85	70	05	22	10	01	1	204			6.74
03	05	881015	16.85	70	05	22	10	01	1	206			0.84
04	01	881015	16.85	05	22	70	12	01	2	206	11 13 n	090 48 w	10.11
04	02	881015	16.85	22	70	05	12	01	2	206			7.02
05	01	881015	16.85	70	05	22	01	02	2	206	11 02 n	090 56 w	3.09
06	01	881015	16.85	51	38	68	01	02	2	206	10 56 n	090 57 w	5.34
07	01	881015	16.85	70	22	05	01	03	2	206	10 50 n	091 00 w	1.69
01	01	881016	16.85	51	68	38			1	209	09 19 n	091 54 w	4.21
01	02	881016	16.85	51	68	38	08	03	1	209			1.40
02	01	881016	16.85	38	51	68			1	209	09 11 n	091 58 w	3.09
02	02	881016	16.85	22	70	05	08	02	1	211			7.30
03	01	881016	16.85	70	05	22	08	02	1	211	09 00 n	092 02 w	1.97
04	01	881016	16.85	05	22	70	09	02	1	211	08 55 n	092 06 w	5.90
04	02	881016	16.85	38	51	68	09	02	1	211			6.74
05	01	881016	16.85	68	38	51	09	01	1	211	08 44 n	092 13 w	2.81
06	01	881016	17.41	51	68	38	10	01	1	211	08 39 n	092 16 w	0.58
07	01	881016	17.41	70	22	05	12	12	1	211	08 36 n	092 19 w	6.67
07	02	881016	17.41	22	05	70	12	01	2	211			2.90
08	01	881016	17.41	38	68	51	01	01	2	211	08 26 n	092 22 w	0.87
09	01	881016	17.41	51	38	68	01	01	2	211	08 25 n	092 23 w	6.67
10	01	881016	17.41	68	51	38	01	02	2	211	08 21 n	092 24 w	8.12
10	02	881016	17.41	05	70	22	01	02	2	211			4.35
11	01	881016	17.04	70	22	05	01	02	2	211	08 11 n	092 29 w	2.56
12	01	881016	17.04	68	51	38	01	03	2	211	08 04 n	092 27 w	1.99
13	01	881016	17.04	38	68	51	01	03	2	211	08 00 n	092 27 w	9.09
01	01	881017	17.41	22	70	05			3	211	06 34 n	093 17 w	2.90
02	01	881017	17.41	68	51	38			3	216	06 16 n	093 24 w	6.09
02	02	881017	17.41	38	68	51	08	02	3	216			6.38
02	03	881017	17.41	70	05	22	08	02	3	216			6.38
02	04	881017	17.41	70	05	22	08	01	2	216			2.61
03	01	881017	17.41	05	22	70	09	01	2	207	06 06 n	093 34 w	7.54
03	02	881017	17.41	05	22	70			2	207			1.45
03	03	881017	17.41	22	70	05			2	207			2.32
04	01	881017	17.41	22	70	05			2	207	05 59 n	093 38 w	6.09
04	02	881017	17.41	51	38	68	09	01	3	207			8.12
05	01	881017	17.41	68	51	38	12	12	3	207	05 51 n	093 45 w	3.19
06	01	881017	17.41	38	68	51	12	01	3	207	05 48 n	093 47 w	7.54
06	02	881017	17.41	70	05	22	01	01	3	207			6.67
06	03	881017	17.41	70	05	22	01	01	4	207			4.35
06	04	881017	17.41	05	22	70	01	01	4	207			2.90
06	05	881017	17.41	05	22	70	01	01	4	002			6.38
06	06	881017	17.41	05	22	70			4	002			2.32
06	07	881017	17.41	22	70	05			4	002			11.32
06	08	881017	17.41	38	68	51			3	002			8.70
06	09	881017	17.41	51	38	68			3	002			4.64
07	01	881017	17.41	68	51	38	09	02	3	002	05 56 n	093 49 w	5.22
07	02	881017	17.41	70	05	22	09	02	3	002			8.99
07	03	881017	17.41	05	22	70			3	002			1.16
01	01	881018	16.67	68	51	38			2	001	08 03 n	093 41 w	1.11
02	01	881018	16.67	70	22	05	03	03	2	001	08 10 n	093 42 w	6.94
03	01	881018	16.67	22	05	70	03	02	2	001	08 20 n	093 39 w	1.67
04	01	881018	16.67	05	70	22			3	001	08 23 n	093 38 w	2.22

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	881018	16.67	05	70	22	04	02	3	001			2.22
04	03	881018	16.67	38	68	51	04	02	3	001			11.11
04	04	881018	16.67	51	38	68	04	01	3	001			1.11
05	01	881018	16.67	68	51	38			3	357	08 38 n	093 38 w	8.61
05	02	881018	16.67	70	22	05	05	01	3	357			11.39
05	03	881018	16.67	22	05	70	06	01	3	357			12.22
05	04	881018	16.67	05	70	22	07	01	3	357			1.11
06	01	881018	16.67	05	70	22	07	01	3	357	08 00 n	093 39 w	2.22
07	01	881018	16.67	51	38	68	08	01	2	357	09 05 n	093 38 w	4.17
08	01	881018	16.67	68	51	38	08	01	2	357	09 09 n	093 38 w	1.11
09	01	881018	16.67	38	68	51	08	02	2	357	09 12 n	093 35 w	5.56
09	02	881018	16.67	70	22	05	08	02	2	357	09 14 n	093 37 w	8.61
09	03	881018	16.67	22	05	70	08	02	2	357			8.33
09	04	881018	16.67	05	70	22	09	02	2	357			8.06
09	05	881018	16.67	51	38	68	08	02	2	357			2.22
10	01	881018	16.67	68	51	38			2	357	09 32 n	093 38 w	0.56
01	01	881019	16.11	22	70	05			3	002	11 05 n	093 38 w	5.10
01	02	881019	16.11	70	05	22	03	03	3	002			5.37
01	03	881019	16.11	05	22	70	03	03	3	002			4.30
01	04	881019	16.11	38	68	51	03	03	3	002			10.74
01	05	881019	16.11	51	38	68	03	02	3	002			10.74
01	06	881019	16.11	68	51	38	04	02	3	002			8.59
02	01	881019	16.11	05	70	22	04	01	3	002	11 34 n	093 41 w	9.40
02	02	881019	16.11	70	22	05	04	01	3	002			2.42
02	03	881019	16.11	70	22	05	04	01	3	008			5.91
02	04	881019	16.11	22	05	70	04	01	3	008			2.95
03	01	881019	16.11	38	51	68	05	01	4	008	11 50 n	093 41 w	7.79
03	02	881019	16.11	68	38	51	07	01	4	008			8.06
03	03	881019	16.11	51	68	38	07	01	4	008			8.06
03	04	881019	16.11	05	22	70	07	01	4	008			10.74
03	05	881019	16.11	22	70	05	07	01	4	008			10.74
03	06	881019	16.11	70	05	22	08	02	4	008			8.06
03	07	881019	16.11	70	05	22	08	02	5	008			2.69
03	08	881019	16.11	68	51	38	08	02	4	008			8.06
03	09	881019	16.11	38	68	51	08	02	4	008			2.15
04	01	881019	16.11	38	68	51	08	02	4	008	12 32 n	093 39 w	1.34
04	02	881019	16.11	51	38	68	08	02	5	008			8.06
04	03	881019	16.11	70	05	22	08	02	5	008			4.30
01	01	881020	16.67	51	68	38			2	209	11 47 n	094 32 w	6.39
01	02	881020	16.67	51	68	38	08	03	2	209			4.17
01	03	881020	16.67	38	51	68	08	03	3	209			11.11
01	04	881020	16.67	68	38	51	08	03	3	209			11.11
01	05	881020	16.67	22	70	05	08	03	3	209	11 29 n	094 44 w	2.22
02	01	881020	16.67	70	05	22	09	02	3	209	11 28 n	094 50 w	9.72
03	01	881020	16.67	05	22	70	09	02	3	206	11 23 n	094 53 w	3.89
04	01	881020	16.67	38	51	68	09	01	3	206			11.39
04	02	881020	16.67	68	38	51	10	01	3	206	11 15 n	094 57 w	1.11
05	01	881020	16.67	51	68	38	10	01	3	206	11 13 n	095 01 w	8.89
05	02	881020	16.67	51	68	38	11	01	4	206			1.67
05	03	881020	16.67	22	70	05	11	01	4	206	11 07 n	095 04 w	8.89
06	01	881020	16.67	70	05	22	12	01	5	206	11 01 n	095 09 w	6.11
06	02	881020	16.67	05	22	70	01	01	5	206			2.78

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
07	01	881020	16.67	38	68	51	01	01	4	207	10 55 n	095 12 w	11.67
07	02	881020	16.67	51	38	68	01	02	4	207			4.17
08	01	881020	16.67	51	38	68	01	02	4	207	10 46 n	095 18 w	4.44
08	02	881020	16.67	68	51	38	01	02	4	207			1.39
09	01	881020	16.67	22	70	05	01	02	4	207	10 41 n	095 24 w	6.11
09	02	881020	16.67	70	05	22	02	03	4	207			1.67
10	01	881020	16.67	68	51	38	02	03	3	208	10 32 n	095 26 w	3.33
01	01	881021	16.67	05	70	22			2	212	09 05 n	096 23 w	7.50
01	02	881021	16.67	05	70	22	08	03	3	212			3.61
01	03	881021	16.67	70	22	05	08	03	3	212			10.56
01	04	881021	16.67	22	05	70			3	212			7.22
02	01	881021	16.67	38	68	51	09	02	3	212	08 48 n	096 36 w	1.67
03	01	881021	16.67	51	38	68	09	02	3	212	08 45 n	096 41 w	6.39
03	02	881021	16.67	68	51	38	09	02	3	212			6.95
03	03	881021	16.67	05	70	22	09	01	3	212			5.00
04	01	881021	16.67	70	22	05	09	01	3	212	08 33 n	096 52 w	1.67
05	01	881021	16.67	22	05	70	10	01	3	212	08 30 n	096 54 w	3.61
06	01	881021	16.67	51	38	68	11	01	3	212	08 26 n	096 59 w	6.39
07	01	881021	16.67	68	51	38	12	01	3	207	08 16 n	097 01 w	11.39
07	02	881021	16.67	05	70	22	01	01	3	207			4.72
08	01	881021	16.67	70	22	05	01	01	3	207	08 04 n	097 08 w	10.00
08	02	881021	16.67	22	05	70			3	207			2.78
08	03	881021	16.67	22	05	70	01	02	3	207			6.95
08	04	881021	16.67	68	51	38	01	02	3	207	07 54 n	097 15 w	1.39
09	01	881021	16.67	68	51	38	01	02	3	207	07 53 n	097 16 w	1.94
10	01	881021	16.67	38	68	51			3	212	07 50 n	097 19 w	1.67
11	01	881021	16.67	05	70	22	02	03	3	201	07 45 n	097 30 w	5.00
11	02	881021	16.67	70	22	05			3	201			1.11
01	01	881023	16.67	38	70	68			3	357	08 02 n	098 22 w	1.67
01	02	881023	16.67	38	51	68			3	357			1.39
02	01	881023	16.67	68	38	51			3	355	08 07 n	098 18 w	12.22
02	02	881023	16.67	51	68	38			3	355			1.11
03	01	881023	16.67	51	68	38	04	01	3	355	08 16 n	098 20 w	0.83
03	02	881023	16.67	22	70	05	04	01	3	355			11.67
03	03	881023	16.67	70	05	22	04	01	3	355			5.28
04	01	881023	16.67	05	22	70	10	01	3	354	08 28 n	098 16 w	4.17
04	02	881023	16.67	68	38	51	06	01	1	354			10.56
04	03	881023	16.67	51	68	38	07	01	1	354			10.83
05	01	881023	16.67	38	51	68	08	01	1	354	08 36 n	098 15 w	1.94
06	01	881023	16.67	22	70	05	08	01	0	351	08 49 n	098 17 w	3.06
06	02	881023	16.67	22	70	05	08	01	3	351			6.39
06	03	881023	16.67	70	05	22	08	02	3	351			5.56
07	01	881023	16.67	05	22	70	08	02	3	351	08 58 n	098 20 w	0.56
08	01	881023	16.67	51	68	38			3	351	09 04 n	098 20 w	2.22
09	01	881023	16.67	38	51	68	08	02	3	351			6.11
09	02	881023	16.67	68	38	51	08	02	3	351	09 10 n	098 18 w	0.83
10	01	881023	16.67	05	70	22	09	03	3	357	09 13 n	098 17 w	1.39
01	01	881024	16.48	68	51	38	08	03	1	215	09 49 n	098 33 w	8.24
01	02	881024	16.48	38	68	51	08	03	2	215	09 46 n	098 35 w	8.52
02	01	881024	16.48	05	70	99	08	02	2	215			10.16
02	02	881024	16.48	70	22	05	08	02	2	215			7.42
02	03	881024	16.48	22	05	70	09	02	2	215			6.59

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	04	881024	16.48	68	38	51	09	01	2	215	09 20 n	098 45 w	1.92
03	01	881024	16.48	68	38	51			3	215	09 18 n	098 48 w	4.40
03	02	881024	16.48	51	68	38	09	01	3	215			10.99
03	03	881024	16.48	38	51	68	10	01	4	215			2.75
04	01	881024	16.48	38	51	68	10	01	5	215	09 07 n	098 57 w	3.30
04	02	881024	16.48	05	70	22	10	01	5	215			1.92
05	01	881024	16.48	05	70	22	10	01	6	215	09 01 n	098 54 w	1.10
05	02	881024	16.48	70	22	05	10	01	6	215			3.57
01	01	881026	17.41	68	38	51			3	008	04 40 n	102 12 w	8.70
01	02	881026	17.41	51	68	38			4	008			1.16
01	03	881026	17.41	51	68	38			4	358			6.96
01	04	881026	17.41	38	51	68	04	02	4	358			8.70
01	05	881026	17.41	22	70	05	03	02	5	358	04 58 n	102 07 w	8.41
01	06	881026	17.41	22	70	05			5	358			0.58
02	01	881026	17.41	70	05	22			5	358	05 10 n	102 07 w	7.25
02	02	881026	17.41	05	22	70			5	358			3.77
03	01	881026	17.41	38	51	68	04	01	5	358	05 27 n	102 06 w	6.96
03	02	881026	17.41	68	38	51	04	01	5	358			3.48
03	03	881026	17.41	68	38	51			5	358			2.61
03	04	881026	17.41	51	68	38			5	358			0.87
04	01	881026	17.41	22	70	05			4	358	05 42 n	102 05 w	10.16
04	02	881026	17.41	70	05	22			4	358			7.54
04	03	881026	17.41	70	05	22			4	358			1.45
04	04	881026	17.41	05	22	70			4	358			2.61
05	01	881026	17.41	68	51	38			4	358			11.03
05	02	881026	17.41	38	68	51			4	358			12.19
05	03	881026	17.41	51	38	68			4	358			10.16
05	04	881026	17.41	22	70	05			4	358	06 20 n	102 01 w	8.99
05	05	881026	17.41	70	05	22			4	358			3.77
05	06	881026	17.41	70	05	22			4	000			4.64
05	07	881026	17.41	05	22	70			4	000			8.70
05	08	881026	17.41	51	68	38			4	000	06 36 n	102 02 w	5.80
05	09	881026	17.41	38	51	68			4	000			6.09
05	10	881026	17.41	68	38	51			4	000			4.93
05	11	881026	17.41	68	38	51			4	000	06 47 n	102 00 w	0.29
01	01	881027	17.59	70	22	05			4	001	08 26 n	101 55 w	5.86
01	02	881027	17.59	70	22	05	03	03	4	001			2.64
01	03	881027	17.59	22	05	70	03	03	4	001			7.04
01	04	881027	17.59	05	70	22			4	001			8.80
01	05	881027	17.59	38	51	68			4	001			11.73
01	06	881027	17.59	68	38	51	03	02	4	001			5.28
02	01	881027	17.59	68	38	51	03	02	4	001	08 55 n	101 52 w	0.29
02	02	881027	17.59	51	68	38	04	02	4	001			4.40
03	01	881027	17.59	51	68	38	04	02	4	001	08 58 n	101 52 w	5.86
03	02	881027	17.59	70	22	05	04	02	3	001			12.02
03	03	881027	17.59	22	05	70	04	01	3	001			11.44
03	04	881027	17.59	05	70	22	05	01	3	001			11.73
03	05	881027	17.59	51	68	38	05	01	3	001	09 23 n	101 49 w	11.73
03	06	881027	17.59	38	51	68	06	01	3	001			11.73
03	07	881027	17.59	68	38	51	07	01	3	001			8.21
03	08	881027	17.59	68	38	51	08	01	3	330			2.64
03	09	881027	17.59	68	38	51			3	330			0.88

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	10	881027	17.59	70	22	05			3	301			2.64
03	11	881027	17.59	70	22	05			3	000			9.38
03	12	881027	17.59	22	05	70	08	01	3	000			0.29
04	01	881027	17.59	22	05	70	08	02	3	000	09 55 n	101 53 w	0.59
05	01	881027	17.59	05	70	22	08	02	3	006	09 57 n	101 53 w	3.52
05	02	881027	17.59	38	51	68	08	02	3	006			8.80
05	03	881027	17.59	68	38	51	08	02	3	006			3.23
06	01	881027	17.59	51	68	38	08	03	3	003	10 11 n	101 50 w	7.92
07	01	881027	17.59	22	70	05			3	003	10 22 n	101 49 w	0.59
01	01	881028	17.04	51	68	38			3	289	11 42 n	102 08 w	0.28
02	01	881028	17.04	51	68	38			3	289	11 42 n	102 08 w	2.84
02	02	881028	17.04	38	51	68			4	289			13.06
02	03	881028	17.04	22	70	05			3	289	11 46 n	102 19 w	6.53
03	01	881028	17.04	70	05	22			3	289	11 48 n	102 29 w	4.54
03	02	881028	17.04	70	05	22			3	289			1.14
04	01	881028	17.04	68	51	38			3	289	11 54 n	102 45 w	2.84
05	01	881028	17.04	05	70	99			3	289	12 03 n	103 15 w	0.57
05	02	881028	17.04	05	70	22			3	289			7.38
05	03	881028	17.04	68	38	51			3	289	12 05 n	103 21 w	12.49
05	04	881028	17.04	51	68	38			4	289			3.41
06	01	881028	17.04	70	22	05			4	289	12 11 n	103 45 w	5.96
06	02	881028	17.04	22	05	70			4	289			6.53
06	03	881028	17.04	05	70	22			4	289			6.82
06	04	881028	17.04	38	68	51			4	289			5.40
06	05	881028	17.04	51	38	68			4	289			5.96
06	06	881028	17.04	68	51	38			4	289			3.12
01	01	881030	16.67	38	68	51			5	051	14 00 n	107 24 w	6.39
01	02	881030	16.67	51	38	68			5	051			7.50
01	03	881030	16.67	22	05	70			5	051			7.78
01	04	881030	16.67	22	05	70	02	02	5	051			2.78
02	01	881030	16.67	05	70	22	02	02	5	051	14 11 n	107 10 w	7.50
02	02	881030	16.67	68	51	38	02	02	5	051			1.67
02	03	881030	16.67	68	51	38	02	02	5	045			9.72
02	04	881030	16.67	38	68	51			4	045			10.83
02	05	881030	16.67	51	38	68	03	01	4	045			11.11
02	06	881030	16.67	70	22	05	03	01	4	045	14 30 n	106 51 w	6.39
03	01	881030	16.67	22	05	70			4	046	14 36 n	106 46 w	9.45
03	02	881030	16.67	05	70	22	05	01	4	046			6.11
03	03	881030	16.67	05	70	22			4	046			2.50
03	04	881030	16.67	51	38	68	06	01	4	046	14 45 n	106 36 w	11.11
03	05	881030	16.67	68	51	38	06	01	3	046			11.11
03	06	881030	16.67	38	68	51	07	02	3	037			2.78
03	07	881030	16.67	38	68	51	06	02	3	060			8.33
03	08	881030	16.67	70	22	05	06	02	3	060	14 58 n	106 17 w	9.45
03	09	881030	16.67	22	05	70	06	02	3	060			2.50
04	01	881030	16.67	05	70	22	06	02	3	060	15 03 n	106 07 w	2.78
04	02	881030	16.67	05	70	22			4	060			1.67
04	03	881030	16.67	68	51	38			3	060			2.22
04	04	881030	16.67	68	51	38			3	355			3.89
05	01	881030	16.67	38	68	51			3	350	15 12 n	106 02 w	3.89
01	01	881031	17.78	22	70	05			2	337	16 26 n	106 44 w	5.63
01	02	881031	17.78	70	05	22	04	03	3	337			5.33

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	881031	17.78	05	22	70	04	03	3	337			2.96
01	04	881031	17.78	05	22	70	05	03	3	308			3.56
01	05	881031	17.78	68	38	51	05	03	3	308			1.48
02	01	881031	17.78	51	68	38	04	02	3	339	16 37 n	106 53 w	9.48
02	02	881031	17.78	38	51	68	05	02	3	339			8.89
02	03	881031	17.78	22	70	05	05	02	3	339			2.37
03	01	881031	17.78	22	70	05	05	02	3	340	16 49 n	106 57 w	5.04
03	02	881031	17.78	70	05	22	05	02	3	340			11.26
03	03	881031	17.78	05	22	70	05	01	3	340			5.93
04	01	881031	17.78	38	51	68	06	01	3	330	17 04 n	107 00 w	10.67
04	02	881031	17.78	68	38	51	07	01	3	330			6.52
05	01	881031	17.78	70	68	05	08	01	3	330	17 16 n	107 05 w	2.07
05	02	881031	17.78	70	22	05	08	01	3	330			9.19
06	01	881031	17.78	22	68	70	09	02	3	330	17 23 n	107 10 w	0.59
07	01	881031	17.78	22	70	05	09	02	2	330	17 26 n	107 15 w	8.89
07	02	881031	17.78	51	68	38	09	02	2	330			1.48
08	01	881031	17.78	38	51	68	09	02	2	330	17 31 n	107 17 w	1.19
08	02	881031	17.78	38	51	68	08	02	2	350			6.22
09	01	881031	17.78	68	38	51	08	02	2	350	17 37 n	107 16 w	8.00
09	02	881031	17.78	70	05	22			2	350			2.37
09	03	881031	17.78	70	05	22	07	03	2	080			4.44
09	04	881031	17.78	05	22	70	06	03	2	080			5.93
09	05	881031	17.78	05	22	70	06	03	2	085			2.67
09	06	881031	17.78	22	70	05			1	085			0.30
09	07	881031	17.78	22	70	05			1	079			1.19
01	01	881101	17.41	51	68	38			2	078	17 57 n	105 10 w	0.29
02	01	881101	17.41	38	51	68	01	03	2	078	17 56 n	105 07 w	0.87
03	01	881101	17.41	22	70	05	01	02	3	070	17 55 n	105 00 w	9.57
03	02	881101	17.41	70	05	22	01	02	3	070			1.74
03	03	881101	17.41	70	05	22			3	070			1.16
03	04	881101	17.41	70	05	22	01	02	3	070			5.80
03	05	881101	17.41	05	22	70	01	02	3	070			5.51
03	06	881101	17.41	05	22	70	01	02	3	079			2.61
03	07	881101	17.41	51	38	68	01	02	3	079	18 00 n	104 44 w	5.80
03	08	881101	17.41	51	38	68	02	02	4	079			5.80
03	09	881101	17.41	68	51	38	02	02	4	079			11.61
03	10	881101	17.41	38	68	51	02	01	4	079			11.90
03	11	881101	17.41	22	70	05	02	01	4	079	18 03 n	104 23 w	11.61
03	12	881101	17.41	70	05	22	03	01	4	079			4.64
03	13	881101	17.41	70	05	22	04	01	5	079			0.58
03	14	881101	17.41	70	05	22	04	01	5	074			6.38
03	15	881101	17.41	05	22	70	04	01	5	074			11.32
03	16	881101	17.41	68	38	51	04	01	5	074			2.32
04	01	881101	17.41	51	68	38	05	02	5	064	18 03 n	103 55 w	2.03
05	01	881101	17.41	51	68	38	06	02	5	053			1.45
05	02	881101	17.41	38	51	68	06	02	5	053			8.70
05	03	881101	17.41	22	70	05	06	02	5	073	18 05 n	103 46 w	8.70
05	04	881101	17.41	70	05	22	06	02	5	073			5.51
05	05	881101	17.41	70	05	22	06	02	5	063			2.03
06	01	881101	17.41	05	22	70	06	02	5	068			1.45
06	02	881101	17.41	05	22	70	05	02	5	090			4.64
06	03	881101	17.41	68	38	51	05	03	5	090	18 10 n	103 34 w	2.90

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	881108	17.59	46	51	68			1	123	17 40 n	102 42 w	5.86
02	01	881108	17.59	68	46	51	11	03	1	123	17 37 n	102 38 w	1.47
03	01	881108	17.59	51	68	46	11	03	1	123	17 33 n	102 36 w	1.76
04	01	881108	17.59	22	05	70	12	03	1	123	17 31 n	102 34 w	11.44
04	02	881108	17.59	05	70	22	12	02	1	123			8.80
04	03	881108	17.59	70	22	05	12	02	1	123			9.38
04	04	881108	17.59	51	68	46	12	02	1	123			3.81
05	01	881108	17.59	51	68	46	12	02	1	123	17 19 n	102 15 w	0.59
06	01	881108	17.59	46	51	68	12	01	1	123	17 17 n	102 15 w	2.05
07	01	881108	17.59	46	51	68	12	01	0	123	17 15 n	102 14 w	2.64
08	01	881108	17.59	22	05	70	01	01	0	123	17 12 n	102 09 w	11.44
08	02	881108	17.59	05	70	22	02	01	0	123			1.17
09	01	881108	17.59	05	70	22	02	01	1	123	17 06 n	101 59 w	1.17
10	01	881108	17.59	68	46	51	03	01	1	123	17 03 n	102 56 w	2.93
11	01	881108	17.59	68	46	51	03	01	1	123	17 03 n	102 53 w	3.81
11	02	881108	17.59	51	68	46	03	02	1	123			9.68
12	01	881108	17.59	46	51	68	04	02	1	123	16 54 n	101 45 w	1.76
12	02	881108	17.59	22	05	70	04	02	1	123			4.40
13	01	881108	17.59	05	70	22	04	02	2	123	16 48 n	101 40 w	1.17
14	01	881108	17.59	05	70	22	04	03	2	123	17 47 n	101 37 w	1.17
15	01	881108	17.59	68	46	51	04	03	2	123	16 46 n	101 33 w	7.92
01	01	881109	17.59	05	70	22			2	122	15 41 n	099 56 w	2.93
01	02	881109	17.59	05	70	22	12	03	2	122			4.69
01	03	881109	17.59	70	22	05	12	03	2	122			7.62
01	04	881109	17.59	22	05	70	12	03	2	122			6.74
01	05	881109	17.59	46	68	51	12	03	1	122			3.81
01	06	881109	17.59	46	68	51	11	03	1	137			0.59
02	01	881109	17.59	46	68	51	11	03	1	137	15 30 n	099 39 w	4.40
02	02	881109	17.59	51	46	68	11	02	1	137			11.73
02	03	881109	17.59	68	51	46	12	02	1	137			1.47
03	01	881109	17.59	05	70	22	12	02	1	116	15 18 n	099 32 w	4.69
03	02	881109	17.59	05	70	22	01	01	1	116			4.11
03	03	881109	17.59	05	70	22	01	01	1	101			1.76
04	01	881109	17.59	70	22	05	01	01	1	116	15 14 n	099 26 w	4.40
05	01	881109	17.59	46	68	51	01	01	2	116	15 08 n	099 20 w	3.81
06	01	881109	17.59	51	46	68	02	01	2	116	15 07 n	099 15 w	0.29
07	01	881109	17.59	05	70	22	04	02	2	114	15 01 n	099 06 w	6.16
08	01	881109	17.59	05	70	22	04	02	2	114	14 58 n	099 03 w	1.47
08	02	881109	17.59	70	22	05	04	02	2	114			2.35
09	01	881109	17.59	70	22	05	04	02	2	114	14 57 n	099 00 w	5.86
09	02	881109	17.59	70	22	05	04	02	2	016			2.05
09	03	881109	17.59	22	05	70	04	02	2	114			3.81
10	01	881109	17.59	51	46	68			2	114	14 55 n	098 49 w	2.93
11	01	881109	17.59	68	51	46	04	03	2	123	14 55 n	098 46 w	7.92
11	02	881109	17.59	05	70	22	04	03	2	123			3.81
11	03	881109	17.59	70	22	05	04	03	2	123			2.35
01	01	881110	17.59	51	46	68			1	268	14 29 n	099 02 w	6.16
01	02	881110	17.59	51	46	68	07	03	1	268			1.47
01	03	881110	17.59	68	51	46	07	03	1	268			2.05
02	01	881110	17.59	46	68	51	07	03	1	265	14 31 n	099 12 w	4.98
03	01	881110	17.59	22	70	05	07	03	1	265	14 31 n	099 18 w	10.56
03	02	881110	17.59	70	05	22	07	02	1	265			0.88

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
04	01	881110	17.59	46	68	51	08	02	1	265	14 35 n	099 31 w	11.73
04	02	881110	17.59	51	46	68	08	02	1	265			0.59
05	01	881110	17.59	51	46	68	08	01	0	265	14 36 n	099 41 w	1.17
06	01	881110	17.59	68	51	46	09	01	0	265	14 36 n	099 44 w	2.05
07	01	881110	17.59	22	70	05	09	01	0	265	14 33 n	099 43 w	10.26
07	02	881110	17.59	70	05	22	10	01	0	265			5.86
07	03	881110	17.59	70	05	22	10	01	0	274			3.23
07	04	881110	17.59	05	22	70	10	01	0	274			3.23
08	01	881110	17.59	05	22	70	10	01	0	274	14 28 n	100 05 w	2.64
09	01	881110	17.59	68	51	46	10	02	0	275	14 27 n	100 06 w	1.76
10	01	881110	17.59	46	68	51	10	02	0	275	14 29 n	100 13 w	1.47
11	01	881110	17.59	46	68	51	10	02	0	275	14 29 n	100 15 w	1.47
12	01	881110	17.59	51	46	68	11	02	1	275	14 30 n	100 18 w	2.93
13	01	881110	17.59	22	70	05	11	02	0	275	14 31 n	100 28 w	3.52
14	01	881110	17.59	22	70	05	11	02	0	275	14 32 n	100 31 w	3.81
14	02	881110	17.59	70	05	22	11	03	0	275			7.04
14	03	881110	17.59	05	22	70	11	03	0	275			2.93
15	01	881110	17.59	05	22	70	11	03	0	275	14 33 n	100 41 w	0.59
15	02	881110	17.59	46	51	68	11	03	1	275			2.35
16	01	881110	17.59	68	46	51	11	03	1	275	14 34 n	100 45 w	0.88
17	01	881110	17.59	68	46	51			1	275	14 34 n	100 46 w	2.93
01	01	881111	17.22	22	70	05			2	271	14 41 n	102 44 w	9.76
01	02	881111	17.22	70	05	22	01	03	2	271			2.01
02	01	881111	17.22	05	22	70			2	271	14 39 n	102 49 w	3.44
02	02	881111	17.22	68	51	46	07	02	2	271			11.77
02	03	881111	17.22	46	68	51	07	02	2	271			4.31
02	04	881111	17.22	46	68	51	07	02	3	271			1.44
03	01	881111	17.22	51	46	68	07	02	3	271	14 39 n	103 03 w	8.61
04	01	881111	17.22	22	70	05	07	02	3	271	14 38 n	103 14 w	9.47
04	02	881111	17.22	70	05	22	08	02	3	271			2.58
04	03	881111	17.22	70	05	22	08	01	3	271			2.01
05	01	881111	17.22	05	22	70	08	01	3	271	14 38 n	103 27 w	2.30
05	02	881111	17.22	46	68	51	08	01	3	271			8.61
05	03	881111	17.22	46	68	51	09	01	3	277			2.30
05	04	881111	17.22	51	46	68	09	01	3	277			4.59
06	01	881111	17.22	51	46	68	10	01	3	274	14 41 n	103 39 w	0.86
06	02	881111	17.22	68	51	46	10	01	3	274			12.06
06	03	881111	17.22	22	70	05	10	01	3	274			8.61
07	01	881111	17.22	70	05	22	10	02	3	274	14 42 n	103 54 w	7.18
07	02	881111	17.22	70	05	22			3	274			2.01
07	03	881111	17.22	05	22	70	11	02	3	274			7.75
07	04	881111	17.22	46	51	68	11	02	2	279	14 42 n	104 06 w	7.75
08	01	881111	17.22	68	46	51	11	02	1	279	14 45 n	104 13 w	5.17
09	01	881111	17.22	51	68	46	11	02	1	270	14 46 n	104 18 w	2.58
09	02	881111	17.22	51	68	46			1	270			3.16
09	03	881111	17.22	22	70	05			1	270			5.74
09	04	881111	17.22	70	05	22			1	270			7.18
01	01	881112	17.04	46	68	51			1	216	13 21 n	105 39 w	2.84
02	01	881112	17.04	46	68	51			1	216	13 19 n	105 40 w	1.99
02	02	881112	17.04	51	46	68	08	03	2	216			2.27
03	01	881112	17.04	68	51	46	08	03	3	216	13 13 n	105 43 w	2.27
03	02	881112	17.04	05	70	22	08	03	3	216			5.96

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
03	03	881112	17.04	05	70	22	08	02	3	216			5.68
03	04	881112	17.04	70	22	05	08	02	3	216			11.64
03	05	881112	17.04	22	05	70	09	02	3	216			10.79
03	06	881112	17.04	51	46	68	09	02	3	216			11.64
03	07	881112	17.04	68	51	46			3	216			5.96
03	08	881112	17.04	68	51	46	10	02	3	216			5.11
03	09	881112	17.04	46	68	51	10	01	3	216			8.24
03	10	881112	17.04	46	68	51	10	01	4	216			3.12
03	11	881112	17.04	05	70	22	10	01	4	216	12 39 n	106 11 w	7.95
03	12	881112	17.04	05	70	22			4	216			3.41
03	13	881112	17.04	70	22	05			4	216			6.53
03	14	881112	17.04	70	22	05			5	216			0.57
04	01	881112	17.04	22	05	70	11	01	5	216	12 27 n	106 20 w	9.37
04	02	881112	17.04	68	51	46			4	216			10.22
04	03	881112	17.04	68	51	46			5	216			1.42
04	04	881112	17.04	46	68	51			5	216			1.14
04	05	881112	17.04	46	68	51			5	208			8.80
04	06	881112	17.04	46	68	51	01	02	5	208			1.14
04	07	881112	17.04	51	46	68	01	02	5	208			11.64
04	08	881112	17.04	05	70	22	01	02	5	208			2.84
01	01	881113	16.11	22	70	05			4	231	10 56 n	108 21 w	11.01
01	02	881113	16.11	70	05	22	08	03	4	231			9.13
01	03	881113	16.11	05	22	70	08	02	4	231			6.18
01	04	881113	16.11	05	22	70	08	02	3	231			2.69
01	05	881113	16.11	68	51	46	08	02	3	231			10.47
01	06	881113	16.11	46	68	51	08	02	2	231			10.47
01	07	881113	16.11	51	46	68	08	02	3	231			6.18
01	08	881113	16.11	51	46	68	09	02	3	231			4.57
01	09	881113	16.11	22	70	05			4	231	10 34 n	108 50 w	10.74
01	10	881113	16.11	70	05	22			5	231			8.32
01	01	881115	16.67	22	70	05			4	274	10 24 n	111 24 w	8.33
01	02	881115	16.67	70	05	22			4	274			8.61
01	03	881115	16.67	05	22	70			4	274			8.06
01	04	881115	16.67	46	68	51			4	274	10 24 n	111 41 w	11.11
01	05	881115	16.67	51	46	68			4	274			10.83
01	06	881115	16.67	68	51	46			4	274			11.39
01	07	881115	16.67	22	70	05			4	274	10 26 n	112 05 w	11.11
01	08	881115	16.67	70	05	22			4	274			1.94
01	09	881115	16.67	70	05	22			5	274			1.39
02	01	881115	16.67	70	05	22			5	271	10 26 n	112 15 w	3.61
03	01	881115	16.67	68	51	46			5	274	10 27 n	112 28 w	2.50
04	01	881115	16.67	46	68	51			4	274	10 26 n	112 39 w	6.94
05	01	881115	16.67	46	51	68			4	267	10 33 n	113 12 w	8.33
05	02	881115	16.67	68	46	51	11	02	3	267			7.22
05	03	881115	16.67	51	68	46	11	03	3	267			0.83
06	01	881115	16.67	22	70	05			4	267	10 30 n	113 28 w	4.17
06	02	881115	16.67	70	05	22			4	267			3.61
01	01	881116	16.30	51	68	46			3	268	10 34 n	115 25 w	5.70
01	02	881116	16.30	51	68	46	07	03	3	268			1.90
01	03	881116	16.30	46	51	68	07	03	4	268			4.35
02	01	881116	16.30	68	46	51	07	02	4	268	10 32 n	115 35 w	4.07
02	02	881116	16.30	05	70	22	07	02	4	268			10.87

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	03	881116	16.30	70	22	05	07	02	4	268			4.35
02	04	881116	16.30	70	22	05	07	02	5	268			6.52
03	01	881116	16.30	46	51	68	07	02	5	268	10 29 n	115 55 w	9.51
04	01	881116	16.30	68	46	51	08	01	5	268	10 28 n	116 01 w	9.24
04	02	881116	16.30	68	46	51			5	268			1.36
04	03	881116	16.30	51	68	46			5	268			7.06
04	04	881116	16.30	51	68	46	09	01	5	268			2.72
04	05	881116	16.30	22	70	05	09	01	5	268			7.88
05	01	881116	16.30	70	05	68	09	01	5	268	10 29 n	116 23 w	4.35
05	02	881116	16.30	70	05	99	09	01	4	268			5.43
05	03	881116	16.30	05	70	99	10	01	4	268			7.88
05	04	881116	16.30	68	46	51			4	268			5.98
05	05	881116	16.30	68	46	51	10	02	4	268			3.53
06	01	881116	16.30	51	68	46	11	02	4	268	10 29 n	116 42 w	8.96
06	02	881116	16.30	46	51	68	11	02	4	268			4.62
06	03	881116	16.30	46	31	68	11	02	4	271			4.07
06	04	881116	16.30	57	70	05	11	02	4	271			8.15
06	05	881116	16.30	70	05	57	11	02	4	271			8.42
06	06	881116	16.30	05	57	70	11	03	4	271			7.88
06	07	881116	16.30	68	46	51	11	03	4	271			7.06
06	08	881116	16.30	51	68	46	11	03	4	271			2.72
01	01	881117	15.56	70	05	99			4	118	09 50 n	117 20 w	12.45
02	01	881117	15.56	46	51	68			4	118	09 44 n	117 08 w	1.56
03	01	881117	15.56	05	70	22			3	118	09 09 n	116 06 w	8.30
03	02	881117	15.56	68	46	51			2	118			8.04
03	03	881117	15.56	51	68	46			2	118			7.52
03	04	881117	15.56	46	51	68			2	118			8.04
03	05	881117	15.56	70	22	05			2	118			9.07
03	06	881117	15.56	22	05	70			2	118			2.33
01	01	881118	16.30	68	51	46			3	123	08 00 n	114 07 w	7.88
01	02	881118	16.30	46	68	51			3	123			8.15
01	03	881118	16.30	51	46	68			3	119			8.15
01	04	881118	16.30	22	70	05			3	119			5.98
02	01	881118	16.30	70	05	22			3	075	07 51 n	113 40 w	5.70
02	02	881118	16.30	05	22	70			3	075			2.72
03	01	881118	16.30	46	51	68			3	075	07 53 n	113 30 w	10.32
03	02	881118	16.30	68	51	99			3	075			1.63
03	03	881118	16.30	68	46	51	02	01	3	075			5.16
04	01	881118	16.30	51	68	46	02	01	3	075	07 53 n	113 16 w	8.15
04	02	881118	16.30	22	70	05	02	01	3	075			9.51
04	03	881118	16.30	22	70	05	04	02	4	077			1.36
04	04	881118	16.30	70	05	22	04	02	4	077			11.68
04	05	881118	16.30	05	22	70	04	01	4	077			3.53
04	06	881118	16.30	05	22	70	04	01	4	074			6.79
04	07	881118	16.30	46	68	51			4	074			7.06
04	08	881118	16.30	46	68	51			4	074			2.17
05	01	881118	16.30	51	46	68			5	074	07 59 n	112 37 w	6.25
01	01	881119	16.67	22	70	05	01	03	2	078	08 27 n	110 18 w	9.17
01	02	881119	16.67	70	05	22	01	03	2	078			8.33
01	03	881119	16.67	70	05	22	01	03	2	078			1.11
01	04	881119	16.67	05	22	70			2	078			2.50
01	05	881119	16.67	05	22	70	01	02	2	078			5.83

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	881119	16.67	46	51	68	01	02	2	078	08 30 n	110 00 w	11.11
01	07	881119	16.67	68	46	51	01	02	2	078			0.83
02	01	881119	16.67	68	46	51	01	02	2	078	08 31 n	109 50 w	5.56
02	02	881119	16.67	51	68	46	01	02	2	078			1.94
03	01	881119	16.67	22	70	05	01	02	2	078	08 37 n	109 42 w	8.89
03	02	881119	16.67	70	05	22	02	01	2	078			3.33
04	01	881119	16.67	05	22	70			2	078	08 41 n	109 32 w	1.11
05	01	881119	16.67	68	46	51	03	01	3	084	08 41 n	109 24 w	9.17
05	02	881119	16.67	51	68	46	04	01	3	084			6.39
05	03	881119	16.67	51	68	46	04	01	3	084			2.50
05	04	881119	16.67	46	51	68	04	01	3	084			4.44
05	05	881119	16.67	46	51	68			2	084			3.33
06	01	881119	16.67	22	70	05			2	084	08 42 n	109 06 w	5.56
06	02	881119	16.67	22	70	05	05	01	2	084			4.44
06	03	881119	16.67	70	05	22	05	02	2	084			10.00
06	04	881119	16.67	70	05	22	05	02	3	084			1.67
06	05	881119	16.67	05	22	70	05	02	3	084			3.61
07	01	881119	16.67	51	68	46			2	084	08 43 n	108 46 w	4.44
07	02	881119	16.67	51	68	46	05	02	1	084			2.78
08	01	881119	16.67	46	51	68	06	03	2	080	08 42 n	108 35 w	5.56
08	02	881119	16.67	22	70	05	06	03	2	080			5.00
01	01	881120	16.48	51	68	46			0	314	09 38 n	108 34 w	1.10
02	01	881120	16.48	51	68	46	05	03	0	314	09 39 n	108 39 w	1.10
02	02	881120	16.48	46	51	68	05	03	1	314			5.77
02	03	881120	16.48	46	51	68	05	03	1	321			1.10
03	01	881120	16.48	46	51	68	05	03	1	321	09 42 n	108 42 w	1.92
03	02	881120	16.48	68	46	51	05	03	1	321			11.81
03	03	881120	16.48	22	70	05	05	02	1	321			10.99
03	04	881120	16.48	70	05	22	05	02	1	321			2.20
03	05	881120	16.48	70	05	22	05	02	1	321			5.77
04	01	881120	16.48	70	05	22			1	321	09 59 n	108 56 w	2.20
04	02	881120	16.48	05	22	70			1	321			10.71
04	03	881120	16.48	46	51	68	06	02	1	320			7.14
04	04	881120	16.48	68	46	51	06	01	1	320			2.75
05	01	881120	16.48	51	68	46	06	01	1	321	10 11 n	109 08 w	1.65
01	01	881121	16.11	05	70	22			5	352	12 07 n	109 26 w	6.71
01	02	881121	16.11	05	70	22	04	03	5	352			2.15
01	03	881121	16.11	70	22	05	04	03	5	352			9.94
01	04	881121	16.11	22	05	70	04	03	5	352			8.86
01	05	881121	16.11	68	46	51	04	03	5	352	12 23 n	109 27 w	11.01
01	06	881121	16.11	51	68	46	04	02	5	352			10.47
01	07	881121	16.11	46	51	68	04	02	5	352			10.74
02	01	881121	16.11	05	70	22			5	355	13 32 n	109 39 w	3.22
02	02	881121	16.11	05	70	22	08	02	5	355			2.42
02	03	881121	16.11	70	22	05	08	02	5	355			5.64
03	01	881121	16.11	51	46	68	08	02	5	355	13 41 n	109 42 w	1.88
03	02	881121	16.11	51	46	68	11	03	5	254			4.30
03	03	881121	16.11	68	51	46	12	03	4	254			6.71
03	04	881121	16.11	46	68	51	12	03	4	254			3.49
03	05	881121	16.11	46	68	51			4	254			2.42
01	01	881122	17.04	68	51	46			4	253	13 08 n	111 49 w	8.52
01	02	881122	17.04	46	68	51	07	03	4	253			8.52

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	881122	17.04	51	46	68	07	03	4	253			8.52
01	04	881122	17.04	22	70	05	07	02	5	253			11.36
01	05	881122	17.04	70	05	22	07	02	5	253			4.54
01	06	881122	17.04	70	05	22	08	02	5	253			1.14
02	01	881122	17.04	05	22	70	08	02	5	253	12 56 n	111 21 w	3.41
02	02	881122	17.04	51	46	68	08	02	5	253			11.64
02	03	881122	17.04	68	51	46	09	01	5	253			11.07
02	04	881122	17.04	46	68	51			5	253			5.96
02	05	881122	17.04	46	68	51	09	01	5	253			5.40
02	06	881122	17.04	22	70	05	09	01	5	253	12 51 n	111 45 w	11.36
02	07	881122	17.04	70	05	22	10	01	5	253			7.67
01	01	881123	15.56	22	70	05	02	03	5	047	12 48 n	114 15 w	7.52
02	01	881123	16.30	68	46	51	06	02	5	047	13 50 n	113 05 w	7.61
02	02	881123	16.30	51	68	46	06	02	4	047			7.61
02	03	881123	16.30	46	51	68	06	03	4	047	13 56 n	112 59 w	7.61
02	04	881123	16.30	70	05	22	07	03	4	049			0.81
02	05	881123	16.30	70	05	22	07	03	4	043			7.33
01	01	881124	16.67	46	68	51			3	045	15 17 n	111 32 w	0.56
02	01	881124	16.67	51	46	68	02	03	3	045	15 17 n	111 28 w	7.50
02	02	881124	16.67	22	70	05	02	02	3	045			8.33
02	03	881124	16.67	70	05	22	02	02	4	045			2.78
02	04	881124	16.67	70	05	22	03	02	4	045			11.39
02	05	881124	16.67	05	22	70	03	02	4	045			10.83
02	06	881124	16.67	46	51	68	03	02	4	045			11.67
02	07	881124	16.67	68	46	51	03	01	4	045			10.83
02	08	881124	16.67	51	68	46	04	01	4	045			6.94
02	09	881124	16.67	51	68	46	04	01	3	045			3.89
02	10	881124	16.67	22	70	05	04	01	3	045			6.94
02	11	881124	16.67	22	70	05	05	01	3	045			1.67
03	01	881124	16.67	70	05	22	05	01	3	040	15 52 n	110 49 w	11.39
03	02	881124	16.67	05	22	70	06	01	3	040			10.83
03	03	881124	16.67	68	51	46	06	02	3	040			11.11
03	04	881124	16.67	46	68	51			3	040			5.00
04	01	881124	16.67	51	46	68	06	02	3	040	16 12 n	110 29 w	8.33
04	02	881124	16.67	22	70	05	07	02	3	040			4.72
04	03	881124	16.67	70	05	22	07	02	3	040			3.61
01	01	881125	16.67	05	70	22			3	046	17 35 n	109 05 w	5.56
01	02	881125	16.67	05	70	22			4	046			2.78
01	03	881125	16.67	70	22	05			4	046			8.89
01	04	881125	16.67	22	05	70			4	046			5.83
01	05	881125	16.67	46	68	51			4	046	17 44 n	109 55 w	11.11
01	06	881125	16.67	51	46	68			4	046			8.06
01	07	881125	16.67	51	46	68	03	02	4	046			3.89
01	08	881125	16.67	68	51	46			4	046			10.28
01	09	881125	16.67	05	70	22			4	046	17 57 n	108 39 w	11.11
01	10	881125	16.67	70	22	05	03	02	4	046			11.67
01	11	881125	16.67	22	05	70	04	01	4	046			10.83
01	12	881125	16.67	68	51	46	05	01	4	046	18 10 n	108 23 w	5.83
02	01	881125	16.67	46	68	51			4	040	18 16 n	108 15 w	10.83
02	02	881125	16.67	51	46	68	06	02	4	040			9.17
02	03	881125	16.67	05	70	22	06	02	4	040			11.11
02	04	881125	16.67	70	22	05			4	040			9.72

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left	right	rec.	sun position horz.	vert.	beauf. no.	course (deg.)	position latitude	longitude	km in leg
03	01	881125	16.67	46	51	68	06	03	3	046	18 37 n	107 58 w	6.67
03	02	881125	16.67	68	46	51	06	03	3	046			3.61
04	01	881125	16.67	51	68	46			3	050	18 45 n	107 53 w	1.39
01	01	881126	16.11	46	68	51			4	280	19 05 n	109 26 w	8.32
01	02	881126	16.11	51	46	68			4	280			7.52
01	03	881126	16.11	68	51	46	06	02	4	283			7.52
01	04	881126	16.11	70	22	05	06	02	4	283	19 07 n	109 41 w	11.01
01	05	881126	16.11	22	05	70	07	02	4	283			10.47
01	06	881126	16.11	05	70	22	07	02	4	283			10.47
01	07	881126	16.11	51	46	68	07	02	4	283	19 11 n	109 01 w	11.01
01	08	881126	16.11	68	51	46	08	02	4	283			9.40
01	09	881126	16.11	68	51	46	08	02	4	275			1.34
01	10	881126	16.11	46	68	51			4	275			10.47
01	11	881126	16.11	70	22	05	08	01	4	275	19 16 n	109 22 w	11.55
01	12	881126	16.11	22	05	70	09	01	4	275			9.94
01	13	881126	16.11	05	70	22	10	02	4	275			7.25
01	01	881127	16.67	46	51	68	08	02	3	250	18 59 n	112 06 w	4.72
01	02	881127	16.67	22	70	05	08	02	3	250			12.22
01	03	881127	16.67	70	05	22	09	02	3	250			10.00
01	04	881127	16.67	05	22	70	09	02	3	250			11.39
01	05	881127	16.67	68	46	51	09	01	4	250			5.00
02	01	881127	16.67	68	46	51	09	01	4	250	18 50 n	112 31 w	3.33
03	01	881127	16.67	51	68	46	10	01	4	249	18 47 n	112 35 w	4.72
04	01	881127	16.67	51	68	46	01	01	5	180	18 46 n	112 38 w	4.17
04	02	881127	16.67	46	51	68	01	02	5	180			6.11
05	01	881127	16.67	22	70	05	02	02	5	160	18 39 n	112 39 w	10.56
05	02	881127	16.67	70	05	22	02	02	5	160			11.11
05	03	881127	16.67	05	22	70	02	02	5	160			3.89
06	01	881127	16.67	05	22	70	02	02	5	160	18 26 n	112 36 w	2.78
06	02	881127	16.67	05	22	70			5	160			2.22
06	03	881127	16.67	46	68	51			4	178			2.50
07	01	881127	16.67	46	68	51			4	178	18 22 n	112 35 w	4.72
07	02	881127	16.67	51	46	68			4	178			8.33
07	03	881127	16.67	68	51	46			4	178			6.39
07	04	881127	16.67	68	51	46			4	196			1.67
07	05	881127	16.67	22	70	05			4	196			3.61
01	01	881128	16.48	46	51	68			3	258	17 27 n	114 20 w	6.32
01	02	881128	16.48	68	46	51			3	258			7.14
01	03	881128	16.48	51	68	46	07	03	3	258			5.49
01	04	881128	16.48	22	70	05	07	02	3	258			10.44
01	05	881128	16.48	70	05	22	08	02	3	258			11.54
01	06	881128	16.48	05	22	70	08	02	3	258			10.71
01	07	881128	16.48	68	46	51	08	02	3	258			10.99
01	08	881128	16.48	51	68	46	08	02	4	258			9.89
02	01	881128	16.48	46	51	68	09	01	4	258	17 17 n	114 07 w	4.12
02	02	881128	16.48	22	70	05	09	01	4	258			10.99
02	03	881128	16.48	70	05	22	09	01	4	258			11.26
02	04	881128	16.48	05	22	70	10	02	4	258			10.71
02	05	881128	16.48	51	68	46	10	02	3	258			3.57
03	01	881128	16.48	46	51	68			3	258	17 11 n	115 34 w	7.42
04	01	881128	16.48	68	46	51			3	259	17 09 n	115 40 w	8.52
04	02	881128	16.48	22	70	05			3	259			6.87

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	03	881128	16.48	22	70	05	11	03	3	259			2.20
04	04	881128	16.48	70	05	22	11	03	3	259			7.97
04	05	881128	16.48	05	22	70			3	259			1.65
05	01	881128	16.48	68	51	46			3	259	17 05 n	116 00 w	7.42
05	02	881128	16.48	68	51	46	12	03	3	259			1.37
01	01	881129	15.74	22	70	05			4	043	16 52 n	117 30 w	5.25
01	02	881129	15.74	70	05	22			4	043			4.20
01	03	881129	15.74	05	22	70			4	043			3.67
01	04	881129	15.74	68	46	51			4	043			10.23
02	01	881129	15.74	51	68	46			4	043	17 00 n	117 21 w	9.18
02	02	881129	15.74	46	51	68			4	043			4.72
03	01	881129	15.74	46	51	68			4	043	17 06 n	117 16 w	4.46
03	02	881129	15.74	22	70	05			4	043			7.87
03	03	881129	15.74	22	70	05	01	02	4	093			2.10
04	01	881129	15.74	70	05	22			4	043	17 11 n	117 10 w	4.20
04	02	881129	15.74	70	05	22	03	02	4	043			3.94
04	03	881129	15.74	70	05	22			4	043			1.84
05	01	881129	15.74	05	22	70			4	038	17 19 n	116 59 w	9.18
05	02	881129	15.74	51	68	46	04	01	4	038			6.82
05	03	881129	15.74	51	68	46	04	01	5	038			1.05
06	01	881129	15.74	46	51	68			5	038	17 34 n	116 46 w	5.77
06	02	881129	15.74	68	46	51			5	038			5.25
06	03	881129	15.74	22	70	05			5	038			3.15
07	01	881129	15.74	22	70	05			5	038	17 41 n	116 42 w	5.51
07	02	881129	15.74	70	05	22			5	038			8.66
07	03	881129	15.74	70	05	22	06	02	5	038			2.10
07	04	881129	15.74	05	22	70	06	02	5	038			10.23
01	01	881130	16.30	51	68	46			2	038	19 27 n	115 01 w	5.16
01	02	881130	16.30	51	68	46	03	03	3	038			1.36
01	03	881130	16.30	46	51	68			3	038			5.43
01	04	881130	16.30	68	46	51			3	038			5.70
01	05	881130	16.30	70	22	05			3	038			8.96
01	06	881130	16.30	70	22	05	03	02	3	038			2.17
01	07	881130	16.30	22	05	70	03	02	3	038			10.32
01	08	881130	16.30	05	70	22	03	02	3	038			3.80
01	09	881130	16.30	05	70	22	03	02	4	038			7.06
01	10	881130	16.30	68	46	51	03	02	3	038			11.14
01	11	881130	16.30	51	68	46	03	02	3	038			7.88
02	01	881130	16.30	51	68	46	03	02	3	038	20 00 n	114 30 w	2.44
02	02	881130	16.30	46	51	68	04	02	3	038			8.96
03	01	881130	16.30	22	70	05			3	038	20 11 n	114 22 w	5.43
03	02	881130	16.30	46	51	68			3	038			8.69
04	01	881130	16.30	68	46	51	07	02	3	031	20 22 n	114 19 w	7.88
04	02	881130	16.30	51	68	46	07	02	3	031			5.43
04	03	881130	16.30	70	05	22	07	02	3	031			8.42
04	04	881130	16.30	05	22	70	07	02	3	031			7.88
04	05	881130	16.30	22	70	05	07	03	3	031			8.15
04	06	881130	16.30	68	46	51	07	03	3	031			9.51
01	01	881201	16.30	70	05	22	03	03	3	026	22 30 n	112 52 w	5.70
01	02	881201	16.30	05	22	70	03	03	3	026			5.16
01	03	881201	16.30	68	46	51	03	03	3	026			4.07
02	01	881201	16.30	51	68	46	03	02	3	026	22 38 n	112 48 w	11.14

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	881201	16.30	46	51	68	04	02	4	026			11.14
02	03	881201	16.30	22	70	05	04	02	4	026			8.42
03	01	881201	16.30	70	05	22	04	02	3	026	22 53 n	112 36 w	1.36
04	01	881201	16.30	70	05	22	04	02	3	026	22 53 n	112 36 w	6.52
04	02	881201	16.30	05	22	70	05	01	3	026			7.61
04	03	881201	16.30	51	68	46	05	01	3	026			1.36
04	04	881201	16.30	51	68	46	05	01	3	021			1.90
04	05	881201	16.30	51	68	46	05	01	2	021			7.61
04	06	881201	16.30	46	51	68	06	01	2	021			9.24
05	01	881201	16.30	68	46	51	06	01	2	021	22 58 n	112 32 w	10.32
05	02	881201	16.30	22	70	05	06	02	2	021			11.41
05	03	881201	16.30	70	05	22	07	02	1	021			2.72
06	01	881201	16.30	05	22	70	06	02	1	033	23 30 n	112 23 w	2.44
06	02	881201	16.30	46	51	68	07	02	1	033			8.15
06	03	881201	16.30	68	46	51	07	02	1	033			8.42
06	04	881201	16.30	51	68	46	07	03	1	033			1.63
07	01	881201	16.30	51	68	46	07	03	1	033	23 41 n	112 15 w	2.99
01	01	881202	16.67	22	05	70	07	02	2	344			11.95
01	02	881202	16.67	05	70	22	07	02	2	344	24 53 n	112 24 w	3.61
02	01	881202	16.67	46	68	51	08	02	2	344	24 57 n	112 26 w	2.78
03	01	881202	16.67	46	68	51	08	02	2	344	25 00 n	112 27 w	3.33
04	01	881202	16.67	51	46	68	08	02	2	344	25 03 n	112 30 w	9.72
04	02	881202	16.67	68	51	46	08	02	2	344			3.89
04	03	881202	16.67	68	51	46	09	02	2	333			1.67
04	04	881202	16.67	70	22	05	09	03	3	333			8.61
04	05	881202	16.67	22	05	70	09	03	3	333			8.06
04	06	881202	16.67	05	70	22	09	03	3	333			8.61
04	07	881202	16.67	46	68	51	09	03	2	333			5.28
01	01	881203	16.48	22	70	05	07	03	3	251	26 36 n	113 37 w	3.57
02	01	881203	16.48	22	70	05	05	03	2	321	26 34 n	113 41 w	1.10
02	02	881203	16.48	70	05	22	05	03	2	321			1.92
03	01	881203	16.48	70	05	22	05	03	2	321	26 37 n	113 44 w	0.82
04	01	881203	16.48	05	22	70	05	02	2	325	26 40 n	113 49 w	3.85
04	02	881203	16.48	46	51	68	05	02	1	325			4.67
05	01	881203	16.48	68	46	51	06	02	3	325	26 48 n	113 56 w	11.26
05	02	881203	16.48	51	68	46	07	02	2	285			9.61
05	03	881203	16.48	22	70	05	08	02	2	285			5.49
06	01	881203	16.48	70	05	22	08	02	2	310	26 56 n	114 08 w	3.85

total distance travelled on effort: 11019.76 km.

Table 3. Marine mammal sightings, classified by species code groups, encountered in the eastern tropical Pacific during July 28 through December 6, 1988.

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
880802	03	01	03	12	12	5	31	3.8	17 42 n	119 53 w	46.7	62.0	53.0
880803	02	11	02	07	01	4	31	0.4	16 37 n	123 07 w	1.7	437.0	348.0
880803	05	02	05	02	02	5	67	0.9	16 27 n	123 49 w	100.0	72.0	63.0
880803	06	02	06	02	02	4	69	0.8	16 19 n	123 59 w	9.0	222.0	200.0
880804	03	04	02			3	55	0.3	14 30 n	125 39 w	77.0	101.0	84.0
880804	06	01	04			2	56	0.6	14 06 n	125 55 w	100.0	50.0	42.0
880810	02	01	01	11	02	5	64	3.5	01 09 n	115 35 w	100.0	102.0	85.0
880816	02	01	03			5	64	0.8	05 51 n	105 16 w	93.3	50.0	43.0
880816	04	03	05	01	01	5	55	5.1	06 08 n	105 04 w	100.0	53.0	43.0
880819			01			5	31	0.2	04 47 n	099 34 w	100.0	75.0	67.0
880820	02	14	02	01	12	5	69	2.7	03 32 n	097 33 w	63.3	422.0	367.0
880821	01	04	01	02	02	4	64	1.5	05 50 n	096 31 w	87.5	55.0	47.0
880821	02	01	02	02	02	4	56	4.6	06 03 n	096 32 w	98.0	70.0	58.0
880821	03	01	03	02	01	4	31	0.7	06 06 n	096 33 w	81.7	310.0	233.0
880822	08	01	09			4	55	0.3	09 06 n	094 55 w	100.0	617.0	517.0
880825	02	03	03	02	02	2	56	0.0	13 07 n	091 13 w	23.7	82.0	70.0
880904			01			4	99	0.5	14 19 n	099 18 w	100.0	37.0	30.0
880904	03	01	02			4	55	2.7	14 20 n	099 32 w	70.0	190.0	162.0
880904	06	01	03			4	56	1.6	14 22 n	100 11 w	83.7	76.0	61.0
880904	06	01	04			4	67	2.7	14 22 n	100 12 w	46.7	62.0	53.0
880906	06	10	03	02	01	4	56	0.4	10 12 n	104 52 w	100.0	113.0	90.0
880906	06	10	04	02	01	4	67	2.6	10 11 n	104 53 w	80.0	240.0	195.0
880907	03	04	03	02	02	3	67	3.5	07 08 n	106 48 w	21.7	703.0	633.0
880909	03	03	02	03	12	4	55	0.4	06 10 n	111 10 w	96.0	440.0	408.0
880912	01	04	01	10	03	4	56	1.7	03 52 n	112 21 w	62.7	210.0	180.0
880916	01	03	01	01	02	4	67	2.1	01 30 s	106 59 w	100.0	250.0	215.0
880921	03	02	03	03	01	4	69	3.5	07 37 n	093 07 w	88.7	187.0	168.0
881014			07	08	01	2	99	1.1	11 18 n	090 01 w	100.0	102.0	86.0
881014	05	01	10	08	01	2	05	7.3	11 31 n	090 05 w	65.5	545.0	410.0
881015	02	01	02	09	02	2	38	0.4	11 44 n	090 29 w	36.3	285.0	210.0
881017	04	02	05	09	01	3	38	2.9	05 54 n	093 40 w	56.7	215.0	173.0
881018	03	01	03	03	02	2	05	0.8	08 20 n	093 39 w	100.0	44.0	31.0
881021	03	03	04	09	01	3	05	1.8	08 37 n	096 46 w	23.0	322.0	262.0
881021	05	01	06	10	01	3	05	0.8	08 29 n	096 55 w	100.0	92.0	65.0
881021	07	01	08	12	01	3	51	0.6	08 11 n	097 03 w	73.3	417.0	332.0
881021	10	01	10			3	68	3.7	07 50 n	097 22 w	86.7	700.0	483.0
881023	01	01	01			3	70	5.7	08 03 n	098 21 w	100.0	292.0	220.0
881023	02	01	02			3	68	1.4	08 10 n	098 18 w	100.0	157.0	117.0
881023	07	01	07	08	02	3	22	0.8	08 58 n	098 20 w	57.8	222.0	141.0
881023	10	01	10	09	03	3	70	2.0	09 14 n	098 17 w	45.0	267.0	220.0

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
881024	02	03	03	09	02	2	05	7.1	09 20 n	098 45 w	75.0	67.0	62.0
881027	03	12	04	08	01	3	05	0.8	09 50 n	101 50 w	65.0	322.0	258.0
881027	06	01	06	08	03	3	68	4.5	10 15 n	101 50 w	100.0	47.0	38.0
881028	02	03	02			3	70	0.0	11 47 n	102 21 w	36.7	583.0	450.0
881030	02	05	02	03	01	4	38	0.9	14 28 n	106 53 w	100.0	242.0	219.0
881031	01	05	01	05	03	3	68	4.2	16 36 n	106 48 w	61.2	90.0	115.0
881101	01	01	02			2	68	0.1	17 57 n	105 10 w	100.0	28.0	21.0
881101	03	16	05	04	01	5	38	6.8	18 04 n	103 57 w	51.7	588.0	423.0
881101	06	03	08	05	03	5	38	1.8	18 10 n	103 33 w	80.0	650.0	525.0
881108			13	02	01	1	99	0.7	17 06 n	101 59 w	10.6	204.0	160.0
881108	01	01	01			1	51	0.9	17 40 n	102 39 w	87.7	120.0	80.0
881108	02	01	02	11	03	1	46	3.2	17 36 n	102 36 w	100.0	63.0	42.0
881108	14	01	18	04	03	2	05	4.7	16 47 n	101 37 w	13.3	358.0	300.0
881109			01			2	22	0.1	15 40 n	099 53 w	100.0	16.0	16.0
881109	02	02	05	11	02	1	46	3.3	15 23 n	099 33 w	100.0	333.0	173.0
881109	04	01	08	01	01	1	22	4.8	15 13 n	099 23 w	35.0	617.0	508.0
881109	05	01	09	01	01	2	51	1.9	15 07 n	099 17 w	45.0	230.0	170.0
881109	06	01	10	02	01	2	46	0.2	15 07 n	099 15 w	53.0	297.0	213.0
881109	09	03	13	04	02	2	22	2.8	14 56 n	098 54 w	72.5	427.0	320.0
881109	10	01	14			2	51	4.0	14 55 n	098 47 w	70.0	168.0	123.0
881110			06	07	02	1	70	0.2	14 31 n	099 25 w	100.0	10.0	8.0
881110	01	03	01	07	03	1	51	1.1	14 29 n	099 08 w	38.3	202.0	153.0
881110	03	01	05	07	03	1	70	1.6	14 31 n	099 21 w	4.8	206.0	175.0
881110	06	01	09	09	01	0	68	7.0	14 35 n	099 44 w	65.0	273.0	200.0
881110	09	01	11	10	02	0	51	3.6	14 27 n	100 07 w	21.7	341.0	268.0
881111	03	01	05	07	02	3	46	1.8	14 39 n	103 08 w	100.0	290.0	236.0
881115	03	01	01			5	68	1.1	10 27 n	112 28 w	89.0	128.0	88.0
881116	02	04	02	07	02	5	70	2.3	10 31 n	115 50 w	20.0	125.0	100.0
881119	07	02	04	05	02	1	68	3.3	08 44 n	108 42 w	100.0	75.0	53.0
881121	02	03	03	08	02	5	70	1.6	13 39 n	109 40 w	100.0	397.0	296.0
881122	01	06	01	08	02	5	70	2.0	13 01 n	112 15 w	100.0	0.0*	53.0
881128	03	01	03			3	46	5.8	17 10 n	115 40 w	100.0	53.0	38.0

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
880821	03	01	03	02	01	4	31	0.7	06 06 n	096 33 w	18.3	310.0	233.0
880825	08	03	10	04	01	3	55	6.1	13 17 n	090 57 w	100.0	1122.0	975.0
880904	06	01	04			4	67	2.7	14 22 n	100 12 w	53.3	62.0	53.0

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
880805	02	13	01			4	56	5.3	11 00 n	126 35 w	100.0	98.0	85.0
880812	02	06	04			4	67	0.0	01 59 n	110 20 w	100.0	19.0	18.0
880825	01	01	02			2	31	4.6	12 53 n	091 21 w	100.0	70.0	65.0
880914	02	07	05	09	02	2	31	0.5	00 41 s	109 59 w	90.8	155.0	140.0
880914	06	04	08			1	67	0.6	01 00 s	109 58 w	100.0	47.0	41.0
880914	09	01	10	03	01	2	69	7.0	01 17 s	110 00 w	100.0	136.0	122.0
880917	01	01	01	01	03	2	31	0.0	00 02 n	104 25 w	100.0	1838.0	1625.0
880921	04	04	04	06	01	4	67	4.6	07 50 n	093 56 w	100.0	813.0	708.0
881005	02	08	03	11	01	3	22	3.3	06 31 n	079 08 w	100.0	156.0	131.0
881007	01	04	01			5	05	0.6	04 59 n	083 17 w	100.0	105.0	73.0
881007	03	03	03	08	02	5	70	2.5	05 53 n	083 27 w	100.0	222.0	163.0
881010			09	10	01	3	51	3.7	07 57 n	089 13 w	100.0	1058.0	834.0
881010	04	06	10	02	02	3	38	8.6	07 05 n	089 08 w	100.0	867.0	672.0
881010	05	01	11			3	70	5.2	07 00 n	089 08 w	100.0	303.0	247.0
881013	01	02	01	03	02	4	22	0.1	07 25 n	090 44 w	100.0	416.0	353.0
881013	02	02	02	04	01	4	05	4.5	07 37 n	090 42 w	100.0	202.0	172.0
881016	04	02	06	09	02	1	51	3.7	08 49 n	092 08 w	100.0	649.0	499.0
881016	06	01	09	10	01	1	68	0.4	08 39 n	092 16 w	100.0	382.0	326.0
881016	11	01	16	01	02	2	05	3.6	08 10 n	092 29 w	100.0	3167.0	2325.0
881016	12	01	18	01	03	2	68	5.8	08 04 n	092 27 w	100.0	392.0	337.0
881018			14			2	99	2.1	09 34 n	093 38 w	100.0	698.0	553.0
881018	07	01	09	08	01	2	38	1.9	09 08 n	093 38 w	100.0	367.0	315.0
881018	09	05	12	08	02	2	51	5.3	09 30 n	093 35 w	100.0	690.0	572.0
881018	10	01	13			2	68	0.3	09 32 n	093 38 w	100.0	542.0	443.0
881020	08	02	07	01	02	4	51	5.7	10 43 n	095 20 w	100.0	201.0	164.0
881020	09	02	08	02	03	4	70	2.3	10 37 n	095 26 w	100.0	245.0	205.0
881101	05	05	07	06	02	5	70	1.3	18 09 n	103 38 w	100.0	90.0	72.0
881123			01	02	02	6	99	0.2	12 55 n	114 07 w	100.0	60.0	50.0
881130	03	02	04			3	46	0.2	20 14 n	114 20 w	100.0	350.0	240.0
881201	02	03	02	04	02	4	70	1.7	22 53 n	112 39 w	100.0	235.0	155.0
881201	05	03	03	07	02	1	70	8.9	23 25 n	112 19 w	100.0	343.0	273.0
881201	07	01	07	07	03	1	68	6.4	23 43 n	112 13 w	100.0	487.0	376.0
881202			03			2	70	0.2	24 26 n	111 56 w	100.0	30.0	24.0
881202			04	06	02	1	22	6.0	24 26 n	111 57 w	100.0	2367.0	1667.0
881202			06			3	51	5.7	24 29 n	112 04 w	100.0	1705.0	1315.0
881202			15			2	99	0.7	24 55 n	112 26 w	100.0	0.0*	0.0*
881202	01	01	07	07	02	2	05	0.2	24 48 n	112 22 w	100.0	8.0	4.0
881202	01	01	08	07	02	2	22	6.2	24 50 n	112 23 w	100.0	0.0*	625.0
881202	01	01	09	07	02	2	05	1.5	24 51 n	112 24 w	100.0	0.0*	4.0
881203	01	01	01	07	03	3	70	0.1	26 35 n	113 38 w	100.0	3531.0	2900.0
881203	02	02	02	05	03	2	70	4.1	26 35 n	113 43 w	100.0	1250.0	900.0
881203	02	02	03	05	03	2	05	2.3	26 35 n	113 43 w	100.0	1800.0	1500.0
881203	03	01	04	05	03	2	05	1.4	26 37 n	113 44 w	100.0	0.0*	4000.0

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
881203	06	01	09	08	02	2	05	2.5	26 57 n	114 10 w	98.8	2742.0	2067.0

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
881107			02	12	03	2	05	0.4	18 50 n	104 20 w	100.0	0.0*	0.0*
881107			03			2	05	0.0	18 50 n	104 20 w	100.0	0.0*	0.0*

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
880825	02	03	03	02	02	2	56	0.0	13 07 n	091 13 w	76.2	82.0	70.0
880904	03	01	02			4	55	2.7	14 20 n	099 32 w	30.0	190.0	162.0
880904	06	01	03			4	56	1.6	14 22 n	100 11 w	16.2	76.0	61.0
880906	06	10	04	02	01	4	67	2.6	10 11 n	104 53 w	20.0	240.0	195.0
880921	03	02	03	03	01	4	69	3.5	07 37 n	093 07 w	11.3	187.0	168.0
881014	05	01	10	08	01	2	05	7.3	11 31 n	090 05 w	34.5	545.0	410.0
881015	02	01	02	09	02	2	38	0.4	11 44 n	090 29 w	63.7	285.0	210.0
881021	03	03	04	09	01	3	05	1.8	08 37 n	096 46 w	77.0	322.0	262.0
881021	07	01	08	12	01	3	51	0.6	08 11 n	097 03 w	26.7	417.0	332.0
881021	10	01	10			3	68	3.7	07 50 n	097 22 w	13.3	700.0	483.0
881023	07	01	07	08	02	3	22	0.8	08 58 n	098 20 w	42.2	222.0	141.0
881023	10	01	10	09	03	3	70	2.0	09 14 n	098 17 w	55.0	267.0	220.0
881024	02	03	03	09	02	2	05	7.1	09 20 n	098 45 w	22.0	67.0	62.0
881027	03	12	04	08	01	3	05	0.8	09 50 n	101 50 w	35.0	322.0	258.0
881028	01	01	01			3	68	0.1	11 42 n	102 08 w	100.0	23.0	18.0
881028	02	03	02			3	70	0.0	11 47 n	102 21 w	63.3	583.0	450.0
881030	01	04	01	02	02	5	05	3.4	14 10 n	107 13 w	100.0	1083.0	867.0
881101	02	01	03	01	03	2	38	0.5	17 56 n	105 07 w	100.0	400.0	250.0
881101	03	16	05	04	01	5	38	6.8	18 04 n	103 57 w	48.3	588.0	423.0
881101	06	03	08	05	03	5	38	1.8	18 10 n	103 33 w	20.0	650.0	525.0
881108			13	02	01	1	99	0.7	17 06 n	101 59 w	89.4	204.0	160.0
881108	01	01	01			1	51	0.9	17 40 n	102 39 w	12.3	120.0	80.0
881108	07	01	10	12	01	0	46	1.1	17 14 n	102 12 w	100.0	287.0	223.0
881108	11	02	15	03	02	1	68	1.0	16 59 n	101 46 w	100.0	155.0	110.0
881108	14	01	18	04	03	2	05	4.7	16 47 n	101 37 w	53.3	358.0	300.0
881109	04	01	08	01	01	1	22	4.8	15 13 n	099 23 w	31.7	617.0	508.0
881109	05	01	09	01	01	2	51	1.9	15 07 n	099 17 w	55.0	230.0	170.0
881109	06	01	10	02	01	2	46	0.2	15 07 n	099 15 w	45.7	297.0	213.0
881109	09	03	13	04	02	2	22	2.8	14 56 n	098 54 w	27.5	427.0	320.0
881109	10	01	14			2	51	4.0	14 55 n	098 47 w	30.0	168.0	123.0
881110	01	03	01	07	03	1	51	1.1	14 29 n	099 08 w	61.7	202.0	153.0
881110	03	01	05	07	03	1	70	1.6	14 31 n	099 21 w	95.2	206.0	175.0
881110	06	01	09	09	01	0	68	7.0	14 35 n	099 44 w	35.0	273.0	200.0
881110	09	01	11	10	02	0	51	3.6	14 27 n	100 07 w	77.3	341.0	268.0
881115	03	01	01			5	68	1.1	10 27 n	112 28 w	11.0	128.0	88.0
881116	02	04	02	07	02	5	70	2.3	10 31 n	115 50 w	80.0	125.0	100.0
881116	05	05	05	10	02	4	68	1.1	10 31 n	116 41 w	100.0	65.0	45.0

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
880802	01	06	01			4	31	0.4	17 59 n	119 16 w	100.0	48.0	42.0
880802	03	01	03	12	12	5	31	3.8	17 42 n	119 53 w	53.3	62.0	53.0
880803	02	11	02	07	01	4	31	0.4	16 37 n	123 07 w	31.7	437.0	348.0
880803	06	02	06	02	02	4	69	0.8	16 19 n	123 59 w	91.0	222.0	200.0
880804	02	02	01	08	02	3	69	3.2	14 47 n	125 25 w	100.0	26.0	22.0
880804	03	04	02			3	55	0.3	14 30 n	125 39 w	23.0	101.0	84.0
880804	08	01	05	03	02	2	31	0.2	13 48 n	126 06 w	7.5	96.0	82.0
880816	02	01	03			5	64	0.8	05 51 n	105 16 w	6.7	50.0	43.0
880820	02	14	02	01	12	5	69	2.7	03 32 n	097 33 w	36.7	422.0	367.0
880907	03	04	03	02	02	3	67	3.5	07 08 n	106 48 w	78.3	703.0	633.0
880909	03	03	02	03	12	4	55	0.4	06 10 n	111 10 w	4.0	440.0	408.0
880912	01	04	01	10	03	4	56	1.7	03 52 n	112 21 w	4.0	210.0	180.0
881119	02	02	02	01	02	2	51	3.2	08 32 n	109 46 w	100.0	72.0	47.0

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
880730	01	08	02			1	31	2.8	27 23 n	121 21 w	100.0	19.0	17.0
880731			05			2	55	4.0	23 52 n	120 12 w	100.0	50.0	40.0
880731	02	03	01			3	31	6.5	24 22 n	120 21 w	100.0	92.0	80.0
880731	03	03	03			2	55	3.4	23 59 n	120 13 w	100.0	71.0	62.0
880804	08	01	05	03	02	2	31	0.2	13 48 n	126 06 w	40.0	96.0	82.0
880809	03	06	03	08	12	4	67	2.2	01 32 n	117 41 w	100.0	35.0	25.0
880811	02	08	02			4	69	0.1	01 08 n	113 02 w	100.0	81.0	65.0
880812			03	11	02	3	64	1.0	01 55 n	110 33 w	100.0	192.0	165.0
880812	01	03	01	12	03	3	31	4.0	01 57 n	110 36 w	100.0	55.0	47.0
880812	04	01	06			4	56	1.3	02 04 n	110 05 w	100.0	101.0	88.0
880812	05	02	07			4	67	0.7	02 01 n	110 02 w	100.0	50.0	42.0
880815	01	02	01			4	55	2.5	02 37 n	104 23 w	100.0	37.0	32.0
880815	03	05	03			4	56	3.0	03 17 n	104 39 w	100.0	22.0	17.0
880817	01	01	01			4	64	0.1	08 24 n	103 20 w	100.0	66.0	57.0
880817	02	06	02	02	02	4	56	0.4	08 46 n	103 09 w	100.0	20.0	16.0
880817	05	10	04			4	69	2.2	09 05 n	102 19 w	100.0	60.0	47.0
880818	02	07	01			3	67	7.2	06 58 n	100 57 w	100.0	242.0	218.0
880820	05	03	04			3	55	2.9	04 10 n	097 13 w	100.0	27.0	18.0
880822	04	01	04	03	01	3	64	0.5	09 10 n	095 06 w	100.0	80.0	68.0
880822	05	04	06	02	01	3	67	2.8	09 21 n	095 05 w	100.0	25.0	18.0
880822	09	01	10	04	01	4	56	1.8	09 02 n	094 53 w	96.0	91.0	82.0
880822	10	02	12			4	67	2.4	08 49 n	094 52 w	100.0	81.0	68.0
880823			01			5	99	0.0	08 08 n	094 05 w	100.0	0.0*	0.0*
880824	03	02	04			4	31	0.2	10 54 n	092 27 w	100.0	31.0	27.0
880824	05	02	06	02	01	4	55	3.0	11 11 n	092 19 w	100.0	68.0	62.0
880824	10	01	13	08	01	3	55	8.0	11 40 n	092 07 w	100.0	25.0	20.0
880906	03	02	02			5	31	3.3	10 57 n	104 22 w	100.0	95.0	84.0
880906	08	03	05	02	03	4	55	0.6	09 53 n	104 57 w	100.0	83.0	70.0
880907	01	02	01	07	03	3	69	0.1	08 25 n	105 57 w	100.0	7.0	6.0
880908	04	01	01	06	01	4	55	2.1	06 14 n	108 47 w	100.0	105.0	95.0
880908	05	04	02	12	12	4	69	1.6	06 11 n	109 13 w	100.0	25.0	21.0
880909	05	04	04	01	02	4	55	0.3	06 05 n	112 33 w	100.0	123.0	110.0
880912	05	05	04			4	55	4.9	03 44 n	111 52 w	100.0	57.0	45.0
880914	02	07	05	09	02	2	31	0.5	00 41 s	109 59 w	9.2	155.0	140.0
880915	04	02	04			3	64	0.8	02 43 s	109 14 w	100.0	70.0	59.0
880916	03	04	02	12	12	3	56	0.9	01 09 s	106 26 w	100.0	33.0	29.0
880916	07	02	04			3	55	0.6	00 56 s	106 05 w	100.0	79.0	71.0
880916	07	03	05	07	01	3	67	2.9	00 55 s	106 03 w	100.0	74.0	62.0
880916	08	01	06			3	55	0.8	00 51 s	105 59 w	100.0	48.0	42.0
880917			02	01	01	3	99	2.2	00 10 n	104 17 w	100.0	25.0	20.0
880917	03	05	04	07	01	4	56	1.3	00 24 n	104 58 w	100.0	42.0	35.0
880918	02	12	01	07	02	5	31	4.3	01 54 n	101 17 w	100.0	31.0	25.0
880919	01	01	01			4	64	3.8	02 54 n	099 35 w	100.0	9.0	7.0

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
880919	05	06	03			4	67	0.3	03 43 n	098 25 w	100.0	75.0	68.0
880921	02	03	02	02	01	4	64	0.3	07 29 n	093 17 w	100.0	63.0	54.0
880922	05	02	03			3	56	0.3	09 41 n	090 27 w	100.0	53.0	49.0
880922	08	02	05	12	12	4	31	4.5	09 58 n	090 04 w	100.0	45.0	39.0
880922	10	01	09	07	02	4	69	3.4	10 02 n	089 52 w	100.0	12.0	10.0
880923	01	01	01			3	31	5.0	10 07 n	088 16 w	100.0	57.0	50.0
880924	03	03	04	11	01	5	31	0.6	05 55 n	087 17 w	100.0	72.0	63.0
880924	04	05	05	03	01	5	55	0.5	05 37 n	087 04 w	100.0	93.0	80.0
880926	04	10	03			4	56	3.0	03 13 n	084 40 w	100.0	0.0*	25.0
880927	04	08	05			4	31	0.7	04 02 n	081 42 w	100.0	77.0	65.0
880928	01	02	01	01	03	3	56	0.5	04 59 n	080 05 w	100.0	10.0	6.0
880928	06	01	04	03	12	3	67	3.9	05 18 n	079 31 w	100.0	57.0	50.0
881013	07	01	04			3	51	2.2	08 05 n	090 31 w	100.0	103.0	82.0
881014			04	05	01	3	99	1.3	11 06 n	090 02 w	100.0	0.0*	20.0
881014			09			2	51	0.5	11 24 n	090 01 w	100.0	17.0	12.0
881014	02	02	05	06	01	3	70	5.0	11 12 n	090 00 w	100.0	198.0	160.0
881014	03	01	06	07	01	3	70	6.9	11 15 n	089 58 w	100.0	147.0	127.0
881014	04	01	08	08	01	2	68	6.9	11 22 n	090 02 w	100.0	80.0	69.0
881015			15			2	05	1.9	10 46 n	091 05 w	100.0	350.0	275.0
881015	03	04	06	10	01	1	05	0.0	11 24 n	090 42 w	100.0	125.0	102.0
881015	04	01	09	12	01	2	22	0.9	11 07 n	090 51 w	100.0	17.0	10.0
881015	05	01	11	01	02	2	70	3.1	11 00 n	090 57 w	100.0	86.0	67.0
881015	07	01	12	01	03	2	22	3.6	10 49 n	091 01 w	100.0	161.0	134.0
881016			13	01	01	2	99	0.0	08 22 n	092 25 w	100.0	35.0	28.0
881016	01	02	01	08	03	1	51	4.3	09 16 n	091 56 w	100.0	125.0	55.0
881016	02	02	04	08	02	1	70	0.3	09 04 n	092 00 w	100.0	79.0	63.0
881016	07	02	11	12	01	2	22	5.9	08 32 n	092 21 w	100.0	122.0	99.0
881016	10	02	15	01	02	2	70	2.9	08 16 n	092 27 w	100.0	52.0	43.0
881016	13	01	19	01	03	2	38	5.5	07 56 n	092 25 w	100.0	66.0	52.0
881017	01	01	01			3	22	1.8	06 33 n	093 17 w	100.0	13.0	10.0
881017	06	09	08			3	38	1.0	05 54 n	093 51 w	100.0	111.0	91.0
881017	07	03	09			3	05	2.7	06 04 n	093 49 w	100.0	60.0	40.0
881018	01	01	01			2	68	1.8	08 04 n	093 41 w	100.0	190.0	147.0
881018	02	01	02	03	03	2	22	1.3	08 16 n	093 42 w	100.0	63.0	50.0
881019			01	04	02	3	99	0.4	11 34 n	093 38 w	100.0	169.0	130.0
881019	03	09	03	08	02	4	38	3.9	12 32 n	093 37 w	100.0	90.0	58.0
881020			03	09	02	2	99	0.3	11 23 n	094 53 w	100.0	126.0	97.0
881020	04	02	04	10	01	3	38	2.5	11 14 n	094 58 w	100.0	114.0	92.0
881020	10	01	09	02	03	3	38	0.1	10 30 n	095 27 w	100.0	54.0	25.0
881021			11			3	38	0.0	07 48 n	097 24 w	100.0	50.0	35.0
881021	01	03	01	08	03	3	70	0.5	08 57 n	096 27 w	100.0	5.0	5.0
881021	01	04	02			3	05	3.3	08 49 n	096 32 w	100.0	107.0	87.0
881021	02	01	03	09	02	3	68	0.8	08 47 n	096 37 w	100.0	113.0	92.0

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
881021	04	01	05	09	01	3	70	0.3	08 32 n	096 52 w	100.0	107.0	82.0
881021	06	01	07	11	01	3	51	6.1	08 22 n	097 03 w	100.0	112.0	88.0
881021	09	01	09	01	02	3	38	1.7	07 52 n	097 17 w	100.0	61.0	43.0
881021	11	02	13			3	70	1.9	07 42 n	097 32 w	100.0	77.0	50.0
881023			11			3	05	0.0	09 14 n	098 17 w	100.0	60.0	49.0
881023	03	03	03	04	01	3	05	5.1	08 27 n	098 20 w	100.0	46.0	36.0
881023	05	01	05	08	01	1	51	1.6	08 39 n	098 15 w	100.0	73.0	56.0
881023	06	01	06	08	01	0	70	0.4	08 50 n	098 17 w	100.0	22.0	23.0
881023	08	01	08			3	68	4.6	09 05 n	098 20 w	100.0	37.0	28.0
881023	09	02	09	08	02	3	38	2.3	09 10 n	098 18 w	100.0	6.0	4.0
881024	01	02	01	08	03	2	38	3.7	09 43 n	098 38 w	100.0	58.0	41.0
881024	02	03	02	09	02	2	05	0.0	09 23 n	098 44 w	75.0	40.0	33.0
881024	04	02	04	10	01	5	05	2.9	09 04 n	098 59 w	100.0	55.0	43.0
881026	01	06	01			5	70	0.1	05 03 n	102 08 w	100.0	20.0	12.0
881027	05	03	05	08	02	3	38	2.9	10 07 n	101 52 w	100.0	32.0	20.0
881030	03	09	03	06	02	3	22	1.7	15 03 n	106 10 w	100.0	85.0	63.0
881030	04	04	05			3	51	1.8	15 07 n	106 03 w	100.0	135.0	108.0
881031			07	09	02	2	99	5.9	17 32 n	107 19 w	100.0	119.0	96.0
881031	02	03	03	05	02	3	70	1.3	16 48 n	106 58 w	100.0	99.0	74.0
881031	03	03	04	05	01	3	22	2.5	17 01 n	107 02 w	100.0	107.0	91.0
881031	06	01	05	09	02	3	68	0.5	17 23 n	107 10 w	100.0	50.0	40.0
881111	01	02	02	01	03	2	70	1.6	14 40 n	102 48 w	5.0	15.0	12.0
881111	05	04	07	09	01	3	46	2.1	14 39 n	103 37 w	100.0	50.0	37.0
881111	06	03	08	10	01	3	70	1.0	14 42 n	103 51 w	100.0	57.0	44.0
881120	01	01	01			0	51	2.9	09 38 n	108 34 w	100.0	17.0	11.0
881124	02	11	03	05	01	3	05	0.0	15 51 n	110 51 w	100.0	82.0	65.0
881124	03	04	04			3	68	6.3	16 10 n	110 34 w	100.0	133.0	105.0
881125	01	12	02	05	01	4	68	0.0	18 13 n	108 21 w	100.0	128.0	100.0
881125	03	02	03	06	03	3	68	5.1	18 41 n	107 53 w	100.0	150.0	117.0
881128	01	08	01	08	02	4	51	1.4	17 20 n	114 06 w	100.0	88.0	57.0
881130	02	02	03	04	02	3	51	1.1	20 06 n	114 26 w	100.0	199.0	162.0

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
880824	01	01	01			4	56	0.1	10 44 n	092 34 w	100.0	6.0	6.0
880825			01			2	99	0.1	12 51 n	091 22 w	100.0	11.0	10.0
880825	05	01	06			2	31	1.1	13 25 n	091 07 w	88.0	8.0	8.0
880914	10	06	11	04	02	2	31	3.2	01 36 s	110 05 w	55.0	37.0	32.0
881006			01	07	01	5	99	0.2	04 09 n	080 42 w	100.0	10.0	8.0
881016	05	01	08	09	01	1	38	0.4	08 42 n	092 14 w	77.0	91.0	70.0
881101			04	01	02	3	38	0.0	17 58 n	104 51 w	100.0	8.0	8.0
881101	04	01	06	05	02	5	68	2.9	18 04 n	103 54 w	100.0	9.0	7.0
881108	03	01	03	11	03	1	68	0.1	17 33 n	102 36 w	100.0	6.0	4.0
881108	04	04	07	12	02	1	51	1.0	17 19 n	102 16 w	100.0	5.0	3.0
881108	05	01	08	12	02	1	68	2.1	17 18 n	102 15 w	100.0	4.0	4.0
881108	06	01	09	12	01	1	51	0.0	17 16 n	102 14 w	100.0	5.0	3.0
881108	08	01	11	01	01	0	70	0.1	17 08 n	102 02 w	100.0	11.0	9.0
881108	08	01	12	01	01	0	05	0.2	17 07 n	102 01 w	100.0	25.0	22.0
881108	10	01	14	03	01	1	68	3.9	17 03 n	101 55 w	100.0	7.0	5.0
881109	03	01	06	12	02	1	05	0.6	15 17 n	099 31 w	100.0	7.0	5.0
881109	06	01	10	02	01	2	46	0.2	15 07 n	099 15 w	1.3	297.0	213.0
881109	11	02	16	04	03	2	22	0.0	14 52 n	098 41 w	100.0	3.0	2.0
881110	04	02	07	08	02	1	51	1.1	14 35 n	099 38 w	100.0	6.0	4.0
881110	05	01	08	08	01	0	46	0.0	14 36 n	099 41 w	0.7	48.0	35.0
881110	08	01	10	10	01	0	22	0.2	14 28 n	100 05 w	100.0	8.0	7.0
881110	11	01	13	10	02	0	68	1.1	14 29 n	100 16 w	10.3	30.0	25.0
881110	12	01	15	11	02	1	51	0.7	14 30 n	100 20 w	100.0	7.0	5.0
881110	14	02	18	11	03	0	05	0.2	14 32 n	100 36 w	100.0	6.0	6.0
881111	01	01	01			2	70	0.2	14 40 n	102 46 w	100.0	2.0	2.0
881111	01	02	02	01	03	2	70	1.6	14 40 n	102 48 w	95.0	15.0	12.0
881111	02	01	03			2	70	0.3	14 38 n	102 50 w	22.5	10.0	9.0
881111	04	03	06	08	01	3	70	1.3	14 37 n	103 22 w	40.0	14.0	11.0
881111	07	03	09	11	02	3	05	0.1	14 42 n	104 04 w	100.0	1.0	1.0
881130	01	11	01	03	02	3	51	0.1	20 00 n	114 31 w	100.0	16.0	12.0

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
880824			14	09	02	3	15	5.4	11 43 n	092 05 w	100.0	15.0	14.0
880824	08	04	10	12	12	3	69	2.1	11 24 n	092 11 w	100.0	18.0	16.0
880824	09	01	11	09	12	3	31	3.6	11 32 n	092 08 w	35.0	120.0	106.0
880824	10	01	12	08	01	3	55	7.2	11 39 n	092 07 w	60.0	58.0	50.0
880825	06	01	07			2	31	3.8	13 24 n	091 06 w	100.0	200.0	150.0
880825	07	02	08			3	56	0.7	13 19 n	091 00 w	100.0	25.0	20.0
880825	09	01	11	09	01	3	31	0.0	13 16 n	090 53 w	100.0	25.0	20.0
880825	09	01	12	09	01	3	69	3.0	13 16 n	090 53 w	100.0	40.0	40.0
880921	01	04	01	01	02	4	55	0.1	07 21 n	093 26 w	18.3	22.0	18.0
880922	09	04	07	07	02	4	56	2.1	09 58 n	089 59 w	38.8	28.0	24.0
880923	04	01	03			3	56	1.8	10 52 n	088 17 w	58.0	108.0	90.0
881007	05	07	04			4	05	2.9	06 25 n	083 18 w	75.0	8.0	7.0
881008	05	01	03			4	05	4.8	07 48 n	083 58 w	80.0	0.0*	10.0
881009	01	03	02			3	22	1.5	08 46 n	086 31 w	45.0	62.0	52.0
881009	05	01	09	09	01	3	38	3.6	08 47 n	087 23 w	31.7	43.0	32.0
881009	07	05	11	11	02	3	05	4.3	08 51 n	087 42 w	46.7	21.0	17.0
881009	09	02	12			4	70	0.1	08 55 n	087 48 w	100.0	8.0	6.0
881009	09	03	13			4	22	2.6	08 56 n	087 53 w	38.7	23.0	13.0
881010	02	04	03			3	68	0.2	08 49 n	089 13 w	28.3	28.0	21.0
881016			07	09	01	1	38	1.4	08 46 n	092 10 w	10.0	0.0*	25.0
881016	05	01	08	09	01	1	38	0.4	08 42 n	092 14 w	23.0	91.0	70.0
881016	08	01	12	01	01	2	68	0.7	08 26 n	092 23 w	62.3	87.0	69.0
881018	05	04	06	07	01	3	70	0.1	08 59 n	093 39 w	100.0	10.0	9.0
881018	06	01	07	07	01	3	05	0.2	08 01 n	093 39 w	54.2	32.0	26.0
881020	01	05	01	08	03	3	70	3.7	11 29 n	094 45 w	50.0	14.0	13.0
881023	04	03	04	07	01	1	51	4.6	08 43 n	098 15 w	100.0	16.0	13.0
881024	02	03	03	09	02	2	05	7.1	09 20 n	098 45 w	3.0	67.0	62.0
881027	03	11	03			3	70	1.5	09 50 n	101 50 w	99.0	43.0	36.0
881031	01	05	01	05	03	3	68	4.2	16 36 n	106 48 w	13.7	90.0	115.0
881110	05	01	08	08	01	0	46	0.0	14 36 n	099 41 w	12.7	48.0	35.0
881110	09	01	11	10	02	0	51	3.6	14 27 n	100 07 w	1.0	341.0	268.0
881110	13	01	17	11	02	0	22	0.1	14 32 n	100 30 w	100.0	6.0	6.0
881111	02	01	03			2	70	0.3	14 38 n	102 50 w	77.5	10.0	9.0
881111	04	03	06	08	01	3	70	1.3	14 37 n	103 22 w	60.0	14.0	11.0
881111	07	04	10	11	02	2	51	4.7	14 43 n	104 12 w	93.3	14.0	10.0
881113			01	09	02	3	99	0.0	10 29 n	108 57 w	100.0	10.0	5.0
881113	01	10	02			5	70	0.1	10 29 n	108 57 w	100.0	2.0	2.0
881119	03	02	03	02	01	2	05	1.0	08 39 n	109 36 w	40.0	33.0	27.0
881120	04	04	04	06	01	1	68	1.3	10 10 n	109 06 w	100.0	13.0	10.0
881128	04	03	04	11	03	3	70	0.3	17 07 n	115 51 w	70.0	10.0	10.0

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
880815	02	07	02			4	64	0.9	03 05 n	104 35 w	100.0	4.0	3.0
880825	03	01	04			3	56	1.4	13 12 n	091 14 w	100.0	22.0	19.0
880927	01	02	01			4	64	3.0	03 45 n	082 42 w	100.0	13.0	12.0
880927	06	01	07			4	64	1.7	04 11 n	081 35 w	100.0	10.0	9.0
880928	02	04	02	01	02	3	64	2.7	05 08 n	079 51 w	100.0	10.0	8.0
881005	06	05	05			5	68	0.3	06 04 n	079 15 w	100.0	4.0	3.0
881017			07	12	12	3	68	1.1	05 50 n	093 45 w	100.0	6.0	5.0
881017	02	04	03	08	01	2	05	1.6	06 07 n	093 31 w	100.0	13.0	10.0
881024	02	03	02	09	02	2	05	0.0	09 23 n	098 44 w	25.0	40.0	33.0
881027	03	11	03			3	70	1.5	09 50 n	101 50 w	1.0	43.0	36.0
881108	13	01	17	04	02	2	70	0.3	16 48 n	101 40 w	100.0	25.0	18.0
881109	07	01	11	04	02	2	70	0.9	15 00 n	099 03 w	100.0	13.0	10.0
881109	11	03	17	04	03	2	22	1.1	14 51 n	098 39 w	100.0	9.0	7.0
881110	10	01	12	10	02	0	46	4.0	14 29 n	100 13 w	100.0	8.0	8.0
881111	02	04	04	07	02	3	46	0.0	14 39 n	103 02 w	69.3	4.0	3.0
881111	09	03	12			1	70	1.1	14 46 n	104 22 w	100.0	3.0	3.0
881112	03	02	03	08	03	3	05	0.0	13 11 n	105 45 w	100.0	0.0*	16.0
881120	04	02	03			1	05	1.0	10 04 n	109 01 w	100.0	2.0	2.0
881124	01	01	02			3	46	0.5	15 17 n	111 32 w	100.0	2.0	2.0
881128	04	03	04	11	03	3	70	0.3	17 07 n	115 51 w	30.0	10.0	10.0

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
881203			06	05	02	1	46	1.3	26 43 n	113 52 w	100.0	1.0	1.0
881203	03	01	05	05	03	2	70	3.7	26 37 n	113 44 w	100.0	85.0	55.0
881203	06	01	09	08	02	2	05	2.5	26 57 n	114 10 w	1.2	2742.0	2067.0

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
880808			01			5	15	0.0	n	w	100.0	0.0*	0.0*
880811	01	03	01			4	56	0.7	01 06 n	113 28 w	100.0	235.0	212.0
880909	04	02	03	12	01	4	64	2.4	06 11 n	112 22 w	85.7	213.0	183.0
880915			06	07	02	4	99	2.8	02 29 s	108 46 w	100.0	227.0	202.0

Table 3. (continued)

Sightings by Species

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

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
880928	03	01	03	01	02	3	69	3.0	05 07 n	079 51 w	100.0	287.0	270.0
881119	03	02	03	02	01	2	05	1.0	08 39 n	109 36 w	60.0	33.0	27.0

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
880914	04	02	07	09	01	2	55	4.5	00 51 s	109 56 w	100.0	18.0	16.0
881101			01			2	38	0.0	17 57 n	105 11 w	100.0	4.0	3.0
881108	12	02	16	04	02	1	05	1.1	16 51 n	101 41 w	100.0	16.0	13.0
881110	05	01	08	08	01	0	46	0.0	14 36 n	099 41 w	53.3	48.0	35.0
881110	11	01	13	10	02	0	68	1.1	14 29 n	100 16 w	89.7	30.0	25.0

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
880810			05			5	55	0.2	01 13 n	115 30 w	100.0	2.0	2.0
880813	02	13	01			4	69	2.2	01 22 n	107 58 w	100.0	15.0	13.0
881124	01	01	01			3	68	0.3	15 17 n	111 32 w	100.0	11.0	7.0

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
880822	09	01	10	04	01	4	56	1.8	09 02 n	094 53 w	4.0	91.0	82.0
880822	11	01	13			5	31	0.2	08 47 n	094 48 w	100.0	10.0	9.0
880822	12	01	14			5	64	0.1	08 44 n	094 47 w	100.0	19.0	17.0
880823			02			5	99	0.1	08 12 n	094 03 w	100.0	0.0*	0.0*
880824	09	01	11	09	12	3	31	3.6	11 32 n	092 08 w	65.0	120.0	106.0
880909	04	02	03	12	01	4	64	2.4	06 11 n	112 22 w	14.3	213.0	183.0
880912	04	01	03			4	55	0.3	03 47 n	112 01 w	75.0	6.0	6.0
880914	10	06	11	04	02	2	31	3.2	01 36 s	110 05 w	45.0	37.0	32.0
880914	12	02	13	04	03	3	55	0.1	01 50 s	110 01 w	100.0	9.0	8.0
880915	01	01	01			3	31	2.7	03 03 s	109 41 w	81.7	16.0	14.0
880915	08	02	07	07	03	4	64	0.9	02 27 s	108 28 w	100.0	16.0	14.0
880921	01	04	01	01	02	4	55	0.1	07 21 n	093 26 w	81.7	22.0	18.0
880922	09	04	07	07	02	4	56	2.1	09 58 n	089 59 w	61.2	28.0	24.0
880923	03	02	02	09	02	3	67	1.7	10 03 n	088 17 w	100.0	47.0	42.0
880923	04	01	03			3	56	1.8	10 52 n	088 17 w	42.0	108.0	90.0
881005	03	02	04			3	51	2.5	06 21 n	079 11 w	100.0	13.0	7.0
881008	05	01	03			4	05	4.8	07 48 n	083 58 w	20.0	0.0*	10.0
881009	01	01	01			3	70	0.0	08 46 n	086 23 w	100.0	5.0	5.0
881009	01	03	02			3	22	1.5	08 46 n	086 31 w	55.0	62.0	52.0
881009	05	01	09	09	01	3	38	3.6	08 47 n	087 23 w	68.3	43.0	32.0
881009	07	05	11	11	02	3	05	4.3	08 51 n	087 42 w	53.3	21.0	17.0
881009	09	03	13			4	22	2.6	08 56 n	087 53 w	36.2	23.0	13.0
881010			04			3	99	0.5	08 09 n	089 13 w	20.0	0.0*	20.0
881010	01	04	01			3	51	5.9	08 40 n	089 13 w	100.0	6.0	6.0
881010	02	04	03			3	68	0.2	08 49 n	089 13 w	71.7	28.0	21.0
881016			07	09	01	1	38	1.4	08 46 n	092 10 w	90.0	0.0*	25.0
881016	08	01	12	01	01	2	68	0.7	08 26 n	092 23 w	21.0	87.0	69.0
881018	06	01	07	07	01	3	05	0.2	08 01 n	093 39 w	45.8	32.0	26.0
881018	08	01	10	08	01	2	51	5.7	09 10 n	093 38 w	100.0	13.0	13.0
881027	03	07	02	07	01	3	68	2.6	09 38 n	101 48 w	100.0	6.0	5.0
881118	03	03	01	02	01	3	46	4.5	07 55 n	113 19 w	100.0	22.0	18.0
881201	06	03	04	07	02	1	68	2.6	23 37 n	112 17 w	100.0	12.0	6.0

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
880923	08	04	06			2	69	7.2	08 46 n	088 12 w	100.0	7.0	6.0
880927	02	03	02			4	55	1.7	03 45 n	082 33 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
880803	03	06	03	06	12	4	55	4.9	16 30 n	123 23 w	100.0	5.0	5.0
880811	04	03	04	06	02	3	55	4.2	01 04 n	112 32 w	100.0	11.0	9.0
880824	07	01	07	02	12	3	56	0.1	11 16 n	092 17 w	100.0	6.0	5.0
880824	10	01	12	08	01	3	55	7.2	11 39 n	092 07 w	40.0	58.0	50.0
880924	01	04	01			5	55	2.3	06 38 n	087 39 w	100.0	7.0	6.0
880924	01	08	03	09	02	5	69	5.4	06 21 n	087 35 w	100.0	15.0	12.0
881007	05	07	04			4	05	2.9	06 25 n	083 18 w	25.0	8.0	7.0
881008	03	03	01			5	51	1.3	07 41 n	083 36 w	100.0	1.0	1.0
881009			04			3	99	0.8	08 47 n	086 49 w	100.0	1.0	1.0
881010	02	01	02			3	70	5.3	08 27 n	089 14 w	100.0	3.0	3.0
881010	03	01	06			3	38	5.9	08 06 n	089 13 w	100.0	10.0	9.0
881020	01	05	01	08	03	3	70	3.7	11 29 n	094 45 w	50.0	14.0	13.0
881109	09	01	12	04	02	2	22	6.2	14 56 n	098 57 w	100.0	1.0	1.0
881119	01	07	01	01	02	2	46	0.1	08 31 n	109 53 w	100.0	1.0	1.0

Table 3. (continued)

Sightings by Species

species: PYGMY SPERM WHALE (KOGIA BREVICEPS) species code: 47

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
881202	01	02	13	07	02	2	05	1.9	24 55 n	112 25 w	100.0	1.0	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
880915	02	06	02			3	55	0.1	02 48 s	109 22 w	100.0	2.0	2.0
880923	06	02	04	11	01	3	55	3.1	10 21 n	088 15 w	75.0	4.0	4.0
880923	08	01	05	03	01	3	64	1.3	08 58 n	088 14 w	100.0	4.0	4.0
881015			13	01	03	1	38	0.0	10 48 n	091 02 w	100.0	1.0	1.0
881020	02	01	02	09	02	3	22	0.0	11 24 n	094 53 w	100.0	1.0	1.0
881110			21			0	51	0.0	14 33 n	100 44 w	100.0	1.0	1.0
881110			22			0	46	0.0	14 35 n	100 45 w	100.0	2.0	2.0

Table 3. (continued)

Sightings by Species

species: BEAKED WHALE (ZIPHIID) species code: 49

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
880914	02	01	02			2	56	0.1	00 20 s	110 01 w	100.0	4.0	3.0
880915	07	06	05			4	31	2.3	02 31 s	108 50 w	100.0	3.0	3.0
880922	01	06	01	01	02	4	64	0.6	09 28 n	090 44 w	100.0	3.0	3.0
880927	05	01	06			4	31	0.1	04 10 n	081 36 w	100.0	2.0	2.0
881009	04	02	08	09	01	3	38	0.3	08 47 n	086 22 w	100.0	1.0	1.0
881010	03	04	08	10	01	3	38	0.6	07 57 n	089 13 w	100.0	1.0	1.0
881015			14			2	68	1.7	10 46 n	091 05 w	100.0	1.0	1.0
881015	03	01	03	09	02	2	05	1.3	11 33 n	090 39 w	100.0	1.0	1.0
881015	03	04	05	10	01	1	05	0.2	11 25 n	090 42 w	100.0	1.0	1.0
881015	04	01	08	12	01	2	22	0.2	11 11 n	090 48 w	100.0	1.0	1.0
881016			03	08	02	1	99	0.0	09 04 n	092 00 w	100.0	1.0	1.0
881031	09	04	09	06	03	2	22	3.1	17 44 n	107 13 w	100.0	1.0	1.0
881108	04	01	04	12	03	1	22	2.2	17 30 n	102 33 w	100.0	1.0	1.0
881110	03	01	04	07	03	1	22	0.1	14 31 n	099 18 w	100.0	3.0	3.0
881111	09	04	13			1	05	2.6	14 46 n	104 27 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
880919	08	02	06			4	31	0.2	03 55 n	098 10 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
880914	01	01	01			2	56	0.1	00 16 s	110 01 w	100.0	4.0	4.0
880914	03	01	06	09	02	2	69	0.9	00 48 s	109 56 w	100.0	2.0	2.0
881014			11			1	38	1.9	11 35 n	090 11 w	100.0	1.0	1.0
881015			10	11	02	2	05	1.1	11 02 n	090 54 w	100.0	3.0	3.0

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
880821	04	02	04	02	01	4	64	1.8	06 20 n	096 29 w	100.0	1.0	1.0
880824	01	02	02			4	56	1.7	10 45 n	092 33 w	100.0	1.0	1.0
880824	01	02	03			4	55	7.0	10 45 n	092 33 w	100.0	3.0	3.0
881020	07	02	06	01	02	4	68	0.4	10 47 n	095 17 w	100.0	3.0	3.0
881030	04	01	04	06	02	3	05	0.9	15 04 n	106 05 w	100.0	1.0	1.0
881115	05	03	03	11	03	3	51	4.3	10 32 n	113 22 w	100.0	5.0	4.0
881202			05	04	02	3	68	2.5	24 24 n	112 04 w	100.0	2.0	1.0
881202	01	02	10	07	02	2	05	1.3	24 54 n	112 25 w	100.0	1.0	1.0
881202	01	02	12	07	02	2	70	2.8	24 54 n	112 25 w	100.0	1.0	1.0
881202	02	01	17	08	02	2	51	0.6	24 58 n	112 27 w	100.0	1.0	1.0
881202	03	01	18	08	02	2	68	3.6	25 02 n	112 28 w	100.0	0.0*	1.0
881202	04	01	21	08	02	2	46	0.4	25 07 n	112 29 w	100.0	1.0	1.0
881202	04	06	23	09	03	3	05	4.0	25 26 n	112 36 w	100.0	0.0*	1.0

Table 3. (continued)

Sightings by Species

species: MINKE WHALE (B.ACUTOROSTRATA) species code: 71

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
881128	02	05	02	10	02	3	68	1.4	17 13 n	115 32 w	100.0	2.0	2.0
881201	01	03	01	03	03	3	51	0.7	22 38 n	112 48 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
880809	04	10	04	06	03	3	64	1.5	01 12 n	117 12 w	100.0	2.0	2.0
880815	04	02	04			4	31	6.7	03 38 n	104 46 w	100.0	6.0	6.0
880919	02	01	02			4	64	0.0	02 58 n	099 31 w	100.0	1.0	1.0

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
880824	04	03	05	02	02	4	64	1.2	11 02 n	092 24 w	100.0	2.0	2.0
880824	12	02	15	09	03	2	55	0.3	11 49 n	091 54 w	100.0	1.0	1.0
881019	02	04	02	04	01	3	05	2.1	11 46 n	093 42 w	100.0	2.0	2.0
881020	06	01	05	12	01	5	05	1.3	10 58 n	095 11 w	100.0	1.0	1.0
881202			14	07	02	2	99	0.3	24 55 n	112 25 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
881202			01	06	03	1	68	0.4	24 19 n	111 47 w	100.0	2.0	2.0
881203	05	03	08	08	02	2	70	3.6	26 54 n	114 09 w	100.0	2.0	2.0

Table 3. (continued)

Sightings by Species

species: UNIDENTIFIED DOLPHIN species code: 77

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
880730	01	05	01			2	64	8.9	27 34 n	121 25 w	100.0	3.0	2.0
880730	02	06	03	04	02	2	55	5.4	26 53 n	121 16 w	100.0	4.0	4.0
880731			06			4	04	0.7	23 15 n	120 09 w	100.0	60.0	40.0
880802	02	06	02	12	12	5	69	7.7	17 43 n	119 50 w	100.0	4.0	4.0
880802	04	02	04	01	01	5	56	1.4	17 41 n	120 04 w	100.0	6.0	4.0
880803	04	04	04	01	01	5	64	1.0	16 27 n	123 43 w	100.0	25.0	20.0
880804	08	01	05	03	02	2	31	0.2	13 48 n	126 06 w	2.5	96.0	82.0
880806	01	18	02			4	69	3.8	08 10 n	125 46 w	100.0	0.0*	1.0
880806	01	18	03			4	31	6.0	08 10 n	125 46 w	100.0	5.0	3.0
880809	01	03	01			4	31	6.3	02 01 n	118 11 w	100.0	40.0	30.0
880810	03	01	04			5	67	3.3	01 13 n	115 31 w	100.0	0.0*	25.0
880812	04	01	05			4	56	9.2	02 04 n	110 09 w	100.0	1.0	1.0
880814	03	02	01			4	69	5.5	01 17 n	105 27 w	100.0	0.0*	2.0
880816			02			5	69	0.5	05 51 n	105 18 w	100.0	1.0	1.0
880816	01	07	01	01	03	5	56	1.3	05 48 n	105 20 w	100.0	5.0	2.0
880817	03	04	03	01	01	4	64	0.9	08 59 n	102 56 w	100.0	1.0	1.0
880820	01	03	01	01	02	4	55	0.2	02 48 n	097 51 w	100.0	2.0	2.0
880821			06			4	55	0.0	06 35 n	096 20 w	100.0	1.0	1.0
880821	01	04	01	02	02	4	64	1.5	05 50 n	096 31 w	12.5	55.0	47.0
880821	02	01	02	02	02	4	56	4.6	06 03 n	096 32 w	2.0	70.0	58.0
880822	01	01	01			4	56	5.4	08 45 n	095 19 w	100.0	1.0	1.0
880822	01	04	02	02	02	3	56	0.8	08 51 n	095 15 w	100.0	3.0	2.0
880822	02	01	03			3	55	6.7	08 56 n	095 13 w	100.0	20.0	15.0
880822	05	04	07	02	01	3	67	7.7	09 21 n	095 05 w	100.0	0.0*	0.0*
880822	06	01	08			3	64	5.6	09 24 n	095 02 w	100.0	30.0	15.0
880822	09	02	11	04	01	4	56	6.6	09 01 n	094 52 w	100.0	2.0	1.0
880824			09	12	12	3	04	0.2	11 24 n	092 11 w	100.0	9.0	9.0
880824	07	01	08	02	12	3	67	1.2	11 16 n	092 17 w	100.0	65.0	60.0
880825	05	01	06			2	31	1.1	13 25 n	091 07 w	12.0	8.0	8.0
880825	11	02	14			2	55	3.8	13 37 n	090 53 w	100.0	3.0	3.0
880906	01	01	01			5	55	0.2	11 14 n	104 10 w	100.0	2.0	2.0
880908	07	03	03	11	02	4	31	4.9	06 14 n	109 35 w	100.0	8.0	6.0
880912	02	03	02	10	02	4	69	5.2	03 51 n	112 08 w	100.0	0.0*	2.0
880912	04	01	03			4	55	0.3	03 47 n	112 01 w	25.0	6.0	6.0
880913	02	01	01			5	69	0.6	01 57 n	110 11 w	100.0	70.0	60.0
880914	02	01	03			2	55	6.5	00 20 s	110 01 w	100.0	1.0	6.0
880914	02	02	04			2	67	5.2	00 26 s	110 00 w	100.0	0.0*	10.0
880915	01	01	01			3	31	2.7	03 03 s	109 41 w	18.3	16.0	14.0
880916	09	04	07	07	03	3	55	4.7	00 42 s	105 43 w	100.0	0.0*	1.0
880917	03	03	03	12	12	4	55	1.2	00 18 n	104 08 w	100.0	0.0*	1.0
880920	01	06	01	01	02	5	69	0.4	05 02 n	096 37 w	100.0	7.0	7.0
880922	07	02	04	12	12	4	69	0.4	09 52 n	090 12 w	100.0	0.0*	1.0
880922	10	01	08	07	02	4	69	8.5	10 00 n	089 55 w	100.0	11.0	5.0

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
880924	01	05	02			5	55	0.0	06 35 n	087 38 w	100.0	10.0	10.0
880926	01	01	01			5	67	0.4	02 47 n	086 35 w	100.0	0.0*	2.0
880927	03	07	03			4	31	0.6	03 50 n	082 07 w	100.0	1.0	1.0
880927	04	07	04	08	01	5	56	10.4	04 01 n	081 43 w	100.0	0.0*	6.0
881005	01	01	01	09	02	3	51	0.3	06 55 n	079 01 w	100.0	0.0*	3.0
881010			04			3	99	0.5	08 09 n	089 13 w	80.0	0.0*	20.0
881013	03	01	03	05	02	4	38	7.1	06 42 n	090 43 w	100.0	0.0*	5.0
881014	01	03	01	04	01	3	68	4.5	10 59 n	090 05 w	100.0	0.0*	6.0
881014	01	03	02	04	01	3	51	0.5	10 59 n	090 05 w	100.0	0.0*	3.0
881014	02	01	03	05	01	3	22	9.9	11 06 n	090 02 w	100.0	0.0*	1.0
881016			02	08	03	1	99	0.7	09 16 n	091 56 w	100.0	40.0	30.0
881016	11	01	17	01	02	2	22	3.0	08 10 n	092 29 w	100.0	0.0*	30.0
881017	03	03	04			2	70	1.5	06 01 n	093 37 w	100.0	1.0	1.0
881017	04	02	05	09	01	3	38	2.9	05 54 n	093 40 w	10.0	215.0	173.0
881017	05	01	06	12	12	3	51	4.3	05 50 n	093 45 w	100.0	0.0*	1.0
881018	04	04	04	04	01	3	51	1.2	08 33 n	093 36 w	100.0	0.0*	15.0
881018	05	03	05	06	01	3	22	1.4	08 53 n	093 39 w	100.0	5.0	5.0
881018	07	01	08	08	01	2	51	6.9	09 07 n	093 38 w	100.0	0.0*	1.0
881018	09	03	11	08	02	2	05	7.9	09 20 n	093 35 w	100.0	0.0*	3.0
881027	01	06	01	03	02	4	38	1.1	08 51 n	101 53 w	100.0	0.0*	1.0
881031	02	02	02	05	02	3	38	7.8	16 42 n	106 55 w	100.0	0.0*	1.0
881031	07	01	06	09	02	2	22	2.5	17 28 n	107 16 w	100.0	0.0*	4.0
881031	09	01	08	08	02	2	51	2.0	17 41 n	107 17 w	100.0	0.0*	1.0
881108	04	01	05	12	03	1	22	2.1	17 30 n	102 32 w	100.0	0.0*	5.0
881108	15	01	19	04	03	2	68	0.5	16 43 n	101 29 w	100.0	40.0	30.0
881109			04	11	03	1	46	0.0	15 30 n	099 39 w	100.0	2.0	2.0
881109	01	02	02	12	03	2	05	5.8	15 38 n	099 51 w	100.0	0.0*	1.0
881109	03	02	07	01	01	1	05	3.4	15 16 n	099 30 w	100.0	0.0*	5.0
881109	11	01	15	04	03	2	68	5.9	14 55 n	098 44 w	100.0	0.0*	0.0*
881110			03			1	68	0.0	14 31 n	099 16 w	100.0	3.0	3.0
881110	02	01	02	07	03	1	46	3.9	14 31 n	099 15 w	100.0	1.0	1.0
881110	12	01	14	11	02	1	46	0.2	14 30 n	100 20 w	100.0	5.0	11.0
881110	14	03	19	11	03	0	05	5.6	14 33 n	100 40 w	100.0	0.0*	4.0
881110	15	02	20	11	03	1	51	3.0	14 33 n	100 43 w	100.0	0.0*	10.0
881111	02	04	04	07	02	3	46	0.0	14 39 n	103 02 w	30.7	4.0	3.0
881111	07	04	10	11	02	2	51	4.7	14 43 n	104 12 w	6.7	14.0	10.0
881112	01	01	01			1	51	0.0	13 19 n	105 40 w	100.0	1.0	1.0
881112	02	02	02	08	03	2	46	0.6	13 17 n	105 42 w	100.0	5.0	9.0
881115	04	01	02			4	68	7.4	10 27 n	112 43 w	100.0	85.0	17.0
881116	01	03	01	07	03	4	46	9.5	10 34 n	115 33 w	100.0	0.0*	3.0
881116	03	01	03	07	02	5	46	1.5	10 29 n	115 59 w	100.0	0.0*	1.0
881116	06	08	06	11	03	4	51	3.9	10 31 n	117 16 w	100.0	11.0	7.0
881120	02	03	02	05	03	1	51	6.9	09 42 n	108 42 w	100.0	0.0*	3.0

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
881121	02	03	02	08	02	5	22	1.1	12 36 n	109 39 w	100.0	0.0*	1.0
881125	01	07	01	03	02	4	51	0.2	17 53 n	109 45 w	100.0	1.0	1.0
881127	01	05	01	09	01	4	68	0.4	18 50 n	112 31 w	100.0	0.0*	2.0
881127	02	01	02	09	01	4	51	0.3	18 47 n	112 32 w	100.0	9.0	5.0
881127	07	05	04			4	70	0.2	18 04 n	112 33 w	100.0	0.0*	5.0
881129	06	03	02			5	22	0.8	17 40 n	116 41 w	100.0	0.0*	3.0
881202			02	06	03	2	22	4.6	24 21 n	111 51 w	100.0	0.0*	100.0
881202	01	02	11	07	02	2	22	0.3	24 54 n	112 25 w	100.0	1.0	8.0
881202	04	04	22	09	03	3	70	1.7	25 16 n	112 30 w	100.0	0.0*	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
880731	04	01	04			2	69	4.1	23 56 n	120 10 w	100.0	0.0*	0.0*
880812			02	10	02	3	64	2.0	01 55 n	110 34 w	100.0	1.0	1.0
880816	03	03	04	01	02	5	69	0.3	06 03 n	105 08 w	100.0	1.0	1.0
880820	03	09	03	09	02	4	69	1.2	04 01 n	097 18 w	100.0	1.0	1.0
880825	08	02	09			3	55	3.4	13 18 n	090 59 w	100.0	1.0	1.0
880909	02	05	01	07	01	4	64	2.0	06 10 n	111 57 w	100.0	1.0	1.0
880914	07	01	09	12	12	2	69	2.4	01 05 s	110 02 w	100.0	2.0	2.0
880914	11	01	12	04	02	2	64	2.6	01 44 s	110 04 w	100.0	3.0	3.0
880915	04	01	03			3	67	3.8	02 45 s	109 18 w	100.0	2.0	2.0
880916			03	07	01	3	04	0.7	01 01 s	106 14 w	100.0	3.0	3.0
880922			06	01	01	4	64	2.7	09 57 n	090 02 w	100.0	1.0	1.0
880923	06	02	04	11	01	3	55	3.1	10 21 n	088 15 w	25.0	4.0	4.0
881015			07			1	70	2.2	11 18 n	090 45 w	100.0	1.0	1.0
881015	01	02	01	09	03	2	70	0.2	11 50 n	090 24 w	100.0	1.0	1.0
881016	04	02	05	09	02	1	38	0.6	08 51 n	092 08 w	100.0	1.0	1.0
881016	07	01	10	12	12	1	70	4.0	08 36 n	092 20 w	100.0	3.0	3.0
881108	04	01	06	12	03	1	22	3.1	17 28 n	102 29 w	100.0	3.0	3.0
881111	08	01	11	11	02	1	46	1.6	14 45 n	104 16 w	100.0	2.0	2.0
881201	06	04	05	07	03	1	68	1.5	23 40 n	112 15 w	100.0	3.0	2.0
881201	07	01	06	07	03	1	68	3.8	23 41 n	112 14 w	100.0	0.0*	3.0

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
880803	01	01	01			4	69	3.7	16 51 n	122 26 w	100.0	1.0	1.0
880810	03	01	02			5	55	1.1	01 13 n	115 34 w	100.0	1.0	1.0
880810	04	03	06	11	01	4	55	1.4	01 13 n	115 24 w	100.0	1.0	1.0
880810	06	05	07	06	02	4	64	3.2	01 06 n	115 07 w	100.0	1.0	1.0
880811	03	07	03	07	01	4	31	2.5	01 06 n	112 38 w	100.0	1.0	1.0
880822			05			3	64	1.8	09 12 n	095 06 w	100.0	1.0	1.0
880907	01	12	02	12	12	4	55	8.9	07 46 n	106 26 w	100.0	1.0	1.0
880922			02	01	02	4	99	1.5	09 34 n	090 35 w	100.0	0.0*	1.0
881007	02	11	02	08	01	5	68	2.2	05 40 n	083 32 w	100.0	2.0	2.0
881009	02	03	05			3	51	5.0	08 47 n	086 49 w	100.0	2.0	2.0
881010	03	03	07	10	01	3	51	0.4	08 02 n	089 13 w	100.0	2.0	2.0
881017	02	01	02			3	68	10.4	06 16 n	093 25 w	100.0	0.0*	2.0
881202			16			1	05	1.4	24 57 n	112 26 w	100.0	3.0	3.0
881202	04	01	20	08	02	2	51	7.2	25 04 n	112 28 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
881107			01	12	03	2	22	0.1	18 50 n	104 20 w	100.0	0.0*	0.0*

Table 3. (continued)

Sightings by Species

species: UNIDENTIFIED CETACEAN species code: 96

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
880731			02			2	20	4.1	24 01 n	120 14 w	100.0	10.0	8.0
880801	01	07	01			5	67	0.1	21 15 n	119 17 w	100.0	0.0*	10.0
880804	04	05	03			3	56	1.9	14 10 n	125 51 w	100.0	4.0	3.0
880821	05	04	05	09	12	4	55	3.9	06 33 n	096 20 w	100.0	2.0	2.0
880825	04	02	05			2	55	4.1	13 17 n	091 13 w	100.0	2.0	2.0
881005	02	03	02			2	22	1.6	06 47 n	079 03 w	100.0	2.0	0.0*
881009	02	10	06	08	01	3	38	1.1	08 47 n	086 16 w	100.0	2.0	2.0
881009	03	01	07	08	01	3	38	0.0	08 47 n	086 19 w	100.0	4.0	2.0
881015	03	02	04	09	02	1	70	2.5	11 31 n	090 40 w	100.0	1.0	1.0
881021			12			3	68	0.1	07 48 n	097 25 w	100.0	0.0*	2.0
881109	01	06	03	11	03	1	46	0.7	15 31 n	099 40 w	100.0	1.0	1.0

Table 3. (continued)

Sightings by Species

species: UNIDENTIFIED OBJECT species code: 97

date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
yrmody			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best	low
881016	10	02	14	01	02	2	05	8.2	08 16 n	092 27 w	100.0	1.0	1.0

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
880806	01	04	01	10	02	4	64	6.5	08 38 n	125 23 w	100.0	2.0	1.0
880809	02	05	02			4	67	3.1	01 50 n	117 58 w	100.0	1.0	1.0
880810	03	01	03			5	67	8.0	01 13 n	115 34 w	100.0	1.0	1.0
880821	06	01	07	09	01	4	56	2.4	06 38 n	096 20 w	100.0	1.0	1.0
880825	10	02	13	09	02	2	56	6.0	13 30 n	090 54 w	100.0	0.0*	0.0*
880919	06	01	04			4	55	2.0	03 47 n	098 20 w	100.0	1.0	1.0
880919	07	01	05			4	67	0.4	03 49 n	098 18 w	100.0	1.0	1.0
880926	03	06	02	01	02	5	31	1.0	02 52 n	086 06 w	100.0	0.0*	1.0
881008	03	03	02			5	51	0.3	07 43 n	083 41 w	100.0	1.0	1.0
881009	02	01	03			3	51	5.6	08 46 n	086 38 w	100.0	4.0	4.0
881009	06	01	10	10	01	3	68	2.2	08 48 n	087 26 w	100.0	0.0*	3.0
881010	03	01	05			3	51	5.9	08 08 n	089 13 w	100.0	1.0	1.0
881110	13	01	16	11	02	0	22	0.7	14 31 n	100 29 w	100.0	1.0	1.0
881116	04	04	04	09	01	5	51	0.5	10 28 n	116 03 w	100.0	0.0*	1.0
881121	01	04	01	04	03	5	05	0.1	12 19 n	109 27 w	100.0	1.0	1.0
881127	06	03	03			4	46	0.9	18 22 n	112 35 w	100.0	1.0	1.0
881129	01	04	01			4	46	0.8	16 58 n	117 24 w	100.0	1.0	1.0
881130	02	01	02	03	02	3	68	6.9	20 01 n	114 29 w	100.0	0.0*	1.0
881202	04	01	19	08	02	2	51	0.0	25 04 n	112 28 w	100.0	1.0	1.0
881202	04	07	24	09	03	2	68	0.6	25 29 n	112 37 w	100.0	2.0	2.0
881203	05	01	07	06	02	3	46	4.6	26 48 n	113 56 w	100.0	1.0	1.0

Table 4. Marine mammal school size estimates for each observer, classified by species codes, for sightings encountered in the eastern tropical Pacific during July - September (Part A) and October through December (Part B), 1988.

A: Sightings encountered July through September, 1988.

			obs 31		obs 55		obs 56		obs 64		obs 67		obs 69	
	date	sight no.	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct
species 2														
	880802	03	90	40					26	45			70	55
	880803	02	550	5										
	880803	05			120	100	35	100			60	100		
	880803	06	320	5					105	14			240	8
	880804	02	110	80	90	70	100	90	75	80	90	72	140	70
	880804	04			45	100	55	100			50	100		
	880810	01	90	100					67	100			150	100
	880816	03	60	95					20	90			70	95
	880816	05			60	100	50	100			50	100		
	880820	02	580	60					260	55			425	75
	880821	01					50	95			60	80		
	880821	02			60	98	75	98			75	98		
	880821	03	320	70					210	90			400	85
	880822	09			600	100	700	100			550	100		
	880825	03	90	20	90	45	100	10			50	20		
	880904	02			250	70	130	70						
	880904	03			120	80	60	80	68	85	55	90		
	880904	04			50	50	70	40			65	50		
	880906	03	150	100					80	100			110	100
	880906	04	220	90					175	75			325	75
	880907	03	780	20					680	15			650	30
	880909	02			500	95	500	95			320	98		
	880912	01			175	90					180	98		
	880916	01			250	100	250	100			250	100		
	880921	03			250	80	150	96			160	90		
species 3														
	880821	03	320	30					210	10			400	15
	880825	10	1380	100	700	100	1200	100	1050	100	750	100	1650	100
	880904	04			50	50	70	60			65	50		
species 5														
	880805	01			150	100	85	100			60	100		
	880812	04	22	100					19	100			16	100
	880825	02	75	100									65	100
	880914	05	257	90	105	90	190	92	172	90	100	93	104	90
	880914	08	43	100	50	100	65	100	44	100	35	100	43	100
	880914	10	94	100	65	100	200	100	135	100	160	100	165	100
	880917	01	1700	100					1750	100	1800	100	2100	100
	880921	04	680	100	750	100	600	100	1050	100	500	100	1300	100
species 10														
	880825	03	90	80	90	55	100	90			50	80		
	880904	02			250	30	130	30						
	880904	03			120	20	60	20	68	15	55	10		

Table 4A. (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 64 best est.	obs 64 pct	obs 67 best est.	obs 67 pct	obs 69 best est.	obs 69 pct
species 10														
	880906	04	220	10					175	25			325	25
	880921	03			250	20	150	4			160	10		
species 11														
	880802	01	55	100	60	100	40	100	21	100	25	100	90	100
	880802	03	90	60					26	55			70	45
	880803	02	550	95										
	880803	06	320	95					105	86			240	92
	880804	01	18	100	30	100	35	100	11	100	45	100	18	100
	880804	02	110	20	90	30	100	10	75	20	90	28	140	30
	880804	05	100	15										
	880816	03	60	5					20	10			70	5
	880820	02	580	40					260	45			425	25
	880907	03	780	80					680	85			650	70
	880909	02			500	5	500	5			320	2		
	880912	01			175	10					180	2		
species 13														
	880730	02	14	100	23	100	18	100	13	100	18	100	28	100
	880731	01	95	100	120	100	60	100	70	100	48	100	160	100
	880731	03	60	100	65	100	70	100	54	100	68	100	110	100
	880804	05	100	80										
	880809	03	25	100							45	100		
	880811	02	90	100			100	100	56	100			80	100
	880812	01	60	100	35	100	60	100	56	100	80	100	37	100
	880812	06			70	100	150	100			84	100		
	880812	07			50	100	70	100			30	100		
	880815	01			40	100	40	100			30	100		
	880815	03					20	100			25	100		
	880817	01	65	100					88	100			45	100
	880817	02			20	100	15	100			25	100		
	880817	04	60	100					56	100			65	100
	880818	01			300	100	225	100			200	100		
	880820	04			15	100	30	100			35	100		
	880822	04	75	100	65	100	60	100	88	100	70	100	120	100
	880822	06			20	100	25	100			30	100		
	880822	10			65	95	75	95			133	98		
	880822	12	95	100					58	100			90	100
	880824	04	31	100					45	100			18	100
	880824	06			60	100	60	100			85	100		
	880824	13			25	100								
	880906	02	95	100					70	100			120	100
	880906	05			50	100	100	100			100	100		
	880907	01	6	100					8	100			8	100
	880908	01			110	100	100	100						
	880908	02					20	100					30	100
	880909	04			90	100	200	100			80	100		
	880912	04			40	100	100	100			30	100		
	880914	05	257	10	105	10	190	8	172	10	100	7	104	10

Table 4A. (continued)

			obs 31		obs 55		obs 56		obs 64		obs 67		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														
	880915	04	53	100	60	100	110	100	68	100	50	100	80	100
	880916	02			35	100	40	100			25	100		
	880916	04	43	100	60	100	105	100	84	100			105	100
	880916	05	47	100	50	100	115	100	75	100	50	100	110	100
	880916	06	23	100	35	100	70	100	58	100	50	100	55	100
	880917	04			25	100	60	100			40	100		
	880918	01	24	100					35	100			35	100
	880919	01	16	100					5	100			6	100
	880919	03			65	100	110	100			50	100		
	880921	02	55	100					70	100			65	100
	880922	03			30	100	80	100			50	100		
	880922	05	45	100	45	100	50	100	38	100	45	100	45	100
	880922	09	10	100									14	100
	880923	01	40	100					66	100			65	100
	880924	04	60	100	50	100			65	100			115	100
	880924	05	45	100	125	100					110	100		
	880927	05	90	100					52	100			90	100
	880928	01					10	100						
	880928	04	65	100	50	100	70	100	45	100	50	100	60	100
species 15														
	880824	01					6	100						
	880825	06	8	88										
	880914	11	26	60					38	50			47	55
species 18														
	880824	10	22	100					10	100			21	100
	880824	11	155	35	110	40	130	25	135	40	70	30	120	40
	880824	12			58	60								
	880825	07	200	100										
	880825	08					25	100						
	880825	11	25	100										
	880825	12											40	100
	880921	01			30	25	20	25			17	5		
	880922	07	24	58	25	40	30	30	34	45	28	15	26	45
	880923	03	150	55	125	75	150	40	72	70	100	40	54	68
species 21														
	880815	02							2	100			5	100
	880825	04			18	100	30	100	22	100	20	100		
	880927	01	16	100					10	100			14	100
	880927	07	12	100					8	100				
	880928	02	12	100					7	100				
species 26														
	880811	01			275	100	350	100			80	100		
	880909	03	146	82	351	93	276	91	191	86	101	74	216	88

Table 4A. (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 64 best est.	obs 64 pct	obs 67 best est.	obs 67 pct	obs 69 best est.	obs 69 pct
species 31														
	880928	03	420	100	160	100							280	100
species 32														
	880914	07			17	100	25	100	14	100	11	100	23	100
species 33														
	880813	01	20	100					11	100			15	100
species 34														
	880822	10			65	5	75	5			133	2		
	880822	13	8	100					10	100			11	100
	880822	14	22	100					16	100				
	880824	11	155	65	110	60	130	75	135	60	70	70	120	60
	880909	03	146	18	351	7	276	9	191	14	101	26	216	12
	880912	03			6	75								
	880914	11	26	40					38	50			47	45
	880914	13			8	100	10	100			8	100		
	880915	01	16	75					16	85			15	85
	880915	07							16	100				
	880921	01			30	75	20	75			17	95		
	880922	07	24	42	25	60	30	70	34	55	28	85	26	55
	880923	02			40	100					55	100		
	880923	03	150	45	125	25	150	60	72	30	100	60	54	32
species 37														
	880923	06	7	100	7	100			7	100			6	100
	880927	02			7	100					5	100		
species 46														
	880803	03			5	100								
	880811	04			8	100	12	100			12	100		
	880824	07									6	100		
	880824	12			58	40								
	880924	01			7	100								
	880924	03											15	100
species 48														
	880915	02			2	100	2	100						
	880923	04			4	75								
	880923	05							4	100				
species 49														
	880914	02			3	100	4	100						
	880915	05	3	100										
	880922	01							3	100				
	880927	06	2	100										

Table 4A. (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 64 best est.	obs 64 pct	obs 67 best est.	obs 67 pct	obs 69 best est.	obs 69 pct
species	51													
	880919	06	2	100										
species	61													
	880914	01			4	100	6	100			3	100		
	880914	06											2	100
species	70													
	880821	04							1	100				
	880824	02					1	100						
	880824	03			4	100	2	100						
species	72													
	880809	04	2	100					3	100			2	100
	880815	04	5	100					8	100			6	100
	880919	02	1	100					1	100			1	100
species	75													
	880824	05							2	100			2	100
	880824	15			1	100	1	100			1	100		
species	77													
	880730	01							3	100				
	880730	03			4	100								
	880802	02											4	100
	880802	04					6	100						
	880803	04	30	100					12	100			32	100
	880804	05	100	5										
	880806	03	5	100										
	880809	01	40	100										
	880812	05					1	100						
	880816	01					5	100						
	880817	03							1	100				
	880820	01			2	100								
	880821	01					50	5			60	20		
	880821	02			60	2	75	2			75	2		
	880822	01					1	100						
	880822	02					3	100						
	880822	03			20	100								
	880822	08							30	100				
	880822	11					2	100						
	880824	08									65	100		
	880825	06	8	12										
	880825	14			3	100								
	880906	01			2	100								
	880908	03			8	100								
	880912	03			6	25								
	880913	01											70	100
	880914	03			1	100								
	880915	01	16	25					16	15			15	15

Table 4A. (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 64 best est.	obs 64 pct	obs 67 best est.	obs 67 pct	obs 69 best est.	obs 69 pct
species 77														
	880920	01											7	100
	880922	08							11	100				
	880924	02			10	100								
	880927	03	1	100										
species 78														
	880816	04											1	100
	880820	03											1	100
	880825	09			1	100								
	880909	01							1	100				
	880914	09											2	100
	880914	12							3	100				
	880915	03									2	100		
	880923	04			4	25								
species 79														
	880803	01											1	100
	880810	02			1	100								
	880810	06			1	100								
	880810	07							1	100				
	880811	03	1	100										
	880907	02			1	100								
species 96														
	880804	03					4	100						
	880821	05			2	100								
	880825	05			2	100								
species 98														
	880806	01							2	100				
	880809	02									1	100		
	880810	03									1	100		
	880821	07					1	100						
	880919	04			1	100					1	100		
	880919	05									1	100		

Table 4B. Sightings encountered October through December, 1988.

		obs 5		obs 22		obs 38		obs 46		obs 51		obs 64		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 5																	
881010	11	300	100	135	100	375	100			180	100			330	100	500	100
881013	01	400	100	230	100									285	100	750	100
881013	02	200	100	75	100	125	100							135	100	475	100
881016	06	550	100	850	100	750	100			800	100			520	100	425	100
881016	09	350	100	480	100	375	100							280	100	425	100
881016	16	2000	100	5500	100											2000	100
881016	18					550	100			300	100			325	100		
881018	09					475	100			425	100			200	100		
881018	12	700	100			900	100			780	100			420	100	650	100
881018	13					875	100			350	100			400	100		
881020	07	150	100	240	100	225	100			300	100			165	100	125	100
881020	08	125	100	280	100	425	100									150	100
881101	07	120	100	65	100									110	100	65	100
881130	04							300	100	400	100						
881201	02													270	100	200	100
881201	03	275	100	480	100			180	100	600	100			225	100	300	100
881201	07	500	100	800	100			300	100					310	100	525	100
881202	07	8	100														
881203	01	4000	100	5500	100									1125	100	3500	100
881203	02															1250	100
881203	03	1800	100														
881203	09	1750	99	3800	99			500	98	3500	99			2400	99	4500	99
species 10																	
881014	10	750	45	350	25	350	37			450	40			420	25	950	35
881015	02	250	45	235	67	250	60			270	65			255	65	450	80
881021	04	275	75	240	88	325	77			400	80			290	82	400	60
881021	08	500	40	370	3	475	37			450	20			260	20	450	40
881021	10					650	10			800	10			650	20		
881023	07	140	45	35	33	275	45			250	40			180	35	450	55
881023	10	250	50											200	50	350	65
881027	04	275	50	280	20	435	40			375	30			245	35	325	35
881028	01					33	100			13	100			23	100		
881028	02	650	60	250	55											850	75
881030	01	1300	100	850	100											1100	100
881101	03					400	100										
881101	05					375	45			600	50			790	50		
881101	08					450	20			700	10			800	30		
881108	01							120	15	90	10			150	12		
881108	10	275	100	350	100			150	100	460	100			190	100	300	100
881108	15	225	100	150	100			80	100	200	100			100	100	175	100
881108	18	325	75													450	85
881109	08	750	40													550	55
881109	09							150	50	300	60			240	55		
881109	10							250	49	450	49			190	39		
881109	13	700	45	700	20			100	15	400	30			260	20	400	35
881109	14							80	30	300	40			125	20		
881110	01							70	50	350	60			185	75		
881110	05	260	99	210	94			115	85	125	99			125	99	400	95

Table 4B. (continued)

			obs 5		obs 22		obs 38		obs 46		obs 51		obs 64		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																	
	881014	10	750	55	350	75	350	63			450	60			420	75	950	65
	881015	02	250	55	235	33	250	40			270	35			255	35	450	20
	881017	05									130	95						
	881018	03	75	100	23	100	25	100			25	100			57	100	60	100
	881021	04	275	25	240	12	325	23			400	20			290	18	400	40
	881021	06	90	100	55	100									125	100	100	100
	881021	08	500	60	370	97	475	63			450	80			260	80	450	60
	881021	10					650	90			800	90			650	80		
	881023	01					400	100			185	100			290	100		
	881023	02					110	100			200	100			160	100		
	881023	07	140	55	35	67	275	55			250	60			180	65	450	45
	881023	10	250	50											200	50	350	35
	881027	04	275	50	280	80	435	60			375	70			245	65	325	65
	881027	06	35	100	70	100									38	100	45	100
	881028	02	650	40	250	45											850	25
	881030	02	275	100	100	100	120	100									475	100
	881031	01									50	75			130	90		
	881101	02					40	100			18	100			27	100		
	881101	05					375	55			600	50			790	50		
	881101	08					450	80			700	90			800	70		
	881108	01							120	85	90	90			150	88		
	881108	02							50	100	60	100			80	100		
	881108	18	325	25													450	15
	881109	05							180	100	450	100			370	100		
	881109	08	750	60													550	45
	881109	09							150	50	300	40			240	45		
	881109	10							250	50	450	50			190	59		
	881109	13	700	55	700	80			100	85	400	70			260	80	400	65
	881109	14							80	70	300	60			125	80		
	881110	01							70	50	350	40			185	25		
	881110	05	260	1	210	6			115	15	125	1			125	1	400	5
	881110	09	250	80	235	70			120	10	400	65			160	80	475	85
	881110	11	375	24	340	40			160	4	500	39			320	9	350	14
	881111	05	450	100					60	100	185	100			380	100	375	100
	881115	01							50	80	55	90			280	97		
	881116	02															125	20
	881119	04							50	100	50	100			125	100		
	881121	03	300	100	450	100									290	100	550	100
	881128	03							40	100	35	100			85	100		
species	5																	
	881005	03	125	100	240	100	225	100							130	100	60	100
	881007	01	110	100											120	100	85	100
	881007	03	300	100	140	100											225	100
	881010	10	700	100	640	100	1000	100			1650	100			440	100	775	100

Table 4B. (continued)

	date	sight no.	obs 5 best est.	obs 5 pct	obs 22 best est.	obs 22 pct	obs 38 best est.	obs 38 pct	obs 46 best est.	obs 46 pct	obs 51 best est.	obs 51 pct	obs 64 best est.	obs 64 pct	obs 68 best est.	obs 68 pct	obs 70 best est.	obs 70 pct
species	10																	
	881110	09	250	20	235	30			120	90	400	35			160	20	475	15
	881110	11	375	75	340	59			160	95	500	60			320	90	350	85
	881115	01							50	20	55	10			280	3		
	881116	02															125	80
	881116	05							60	100	45	100			90	100		
species	11																	
	881119	02			35	100			40	100	50	100			110	100	125	100
species	13																	
	881013	04	125	100	32	100	60	100			47	100			130	100	225	100
	881014	05	100	100	125	100	60	100							155	100	550	100
	881014	06	85	100	60	100	75	100			50	100			140	100	475	100
	881014	08					65	100			40	100			135	100		
	881015	06	60	100	56	100	60	100			110	100			89	100	375	100
	881015	11	85	100	47	100	47	100			70	100			90	100	175	100
	881015	12	175	100	64	100	75	100							320	100	170	100
	881016	01													125	100		
	881016	04	80	100	45	100	45	100			57	100			185	100	65	100
	881016	11	135	100	95	100	150	100			67	100			160	100	125	100
	881016	15	45	100	32	100									88	100	45	100
	881016	19					57	100			40	100			100	100		
	881017	01	20	100													6	100
	881017	08					75	100			73	100			185	100		
	881017	09	60	100														
	881018	01					160	100			150	100			260	100		
	881018	02	80	100	65	100					34	100			100	100	35	100
	881019	03					40	100			50	100			180	100		
	881020	04					115	100			100	100			128	100		
	881020	09					37	100			40	100			85	100		
	881021	01															5	100
	881021	02	90	100	70	100	65	100			108	100			185	100	125	100
	881021	03	75	100	35	100	150	100			85	100			260	100	75	100
	881021	05	65	100	130	100											125	100
	881021	07					52	100			150	100			135	100		
	881021	09					27	100			85	100			70	100		
	881021	13			40	100									140	100	50	100
	881023	03	40	100	39	100	42	100			35	100			60	100	60	100
	881023	05	55	100	45	100	55	100			88	100			130	100	65	100
	881023	06			18	100									24	100	25	100
	881023	08	40	100	16	100					20	100			80	100	30	100
	881023	09					7	100			5	100			7	100		
	881024	01	65	100	36	100									75	100	55	100
	881024	02															40	75
	881024	04	30	100	70	100											65	100
	881026	01															20	100
	881027	05					20	100			12	100			65	100		
	881030	03	40	100	90	100											125	100
	881030	05					90	100			74	100			240	100		

Table 4B. (continued)

	date	sight no.	obs 5 best est.	obs 5 pct	obs 22 best est.	obs 22 pct	obs 38 best est.	obs 38 pct	obs 46 best est.	obs 46 pct	obs 51 best est.	obs 51 pct	obs 64 best est.	obs 64 pct	obs 68 best est.	obs 68 pct	obs 70 best est.	obs 70 pct
species 13																		
	881031	03	75	100	65	100	77	100			130	100			120	100	125	100
	881031	04	40	100	80	100									160	100	150	100
	881031	05	35	100	25	100									75	100	65	100
	881111	02															15	5
	881111	07							30	100	60	100			60	100		
	881111	08	50	100	17	100			40	100	45	100			65	100	125	100
	881120	01							15	100	20	100			17	100		
	881124	03	45	100	75	100											125	100
	881124	04							100	100	80	100			220	100		
	881125	02							80	100	130	100			175	100		
	881125	03							70	100	150	100			230	100		
	881128	01							60	100	80	100			125	100		
	881130	03	145	100	260	100			140	100	200	100					250	100
species 15																		
	881016	08					65	75							118	79		
	881101	06					8	100			9	100			10	100		
	881108	03	6	100					5	100	6	100			6	100		
	881108	07									6	100			4	100		
	881108	08			3	100			3	100	4	100			4	100		
	881108	09							6	100	3	100			6	100		
	881108	11	11	100														
	881108	12	25	100														
	881108	14									6	100	8	100	8	100		
	881109	06	8	100	10	100											4	100
	881109	10							250	1	450	1			190	2		
	881109	16	4	100	3	100											3	100
	881110	07							7	100	6	100			4	100		
	881110	08							50	1	35	1						
	881110	10			4	100											11	100
	881110	13							20	20	16	1			53	10		
	881110	15									7	100						
	881110	18	6	100													6	100
	881111	01			1	100							3	100			3	100
	881111	02															15	95
	881111	03	9	25													10	20
	881111	06	15	50	9	20											17	50
	881111	09	1	100														
	881130	01							12	100	15	100			20	100		
species 18																		
	881007	04	8	75														
	881009	02	75	45	50	50									65	50	60	35
	881009	09					55	30			38	15			35	50		
	881009	11	20	40	12	66											30	34
	881009	12			5	100									12	100	6	100
	881009	13													23	50		
	881010	03					35	20			20	15			30	50		
	881016	08					65	25							118	21		

Table 4B. (continued)

	date	sight no.	obs 5 best est.	obs 5 pct	obs 22 best est.	obs 22 pct	obs 38 best est.	obs 38 pct	obs 46 best est.	obs 46 pct	obs 51 best est.	obs 51 pct	obs 64 best est.	obs 64 pct	obs 68 best est.	obs 68 pct	obs 70 best est.	obs 70 pct
species 18																		
	881016	12	175	70	57	72	85	70							104	72	65	90
	881018	06	11	100	12	100											8	100
	881018	07	25	40	26	48	63	55			27	65			23	50	30	67
	881020	01	14	50														
	881023	04					12	100			18	100			17	100		
	881027	03	60	99	45	99											23	99
	881031	01									50	25			130	10		
	881110	08							50	29	35	9						
	881110	11	375	1	340	1			160	1	500	1			320	1	350	1
	881110	17			5	100									6	100	6	100
	881111	03	9	75													10	80
	881111	06	15	50	9	80											17	50
	881111	10							15	95	15	95			11	90		
	881113	02															2	100
	881119	03	35	40	35	35											30	45
	881120	04							15	100	9	100			15	100		
	881128	04	10	70	10	70											10	70
species 21																		
	881005	05					3	100							4	100		
	881017	03	12	100	12	100											15	100
	881024	02															40	25
	881027	03	60	1	45	1											23	1
	881108	17	20	100	25	100											30	100
	881109	11			9	100											17	100
	881109	17	12	100	6	100											10	100
	881110	12							5	100					10	100		
	881111	04							3	67	5	75			5	66		
	881111	12															3	100
	881120	03															2	100
	881124	02							2	100								
	881128	04	10	30	10	30											10	30
species 22																		
	881203	05															85	100
	881203	09	1750	1	3800	1			500	2	3500	1			2400	1	4500	1
species 31																		
	881119	03	35	60	35	65											30	55
species 32																		
	881108	16	18	100	20	100			15	100					15	100	11	100
	881110	08							50	70	35	90						
	881110	13							20	80	16	99			53	90		
species 33																		
	881124	01							10	100	12	100			12	100		

Table 4B. (continued)

	date	sight no.	obs 5 best est.	obs 5 pct	obs 22 best est.	obs 22 pct	obs 38 best est.	obs 38 pct	obs 46 best est.	obs 46 pct	obs 51 best est.	obs 51 pct	obs 64 best est.	obs 64 pct	obs 68 best est.	obs 68 pct	obs 70 best est.	obs 70 pct
species	34																	
	881005	04									22	100			5	100		
	881009	01			4	100											6	100
	881009	02	75	55	50	50									65	50	60	65
	881009	09					55	70			38	85			35	50		
	881009	11	20	60	12	34											30	66
	881009	13													23	50		
	881010	01									6	100			6	100		
	881010	03					35	80			20	85			30	50		
	881016	12	175	30	57	28	85	30							104	28	65	10
	881018	07	25	60	26	52	63	45			27	35			23	50	30	33
	881018	10									13	100						
	881027	02													6	100		
	881118	01							22	100	23	100			22	100		
	881201	04													12	100		
species	46																	
	881007	04	8	25														
	881008	01									1	100						
	881010	02	3	100													3	100
	881010	06									10	100						
	881020	01	14	50														
	881109	12			1	100												
	881119	01							1	100	1	100			1	100	1	100
species	47																	
	881202	13	1	100														
species	48																	
	881020	02	1	100	1	100											1	100
species	49																	
	881009	08					1	100										
	881010	08					1	100			1	100						
	881015	03	1	100														
	881015	05	1	100													1	100
	881015	08	1	100	1	100									1	100		
	881031	09									1	100						
	881108	04	1	100	1	100												
	881110	04	3	100													3	100
	881111	13															1	100
species	70																	
	881020	06									3	100					3	100
	881030	04	1	100														
	881115	03							4	100	5	100						
	881202	10	1	100														
	881202	12															1	100
	881202	17									1	100					1	100
	881202	21							1	100								

Table 4B. (continued)

	date	sight no.	obs 5 best est.	obs 5 pct	obs 22 best est.	obs 22 pct	obs 38 best est.	obs 38 pct	obs 46 best est.	obs 46 pct	obs 51 best est.	obs 51 pct	obs 64 best est.	obs 64 pct	obs 68 best est.	obs 68 pct	obs 70 best est.	obs 70 pct
species	71																	
	881128	02	2	100					2	100	2	100			2	100	2	100
	881201	01	2	100					2	100	2	100			2	100	2	100
species	75																	
	881019	02	2	100	2	100	2	100			2	100			2	100	2	100
	881020	05	2	100	1	100											1	100
species	76																	
	881203	08	2	100	2	100					2	100			2	100	2	100
species	77																	
	881017	04															1	100
	881017	05									130	5						
	881018	05			5	100												
	881108	19													40	100		
	881110	02							1	100								
	881110	14							5	100								
	881111	04							3	33	5	25			5	34		
	881111	10							15	5	15	5			11	10		
	881112	01									1	100						
	881112	02							5	100								
	881115	02							10	100					160	100		
	881116	06							10	100	9	100			13	100		
	881125	01									1	100						
	881127	02							8	100	8	100			11	100		
	881202	11															1	100
species	78																	
	881015	01															1	100
	881016	05					1	100										
	881016	10															3	100
	881108	06	3	100	3	100												
	881111	11							2	100								
	881201	05									3	100			3	100		
species	79																	
	881007	02													2	100		
	881009	05									2	100						
	881010	07									2	100			1	100		
	881202	20									1	100						
species	96																	
	881005	02			2	100												
	881009	06					2	100										
	881009	07					4	100										
	881015	04															1	100
	881109	03							1	100					1	100		

Table 4B. (continued)

		obs 5		obs 22		obs 38		obs 46		obs 51		obs 64		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 97																	
881016	14	1	100														
species 98																	
881008	02									1	100						
881009	03									4	100						
881010	05									1	100						
881110	16															1	100
881121	01	1	100														
881127	03							1	100								
881129	01							1	100					1	100		
881202	19									1	100						
881202	24													2	100		
881203	07							1	100								

Table 5. Summary of marine mammal sightings encountered in the eastern tropical Pacific during July 28 through December 6, 1988.

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	72	26	46	115.15(72)	200.10(71)	147.37(71)
SPINNER DOLPHIN (STENELLA LONGIROSTRIS)	3	3	1	2	348.63(3)	489.12(3)	403.93(3)
COMMON DOLPHIN (DELPHINUS DELPHIS)	5	44	42	2	635.40(43)	894.89(40)	719.72(40)
COASTAL SPOTTED DOLPHIN (S.A. GRAFFMANI)	6	2	2	0	0.00(0)	0.00(0)	0.00(0)
EASTERN SPINNER DOLPHIN (STENELLA LONGIROSTRIS)	10	37	6	31	124.56(37)	218.89(37)	162.01(37)
WHITEBELLY SPINNER DOLPHIN (STENELLA LONGIROSTRIS)	11	13	3	10	85.67(13)	119.06(13)	98.82(13)
STRIPED DOLPHIN (S. COERULEOALBA)	13	117	112	5	59.40(116)	98.99(114)	74.68(114)
ROUGH-TOOTHED DOLPHIN (STENO BREDANENSIS)	15	30	21	9	7.83(30)	12.23(30)	9.66(30)
BOTTLENOSED DOLPHIN (TURSIOPS TRUNCATUS)	18	40	13	27	17.30(40)	28.79(38)	21.89(38)
RISSO'S DOLPHIN (GRAMPUS GRISEUS)	21	20	16	4	7.43(20)	11.28(19)	8.43(19)
PACIFIC WHITE-SIDED DOLPHIN (LAGENORHYNCHUS OBLIQUIDENS)	22	3	2	1	26.93(3)	56.33(3)	39.63(3)
FRASER'S DOLPHIN (LAGENODELPHIS HOSEI)	26	4	3	1	190.28(3)	256.13(3)	214.85(3)
UNIDENTIFIED DOLPHIN	77	95	85	10	8.26(93)	21.91(45)	12.05(54)
SPOTTED DOLPHIN (STENELLA ATTENUATA)	90	1	1	0	0.00(0)	0.00(0)	0.00(0)
totals		481	333				

Table 5. (continued)

species name (scientific name)	species code	species sightings total	pure	mixed	estimated-mean-school-size low /(n)	high /(n)	best /(n)
MELON-HEADED WHALE (PEPONOCEPHALA ELECTRA)	31	2	1	1	143.10(2)	167.90(2)	153.40(2)
PYGMY KILLER WHALE (FERESA ATTENUATA)	32	5	3	2	14.62(5)	23.48(5)	18.10(5)
FALSE KILLER WHALE (PSEUDORCA CRASSIDENS)	33	3	3	0	7.33(3)	16.00(3)	9.33(3)
PILOT WHALE (GLOBICEPHALA SP.)	34	32	13	19	15.49(31)	24.28(28)	19.31(28)
KILLER WHALE (ORCINUS ORCA)	37	2	2	0	5.50(2)	7.50(2)	6.50(2)
SPERM WHALE (PHYSETER MACROCEPHALUS)	46	14	11	3	5.80(14)	8.01(14)	6.66(14)
PYGMY SPERM WHALE (KOGIA BREVICEPS)	47	1	1	0	2.00(1)	1.00(1)	1.00(1)
DWARF SPERM WHALE (KOGIA SIMUS)	48	7	6	1	2.00(7)	2.25(7)	2.00(7)
BEAKED WHALE (ZIPHIID)	49	15	15	0	1.60(15)	1.80(15)	1.67(15)
UNID. MESOPLODONT (MESOPLODON SP.)	51	1	1	0	2.00(1)	3.00(1)	2.00(1)
CUVIER'S BEAKED WHALE (ZIPHIUS CAVIROSTRIS)	61	4	4	0	2.50(4)	3.00(4)	2.50(4)
RORQUAL (BALAENOPTERA SP.)	70	13	13	0	1.54(13)	2.27(11)	1.82(11)
MINKE WHALE (B.ACUTOROSTRATA)	71	2	2	0	2.00(2)	2.00(2)	2.00(2)
BRYDE'S WHALE (B. EDENI)	72	3	3	0	3.00(3)	4.00(3)	3.00(3)
BLUE WHALE (B. MUSCULUS)	75	5	5	0	1.40(5)	1.60(5)	1.40(5)
HUMPBACK WHALE (MEGAPTERA NOVAEANGLIAE)	76	2	2	0	2.00(2)	2.50(2)	2.00(2)
UNIDENTIFIED SMALL WHALE	78	20	19	1	1.74(19)	2.01(18)	1.72(18)
UNIDENTIFIED LARGE WHALE	79	14	14	0	1.43(14)	1.50(12)	1.42(12)
UNIDENTIFIED CETACEAN	96	11	11	0	3.30(10)	5.25(8)	3.11(9)
UNIDENTIFIED OBJECT	97	1	1	0	1.00(1)	1.00(1)	1.00(1)
UNIDENTIFIED WHALE	98	21	21	0	1.30(20)	1.50(16)	1.31(16)
totals		178	151				

Table 6. Summary of distance searched, dolphin schools detected, and rates of encountering dolphins by observers aboard the Jordan in the eastern tropical Pacific during July 28 through December 6, 1988.

	Distance Searched (km)	Percent Distance Searched	Number Schools Detected	Percent Schools Detected	Detection Rate (Schools/ 1000 km)	S.E. Detection Rate	Number[1] Days Searched
All Data	10922	100	367	100	33.60	3.63	95
Inshore	6473	59	281	77	43.41	5.29	63
Middle	3516	32	67	18	19.06	2.83	35
West	657	6	12	3	18.26	4.83	5
South	276	3	7	2	25.39	9.78	3
Sea State Conditions							
Calm	1559	14	125	34	80.16	12.99	35
Rough	9362	86	242	66	25.85	2.94	88
Visibility Conditions							
Good	9675	89	329	90	34.00	3.69	94
Poor	1247	11	38	10	30.48	6.34	62
Observers							
5	2624	24	39	11	14.86	3.48	47
22	2618	24	27	7	10.31	2.38	47
31	2704	25	28	8	10.36	2.45	47
38	1311	12	22	6	16.78	3.36	24
46	1336	12	17	5	12.72	4.22	25
51	2648	24	37	10	13.99	3.20	50
55	2943	27	30	8	10.19	2.35	44
56	2943	27	29	8	9.85	2.34	44
64	2695	25	17	5	6.31	1.74	46
67	2943	27	20	5	6.80	1.58	44
68	2658	24	36	10	13.55	3.18	49
69	2682	25	20	5	7.46	1.79	46
70	2623	24	45	12	17.16	3.49	47

Table 6. (continued)

	Distance Searched (km)	Percent Distance Searched	Number Schools Detected	Percent Schools Detected	Detection Rate (Schools/ 1000 km)	S.E. Detection Rate	Number[1] Days Searched
Teams[2]							
Team 1	2624	24	110	30	41.93	6.85	47
Team 2	2704	25	65	18	24.04	3.53	47
Team 3	1311	12	57	16	43.49	9.82	24
Team 4	2943	27	79	22	26.84	4.74	44

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

[2]Team 1 members were observers 5,22,70; Team 2 members were observers 31,64,69; Team 3 members were observers 38,51,68; and Team 4 members were observers 55,56,67. 1340.88nm of trackline was searched when either both or neither of the team leaders were on duty and is not used for team analysis; team leader for team #3 replaced by observer #46 on leg 4.

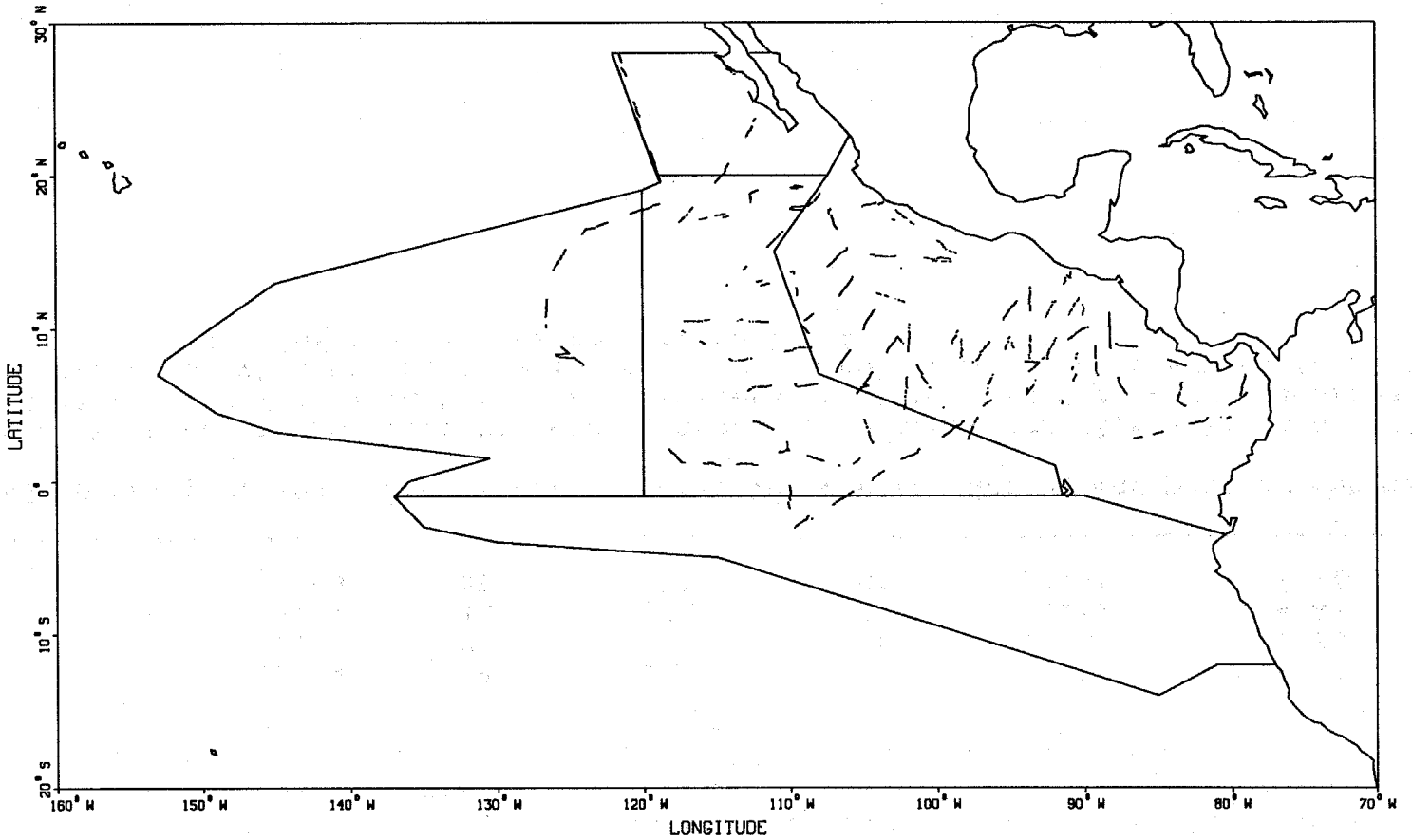


Figure 1. Tracklines surveyed by the NOAA Ship David Starr Jordan from July 28 through December 6, 1988, in the eastern tropical Pacific.

CRUISE #	YEAR	MONTH	DAY
1	4	6	8

RESEARCH SHIP
MARINE MAMMAL
DAILY EFFORT RECORD

SERIES #	LEG #	START OF LEG: TIME	START OF LEG: SURFACE TEMP. °F & 10ths	START OF LEG: BEAU #	START OF LEG: FOG/ RAIN	START OF LEG: HORZ SUN	START OF LEG: VERT SUN	END OF LEG TIME	COMPASS COURSE °T	VESSEL SPEED KTS & 10ths	POSITION: ONE OR MORE PER SERIES: LATITUDE	POSITION: N/S	POSITION: LONGITUDE	POSITION: E/W	OBSERVER POSITION: LEFT BIND.	OBSERVER POSITION: RIGHT BIND.	OBSERVER POSITION: 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.

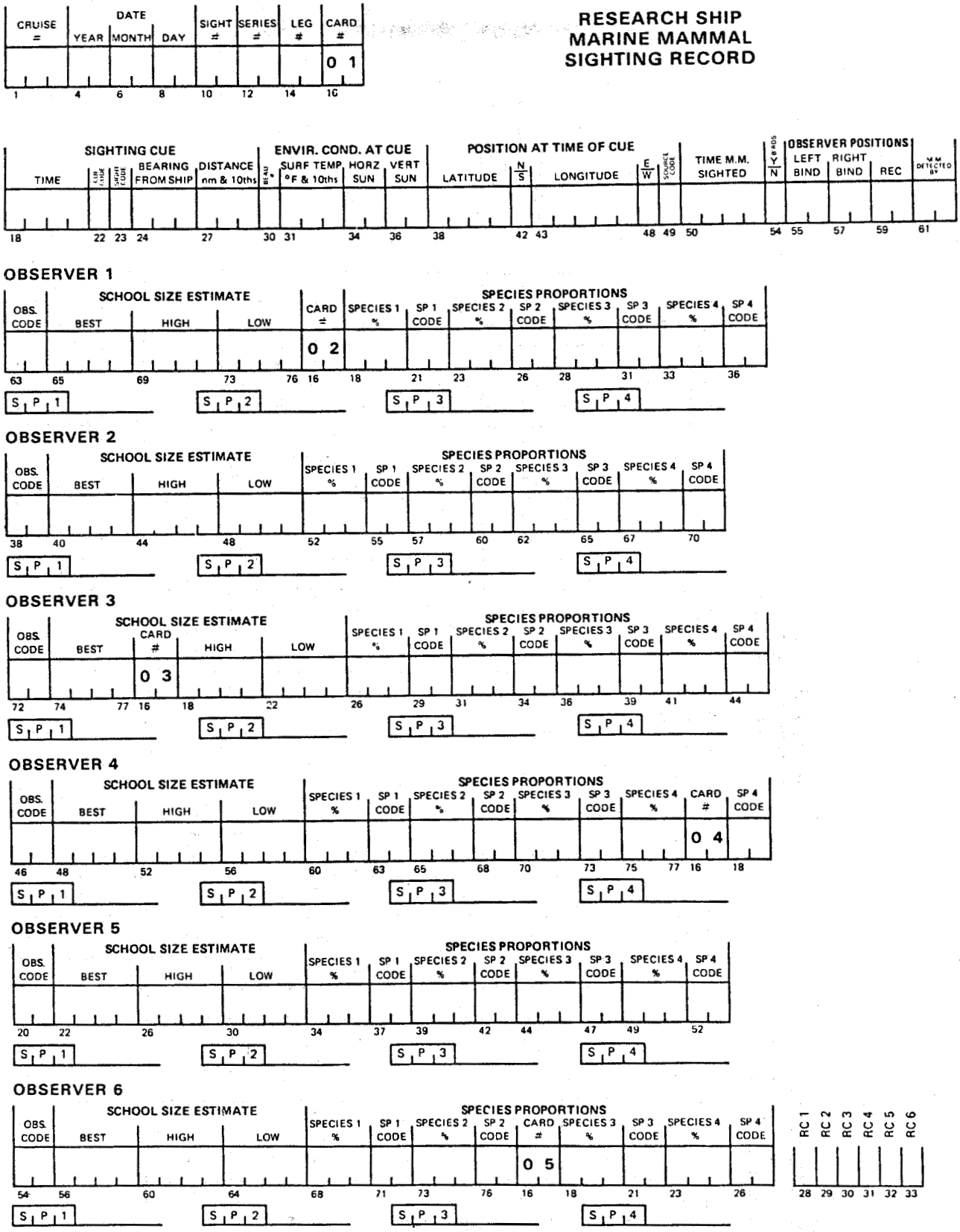
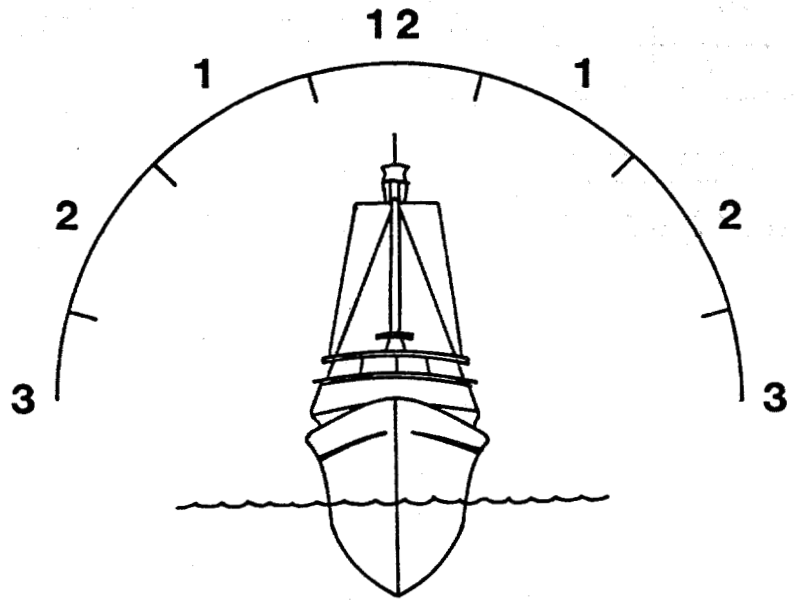
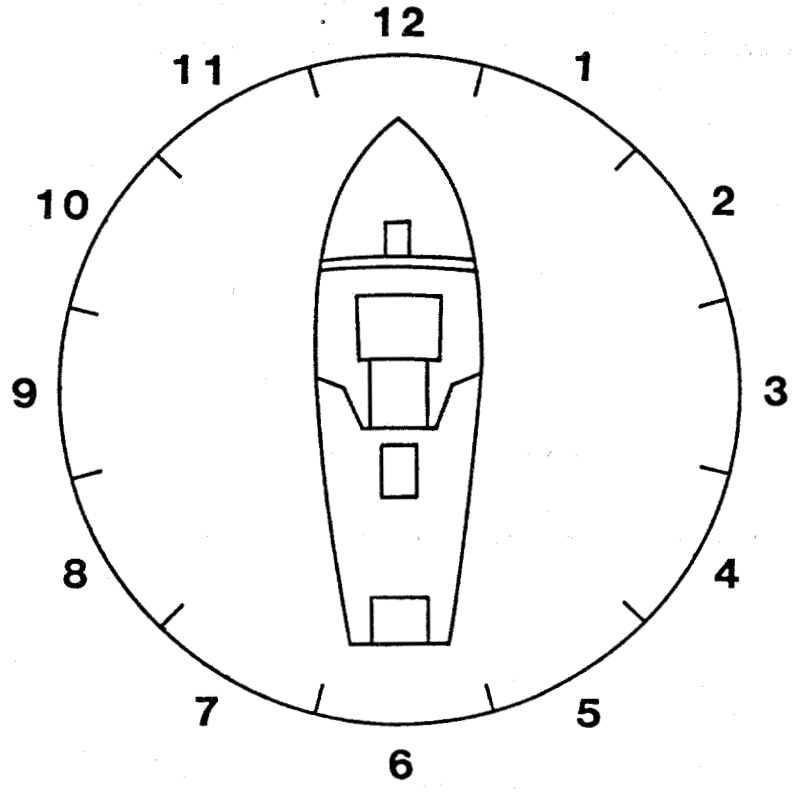


Figure 3. Research ship marine mammal sighting record.



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.

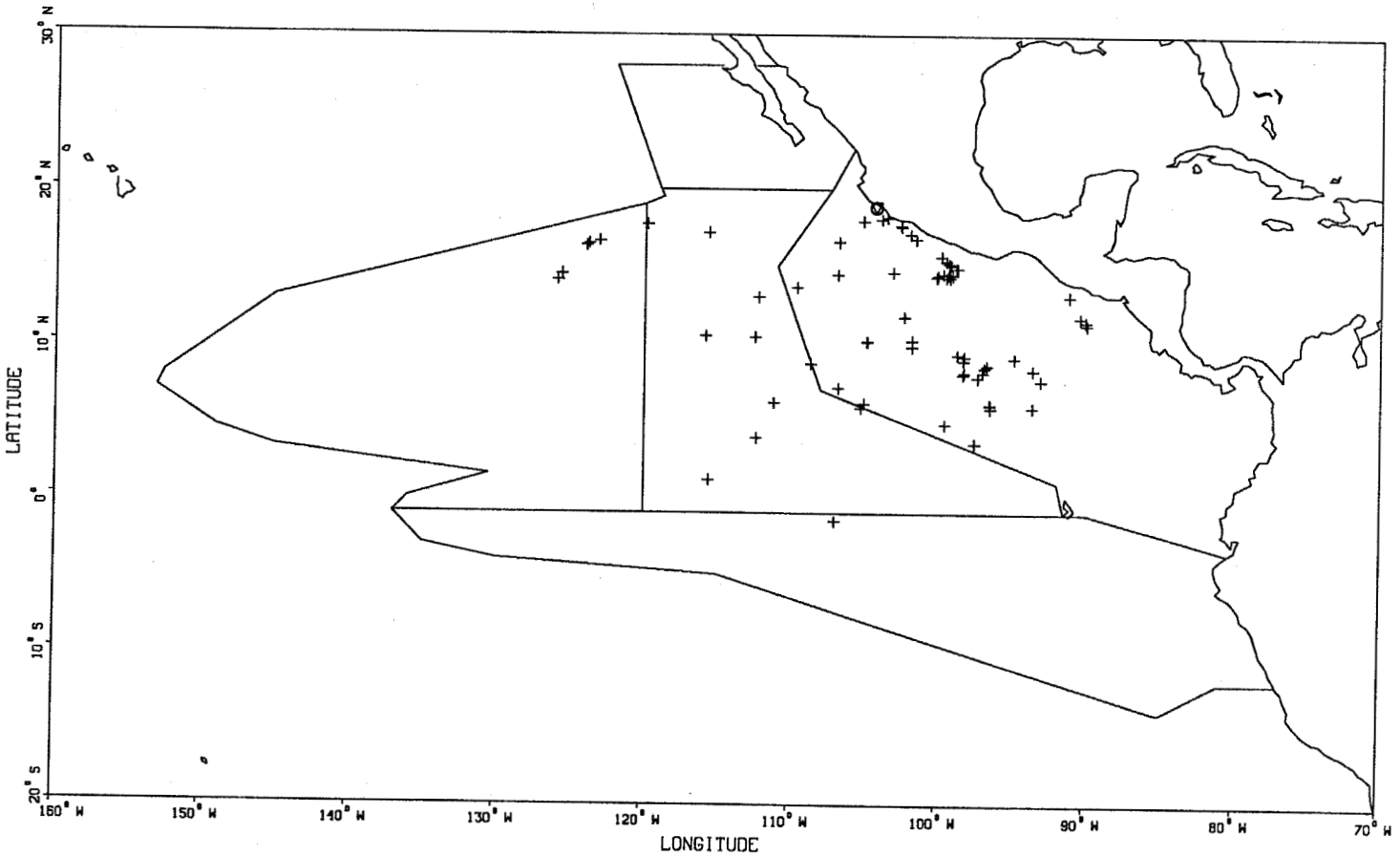


Figure 6. Offshore (+), coastal (o) and unidentified (▽) spotted dolphins detected from aboard the NOAA Ship David Starr Jordan from July 28 through December 6, 1988, in the eastern tropical Pacific.

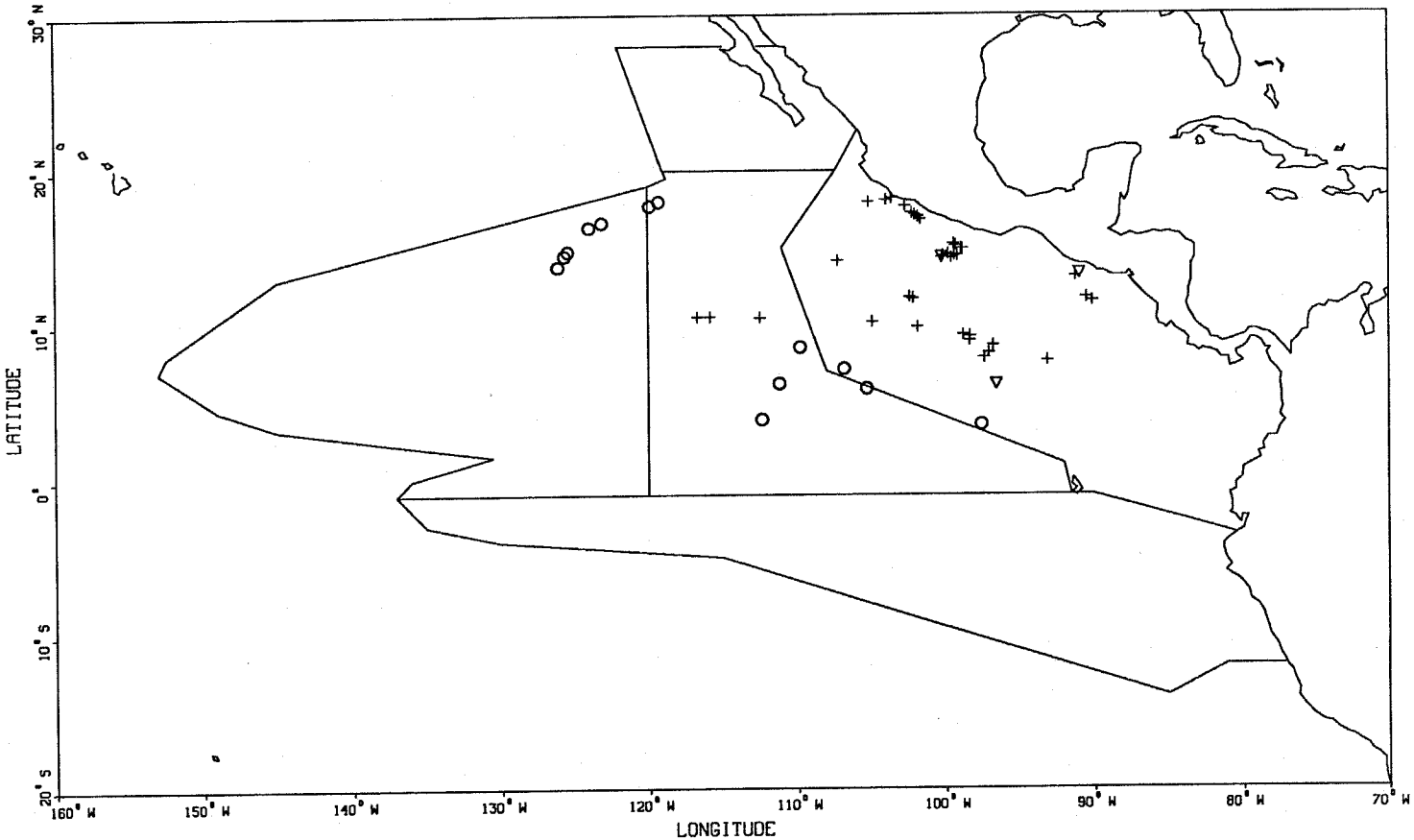


Figure 7. Eastern (+), whitebelly (○) and unidentified (▽) spinner dolphins detected from aboard the NOAA Ship David Starr Jordan from July 28 through December 6, 1988, in the eastern tropical Pacific.

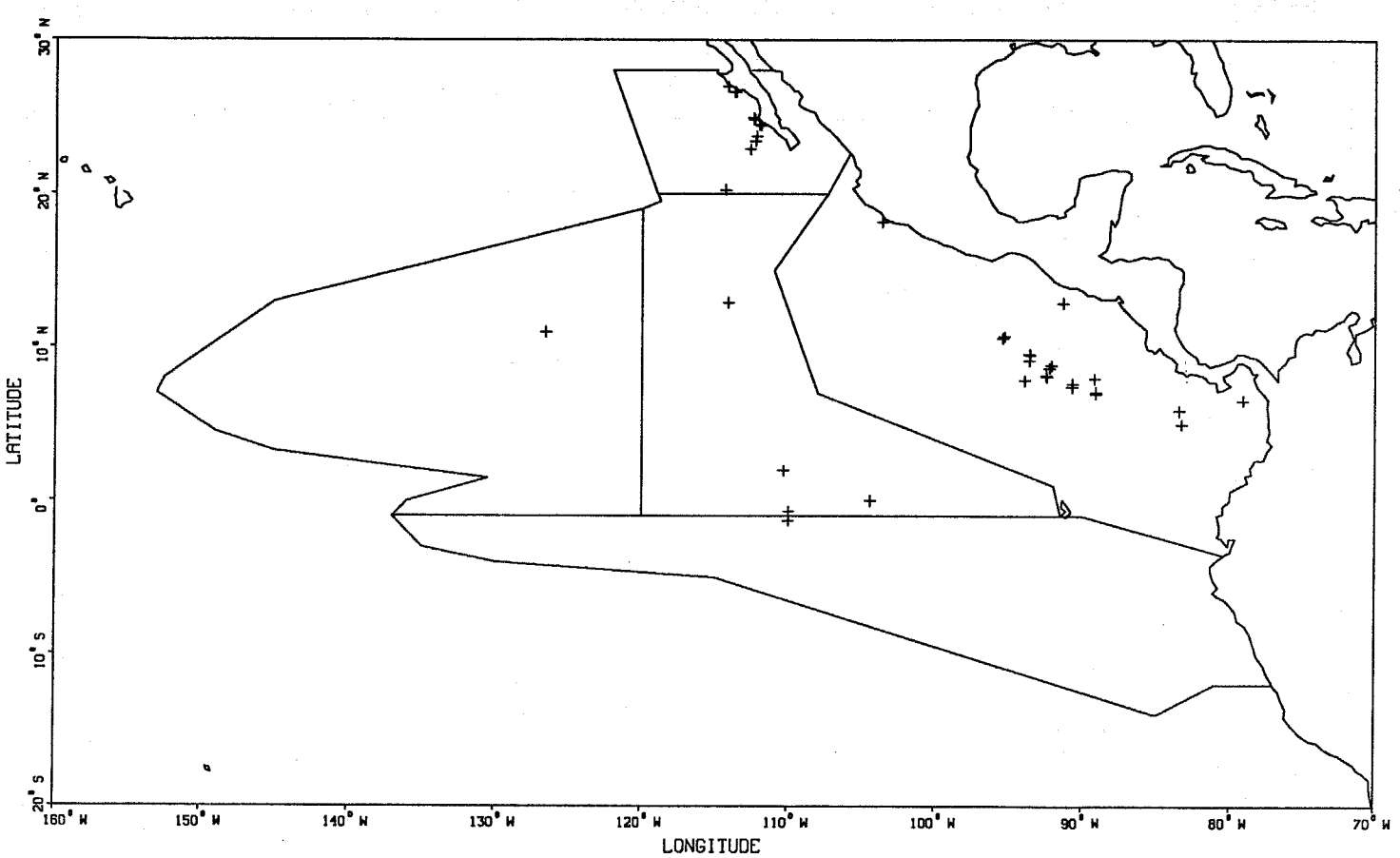


Figure 8. Common dolphins (+) detected from aboard the NOAA Ship David Starr Jordan from July 28 through December 6, 1988, in the eastern tropical Pacific.

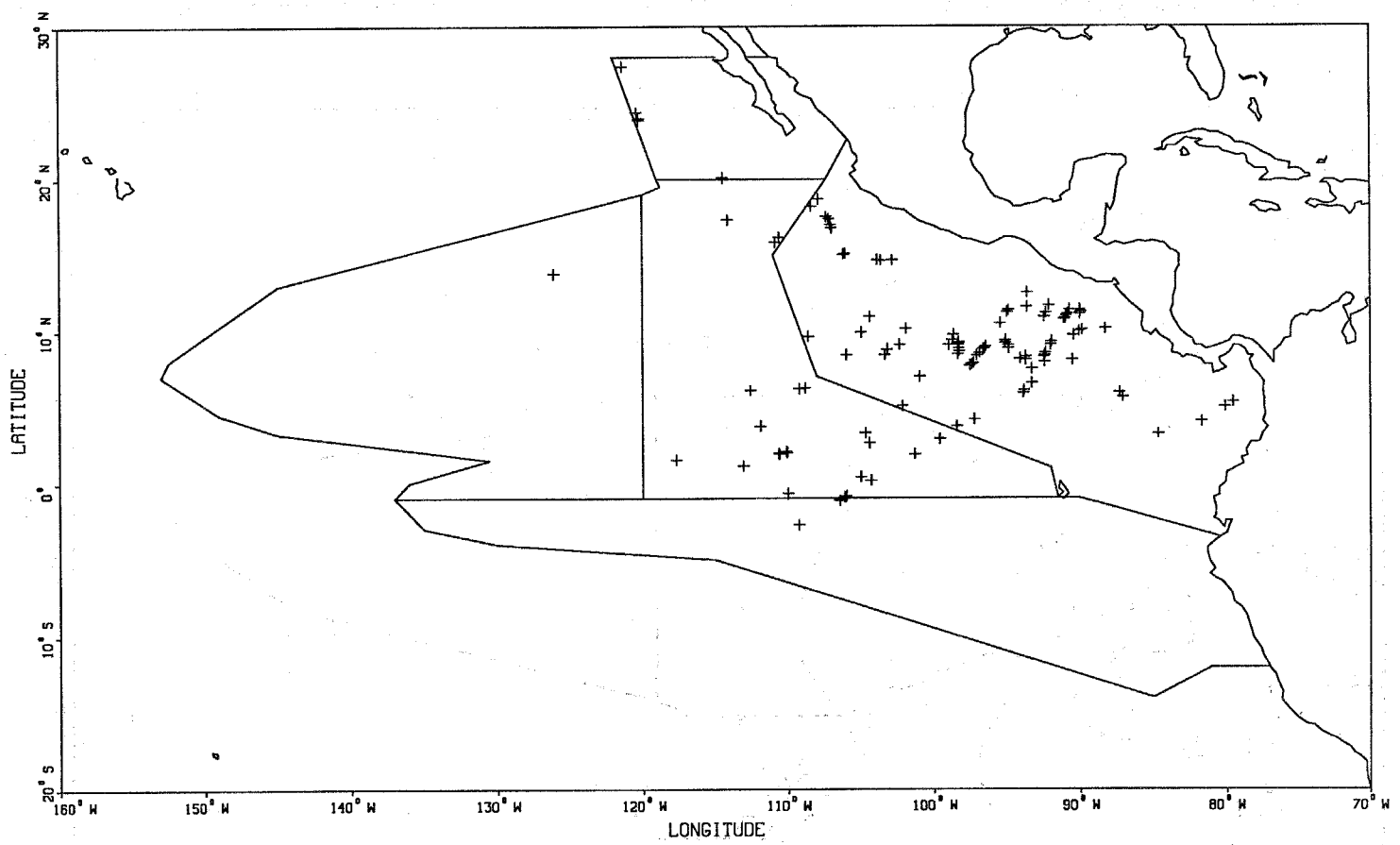


Figure 9. Striped dolphins (+) detected from aboard the NOAA Ship David Starr Jordan from July 28 through December 6, 1988, in the eastern tropical Pacific.

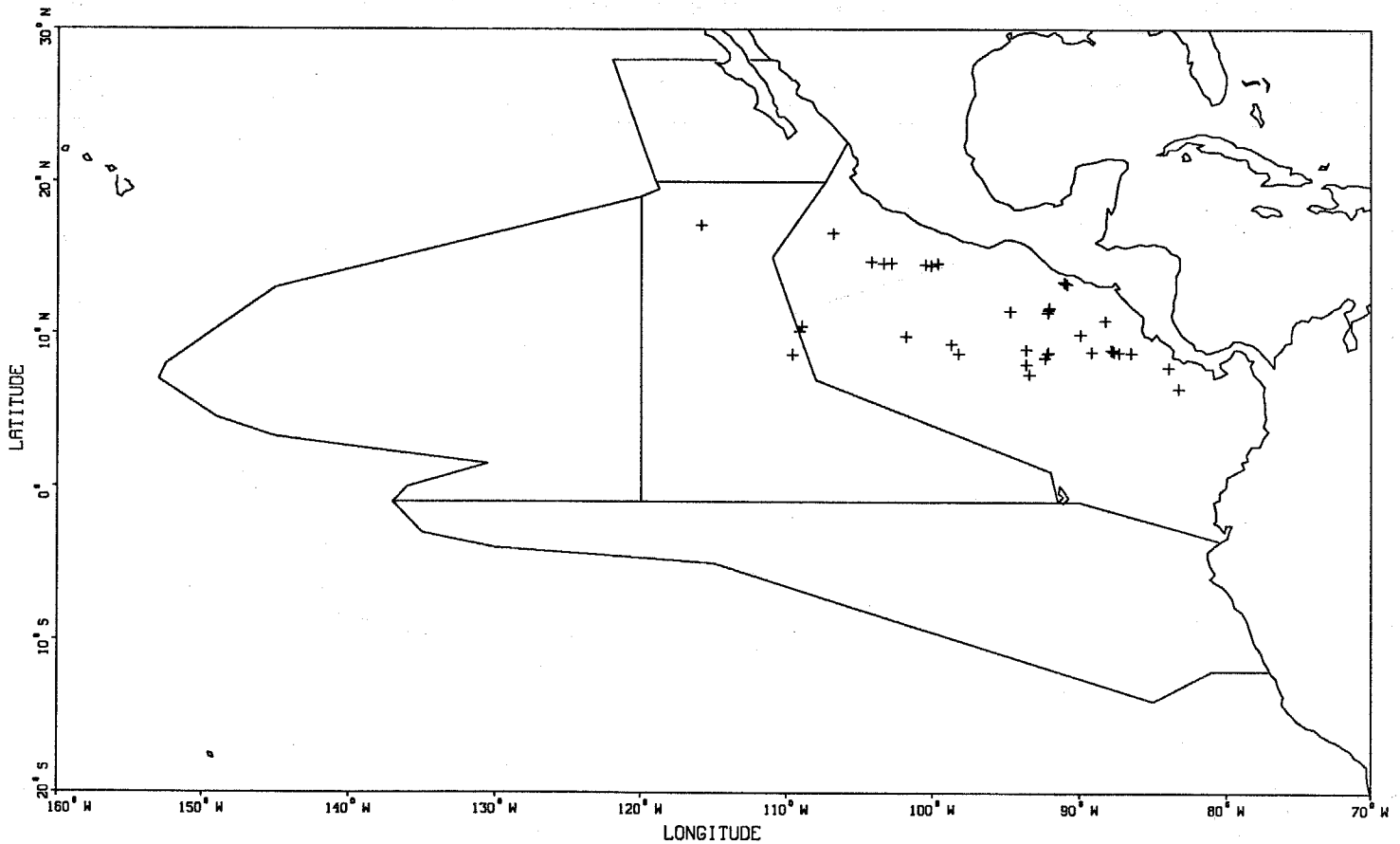


Figure 10. Bottlenose dolphins (+) detected from aboard the NOAA Ship David Starr Jordan from July 28 through December 6, 1988, in the eastern tropical Pacific.

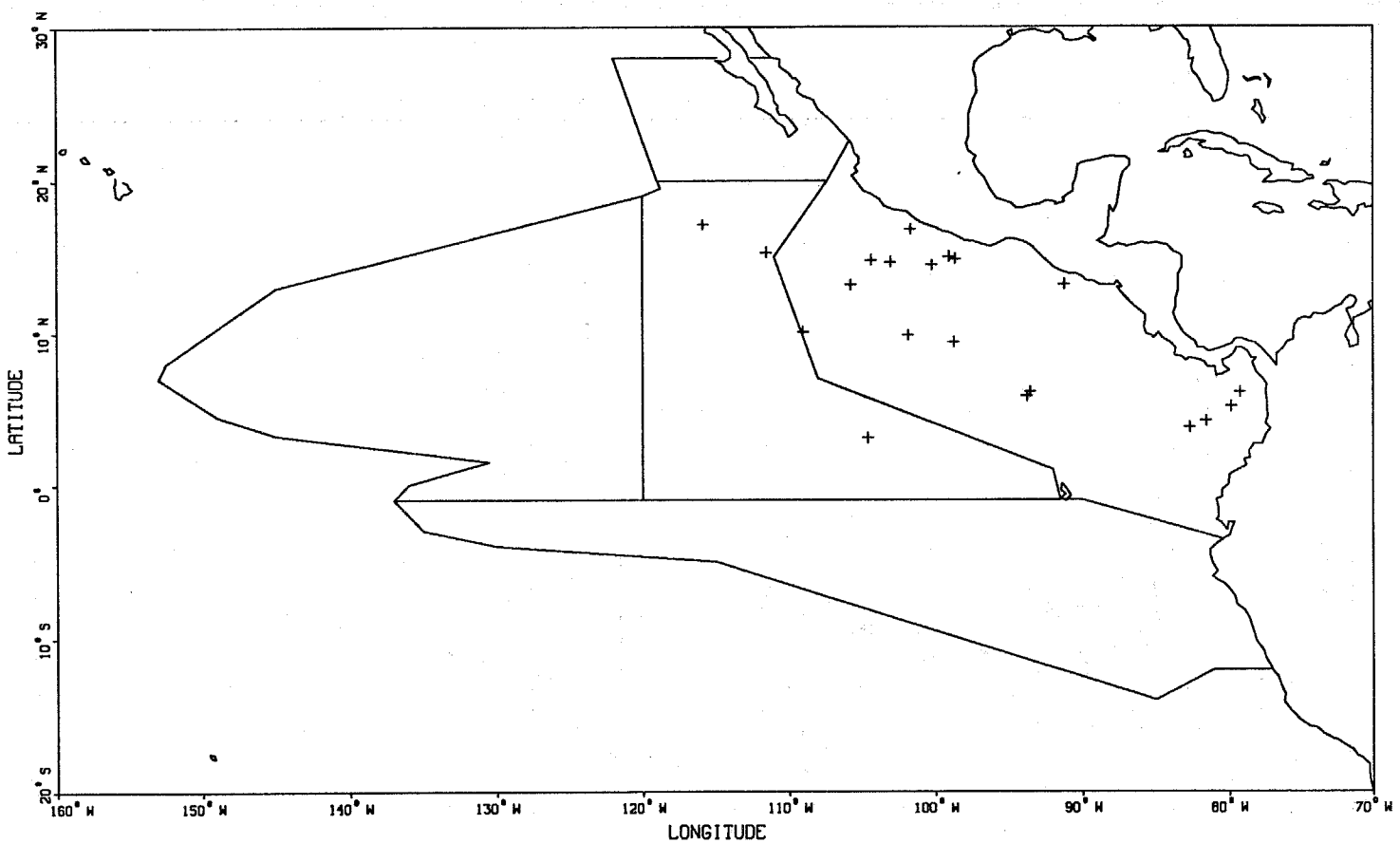


Figure 11. Risso's dolphins (+) detected from aboard the NOAA Ship David Starr Jordan from July 28 through December 6, 1988, in the eastern tropical Pacific.

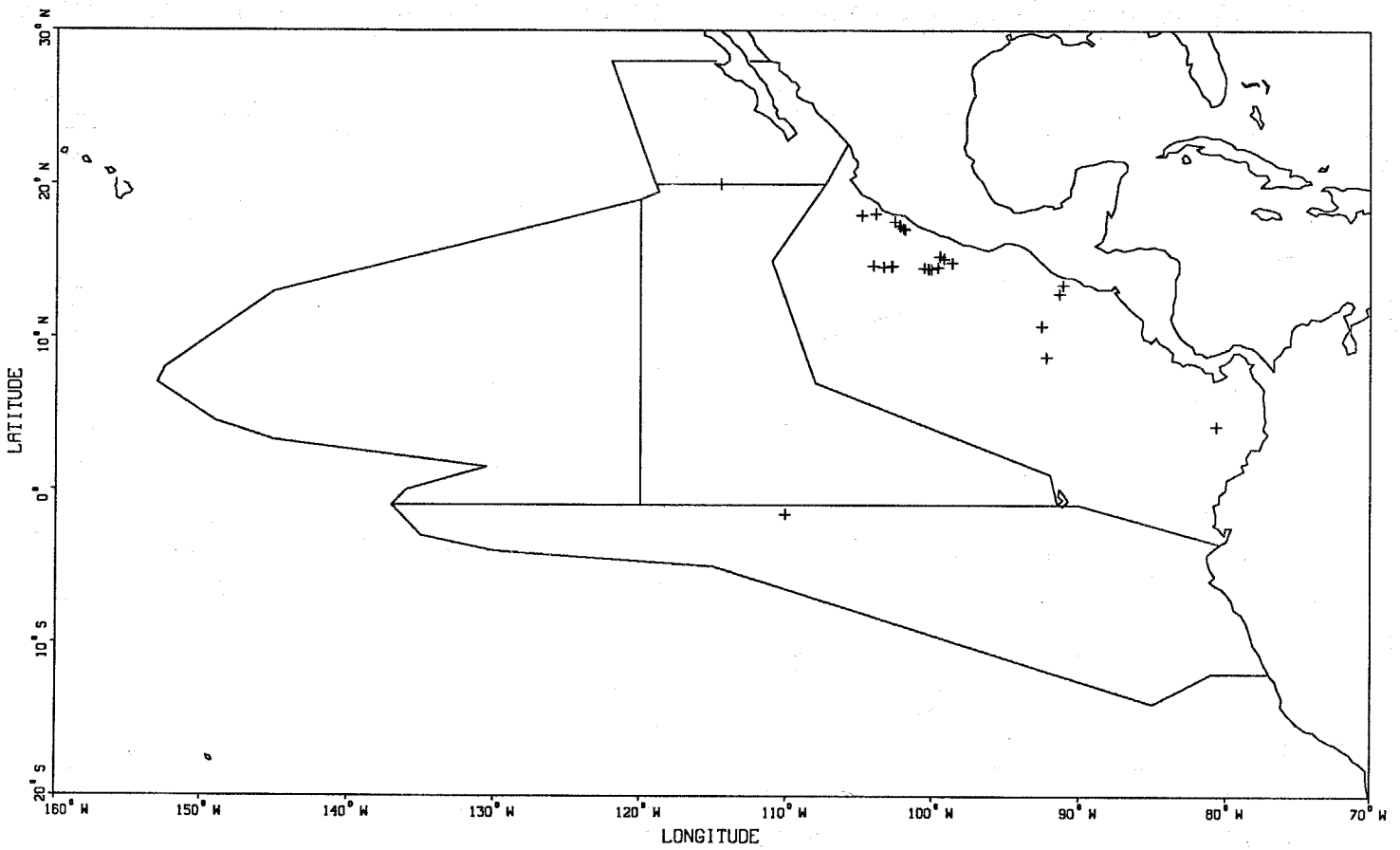


Figure 12. Rough-toothed dolphins (+) detected from aboard the NOAA Ship David Starr Jordan from July 28 through December 6, 1988, in the eastern tropical Pacific.

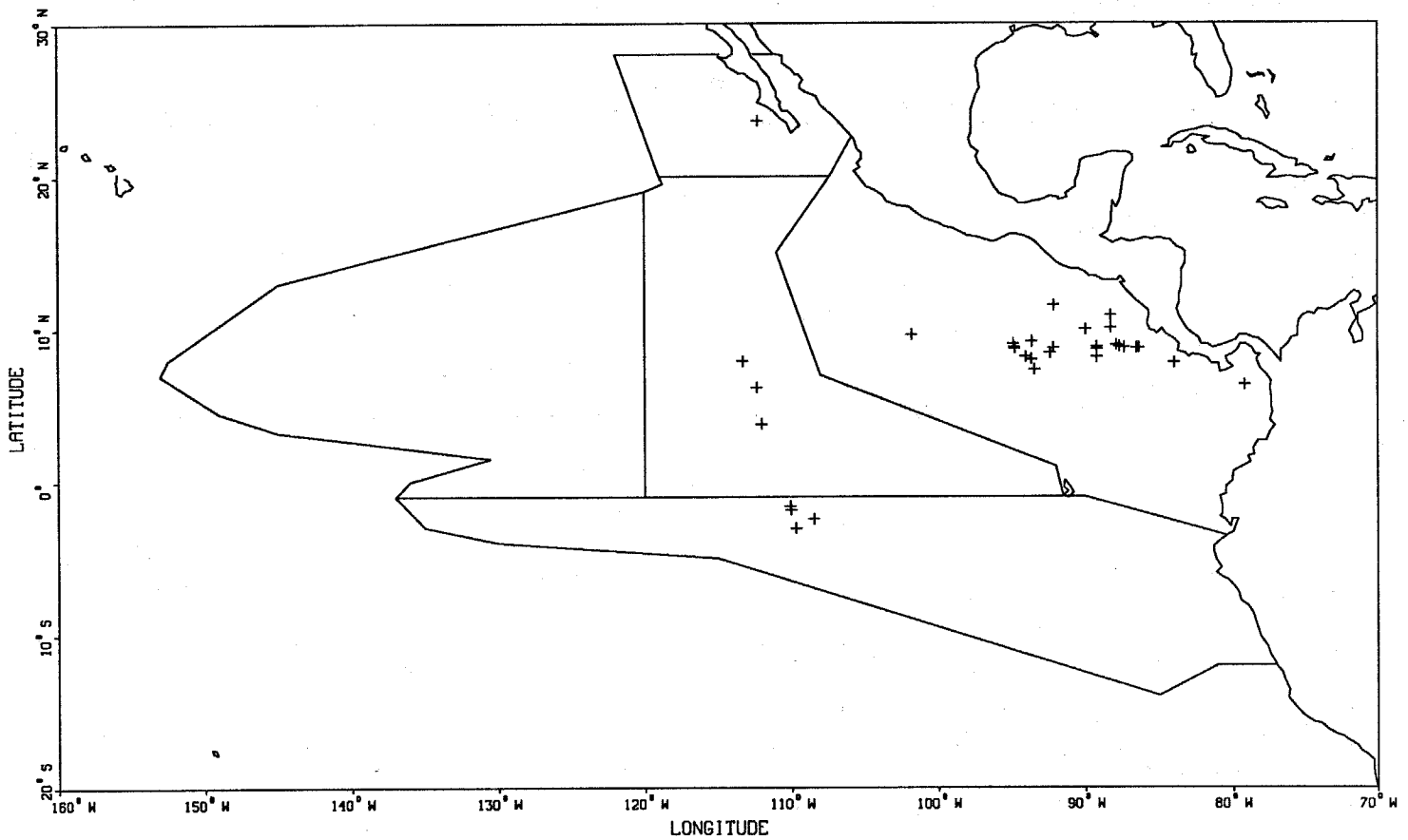


Figure 13. Pilot whales (+) detected from aboard the NOAA Ship David Starr Jordan from July 28 through December 6, 1988, in the eastern tropical Pacific.

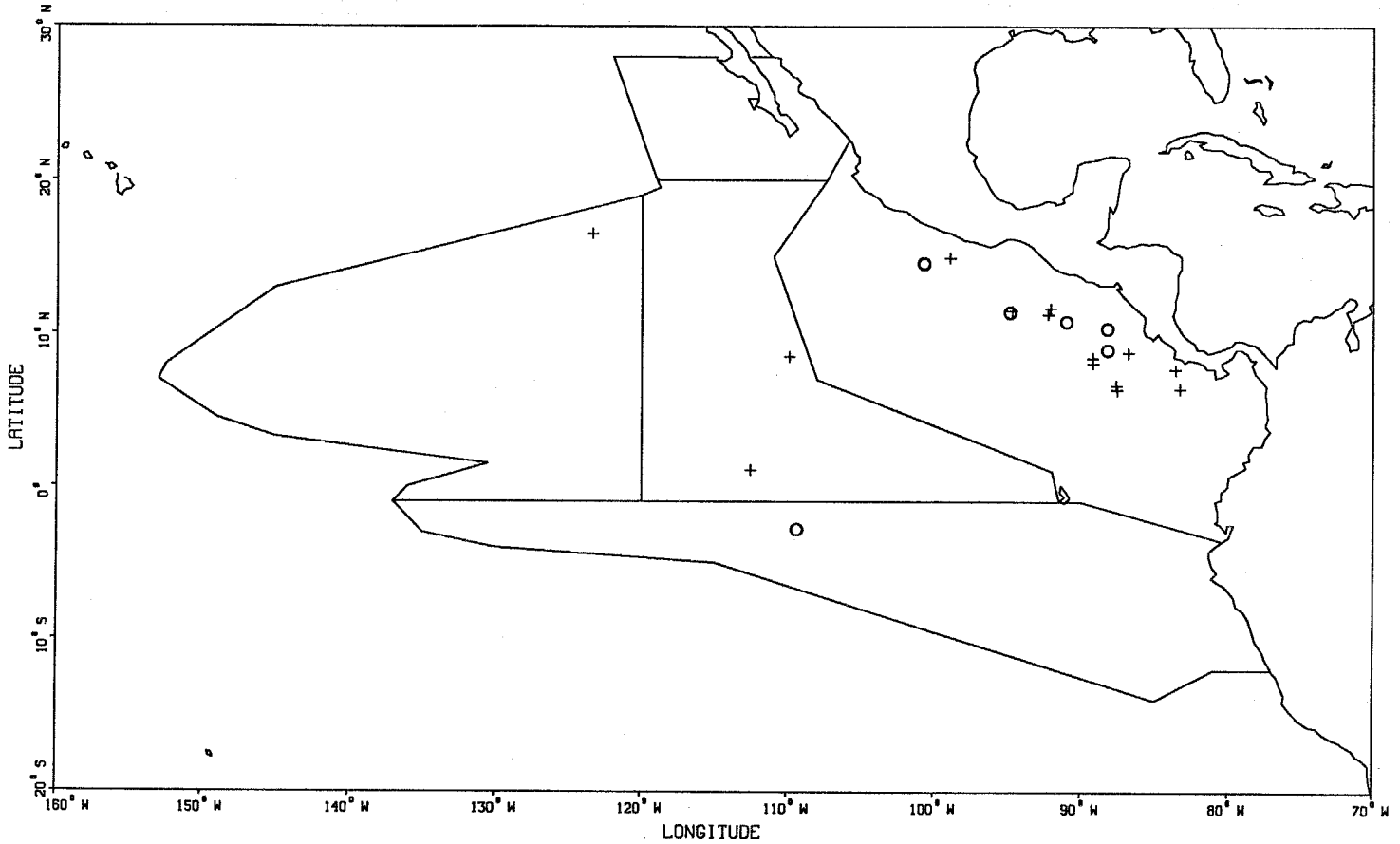


Figure 14. Sperm (+), dwarf sperm (o) and pygmy sperm (▽) whales detected from aboard the NOAA Ship David Starr Jordan from July 28 through December 6, 1988, in the eastern tropical Pacific.

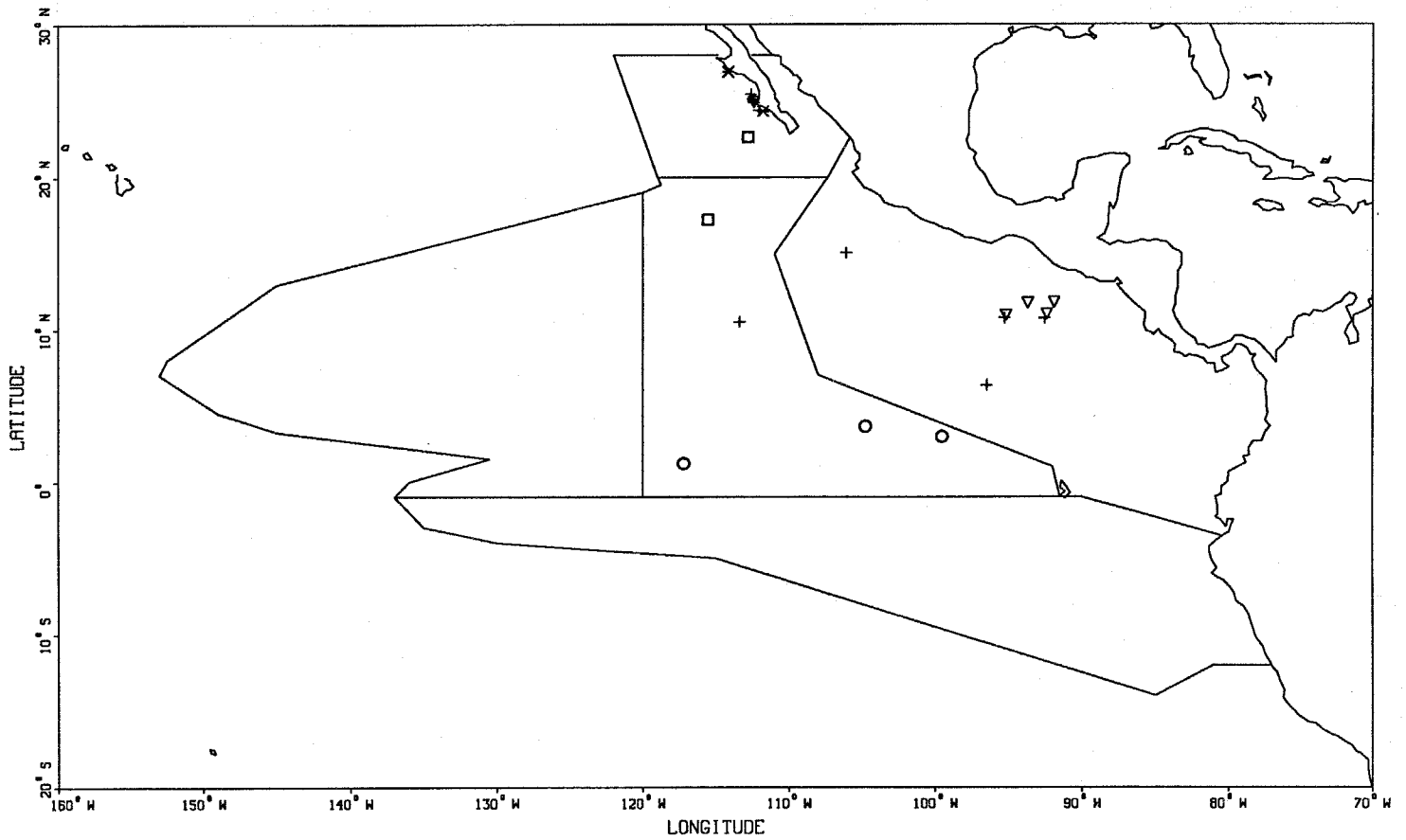


Figure 15. Unidentified rorquals (+), Bryde's (○), blue (▽), minke (□) and humpback (✳) whales detected from aboard the NOAA Ship David Starr Jordan from July 28 through December 6, 1988, in the eastern tropical Pacific.

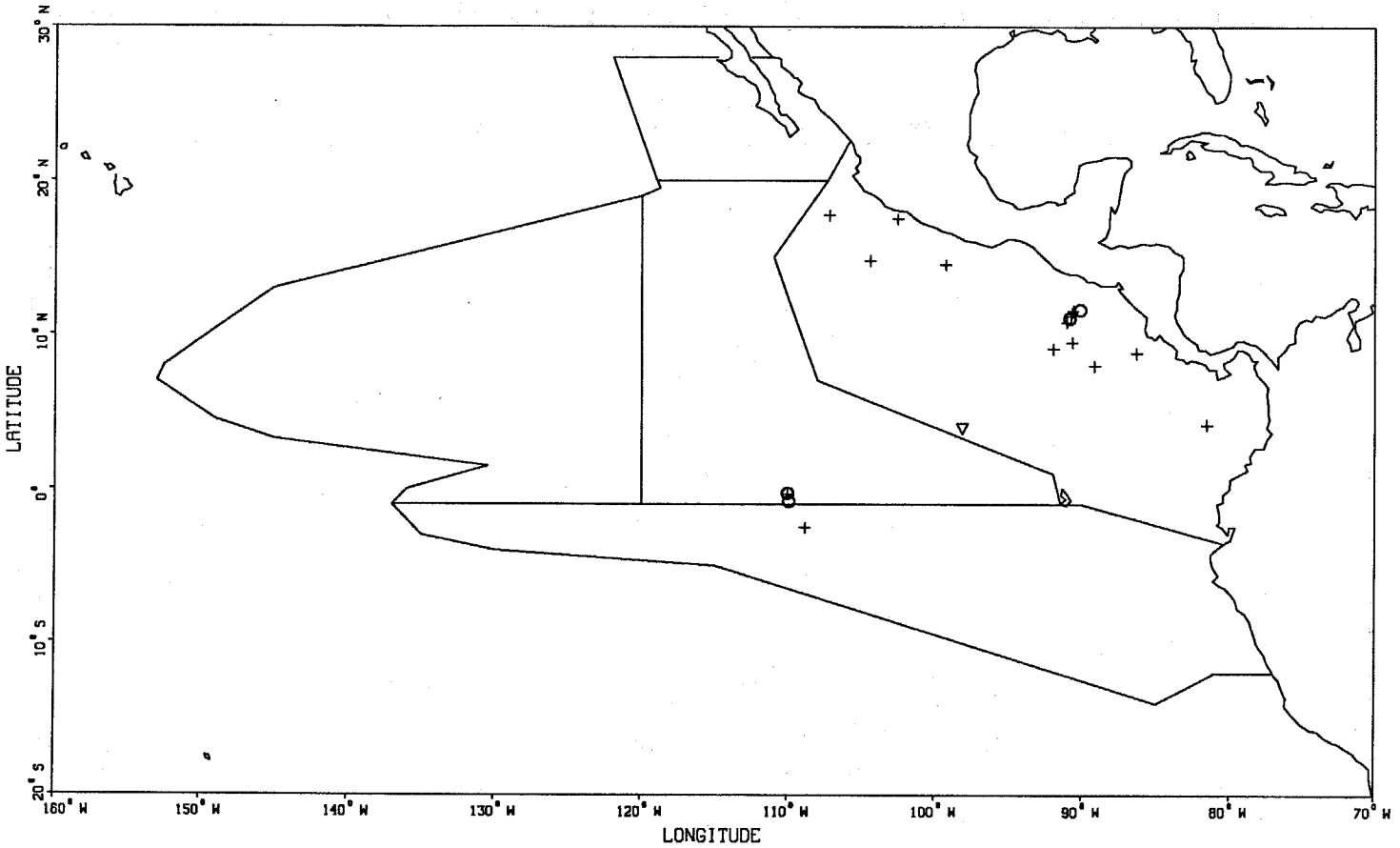


Figure 16. Unidentified beaked (+), Cuvier's beaked (o) and mesoplodon (▽) whales detected from aboard the NOAA Ship David Starr Jordan from July 28 through December 6, 1988, in the eastern tropical Pacific.

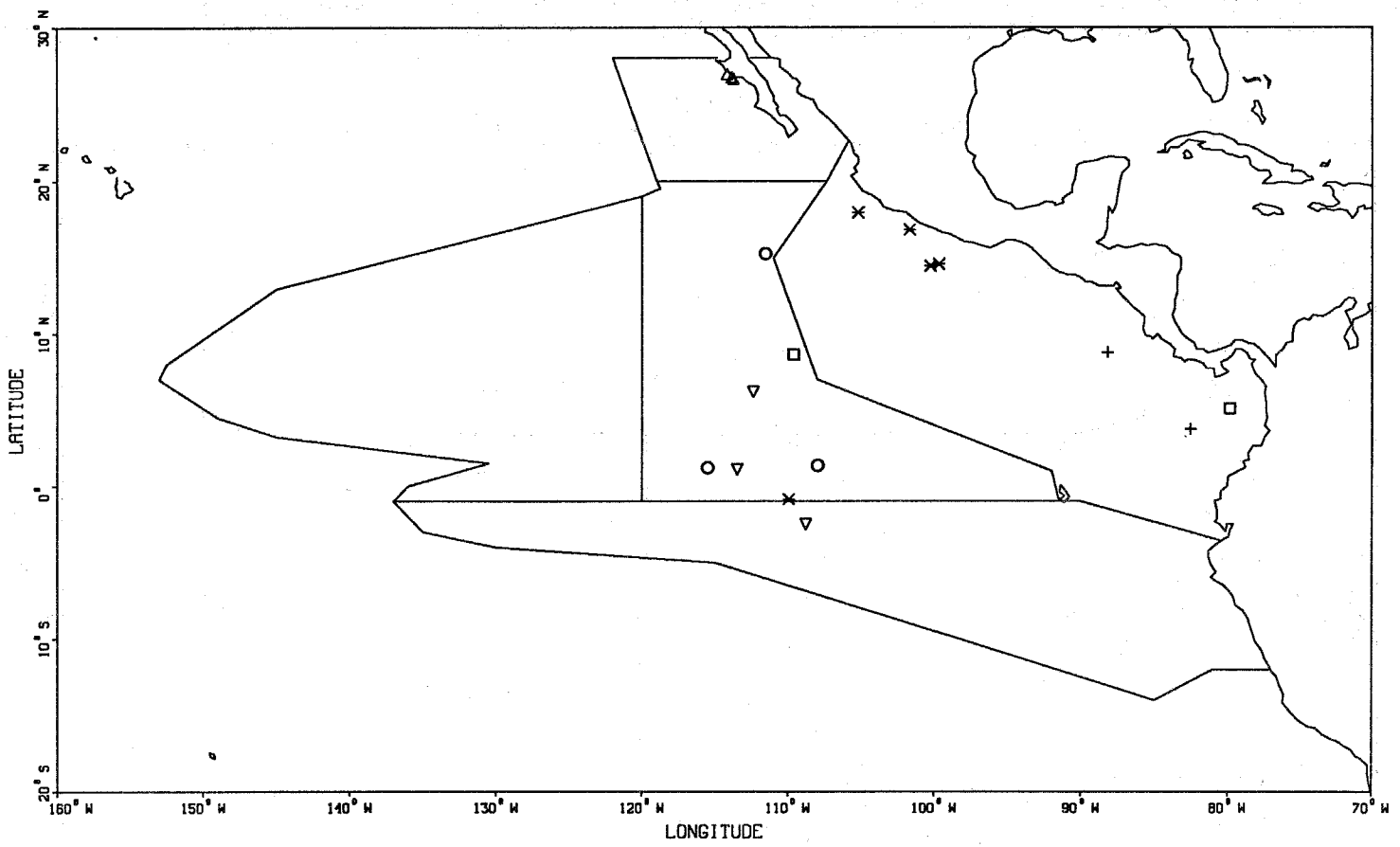


Figure 17. Killer (+) and false killer (o) whales, Fraser's dolphins (▽), melon-headed (□) and pygmy killer (⋇) whales and Pacific white-sided dolphins (△) detected from aboard the NOAA Ship David Starr Jordan from July 28 through December 6, 1988, in the eastern tropical Pacific.

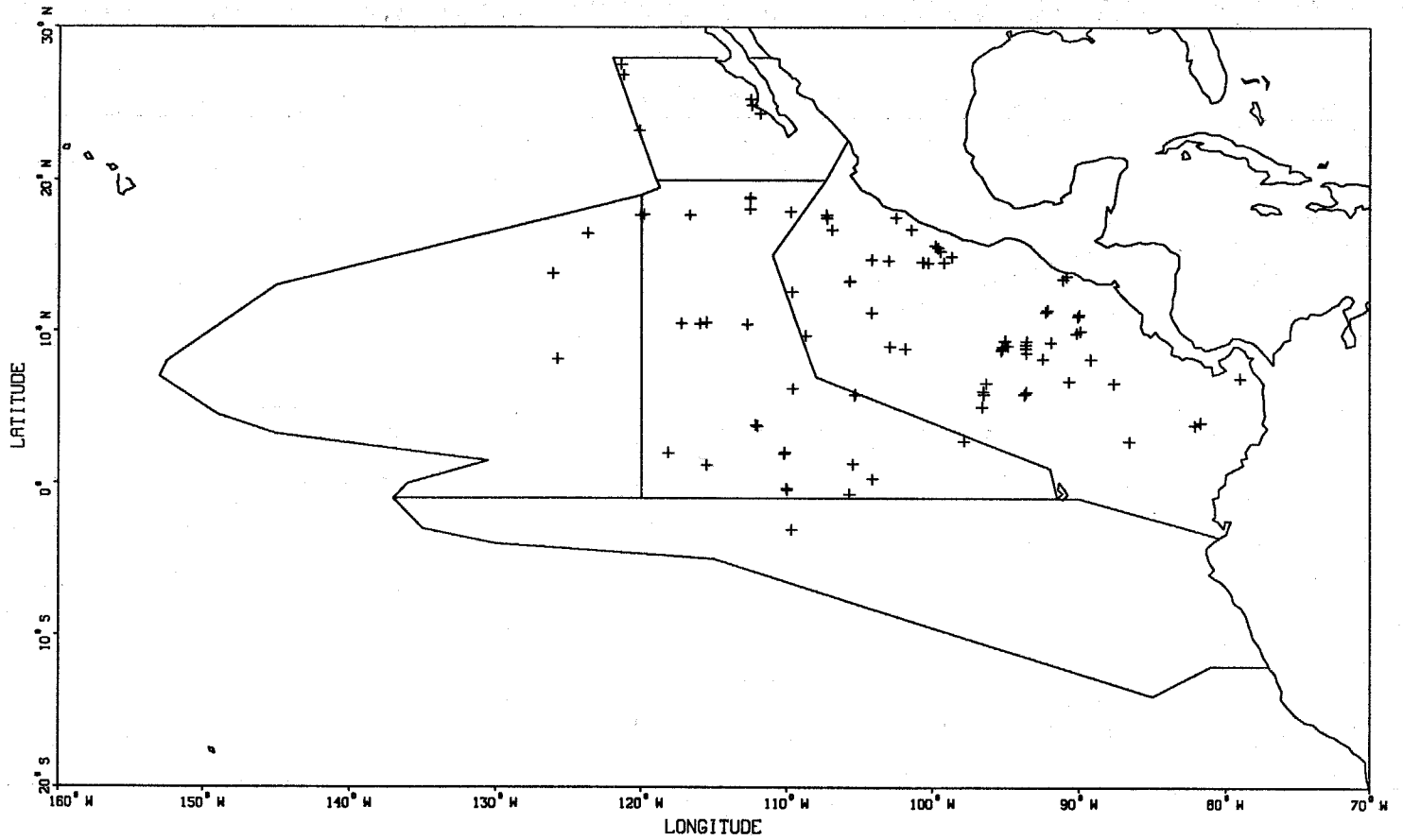


Figure 18. Unidentified dolphins (+) detected from aboard the NOAA Ship David Starr Jordan from July 28 through December 6, 1988, in the eastern tropical Pacific.

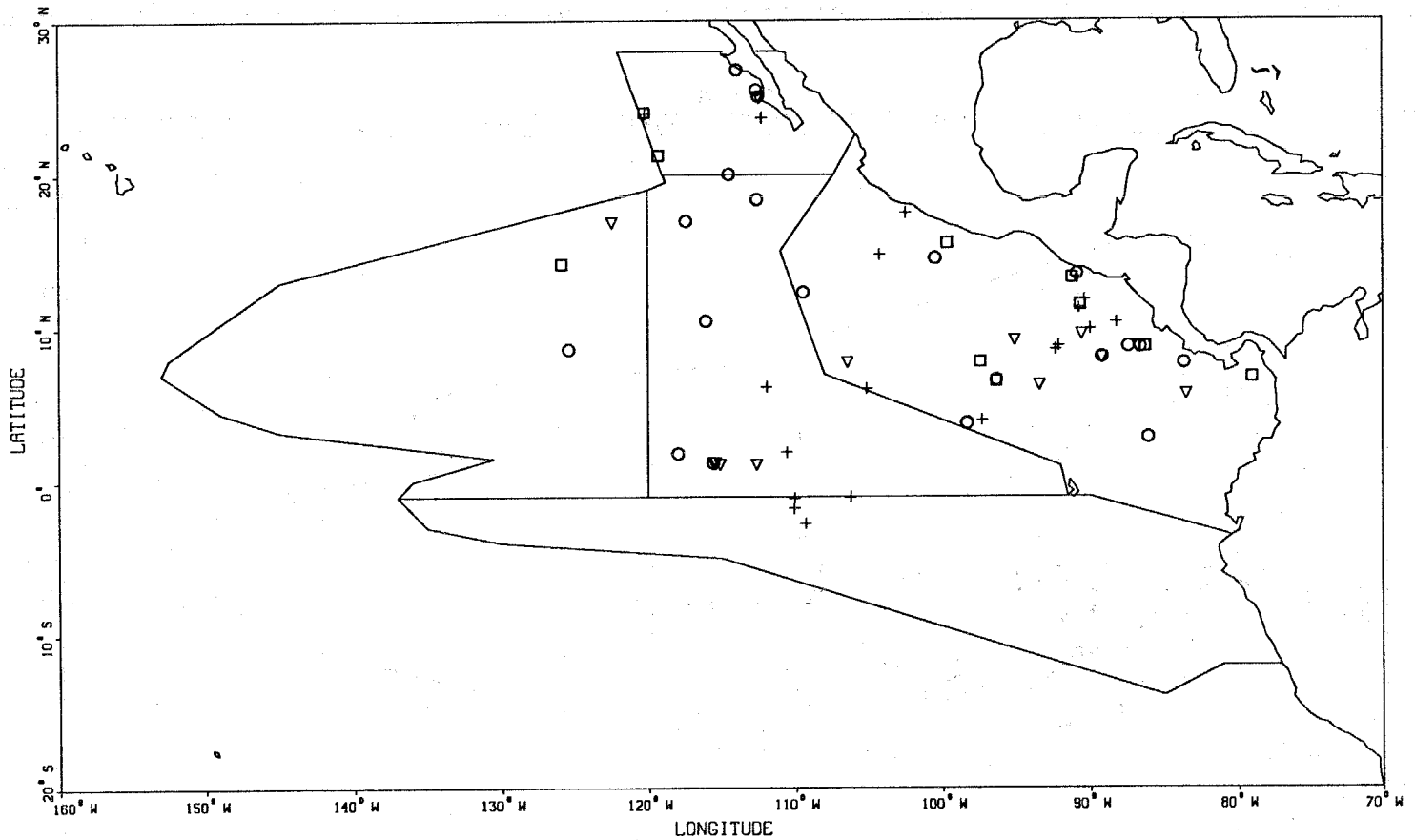


Figure 19. Unidentified small whales (+), unidentified whales (○), unidentified large whales (▽) and unidentified cetaceans (□) detected from aboard the NOAA Ship David Starr Jordan from July 28 through December 6, 1988, in the eastern tropical Pacific.

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