

NOAA Technical Memorandum NMFS



JULY 1988

**REPORT OF A MARINE MAMMAL SURVEY
OF THE EASTERN TROPICAL PACIFIC
ABOARD THE RESEARCH VESSEL**

David Starr Jordan,
AUGUST 8-DECEMBER 10, 1987

Rennie S. Holt
Stephanie N. Sexton



NOAA-TM-NMFS-SWFC-117

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

NOAA Technical Memorandum NMFS

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CONTENTS

	Page
List of Tables	ii
List of Figures	iii
Survey Objectives	1
Materials and Methods	2
Study Area and Itinerary	2
Scientific Personnel	2
Marine Mammal Species Surveyed	3
Equipment	3
Duty Stations	4
Observer Teams and Rotation	5
Data Collection Procedures	5
Data Analyses	7
Results	7
Summary.....	9
Acknowledgments.....	9
Literature Cited	10
Tables	11
Figures	119

LIST OF TABLES

	Page
Table 1. Sea state conditions measured by the Beaufort scale (from Bowditch, 1966).....	11
Table 2. Daily searching effort recorded in the eastern tropical Pacific aboard the <u>David Starr Jordan</u> during August 8 through December 10, 1987.....	12
Table 3. Marine mammal sightings, classified by species code groups, encountered in the eastern tropical Pacific during August 8 through December 10, 1987...	60
Table 4. Marine mammal school size estimates for each observer, classified by species codes, for all sightings encountered in the eastern tropical Pacific during August 8 through December 10, 1987..	100
Table 5. Summary of marine mammal sightings encountered in the eastern tropical Pacific during August 8 through December 10, 1987.....	115
Table 6. Summary of distance searched, large dolphin schools detected, and rates of encountering dolphins by observers aboard the <u>Jordan</u> in the eastern tropical Pacific during August 8 through December 10, 1987.....	117

LIST OF FIGURES

	Page
Figure 1. Tracklines surveyed by the NOAA Ship <u>David Starr Jordan</u> from August 8 through December 10, 1987, in the eastern tropical Pacific.....	119
Figure 2. Research ship marine mammal daily effort record...	120
Figure 3. Research ship marine mammal sighting record.....	121
Figure 4. Vertical and horizontal sun position categories...	122
Figure 5. Research ship marine mammal sighting record continuation sheet.....	123
Figure 6. Offshore (+), coastal (o) and unidentified (▽) spotted dolphins detected from aboard the NOAA Ship <u>David Starr Jordan</u> from August 8 through December 10, 1987, in the eastern tropical Pacific.....	124
Figure 7. Eastern (+), whitebelly (o) and unidentified (▽) spinner dolphins detected from aboard the NOAA Ship <u>David Starr Jordan</u> from August 8 through December 10, 1987, in the eastern tropical Pacific.....	125
Figure 8. Common dolphins (+) detected from aboard the NOAA Ship <u>David Starr Jordan</u> from August 8 through December 10, 1987, in the eastern tropical Pacific.....	126
Figure 9. Striped dolphins (+) detected from aboard the NOAA Ship <u>David Starr Jordan</u> from August 8 through December 10, 1987, in the eastern tropical Pacific.....	127
Figure 10. Bottlenose dolphins (+) detected from aboard the NOAA Ship <u>David Starr Jordan</u> from August 8 through December 10, 1987, in the eastern tropical Pacific.....	128
Figure 11. Risso's dolphins (+) detected from aboard the NOAA Ship <u>David Starr Jordan</u> from August 8 through December 10, 1987, in the eastern tropical Pacific.....	129

- Figure 12. Rough-toothed dolphins (+) detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific..... 130
- Figure 13. Pilot whales (+) detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific..... 131
- Figure 14. Sperm (+) and dwarf sperm (o) whales detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific..... 132
- Figure 15. Unidentified rorquals (+), Bryde's (o), blue (∇) and humpback (*) whales detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific..... 133
- Figure 16. Unidentified beaked (+), Cuvier's beaked (o), mesoplodon (∇) and southern bottlenose (□) whales detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific..... 134
- Figure 17. Killer (+) and false killer (o) whales, Fraser's dolphins (∇), pygmy killer (*) whales and Pacific white-sided (Δ) dolphins detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 8, 1987, in the eastern tropical Pacific..... 135
- Figure 18. Unidentified dolphins (+) detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific..... 136
- Figure 19. Unidentified small whales (+), unidentified whales (o), unidentified large whales (∇) and unidentified cetaceans (□) detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern Tropical Pacific..... 137

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

In this report, we describe the experimental procedures used during the surveys and we present summaries of the distance searched and marine mammals encountered from aboard the David Starr Jordan (Cruise 87-06 (210); SWFC Observer Cruise 1081). A separate report of the McArthur cruise has been published by Holt and Jackson (1988). A report of environmental data collected during the surveys is reported by Thayer et al. (1988).

SURVEY OBJECTIVES

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

1. estimate school density, school size, and species composition of each species taken by the fishery;
2. calibrate observers' estimates of dolphin school size with counts of school sizes obtained from photographs taken from a ship-based helicopter;
3. investigate the physical and biological environment of the affected species; and

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

MATERIALS AND METHODS

Study Area and Itinerary

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

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

Scientific Personnel

Cruise Leaders

	<u>Legs</u>
Jay Barlow, SWFC	1
Doug DeMaster, SWFC	2
Aleta Hohn, SWFC	3
Elizabeth Vetter, SWFC	4

Identification Specialists

Robert Pitman, SWFC	1-2
Scott Sinclair, SWFC	1-2
Richard LeDuc, SWFC	3-4
Marc Webber, SWFC	3-4

Observers

Sallie Beavers, SWFC	1-2
Carrie Fried, SWFC	1-2
William Irwin, SWFC	1-2

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

Photogrammetry Specialists

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

Bird Survey and Oceanographic Specialists

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

Helicopter Support

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

Marine Mammal Species Surveyed

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

Equipment

The Jordan, commissioned in 1964, is 52.1 m in length and 11.2 m in breadth, and has a 3.8 m draft. During the survey, the vessel maintained a cruising speed of approximately 18.5 km/hr.

Several pieces of equipment were used to gather data. The geographic position of the vessel was recorded periodically and at the time of a marine mammal sighting using the ship's Satellite Navigation System (SAT NAV). Marine mammals were detected using port and starboard pedestal mounted 25X Fuginon¹

¹Reference to trade names does not imply endorsement by NMFS

binoculars and a variety of hand-held 7-15X binoculars. The 25X glasses were mounted on the upper deck approximately 10.7 m above the sea surface. Surface temperature and salinity, fluorescence (chlorophyll), and temperature-depth profiles were obtained using a thermosalinograph, fluorometer, and expendable bathythermograph (XBT), respectively. Discrete conductivity and temperature-depth profiles were also obtained using conductivity-temperature-depth (CTD) probes.

The bearing and radial distances of marine mammals from the ship were calculated using two methods. First, the Computer Assisted Sighting Technology (CAST) system used information from several sensors to measure sighting angles and then to calculate radial distances. A CAMAC¹ computer collected data from various sources: the ship's course from the gyroscope; the electronically encoded sighting angles of the 25X binoculars; a measurement of the relative motion of the ship from a pitch-roll sensor; speed from the speed log (when it was functional); and information concerning survey status, such as identification of observers occupying survey positions from data pads located on the flying bridge. An IBM-compatible computer, which was interfaced with the CAMAC, was then used to process information to determine the sighting angle to the cue. Successive sighting angles, recorded as the ship traveled along the trackline, were used to calculate radial distances. Analyses of CAST data will be presented in a separate report. The second method was the use of estimates of the bearing and radial distance of a school from the ship, which were recorded by the observers using a 360° 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 Canon¹ camera with motor drive was used to photograph animals to aid in stock and species identification. The system included 400 mm, 75-210 mm zoom, and 28 mm lens. Some observers also used film supplied by the SWFC in personal camera equipment to photograph sightings. Animals were also recorded on 1.27 cm video tape using a Panasonic¹ VHS recorder and a Panasonic¹ camera equipped with telephoto lens.

Duty Stations

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

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

2. Right Binocular - The starboard observer used a 25X binocular, mounted on the starboard side of the ship, to search from the midpoint of the trackline to abeam the right side of the ship; and outward to the horizon or to the extent possible with prevailing environmental conditions. Observers in the left and right positions frequently searched areas on the opposite side of the tracklines.
3. Recorder - The recorder's duties were to transcribe transect effort data at regular intervals, to make notes of information pertaining to each sighting, and, when possible, to search the trackline adjacent to the ship with hand held binoculars for schools not detected by the observers on the 25X glasses.

Observer Teams and Rotation

Two teams of three observers each alternately occupied the three duty stations. Each team was on duty for 2-hour shifts. During each shift members spent approximately equal time occupying each duty station. Two of the six observers were experts in identifying marine mammals. These two identification specialists were assigned to separate teams so that one would always be on duty. Two of the other four observers were assigned to each team. Team members remained constant during the entire survey. Team members rotated among the duty stations and teams rotated on and off duty without interrupting searching effort. Teams alternated completing the first watch of the day. Observers aboard the Jordan and McArthur changed vessels after leg 2.

Data Collection Procedures

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

When a sighting cue (marine mammals, birds, splashes, etc.) was detected, it was determined if the cue was a marine mammal and if the cue was appropriate for tracking using the CAST system. Schools that were not tracked included whales, dolphins detected close to the vessel or at distances greater than 5.6 km lateral to the vessel, small schools of dolphins (<15 animals),

and schools detected during poor sighting conditions. If tracking was appropriate, the searching effort was terminated and the observer began tracking by turning on a switch attached to the binocular stand. With the ship still on course and with the school in the field of view of the binoculars, the CAST system recorded successive bearings of the animals to the ship. After approximately 8 minutes the ship was directed towards the cue and the tracking continued for another 8 minutes. When the target was not in the field of view, the switch was deactivated until the target was again sighted. At the end of the tracking sequence, if the target was lost from view and not resighted, or if the cue was not a marine mammal, the tracking procedure was terminated. All marine mammal schools were approached to obtain estimates of school size and species composition. The searching mode was resumed when the vessel returned to course and speed and the observers resumed searching for other sighting cues.

During each marine mammal sighting, the recorder collected data to complete Research Vessel Effort and Research Vessel Sighting (Figure 3) forms. Definition of each data element is given by Ralston (1984).² Criteria for assigning sun position and sea state conditions are given in Figure 4 and Table 1, respectively. Observers recorded bearing and range for schools using the 360° washer and reticle increments. The reticle measurements were converted to km using

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

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

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

During suitable sea states (Beaufort states 0 - 4) and visibility conditions, a Hughes¹ 500D helicopter was used to photograph dolphin schools. The photographs will be used to

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

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

Data Analyses

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

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

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

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

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

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

RESULTS

Data describing each leg of searching effort during the entire survey are summarized in Table 2. Information summarized for each marine mammal sighting encountered during the survey is presented in Table 3. The geographic positions of all schools

detected during the survey are presented for each species category (code) in Figures 6 through 19. Observer estimates of school size are presented by species code in Table 4.

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

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

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

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

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

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

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

SUMMARY

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

ACKNOWLEDGEMENTS

Because of the work of many dedicated professionals, the cruise aboard the Jordan was successfully executed. Among those contributing to the success of the cruise were the observers who spent many hours collecting the data, the officers and crew of the Jordan who gave their continuous support, and L. Farrar (Jordan Port Captain) who provided liaison with ship support personnel and the scientists. We thank R. Schipper for his contribution to the CAST system. Critical logistical arrangements were completed by P. Stangl. Special efforts were provided in procurement by B. Engstrand and B. Watkins. Many people contributed to training the observers but A. Jackson, H. Bernard, R. Pitman, and P. Stangl provided valuable assistance. The manuscript benefited from critical reviews by Jean Davis, D. DeMaster, and S. Reilly. Part of the manuscript was typed by C. Ratcliffe. Finally, we are grateful to I. Barrett, J. Carr, D. DeMaster, and B. Remington for their support during the entire cruise preparation and execution.

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

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

Table 2. Daily searching effort recorded in the eastern tropical Pacific aboard the David Starr Jordan during August 8 through December 10, 1987.

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
01	01	870808	17.59	67	03	02	172	32 27 n 117 12 w	6.16
01	02	870808	17.59	67	02	02	194		1.76
01	03	870808	17.59	22	02	02	194		6.45
01	04	870808	17.59	05	67	02	194		6.45
01	05	870808	17.59	05	67	02	194	32 14 n 117 14 w	0.88
02	01	870808	17.59	68	04	03	194	32 12 n 117 15 w	4.40
02	02	870808	17.59	51	68	03	194		10.56
02	03	870808	17.59	51	68	03	194		0.29
01	01	870809	18.52	51	04	03	190	30 19 n 117 49 w	10.19
01	02	870809	18.52	68	51	04	190		9.26
01	03	870809	18.52	04	68	51	190		4.01
02	01	870809	18.52	04	68	51	190	30 04 n 117 52 w	5.25
03	01	870809	18.52	22	05	67	190		6.17
03	02	870809	18.52	05	67	22	187		1.85
03	03	870809	18.52	67	22	05	187		6.17
03	04	870809	18.52	67	22	05	155		4.63
03	05	870809	18.52	22	05	67	155		6.17
03	06	870809	18.52	05	67	22	155		6.17
03	07	870809	18.52	67	22	05	155		3.70
03	08	870809	18.52	51	68	04	155	29 44 n 117 49 w	6.79
03	09	870809	18.52	51	68	04	155		3.09
04	01	870809	18.52	04	51	68	155	29 40 n 117 44 w	11.73
04	02	870809	18.52	68	04	51	155	29 36 n 117 44 w	12.35
04	03	870809	18.52	22	67	05	155		2.47
05	01	870809	18.52	22	67	05	155	29 26 n 117 38 w	3.40
05	02	870809	18.52	67	05	22	155		6.17
05	03	870809	18.52	05	22	67	155		7.10
05	04	870809	18.52	22	67	05	155	29 18 n 117 35 w	6.17
05	05	870809	18.52	67	05	22	155	29 14 n 117 33 w	1.85
05	06	870809	18.52	51	04	68	155		12.35
05	07	870809	18.52	68	51	04	155		6.79
05	08	870809	18.52	68	51	04	155	29 04 n 117 29 w	5.56
05	09	870809	18.52	04	68	51	155		12.35
05	10	870809	18.52	22	05	67	155	28 58 n 117 26 w	6.17
05	11	870809	18.52	05	67	22	155		2.78
05	12	870809	18.89	05	67	22	154	28 51 n 117 23 w	4.09
05	13	870809	18.89	67	22	05	154		5.67
05	14	870809	18.89	22	05	67	154	28 46 n 117 20 w	5.98
05	15	870809	19.08	05	67	22	154		3.50
05	16	870809	19.08	04	51	68	154	28 41 n 117 18 w	7.63
06	01	870809	19.08	04	51	68	154	28 37 n 117 16 w	5.40
06	02	870809	18.89	68	04	51	154		4.09
06	03	870809	19.08	68	04	51	153	28 31 n 117 14 w	3.50
06	04	870809	19.08	68	04	51	153		6.04
06	05	870809	18.71	51	68	04	153	28 26 n 117 12 w	9.35
06	06	870809	19.45	51	68	04	153	28 23 n 117 10 w	4.86

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
01	01	870810	17.96	67 05		2	154	26 49 n 116 19 w	5.99
01	02	870810	17.96	05 22		2	154		5.99
01	03	870810	17.96	22 67		2	154	26 42 n 116 16 w	6.29
01	04	870810	17.96	67 05		2	154		5.69
01	05	870810	17.96	22 67		2	154		5.69
01	06	870810	19.08	68 51		2	154	26 34 n 116 12 w	12.72
01	07	870810	19.08	04 68		2	154		12.72
01	08	870810	19.08	51 04		2	154	26 15 n 116 03 w	12.72
01	09	870810	18.89	22 67		2	154		6.30
01	10	870810	18.89	05 22		2	154		6.30
01	11	870810	18.89	67 05		2	154		6.30
01	12	870810	18.89	22 67		2	154	26 01 n 115 55 w	6.30
01	13	870810	19.45	67 05		2	154		6.48
01	14	870810	19.45	05 22		2	154		6.48
01	15	870810	19.45	51 68		2	154	25 55 n 115 52 w	11.67
01	16	870810	19.45	51 68		2	154		1.30
01	17	870810	19.45	04 51	12	3	154		9.72
01	18	870810	19.45	04 51	12	3	154	25 42 n 115 45 w	3.24
01	19	870810	19.45	68 04	12	3	154		6.16
02	01	870810	19.45	68 04	02	3	154	25 37 n 115 42 w	2.27
02	02	870810	19.45	22 67	02	3	154		6.48
02	03	870810	19.45	67 05	03	3	154		6.16
02	04	870810	19.45	05 22	03	3	154	25 29 n 115 38 w	6.48
02	05	870810	19.45	22 67	03	3	154	25 25 n 115 36 w	5.51
03	01	870810	19.45	67 05	03	3	154	25 20 n 115 33 w	3.24
03	02	870810	19.45	05 22	03	3	154		6.48
03	03	870810	19.45	51 04	03	3	154	25 19 n 115 31 w	9.72
03	04	870810	19.45	68 51	04	3	154	25 14 n 115 30 w	9.72
03	05	870810	19.45	04 68	04	3	154		10.05
03	06	870810	19.45	22 67	04	3	154	25 03 n 115 25 w	4.86
04	01	870810	14.82	67 05	04	3	154	24 58 n 115 22 w	3.95
04	02	870810	14.82	67 05	04	3	154		1.98
04	03	870810	14.82	05 22	04	3	154	24 53 n 115 20 w	4.94
04	04	870810	14.82	22 67	04	3	154		1.23
04	05	870810	19.45	22 67	04	3	154	24 54 n 115 18 w	5.51
04	06	870810	19.45	67 05	04	3	154		1.30
04	07	870810	19.45	67 05	04	3	154		1.30
01	01	870811	19.45	68 51	09	3	154	23 04 n 114 23 w	9.40
01	02	870811	18.89	04 68	09	3	154		9.76
02	01	870811	18.89	51 04	10	2	154	22 52 n 114 15 w	3.15
03	01	870811	18.89	51 04	10	2	154	22 49 n 114 14 w	1.89
04	01	870811	18.89	67 22	10	2	154	22 47 n 114 13 w	6.30
04	02	870811	18.89	22 05	10	2	154		6.61
04	03	870811	20.93	05 67	10	2	154		5.23
05	01	870811	20.93	67 22	10	2	154	22 33 n 114 06 w	6.98
05	02	870811	20.93	22 05	10	2	154		6.98
05	03	870811	20.93	68 04	10	01	154		3.14
06	01	870811	20.93	68 04	10	01	154	22 23 n 114 01 w	4.19
06	02	870811	20.93	51 68	10	01	154		5.23
07	01	870811	20.93	51 68	11	01	154	22 17 n 113 58 w	4.88
07	02	870811	20.93	04 51	11	01	154		6.28
07	03	870811	20.93	04 51	11	12	154		6.98

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. course no.	position latitude longitude	km in leg
07	04	870811	20.93	22 67	12	154	22 07 n 113 54 w	6.98
07	05	870811	20.93	67 05	12	154		3.49
08	01	870811	19.45	22 67	12	154		2.27
08	02	870811	19.45	05 22	12	154	22 56 n 113 50 w	0.32
09	01	870811	19.45	22 67	12	154	21 51 n 113 46 w	4.54
09	02	870811	19.45	04 51	12	154	21 49 n 113 45 w	10.05
09	03	870811	19.45	04 51	01	154	21 43 n 113 42 w	0.65
10	01	870811	19.45	04 51	01	154		1.62
10	02	870811	19.45	68 04	01	154	21 41 n 113 42 w	3.57
11	01	870811	19.45	68 04	01	154	21 38 n 113 40 w	4.54
11	02	870811	19.45	51 68	01	154		1.62
12	01	870811	19.45	51 68	01	154	21 31 n 113 38 w	7.78
12	02	870811	19.45	05 22	02	154	21 27 n 113 36 w	6.48
12	03	870811	19.45	22 67	02	154		2.92
13	01	870811	19.45	22 67	02	154	21 00 n 113 27 w	0.97
13	02	870811	19.45	67 05	02	154		6.48
13	03	870811	19.45	05 22	02	154	21 21 n 113 27 w	6.48
13	04	870811	19.45	22 67	02	154		3.24
13	05	870811	19.45	04 51	02	154	21 17 n 113 26 w	1.94
14	01	870811	19.45	04 51	02	154	21 16 n 113 24 w	7.78
15	01	870811	19.45	68 04	02	154	21 03 n 113 26 w	5.51
16	01	870811	19.45	68 04	02	149	21 00 n 113 24 w	4.21
01	01	870812	18.52	51 68	03	138	19 19 n 112 25 w	1.54
02	01	870812	18.52	22 05	10	138	19 16 n 112 21 w	2.92
02	02	870812	19.45	22 05	10	138		2.27
02	03	870812	19.45	67 22	10	138	19 14 n 112 19 w	13.58
03	01	870812	18.52	68 51	10	138	19 08 n 112 13 w	0.62
03	02	870812	18.52	04 51	10	138	19 03 n 112 10 w	8.50
04	01	870812	17.59	68 04	10	138	18 58 n 112 05 w	6.79
05	01	870812	18.52	22 05	10	154		3.40
05	02	870812	18.52	22 05	10	154	18 52 n 112 02 w	6.99
06	01	870812	19.08	67 22	10	154		5.40
06	02	870812	19.08	51 04	11	154	18 46 n 111 59 w	12.72
06	03	870812	19.08	68 51	10	154		13.35
06	04	870812	19.08	04 68	03	154		11.13
07	01	870812	19.45	67 22	04	154	18 22 n 111 48 w	6.81
07	02	870812	19.45	22 05	04	154		6.48
07	03	870812	19.45	22 05	04	154		6.48
07	04	870812	19.45	67 22	04	154	18 13 n 111 44 w	2.59
07	05	870812	19.45	05 67	02	154		3.57
07	06	870812	19.45	67 22	04	154		4.54
07	07	870812	19.45	51 68	04	154	18 08 n 111 42 w	12.96
07	08	870812	19.45	04 51	02	154		6.48
07	09	870812	19.45	68 04	02	155	17 58 n 111 38 w	10.70
07	10	870812	19.45	22 05	02	155	17 53 n 111 36 w	6.48
07	11	870812	19.45	05 67	02	155		5.51
08	01	870812	19.82	22 05	03	155	17 44 n 111 31 w	4.62
09	01	870812	19.82	67 22	04	155	17 41 n 111 30 w	4.29
01	01	870813	19.45	51 68	04	156	15 54 n 110 40 w	3.57
01	02	870813	19.45	51 68	04	156		7.45
01	03	870813	19.45	04 51	09	156		12.96
01	04	870813	19.45	68 04	09	156		3.24

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
02	01	870813	19.45	68	09	03	156	15 36 n 110 33 w	2.59
02	02	870813	19.45	22	09	02	156		5.83
02	03	870813	19.45	67	09	02	156		6.48
02	04	870813	19.45	05	09	02	156		6.48
02	05	870813	19.45	22	09	02	156	15 25 n 110 28 w	1.94
03	01	870813	20.00	22	10	02	156	15 24 n 110 27 w	2.00
03	02	870813	20.00	67	10	02	156		6.67
03	03	870813	20.00	05	10	01	156	15 19 n 110 26 w	7.00
03	04	870813	20.00	51	10	01	156	15 14 n 110 24 w	13.33
03	05	870813	20.00	68	10	01	156		8.00
03	06	870813	20.00	68	10	01	156	15 06 n 110 20 w	5.33
03	07	870813	20.00	04	10	12	156		5.33
04	01	870813	19.45	04	10	12	156	14 57 n 110 15 w	4.54
04	02	870813	19.45	22	10	12	156	14 55 n 110 14 w	6.48
04	03	870813	19.45	67	12	12	156		6.48
04	04	870813	19.45	05	12	12	156	14 45 n 110 10 w	6.81
04	05	870813	19.45	22	12	12	156		6.48
04	06	870813	19.45	67	04	12	156		6.16
04	07	870813	19.45	05	04	12	156	14 37 n 110 07 w	6.81
04	08	870813	19.45	04	04	12	148		5.83
04	09	870813	19.26	04	04	12	148		7.06
04	10	870813	19.26	51	04	01	148		12.52
04	11	870813	19.26	68	04	01	148	14 18 n 109 56 w	12.84
04	12	870813	19.08	22	04	02	148		2.86
04	13	870813	19.08	22	04	02	148		3.50
04	14	870813	19.08	67	04	02	148		6.36
04	15	870813	19.08	05	04	02	148		6.36
04	16	870813	19.08	22	04	02	148	14 10 n 109 51 w	6.36
04	17	870813	18.71	67	04	02	148		3.43
04	18	870813	18.71	04	04	02	148	14 05 n 109 48 w	2.81
05	01	870813	18.71	51	04	03	148	13 59 n 109 49 w	4.05
06	01	870813	18.71	51	04	03	148	13 57 n 109 48 w	1.56
06	02	870813	18.71	68	51	03	148		4.05
01	01	870814	17.96	22	05		169	12 02 n 109 25 w	6.29
01	02	870814	17.96	67	05		169	11 56 n 109 25 w	1.80
01	03	870814	17.96	67	05		169		4.19
01	04	870814	17.96	05	04		169	11 54 n 109 24 w	5.99
01	05	870814	17.96	22	05		169		3.89
01	06	870814	17.96	22	05		169		2.10
01	07	870814	17.96	67	09	02	169		7.49
01	08	870814	17.96	68	09	02	169	11 45 n 109 23 w	2.40
01	09	870814	17.96	68	04		169		0.30
02	01	870814	17.96	68	04		169	11 40 n 109 22 w	1.50
02	02	870814	17.96	51	09	02	169		1.80
03	01	870814	18.52	51	09		169		1.54
03	02	870814	18.52	51	09		169	11 35 n 109 21 w	4.01
03	03	870814	18.52	51	09		169		2.78
03	04	870814	18.52	04	09		169		5.56
04	01	870814	18.52	22	05		172	11 18 n 109 21 w	6.79
04	02	870814	18.52	05	05		172		2.16
05	01	870814	18.52	67	22		172		3.70
05	02	870814	18.52	67	22		172	11 11 n 109 19 w	6.17

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
05	03	870814	18.52	22		5	172	11 07 n 109 19 w	5.56
05	04	870814	18.52	04		5	171		12.04
05	05	870814	18.52	51		5	171		4.32
05	06	870814	18.52	51		5	171	10 58 n 109 18 w	1.23
06	01	870814	18.52	68		5	171	10 52 n 109 17 w	8.64
06	02	870814	18.52	05		5	171	10 48 n 109 16 w	6.17
06	03	870814	18.52	67		5	171		6.17
06	04	870814	18.52	22		5	171		2.78
06	05	870814	18.52	22		5	176		3.70
06	06	870814	18.52	05		5	176	10 39 n 109 14 w	4.94
06	07	870814	18.52	67		5	176		6.17
06	08	870814	18.52	22		4	176		6.17
06	09	870814	18.52	68		4	176		9.88
01	01	870815	20.19	51		2	172	10 28 n 109 13 w	3.03
01	02	870815	20.19	51		2	172	09 05 n 109 00 w	9.42
01	03	870815	20.19	04	09	2	172		10.09
01	04	870815	20.19	04	09	2	172		3.36
01	05	870815	20.19	68	02	3	172		11.44
02	01	870815	20.19	05	02	2	129	109 00 w	3.70
03	01	870815	19.45	22	01	3	119	108 58 w	1.30
03	02	870815	19.45	67	01	3	263		5.51
03	03	870815	19.45	05	06	3	263		6.16
04	01	870815	18.52	68	01	3	263	109 11 w	10.49
04	02	870815	18.52	04	12	3	263	109 17 w	8.64
04	03	870815	18.52	05	12	3	263	109 20 w	0.93
05	01	870815	18.52	05	12	3	263	109 21 w	2.47
06	01	870815	18.52	22	12	3	259	109 30 w	7.41
06	02	870815	18.52	68	01	3	259	109 31 w	9.26
07	01	870815	18.52	68	01	3	259	109 36 w	2.16
07	02	870815	18.52	04	01	3	259		12.04
07	03	870815	18.52	51	01	3	259		12.35
07	04	870815	18.52	05	02	3	259		4.63
08	01	870815	18.15	22	01	3	259	109 53 w	6.35
08	02	870815	18.15	67	02	3	259		6.05
08	03	870815	18.15	05	02	3	259		7.26
08	04	870815	18.15	04	02	3	259		9.07
08	05	870815	18.15	68	03	3	259	110 04 w	7.56
08	06	870815	18.15	04	03	3	259	110 10 w	4.23
08	07	870815	18.15	04	01	2	257		6.24
01	01	870816	18.71	05	03	1	257	111 55 w	6.86
01	02	870816	18.71	22	03	1	257		6.24
01	03	870816	18.71	67	03	1	257	112 02 w	6.24
01	04	870816	18.71	05	03	1	257		1.56
02	01	870816	18.71	05	03	1	257		1.25
02	02	870816	18.71	22	02	1	257	112 06 w	6.24
02	03	870816	18.71	68	02	1	257		12.47
03	01	870816	19.08	51	02	1	257	112 11 w	11.13
03	02	870816	19.08	04	02	1	257	112 18 w	12.72
03	03	870816	18.52	67	01	1	257		6.17
03	04	870816	18.52	22	01	1	257	112 30 w	6.17
03	05	870816	18.52	05	01	1	255		6.17
03	06	870816	18.52	67	12	1	255	112 39 w	6.17
03	07	870816	18.52	22	12	1	255		6.48

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
03	08	870816	18.52	05	06	12	255	07 59 n 112 47 w	0.31
04	01	870816	18.52	05	06	12	255		1.23
04	02	870816	18.52	05	06	12	255	07 59 n 112 49 w	2.16
04	03	870816	18.52	04	06	12	255	07 59 n 112 50 w	10.80
05	01	870816	18.52	68	04	12	255	07 54 n 112 57 w	3.40
06	01	870816	18.52	68	04	12	255	07 53 n 112 59 w	4.94
06	02	870816	18.52	51	02	12	255		6.17
07	01	870816	18.52	67	05	01	255	07 48 n 113 05 w	4.94
07	02	870816	18.52	05	01	01	270	07 46 n 113 08 w	1.23
07	03	870816	18.52	05	01	01	270		6.48
07	04	870816	18.52	22	01	01	270		6.17
07	05	870816	18.52	67	05	01	270	07 46 n 113 15 w	5.56
08	01	870816	19.45	51	12	02	270	07 42 n 113 21 w	6.48
08	02	870816	19.45	68	12	02	270	07 44 n 113 24 w	2.27
08	03	870816	17.22	68	12	02	272	07 44 n 113 24 w	2.58
08	04	870816	17.22	04	12	02	272	07 44 n 113 25 w	1.44
09	01	870816	18.52	05	12	03	272	07 42 n 113 28 w	6.17
09	02	870816	18.52	22	12	03	272		4.01
10	01	870816	18.52	67	05	03	272	07 42 n 113 35 w	4.32
01	01	870817	19.82	04	12	03	310	08 43 n 115 00 w	9.25
01	02	870817	19.82	51	04	03	310		6.28
01	03	870817	19.82	51	04	03	310		1.98
01	04	870817	19.82	51	04	03	310		1.65
01	05	870817	19.82	68	04	03	310		0.99
01	06	870817	19.82	51	04	03	310		5.61
02	01	870817	19.08	22	05	02	310	08 58 n 115 19 w	5.72
02	02	870817	19.08	22	05	02	310		0.64
02	03	870817	19.08	67	05	02	310		3.18
02	04	870817	19.08	67	05	02	310	09 02 n 115 23 w	3.18
02	05	870817	19.08	05	04	02	310		6.36
03	01	870817	19.08	04	04	12	310	09 10 n 115 32 w	8.27
03	02	870817	19.08	51	04	12	310		8.27
03	03	870817	19.08	51	04	12	310	09 16 n 115 39 w	3.82
04	01	870817	19.08	67	22	12	310	09 23 n 115 47 w	2.23
04	02	870817	19.08	67	22	12	310		3.18
04	03	870817	19.08	22	05	12	310		6.36
04	04	870817	19.08	05	12	12	310		4.77
04	05	870817	19.08	67	12	12	310	115 54 w	9.54
05	01	870817	19.08	51	11	01	310	115 57 w	9.54
05	02	870817	19.08	68	11	01	310		1.91
05	03	870817	19.08	68	11	01	310		10.81
05	04	870817	19.08	04	11	01	310		6.73
05	05	870817	19.08	04	11	01	310	09 49 n 116 11 w	6.73
05	06	870817	20.19	22	11	02	310		3.36
05	07	870817	20.19	67	11	02	310	116 18 w	0.67
05	08	870817	20.19	22	11	02	310		6.73
05	09	870817	20.19	22	05	02	310		3.36
06	01	870817	20.19	22	05	02	310		0.67
06	02	870817	20.19	68	11	02	310	116 23 w	1.68
01	01	870818	16.85	22	05	03	080	114 57 w	6.73
01	02	870818	16.85	22	05	03	080		2.81
01	03	870818	16.85	67	12	03	080	114 53 w	4.49
01				05	12	03			3.37

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
01	04	870818	16.85	67 05		5	080	10 31 n 114 49 w	0.84
01	05	870818	16.85	05 22		5	080		5.34
01	06	870818	16.85	04 68		6	080		2.53
01	07	870818	16.85	04 68		6	080		3.09
02	01	870818	18.52	04 51		4	088	10 40 n 114 01 w	15.43
02	02	870818	18.52	22 67		4	088	10 41 n 113 53 w	6.79
02	03	870818	17.96	67 05		4	091	10 42 n 113 49 w	5.99
02	04	870818	17.96	05 22		4	091		2.40
03	01	870818	17.96	68 04		4	091	10 47 n 113 52 w	1.50
03	02	870818	17.96	68 04		4	091		1.50
03	03	870818	17.96	68 04		4	091		3.59
03	04	870818	17.96	51 68		5	091		8.98
03	05	870818	17.96	04 51		5	091	10 48 n 113 41 w	3.89
03	06	870818	18.33	22 67		5	095	10 48 n 113 40 w	5.50
03	07	870818	18.33	22 67		4	095	10 46 n 113 37 w	7.33
03	08	870818	18.33	67 05		4	095	10 46 n 113 32 w	2.44
01	01	870819	18.52	68 51		2	081	10 52 n 111 40 w	1.85
02	01	870819	18.52	68 51		1	081	10 53 n 111 38 w	0.93
02	02	870819	18.52	04 68	12	1	081	10 53 n 111 38 w	6.17
02	03	870819	18.52	04 68	02	1	081		2.16
02	04	870819	18.52	04 68		1	081		0.93
02	05	870819	18.52	51 04		1	081	10 54 n 111 33 w	7.72
02	06	870819	18.52	51 04		1	081		1.54
02	07	870819	18.52	22 05		1	081	10 54 n 111 30 w	1.85
03	01	870819	18.52	22 05		1	081	10 55 n 111 23 w	5.25
03	02	870819	18.52	05 67		1	081	10 55 n 111 20 w	4.01
04	01	870819	18.52	67 22		1	081	10 54 n 111 16 w	3.40
05	01	870819	18.52	51 68		3	081	10 57 n 111 01 w	7.72
05	02	870819	18.52	04 51		3	081	10 57 n 110 56 w	6.79
06	01	870819	18.52	04 51		2	081	11 01 n 110 30 w	11.73
07	01	870819	18.52	68 04		2	083	11 00 n 110 24 w	2.47
08	01	870819	18.52	51 68		3	083	11 02 n 110 17 w	0.31
09	01	870819	18.71	51 68		2	083	11 03 n 110 15 w	4.36
09	02	870819	18.71	05 22		5	083	11 04 n 110 13 w	7.17
09	03	870819	18.71	22 67		5	083		5.92
09	04	870819	18.71	05 22		5	083	11 04 n 110 05 w	5.61
09	05	870819	18.71	05 22		5	084	11 05 n 110 03 w	0.62
09	06	870819	18.71	05 22		5	084		0.94
10	01	870819	18.52	51 04		5	084	11 09 n 110 02 w	1.54
10	02	870820	19.63	05 22		5	084		4.32
01	01	870820	19.63	22 67	12	3	086	11 20 n 108 07 w	6.54
01	02	870820	19.63	05 22	03	3	086	11 21 n 108 04 w	7.20
01	03	870820	19.63	67 05	12	3	086		4.91
01	04	870820	19.63	67 05	03	3	086		1.64
01	05	870820	19.63	05 22	12	3	086		6.54
01	06	870820	19.08	22 67	02	3	086	107 53 w	8.27
01	07	870820	19.08	68 51	12	3	086	11 21 n 107 47 w	2.54
02	01	870820	18.89	04 51	12	3	098	11 22 n 107 53 w	3.78
03	01	870820	18.89	22 05	01	3	099	11 29 n 107 49 w	6.93
03	02	870820	18.89	05 67	12	3	099	11 29 n 107 45 w	5.67
03	03	870820	18.89	22 05	01	3	099		6.30
03	04	870820	18.89	22 05	12	3	099		5.98

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
03	05	870820	18.89	05 67	12 12	3	099	11 28 n 107 35 w	6.61
03	06	870820	18.89	67 22	12 12	3	099		4.41
03	07	870820	18.89	04 68	12 12	3	099	11 27 n 107 30 w	13.22
03	08	870820	18.89	51 04	12 12	3	099		12.91
03	09	870820	18.89	68 51	06 01	3	099	11 25 n 107 15 w	11.33
03	10	870820	18.89	22 05	06 01	3	099	11 24 n 107 10 w	6.30
03	11	870820	18.89	05 67	06 01	3	099		6.30
03	12	870820	18.89	22 05	06 01	3	099		6.30
03	13	870820	18.89	67 22	06 01	3	099	11 23 n 106 59 w	6.30
03	14	870820	18.89	05 67	06 01	4	099		1.57
03	15	870820	18.89	05 67	08 02	4	041		1.89
03	16	870820	18.89	05 67	08 02	4	025	11 22 n 106 55 w	2.83
03	17	870820	18.89	67 22	08 02	4	025		6.30
03	18	870820	18.89	51 04	09 02	3	025	11 27 n 106 52 w	7.24
04	01	870820	18.89	68 51	09 02	4	025		5.67
04	02	870820	18.89	22 05	09 03	4	025	11 33 n 106 44 w	7.24
04	03	870820	18.89	67 22	09 03	4	025	11 38 n 106 42 w	5.67
04	04	870820	18.89	67 22	09 03	4	025		3.15
01	01	870821	20.00	04 68	01 03	3	037	13 07 n 105 34 w	5.00
02	01	870821	20.00	51 04	01 03	3	037		6.67
02	02	870821	20.00	51 04	01 02	3	037		3.33
02	03	870821	20.00	68 51	01 02	3	037		13.33
02	04	870821	20.00	22 67	01 02	3	037	13 19 n 105 20 w	7.33
02	05	870821	20.00	67 05	01 02	3	037		6.00
02	06	870821	20.00	22 67	01 02	3	037		6.67
02	07	870821	20.00	67 05	01 02	3	037	13 25 n 105 14 w	7.33
02	08	870821	20.00	67 05	01 01	3	037		6.00
02	09	870821	20.00	05 22	01 01	3	037		6.67
02	10	870821	20.00	04 51	01 01	3	037	13 33 n 105 07 w	13.67
02	11	870821	20.00	68 04	01 01	3	037		13.00
02	12	870821	20.00	51 68	01 12	3	037		13.33
02	13	870821	20.00	22 67	09 12	3	037	13 48 n 104 53 w	7.33
02	14	870821	20.00	67 05	09 12	3	037		3.67
03	01	870821	19.45	05 22	09 12	3	037		1.62
03	02	870821	19.45	05 22	09 12	4	037	13 54 n 104 48 w	5.19
03	03	870821	19.45	22 67	09 12	4	037		6.81
03	04	870821	19.45	67 05	08 12	4	037	13 58 n 104 44 w	6.48
03	05	870821	19.45	67 05	08 01	4	037		1.94
03	06	870821	19.45	68 51	08 01	4	037	14 02 n 104 41 w	1.94
04	01	870821	19.45	68 51	08 01	3	037	14 04 n 104 39 w	7.13
04	02	870821	19.45	04 68	08 01	3	037	14 08 n 104 36 w	5.83
05	01	870821	19.45	04 68	08 01	3	037	14 10 n 104 34 w	5.83
05	02	870821	19.45	51 04	08 02	3	037		6.48
06	01	870821	19.45	22 67	08 02	3	037	14 18 n 104 22 w	2.59
06	02	870821	18.52	22 67	08 02	3	037		4.01
06	03	870821	18.52	67 05	08 02	3	037		2.47
06	04	870821	18.45	67 05	08 02	3	034	14 21 n 104 19 w	3.89
06	05	870821	18.52	05 22	08 03	3	034		6.48
06	06	870821	19.45	04 68	08 03	3	034	14 25 n 104 15 w	6.81
01	01	870822	20.74	67 05	01 03	2	048	15 46 n 103 15 w	4.15
01	02	870822	20.74	67 05	01 03	2	048	15 49 n 103 12 w	1.04
01	03	870822	20.74	05 22	01 03	2	046		1.73

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
01	04	870822	20.74	05 22	01 03	2	046	15 52 n 103 08 w	7.26
01	05	870822	20.74	22 67	01 03	2	046	15 52 n 103 08 w	10.72
01	06	870822	19.45	68 04	01 02	2	046	15 55 n 103 03 w	12.96
01	07	870822	19.45	51 68	01 02	3	046	15 59 n 102 57 w	11.34
02	01	870822	19.45	67 05	02 01	3	032	16 09 n 102 52 w	5.19
03	01	870822	19.45	67 05	02 01	3	032	16 11 n 102 51 w	6.48
03	02	870822	19.45	22 67	02 01	3	032		6.81
03	03	870822	19.45	67 05	02 01	3	032		4.21
04	01	870822	19.45	51 68	02 12	3	050	16 25 n 102 43 w	7.13
04	02	870822	19.45	51 04	01 12	3	104		2.92
04	03	870822	19.45	51 04	01 12	3	104	16 26 n 102 37 w	1.30
05	01	870822	19.45	68 51	03 12	2	104	16 26 n 102 35 w	11.34
06	01	870822	19.45	68 51	04 12	2	104	16 23 n 102 28 w	0.97
07	01	870822	19.45	67 05	06 12	2	096	16 17 n 102 23 w	3.57
08	01	870822	20.74	22 67	06 01	2	096	16 18 n 102 19 w	6.91
08	02	870822	20.74	67 05	06 01	1	096		5.88
09	01	870822	20.74	04 51	06 02	1	096	16 17 n 102 09 w	6.22
10	01	870822	20.74	04 51	06 02	1	096	16 17 n 102 04 w	4.15
11	01	870822	20.74	05 67	06 03	2	096		6.91
11	02	870822	20.74	67 22	06 03	1	096	16 11 n 101 54 w	8.50
01	01	870823	18.89	68 51	01 03	3	104	16 00 n 101 04 w	7.87
01	02	870823	18.89	04 68	01 03	3	104		7.56
01	03	870823	18.89	51 04	01 03	3	102	15 56 n 100 46 w	6.98
01	04	870823	20.93	67 22	01 02	3	102		5.93
01	05	870823	20.93	22 05	02 02	3	102		1.05
01	06	870823	20.93	22 05	02 02	3	122		6.63
01	07	870823	20.93	05 67	02 02	3	122	15 52 n 100 36 w	6.98
01	08	870823	20.93	67 22	02 02	3	122		7.67
01	09	870823	20.93	22 05	02 02	3	122		7.32
01	10	870823	20.93	05 67	02 02	3	122	15 45 n 100 26 w	5.23
01	11	870823	20.93	04 51	01 01	3	080		0.70
01	12	870823	20.93	04 51	01 01	3	080		2.09
01	13	870823	20.93	04 51	02 01	3	030	15 45 n 100 22 w	2.44
02	01	870823	20.93	04 51	02 01	3	080		13.95
02	02	870823	20.93	68 04	01 01	3	080		14.30
02	03	870823	20.93	51 68	01 01	3	080	15 47 n 100 05 w	6.63
02	04	870823	20.93	67 22	01 12	3	080		3.49
02	05	870823	20.93	22 05	01 12	3	080		13.95
03	01	870823	20.93	51 04	04 12	3	103	15 48 n 099 55 w	11.51
03	02	870823	20.93	68 51	05 01	3	103	15 46 n 099 47 w	2.61
04	01	870823	22.41	04 68	05 01	3	103	15 45 n 099 38 w	7.84
05	01	870823	22.41	05 67	05 02	3	103	15 46 n 099 34 w	7.47
05	02	870823	22.41	67 22	05 02	3	103		8.59
05	03	870823	22.41	22 05	06 02	3	103	15 44 n 099 25 w	2.61
05	04	870823	22.41	05 67	06 02	3	103	15 43 n 099 23 w	4.48
06	01	870823	22.41	67 22	06 02	3	103		18.30
06	02	870823	22.41	51 04	06 02	3	103	15 39 n 099 18 w	3.84
06	03	870823	20.93	68 51	06 03	3	103		1.74
06	04	870823	20.93	04 68	05 03	3	103	15 37 n 099 08 w	6.17
01	01	870824	18.52	22 67	12 03	2	090	15 21 n 098 56 w	1.85
01	02	870824	18.52	67 05	12 03	2	090		5.62
01	03	870824	24.08	67 05	11 03	2	110	15 19 n 098 52 w	

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg			
01	04	870824	24.08	05	22	67	11	03	110	15 18 n	098 47 w	8.03
01	05	870824	24.08	22	67	05	11	03	110	15 18 n	098 47 w	8.43
01	06	870824	24.08	67	05	22	11	02	110	15 15 n	098 38 w	3.21
01	07	870824	24.08	68	04	51	11	02	110	15 15 n	098 38 w	15.25
01	08	870824	24.08	51	68	04	11	02	110	15 04 n	098 27 w	16.05
02	01	870824	20.00	05	22	67	01	01	080	15 04 n	098 27 w	7.33
02	02	870824	20.00	22	67	05	01	01	080	15 04 n	098 19 w	5.00
02	03	870824	20.00	67	05	22	01	01	080	15 04 n	098 19 w	1.33
02	04	870824	20.00	67	05	22	01	01	055	15 05 n	098 14 w	2.33
03	01	870824	20.00	05	22	67	12	12	080	15 05 n	098 14 w	6.33
03	02	870824	20.00	22	67	05	12	12	080	15 03 n	098 06 w	1.33
04	01	870824	20.00	04	68	51	12	01	080	15 03 n	098 06 w	1.33
05	01	870824	19.26	04	68	15	12	12	080	15 02 n	098 04 w	4.17
05	02	870824	19.26	15	04	68	12	12	080	15 02 n	098 04 w	4.17
05	03	870824	19.26	68	15	04	12	12	080	15 02 n	098 02 w	9.63
05	04	870824	19.26	67	05	22	12	12	080	15 05 n	097 52 w	4.82
05	05	870824	19.26	67	05	22	12	12	080	15 05 n	097 52 w	4.82
05	06	870824	19.26	05	22	67	05	12	3	080		1.61
05	07	870824	19.26	05	22	67	05	12	3	080		6.74
05	08	870824	19.26	22	67	05	06	12	3	080		0.32
06	01	870824	19.82	22	67	05	06	12	3	080	097 43 w	3.30
06	02	870824	19.82	67	05	22	06	12	3	080		5.94
06	03	870824	19.82	05	22	67	06	01	2	080		2.64
07	01	870824	18.52	04	51	68	06	02	2	080	097 25 w	0.31
08	01	870824	18.52	04	51	68	06	02	2	080	097 26 w	0.31
09	01	870824	18.52	22	67	05	07	03	2	080		2.47
09	02	870824	18.52	22	67	05	06	03	2	104	097 22 w	1.85
01	01	870825	19.08	04	68	51	10	03	2	123	097 14 w	2.86
01	02	870825	19.08	04	68	51	10	03	2	123	097 08 w	2.54
02	01	870825	19.08	04	68	51	10	03	2	123	097 08 w	2.54
03	01	870825	18.52	51	04	68	11	03	2	123	097 06 w	0.95
04	01	870825	18.52	51	04	68	11	03	2	123	097 05 w	0.62
05	01	870825	18.52	68	51	04	11	02	3	123	097 05 w	0.62
06	01	870825	18.52	22	67	05	11	02	2	123	097 00 w	4.32
07	01	870825	18.52	67	05	22	11	02	2	123	096 59 w	4.63
08	01	870825	19.26	05	22	67	11	02	2	123	096 55 w	0.62
09	01	870825	19.26	68	04	51	11	01	3	123	096 53 w	2.25
09	02	870825	19.26	68	04	51	12	01	3	123	096 50 w	4.49
09	03	870825	19.26	51	68	04	12	01	3	090	096 48 w	8.35
09	04	870825	19.26	04	51	68	12	12	3	090		12.84
10	01	870825	20.19	22	67	05	12	12	3	090	096 29 w	6.42
11	01	870825	20.19	67	05	22	12	12	3	090	096 25 w	3.03
12	01	870825	20.19	22	05	67	12	12	3	090	096 17 w	2.69
13	01	870825	20.19	51	68	04	06	12	1	090	096 14 w	6.39
14	01	870825	19.45	51	04	68	06	02	1	090	096 10 w	5.38
15	01	870825	19.45	05	67	22	06	02	1	090	096 04 w	5.19
15	02	870825	19.45	05	67	22	06	02	2	090	096 04 w	4.21
15	03	870825	19.45	67	22	05	06	02	2	090		1.94
15	04	870825	19.45	22	05	67	06	02	2	090	095 58 w	6.48
15	05	870825	19.45	22	05	67	06	02	3	090		3.24
15	06	870825	19.45	04	68	51	06	02	3	090	095 55 w	4.86
15	07	870825	19.45	51	04	68	06	03	4	090	095 49 w	9.40
01	01	870826	20.00	05	22	67	11	03	5	105	094 14 w	3.24
												6.67

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
01	02	870826	20.00	22 67	11 03	5	105	14 22 n 094 07 w	5.00
01	03	870826	20.00	68 51	11 03	5	105		8.00
01	04	870826	20.00	68 51	11 03	5	130		5.33
01	05	870826	20.00	04 68	10 02	5	130		4.33
01	06	870826	20.00	04 68	10 02	4	130		9.67
01	07	870826	20.00	51 68	11 02	4	130		12.67
01	08	870826	20.00	05 67	11 02	4	130	14 09 n 093 48 w	6.67
01	09	870826	20.37	05 67	11 02	3	130		7.13
01	10	870826	20.37	67 22	12 02	3	090	14 05 n 093 42 w	6.45
01	11	870826	20.37	22 05	12 01	3	090	14 05 n 093 38 w	0.68
02	01	870826	20.37	22 05	12 01	3	090	14 05 n 093 37 w	0.68
02	02	870826	20.37	05 67	12 01	3	090		6.45
02	03	870826	20.37	67 22	12 01	3	090		7.47
02	04	870826	20.37	68 04	12 12	3	090	14 05 n 093 30 w	6.45
03	01	870826	20.37	51 68	01 12	2	090	14 02 n 093 25 w	4.75
04	01	870826	20.37	51 68	04 01	3	090	14 02 n 093 20 w	1.36
05	01	870826	20.37	51 68	04 01	3	090	14 02 n 093 19 w	1.36
05	02	870826	20.37	04 51	02 12	4	090		2.38
05	03	870826	20.37	04 51	02 12	4	090	14 01 n 093 16 w	11.20
05	04	870826	19.45	22 05	12 12	4	090	14 01 n 093 12 w	0.65
06	01	870826	19.45	22 05	12 12	4	090		1.94
06	02	870826	19.45	05 67	12 22	4	090	14 00 n 093 08 w	0.32
07	01	870826	19.45	67 22	12 22	4	090	14 00 n 093 06 w	4.86
08	01	870826	19.45	67 22	05 05	4	090	14 00 n 093 01 w	6.48
08	02	870826	19.45	22 05	05 67	4	090		6.48
08	03	870826	19.45	05 67	22 22	4	090		1.30
09	01	870826	19.63	04 51	68	4	090	14 01 n 092 51 w	10.47
09	02	870826	19.63	68 04	06 02	4	090	14 01 n 092 46 w	9.16
09	03	870826	19.63	51 68	04 04	4	090	14 01 n 092 40 w	10.14
09	04	870826	19.63	67 22	05 05	3	090	13 59 n 092 35 w	6.22
09	05	870826	19.63	22 05	06 02	3	090		0.65
10	01	870826	19.63	22 05	06 02	3	090	13 59 n 092 29 w	1.31
11	01	870826	19.63	22 05	06 02	3	090	13 59 n 092 29 w	0.65
12	01	870826	19.63	22 05	06 02	3	090		0.33
12	02	870826	19.63	05 67	06 03	3	090		2.62
12	03	870826	19.63	67 22	06 03	3	090	13 59 n 092 24 w	0.98
12	04	870826	19.63	05 67	06 03	2	090		0.65
12	05	870826	19.63	05 67	06 03	2	090		1.64
12	06	870826	19.63	67 22	06 03	2	090		0.98
12	07	870826	19.63	67 22	06 03	2	090		6.22
12	08	870826	19.63	22 05	06 03	2	090	14 00 n 092 17 w	7.20
01	01	870827	18.52	04 51	68	3	180	14 00 n 092 23 w	4.01
02	01	870827	18.52	22 67	05 05	3	180	13 52 n 092 23 w	7.10
02	02	870827	18.52	67 05	22 67	3	180		2.78
03	01	870827	18.52	05 22	18 52	3	180	13 43 n 092 28 w	1.54
04	01	870827	18.52	05 22	67	3	180	13 42 n 092 28 w	3.09
04	02	870827	18.52	22 67	05 05	3	180		6.17
04	03	870827	18.52	68 04	51	3	180	13 39 n 092 28 w	12.35
04	04	870827	18.52	51 68	04 04	3	180		12.35
04	05	870827	18.52	67 05	68	3	180		12.96
04	06	870827	18.52	67 05	22 67	3	180		5.56
04	07	870827	18.52	05 22	11 12	3	180	13 14 n 092 30 w	1.54

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
05	01	870827	18.89	22			180	13 11 n 092 31 w	6.93
05	02	870827	18.89	67	01	12	180		5.67
05	03	870827	18.89	05	01	12	180		6.30
05	04	870827	18.89	04	02	12	180	13 01 n 092 32 w	12.59
05	05	870827	18.89	51			180	12 53 n 092 34 w	4.41
05	06	870827	18.89	51			180	12 51 n 092 34 w	8.19
05	07	870827	18.89	68			155		8.19
05	08	870827	18.89	68			155	12 43 n 092 32 w	4.41
01	01	870828	18.52	68			060	12 48 n 092 15 w	11.73
01	02	870828	18.52	22			060	12 52 n 092 10 w	4.01
01	03	870828	18.52	05			060		5.86
01	04	870828	18.52	67			060		0.93
01	05	870828	18.52	67			060		6.17
01	06	870828	18.52	22			060		1.23
01	07	870828	18.52	22			060	12 57 n 092 01 w	0.93
02	01	870828	18.52	22			060		5.25
02	02	870828	18.52	67			060	12 59 n 091 57 w	4.32
02	03	870828	18.52	51			060		1.85
03	01	870828	18.52	51			060	13 02 n 091 53 w	4.32
03	02	870828	18.52	04			060	13 04 n 091 51 w	2.16
03	03	870828	18.52	51			060		10.19
03	04	870828	18.52	68			060		12.35
03	05	870828	18.52	22			060	13 11 n 091 36 w	6.17
03	06	870828	18.52	05			060		6.17
03	07	870828	18.52	67			060		3.70
04	01	870828	18.52	51	07	12	060	13 12 n 091 21 w	4.01
04	02	870828	18.52	68	07	02	060		4.01
04	03	870828	18.52	04	07	02	060		3.09
05	01	870828	18.52	22	07	02	060	13 14 n 091 15 w	3.40
06	01	870828	21.30	22	07	02	060	13 17 n 091 12 w	3.55
06	02	870828	21.30	05	07	02	060	13 17 n 091 11 w	7.10
06	03	870828	21.30	67	07	03	060	13 19 n 091 07 w	7.10
06	04	870828	21.30	22	07	03	060		8.16
06	05	870828	21.30	05	07	03	060	13 22 n 091 01 w	2.84
01	01	870905	19.63	51	07	03	275	13 44 n 090 59 w	8.83
01	02	870905	19.63	04			275		6.54
01	03	870905	20.19	22			275	13 45 n 091 08 w	6.06
01	04	870905	20.19	22			270		1.01
01	05	870905	20.19	67			270		6.39
01	06	870905	20.19	05			270		7.74
01	07	870905	20.19	22			270	13 46 n 091 20 w	6.73
01	08	870905	20.19	67			270		5.72
01	09	870905	20.19	05			270		6.73
01	10	870905	20.93	51			270	13 46 n 091 32 w	10.46
01	11	870905	20.93	68			270	13 46 n 091 37 w	10.46
01	12	870905	20.93	04			270	13 46 n 091 43 w	10.46
01	13	870905	20.93	22			270	13 47 n 091 48 w	7.67
01	14	870905	20.93	67			270		6.98
01	01	870906	19.45	51			273	13 54 n 093 49 w	5.19
02	01	870906	19.45	04			293	13 55 n 093 55 w	1.30
03	01	870906	19.63	04			273	13 55 n 093 58 w	2.62
04	01	870906	19.63	68			273	13 55 n 094 02 w	3.93

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
05	01	870906	19.63	68			273	13 56 n 094 03 w	3.27
05	02	870906	19.63	67		4	273		7.20
05	03	870906	19.63	67		4	273		3.27
06	01	870906	18.89	05		4	273	13 58 n 094 13 w	6.93
06	02	870906	18.89	22		4	273		6.61
06	03	870906	18.89	67		4	273		3.15
07	01	870906	18.52	51		4	273	14 00 n 094 26 w	12.35
07	02	870906	18.52	68	07	4	273		12.35
07	03	870906	18.52	04		4	273		12.35
07	04	870906	16.30	05		4	273	14 01 n 094 42 w	5.70
07	05	870906	16.30	22		4	273		5.70
07	06	870906	16.30	67		3	273		4.89
07	07	870906	16.30	05		3	273		5.43
07	08	870906	16.30	22		3	273		5.70
07	09	870906	16.30	67		3	275		5.16
07	10	870906	16.67	04		3	275	14 00 n 095 01 w	11.11
07	11	870906	16.67	68		3	275		4.44
07	12	870906	16.67	68		3	275		2.22
08	01	870906	16.67	04		3	280	14 00 n 095 16 w	6.39
08	02	870906	16.67	05	12	3	280		5.56
08	03	870906	16.67	22	12	3	280		3.61
08	04	870906	16.67	67	02	3	280		1.94
08	05	870906	16.67	67	02	3	280		5.56
08	06	870906	18.33	05		3	280	14 01 n 095 31 w	6.11
08	07	870906	18.33	22		3	280		3.06
08	08	870906	18.33	68	03	2	280		6.11
08	09	870906	18.33	51	03	2	280		6.11
08	10	870906	18.33	04	03	2	280		1.22
01	01	870907	20.00	67		2	272	14 16 n 097 48 w	6.67
01	02	870907	20.00	22		2	272		5.67
01	03	870907	20.00	22	06	2	272		2.00
01	04	870907	20.00	67	03	2	272		0.67
01	05	870907	20.00	05	03	3	272	14 17 n 097 56 w	2.33
01	06	870907	20.00	67	03	3	272		4.00
01	07	870907	20.00	67		3	272		4.00
01	08	870907	20.00	67	06	3	272		3.00
01	09	870907	20.00	22	02	3	272		3.33
01	10	870907	20.00	22	02	3	272		3.33
01	11	870907	19.63	04		3	272	14 18 n 098 07 w	13.09
01	12	870907	19.63	04		3	272		1.64
02	01	870907	19.63	51		3	272	14 19 n 098 24 w	9.82
02	02	870907	19.63	22		3	272		2.29
03	01	870907	19.63	05		3	272	14 18 n 098 32 w	7.53
03	02	870907	19.63	67		3	272		5.89
03	03	870907	19.63	67	12	3	272		6.87
03	04	870907	19.63	22		3	272		6.22
03	05	870907	19.63	67	07	3	272		6.54
03	06	870907	19.63	22	07	3	272	14 18 n 098 51 w	4.91
03	07	870907	19.63	51	09	3	276		8.18
03	08	870907	19.63	04	11	3	276		12.43
04	01	870907	19.63	51	11	3	276	14 18 n 099 02 w	10.80
04	02	870907	19.63	68	11	3	276		4.25

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
05	01	870907	17.59	67 22	12 02	2	275	14 22 n 099 16 w	2.05
05	02	870907	17.59	05 67	11 02	2	305		5.86
05	03	870907	17.59	04 51	11 02	2	305		7.92
06	01	870907	18.15	68 04	11 02	2	307	14 28 n 099 27 w	6.05
06	02	870907	18.15	51 68	11 02	3	307		3.63
06	03	870907	18.15	51 68	11 02	2	307		1.21
06	04	870907	18.15	67 22	11 02	2	307		5.75
06	05	870907	16.48	22 05	11 03	1	307	14 34 n 099 35 w	1.10
01	01	870908	18.15	51 68		2	270	14 37 n 100 58 w	1.21
01	02	870908	18.15	51 68		2	270		9.38
02	01	870908	18.89	04 51		2	262	14 44 n 101 05 w	2.83
03	01	870908	17.78	67 22	02 02	2	250	14 47 n 101 12 w	5.93
03	02	870908	17.78	22 05	07 02	2	250		5.93
03	03	870908	17.78	05 67	07 01	2	250		3.85
04	01	870908	17.78	05 67	07 01	1	250	14 44 n 101 22 w	0.89
05	01	870908	18.89	68 04	07 01	1	260	14 41 n 101 25 w	11.02
05	02	870908	18.89	51 68	08 12	1	260		5.04
06	01	870908	18.89	67 22	09 12	2	260	14 45 n 101 40 w	4.09
06	02	870908	18.89	22 05	10 12	2	260	14 45 n 101 43 w	4.72
07	01	870908	18.89	05 67	12 12	2	260	14 46 n 101 52 w	6.93
07	02	870908	18.89	67 22	12 12	1	213		1.89
08	01	870908	9.26	51 04	01 01	1	213	14 45 n 101 58 w	0.62
09	01	870908	18.52	68 51	01 01	1	213	14 41 n 102 00 w	0.00
10	01	870908	19.82	04 68	01 02	1	213	14 37 n 102 03 w	1.32
10	02	870908	19.82	04 68	01 02	1	210		4.95
10	03	870908	19.82	22 05	02 02	1	210	14 35 n 102 05 w	6.94
10	04	870908	19.82	05 67	02 02	1	210		6.61
10	05	870908	19.82	67 22	02 02	1	210		0.66
11	01	870908	18.71	22 05	02 02	2	210	14 27 n 102 09 w	6.24
11	02	870908	18.71	04 68	02 02	2	210	14 25 n 102 09 w	4.68
11	03	870908	18.71	04 68	02 02	1	213		6.86
01	01	870909	18.71	22 05	02 02	3	210	12 48 n 103 12 w	2.18
01	02	870909	18.71	22 05		3	210		0.31
02	01	870909	18.71	22 05		3	210	12 44 n 103 15 w	8.42
02	02	870909	18.71	04 68		3	210		11.85
02	03	870909	18.71	51 04		3	210		2.18
03	01	870909	18.52	68 51		4	210	12 05 n 103 39 w	10.49
03	02	870909	18.52	04 68		4	210		12.35
03	03	870909	18.52	51 04		4	210		6.17
04	01	870909	18.89	05 22		4	213	11 44 n 103 56 w	5.56
04	02	870909	18.89	22 67		4	213		7.24
04	03	870909	18.89	05 22		4	213		6.61
04	04	870909	18.89	67 05		4	213		2.20
05	01	870909	18.71	51 04		4	213	11 30 n 103 59 w	5.30
05	02	870909	18.71	68 51		4	213		6.24
05	03	870909	18.71	04 68		4	213		5.61
05	04	870909	18.89	05 22		4	213	11 24 n 104 06 w	7.87
05	05	870909	18.89	22 67		4	213		3.15
01	01	870912	15.93	68 04		3	266	05 59 n 108 39 w	6.37
01	02	870912	15.93	51 68		4	266		10.62
01	03	870912	15.93	04 51		4	266		2.65
01	04	870912	17.59	51 68		4	266		9.38

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
01	05	870912	17.59	67 05		4	266		5.57
01	06	870912	17.59	67 05		4	266		5.57
01	07	870912	17.59	67 05		4	266		6.74
01	08	870912	17.59	67 05		4	266		6.16
01	09	870912	17.59	67 05		4	266		4.69
01	10	870912	17.59	67 05		4	266		5.86
01	11	870912	17.59	51 68		4	266	05 58 n 109 16 w	11.73
01	12	870912	17.59	51 68		5	266		11.73
01	13	870912	17.59	68 04		4	266		11.73
01	14	870912	17.59	67 05		4	266		6.45
01	15	870912	17.59	67 05		4	266		5.28
01	16	870912	17.59	67 05		4	266		6.45
01	17	870912	17.59	67 05	12	4	266		6.16
01	18	870912	17.59	67 05	12	4	266		4.11
01	19	870912	17.59	67 05	12	4	266		0.88
01	20	870912	17.59	67 05	12	4	266	05 57 n 109 55 w	11.73
01	21	870912	17.59	68 04	12	4	266		7.33
01	22	870912	17.59	68 04	12	4	266		4.40
01	23	870912	17.59	68 04	12	5	266		5.28
01	24	870912	17.59	51 68		5	266		6.45
01	25	870912	17.59	51 68	12	5	263		5.86
01	26	870912	17.59	67 05		5	263		6.16
01	27	870912	17.59	67 05		5	263		4.11
01	28	870912	17.59	67 05	12	5	263		1.47
01	29	870912	17.59	67 05		5	263		6.16
01	30	870912	17.59	67 05		5	263	05 57 n 110 34 w	5.99
02	01	870912	17.96	68 04	12	4	263	05 47 n 112 22 w	3.36
02	02	870913	20.19	67 05		4	263		3.36
02	03	870913	20.19	67 05		4	263		6.73
02	04	870913	20.19	67 05	06	4	263		3.36
02	05	870913	20.19	67 05	06	4	263		0.34
02	06	870913	20.00	67 05	06	4	263	05 45 n 112 32 w	6.67
02	07	870913	20.00	67 05	06	5	263		2.33
02	08	870913	20.00	67 05	06	5	263		11.00
02	09	870913	20.00	67 05	06	5	263		13.33
02	10	870913	20.00	67 05	07	5	263		13.33
02	11	870913	20.00	67 05	07	5	263		7.33
02	12	870913	20.00	67 05	06	5	263		6.00
02	13	870913	20.00	67 05	06	5	263		7.00
02	14	870913	20.00	67 05	07	5	263		7.00
02	15	870913	20.00	67 05	07	5	263		2.00
02	16	870913	20.00	67 05	07	5	263	03 43 n 113 13 w	1.08
02	17	870913	20.00	67 05	09	4	170	03 43 n 113 13 w	8.33
02	18	870913	20.00	67 05	09	4	170		8.33
02	19	870913	20.00	67 05	10	4	170		5.56
02	20	870913	20.00	67 05	09	4	170		5.83
02	21	870913	20.00	67 05	09	4	170		2.78
02	22	870913	20.00	67 05	09	4	170		2.78
02	23	870913	20.00	67 05	01	4	062		5.28
02	24	870913	20.00	67 05	01	4	062		5.56

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
01	11	870914	16.67	05 67	01 01	4	062	03 27 n 113 02 w	5.56
01	12	870914	16.67	04 51	01 01	4	062		4.17
01	13	870914	16.67	04 51	01 01	5	062		6.94
01	14	870914	16.67	68 04	01 01	4	062		11.11
01	15	870914	16.67	51 68	01 01	4	062		5.00
01	16	870914	16.67	51 68	09 12	4	243		6.67
01	17	870914	15.37	67 22	12 12	4	243	03 33 n 112 51 w	5.12
01	18	870914	15.37	22 05	12 12	4	243		4.87
01	19	870914	15.37	67 22	12 12	5	243		4.87
01	20	870914	15.37	67 22	12 12	5	243		3.07
01	21	870914	15.37	22 05	12 12	5	243		3.12
01	22	870914	18.71	22 05	12 12	5	241	03 27 n 113 07 w	0.94
01	23	870914	18.71	05 67	01 01	5	241		1.87
01	24	870914	18.71	05 67	01 01	5	241	03 24 n 113 12 w	9.98
02	01	870914	18.71	68 51	01 01	4	241		12.47
02	02	870914	18.71	04 68		4	241		7.79
02	03	870914	18.71	51 04		4	241		4.68
02	04	870914	18.71	51 04		4	241		4.33
02	05	870914	20.00	67 22		4	241	03 14 n 113 31 w	2.33
02	06	870914	20.00	67 22		3	241		5.33
02	07	870914	20.00	22 05		3	241		1.67
02	08	870914	20.00	22 05		3	241		6.67
02	09	870914	20.00	05 67		3	241		6.33
02	10	870914	20.00	67 22		3	241		3.33
02	11	870914	20.00	22 05		3	241		6.67
02	12	870914	20.00	04 68		3	241		6.67
02	13	870914	20.00	51 04		4	241		6.33
02	14	870914	20.00	68 51		3	241		3.67
02	15	870914	20.00	68 04		4	246	02 18 n 115 52 w	1.48
01	01	870915	22.22	22 67	07 03	4	246		6.30
01	02	870915	22.22	22 67	07 03	4	246		4.07
01	03	870915	22.22	67 05		4	246	02 16 n 116 06 w	4.82
02	01	870915	22.22	05 22		4	244		7.41
02	02	870915	22.22	04 68		4	244	02 11 n 116 18 w	9.26
03	01	870915	22.22	51 04	07 02	4	244		15.56
03	02	870915	22.22	68 51	07 02	5	244		1.48
03	03	870915	22.22	22 67	07 01	5	244		5.93
03	04	870915	22.22	22 67	07 01	5	230		6.67
03	05	870915	22.22	67 05	07 01	5	230		7.78
03	06	870915	22.22	05 22		5	230	02 03 n 116 38 w	7.41
03	07	870915	22.22	22 67		5	230		7.04
03	08	870915	22.22	67 05	12 12	5	230		7.41
03	09	870915	22.22	05 22	12 12	5	230		14.82
03	10	870915	22.22	68 51	12 12	5	230		14.82
03	11	870915	22.22	04 68	12 12	4	230		6.30
03	12	870915	22.22	51 04	12 12	4	230		0.35
04	01	870915	20.93	51 04	02 12	4	230	01 47 n 117 04 w	6.22
05	01	870915	20.74	22 67	01 01	4	230	01 47 n 117 07 w	6.57
05	02	870915	20.74	67 05	01 01	4	230		8.30
05	03	870915	20.74	22 67	01 01	4	230		6.57
05	04	870915	20.74	22 67	05 22	4	230		6.57
05	05	870915	20.74	67 05	22 22	4	230		

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
05	06	870915	20.74	05 22		4	230		6.22
05	07	870915	20.74	04 51		4	230		10.37
05	08	870915	20.74	68 04	01 02	4	230		1.38
05	09	870915	20.74	68 04	02 02	4	200		8.99
05	10	870915	20.74	51 68	02 02	4	200		2.77
06	01	870915	21.48	67 22		4	200	01 24 n 117 44 w	7.16
06	02	870915	21.48	22 05		4	200		7.16
06	03	870915	21.48	05 67		4	200		2.15
06	04	870916	16.85	51 04		4	200		6.46
01	01	870916	16.85	68 51		3	080		6.46
01	02	870916	12.96	04 68		3	080		1.94
01	03	870916	12.96	22 67		3	080		2.59
02	01	870916	12.96	05 22		3	080	01 18 n 117 55 w	2.16
02	02	870916	12.96	22 67	12 02	3	080		4.32
02	03	870916	12.96	05 22	12 02	3	090		4.32
02	04	870916	12.96	05 22	11 02	4	110		4.54
02	05	870916	12.96	22 67	11 02	4	110		4.54
02	06	870916	12.96	05 22	11 02	4	110		4.97
02	07	870916	12.96	68 51	11 02	4	110		8.86
02	08	870916	12.96	04 68		4	083		4.54
02	09	870916	16.67	04 68	12 01	4	083	01 14 n 117 30 w	5.00
02	10	870916	16.67	51 04		4	083		9.72
02	11	870916	16.67	51 04	12 12	5	083		1.39
02	12	870916	16.67	67 22	12 12	5	083		5.56
02	13	870916	16.67	22 05	12 12	4	083		5.83
02	14	870916	16.67	05 67		5	083		5.28
02	15	870916	16.67	67 22		5	083		5.56
02	16	870916	16.67	22 05		5	083		4.17
02	17	870916	16.67	05 67	12 12	5	083		6.95
02	18	870916	15.74	68 04	06 12	5	083	01 21 n 117 07 w	9.71
02	19	870916	16.67	68 04	06 12	5	083	01 22 n 117 03 w	1.39
02	20	870916	16.67	51 68		5	083		2.22
02	21	870916	16.67	51 68		4	083		5.28
02	22	870916	16.67	51 68		4	083		3.06
02	23	870916	16.67	51 68		5	083		11.67
02	24	870916	16.67	04 51	06 01	5	083	01 25 n 116 50 w	4.67
02	25	870916	15.56	67 22	06 01	5	083		2.85
02	26	870916	15.56	22 05	06 01	5	083		2.59
02	27	870916	15.56	05 67	06 02	5	085		5.19
02	28	870916	15.56	67 22	06 02	5	085		4.93
02	29	870916	15.56	22 05	06 02	5	085		2.59
02	30	870916	15.56	04 68	06 02	5	085		7.78
02	31	870916	15.56	51 04	06 02	4	085		3.63
02	32	870916	15.56	51 04	06 02	4	085		4.15
01	01	870917	16.11	22 67		4	105		5.37
01	02	870917	16.11	05 22		4	085	01 43 n 115 00 w	5.37

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
02	02	870917	16.11	67 05	01 01	4	070		0.27
02	03	870917	16.11	05 22	01 01	4	070		5.37
02	04	870917	16.11	22 67	01 01	4	070		3.22
03	01	870917	9.26	51 04	12 12	4	070	01 37 n 114 22 w	0.62
04	01	870917	9.26	51 04	12 12	4	070		3.24
04	02	870917	18.15	68 51	12 12	4	070	01 38 n 114 20 w	10.59
04	03	870917	18.15	04 68	12 12	4	070		10.28
04	04	870917	18.15	04 68	12 12	4	070		1.81
04	05	870917	17.78	67 05	06 12	4	070	01 45 n 114 08 w	5.93
04	06	870917	17.78	05 22	06 12	4	070		4.74
04	07	870917	17.78	05 22	06 12	4	070		2.07
04	08	870917	17.78	22 67	06 01	4	070		5.63
04	09	870917	17.78	67 05	06 01	4	070		5.33
04	10	870917	17.78	05 22	06 01	4	070		6.52
04	11	870917	17.78	22 67		4	070		5.33
04	12	870917	17.59	04 68		4	070	01 52 n 113 49 w	12.02
04	13	870917	17.59	51 04		4	070		7.04
04	14	870917	17.59	68 51		4	070		7.62
04	15	870917	17.59	67 05		4	070		5.57
04	16	870917	17.59	05 22		4	070		6.74
04	17	870917	17.59	22 67		4	070		5.57
01	01	870918	17.96	04 68	12 03	4	088	02 08 n 111 46 w	9.58
01	02	870918	17.96	51 04	12 03	4	088		8.98
01	03	870918	17.96	68 51	12 02	4	088		8.98
01	04	870918	17.96	22 67	12 02	4	088		6.29
01	05	870918	17.96	67 05	12 02	4	088		5.69
01	06	870918	17.96	05 22	12 02	4	088		4.19
01	07	870918	17.96	05 22	12 02	5	088		1.80
01	08	870918	17.96	22 67	12 02	5	088		6.29
01	09	870918	17.96	67 05	12 02	5	088		5.99
01	10	870918	17.96	05 22	12 02	5	088		5.69
01	11	870918	17.96	68 51	12 01	5	088		11.98
01	12	870918	17.96	04 68	12 01	5	088		2.69
02	01	870918	17.59	04 68	12 01	5	084	02 07 n 111 04 w	7.33
02	02	870918	17.59	51 04	12 12	5	084		11.73
02	03	870918	17.04	22 67	12 12	5	084	02 08 n 110 55 w	5.96
02	04	870918	17.04	67 05	12 12	5	084		5.40
02	05	870918	17.04	05 22	12 12	5	084		5.68
02	06	870918	17.04	22 67	12 12	5	084		5.96
02	07	870918	17.04	67 05	12 12	5	084		5.40
02	08	870918	17.04	05 22	12 12	4	084		5.68
02	09	870918	17.04	51 04	12 12	4	084		3.69
03	01	870918	17.04	51 04	12 12	4	088	02 11 n 110 34 w	5.40
03	02	870918	17.04	68 51	06 01	4	088		11.36
03	03	870918	17.04	04 68	06 01	4	088		7.10
03	04	870918	17.04	51 04	06 01	4	088		6.11
01	01	870919	16.67	67 22		3	175	00 59 n 110 14 w	6.11
01	02	870919	16.67	22 05		3	175		2.50
01	03	870919	16.67	05 67	09 03	4	175		2.78
01	04	870919	16.67	05 67	09 02	4	175		5.28
01	05	870919	16.67	22 05	09 02	4	175		6.54
01	06	870919	19.63	22 05	09 02	4	175		7.45
01	07	870919	19.45	51 04	09 02	4	175	00 37 n 110 14 w	

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
02	01	870919	19.45	51	09	02	175	00 27 n 110 19 w	0.97
03	01	870919	19.08	51	09	01	175	00 25 n 110 20 w	2.54
03	02	870919	19.08	68	09	01	175		2.86
04	01	870919	18.89	05	10	01	172	00 17 n 110 11 w	6.61
04	02	870919	18.89	67	10	01	172		5.98
04	03	870919	18.89	22	10	12	172		6.30
04	04	870919	18.89	68	12	12	172		12.59
04	05	870919	18.89	51	12	12	172		0.63
05	01	870919	16.67	05	03	01	172	00 04 s 110 12 w	4.17
05	02	870919	16.67	67	03	01	172		5.28
05	03	870919	16.67	22	03	01	172		5.56
05	04	870919	16.67	05	03	01	172		4.17
05	05	870919	16.67	67	03	02	172		1.67
05	06	870919	16.67	22	03	02	172		5.56
05	07	870919	16.67	67	03	02	172		5.28
05	08	870919	16.67	22	03	02	172		8.33
06	01	870919	18.71	05	01	02	155	00 38 s 110 19 w	3.74
01	01	870920	16.11	22	01	02	064	02 02 s 109 56 w	4.03
01	02	870920	16.11	67	01	02	064		4.83
01	03	870920	16.11	05	01	02	064		5.64
01	04	870920	16.11	22	01	02	064		5.10
01	05	870920	16.11	67	01	02	064		5.37
01	06	870920	16.11	05	01	02	064		4.03
01	07	870920	16.11	05	01	02	064		1.88
01	08	870920	16.11	68	01	01	064		4.57
01	09	870920	16.11	68	01	01	058		5.64
01	10	870920	16.11	51	01	01	058		6.18
01	11	870920	16.67	51	01	01	058	01 52 s 109 29 w	3.33
01	12	870920	16.67	68	01	01	058		1.39
01	13	870920	16.67	51	01	01	058		5.56
01	14	870920	16.67	04	01	01	058		4.17
02	01	870920	9.26	67	12	12	058		2.93
02	02	870920	16.67	05	12	12	058	01 48 s 109 21 w	5.56
02	03	870920	16.67	05	12	12	058	01 47 s 109 19 w	5.56
02	04	870920	16.67	22	12	12	058		5.56
02	05	870920	16.67	67	12	12	058		5.56
02	06	870920	16.67	05	07	12	058		5.56
02	07	870920	16.67	05	07	12	058		4.17
03	01	870920	16.85	51	07	01	058	01 39 s 109 02 w	5.34
03	02	870920	16.85	04	07	01	058		11.24
03	03	870920	16.85	68	07	02	058		1.12
03	04	870920	16.85	68	07	02	052		5.62
03	05	870920	16.85	22	07	02	052		5.62
03	06	870920	16.85	67	07	02	052		5.62
03	07	870920	16.85	05	07	02	052		5.62
03	08	870920	16.85	22	07	02	052	01 26 s 108 44 w	2.81
03	09	870920	16.85	67	07	02	052		5.90
03	10	870920	16.85	04	08	03	052		5.34
03	11	870920	16.85	68	08	03	052		2.81
03	12	870920	16.85	68	07	03	064		3.04
01	01	870921	15.19	05	07	02	065		2.28
01	02	870921	15.19	05	07	02	065	00 43 s 107 18 w	2.28

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
01	03	870921	15.19	67		2	065		6.33
01	04	870921	15.19	22		2	065		4.81
01	05	870921	15.19	05		3	065		5.32
01	06	870921	15.19	67	01 02	3	065		1.77
01	07	870921	15.19	22	01 02	3	067		3.29
01	08	870921	15.19	67	01 02	3	067		10.12
01	09	870921	15.19	51	01 02	3	067		10.38
01	10	870921	15.19	04	01 02	3	067		1.27
02	01	870921	15.74	68	01 01	3	067	00 28 s 106 57 w	2.36
03	01	870921	15.74	22	01 01	3	067	00 28 s 106 56 w	1.31
04	01	870921	15.74	05	01 01	3	067	00 30 s 106 53 w	5.51
05	01	870921	15.56	67	12 12	3	067	00 26 s 106 49 w	5.19
05	02	870921	15.56	22	12 12	3	067		3.89
05	03	870921	15.56	04	12 12	3	067		10.37
05	04	870921	15.56	68	07 12	3	067		2.59
05	05	870921	15.56	68	06 12	3	072		7.78
05	06	870921	15.56	51	06 12	3	072		5.44
06	01	870921	16.11	05	07 01	3	072	00 15 s 106 24 w	5.91
06	02	870921	16.11	67	07 01	3	072		5.37
06	03	870921	16.11	22	07 02	3	072		5.37
06	04	870921	16.11	05	07 02	3	072		2.69
06	05	870921	16.11	68	07 02	3	072		8.06
06	06	870921	16.67	51	07 02	2	072	00 08 s 106 12 w	8.33
06	07	870921	16.67	04	07 02	2	072		8.89
06	08	870921	16.67	67	07 03	2	072		5.00
06	09	870921	16.67	22	07 03	2	072		4.72
02	01	870922	18.15	70		3	074	104 26 w	8.47
02	02	870922	17.96	68	01 03	4	074	104 22 w	1.80
02	03	870922	17.96	70	01 03	4	064		2.40
02	04	870922	17.96	04	01 03	4	064		7.49
02	05	870922	17.96	68	01 02	4	064		4.49
03	01	870922	17.96	68	01 02	4	064		8.98
04	01	870922	17.78	68	01 02	4	064	00 47 n 104 08 w	0.59
05	01	870922	17.96	04	01 02	4	064	00 57 n 103 48 w	0.00
05	02	870922	17.96	70	12 12	4	064	01 02 n 103 48 w	2.99
05	03	870922	17.04	51	12 12	4	064	01 02 n 103 47 w	1.99
05	04	870922	17.04	67	12 12	4	064		5.11
05	05	870922	17.04	22	12 12	4	064		1.42
05	06	870922	17.04	05	12 12	4	068		4.54
05	07	870922	17.04	67	06 12	4	068		5.96
05	08	870922	17.04	22	06 12	4	068		5.68
05	09	870922	17.04	05	06 12	4	068		5.11
05	10	870922	17.04	67	06 01	4	068		3.41
06	01	870922	17.04	05		4	068		2.27
07	01	870922	17.04	04		4	068	01 08 n 103 30 w	4.54
07	02	870922	17.04	68		4	068	01 09 n 103 22 w	9.37
08	01	870922	17.04	51		3	068	01 11 n 103 17 w	0.28
08	02	870922	17.04	67	06 02	3	068	01 12 n 103 16 w	5.68
09	01	870922	17.04	22		3	064	01 14 n 103 07 w	3.41
09	02	870922	17.04	05	07 02	3	064		5.68
09	03	870922	17.04	68	07 03	3	064		4.26
09	04	870922	17.04	04		3	064		4.54

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
10	01	870922	17.04	68			064	01 17 n 103 00 w	0.85
01	01	870923	17.96	04	12	03	064	02 03 n 101 36 w	2.40
01	02	870923	17.96	04			064		2.69
01	03	870923	17.96	22			064		6.89
01	04	870923	17.96	67			064		2.40
01	05	870923	17.96	67			064		2.69
01	06	870923	17.96	70			064		2.10
01	07	870923	17.96	70			064		2.40
02	01	870923	18.15	51	11	01	064	02 09 n 101 23 w	7.56
02	02	870923	18.15	51	02	02	034		1.21
02	03	870923	18.15	51	02	02	034		8.77
03	01	870923	18.15	68			064	02 17 n 101 14 w	2.12
03	02	870923	18.15	68			054		2.42
04	01	870923	18.15	68			064	02 18 n 101 12 w	2.12
04	02	870923	18.15	68			064		0.91
04	03	870923	18.15	68			064		0.91
05	01	870923	17.78	68			068	02 29 n 100 51 w	10.37
05	02	870923	17.78	51	12	12	068		5.93
06	01	870923	19.82	04	06	12	068	02 35 n 100 38 w	10.24
06	02	870923	19.82	70	06	12	068		3.96
07	01	870923	19.82	22	06	12	068	02 38 n 100 29 w	6.61
07	02	870923	19.82	67	06	01	068		6.28
07	03	870923	19.82	70	06	01	068		6.94
07	04	870923	19.82	22	06	01	068		2.64
07	05	870923	19.82	67	07	01	068		11.38
07	06	870923	17.96	04	07	02	068	02 44 n 100 20 w	7.49
07	07	870923	17.96	51	07	02	068		8.08
07	08	870923	17.96	68	07	02	068		8.08
07	09	870923	17.96	70	07	02	068		5.39
07	10	870923	17.96	22	07	03	068		3.97
01	01	870924	18.33	68			055	03 27 n 098 22 w	6.72
01	02	870924	18.33	68	01	03	055		9.17
01	03	870924	18.33	04	01	03	055		9.47
01	04	870924	18.33	51	01	03	055		6.11
01	05	870924	18.33	67	01	02	055		6.42
01	06	870924	18.33	22	01	02	055		5.50
01	07	870924	18.33	05	01	02	055		6.11
01	08	870924	18.33	67	01	02	055		4.28
01	09	870924	18.33	22	01	02	055		4.28
02	01	870924	18.33	51	01	01	060	03 47 n 097 54 w	0.31
03	01	870924	18.33	51	01	01	060	03 50 n 097 50 w	5.50
04	01	870924	18.33	68	02	12	055	03 55 n 097 43 w	4.28
04	02	870924	18.33	05	12	12	055		1.53
04	03	870924	18.33	05			055		6.11
04	04	870924	18.33	67			055		7.03
04	05	870924	18.33	22			055		5.19
04	06	870924	18.33	05	12	12	055		6.11
04	07	870924	18.33	67	07	12	055		6.42
04	08	870924	18.33	22	07	12	055		13.45
04	09	870924	18.33	68	07	12	055		5.19
04	10	870924	18.33	51	07	01	055	04 20 n 097 12 w	6.30
05	01	870924	18.89	05	07		055		

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
05	02	870924	18.89	67		4	055		6.30
05	03	870924	18.89	22		4	055		6.61
05	04	870924	18.89	05		4	055		5.67
05	05	870924	19.63	04		4	055	04 28 n 096 59 w	8.18
05	06	870924	19.63	68		3	055		8.51
01	01	870925	20.74	67	01 03	3	063	05 28 n 095 06 w	6.91
01	02	870925	20.74	22	01 03	3	063		0.69
02	01	870925	21.11	05		3	063	05 33 n 094 58 w	6.33
03	01	870925	20.56	04		3	063	05 30 n 094 51 w	4.11
03	02	870925	20.56	04	02	3	063		6.85
03	03	870925	20.56	68		3	063		4.11
04	01	870925	20.56	68	01 02	3	058	05 34 n 094 43 w	4.80
04	02	870925	20.56	51	01 02	3	058		11.99
04	03	870925	20.56	67	01 01	2	058		2.06
04	04	870925	20.56	67		2	058		4.80
04	05	870925	20.56	22	01	2	058		4.11
05	01	870925	20.74	05		3	058	05 43 n 094 25 w	6.57
05	02	870925	20.74	67		3	058		6.91
05	03	870925	20.74	22		3	058		5.53
05	04	870925	21.30	51		3	058	05 49 n 094 16 w	2.84
05	05	870925	21.30	51		3	054		11.36
05	06	870925	21.30	04		3	054	05 55 n 094 06 w	2.84
06	01	870925	21.48	04	07 12	3	054		8.24
06	02	870925	21.48	68	12 12	3	054		14.32
06	03	870925	21.48	05	07 01	3	054		7.16
06	04	870925	21.48	67	01 01	3	054		7.16
06	05	870925	21.48	22	07 01	3	054		8.59
06	06	870925	21.48	05	07 02	3	054		3.22
07	01	870925	21.85	67	07 02	3	050	06 11 n 093 42 w	3.28
08	01	870925	21.48	67	07 02	3	050	06 12 n 093 47 w	0.72
09	01	870925	21.48	22	07 02	3	050	06 13 n 093 40 w	6.80
09	02	870925	21.48	04	07 02	3	050		10.74
09	03	870925	21.48	51	07	3	050		3.58
09	04	870925	21.48	51		3	050		7.16
09	05	870925	21.48	68		3	050		5.73
01	01	870926	20.37	68		2	058	07 24 n 091 37 w	0.68
02	01	870926	20.37	68		2	058	07 25 n 091 35 w	4.07
03	01	870926	18.15	51	03	2	058	07 28 n 091 33 w	6.65
03	02	870926	18.15	51	03	2	058		3.93
03	03	870926	18.15	04	01 03	2	058		4.54
04	01	870926	20.00	22	01 02	3	058	07 38 n 091 22 w	7.33
04	02	870926	20.00	67	01 02	3	058		2.67
05	01	870926	20.37	67	01 02	3	058	07 42 n 091 16 w	1.36
05	02	870926	20.37	05	01 02	3	058		2.38
06	01	870926	20.37	05	01 02	3	058	07 44 n 091 12 w	0.68
07	01	870926	20.37	22	01 01	3	058	07 45 n 091 10 w	2.04
07	02	870926	20.37	04	01 01	3	058		1.36
08	01	870926	20.37	04	02 01	3	058	07 47 n 091 08 w	6.45
09	01	870926	20.37	68	02 01	3	058	07 49 n 091 02 w	5.09
10	01	870926	20.37	68	02 01	3	058	07 46 n 091 08 w	3.40
10	02	870926	20.37	51	02 12	2	058	07 52 n 090 57 w	13.58
10	03	870926	20.37	67	12 12	2	058		6.79

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
10	04	870926	20.37	22	12	12	058	08 00 n 090 42 w	2.72
11	01	870926	21.67	05	06	01	058		5.42
11	02	870926	21.67	51	06	01	058		1.08
11	03	870926	21.67	51	06	01	057		13.36
12	01	870926	20.37	04	07	02	057	08 05 n 090 29 w	10.19
01	01	870927	22.59	22	05	03	150	08 50 n 088 51 w	3.77
02	01	870927	18.52	67	05	03	150	08 47 n 088 49 w	3.09
03	01	870927	18.52	05	10	03	150	08 45 n 088 46 w	0.93
03	02	870927	18.52	22	10	03	150		5.56
03	03	870927	18.52	22	10	02	150		3.09
03	04	870927	18.52	68	10	02	150		6.48
04	01	870927	17.78	04	10	02	150	08 33 n 088 39 w	5.04
05	01	870927	17.78	04	10	02	150	08 30 n 088 37 w	3.26
05	02	870927	17.78	04	10	02	150		6.52
05	03	870927	17.78	51	10	02	150		5.63
05	04	870927	17.78	22	10	02	150		6.22
05	05	870927	17.78	05	10	01	150		6.22
06	01	870927	17.78	67	12	12	150	08 15 n 088 35 w	5.93
07	01	870927	18.89	51	12	12	150	08 12 n 088 31 w	0.31
08	01	870927	17.78	51	12	12	150	08 11 n 088 30 w	4.74
08	02	870927	17.96	68	12	12	150	08 07 n 088 26 w	6.29
08	03	870927	17.96	68	12	12	150		8.08
08	04	870927	17.96	04	02	12	152	08 04 n 088 25 w	1.85
09	01	870927	18.52	22	03	01	152		1.85
09	02	870927	18.52	05	03	01	152	07 51 n 088 18 w	0.62
10	01	870927	18.52	05	03	01	152		4.63
10	02	870927	18.52	05	03	01	152		6.48
10	03	870927	18.52	67	03	02	152		3.09
10	04	870927	18.52	22	03	02	152		9.26
10	05	870927	18.52	04	03	02	152		1.54
11	01	870927	18.52	68	03	02	152	07 37 n 088 10 w	5.56
11	02	870927	18.52	51	03	02	152	07 33 n 088 08 w	1.54
12	01	870927	18.52	51	03	02	152		0.62
12	02	870927	18.52	51	03	03	152	07 30 n 088 06 w	2.78
13	01	870927	18.52	67	04	03	152		5.56
13	02	870927	18.52	22	04	03	152		1.54
13	03	870927	18.52	22	04	03	152		2.47
13	04	870927	18.52	05	04	03	152		0.62
13	05	870927	18.52	67	04	02	106	05 26 n 087 03 w	9.26
01	01	870928	18.52	51	04	02	106	05 01 n 085 02 w	7.74
01	01	870929	21.11	67	05	02	106		7.04
01	02	870929	21.11	22	05	02	106		6.69
01	03	870929	21.11	05	07	02	106		4.93
01	04	870929	21.11	67	07	02	106		8.80
02	01	870929	21.11	51	08	02	106	04 56 n 084 46 w	1.76
02	02	870929	21.11	51	08	02	106		5.43
03	01	870929	20.37	04	68	08	106	04 54 n 084 38 w	1.70
03	02	870929	20.37	68	04	04	106		6.45
03	03	870929	20.37	68	04	04	106		6.79
03	04	870929	20.37	05	51	05	106		6.73
04	01	870929	20.19	22	67	05	112	04 53 n 084 30 w	5.05
04	02	870929	20.19	67	05	05	112		1.68
04	03	870929	20.19	67	05	05	112		

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
04	04	870929	20.19	05			112		6.73
04	05	870929	20.19	04			112		13.46
04	06	870929	20.19	68			112		1.68
05	01	870929	19.63	68			112	04 49 n 084 13 w	1.64
06	01	870929	19.45	68			113	04 36 n 083 45 w	6.48
07	01	870929	19.45	12			113	04 32 n 083 36 w	2.92
07	02	870929	19.45	04			113		1.62
08	01	870929	19.45	05			113	04 30 n 083 32 w	7.13
08	02	870929	19.45	22			113		6.48
08	03	870929	19.45	67			113		0.55
08	04	870929	19.45	67			113		1.94
01	01	870930	21.30	67			028	04 08 n 081 29 w	0.35
01	02	870930	21.30	67			028		4.61
02	01	870930	20.74	04	02	01	028	04 13 n 081 26 w	13.14
02	02	870930	20.74	04	02	01	028		13.83
02	03	870930	20.74	68	02	01	028		4.15
02	04	870930	20.74	68	04	02	028		9.68
02	05	870930	20.74	22	03	12	028		6.91
02	06	870930	20.74	05	12	12	028		6.91
02	07	870930	20.74	67	12	12	028		6.91
02	08	870930	20.74	22	07	12	028		1.04
03	01	870930	20.00	05			028	04 43 n 081 03 w	4.67
04	01	870930	19.45	68			028	04 46 n 081 02 w	0.97
04	02	870930	19.45	68			037		7.78
04	03	870930	19.45	68			037		1.94
04	04	870930	19.45	51			037		7.45
04	05	870930	19.45	04			037		7.13
04	06	870930	19.45	67			037		1.94
05	01	870930	19.63	22	08	02	037	04 59 n 080 51 w	6.87
06	01	870930	19.63	67			037	05 00 n 080 48 w	2.62
07	01	870930	19.45	51			030	05 04 n 080 46 w	4.86
01	01	871001	19.82	67			030	06 49 n 079 46 w	1.32
02	01	871001	19.08	22	02	03	030	06 53 n 079 42 w	6.68
02	02	871001	19.08	05			030		5.09
02	03	871001	19.08	05			030		1.27
02	04	871001	19.08	67	02	02	030		6.99
02	05	871001	19.08	22	02	02	030		2.23
02	06	871001	19.08	68	02	02	030	07 02 n 079 36 w	12.72
02	07	871001	19.08	04			030		13.35
02	08	871001	19.08	51			030		2.54
02	09	871001	19.08	51	02	01	030		10.49
02	10	871001	19.08	05	02	01	030		6.04
02	11	871001	19.08	67	02	01	030		4.77
03	01	871001	19.08	22			030		7.31
03	02	871001	19.08	05	03	12	030	07 30 n 079 18 w	0.32
04	01	871001	19.08	05	03	12	030	07 31 n 079 17 w	3.50
04	02	871001	19.08	67	03	12	030		8.90
04	03	871001	19.08	51	12	12	030		3.18
04	04	871001	19.08	51			030		0.32
05	01	871001	18.52	51			030	07 46 n 079 10 w	8.33
05	02	871001	18.52	04			030		9.26
06	01	871001	19.08	22	07	01	030	07 55 n 079 05 w	6.36

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
06	02	871001	19.08	05	07	01	030	08 01 n 079 01 w	6.36
06	03	871001	17.78	67	07	01	030		2.37
06	04	871001	17.78	67	07	01	325		4.44
06	05	871001	17.78	22	05	01	325		3.56
06	06	871001	17.78	22	05	07	320		1.48
01	01	871009	18.52	55	63		114	08 43 n 079 04 w	4.32
01	02	871009	18.52	55	63		130		0.93
02	01	871009	18.52	55	63		130	08 41 n 079 59 w	2.78
03	01	871009	18.52	63	56		130	08 39 n 078 58 w	1.85
04	01	871009	18.52	56	55		130	08 37 n 078 57 w	3.70
04	02	871009	18.52	56	55		130		6.79
04	03	871009	18.52	55	63		126		4.63
04	04	871009	18.52	56	63		126	08 31 n 078 51 w	12.35
04	05	871009	18.52	31	64		126		10.49
05	01	871009	18.52	64	69		126	08 23 n 078 40 w	2.47
05	02	871009	18.52	69	31		180	08 22 n 078 39 w	7.72
05	03	871009	18.52	69	31		180		1.54
05	04	871009	18.52	31	64		180		4.01
05	05	871009	18.52	55	56		180		5.25
06	01	871009	18.52	63	56		180		3.40
06	02	871009	18.52	56	55		180	08 08 n 078 41 w	6.79
07	01	871009	18.52	63	56	11	180	08 03 n 078 42 w	0.62
07	02	871009	18.52	55	55	12	180		9.26
07	03	871009	18.52	56	55	12	180		3.09
07	04	871009	18.52	31	64	12	195	07 56 n 078 43 w	9.26
07	05	871009	18.52	64	69	12	195	07 50 n 078 44 w	3.40
07	06	871009	18.52	64	69	12	195		3.70
08	01	871009	18.52	64	69	31	195	07 45 n 078 46 w	2.47
08	02	871009	18.52	64	69	31	195	07 44 n 078 46 w	2.78
09	01	871009	18.52	55	63	56	195	07 37 n 078 48 w	4.01
10	01	871009	18.52	55	63	56	195	07 33 n 078 49 w	3.70
11	01	871009	18.52	63	56	55	195	07 29 n 078 50 w	3.09
11	02	871009	18.52	56	55	55	195		4.01
11	03	871009	18.52	63	56	55	195		3.09
11	04	871009	18.52	56	63	55	195	07 24 n 078 51 w	3.40
11	05	871009	18.52	55	63	55	195		6.17
11	06	871009	18.52	31	64	69	195	07 19 n 078 53 w	4.63
11	07	871009	18.52	64	69	69	195		4.63
11	08	871009	18.52	64	69	31	195	07 15 n 078 54 w	9.26
11	09	871009	18.52	69	31	64	195	07 10 n 078 56 w	9.26
11	10	871009	18.52	55	63	56	193	07 13 n 079 00 w	7.41
11	11	871009	18.52	55	63	56	193	07 08 n 079 01 w	0.31
01	01	871010	18.52	64	69	31	192	05 29 n 079 26 w	6.48
02	01	871010	18.52	69	31	64	192	05 28 n 079 27 w	10.19
02	02	871010	18.52	31	64	69	192		10.80
02	03	871010	18.52	56	55	63	192		8.03
02	04	871010	18.52	56	55	63	192	05 13 n 079 31 w	0.93
02	05	871010	17.59	56	63	56	192		3.23
02	06	871010	17.59	55	63	56	192	05 06 n 079 30 w	3.23
03	01	871010	17.78	63	56	55	192		0.30
03	02	871010	17.78	56	55	55	192	04 59 n 079 32 w	11.85
03	03	871010	17.59	64	69	31	192		11.73

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
03	04	871010	17.59	69 31	10 01	2	192	04 44 n 079 39 w	6.16
04	01	871010	17.78	56 55	12 12	2	192	04 44 n 079 39 w	10.96
05	01	871010	17.78	55 63	10 01	2	311	04 35 n 079 43 w	10.07
05	02	871010	17.78	64 69	10 01	3	311		10.67
05	03	871010	17.78	69 31	10 01	3	311		3.56
06	01	871010	18.52	69 31	10 01	3	311	04 47 n 079 53 w	1.54
06	02	871010	18.52	31 64	10 01	3	311		6.17
06	03	871010	18.52	31 64	10 02	3	311	04 50 n 079 56 w	9.26
06	04	871010	18.15	56 55	10 02	3	306	04 53 n 079 58 w	9.07
06	05	871010	18.15	55 63	10 02	3	306	04 56 n 080 02 w	6.96
01	01	871011	17.78	63 56	10 02	3	245	04 01 n 080 53 w	10.96
01	02	871011	17.78	55 63	07 03	3	245		6.22
01	03	871011	17.78	55 55	07 02	3	245		5.33
01	04	871011	17.78	55 63	07 02	3	245		1.19
01	05	871011	17.78	55 63	07 02	3	245	03 56 n 081 05 w	0.30
02	01	871011	18.15	55 63	07 02	3	245	03 54 n 081 04 w	6.35
02	02	871011	18.15	69 31	07 02	3	245	03 53 n 081 07 w	12.10
02	03	871011	18.15	31 64	07 01	3	245		9.07
03	01	871011	17.96	56 55	08 01	3	244	03 51 n 081 22 w	11.08
03	02	871011	17.96	55 63	08 01	3	244		8.08
03	03	871011	17.96	55 55	08 12	3	244		3.89
03	04	871011	17.96	55 63		3	244		1.50
03	05	871011	18.33	55 63		3	244	03 46 n 081 35 w	4.58
03	06	871011	18.33	55 63		3	244		4.58
03	07	871011	18.33	69 31		2	244	03 44 n 081 39 w	12.22
03	08	871011	18.33	31 64		2	244		12.22
03	09	871011	18.33	64 69		3	244		12.22
03	10	871011	18.52	63 56	12 01	3	244	03 35 n 081 57 w	12.35
03	11	871011	18.52	55 55	12 01	3	244		12.35
03	12	871011	18.52	55 63	12 02	3	244		3.09
03	13	871011	18.52	55 63	12 02	3	244	03 28 n 082 10 w	9.26
03	14	871011	18.33	69 31	12 02	3	244	03 25 n 082 15 w	4.28
04	01	871011	18.33	64 69	01 02	3	244	03 26 n 082 18 w	8.56
04	02	871011	18.33	64 69	01 02	3	244		5.50
05	01	871011	18.15	56 55		3	239	03 24 n 082 28 w	1.21
05	02	871011	18.15	63 56	12 03	3	239		1.21
05	03	871011	18.15	55 55		3	240	03 23 n 082 28 w	5.14
05	04	871011	18.15	55 63		3	240	03 23 n 082 29 w	0.30
01	01	871012	19.26	31 64		3	301	03 43 n 084 12 w	3.85
01	02	871012	19.08	31 64	03 03	3	301	03 44 n 084 13 w	6.36
01	03	871012	19.08	64 69	05 03	3	301		11.13
01	04	871012	19.08	31 64	05 02	3	301		1.91
01	05	871012	19.08	69 31	05 02	3	310	03 50 n 084 22 w	5.40
01	06	871012	19.08	31 64		3	310		3.82
01	07	871012	18.71	55 63		3	310	03 54 n 084 26 w	12.47
01	08	871012	18.71	55 63		3	310		4.36
01	09	871012	18.71	63 56		3	310	03 59 n 084 32 w	3.12
01	10	871012	18.71	63 56	05 02	4	310	04 00 n 084 33 w	1.56
01	11	871012	18.71	63 56	05 02	3	310		1.56
01	12	871012	18.71	63 56		2	310		1.87
01	13	871012	18.71	56 55	05 01	2	310		12.47
01	14	871012	18.71	31 64	05 01	2	310		13.72

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
01	15	871012	18.33	64	06	01	310	04 11 n 084 46 w	10.70
02	01	871012	18.15	69			310	04 18 n 084 50 w	2.72
03	01	871012	18.15	55			297	04 29 n 085 02 w	2.72
04	01	871012	18.15	31			297	04 35 n 085 11 w	6.96
05	02	871012	18.15	55	11	02	297	04 38 n 085 19 w	7.56
05	02	871012	18.15	55	11	02	297		1.51
05	03	871012	17.96	63	11	02	297	04 41 n 085 23 w	8.98
05	04	871012	18.15	56	11	02	297	04 43 n 085 26 w	7.86
06	01	871012	17.78	31	11	03	296	04 46 n 085 32 w	1.19
07	01	871012	17.41	64	11	03	294	04 49 n 085 34 w	4.06
07	02	871012	17.04	64	11	03	294	04 50 n 085 36 w	0.28
01	01	871013	18.52	56	09	01	348	05 36 n 087 04 w	3.09
02	01	871013	18.15	55	09	01	348	05 40 n 087 03 w	5.14
03	01	871013	18.52	64	09	02	346	05 41 n 087 04 w	1.54
01	01	871014	19.63	69	03	03	347	07 31 n 087 27 w	4.25
01	02	871014	19.63	31	03	03	347	07 33 n 087 28 w	5.56
02	01	871014	21.11	31	03	03	347	07 41 n 087 30 w	3.52
02	02	871014	21.11	64	03	02	347	07 43 n 087 30 w	5.28
02	03	871014	21.11	64	03	02	347		5.28
02	04	871014	21.11	63	04	02	347	07 48 n 087 32 w	4.93
03	01	871014	20.00	56			345	07 51 n 087 30 w	6.00
04	01	871014	18.15	69			345	07 52 n 087 33 w	4.54
04	02	871014	18.15	31			345	07 55 n 087 34 w	6.05
04	03	871014	18.15	31			345		11.19
04	04	871014	18.15	31			345		2.72
04	03	871014	18.15	64	05	01	345	08 10 n 087 38 w	5.28
05	01	871014	21.11	64	05	12	345	08 13 n 087 38 w	14.08
05	02	871014	21.11	63	05	12	345	08 20 n 087 40 w	11.31
06	01	871014	20.56	56	06	12	345		1.03
06	02	871014	20.56	56			345		2.40
06	03	871014	20.56	55	08	12	345	08 28 n 087 42 w	9.25
06	04	871014	19.82	55			345		1.65
06	05	871014	19.82	55			345	08 34 n 087 43 w	4.62
06	06	871014	19.82	69	01	01	224	08 34 n 087 43 w	5.28
06	07	871014	19.82	69	01	01	224	08 29 n 087 47 w	2.96
06	08	871014	17.78	31	01	01	224		2.07
06	09	871014	17.78	31	01	01	224	08 26 n 087 51 w	10.07
07	01	871014	17.78	64	01	01	224	08 24 n 087 53 w	8.98
07	02	871014	17.96	63	01	02	224	08 20 n 087 57 w	1.50
07	03	871014	17.96	56	01	02	224	08 20 n 087 57 w	7.49
07	04	871014	17.96	56	01	02	224		1.20
07	05	871014	17.96	55	01	02	224	08 17 n 088 01 w	7.78
07	06	871014	17.96	55			224		2.99
07	07	871014	17.96	69			224	08 14 n 088 04 w	2.99
08	01	871014	17.96	31			224	08 09 n 088 07 w	6.59
08	01	871015	17.78	55			220	06 58 n 089 28 w	10.37
01	01	871015	17.78	63			220		4.15
01	02	871015	17.78	56			220	06 51 n 089 35 w	0.89
02	01	871015	17.78	55			212	06 30 n 089 51 w	2.61
03	01	871015	17.41	55	09	01	212		3.77
03	02	871015	17.41	55	09	01	212	06 26 n 089 53 w	0.29
03	03	871015	17.41	55	10	01	212	06 23 n 089 55 w	5.80
04	01	871015	17.41	63	10	01	212		4.06
04	02	871015	17.41	55					

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
05	01	871015	16.67	31		4	220	06 19 n 089 59 w	8.33
05	02	871015	16.67	64		4	220	06 16 n 090 01 w	5.83
05	03	871015	16.67	64	11	4	220		2.50
05	04	871015	16.67	69	12	4	220	06 13 n 090 04 w	2.78
05	05	871015	16.67	69	01	5	220		1.39
05	06	871015	16.67	69	01	5	220	06 10 n 090 06 w	0.28
01	01	871016	19.45	64	12	4	019	05 54 n 091 24 w	6.81
01	02	871016	19.45	64		4	019		4.21
01	03	871016	19.45	69		4	019		3.89
01	04	871016	19.45	69		4	019		5.83
01	05	871016	19.45	56		4	019	06 03 n 091 18 w	12.96
01	06	871016	19.45	55		4	019		3.89
01	07	871016	19.45	55		3	010	06 35 n 091 05 w	6.82
02	01	871016	17.78	64		3	010		1.48
02	02	871016	17.78	56		3	010		10.37
02	03	871016	17.78	55		3	010		5.93
02	04	871016	17.78	55		3	010	06 47 n 091 01 w	5.99
02	05	871016	17.96	55		3	010		7.78
02	06	871016	17.96	63		3	010		4.19
02	07	871016	17.96	63		3	010	07 06 n 090 56 w	7.49
03	01	871016	17.96	64		3	015		7.49
03	02	871016	17.96	69		3	015	07 15 n 090 53 w	0.60
03	03	871016	17.96	31		3	015	07 20 n 090 50 w	7.31
04	01	871016	19.08	55		3	015		4.13
04	02	871016	19.08	55		3	015	07 28 n 090 47 w	2.52
05	01	871016	18.89	63		3	015		2.20
05	02	871016	18.89	63		3	015	07 35 n 090 47 w	13.27
06	01	871016	18.52	64		3	016	09 14 n 090 13 w	4.02
01	01	871017	17.22	63	03	2	016	09 16 n 090 13 w	2.87
01	02	871017	17.22	63	03	2	016		4.02
01	03	871017	17.22	56	03	2	016		9.76
01	04	871017	17.22	55	03	3	016	09 25 n 090 10 w	4.31
01	05	871017	17.22	69	03	3	016	09 29 n 090 06 w	3.93
02	01	871017	18.15	31	03	3	015	09 32 n 090 05 w	7.54
03	01	871017	17.41	64	03	2	015	09 37 n 090 06 w	4.44
04	01	871017	17.78	63	03	2	015	09 46 n 090 09 w	7.41
05	01	871017	17.78	56	03	2	030		2.37
05	02	871017	17.78	56	03	2	030	09 49 n 090 08 w	4.31
06	01	871017	17.22	69	12	2	030	09 54 n 090 06 w	0.57
07	01	871017	17.22	31	12	2	033	09 57 n 090 03 w	11.20
08	01	871017	17.22	63	12	2	033		7.75
08	02	871017	17.22	56	07	2	033	10 05 n 089 58 w	0.46
08	03	871017	9.26	56	07	2	033	10 05 n 089 58 w	2.01
09	01	871017	17.22	55	07	3	027	10 06 n 089 58 w	2.87
10	01	871017	17.22	55	07	3	027	10 07 n 089 57 w	7.02
10	02	871017	16.85	69	07	3	027	08 58 n 091 14 w	0.67
01	01	871018	20.19	31	08	2	218	08 54 n 091 16 w	4.86
02	01	871018	19.45	64		2	218		2.92
02	02	871018	19.45	64		2	218	08 49 n 091 17 w	10.27
03	01	871018	19.26	55	08	2	218		4.82
03	02	871018	19.26	63	08	2	218	08 39 n 091 23 w	3.21
04	01	871018	19.26	55	08	2	218		11.24
04	02	871018	19.26	64	08	3	218		

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
05	01	871018	19.26	64	09	01	218	08 31 n 091 32 w	8.99
05	02	871018	19.26	69	09	01	218	08 27 n 091 35 w	0.32
06	01	871018	19.26	69	09	12	218	08 26 n 091 37 w	3.21
06	02	871018	19.26	55	09	12	218	08 25 n 091 37 w	9.63
07	01	871018	19.45	63	11	01	218	08 19 n 091 39 w	11.34
08	01	871018	19.45	31	01	01	218	08 10 n 091 52 w	5.19
09	01	871018	19.45	31	01	01	218	08 05 n 091 51 w	1.94
10	01	871018	19.45	31	01	01	224	08 04 n 091 52 w	3.43
11	01	871018	18.71	64	01	01	224	07 54 n 091 58 w	4.45
12	01	871018	20.56	55	01	02	224	07 50 n 092 02 w	5.48
12	01	871018	20.56	63	01	02	227	07 52 n 092 12 w	5.46
13	01	871018	19.26	31	01	03	227	07 50 n 092 16 w	0.33
13	02	871018	19.82	31	01	03	227	06 15 n 093 42 w	8.77
01	01	871019	18.15	64	09	01	222	06 12 n 093 45 w	5.93
01	02	871019	17.78	69	31	01	222	06 09 n 093 48 w	11.85
01	03	871019	17.78	55	63	01	222		11.85
01	04	871019	17.78	55	63	01	222		5.04
01	05	871019	17.78	63	55	01	222		5.04
01	06	871019	17.96	64	69	01	222	05 53 n 094 03 w	8.38
02	01	871019	17.96	64	69	01	222	05 49 n 094 06 w	0.30
02	02	871019	17.96	64	69	01	222	05 49 n 094 06 w	0.30
01	01	871020	17.59	69	31	01	225	04 01 n 095 47 w	8.80
01	01	871020	17.59	63	55	01	225	03 57 n 095 52 w	3.52
01	02	871020	17.59	63	55	01	225		3.81
01	03	871020	17.59	55	55	01	225		4.40
01	04	871020	17.59	63	55	01	225		4.40
01	05	871020	17.59	55	55	01	225		11.73
01	06	871020	17.59	55	55	01	225		2.35
01	07	871020	17.59	55	55	01	225		0.88
01	08	871020	17.59	55	55	01	225		4.40
01	09	871020	17.59	55	55	01	225		1.76
01	10	871020	17.59	69	31	01	225		9.97
01	11	871020	17.59	69	31	01	225		2.93
01	12	871020	17.59	31	64	01	225		7.64
02	01	871020	18.33	31	64	01	225		6.11
02	02	871020	18.33	31	64	01	225		5.50
02	03	871020	18.33	64	69	01	225		9.47
02	04	871020	18.33	63	55	01	225		2.75
02	05	871020	18.33	63	55	01	225		15.58
02	06	871020	18.33	56	55	01	225		9.22
02	07	871020	19.08	55	63	01	225		2.54
02	08	871020	19.08	55	63	01	225		10.17
02	09	871020	19.08	69	31	01	225		13.03
02	10	871020	19.08	31	64	01	225		7.31
02	11	871020	19.08	64	69	01	225		5.09
02	12	871020	19.08	64	69	01	225		4.77
02	13	871020	19.08	63	55	01	225		5.35
02	14	871020	18.89	63	55	01	225		8.90
02	15	871020	19.08	56	55	01	225		9.45
02	16	871020	18.89	55	63	01	225		7.87
02	17	871020	18.89	69	31	01	225		8.50
02	18	871020	18.89	31	64	01	225		8.50
02	19	871020	18.89	64	69	01	225		0.31
02	20	871020	18.89	64	69	01	225		7.53
01	01	871021	19.63	55	55	01	225		

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
02	01	871021	19.63	63	03	03	015	06 49 n 095 21 w	6.54
02	02	871021	19.63	31	03	03	015		6.54
02	03	871021	19.63	31	03	02	015		6.87
02	04	871021	19.63	64	03	02	015		6.87
03	01	871021	19.63	64	03	02	015	07 03 n 095 16 w	3.60
03	02	871021	22.04	69	03	02	015	07 05 n 095 15 w	12.86
04	01	871021	21.30	55	03	02	015	07 14 n 095 06 w	5.32
04	02	871021	21.30	55	03	01	015		8.16
04	03	871021	21.30	63	03	01	015		6.03
04	04	871021	20.93	63	03	01	010	07 24 n 095 01 w	5.58
05	01	871021	20.19	56	04	01	010	07 26 n 095 02 w	2.36
05	02	871021	20.19	31	04	12	010	07 27 n 095 01 w	13.79
05	03	871021	20.19	64	04	12	010	07 34 n 094 58 w	5.38
06	01	871021	18.52	55	04		010	07 36 n 094 58 w	6.17
07	01	871021	20.00	63	08	01	018	07 41 n 094 58 w	6.33
08	01	871021	20.00	56	08	02	010	07 47 n 094 56 w	8.00
09	01	871021	18.52	31	08	02	010	07 53 n 094 53 w	4.63
09	02	871021	18.52	31	08	02	010		3.09
09	03	871021	18.52	31	08	02	010		1.54
09	04	871021	18.71	64	08	02	010	07 58 n 094 52 w	1.56
10	01	871021	18.52	55	08	02	010	08 02 n 094 50 w	4.63
11	01	871021	18.52	63	08	02	010	08 05 n 094 48 w	1.54
12	01	871021	19.08	55	08	02	005	08 09 n 094 47 w	5.40
13	01	871021	19.08	56	08	03	005		1.91
13	02	871021	19.45	56	08	03	005	08 14 n 094 46 w	0.32
01	01	871022	19.26	64	03	03	016	09 46 n 094 39 w	3.21
02	01	871022	19.26	69	03	03	016	09 52 n 094 40 w	3.21
02	02	871022	19.26	56	03	03	016	10 01 n 094 34 w	4.82
03	01	871022	19.26	55	03	02	025	10 06 n 094 35 w	5.14
03	02	871022	19.26	55	03	02	025		7.06
03	03	871022	19.26	63	03	02	025		12.20
03	04	871022	21.30	64	03	02	025	10 18 n 094 28 w	14.20
03	05	871022	21.30	69	03	02	025		7.81
04	01	871022	18.71	31	03	01	025	10 28 n 094 23 w	7.79
04	02	871022	18.71	56	04	01	025	10 32 n 094 22 w	10.91
04	03	871022	18.71	55	04	12	025		1.56
04	04	871022	18.71	55	04	01	025		2.49
05	01	871022	18.52	55	05	01	025	10 40 n 094 18 w	1.85
05	02	871022	18.52	55	05	01	015	10 41 n 094 17 w	6.79
05	03	871022	18.52	63	05	12	015		12.35
05	04	871022	18.52	64	06	01	015	10 49 n 094 14 w	2.78
06	01	871022	17.78	64	06	01	015	10 52 n 094 14 w	7.11
06	02	871022	17.78	69	07	01	015		11.85
06	03	871022	17.78	31	07	01	015		11.85
06	04	871022	17.04	56	07	02	015	11 07 n 094 10 w	8.52
06	05	871022	17.04	55	08	02	015		8.52
06	06	871022	17.04	63	08	02	015	11 16 n 094 08 w	8.52
06	07	871022	17.04	64	08	02	015		8.52
06	08	871022	17.04	69	08	03	015		8.52
06	09	871022	16.48	31	08	03	015	11 29 n 094 06 w	2.75
01	01	871023	17.78	63	08	03	216	12 49 n 093 48 w	0.59
02	01	871023	17.59	56	08	03	216	12 47 n 093 50 w	7.04

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
02	02	871023	17.59	69	31	64	216	12 43 n 093 53 w	3.81
03	01	871023	17.78	69	31	64	216	12 40 n 093 55 w	2.96
03	02	871023	17.78	31	64	69	216		11.85
03	03	871023	17.78	64	69	31	216		7.11
03	04	871023	17.78	64	69	31	216		4.74
03	05	871023	18.15	63	56	55	216	12 27 n 094 03 w	12.10
03	06	871023	18.15	56	55	63	216		7.56
04	01	871023	19.63	55	63	56	216	12 16 n 094 06 w	1.64
04	02	871023	18.33	55	63	56	225	12 15 n 094 06 w	0.92
05	01	871023	18.33	69	31	64	225	12 12 n 094 07 w	9.17
05	02	871023	18.33	31	64	69	225		9.17
05	03	871023	18.33	31	64	69	225		3.36
05	04	871023	18.33	64	69	31	225		0.61
06	01	871023	18.33	64	69	31	225	12 03 n 094 15 w	4.58
07	01	871023	18.33	63	56	55	225	11 59 n 094 18 w	7.33
08	01	871023	18.33	56	55	63	225	11 55 n 094 22 w	10.08
08	02	871023	18.33	55	63	56	225		10.39
08	03	871023	18.52	69	31	64	225	11 47 n 094 30 w	3.09
08	04	871023	18.52	69	31	64	225		5.56
09	01	871023	18.52	31	64	69	225	11 44 n 094 33 w	0.93
10	01	871023	18.52	64	69	31	225	11 40 n 094 34 w	4.01
10	02	871023	18.52	63	56	55	225	11 40 n 094 37 w	9.26
10	03	871023	18.52	56	55	63	225	11 37 n 094 41 w	4.63
10	04	871023	18.33	56	55	63	216	11 35 n 094 43 w	1.53
11	01	871023	18.52	56	55	63	216	11 33 n 094 47 w	2.16
11	02	871023	18.52	56	55	63	216	11 32 n 094 48 w	0.31
01	01	871024	17.22	31	64	69	213	10 28 n 095 45 w	2.87
01	02	871024	16.67	31	64	69	209	10 27 n 095 46 w	6.94
01	03	871024	16.67	64	69	31	209		6.11
01	04	871024	16.67	64	69	31	209		3.61
01	05	871024	16.67	69	31	64	209	10 21 n 095 51 w	8.33
01	06	871024	16.67	55	63	56	209		5.83
01	07	871024	15.19	55	63	56	185	10 14 n 095 55 w	0.51
02	01	871024	15.37	55	63	56	185	10 13 n 095 54 w	1.79
02	02	871024	15.37	63	56	55	185		10.25
02	03	871024	15.37	56	55	63	185		9.22
02	04	871024	15.37	56	55	63	216		1.54
02	05	871024	16.30	31	64	69	209	10 01 n 095 57 w	6.25
02	06	871024	16.30	31	64	69	209		1.36
02	07	871024	16.11	31	64	69	203	09 57 n 096 00 w	0.54
03	01	871024	16.30	64	69	31	209	09 56 n 096 01 w	1.36
04	01	871024	16.48	69	31	64	209	09 57 n 096 02 w	8.24
05	01	871024	16.11	55	63	56	209	09 50 n 096 05 w	6.44
05	02	871024	16.11	55	63	56	209		2.42
05	03	871024	16.11	63	56	55	209		2.95
05	04	871024	16.11	63	56	55	209		5.64
05	05	871024	16.11	56	55	63	209		3.22
05	06	871024	16.11	56	55	63	209		5.37
05	07	871024	16.30	31	64	69	209	09 38 n 096 13 w	11.41
05	08	871024	16.30	69	31	64	209		4.62
06	01	871024	16.30	69	31	64	209	09 29 n 096 20 w	3.53
06	02	871024	16.30	69	31	64	209		1.36

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
06	03	871024	16.30	31		2	209		3.26
06	04	871024	16.30	55		3	209		6.25
06	05	871024	16.30	55		3	214		1.90
06	06	871024	16.30	55		3	214	09 22 n	5.16
06	07	871024	16.30	55		3	214		2.99
01	01	871025	17.04	56		3	216	08 06 n	1.99
01	02	871025	17.04	56	08	3	216	08 03 n	1.70
01	03	871025	18.33	55		3	216		3.36
01	04	871025	18.33	55		3	216		6.42
01	05	871025	18.33	55		3	216		7.03
01	06	871025	17.96	64		3	216	07 55 n	1.80
02	01	871025	17.78	64		4	216	07 44 n	6.82
02	02	871025	17.78	64		4	216		2.07
02	03	871025	17.78	55	09	4	216	07 40 n	8.89
03	01	871025	18.15	55	09	4	216	07 26 n	2.12
03	02	871025	17.78	55	10	4	232	07 25 n	5.33
03	03	871025	17.78	64	10	4	232	07 23 n	11.85
03	04	871025	17.78	69	11	3	232		11.85
03	05	871025	17.78	31	12	2	232		3.85
04	01	871025	17.78	31		2	232	07 12 n	2.96
04	02	871025	17.78	55	12	2	232	07 11 n	11.85
04	03	871025	17.78	55	12	2	232		1.48
04	04	871025	17.78	55		2	232		8.00
04	05	871025	17.78	55		2	232		2.07
04	06	871025	17.96	63		2	225	07 03 n	0.30
04	07	871025	17.96	55		2	225		2.69
04	08	871025	17.96	55		2	225	07 01 n	0.30
01	01	871026	21.11	69		3	002	06 52 n	9.50
01	02	871026	20.37	31		3	002	06 57 n	6.79
01	03	871026	20.37	64		3	002		3.40
02	01	871026	18.52	69		3	345	07 30 n	5.56
02	02	871026	18.52	31		4	345		2.78
02	03	871026	18.71	69		4	002	07 34 n	2.49
02	04	871026	18.71	31		4	002		3.12
03	01	871026	18.71	63		4	002	07 41 n	3.43
03	02	871026	18.71	55		5	002		1.25
01	01	871027	22.22	55		3	010	10 20 n	3.33
01	02	871027	22.22	55	03	3	010		9.26
01	03	871027	19.63	55	03	4	010	10 29 n	9.16
01	04	871027	22.22	56	03	4	010	10 35 n	11.11
01	05	871027	20.93	31	03	3	010	10 39 n	1.74
01	06	871027	20.93	31	03	3	355	10 40 n	12.56
01	07	871027	20.93	64	04	3	355		13.60
01	08	871027	20.93	69	04	3	355		4.19
01	09	871027	20.56	69	04	3	005	10 55 n	9.59
01	10	871027	15.74	55	04	3	005	10 55 n	2.89
02	01	871027	19.26	63	04	3	005	11 02 n	12.20
02	02	871027	19.26	55	04	3	005		5.46
02	03	871027	19.26	55	05	2	005	11 12 n	2.57
03	01	871027	18.52	31	05	2	005	11 15 n	4.63
04	01	871027	18.52	64	06	2	005	11 20 n	3.40
05	01	871027	18.52	69	07	2	005	11 22 n	4.01

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
05	02	871027	18.52	69	07	01	005	11 28 n 098 57 w	6.17
06	01	871027	19.82	55	01	02	206	11 25 n 098 59 w	5.94
06	02	871027	19.82	31	01	02	206	11 20 n 099 02 w	9.91
06	03	871027	19.82	64	01	02	206	11 24 n 099 05 w	2.64
07	01	871027	19.45	69	02	03	206	11 23 n 099 05 w	1.30
07	02	871027	19.45	69	02	03	200	11 23 n 099 05 w	4.86
01	01	871028	17.96	64	09	03	206	09 36 n 099 42 w	8.68
01	02	871028	18.33	69	09	03	206	09 32 n 099 44 w	10.70
01	03	871028	18.33	31	09	02	206	09 21 n 099 50 w	3.97
02	01	871028	18.33	55	09	02	206	09 18 n 099 53 w	4.28
03	01	871028	18.33	55	09	01	206	09 14 n 099 57 w	3.36
04	01	871028	18.52	63	09	01	206	09 04 n 100 02 w	1.54
04	02	871028	18.52	64	09	01	206	08 57 n 100 02 w	6.48
05	01	871028	18.89	69	10	01	206	08 56 n 100 03 w	5.35
06	01	871028	18.89	31	11	01	206	08 38 n 100 09 w	0.31
07	01	871028	18.52	55	12	01	206	08 38 n 100 09 w	11.42
07	02	871028	18.52	55	12	01	206	08 38 n 100 09 w	12.04
07	03	871028	18.52	63	12	01	206	08 38 n 100 09 w	11.42
07	04	871028	18.52	64	01	01	206	08 38 n 100 09 w	12.04
07	05	871028	18.52	69	01	01	206	08 38 n 100 09 w	4.32
07	06	871028	18.52	69	01	01	206	08 38 n 100 09 w	7.10
08	01	871028	18.52	63	01	02	206	08 19 n 100 16 w	3.40
09	01	871028	18.89	55	01	02	209	08 12 n 100 15 w	6.61
09	02	871028	18.89	63	01	02	209	08 12 n 100 15 w	6.61
09	03	871028	18.89	64	01	02	209	08 05 n 100 18 w	6.30
09	04	871028	18.89	69	01	03	209	08 05 n 100 18 w	2.52
09	05	871028	18.89	69	01	03	209	08 01 n 100 19 w	3.15
09	06	871028	18.15	69	01	03	209	09 00 n 100 21 w	0.30
01	01	871029	17.22	63	08	03	210	06 36 n 101 09 w	8.32
01	02	871029	17.22	55	08	03	210	06 31 n 101 11 w	0.86
01	03	871029	17.22	56	08	03	210	06 31 n 101 11 w	0.86
01	04	871029	17.22	56	08	03	210	06 31 n 101 11 w	4.59
02	01	871029	16.67	55	09	02	210	06 26 n 101 13 w	3.61
02	02	871029	16.67	64	09	02	210	06 24 n 101 14 w	2.78
02	03	871029	16.67	31	09	02	210	06 24 n 101 14 w	2.22
03	01	871029	16.67	64	09	02	215	06 15 n 101 09 w	5.56
03	02	871029	16.67	64	09	02	215	06 15 n 101 09 w	5.56
03	03	871029	16.67	63	09	02	215	06 06 n 101 13 w	6.67
03	04	871029	16.11	63	09	02	245	06 06 n 101 13 w	4.30
03	05	871029	16.11	56	09	02	245	06 06 n 101 13 w	10.74
03	06	871029	16.11	55	09	02	245	06 06 n 101 13 w	10.74
03	07	871029	16.30	69	09	02	245	06 00 n 101 26 w	1.36
03	08	871029	17.04	69	09	02	215	05 59 n 101 27 w	2.56
04	01	871029	17.22	64	09	02	210	05 57 n 101 31 w	6.60
04	02	871029	17.22	64	09	02	210	05 52 n 101 33 w	2.58
04	03	871029	17.22	63	09	02	210	05 48 n 101 34 w	8.61
04	04	871029	17.22	63	09	02	210	05 48 n 101 34 w	2.87
04	05	871029	17.22	55	09	02	210	05 48 n 101 34 w	11.48
04	06	871029	17.22	55	09	02	210	05 39 n 101 37 w	2.87
04	07	871029	17.22	55	09	02	210	05 35 n 101 40 w	8.61
04	08	871029	17.22	69	09	02	210	05 30 n 101 41 w	8.61
04	09	871029	17.22	31	09	02	210	05 30 n 101 41 w	8.61
04	10	871029	17.22	64	09	02	210	05 26 n 101 42 w	8.61

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
04	11	871029	17.22	63		3	210	05 22 n 101 44 w	8.61
04	12	871029	17.96	56		3	210	05 16 n 101 50 w	2.99
04	13	871029	17.96	55	02	3	210		2.99
04	14	871029	17.96	56		3	210		1.50
04	15	871029	17.96	55		3	210		0.30
01	01	871030	18.71	31		3	000	05 12 n 101 51 w	6.24
01	02	871030	18.71	31	03	3	000	05 50 n 102 01 w	1.56
01	03	871030	18.71	64	03	3	000		9.35
01	04	871030	17.96	69	03	3	356	05 58 n 102 00 w	5.99
01	05	871030	17.96	69	03	3	356		1.50
01	06	871030	17.96	69	04	3	356		1.50
01	07	871030	17.78	55	02	2	356	06 03 n 102 00 w	1.48
01	08	871030	17.78	55	04	2	356		1.48
02	01	871030	17.22	63	04	2	356	06 09 n 101 59 w	0.86
02	02	871030	17.22	63	04	2	345	06 10 n 101 59 w	7.18
02	03	871030	17.22	56	04	2	345		2.01
02	04	871030	17.22	56	04	2	345		5.45
02	05	871030	17.22	56	04	2	345		6.32
02	06	871030	17.22	31	04	3	345		3.44
02	07	871030	16.85	31	04	3	003	06 22 n 102 02 w	7.86
02	08	871030	16.85	64	04	3	003		4.21
02	09	871030	16.85	64	04	4	003		7.02
02	10	871030	16.85	69	04	4	003		2.81
02	11	871030	16.30	69	04	4	003	06 33 n 102 00 w	1.63
03	01	871030	16.30	55	04	4	003	06 38 n 101 59 w	1.63
03	02	871030	16.30	55	05	4	003		4.07
03	03	871030	16.67	55	06	4	003	06 42 n 101 59 w	2.78
03	04	871030	16.67	55	06	3	003		2.22
03	05	871030	16.67	63	06	3	003		9.17
03	06	871030	16.67	63	06	3	003		0.56
03	07	871030	16.67	56	07	3	003		2.78
04	01	871030	15.56	55	01	3	003	06 50 n 101 58 w	1.04
04	02	871030	15.56	56	01	3	003		3.63
04	03	871030	15.56	31	07	3	003	06 52 n 101 57 w	0.78
05	01	871030	16.67	64	08	3	003	06 54 n 101 57 w	4.17
05	02	871030	16.67	64	08	3	003		2.22
05	03	871030	16.67	64	08	3	003		4.72
05	04	871030	16.67	69	08	3	003		2.78
05	05	871030	16.67	69	08	3	003	07 01 n 101 56 w	5.56
05	06	871030	16.67	69	08	3	003		2.78
05	07	871030	16.67	55	08	3	003	07 08 n 101 59 w	4.17
06	01	871030	16.67	55	08	3	003	07 10 n 101 59 w	2.78
06	02	871030	16.67	63		3	003		8.33
06	03	871030	18.15	55	02	3	003	07 19 n 101 58 w	4.54
07	01	871030	18.15	31		3	003	07 27 n 101 58 w	5.14
01	01	871031	20.56	56		3	004	09 32 n 101 50 w	2.74
01	02	871031	20.56	55	03	3	004		6.85
01	03	871031	20.56	55	03	3	004	09 37 n 101 49 w	1.71
01	04	871031	20.56	63	03	4	004		8.57
01	05	871031	20.00	55	03	4	004	09 42 n 101 49 w	9.33
01	06	871031	20.00	64	04	4	004		13.00
01	07	871031	20.00	69	04	4	004		13.33

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
01	08	871031	20.00	31	04	4	004	10 08 n 101 47 w	13.33
01	09	871031	19.26	56	04	4	004	10 16 n 101 42 w	6.42
02	01	871031	19.08	55	05	4	358	10 19 n 101 42 w	6.04
02	02	871031	19.08	64	05	4	358	10 23 n 101 42 w	9.54
02	03	871031	19.08	64	05	4	358	10 26 n 101 42 w	2.54
03	01	871031	19.08	69	06	4	358	10 28 n 101 42 w	4.77
03	02	871031	19.08	69	07	4	358	10 35 n 101 46 w	6.36
03	03	871031	19.08	31	07	4	358	10 47 n 101 48 w	6.99
04	01	871031	17.59	56	08	4	358	10 49 n 101 48 w	12.02
04	02	871031	17.59	55	08	4	358	10 56 n 101 49 w	6.16
04	03	871031	19.26	55	08	4	004	11 00 n 101 48 w	5.46
04	04	871031	19.26	63	08	4	004	12 16 n 102 53 w	12.84
04	05	871031	19.26	64	08	4	004	12 23 n 103 04 w	0.64
04	06	871031	19.26	64	08	4	004	12 30 n 103 15 w	5.78
05	01	871031	19.26	64	08	4	004	12 36 n 103 24 w	0.32
05	02	871031	19.26	64	08	4	004	12 42 n 103 35 w	12.75
05	03	871031	19.26	64	08	4	004	12 45 n 103 40 w	10.93
05	04	871031	19.26	64	08	4	004	12 56 n 103 52 w	14.57
05	05	871031	19.26	64	08	4	004	13 02 n 104 00 w	7.28
05	06	871031	19.26	64	08	4	004	13 18 n 104 27 w	7.41
05	07	871031	19.26	64	08	4	004	13 26 n 104 40 w	5.93
05	08	871031	19.26	64	08	4	004	13 32 n 104 42 w	3.33
05	09	871031	19.26	64	08	4	004	13 38 n 104 45 w	1.85
05	10	871031	19.26	64	08	4	004	13 44 n 104 47 w	3.83
05	11	871031	19.26	64	08	4	004	13 50 n 104 49 w	2.30
05	12	871031	19.26	64	08	4	004	13 56 n 104 51 w	8.04
05	13	871031	19.26	64	08	4	004	14 02 n 104 53 w	4.56
05	14	871031	19.26	64	08	4	004	14 08 n 104 55 w	5.69
05	15	871031	19.26	64	08	4	004	14 14 n 104 57 w	4.18
05	16	871031	19.26	64	08	4	004	14 20 n 104 59 w	3.58
05	17	871031	19.26	64	08	4	004	14 26 n 104 61 w	4.82
05	18	871031	19.26	64	08	4	004	14 32 n 104 63 w	12.04
05	19	871031	19.26	64	08	4	004	14 38 n 104 65 w	4.01
05	20	871031	19.26	64	08	4	004	14 44 n 104 67 w	16.05
05	21	871031	19.26	64	08	4	004	14 50 n 104 69 w	16.05
05	22	871031	19.26	64	08	4	004	14 56 n 104 71 w	12.22
05	23	871031	19.26	64	08	4	004	15 02 n 104 73 w	13.04
05	24	871031	19.26	64	08	4	004	15 08 n 104 75 w	11.41
05	25	871031	19.26	64	08	4	004	15 14 n 104 77 w	4.44
05	26	871031	19.26	64	08	4	004	15 20 n 104 79 w	7.41
05	27	871031	19.26	64	08	4	004	15 26 n 104 81 w	8.52
05	28	871031	19.26	64	08	4	004	15 32 n 104 83 w	5.23
05	29	871031	19.26	64	08	4	004	15 38 n 104 85 w	6.98
05	30	871031	19.26	64	08	4	004	15 44 n 104 87 w	10.46
05	31	871031	19.26	64	08	4	004	15 50 n 104 89 w	14.65
05	32	871031	19.26	64	08	4	004	15 56 n 104 91 w	5.56
05	33	871031	19.26	64	08	4	004	16 02 n 104 93 w	6.81
05	34	871031	19.26	64	08	4	004	16 08 n 104 95 w	4.86
05	35	871031	19.26	64	08	4	004	16 14 n 104 97 w	6.99
05	36	871031	19.26	64	08	4	004	16 20 n 104 99 w	8.27
05	37	871031	19.26	64	08	4	004	16 26 n 105 01 w	7.10
05	38	871031	19.26	64	08	4	004	16 32 n 105 03 w	10.49
05	39	871031	19.26	64	08	4	004	16 38 n 105 05 w	
05	40	871031	19.26	64	08	4	004	16 44 n 105 07 w	
05	41	871031	19.26	64	08	4	004	16 50 n 105 09 w	
05	42	871031	19.26	64	08	4	004	16 56 n 105 11 w	
05	43	871031	19.26	64	08	4	004	17 02 n 105 13 w	
05	44	871031	19.26	64	08	4	004	17 08 n 105 15 w	
05	45	871031	19.26	64	08	4	004	17 14 n 105 17 w	
05	46	871031	19.26	64	08	4	004	17 20 n 105 19 w	
05	47	871031	19.26	64	08	4	004	17 26 n 105 21 w	
05	48	871031	19.26	64	08	4	004	17 32 n 105 23 w	
05	49	871031	19.26	64	08	4	004	17 38 n 105 25 w	
05	50	871031	19.26	64	08	4	004	17 44 n 105 27 w	
05	51	871031	19.26	64	08	4	004	17 50 n 105 29 w	
05	52	871031	19.26	64	08	4	004	17 56 n 105 31 w	
05	53	871031	19.26	64	08	4	004	18 02 n 105 33 w	
05	54	871031	19.26	64	08	4	004	18 08 n 105 35 w	
05	55	871031	19.26	64	08	4	004	18 14 n 105 37 w	
05	56	871031	19.26	64	08	4	004	18 20 n 105 39 w	
05	57	871031	19.26	64	08	4	004	18 26 n 105 41 w	
05	58	871031	19.26	64	08	4	004	18 32 n 105 43 w	
05	59	871031	19.26	64	08	4	004	18 38 n 105 45 w	
05	60	871031	19.26	64	08	4	004	18 44 n 105 47 w	
05	61	871031	19.26	64	08	4	004	18 50 n 105 49 w	
05	62	871031	19.26	64	08	4	004	18 56 n 105 51 w	
05	63	871031	19.26	64	08	4	004	19 02 n 105 53 w	
05	64	871031	19.26	64	08	4	004	19 08 n 105 55 w	
05	65	871031	19.26	64	08	4	004	19 14 n 105 57 w	
05	66	871031	19.26	64	08	4	004	19 20 n 105 59 w	
05	67	871031	19.26	64	08	4	004	19 26 n 106 01 w	
05	68	871031	19.26	64	08	4	004	19 32 n 106 03 w	
05	69	871031	19.26	64	08	4	004	19 38 n 106 05 w	
05	70	871031	19.26	64	08	4	004	19 44 n 106 07 w	
05	71	871031	19.26	64	08	4	004	19 50 n 106 09 w	
05	72	871031	19.26	64	08	4	004	19 56 n 106 11 w	
05	73	871031	19.26	64	08	4	004	20 02 n 106 13 w	
05	74	871031	19.26	64	08	4	004	20 08 n 106 15 w	
05	75	871031	19.26	64	08	4	004	20 14 n 106 17 w	
05	76	871031	19.26	64	08	4	004	20 20 n 106 19 w	
05	77	871031	19.26	64	08	4	004	20 26 n 106 21 w	
05	78	871031	19.26	64	08	4	004	20 32 n 106 23 w	
05	79	871031	19.26	64	08	4	004	20 38 n 106 25 w	
05	80	871031	19.26	64	08	4	004	20 44 n 106 27 w	
05	81	871031	19.26	64	08	4	004	20 50 n 106 29 w	
05	82	871031	19.26	64	08	4	004	20 56 n 106 31 w	
05	83	871031	19.26	64	08	4	004	21 02 n 106 33 w	
05	84	871031	19.26	64	08	4	004	21 08 n 106 35 w	
05	85	871031	19.26	64	08	4	004	21 14 n 106 37 w	
05	86	871031	19.26	64	08	4	004	21 20 n 106 39 w	
05	87	871031	19.26	64	08	4	004	21 26 n 106 41 w	
05	88	871031	19.26	64	08	4	004	21 32 n 106 43 w	
05	89	871031	19.26	64	08	4	004	21 38 n 106 45 w	
05	90	871031	19.26	64	08	4	004	21 44 n 106 47 w	
05	91	871031	19.26	64	08	4	004	21 50 n 106 49 w	
05	92	871031	19.26	64	08	4	004	21 56 n 106 51 w	
05	93	871031	19.26	64	08	4	004	22 02 n 106 53 w	
05	94	871031	19.26	64	08	4	004	22 08 n 106 55 w	
05	95	871031	19.26	64	08	4	004	22 14 n 106 57 w	
05	96	871031	19.26	64	08	4	004	22 20 n 106 59 w	
05	97	871031	19.26	64	08	4	004	22 26 n 107 01 w	
05	98	871031	19.26	64	08	4	004	22 32 n 107 03 w	
05	99	871031	19.26	64	08	4	004	22 38 n 107 05 w	
05	100	871031	19.26	64	08	4	004	22 44 n 107 07 w	

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
03	02	871102	19.82	63	06	01	032	14 55 n 106 45 w	10.24
03	03	871102	19.82	56	07	01	032	15 01 n 106 43 w	8.59
03	04	871102	19.82	55	07	02	032		1.65
03	05	871102	21.11	31	07	02	032	15 04 n 106 32 w	10.56
03	06	871102	20.93	56	07	02	032	15 09 n 106 31 w	3.84
03	07	871102	20.93	64	07	02	032		3.14
03	08	871102	20.93	64	07	02	032		3.49
03	09	871102	20.93	69	07	02	032	15 14 n 106 28 w	10.46
03	10	871102	20.93	55	07	02	032	15 19 n 106 25 w	5.23
03	11	871102	20.93	55	07	03	032		5.23
03	12	871102	18.89	63	07	03	032	15 21 n 106 22 w	5.35
03	13	871102	18.89	63	07	03	032	15 24 n 106 21 w	0.31
01	01	871103	20.00	64	07	03	028	17 10 n 105 23 w	2.00
01	02	871103	20.00	64	02	03	028		7.00
01	03	871103	20.00	69	02	03	028		4.00
02	01	871103	19.82	56	03	02	023	17 18 n 105 14 w	2.31
02	02	871103	19.82	64	03	02	023	17 19 n 105 14 w	13.21
02	03	871103	19.82	69	04	01	023		11.56
04	01	871103	19.63	31	04	01	028	17 35 n 105 08 w	0.98
04	02	871103	19.63	55	05	01	023	17 37 n 105 06 w	10.47
04	03	871103	19.63	55	05	01	023		5.56
05	01	871103	19.82	64	06	01	023	17 51 n 105 02 w	4.58
06	01	871103	19.63	69	07	01	023	17 52 n 105 02 w	2.64
06	02	871103	19.63	31	07	02	023		9.82
06	03	871103	20.19	55	07	02	023	18 01 n 104 57 w	10.09
07	01	871103	20.19	55	07	02	023	18 09 n 104 51 w	4.71
07	02	871103	20.19	63	07	02	023		3.36
08	01	871103	18.89	64	07	03	023	18 14 n 104 50 w	9.76
01	01	871109	19.08	55	09	03	190	17 08 n 104 56 w	5.67
01	02	871109	19.08	55	09	03	190	17 05 n 104 56 w	5.40
01	03	871109	19.08	56	09	03	190	17 02 n 104 57 w	4.77
01	04	871109	19.08	69	09	03	190		8.90
02	01	871109	18.15	69	09	02	193	16 56 n 104 59 w	2.23
02	02	871109	18.15	69	09	02	193		3.02
02	03	871109	18.15	64	09	02	193		13.31
02	04	871109	18.15	64	09	02	193	16 47 n 105 02 w	1.81
02	05	871109	18.15	55	09	02	193	16 41 n 105 04 w	9.07
03	01	871109	18.15	55	09	02	193	16 40 n 105 04 w	2.42
03	02	871109	18.15	56	10	01	193		7.86
03	03	871109	18.15	63	11	01	193		12.10
03	04	871109	18.52	69	11	01	193	16 23 n 105 11 w	12.10
03	05	871109	18.52	69	11	01	193		4.94
03	06	871109	18.71	31	12	01	193	16 16 n 105 13 w	7.41
04	01	871109	18.71	64	12	01	193	16 11 n 105 18 w	4.36
04	02	871109	18.71	64	12	01	193		3.74
04	03	871109	18.71	55	12	01	193	16 07 n 105 19 w	2.49
04	04	871109	18.71	56	12	01	193		6.24
04	05	871109	18.71	55	01	01	193		6.24
05	01	871109	18.52	63	01	02	193	15 59 n 105 21 w	5.61
05	02	871109	18.52	63	01	02	193		3.70
05	03	871109	18.52	55	02	02	187		3.70

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
06	01	871109	17.78	69	02	02	187	15 54 n 105 22 w	10.67
07	01	871109	17.78	31	02	02	187	15 50 n 105 23 w	2.07
08	01	871109	17.78	31	02	03	187	15 49 n 105 21 w	5.04
08	02	871109	17.78	55	02	03	187	15 46 n 105 21 w	5.93
08	03	871109	17.78	56	02	03	187		3.85
08	04	871109	17.78	56	02	03	187		0.89
08	05	871109	17.78	56	02	03	187		0.30
01	01	871110	18.52	31	02	03	110	15 40 n 105 21 w	5.25
01	02	871110	18.52	31	02	03	110	14 15 n 105 18 w	1.54
01	03	871110	18.52	64	12	03	110		9.26
01	04	871110	18.52	63	12	03	110	14 12 n 105 09 w	6.17
01	05	871110	18.52	55	12	02	110		6.17
01	06	871110	18.52	55	12	02	110		9.26
01	07	871110	18.52	55	02	02	050	14 09 n 104 58 w	3.09
01	08	871110	18.52	56	02	02	050		12.35
01	09	871110	19.45	31	02	01	050	14 16 n 104 47 w	11.34
01	10	871110	19.45	64	12	01	114		1.62
01	11	871110	19.45	64	02	01	050		12.96
01	12	871110	19.45	69	02	01	050		4.54
01	13	871110	19.45	69	01	01	115	14 22 n 104 36 w	8.43
01	14	871110	19.45	63	02	01	115		6.48
01	15	871110	19.45	55	01	01	138		4.21
02	01	871110	20.74	55	02	01	138	14 12 n 104 24 w	10.37
02	02	871110	20.74	56	02	01	138		10.37
02	03	871110	20.74	31	03	01	138		8.64
02	04	871110	20.74	64	03	01	138		5.88
02	05	871110	20.74	69	03	01	138		13.14
02	06	871110	20.74	69	03	02	138		5.19
03	01	871110	20.56	69	04	02	110	13 49 n 104 03 w	4.80
03	02	871110	20.56	63	04	02	110		10.28
03	03	871110	18.15	55	04	02	110	13 45 n 103 57 w	8.17
04	01	871110	18.33	56	05	03	110	13 44 n 103 54 w	1.53
04	02	871110	18.33	31	05	03	110		7.64
04	03	871110	18.15	64	05	03	110	13 41 n 103 49 w	6.96
01	01	871111	18.15	56			112	13 08 n 102 00 w	3.02
01	02	871111	18.15	56	12	03	112		4.23
02	01	871111	18.15	63	12	03	112	13 08 n 101 56 w	3.93
02	02	871111	17.96	63	12	03	112	13 08 n 101 55 w	2.99
02	03	871111	17.96	55			112		0.90
02	04	871111	17.96	63	12	03	112	13 07 n 101 52 w	1.80
03	01	871111	19.26	64	01	02	070	13 06 n 101 50 w	8.03
03	02	871111	19.26	69	01	02	070		12.20
04	01	871111	19.45	31	02	02	070	13 13 n 101 38 w	6.48
04	02	871111	19.45	63	02	01	070	13 15 n 101 35 w	12.96
04	03	871111	19.45	55	02	01	070		2.27
04	04	871111	18.52	55	02	01	140	13 18 n 101 27 w	10.19
04	05	871111	18.52	55	12	01	140		12.35
04	06	871111	17.59	64	12	01	140	13 09 n 101 18 w	11.73
04	07	871111	17.59	69	01	01	140		11.73
05	01	871111	17.59	31	01	01	140	13 01 n 101 07 w	4.98
05	02	871111	16.30	56	02	01	140	13 01 n 101 05 w	10.05
06	01	871111	16.30	63	03	01	140	12 57 n 101 01 w	6.79

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
06	02	871111	16.30	63 55	03 02	4	140	12 55 n 100 58 w	2.72
06	03	871111	16.30	55 63	03 02	4	140		10.87
07	01	871111	16.30	64 69	03 02	4	140		5.70
07	02	871111	15.74	69 31	03 02	4	140	12 48 n 100 51 w	2.62
07	03	871111	15.74	69 31	03 02	4	140		2.62
07	04	871111	15.74	69 31	03 02	4	140		1.31
08	01	871111	15.74	31 64	03 02	4	140		3.94
08	02	871111	15.56	56 63		4	140	12 43 n 100 46 w	4.41
09	01	871111	15.74	63 55		4	140	12 44 n 100 43 w	3.41
09	02	871111	15.74	63 55		4	140	12 42 n 100 42 w	0.26
01	01	871113	16.30	55 63	12 03	3	110	10 08 n 100 07 w	4.07
01	02	871113	16.30	55 63	12 03	3	110		3.53
01	03	871113	16.30	56 63	12 03	3	110		1.36
02	01	871113	17.04	56 63		3	140	10 06 n 100 00 w	2.27
02	02	871113	17.04	56 63	03 03	3	140	10 05 n 099 59 w	1.14
02	03	871113	17.04	55 56	11 03	3	140		4.54
02	04	871113	17.04	63 55	11 03	4	140		2.84
02	05	871113	17.04	64 31	11 03	4	140	10 01 n 099 57 w	2.56
02	06	871113	17.04	69 31	11 02	4	140		5.96
02	07	871113	17.04	69 31	11 02	4	140	09 57 n 099 54 w	2.84
02	08	871113	17.04	31 64	11 02	4	140		0.85
03	01	871113	16.85	64 69	11 02	4	140	09 55 n 099 51 w	5.90
03	02	871113	16.67	64 69	11 01	4	090	09 52 n 099 48 w	1.11
03	03	871113	16.67	55 56	01 01	4	090		11.11
03	04	871113	16.67	63 55	02 01	4	090		11.11
03	05	871113	16.67	63 55	02 01	4	090		3.61
03	06	871113	16.67	63 55	02 01	4	090	09 53 n 099 34 w	4.72
03	07	871113	16.67	63 55	02 01	4	090		2.78
03	08	871113	17.22	69 31	03 01	4	090	09 52 n 099 29 w	2.30
03	09	871113	17.22	69 31	03 01	4	090		3.44
03	10	871113	17.22	69 31	03 01	4	090		2.87
03	11	871113	17.22	69 31	03 01	4	090	09 52 n 099 24 w	2.87
03	12	871113	17.22	64 69	03 01	4	090		12.34
03	13	871113	17.22	64 69	03 01	4	110	09 52 n 099 16 w	10.62
03	14	871113	17.22	55 56	04 01	4	110	09 50 n 099 10 w	11.48
03	15	871113	17.22	63 55	04 01	4	110		11.48
03	16	871113	17.22	63 55	04 02	4	110		10.62
04	01	871113	17.59	69 31	05 02	4	110	09 40 n 098 54 w	2.93
04	02	871113	17.59	69 31	05 02	4	110	09 39 n 098 51 w	2.93
04	03	871113	17.59	31 64	05 02	4	110		7.62
04	04	871113	17.59	64 69	05 02	4	110	09 37 n 098 46 w	0.29
05	01	871113	17.78	55 56	05 02	4	110	09 35 n 098 44 w	7.70
05	02	871113	17.96	55 56	05 02	4	110	09 34 n 098 40 w	0.30
01	01	871114	17.59	63 55	09 01	3	228	08 15 n 096 47 w	2.35
01	02	871114	17.59	63 55	09 01	3	228		1.17
01	03	871114	17.59	63 55	09 01	3	228		5.28
01	04	871114	17.59	31 64	09 01	3	228	08 42 n 096 50 w	8.80
02	01	871114	17.59	64 69	09 01	3	228	08 37 n 096 52 w	0.88
03	01	871114	16.67	69 31		3	290	08 33 n 096 54 w	2.78
04	01	871114	19.26	63 55		3	251	08 43 n 097 08 w	5.46
05	01	871114	19.26	55 56		3	251	08 43 n 097 13 w	10.27
05	02	871114	19.26	56 63		3	251		8.99

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
05	03	871114	18.71	31			251	08 39 n 097 21 w	4.68
05	04	871114	18.71	31	11	01	251		6.55
06	01	871114	18.71	64	11	01	251	08 37 n 097 28 w	9.04
06	02	871114	18.71	64	11	02	251		2.49
06	03	871114	18.71	69	11	02	251		3.12
06	04	871114	18.33	69	11	02	251	08 36 n 097 35 w	9.17
06	05	871114	18.33	63			251	08 34 n 097 40 w	2.44
07	01	871114	18.33	55	12	02	251	08 35 n 097 42 w	1.83
07	02	871114	18.33	63			251		1.53
01	01	871115	17.22	56			255	07 58 n 099 10 w	4.31
02	01	871115	17.04	63			255	07 56 n 099 17 w	4.54
03	01	871115	16.85	64			255	07 51 n 099 23 w	8.71
03	02	871115	16.85	69			255		2.53
04	01	871115	16.67	69			255	07 49 n 099 29 w	4.17
05	01	871115	16.67	56	08	01	255	07 50 n 099 33 w	10.00
05	02	871115	16.67	63	08	01	255		10.00
05	03	871115	16.67	55			255		2.78
05	04	871115	16.67	55	09	01	255	07 46 n 099 45 w	7.22
05	05	871115	16.67	64			255		9.72
05	06	871115	16.67	64	10	01	255	07 43 n 099 54 w	1.39
05	07	871115	16.67	69	10	01	255		9.17
06	01	871115	16.67	31	10	01	255	07 42 n 100 01 w	9.17
07	01	871115	16.67	56	11	01	255	07 41 n 100 05 w	3.61
07	02	871115	16.67	63			255		6.94
07	03	871115	16.67	56			255		1.39
08	01	871115	16.67	63	11	02	255	07 41 n 100 12 w	0.83
09	01	871115	16.48	64			255	07 45 n 100 19 w	1.65
10	01	871115	17.04	64			250	07 44 n 100 21 w	1.14
11	01	871115	17.22	56			250	07 47 n 100 29 w	2.87
11	02	871115	17.22	56			250		2.87
11	03	871115	17.22	63			250		0.86
11	04	871115	17.04	63	12	03	250	07 46 n 100 32 w	4.26
11	05	871115	17.04	63			250		1.42
11	06	871115	17.04	63			250	07 44 n 100 35 w	0.28
01	01	871116	17.78	69			250	07 06 n 101 57 w	1.48
01	02	871116	17.78	69			250		1.19
02	01	871116	17.59	31			280	07 02 n 102 05 w	2.93
02	02	871116	17.59	55	06	02	250		1.47
03	01	871116	17.59	55	07	02	250	07 04 n 102 10 w	0.59
03	02	871116	17.59	55			250		0.88
03	03	871116	17.59	56	07	02	250		1.76
03	04	871116	17.59	63	07	02	250		11.73
03	05	871116	17.59	63			250		1.47
03	06	871116	17.59	63	08	02	250		4.40
03	07	871116	17.22	63			250	07 01 n 102 22 w	0.86
04	01	871116	17.22	69			250	07 02 n 102 25 w	5.45
04	02	871116	17.22	69	03	01	250		4.31
04	03	871116	17.22	31			250	06 58 n 102 32 w	5.74
04	04	871116	17.96	64			200		1.50
04	05	871116	17.96	31			230		1.50
05	01	871116	17.59	64			250	06 57 n 102 35 w	1.76
06	01	871116	17.59	55			240	06 51 n 102 50 w	8.50

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
06	02	871116	17.59	56		4	240		4.40
06	03	871116	17.59	56		4	240		3.23
06	04	871116	17.22	69		4	240	06 46 n 102 58 w	7.18
06	05	871116	17.22	69		4	240		2.87
06	06	871116	17.22	69		4	240		1.44
06	07	871116	17.22	31	12 01	4	240	06 44 n 103 02 w	1.44
06	08	871116	17.22	31	12 01	4	240		8.04
06	09	871116	17.22	31		4	240		2.01
07	01	871116	17.04	64		4	240	06 40 n 103 10 w	1.99
07	02	871116	17.04	64		4	240		4.83
07	03	871116	17.04	55		4	240		5.68
07	04	871116	17.04	55		4	240		2.84
07	05	871116	16.67	56	12 02	4	240		5.00
07	06	871116	17.41	56	12 02	4	210	06 35 n 103 16 w	3.48
07	07	871116	17.41	56	01 02	4	210	06 34 n 103 19 w	1.16
07	08	871116	17.41	63	01 02	4	210		5.80
07	09	871116	17.41	63		4	210		1.74
07	10	871116	16.48	69		4	250	06 28 n 103 21 w	8.24
07	11	871116	16.48	31		4	250	06 27 n 103 26 w	4.12
07	12	871116	16.48	31		5	250		1.37
01	01	871117	17.22	63		4	249	06 02 n 104 54 w	1.44
01	02	871117	17.22	63	07 03	4	249		5.17
01	03	871117	17.22	63		4	249		4.59
01	04	871117	17.22	55		4	249		10.62
01	05	871117	17.04	31		4	249	05 58 n 105 05 w	11.64
01	06	871117	17.04	64		4	249		2.84
02	01	871117	17.04	64		4	249		1.70
02	02	871117	17.41	69		4	249	05 56 n 105 14 w	7.54
03	01	871117	17.41	63		4	249	05 56 n 105 19 w	10.74
03	02	871117	17.41	55		4	249		6.96
03	03	871117	17.41	55	09 01	4	249		4.93
03	04	871117	17.96	56		4	249	05 51 n 105 31 w	5.39
03	05	871117	17.96	56	09 01	4	249		4.49
03	06	871117	17.96	31	09 01	4	249	05 49 n 105 36 w	12.28
03	07	871117	17.96	64	10 01	4	249		3.89
04	01	871117	18.33	64		4	249	05 45 n 105 45 w	2.14
04	02	871117	18.33	69		4	249		3.97
04	03	871117	18.33	69		4	249	05 44 n 105 48 w	8.25
04	04	871117	17.78	63		4	249	05 43 n 105 52 w	4.44
04	05	871117	17.78	63		4	249		1.19
05	01	871117	17.78	63		4	249	05 41 n 105 57 w	1.19
05	02	871117	17.78	55		4	249		11.85
05	03	871117	17.78	56		4	249		6.22
06	01	871117	17.78	56		4	249	05 37 n 106 08 w	2.96
06	02	871117	17.59	31		4	249	05 37 n 106 10 w	8.50
07	01	871117	18.33	64		4	176	05 34 n 106 14 w	1.83
08	01	871117	18.15	55		4	176	05 21 n 106 13 w	3.02
01	01	871118	18.15	64		4	176	03 40 n 106 05 w	9.38
01	02	871118	18.15	69		4	176		9.07
01	03	871118	17.78	56		4	176	03 30 n 106 06 w	6.82
01	04	871118	17.78	63	10 02	4	176		5.04
01	05	871118	17.78	63	10 02	4	176		2.96

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
01	06	871118	17.78	63		4	176	03 20 n 106 05 w	2.07
01	07	871118	17.78	55	10	02	176		3.26
01	08	871118	17.78	63		4	176		1.19
01	09	871118	17.78	55	10	02	176		2.37
01	10	871118	17.78	55	10	02	176		1.48
02	01	871118	18.52	55		4	176	03 13 n 106 09 w	2.16
03	01	871118	18.52	64		5	176	03 11 n 106 10 w	3.40
04	01	871118	18.52	64		5	176	03 06 n 106 10 w	2.47
04	02	871118	18.52	69		5	176		3.09
04	03	871118	18.52	31	11	01	176		3.09
04	04	871118	18.52	69		5	176		4.63
04	05	871118	18.52	31		5	176	02 59 n 106 10 w	6.17
05	01	871118	18.15	31		5	164	02 55 n 106 11 w	4.54
05	02	871118	18.15	56		5	164		7.86
05	03	871118	18.15	56	12	01	164		4.23
05	04	871118	18.15	56	12	01	164		6.05
05	05	871118	18.15	63	12	01	164		6.05
05	06	871118	18.15	55	01	01	164	02 43 n 106 09 w	12.10
01	01	871119	21.30	55		4	281	01 25 n 106 51 w	1.06
02	01	871119	21.30	55		4	281	01 26 n 106 53 w	5.68
03	01	871119	21.11	56		4	281	01 26 n 106 59 w	0.70
04	01	871119	20.93	56		4	281	01 27 n 107 02 w	2.09
05	01	871119	21.30	31		4	281	01 31 n 107 03 w	9.58
05	02	871119	21.11	31	07	02	281	01 31 n 107 08 w	10.56
05	03	871119	21.11	64	07	01	281	01 32 n 107 14 w	6.33
05	04	871119	21.11	55	07	01	281	01 33 n 107 19 w	14.08
05	05	871119	21.11	55	07	01	281		14.08
05	06	871119	21.11	56	07	01	281		8.80
05	07	871119	21.11	63	07	01	281		5.28
05	08	871119	21.11	63	08	01	281	01 37 n 107 43 w	1.82
05	09	871119	21.85	69	08	01	281	01 38 n 107 46 w	6.56
06	01	871119	22.85	31	08	01	281	01 37 n 107 53 w	4.86
07	01	871119	22.41	31	09	12	281	01 39 n 108 01 w	5.60
08	01	871119	22.41	64	09	01	281		7.47
08	02	871119	22.41	55	10	01	281	01 45 n 108 11 w	6.35
09	01	871119	22.41	56	11	01	281	01 45 n 108 14 w	4.78
09	02	871119	22.04	63	11	01	279	01 46 n 108 17 w	11.02
09	03	871119	22.04	63	11	01	279	01 46 n 108 22 w	11.02
09	04	871119	22.04	69	11	02	279	01 46 n 108 30 w	11.30
09	05	871119	22.59	31	11	02	279	01 48 n 108 35 w	11.20
09	06	871119	22.41	64	11	02	279	01 49 n 108 35 w	11.30
09	07	871119	22.59	55	11	02	279	01 50 n 108 41 w	11.30
09	08	871119	22.78	56	11	03	279	01 51 n 108 47 w	11.39
09	09	871119	23.15	63	11	03	279	01 52 n 108 54 w	11.58
09	10	871119	23.15	55	11	03	279	01 53 n 108 59 w	0.39
01	01	871120	23.34	64	11	03	294	02 13 n 110 29 w	7.78
02	01	871120	23.34	31	06	02	294	02 21 n 110 35 w	6.22
02	02	871120	23.34	69	06	02	294		13.61
02	03	871120	23.15	63	06	02	294	02 25 n 110 44 w	7.72
03	01	871120	23.15	55	06	02	294	02 27 n 110 50 w	8.49
03	02	871120	23.15	55	06	01	294		5.79
04	01	871120	23.52	31	07	01	290	02 38 n 110 56 w	9.41

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
04	02	871120	23.52	64 69	07 01	4	290		15.29
04	03	871120	23.52	69 31	08 01	4	290		13.72
04	04	871120	23.71	63 55	09 01	4	290	02 47 n 111 15 w	9.09
05	01	871120	23.89	55 56	09 01	4	290	02 47 n 111 24 w	1.19
05	02	871120	23.89	55 56	09 01	4	293	02 48 n 111 24 w	2.79
06	01	871120	23.89	55 56	09 01	4	293	02 47 n 111 27 w	3.19
06	02	871120	23.89	56 63	09 01	4	293		2.39
07	01	871120	23.89	56 63	10 01	3	293	02 48 n 111 31 w	3.19
07	02	871120	23.89	31 64	10 01	3	293		16.33
07	03	871120	23.89	64 69	10 01	3	293		5.97
08	01	871120	23.89	64 69	10 02	3	293	02 55 n 111 44 w	7.17
08	02	871120	23.89	69 31	10 02	3	293		3.19
09	01	871120	24.63	63 55	10 02	3	293	03 01 n 111 50 w	6.16
10	01	871120	24.08	55 56	10 02	3	293	03 07 n 111 54 w	8.83
11	01	871120	23.89	31 64	11 03	3	293	03 13 n 112 00 w	11.15
01	01	871121	20.56	56 63	06 03	4	293	03 56 n 113 49 w	9.59
01	02	871121	20.37	63 55		4	293	03 58 n 113 53 w	6.79
01	03	871121	20.37	63 55		4	293		3.40
01	04	871121	20.37	55 56	06 02	4	293	04 00 n 113 58 w	10.19
01	05	871121	20.37	64 69		4	293	04 05 n 114 03 w	10.87
01	06	871121	20.37	64 69	06 02	4	293	04 05 n 114 08 w	1.36
01	07	871121	20.37	64 69		4	293		1.36
01	08	871121	20.37	69 31		4	293		13.58
01	09	871121	20.37	31 64	06 01	4	293	04 10 n 114 21 w	11.24
01	10	871121	19.26	56 63		4	293		1.61
01	11	871121	19.26	56 63	07 01	4	293		12.84
01	12	871121	19.26	63 55	07 01	4	293		2.57
01	13	871121	19.26	55 56		4	293	04 17 n 114 37 w	8.59
01	14	871121	19.82	55 56	07 01	4	293		2.64
01	15	871121	19.82	55 56	08 01	4	293	04 19 n 114 42 w	0.99
01	16	871121	19.82	64 69	08 01	5	288	04 20 n 114 42 w	11.56
01	17	871121	19.82	64 69	08 01	5	288		13.21
01	18	871121	19.82	31 64	09 01	5	288		13.21
01	19	871121	19.82	64 69	09 01	5	288	04 27 n 115 01 w	13.21
01	20	871121	19.82	56 63	10 01	5	288		3.30
01	21	871121	19.82	55 56	10 01	5	288	04 31 n 115 10 w	7.27
02	01	871121	19.82	63 55	10 02	5	288		5.61
02	02	871121	19.82	55 56	10 02	5	285	04 31 n 115 16 w	7.78
02	03	871121	19.45	55 56	11 02	5	285	04 32 n 115 20 w	3.57
02	04	871121	19.45	64 69		5	285		5.83
02	05	871121	19.45	64 69	11 02	5	285	04 34 n 115 25 w	0.32
02	06	871121	19.45	64 69		5	285	05 04 n 117 04 w	8.42
01	01	871122	18.71	69 31		3	274	05 03 n 117 09 w	3.82
02	01	871122	19.08	31 64		3	274	05 04 n 117 11 w	2.86
03	01	871122	19.08	64 69		3	274		1.59
03	02	871122	19.08	64 69		3	274		1.27
03	03	871122	19.08	64 69		3	274	05 03 n 117 15 w	5.72
04	01	871122	19.08	55 56		3	274	05 03 n 117 21 w	4.13
05	01	871122	19.08	56 63		3	274	05 03 n 117 24 w	5.72
06	01	871122	19.08	56 63		4	274		2.54
06	02	871122	19.08	63 55		4	274	05 02 n 117 29 w	7.31
07	01	871122	19.08	63 55		4	274		

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
07	02	871122	19.08	69			274		4.77
07	03	871122	19.08	69			274		2.86
07	04	871122	19.08	69	01		274		5.09
07	05	871122	19.08	31			274		4.13
08	01	871122	18.71	31	08		274	05 01 n	2.49
08	02	871122	18.71	64	01		274	117 43 w	8.73
08	03	871122	17.78	64	08		280		3.26
08	04	871122	17.78	55	01		280	117 48 w	7.41
08	05	871122	17.78	55	08		290	117 50 w	4.44
08	06	871122	17.78	56	01		290	117 54 w	11.85
08	07	871122	17.78	63	08		290		1.19
09	01	871122	17.41	63			290	117 04 w	4.35
09	02	871122	17.41	64			290		4.35
09	03	871122	17.41	64	01		290		3.48
10	01	871122	17.41	31			290	118 12 w	2.90
11	01	871122	16.85	55			290	118 25 w	8.43
11	02	871122	16.85	56	02		290		7.86
11	03	871122	17.96	69			290	118 36 w	4.49
11	04	871122	17.96	69			290		4.49
11	05	871122	17.96	31			290	118 41 w	5.39
01	01	871124	17.96	64			355	120 59 w	3.89
02	01	871124	17.96	63			002	120 43 w	9.58
02	02	871124	17.96	55			002		10.48
02	03	871124	18.33	64			002	120 41 w	9.17
02	04	871124	18.33	69			002		7.33
02	05	871124	18.33	69			002	120 40 w	0.31
01	01	871125	18.89	56			020	120 01 w	9.76
01	02	871125	18.52	63			020	119 59 w	9.26
01	03	871125	18.52	69			020	119 57 w	12.35
01	04	871125	18.52	31			020		3.09
01	05	871125	18.52	31			020		2.16
02	01	871125	17.78	64	03	02	020	119 50 w	1.48
02	02	871125	17.78	56			020		4.44
03	01	871125	18.89	63			024	119 47 w	7.87
03	02	871125	18.89	55			024	119 45 w	7.56
03	03	871125	18.89	55			024		1.26
03	04	871125	18.15	69			024	119 44 w	4.84
04	01	871125	18.15	31			024	119 42 w	4.84
04	02	871125	18.15	64			024		12.40
04	03	871125	18.15	69			024		11.80
04	04	871125	17.41	56			024	119 35 w	2.90
04	05	871125	17.41	63			018	119 34 w	10.16
04	06	871125	17.41	63			018		10.16
04	07	871125	17.41	55			018		4.35
04	08	871125	17.41	55			018		7.25
04	09	871125	17.41	69			018	119 29 w	8.70
04	10	871125	17.96	31			018	119 27 w	6.59
04	11	871125	17.96	31	07	02	018		2.40
05	01	871125	17.96	56			018	119 27 w	7.33
01	01	871126	17.96	31	03	03	028	118 50 w	8.98
01	02	871126	17.96	64	03	03	028		8.98
01	03	871126	17.96	55	03	03	028	118 45 w	2.99

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
02	01	871126	17.96	56	03	02	028	13 55 n 118 43 w	12.58
02	02	871126	17.96	63	03	02	028		8.98
02	03	871126	17.96	55	03	02	028		2.99
02	04	871126	15.74	31	03	02	028	14 01 n 118 37 w	6.82
03	01	871126	18.52	31	03	01	028	14 10 n 118 36 w	1.85
03	02	871126	18.52	64	04	01	028		12.04
03	03	871126	18.52	69	04	01	028		12.35
03	04	871126	17.96	55	04	01	028	14 22 n 118 31 w	7.49
03	05	871126	17.96	55	05	01	028		1.50
03	06	871126	17.96	55	05	01	028		1.80
03	07	871126	17.96	55	05	01	028	14 27 n 118 28 w	1.20
03	08	871126	17.96	56	05	01	028		2.99
04	01	871126	17.04	56	05	01	028	14 30 n 118 27 w	3.98
04	02	871126	18.33	56	06	01	020	14 31 n 118 23 w	3.67
04	03	871126	18.33	63			020		1.53
04	04	871126	18.33	63			020		2.44
05	01	871126	18.33	63	06	01	020	14 35 n 118 21 w	6.72
05	02	871126	18.33	31	06	01	020	14 39 n 118 19 w	9.17
06	01	871126	18.33	31	06	01	020	14 43 n 118 17 w	2.14
06	02	871126	18.33	64	07	01	020		11.92
06	03	871126	18.33	69	07	02	020		11.31
07	01	871126	18.33	55	07	02	020	14 57 n 118 10 w	2.14
07	02	871126	18.33	55	07	02	020		2.44
07	03	871126	18.33	55	07	02	020		2.14
07	04	871126	18.33	56	06		020		9.17
01	01	871127	17.59	63			012	15 01 n 118 09 w	7.33
01	02	871127	17.59	55			012	16 46 n 117 34 w	1.47
01	03	871127	17.41	55	03	03	012	16 50 n 117 33 w	5.80
01	04	871127	17.41	64	03	03	012	16 55 n 117 32 w	4.06
02	01	871127	17.41	64	03	03	012	16 56 n 117 31 w	1.16
02	02	871127	17.41	64	03	03	127	16 56 n 117 32 w	2.16
03	01	871127	18.52	31	11	03	128	15 03 n 115 08 w	2.07
01	01	871128	17.78	69			128	15 01 n 115 07 w	2.07
02	01	871128	17.78	31			128	15 00 n 115 06 w	5.93
02	02	871128	17.78	64			128		0.89
02	03	871128	17.78	31			128	14 58 n 114 55 w	6.65
03	01	871128	18.15	56			128		6.65
03	02	871128	18.15	55			128		6.65
03	03	871128	18.15	55			128		2.37
03	04	871128	17.78	69			128	14 52 n 114 46 w	2.96
03	05	871128	17.78	69	12	02	128		9.98
04	01	871128	18.15	31			128	14 51 n 114 41 w	2.64
05	01	871128	17.59	64	01	01	128	14 45 n 114 36 w	4.40
05	02	871128	17.59	64			128		1.47
05	03	871128	17.59	56			128	14 43 n 114 32 w	10.26
05	04	871128	17.59	56			134	14 42 n 114 32 w	7.33
05	05	871128	17.59	63			134		4.40
05	06	871128	17.59	55	02	01	134	14 34 n 114 23 w	2.93
05	07	871128	17.59	55	02	01	134	14 29 n 114 17 w	11.53
06	01	871128	18.71	69	02	01	134	14 24 n 114 11 w	9.35
06	02	871128	18.71	31	03	02	134		3.12
06	03	871128	18.71	64	03	02	134		1.51
06	04	871128	18.15	64	03		136	14 21 n 114 07 w	

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
06	05	871128	18.15	64	03	02	136	14 20 n 114 06 w	21.48
01	01	871129	18.89	55	11	03	128	12 58 n 112 43 w	2.52
01	02	871129	18.89	56	11	03	128		6.30
01	03	871129	18.89	56	11	03	128		8.19
01	04	871129	18.89	63	11	03	128	12 52 n 112 37 w	2.52
02	01	871129	18.71	31	01	02	089	12 44 n 112 35 w	12.16
02	02	871129	18.71	64	01	02	089		8.11
02	03	871129	17.96	55	01	02	106	12 44 n 112 25 w	1.20
02	04	871129	17.96	55	01	02	106		4.79
02	05	871129	17.78	55	03	01	106	12 43 n 112 22 w	1.48
03	01	871129	17.78	55	03	01	049	12 44 n 112 21 w	3.26
03	02	871129	17.78	56	03	01	049		4.44
04	01	871129	17.78	56	03	01	049	12 46 n 112 18 w	5.04
04	02	871129	17.78	63	03	01	049		11.85
04	03	871129	17.04	31	04	01	049	12 51 n 112 12 w	11.64
04	04	871129	17.04	64	05	01	049		11.07
04	05	871129	18.33	69	05	01	049	12 58 n 112 01 w	12.22
04	06	871129	18.52	55	06	01	049	13 04 n 111 55 w	2.78
04	07	871129	18.52	56	06	01	049		2.16
04	08	871129	18.52	55	06	01	049		5.25
05	01	871129	18.52	56	06	01	049	13 08 n 111 51 w	10.80
05	02	871129	18.52	63	06	02	049		0.93
05	03	871129	18.52	55	06	02	049		0.93
05	04	871129	18.52	63	06	02	049	13 12 n 111 45 w	8.95
05	05	871129	17.96	31	06	02	049	13 15 n 111 43 w	8.98
05	06	871129	17.96	64	06	02	049	13 18 n 111 39 w	8.98
05	07	871129	17.96	69	06	02	049	13 22 n 111 35 w	7.49
06	01	871129	17.96	31	06	03	049	13 26 n 111 32 w	4.19
06	02	871129	17.96	55	06	03	049	13 28 n 111 30 w	0.30
01	01	871130	18.33	64	02	03	049	14 39 n 110 04 w	7.33
02	01	871130	18.89	55	02	02	049	14 45 n 109 55 w	12.59
02	02	871130	18.89	55	02	02	049		12.59
02	03	871130	18.89	63	03	02	049		12.59
03	01	871130	19.26	64	03	01	049	14 59 n 109 41 w	8.35
03	02	871130	19.26	69	03	01	049		4.17
03	03	871130	19.26	31	04	01	000		2.25
04	01	871130	18.71	31	04	01	049	15 06 n 109 34 w	9.98
05	01	871130	18.71	63	04	01	049	15 10 n 109 29 w	11.85
05	02	871130	18.71	55	05	01	049		3.43
06	01	871130	18.33	56	05	01	049	15 16 n 109 21 w	3.36
06	02	871130	18.33	56	05	01	049		7.64
06	03	871130	18.71	64	05	01	049	15 21 n 109 16 w	12.47
06	04	871130	18.71	69	06	02	049		9.35
06	05	871130	18.71	69	06	02	049		3.12
06	06	871130	18.71	31	06	02	049		7.79
06	07	871130	18.71	31	08	02	350		4.05
07	01	871130	17.78	63	07	03	049	15 31 n 109 03 w	6.82
07	02	871130	17.78	64	07	03	049		2.07
01	01	871201	18.71	56	07	03	285	16 21 n 110 37 w	7.17
02	01	871201	18.71	63	06	02	285	16 24 n 110 40 w	7.79
02	02	871201	18.71	55	06	02	285		1.56
02	03	871201	18.71	55	63	02	285		4.99

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
02	04	871201	18.33	69		2	285	16 26 n 110 48 w	7.64
03	01	871201	18.52	31		2	285	16 34 n 110 59 w	3.09
04	01	871201	18.52	56		2	285	16 34 n 111 02 w	6.17
04	02	871201	18.52	63	07	01	285		6.17
04	03	871201	18.15	55	08	01	285	16 36 n 111 09 w	6.05
05	01	871201	18.15	63	08	01	285	16 38 n 111 12 w	8.77
05	02	871201	19.08	55	09	01	285	16 39 n 111 18 w	12.72
05	03	871201	19.08	31	09	01	285		3.18
05	04	871201	19.08	64	09	01	285		9.86
05	05	871201	19.08	31	09	01	285		7.63
05	06	871201	19.08	64	10	01	285		4.77
06	01	871201	19.08	56		3	285	16 45 n 111 40 w	10.49
06	02	871201	19.08	63		3	285		0.64
06	03	871201	19.08	55	10	02	285		0.95
06	04	871201	20.37	63		3	285	16 47 n 111 49 w	0.34
07	01	871201	20.37	55		3	285	16 49 n 111 51 w	0.68
07	02	871201	20.37	63	10	02	285		0.68
08	01	871201	20.19	55	10	02	285	16 50 n 111 51 w	3.36
09	01	871201	20.37	55	10	02	285	16 50 n 111 55 w	5.09
09	02	871201	20.37	69		4	285	16 51 n 111 59 w	10.19
09	03	871201	20.19	31		4	285	16 52 n 112 03 w	10.43
09	04	871201	20.37	69		4	285	16 53 n 112 09 w	7.13
09	05	871201	19.45	63		4	285	16 54 n 112 12 w	0.97
01	01	871202	19.63	31		5	289	17 29 n 114 19 w	10.80
01	02	871202	19.63	64		5	289		9.82
01	03	871202	19.45	55		5	289	17 33 n 114 30 w	6.81
01	04	871202	19.45	55	06	02	289		6.16
01	05	871202	19.45	56	07	02	289		13.61
01	06	871202	19.45	63	07	02	289		5.83
01	07	871202	19.45	55		5	289		6.48
01	08	871202	19.63	31		5	289	17 40 n 114 50 w	1.96
02	01	871202	19.63	64		5	289	17 42 n 114 53 w	1.64
03	01	871202	19.45	64		5	289	11 42 n 115 00 w	9.40
03	02	871202	19.45	69	08	01	289		4.86
03	03	871202	19.45	69		5	289		2.92
03	04	871202	19.45	31		5	291		1.94
03	05	871202	20.37	55		5	291	17 44 n 115 12 w	8.83
04	01	871202	19.08	56		5	291	17 41 n 115 23 w	7.31
04	02	871202	19.08	63		5	291		2.54
04	03	871202	19.08	63	09	01	291		4.45
04	04	871202	19.08	31	09	01	291	17 43 n 115 31 w	1.59
04	05	871202	19.08	64	09	01	291		1.59
04	06	871202	19.08	31	09	01	291		9.86
04	07	871202	19.08	64		5	291		2.86
05	01	871202	19.82	69	10	02	297	17 46 n 115 41 w	8.26
05	02	871202	19.82	55		5	297		1.32
05	03	871202	19.82	55	10	02	297		3.30
05	04	871202	19.82	55		5	297		5.28
05	05	871202	19.63	56		5	297	17 50 n 115 50 w	5.89
06	01	871202	19.63	31		5	297	17 49 n 115 58 w	10.14
01	01	871203	19.26	63		4	287	18 38 n 117 59 w	3.53
02	01	871203	19.08	55		4	287	18 36 n 118 02 w	1.59

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
02	02	871203	19.08	63	06	03	287	18 37 n 118 03 w	2.86
02	03	871203	19.08	55	06	03	287		12.08
02	04	871203	19.08	56	06	02	287		11.76
02	05	871203	18.71	64	06	02	287	18 42 n 118 18 w	12.16
02	06	871203	18.71	69	06	02	287		1.56
03	01	871203	18.71	31	07	02	287	18 46 n 118 21 w	3.12
03	02	871203	18.71	69	07	01	287		12.47
03	03	871203	19.63	63	07	01	287	18 49 n 118 29 w	3.93
04	01	871203	19.63	55	08	01	287	18 49 n 118 34 w	7.20
04	02	871203	19.63	55	08	01	287		13.09
04	03	871203	19.63	56	08	01	287		9.82
04	04	871203	19.63	63	03	01	096	18 53 n 118 48 w	3.27
04	05	871203	17.78	64	03	01	096		11.85
04	06	871203	17.78	31	03	01	096	18 52 n 118 40 w	1.48
05	01	871203	17.78	69	03	01	096		9.48
05	02	871203	17.78	31	04	01	096	18 51 n 118 28 w	11.85
05	03	871203	17.78	63	04	02	096		8.00
06	01	871203	17.59	55	04	02	096	18 50 n 118 23 w	2.64
06	02	871203	17.59	56	04	02	096		11.73
06	03	871203	17.59	56	04	02	096		11.73
06	04	871203	18.89	64	05	02	096	18 49 n 118 15 w	6.93
06	05	871203	18.89	64	05	02	096	18 46 n 118 07 w	2.52
06	06	871203	18.89	69	05	03	096		9.45
06	07	871203	18.89	31	05	03	096	18 46 n 118 01 w	2.52
01	01	871204	18.71	69	05	03	096	18 45 n 117 56 w	1.87
02	01	871204	18.71	31	01	03	099	18 31 n 115 58 w	5.61
02	02	871204	18.71	31	01	03	099	18 30 n 115 57 w	14.34
02	03	871204	18.71	64	01	02	099		11.53
02	04	871204	18.89	56	01	02	099	18 28 n 115 38 w	5.04
02	05	871204	18.89	64	01	02	099		7.56
02	06	871204	18.89	63	01	02	099		12.59
02	07	871204	18.89	55	01	02	099		8.50
02	08	871204	18.89	55	01	02	099		4.09
02	09	871204	18.52	69	01	01	099	18 24 n 115 19 w	8.03
03	01	871204	18.52	69	02	01	095	18 21 n 115 13 w	2.47
03	02	871204	18.52	31	02	01	095		12.04
04	01	871204	18.89	64	02	01	105	18 27 n 115 07 w	6.93
04	02	871204	18.89	56	03	01	105		3.15
04	03	871204	18.89	56	04	02	105		3.15
04	04	871204	18.89	63	04	02	105	18 24 n 114 57 w	6.30
04	05	871204	18.33	55	04	02	105		3.15
04	06	871204	18.33	55	04	02	105		1.83
04	07	871204	18.33	55	04	02	105		1.22
04	08	871204	18.33	69	04	02	105		6.11
01	01	871205	19.08	55	01	03	105	18 22 n 114 52 w	3.67
02	01	871205	19.08	56	01	03	072	18 51 n 112 33 w	2.54
02	02	871205	19.08	55	01	03	072	18 53 n 112 31 w	1.91
02	03	871205	19.08	55	01	03	072		5.72
02	04	871205	19.08	56	01	03	072		5.40
02	05	871205	18.89	63	01	03	072	18 55 n 112 22 w	2.23
03	01	871205	19.08	63	02	02	076	18 56 n 112 17 w	3.46
03	02	871205	18.89	55	02	02	076		5.72
03	03	871205	18.89	64	02	02	076	18 57 n 112 12 w	10.39

Table 2. (continued)

series	leg	date	speed km/hr	observer codes left right	sun position horz. vert.	beauf. no.	course (deg.)	position latitude longitude	km in leg
03	03	871205	18.89	31 64	02 02	2	063		3.78
03	04	871205	18.89	31 64	02 02	3	063		1.57
04	01	871205	18.15	55 56	06 01	4	355	19 00 n 112 05 w	4.84
05	01	871205	18.15	55 56	06 01	4	355	19 04 n 112 05 w	0.60
06	01	871205	18.15	56 63	06 01	4	355	19 08 n 112 04 w	0.91
07	01	871205	17.96	31 64	07 01	4	355	19 11 n 112 05 w	3.59
08	01	871205	17.96	31 64	07 01	4	355	19 14 n 112 05 w	2.99
08	02	871205	17.96	64 69	07 01	4	355	19 14 n 112 05 w	11.98
08	03	871205	17.96	69 31	07 01	4	355		3.59
09	01	871205	17.96	55 56	08 02	4	355	19 26 n 112 05 w	11.08
09	02	871205	17.96	56 63	08 02	4	355		10.78
09	03	871205	17.96	63 55	08 02	4	355		11.08
09	04	871205	17.96	63 55	08 02	4	355	19 44 n 112 06 w	0.30

Table 3. Marine mammal sightings, classified by species code groups, encountered in the eastern tropical Pacific during August 8 through December 10, 1987.

Sightings by Species														
species: OFFSHORE SPOTTED DOLPHIN (STENELLA ATTENUATA)														
species code: 2														
date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est		ymrody
				number	vert.							best	low	
			horz.	by	dist. (km)	deg min	deg min			(% of school)				
870813	04	18	04	04	02	3	04	1.5	14 05 n	109 48 w	56.7	202.0	163.0	
870815	01	05	09	02	02	2	04	3.9	08 47 n	108 56 w	100.0	14.0	11.0	
870815	03	03	06	05	01	3	05	1.9	08 36 n	109 04 w	100.0	52.0	42.0	
870815	04	02	03	04	12	3	04	1.5	08 38 n	109 17 w	79.5	228.0	171.0	
870817				99		2	04	4.6	09 19 n	115 42 w	54.0	232.0	189.0	
870817	06	02	11	51	02	4	51	2.9	10 01 n	116 25 w	10.0	0.0*	27.0	
870818	02	04	02	05		4	05	3.8	10 42 n	113 45 w	62.5	93.0	48.0	
870819	01	01	01	68		5	68	0.6	10 52 n	111 39 w	100.0	19.0	16.0	
870819	09	04	07	04		5	67	0.5	11 04 n	110 05 w	47.0	267.0	166.0	
870820	01	07	01	68		3	68	7.0	11 22 n	107 47 w	1.7	250.0	78.0	
870820	03	18	03	04	02	3	04	3.0	11 29 n	106 51 w	100.0	210.0	155.0	
870821	01	01	01	68		3	68	3.8	13 09 n	105 32 w	23.3	48.0	37.0	
870821	02	14	04	67	12	3	67	0.4	13 52 n	104 49 w	46.7	62.0	53.0	
870821	05	02	07	04	02	3	04	3.3	14 14 n	104 30 w	48.0	37.0	25.0	
870821	06	04	08	67	02	3	67	2.7	14 23 n	104 18 w	100.0	31.0	25.0	
870822				05		1	05	4.1	16 10 n	101 50 w	100.0	35.0	25.0	
870822	01	07	01	51	02	3	51	6.1	16 02 n	102 55 w	15.0	42.0	29.0	
870822	03	02	02	67	01	3	67	0.8	16 16 n	102 47 w	100.0	30.0	24.0	
870822	06	01	05	68	12	2	68	1.5	16 23 n	102 28 w	100.0	54.0	40.0	
870822	10	01	10	04	02	1	04	0.7	16 17 n	102 02 w	100.0	14.0	11.0	
870824				05		2	05	9.2	15 04 n	097 35 w	100.0	13.0	8.0	
870824	01	08	01	68	01	2	68	6.2	15 11 n	098 29 w	64.7	71.0	54.0	
870824	03	02	02	67	12	2	67	0.9	15 05 n	098 13 w	58.2	119.0	92.0	
870824	06	03	04	05	01	2	05	3.6	15 04 n	097 36 w	100.0	20.0	18.0	
870824	08	01	07	04	02	2	04	2.4	15 11 n	097 26 w	100.0	90.0	63.0	
870824	09	02	08	22	03	2	22	0.7	15 11 n	097 21 w	28.0	271.0	220.0	
870825	01	02	02	68	03	2	68	1.4	15 12 n	097 07 w	45.0	21.0	16.0	
870825	02	01	03	04	03	2	04	2.5	15 10 n	097 05 w	58.3	194.0	135.0	
870825	05	01	06	51	02	3	51	5.4	15 05 n	096 58 w	76.5	147.0	118.0	
870825	07	01	08	05	02	2	05	1.7	15 00 n	096 55 w	79.7	112.0	92.0	
870825	09	04	10	51	12	3	51	1.4	14 51 n	096 31 w	53.0	294.0	235.0	
870825	11	01	12	67	12	3	67	2.5	14 51 n	096 23 w	35.0	287.0	201.0	
870825	14	01	14	51	02	1	51	1.5	14 51 n	096 07 w	40.0	160.0	120.0	
870905				04		5	04	0.3	13 44 n	090 51 w	100.0	5.0	4.0	
870906	03	01	03	04		4	04	0.1	13 55 n	094 00 w	100.0	25.0	19.0	
870906	05	03	05	05		4	05	0.6	13 58 n	094 11 w	86.2	107.0	86.0	
870907	04	02	02	05	01	3	05	8.9	14 17 n	099 14 w	62.3	80.0	74.0	
870908	02	01	03	51		2	51	4.9	14 44 n	101 05 w	91.5	28.0	24.0	
870908	03	03	04	05	01	2	05	0.5	14 44 n	101 20 w	100.0	12.0	10.0	
870908	04	01	06	67	01	1	67	0.3	14 44 n	101 22 w	100.0	38.0	31.0	

Table 3. (continued)

Sightings by Species													species code: 2	
species: OFFSHORE SPOTTED DOLPHIN (STENELLA ATTENUATA)														
date	series	leg	sight	sun position		beauf. detected	perp. dist. (km)	latitude	longitude	proportion (% of school)	mean school size			
				horz.	vert.						best	low		
yr	mo	day	no.	no.	no.	no.	no.	deg	deg					
870908	05	02	08	08	12	1	68	8.3	14 40 n	101 34 w	100.0	43.0	36.0	
870908	06	02	11	10	12	2	05	2.2	14 45 n	101 44 w	75.5	60.0	50.0	
870908	07	01	13	12	12	2	05	9.9	14 46 n	101 55 w	100.0	27.0	23.0	
870908	07	02	14	12	12	1	22	1.6	14 45 n	101 56 w	100.0	9.0	7.0	
870908	09	01	15	01	01	1	68	0.3	14 41 n	102 00 w	71.8	112.0	85.0	
870908	10	05	16	02	02	2	67	0.4	14 29 n	102 08 w	100.0	33.0	28.0	
870908	11	02	17	02	02	1	04	1.1	14 23 n	102 10 w	100.0	31.0	26.0	
870909	02	02	01			3	04	2.1	12 35 n	103 21 w	26.7	34.0	24.0	
870909	03	04	02			4	04	6.9	11 49 n	103 48 w	78.8	117.0	89.0	
870909	04	03	03			4	67	3.8	11 38 n	104 00 w	100.0	187.0	124.0	
870915	02	02	01			4	68	0.8	02 14 n	116 13 w	100.0	125.0	93.0	
870917	01	08	01	12	02	4	04	1.0	01 47 n	114 35 w	100.0	11.0	9.0	
870919			03	09	02	4	04	0.8	00 29 n	110 18 w	100.0	545.0	452.0	
870919			06			4	04	1.8	00 20 n	110 12 w	100.0	77.0	54.0	
870919	02	01	04	09	02	4	68	0.2	00 27 n	110 19 w	100.0	48.0	37.0	
870921	04	01	05	01	01	3	05	0.2	00 28 s	106 50 w	100.0	64.0	53.0	
870922	04	01	03	01	02	4	04	3.4	00 57 n	103 48 w	65.0	575.0	400.0	
870922	06	01	05			4	04	1.1	01 08 n	103 26 w	94.7	495.0	407.0	
870924	04	10	04	07	01	4	51	2.9	04 14 n	097 18 w	16.0	682.0	566.0	
870925	01	02	01	01	03	3	05	0.2	05 32 n	094 53 w	100.0	52.0	36.0	
870925	02	01	03			3	67	4.2	05 34 n	094 55 w	100.0	52.0	37.0	
870925	04	05	05	01	01	2	05	0.7	05 41 n	094 31 w	100.0	62.0	48.0	
870925	05	06	07			3	51	0.0	05 54 n	094 08 w	100.0	22.0	15.0	
870926	03	03	03	01	02	3	04	3.6	07 33 n	091 23 w	100.0	209.0	165.0	
871013	03	01	05	09	02	2	69	0.6	05 42 n	087 04 w	16.2	437.0	399.0	
871014	02	04	04	04	02	1	56	4.6	07 51 n	087 33 w	98.8	312.0	286.0	
871022	05	04	06	06	01	4	31	0.2	10 51 n	094 14 w	100.0	10.0	9.0	
871023	03	06	03	09	01	3	56	3.3	12 18 n	094 09 w	35.0	86.0	71.0	
871025	02	03	01	09	01	4	56	1.0	07 36 n	097 42 w	47.5	62.0	47.0	
871027			08	07	01	2	56	0.6	11 29 n	098 42 w	100.0	114.0	101.0	
871027	05	02	07			2	69	0.7	11 29 n	098 42 w	100.0	64.0	54.0	
871028	02	01	05			1	55	1.3	09 21 n	099 50 w	100.0	42.0	37.0	
871028	04	02	12	09	01	2	64	0.5	09 10 n	099 59 w	54.3	85.0	73.0	
871030	06	02	04			3	56	2.9	07 13 n	101 59 w	100.0	349.0	279.0	
871031	01	09	01	04	01	4	55	4.0	10 11 n	101 46 w	37.5	208.0	177.0	
871031	04	05	05	08	01	4	31	0.0	10 57 n	101 48 w	100.0	78.0	63.0	
871101	03	02	02			4	69	2.3	12 49 n	103 45 w	38.3	137.0	110.0	
871102	02	01	02	04	01	3	55	0.4	14 42 n	106 47 w	100.0	47.0	41.0	
871102	03	12	04	07	03	3	63	5.0	15 23 n	106 21 w	100.0	63.0	43.0	
871103	01	02	01	02	03	2	64	0.5	17 11 n	105 25 w	100.0	165.0	141.0	
871103	02	03	03	04	01	2	69	2.1	17 26 n	105 11 w	100.0	50.0	42.0	
871103	04	03	05	05	01	3	55	7.5	17 46 n	105 00 w	100.0	42.0	35.0	
871109	03	06	02	12	01	3	64	5.9	16 16 n	105 13 w	87.8	116.0	102.0	

Table 3. (continued)

Sightings by Species												
species: OFFSHORE SPOTTED DOLPHIN (STENELLA ATTENUATA)												
species code: 2												
date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size
				horz.	vert.							
ymrdo		number	horz.	vert.		by	dist.(km)	deg min	deg min	deg min	(% of school)	best low
871110	01	15	01	01		55	1.9	14 17 n	104 27 w	95.0	152.0	137.0
871115	10	01	10			69	3.3	07 43 n	100 22 w	63.3	293.0	262.0
871116	01	02	01			31	3.4	07 06 n	101 59 w	97.3	317.0	290.0
871119	02	01	01			55	0.4	01 26 n	106 55 w	100.0	88.0	75.0
871119	04	01	02			63	2.8	01 27 n	107 03 w	100.0	67.0	57.0
871119	06	01	05	08	01	69	1.1	01 38 n	107 47 w	40.0	230.0	185.0
871119	07	01	06	09	12	64	0.3	01 38 n	107 56 w	57.5	542.0	450.0
871119	08	02	07	10	01	56	3.2	01 39 n	108 05 w	80.0	128.0	113.0
871120	01	01	02	06	03	69	0.0	02 15 n	110 33 w	75.0	57.0	47.0
871120	03	02	05	06	01	56	3.2	02 31 n	110 57 w	100.0	278.0	245.0
871120	09	01	11	10	02	55	4.6	03 03 n	111 53 w	36.7	170.0	152.0
871120	10	01	12	10	02	56	3.5	03 09 n	111 59 w	55.0	250.0	217.0
871125	05	01	05			56	0.0	12 11 n	119 24 w	5.7	467.0	410.0
871128	05	07	05	02	01	55	2.7	14 34 n	114 23 w	44.2	289.0	257.0
871128	06	04	07			64	3.5	14 20 n	114 07 w	100.0	380.0	329.0
871129	01	04	02	11	03	55	5.0	12 51 n	112 35 w	40.8	153.0	122.0
871130	01	01	01	02	03	64	5.1	14 42 n	110 00 w	100.0	318.0	288.0
871201	02	04	02			31	4.2	16 27 n	110 52 w	100.0	127.0	105.0
871202	03	05	04			55	2.7	17 46 n	115 17 w	100.0	22.0	17.0
871202	04	06	05			31	6.9	17 47 n	115 37 w	7.7	1058.0	933.0
871202	05	05	06			56	6.3	17 52 n	115 53 w	26.7	650.0	547.0
871204	02	09	03	01	01	69	5.5	18 22 n	115 14 w	30.0	410.0	362.0

Table 3. (continued)

Sightings by Species													
species: SPINNER DOLPHIN (STENELLA LONGIROSTRIS)													
species code: 3													
date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion (% of school)	mean school size est	
				number	horz.							vert.	best
yr	mo	day	number	by	dist.(km)	deg	min	deg	min	deg	min	best	low
870817	06	02	03	11	02	4	2.9	2.9	10 01 n	116 25 w	3.3	0.0*	27.0
870818	02	04	02			4	3.8	3.8	10 42 n	113 45 w	12.5	93.0	48.0
870819	09	04	07			5	0.5	0.5	11 04 n	110 05 w	3.0	267.0	166.0
870828	03	07	05	07	12	3	3.1	3.1	13 16 n	091 29 w	100.0	332.0	278.0
871116	01	02	01			2	3.4	3.4	07 06 n	101 59 w	2.7	317.0	290.0

Table 3. (continued)

Sightings by Species													
species: COMMON DOLPHIN (DELPHINUS DELPHIS)													
species code: 5													
date	series	leg	sight	sun position		beauf.	detected	perp.	lat. deg	min	long. deg	min	size est
				horz.	vert.								low
ymdoy			number			by	dist. (km)					proportion (% of school)	mean school size
870808	01	02	01	02	02	22	6.1	32	27	n	117	12	0.0*
870808	01	04	03	02	02	67	0.3	32	16	n	117	14	250.0
870808	02	01	06	02	03	04	0.0	32	11	n	117	15	110.0
870809	01	03	01	02	03	68	2.4	30	08	n	117	50	14.0
870811	01	02	01	09	03	68	1.1	22	55	n	114	17	75.0
870811	04	03	04	10	02	05	0.2	22	36	n	114	08	108.0
870811	14	01	14	04	02	04	1.1	21	09	n	113	28	111.0
870812	03	02	05	10	02	51	1.8	19	08	n	112	13	47.0
870828	02	03	02	02	01	51	0.9	13	02	n	091	52	157.0
870926	08	01	09	02	01	04	0.6	07	48	n	091	04	56.0
870926	11	03	12	06	01	68	3.1	08	05	n	090	38	412.0
870926	12	01	15	07	02	04	1.5	08	05	n	090	29	1350.0
870927			03	10	03	05	6.2	08	46	n	088	48	0.0*
870927	01	01	01			22	0.7	08	49	n	088	50	82.0
870927	03	04	07	10	02	68	3.4	08	37	n	088	41	422.0
871015	04	02	01	10	01	55	3.3	06	19	n	089	58	206.0
871016	03	03	02			69	1.3	07	15	n	090	53	29.0
871018			18	02	01	69	0.1	08	00	n	091	54	111.0
871018	07	01	13	11	01	56	5.7	08	15	n	091	43	662.0
871018	12	01	22	01	02	56	6.7	07	47	n	092	04	514.0
871022	01	01	01	03	02	64	3.7	09	47	n	094	38	217.0
871022	02	02	02	03	03	55	1.6	10	05	n	094	33	155.0
871113	03	16	05	04	02	55	3.9	09	42	n	098	54	35.0
871208			03	09	01	56	0.2	28	22	n	115	23	12.0
871209			01		01	55	0.7	30	35	n	116	18	60.0
871209			02			64	0.1	30	43	n	116	25	42.0

Table 3. (continued)

Sightings by Species												
species: COASTAL SPOTTED DOLPHIN (S.A. GRAFFMANI)												
date		series	leg	number	sun position	beauf. detected	perp. dist.(km)	latitude	longitude	proportion	mean school size	est
yr		mo	day	horz.	vert.	by	by	deg	min	(% of school)	best	low
87	10	01	12			2	22	0.0	n	100.0	0.0*	0.0*
87	10	09	06			2	25	0.1	08 30 n	100.0	20.0	15.0
87	10	09	03	01		2	56	1.4	08 39 n	100.0	38.0	32.0
87	10	09	06	02		3	55	0.3	08 04 n	100.0	9.0	7.0
87	10	09	08	02		2	64	0.0	07 42 n	100.0	157.0	142.0
87	11	08	01			1	31	0.0	19 08 n	100.0	50.0	40.0

Table 3. (continued)

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

Table 3. (continued)

Sightings by Species													
species: EASTERN SPINNER DOLPHIN (STENELLA LONGIROSTRIS)													
species code: 10													
date	series	leg	sight	sun position		beauf. detected	perp. dist. (km)	lat. deg min	long. deg min	proportion (% of school)	mean school size		est
				horz.	vert.						best	low	
yr	mo	day	hr	min	sec	ft	mi	deg	min	sec	deg	min	sec
871115	10	01	10			3	3.3	07 43 n	100 22 w	36.7	293.0	262.0	
871125	05	01	05			3	0.0	12 11 n	119 24 w	94.3	467.0	410.0	
871128	02	02	02			2	8.4	14 59 n	115 04 w	100.0	370.0	335.0	
871128	04	01	03			4	0.2	14 50 n	114 40 w	100.0	188.0	163.0	
871128	05	07	05	02	01	4	2.7	14 34 n	114 23 w	55.8	289.0	257.0	
871129	01	04	02	11	03	3	5.0	12 51 n	112 35 w	9.2	153.0	122.0	
871202	04	06	05			5	6.9	17 47 n	115 37 w	92.3	1058.0	933.0	
871202	05	05	06			5	6.3	17 52 n	115 53 w	73.3	650.0	547.0	
871204	02	09	03	01	01	4	5.5	18 22 n	115 14 w	70.0	410.0	362.0	

Table 3. (continued)

Sightings by Species															
species: WHITEBELLY SPINNER DOLPHIN (STENELLA LONGIROSTRIS)															
species code: 11															
date	series	leg	sight	sun position		beauf.	detected	perp.	lat	deg	min	longitude	proportion (% of school)	mean school size est	
				number	horz.									vert.	by
ym	dy														
870815	04	02	03	03	05	12	04	1.5	08	38	n	109 17 w	20.5	228.0	171.0
870817			01	2			99	4.6	09	19	n	115 42 w	26.0	232.0	189.0
870922	04	01	03	4	01	02	04	3.4	00	57	n	103 48 w	35.0	575.0	400.0
870922	06	01	05	4			04	1.1	01	08	n	103 26 w	5.3	495.0	407.0
870924	04	10	04	4	07	01	51	2.9	04	14	n	097 18 w	84.0	682.0	566.0
871119	07	01	06	5	09	12	64	0.3	01	38	n	107 56 w	42.5	542.0	450.0
871119	08	02	07	10	10	01	56	3.2	01	39	n	108 05 w	20.0	128.0	113.0
871120	06	02	09	4	09	01	55	0.3	02	49	n	111 29 w	100.0	36.0	30.0
871120	09	01	11	3	10	02	55	4.6	03	03	n	111 53 w	63.3	170.0	152.0
871120	10	01	12	3	10	02	56	3.5	03	09	n	111 59 w	45.0	250.0	217.0

Table 3. (continued)

Sightings by Species												
species: STRIPED DOLPHIN (S. COERULEALBA)												
species code: 13												
date	series	leg	sight	sun position		beauf. detected	perp. dist. (km)	lat. deg	long. min	proportion (% of school)	mean school size	
				horz.	vert.						best	low
ymdy			number			by						
870811	15	01	15	04	03	04	4.3	21 02 n	113 25 w	100.0	26.0	20.0
870812	02	02	02	10	03	05	5.9	19 14 n	112 20 w	100.0	29.0	24.0
870815	04	02	04	05	12	04	0.6	08 38 n	109 20 w	100.0	16.0	12.0
870816	08	04	08	12	02	04	0.2	07 44 n	113 26 w	100.0	101.0	83.0
870819	08	01	06			51	1.0	11 02 n	110 17 w	100.0	27.0	21.0
870913		04	01	11	12	04	1.5	05 37 n	113 23 w	100.0	20.0	10.0
870917	02	04	03	01	01	22	0.4	01 45 n	114 27 w	100.0	120.0	95.0
870918	01	12	01	12	01	68	0.5	02 08 n	111 05 w	100.0	13.0	9.0
870919		05	05	09	01	99	1.8	00 23 n	110 19 w	100.0	174.0	155.0
870919	01	07	01	09	02	04	6.4	00 34 n	110 14 w	100.0	202.0	178.0
870921			07	06	12	04	3.0	00 17 s	106 29 w	100.0	0.0*	25.0
870921	01	10	01	01	02	68	1.3	00 30 s	106 55 w	100.0	43.0	35.0
870921	03	01	02	01	01	22	0.2	00 28 s	106 55 w	100.0	34.0	27.0
870922	08	02	07	01	02	22	6.4	01 13 n	103 11 w	100.0	32.0	27.0
870924	01	09	01	01	02	05	0.8	03 43 n	097 56 w	100.0	68.0	51.0
870925	05	05	03	01	01	51	0.0	03 50 n	097 51 w	100.0	41.0	29.0
870925	06	06	08	07	02	67	1.9	06 10 n	094 11 w	100.0	18.0	13.0
870926	01	01	01	02	01	04	0.7	07 24 n	091 37 w	100.0	36.0	28.0
870926	09	01	10	02	01	04	0.2	07 50 n	091 01 w	100.0	41.0	31.0
870927	05	04	11	10	01	67	7.5	08 20 n	088 31 w	100.0	118.0	101.0
870927	10	06	18	03	02	68	0.8	07 39 n	088 12 w	100.0	14.0	10.0
870927	13	05	26	04	03	05	1.4	07 23 n	088 04 w	100.0	33.0	28.0
870930	06	01	02			05	0.8	05 01 n	080 48 w	100.0	38.0	32.0
871001	01	01	01	02	03	22	0.1	06 50 n	079 45 w	100.0	46.0	32.0
871010	01	01	01	01	01	31	0.9	05 27 n	079 27 w	100.0	39.0	33.0
871010	02	06	03	09	02	56	3.0	05 09 n	079 32 w	100.0	114.0	97.0
871010	03	04	05	10	01	31	4.9	04 50 n	079 34 w	100.0	60.0	52.0
871010	06	05	11	10	02	55	0.3	04 58 n	080 04 w	100.0	37.0	30.0
871011	02	03	02	07	01	69	3.0	03 50 n	081 18 w	100.0	39.0	31.0
871011	04	02	07	01	02	31	0.4	04 19 n	084 51 w	100.0	45.0	39.0
871012	02	01	03			31	0.9	04 36 n	085 13 w	100.0	27.0	20.0
871012	06	01	04			31	2.9	04 46 n	085 33 w	100.0	25.0	20.0
871013	01	01	02	09	01	55	2.0	05 37 n	087 04 w	100.0	27.0	24.0
871014	03	01	05	03	02	56	3.8	07 54 n	087 31 w	100.0	18.0	16.0
871017	03	01	03	03	02	31	3.7	09 35 n	090 05 w	100.0	36.0	31.0
871017	04	01	04	03	01	63	5.0	09 39 n	090 06 w	100.0	110.0	100.0
871017	08	03	12	07	01	56	1.8	10 05 n	089 58 w	100.0	57.0	48.0
871017	10	02	15	07	02	31	4.6	10 10 n	089 55 w	100.0	145.0	132.0
871018	01	01	04			64	0.0	08 49 n	091 17 w	100.0	15.0	12.0
871018	03	02	06	08	02	31	0.9	08 58 n	091 14 w	100.0	25.0	20.0
871018						63	1.8	08 42 n	091 23 w	100.0	44.0	39.0

Table 3. (continued)

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

Table 3. (continued)

Sightings by Species													
species: STRIPED DOLPHIN (S. COERULEALBA)													
date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
				number	vert.							best	low
ymody				horz.			by	dist.(km)	deg min	deg min	(% of school)		
871205	05	01	04	06	01		55	1.8	19 04 n	112 05 w	100.0	69.0	60.0
871205	06	01	05	06	01		63	2.6	19 09 n	112 04 w	100.0	40.0	33.0

Table 3. (continued)

Sightings by Species													
species: ROUGH-TOOTHED DOLPHIN (STENO BREANENSIS)													
species code: 15													
date	series	leg	sight	sun position		beauf.	detected	perp. dist.(km)	lat deg min	long deg min	proportion (% of school)	mean school size	
				horz.	vert.	number	by					best	low
yr	mo	day	time										
870816	07	05	06	12	01	1	67	3.0	07 45 n	113 18 w	100.0	17.0	14.0
870821			09	08	03	3	04	2.1	14 28 n	104 15 w	100.0	6.0	5.0
870908			07	07	01	1	05	8.2	14 42 n	101 24 w	100.0	2.0	1.0
870916	02	10	02			4	04	1.1	01 16 n	117 24 w	100.0	10.0	8.0
870929	08	01	05			2	05	0.6	04 29 n	083 31 w	100.0	5.0	5.0
871009	10	01	16			3	55	0.3	07 31 n	078 49 w	100.0	10.0	9.0
871013	02	01	03			2	63	6.4	05 41 n	087 03 w	100.0	87.0	76.0
871018	05	02	11	09	01	3	31	0.1	08 27 n	091 35 w	100.0	34.0	31.0
871027	07	02	11	02	03	2	69	4.8	11 23 n	099 05 w	100.0	8.0	7.0
871103	05	01	06	06	01	3	55	4.2	17 52 n	105 02 w	100.0	15.0	14.0
871103	07	02	07	07	02	3	55	0.1	18 13 n	104 50 w	100.0	5.0	5.0
871117	02	02	02			4	31	1.9	05 55 n	105 18 w	100.0	27.0	24.0
871117	03	07	04	10	01	4	69	2.2	05 45 n	105 44 w	100.0	13.0	12.0
871122	02	01	02			3	64	0.9	05 03 n	117 11 w	100.0	13.0	12.0
871122	03	03	03			3	64	0.5	05 03 n	117 14 w	100.0	2.0	2.0
871126	01	03	01	03	03	3	63	0.0	13 51 n	118 45 w	100.0	18.0	14.0

Table 3. (continued)

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

Table 3. (continued)

Sightings by Species													
species: BOTTLENOSED DOLPHIN (TURSIOPS TRUNCATUS)													
species code: 18													
date	series	leg	sight	sun position		beauf.	detected	perp.	lat. (km)	deg min	longitude	proportion (% of school)	mean school size
				horz.	vert.								
yr	mo	day	number	by	dist.	deg min	deg min	deg min	deg min	deg min	deg min	best	low
871017	05	02	10	69	0.5	09 55	09 55	09 05	05	05	77.5	25.0	22.0
871017	06	01	07	56	2.7	09 47	09 47	09 09	09	09	66.7	42.0	39.0
871017	10	01	08	69	3.6	09 51	09 51	09 07	07	07	100.0	79.0	72.0
871017	10	01	14	56	0.6	10 06	10 06	08 57	57	57	40.0	13.0	10.0
871018	09	01	19	63	1.1	07 56	07 56	09 15	55	55	57.5	18.0	17.0
871018	09	01	16	64	4.4	08 05	08 05	09 15	51	51	50.0	29.0	25.0
871018	11	01	20	55	1.0	07 52	07 52	09 20	00	00	100.0	56.0	56.0
871021	11	01	09	56	2.9	08 07	08 07	09 49	49	49	37.7	17.0	15.0
871023	01	01	01	56	0.2	12 49	12 49	09 34	48	48	100.0	13.0	13.0
871101	01	04	04	55	0.1	13 26	13 26	10 44	40	40	100.0	2.0	2.0
871110	01	15	01	55	1.9	14 17	14 17	10 42	27	27	5.0	152.0	137.0
871111	04	02	05	55	0.0	13 15	13 15	10 13	34	34	100.0	6.0	6.0
871115	01	02	02	63	0.0	07 57	07 57	09 14	14	14	47.3	25.0	21.0
871127	01	04	01	31	0.0	16 55	16 55	11 32	32	32	100.0	8.0	7.0
871202	02	01	03	31	2.2	17 43	17 43	11 45	54	54	100.0	38.0	34.0

Table 3. (continued)

Sightings by Species													species code: 21	
species: RISSO'S DOLPHIN (GRAMPUS GRISEUS)														
date	series	leg	sight	sun position		beauf. number	by	detected	perp. dist.(km)	lat. deg min	longitude deg min	proportion (% of school)	mean school size est	
				horz.	vert.								best	low
870813	03	07	02	10	12	4	68		0.0	14 58 n	110 16 w	50.0	2.0	2.0
870819	03	02	03			1	05		0.6	10 55 n	111 18 w	5.0	22.0	17.0
870823	04	01	04	05	01	3	04		2.3	15 45 n	099 38 w	42.5	70.0	57.0
870826			01	12	01	3	29		0.0	14 05 n	093 38 w	75.0	50.0	40.0
870826	04	01	04			3	68		0.1	14 02 n	093 20 w	100.0	6.0	6.0
870826	06	02	06			4	67		0.1	14 00 n	093 08 w	27.0	101.0	94.0
870826	08	03	08			4	05		5.7	14 00 n	092 53 w	75.0	15.0	14.0
870826	11	01	10	06	02	3	05		0.1	13 59 n	092 29 w	55.0	20.0	18.0
870827	02	02	02			3	05		4.8	13 46 n	092 24 w	50.0	13.0	9.0
870827	04	07	03	11	12	3	22		1.0	13 14 n	092 30 w	50.0	18.0	0.0*
870907	03	08	01	11	12	3	04		0.4	14 17 n	99 05 w	100.0	5.0	4.0
870908			05	07	01	1	04		0.1	14 44 n	101 21 w	100.0	6.0	4.0
870920	02	07	03	07	01	4	04		0.2	01 39 s	109 03 w	100.0	5.0	4.0
870927			24	04	03	1	99		0.3	07 27 n	088 04 w	100.0	1.0	1.0
870927	12	02	23	03	03	1	51		0.3	07 32 n	088 07 w	100.0	10.0	8.0
870929	04	06	01			4	68		1.3	04 48 n	084 14 w	100.0	7.0	5.0
870929	07	02	04			2	04		0.2	04 32 n	083 35 w	100.0	9.0	7.0
871012	01	15	02	06	01	3	64		0.3	04 15 n	084 50 w	100.0	19.0	18.0
871012	05	04	06	11	02	3	56		0.0	04 44 n	085 28 w	50.0	25.0	18.0
871021	10	03	08	08	02	3	63		0.3	08 05 n	094 49 w	100.0	8.0	7.0
871021	11	01	09	08	02	3	56		2.9	08 07 n	094 49 w	6.0	17.0	15.0
871023	02	02	02	08	03	2	31		0.5	12 42 n	093 54 w	100.0	5.0	5.0
871024	05	08	04	01	01	2	64		1.2	09 31 n	096 18 w	100.0	15.0	14.0
871027			06	06	01	2	99		0.0	11 22 n	098 42 w	100.0	9.0	8.0
871117	04	01	05			3	55		0.2	08 43 n	097 10 w	100.0	13.0	11.0
871130	05	02	04	05	01	4	69		2.2	05 56 n	105 12 w	100.0	8.0	7.0
871130			04	05	01	2	55		3.2	15 15 n	109 22 w	100.0	14.0	12.0

Table 3. (continued)

Sightings by Species													
species: PACIFIC WHITE-SIDED DOLPHIN (LAGENORHYNCHUS OBLIQUIDENS)													
species code: 22													
date series	leg	sight	sun position		beauf.	detected	perp.	lat.	long.	deg	min	proportion	mean school size
			horz.	vert.								(% of school)	est
yr	mo	day	hr	min	km	km	km	deg	min	deg	min	best	low
871208	01	04	03	4	31	0.0	0.0	27	48	n	115 06	100.0	11.0
871208	02	09	01	5	63	0.1	0.1	28	19	n	115 16	100.0	4.0

Table 3. (continued)

Sightings by Species													
species: FRASER'S DOLPHIN (LAGENODELPHIS HOSEI) species code: 26													
date series yrmody	leg	sight number	sun position		beauf. detected	perp. dist.(km)	latitude deg min	longitude deg min	proportion (% of school)	mean school size		est	
			horz.	vert.						best	low		
870921 05	06	06	06	12	3	68	2.2	00 16 s	106 32 w	100.0	162.0	138.0	

Table 3. (continued)

Sightings by Species													
species: PYGMY KILLER WHALE (FERESA ATTENUATA)													
species code: 32													
date	series	leg	sight	sun position		beauf. number	detected	perp. dist. (km)	lat. deg min	long. deg min	proportion (% of school)	mean school size	
				horz. number	vert. number							best	low
870822	08	02	08	06	01	1	67	0.8	16 16 n	102 11 w	100.0	11.0	9.0
870916	01	03	01		3	3	04	2.0	01 13 n	117 57 w	100.0	12.0	9.0
870923	02	03	02	02	02	3	04	0.5	02 15 n	101 16 w	100.0	29.0	22.0
871017	01	05	01	03	02	3	31	0.1	09 27 n	090 09 w	100.0	28.0	25.0
871021	08	01	06	08	01	2	56	0.2	07 50 n	094 55 w	100.0	25.0	21.0
871101	04	01	03	08	01	5	56	0.1	12 57 n	103 54 w	100.0	17.0	15.0

Table 3. (continued)

Sightings by Species													
species: FALSE KILLER WHALE (PSEUDORCA CRASSIDENS)													
species code: 33													
date	series	leg	sight	sun position		beauf.	detected	perp.	latitute	longitute	proportion	mean school size	
				horz.	vert.							best	low
ymody	number	horz.	vert.	number	by	dist.(km)	deg min	deg min	deg min	deg min	(% of school)	best	low
871016	01			3	99	0.4	06 21 n	091 09 w	100.0	8.0	8.0		
871025	05	12	01	2	64	0.3	07 13 n	097 57 w	100.0	11.0	11.0		
871120	04	09	01	4	63	2.0	02 49 n	111 19 w	100.0	13.0	8.0		

Table 3. (continued)

Sightings by Species													
species: PILOT WHALE (GLOBICEPHALA SP.)													
species code: 34													
date	series	leg	sun position		beauf. detected	perp. dist. (km)	latitude deg min	longitude deg min	proportion (% of school)	mean school size est		yrmody	
			horz.	vert.						best	low		
870810	03	06	02	04	02	02	25 01 n	115 24 w	100.0	9.0	7.0		
870920		01	01	02	68	1.3	02 02 s	109 56 w	51.7	0.0*	6.0		
870922	02	05	02	01	68	2.1	00 46 n	104 09 w	100.0	0.0*	9.0		
870924	02	01	02	01	51	1.0	03 48 n	097 52 w	100.0	19.0	14.0		
870925	07	01	09	07	67	1.9	06 12 n	093 41 w	100.0	13.0	9.0		
870926		13			51	0.1	08 06 n	090 32 w	100.0	0.0*	8.0		
870926	04	02	05	01	05	0.5	07 41 n	091 17 w	100.0	8.0	6.0		
870926	06	01	07	01	05	0.7	07 44 n	091 12 w	100.0	16.0	13.0		
870926	09	01	11	02	68	1.0	07 50 n	091 01 w	100.0	19.0	15.0		
870927	03	04	06	10	68	3.4	08 37 n	088 41 w	59.0	70.0	58.0		
870927	08	02	14	12	68	3.4	08 08 n	088 28 w	53.3	31.0	23.0		
871001	03	02	06	03	67	0.1	07 30 n	079 17 w	85.3	23.0	20.0		
871017		10	12	12	69	0.5	09 55 n	090 05 w	22.5	25.0	22.0		
871017	02	01	02	03	31	0.8	09 31 n	090 05 w	100.0	14.0	14.0		
871017	05	02	07	03	56	2.7	09 47 n	090 09 w	33.3	42.0	39.0		
871017	07	01	09	12	31	0.1	09 54 n	090 06 w	100.0	11.0	10.0		
871017	10	01	14	07	56	0.6	10 06 n	089 57 w	60.0	13.0	10.0		
871018		19			63	1.1	07 56 n	091 55 w	42.5	18.0	17.0		
871021	11	01	09	08	56	2.9	08 07 n	094 49 w	56.3	17.0	15.0		
871030	04	03	03	07	31	1.0	06 53 n	101 57 w	100.0	17.0	16.0		
871114		01			99	0.0	08 50 n	096 43 w	100.0	8.0	7.0		
871115		02			63	0.0	07 57 n	099 14 w	52.7	25.0	21.0		
871115	05	07	06	10	31	4.0	07 41 n	099 59 w	100.0	9.0	8.0		
871115	09	01	09		69	2.2	07 43 n	100 20 w	100.0	10.0	9.0		
871122	08	07	05		63	0.2	05 04 n	117 03 w	100.0	12.0	10.0		

Table 3. (continued)

Sightings by Species													
species: KILLER WHALE (ORCINUS ORCA)													
species code: 37													
date	series	leg	sight	sun position		beauf.	detected	perp.	latitud	longitud	proportion	mean school size	
				horz.	vert.							best	low
yr	mod		number				by	dist.(km)	deg min	deg min	(% of school)		
871014	06	09	07	01	01	3	31	4.3	08 27 n	087 48 w	100.0	5.0	5.0
871018	04	02	08	08	01	3	31	0.7	08 35 n	091 27 w	100.0	4.0	4.0
871110	03	03	03	04	02	4	55	0.9	13 44 n	103 54 w	100.0	5.0	5.0
871115	04	01	04			2	31	5.0	07 48 n	099 32 w	100.0	9.0	8.0
871120			10			3	31	0.1	02 57 n	111 49 w	100.0	5.0	5.0
871125	02	02	02			3	63	3.0	11 14 n	119 49 w	100.0	6.0	5.0

Table 3. (continued)

Sightings by Species												
species: SPERM WHALE (PHYSETER MACROCEPHALUS)												
species code: 46												
date	series	leg	sun position		beauf. detected	perp. dist.(km)	lat deg min	long deg min	proportion (% of school)	mean school size est		size est
			number	vert.						best	low	
yr	mo	day	horz.		by							
870821	03	06	05	08	01	4	14 03 n	104 40 w	100.0	3.0		3.0
870926	05	02	06	01	02	3	07 43 n	091 14 w	100.0	3.0		3.0
870930	02	08	01	07	12	3	04 40 n	081 06 w	100.0	11.0		9.0
871001	02	11	05	02	01	3	07 24 n	079 22 w	100.0	5.0		4.0
871009	10	01	15		63	3	07 33 n	078 49 w	100.0	8.0		8.0
871011	03	13	05	12	55	3	03 26 n	082 13 w	100.0	20.0		18.0
871014	01	01	01		69	2	07 31 n	087 27 w	30.0	42.0		39.0
871016	06	01	04		64	3	07 35 n	090 47 w	100.0	5.0		5.0
871018		21	21	01	55	2	07 52 n	092 00 w	100.0	28.0		28.0
871018	09	01	16	01	64	2	08 05 n	091 51 w	50.0	29.0		25.0
871028	01	01	02	09	64	2	09 34 n	099 43 w	60.0	14.0		13.0
871028	01	03	04	09	64	1	09 24 n	099 47 w	100.0	6.0		5.0
871029	03	08	06		31	3	05 59 n	101 27 w	100.0	15.0		14.0
871103	02	02	02	03	69	3	17 22 n	105 12 w	100.0	3.0		3.0
871109	03	06	02	12	64	3	16 16 n	105 13 w	12.2	116.0		102.0
871115	05	05	05		69	2	07 44 n	099 50 w	100.0	7.0		6.0
871125	04	10	04		31	3	12 06 n	119 27 w	100.0	10.0		10.0
871202	01	05	01	07	63	5	17 38 n	114 43 w	100.0	2.0		2.0

Table 3. (continued)

Sightings by Species														
species: DWARF SPERM WHALE (KOGIA SIMUS)														
species code: 48														
date series	leg	sight	sun position		beauf. number	by	detected	perp.	lat. min	deg	long. min	proportion (% of school)	mean school size est	
			number	horz.									vert.	best
870816		07	12	01	1	05	0.2		07 45 n	113 18 w		100.0	2.0	2.0
870816	06	01	05	02	12	04	0.8		07 53 n	113 01 w		100.0	2.0	1.0
870920	01	14	02	12	12	04	0.6		01 49 s	109 21 w		100.0	2.0	2.0
870927	05	04	10	10	01	05	4.1		08 22 n	088 32 w		100.0	6.0	4.0
870927	11	01	21	03	02	68	0.7		07 36 n	088 09 w		100.0	2.0	1.0
870927	11	01	22	03	02	51	0.3		07 34 n	088 08 w		100.0	2.0	2.0
871027	03	01	04	05	01	31	0.5		11 15 n	098 41 w		100.0	2.0	2.0
871121	01	21	01	10	01	55	0.4		04 30 n	115 10 w		100.0	1.0	1.0

Table 3. (continued)

Sightings by Species												
species: BEAKED WHALE (ZIPHIID)												
species code: 49												
date	series	leg	sight	sun position		beauf.	detected	perp.	lat.	long.	proportion	mean school size
				horz.	vert.							
yr	mo	day	number	by	dist.(km)	deg min	deg min	deg min	deg min	deg min	(% of school)	best
low												
870816			10	67	0.5	07 42 n	113 37 w	100.0	1.0	1.0		
870822			12	04	0.6	16 06 n	101 48 w	100.0	2.0	2.0		
870823	02	02	01	04	0.3	15 46 n	100 14 w	100.0	1.0	1.0		
870907			03	04	0.0	14 25 n	099 22 w	100.0	2.0	2.0		
870926			04	68	0.5	07 33 n	091 24 w	100.0	2.0	2.0		
870927	10	05	16	04	5.0	07 40 n	088 12 w	100.0	3.0	2.0		
870927	10	05	17	04	0.0	07 39 n	088 12 w	100.0	1.0	1.0		
871001	02	10	04	67	0.1	07 20 n	079 23 w	100.0	2.0	2.0		
871029	04	01	07	64	1.0	05 57 n	101 31 w	100.0	1.0	1.0		
871110	02	06	02	69	0.7	13 50 n	104 04 w	100.0	1.0	1.0		
871111	03	02	03	31	1.7	13 11 n	101 42 w	100.0	2.0	2.0		
871128	05	04	04	63	1.4	14 39 n	114 29 w	100.0	1.0	1.0		
871129	02	01	03	31	3.4	12 43 n	112 32 w	100.0	1.0	1.0		
871130	06	02	05	56	2.3	15 19 n	109 18 w	100.0	3.0	3.0		

Table 3. (continued)

Sightings by Species																
species: SOUTHERN BOTTLENOSED WHALE (HYPEROODON PLANIFRONS)																
species code: 50																
date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est				
				number	horz.							vert.	by	dist.(km)	deg min	deg min
870908		09		1		04	0.0	14	41	n	101	36	w	100.0	1.0	1.0

Table 3. (continued)

Sightings by Species													
species: UNID. MESOPLDONT (MESOPLDON SP.)													
species code: 51													
date	series	leg	sight	sun position		beauf. detected	perp. dist. (km)	lat. deg min	long. deg min	proportion (% of school)	mean school size est		yrmody
				number	vert.						best	low	
870908	07	01	12	12	12	05	0.8	14 46 n	101 52 w	100.0	3.0	3.0	
870917	04	07	05	06	01	05	0.1	01 47 n	114 02 w	100.0	3.0	3.0	
870925	03	03	04	12	01	04	0.7	05 34 n	094 45 w	100.0	3.0	2.0	
870927			12	10	01	70	0.0	08 20 n	088 31 w	100.0	1.0	1.0	
870927	06	01	13	12	12	67	1.7	08 12 n	088 33 w	100.0	3.0	3.0	
871010	05	01	08	10	01	63	1.3	04 39 n	079 47 w	100.0	3.0	3.0	
871010	05	03	09	10	01	31	0.9	04 45 n	079 53 w	100.0	5.0	5.0	
871011	03	05	03		01	63	1.5	03 45 n	081 35 w	100.0	2.0	2.0	
871011	03	08	04			64	4.1	03 38 n	081 50 w	100.0	3.0	3.0	
871027	02	03	03	05	01	55	0.2	11 13 n	098 41 w	100.0	2.0	2.0	
871027	06	02	10	01	02	31	1.0	11 24 n	099 00 w	100.0	1.0	1.0	
871028			15	11	01	31	0.6	08 56 n	100 03 w	100.0	1.0	1.0	
871028	02	01	06			55	0.9	09 20 n	099 51 w	100.0	1.0	1.0	
871029	03	05	04			55	0.7	06 05 n	101 17 w	100.0	2.0	2.0	
871103	02	03	04	04	01	64	2.9	17 30 n	105 09 w	100.0	3.0	3.0	
871113	02	06	02	11	02	31	0.5	09 57 n	099 54 w	100.0	2.0	2.0	
871204	02	09	02	01	01	31	0.6	18 22 n	115 14 w	100.0	2.0	2.0	

Table 3. (continued)

Sightings by Species														
species: CUVIER'S BEAKED WHALE (ZIPHIUS CAVIROSTRIS)														
species code: 61														
date	series	leg	sight	sun position		beauf.	detected	perp.	latitude		longitude	proportion (% of school)	mean school size est	
				number	horz.				deg	min			best	low
yr	mo	day	number	by	dist.(km)	deg	min	deg	min	deg	min	best	low	
870826	05	04	05	05	0.0	14	01 n	093	12 w	100.0	1.0	1.0		
870918	02	09	02	51	0.3	02	10 n	110	35 w	100.0	1.0	1.0		
870921	06	07	09	51	0.4	00	05 s	106	05 w	100.0	2.0	2.0		
870927	10	04	15	22	0.0	07	37 n	088	10 w	100.0	3.0	3.0		
870927	13	02	25	05	2.0	07	27 n	088	04 w	100.0	1.0	1.0		
871018	09	01	15	31	2.7	08	05 n	091	51 w	100.0	3.0	3.0		
871022	06	03	07	31	1.1	11	07 n	094	10 w	100.0	1.0	1.0		
871029	03	05	05	56	0.5	06	04 n	101	18 w	100.0	1.0	1.0		

Table 3. (continued)

Sightings by Species													
species: RORQUAL (BALAENOPTERA SP.)													
species code: 70													
date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
				number	vert.							(% of school)	best
yr	mo	day	horz.	horz.	vert.	by	dist. (km)	deg min	deg min	deg min			
870808	01	04	04	02	02	05	0.3	32 15 n	117 14 w	100.0	3.0	3.0	
870811		16	04	03	04	04	4.0	21 02 n	113 25 w	100.0	1.0	1.0	
870813		03	04	02	3	29	0.4	14 12 n	109 52 w	100.0	1.0	1.0	
870818		03	01	01	4	29	0.2	10 47 n	113 51 w	100.0	1.0	1.0	
870826	07	01	07	12	4	05	1.1	14 00 n	093 06 w	100.0	1.0	1.0	
870919	04	04	07	12	4	04	2.5	00 05 n	110 10 w	100.0	1.0	1.0	
870923	02	01	01	11	3	68	2.9	02 10 n	101 20 w	100.0	1.0	1.0	
870923	03	02	03		3	04	0.5	02 18 n	101 13 w	100.0	1.0	1.0	
870927	03	04	05	10	1	51	1.8	08 38 n	088 41 w	100.0	0.0*	1.0	
871009	06	01	08		2	55	3.9	08 08 n	078 41 w	100.0	1.0	1.0	
871009	09	01	14		2	55	2.9	07 36 n	078 48 w	100.0	1.0	1.0	
871011	01	03	01	07	2	63	0.2	03 56 n	081 04 w	100.0	1.0	1.0	
871012		09	09	09	3	31	0.0	04 48 n	085 34 w	100.0	1.0	1.0	
871012	01	08	01		3	56	10.3	03 59 n	084 32 w	100.0	1.0	1.0	
871013		06	06	09	2	69	2.1	05 46 n	087 05 w	100.0	1.0	1.0	
871018	05	01	09	09	3	31	2.5	08 30 n	091 33 w	100.0	1.0	1.0	
871020	01	12	01	03	5	64	0.2	03 53 n	096 02 w	100.0	1.0	1.0	
871027	01	06	01	03	2	31	2.2	10 41 n	098 40 w	100.0	1.0	1.0	
871028		22	01		2	25	0.0	08 25 n	100 14 w	100.0	1.0	1.0	
871111	02	04	02	12	2	64	7.2	13 07 n	101 51 w	100.0	1.0	1.0	
871119	05	09	04	08	5	31	2.9	01 37 n	107 44 w	100.0	1.0	1.0	
871120	06	01	08	09	4	56	2.2	02 48 n	111 27 w	100.0	1.0	1.0	
871128		06	06	03	4	31	0.1	14 31 n	114 18 w	100.0	1.0	1.0	
871129	06	01	06		2	55	5.3	13 27 n	111 32 w	100.0	1.0	1.0	
871201	05	02	04	09	3	31	3.1	16 40 n	111 23 w	100.0	1.0	1.0	
871203	06	07	02	05	3	69	0.4	18 44 n	117 54 w	100.0	2.0	2.0	
871204	03	02	04	02	4	31	4.0	18 21 n	115 07 w	100.0	1.0	1.0	
871205	03	04	03	02	3	31	9.3	18 59 n	112 06 w	100.0	2.0	2.0	

species code: 70

species: RORQUAL
(BALAENOPTERA SP.)

Sightings by Species

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

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	
				horz.	vert.							(% of school)	best
yrmody	number	sight	number	by	dist.(km)	deg	min	deg	min	deg	min	deg	min
870812	07	11	13	04	02	3	22	1.4	17 47 n	111 32 w	100.0	2.0	2.0
870923	06	01	05	06	12	4	51	0.8	02 35 n	100 37 w	100.0	2.0	2.0
871111	01	02	01	12	03	2	56	2.3	13 07 n	101 56 w	100.0	2.0	2.0

Table 3. (continued)

Sightings by Species													
species: BLUE WHALE (B. MUSCULUS)													
species code: 75													
date	series	leg	sight	sun position		beauf.	detected	perp.	latitude	longitude	proportion	mean school size est	
				number	vert.							best	low
ymody		number	horz.	horz.	horz.	number	by	dist.(km)	deg min	deg min	(% of school)		
870810	01	06	01			2	51	0.8	26 32 n	116 11 w	100.0	2.0	1.0
871018	02	02	03			2	64	4.8	08 51 n	091 18 w	100.0	1.0	1.0
871024	02	07	02			3	64	1.8	09 57 n	096 00 w	100.0	2.0	2.0
871205	02	05	02	01	03	2	55	1.8	18 56 n	112 20 w	100.0	1.0	1.0
871205	08	03	06	08	01	4	31	2.1	19 24 n	112 06 w	100.0	1.0	1.0

Table 3. (continued)

Sightings by Species												
species: HUMPBACK WHALE (MEGAPTERA NOVAEANGLIAE)												
date series yrmody	leg	sight	sun position	beauf.	detected	perp.	latitude deg min	longitude deg min	proportion (% of school)	species code: 76		
										mean	school	size est
	number	horz.	vert.	number	by	dist.(km)	deg min	deg min		best	low	
870905	02			5	04	4.5	13 43 n	090 53 w	100.0	1.0		1.0

Table 3. (continued)

Sightings by Species													
species: UNIDENTIFIED DOLPHIN													
species code: 77													
date	series	leg	sight	sun position		beauf.	detected	perp. dist.(km)	latitude deg min	longitude deg min	proportion (% of school)	mean school size est	
				number	horz.							vert.	number
870808	02	01	05	02	03	2	04	2.9	32 12 n	117 15 w	100.0	0.0*	25.0
870811			02	09	03	2	04	1.3	22 54 n	114 16 w	100.0	0.0*	1.0
870811	02	01	03	10	02	2	04	0.4	22 52 n	114 15 w	100.0	28.0	18.0
870811	06	02	05	10	01	3	51	3.4	22 18 n	113 58 w	100.0	30.0	20.0
870811	08	02	06	02	12	3	22	1.1	22 56 n	113 50 w	90.0	17.0	14.0
870811	09	02	07	03	12	3	04	1.0	21 45 n	113 43 w	100.0	0.0*	1.0
870811	09	03	08	03	01	2	51	6.3	21 43 n	113 42 w	100.0	0.0*	20.0
870811	10	02	09	03	01	3	68	8.1	21 40 n	113 42 w	100.0	0.0*	15.0
870811	11	02	10	03	01	3	68	1.8	21 32 n	113 39 w	100.0	0.0*	5.0
870811	12	03	11	04	02	3	67	4.0	21 01 n	113 27 w	100.0	20.0	13.0
870811	13	05	12	04	02	2	51	4.9	21 16 n	113 25 w	100.0	0.0*	15.0
870811	14	01	13	04	02	2	04	3.9	21 09 n	113 28 w	100.0	0.0*	30.0
870812			01	10	03	2	04	3.4	19 17 n	112 23 w	100.0	0.0*	10.0
870812	04	01	06	10	02	3	68	0.5	19 01 n	112 07 w	100.0	4.0	3.0
870812	05	02	08	10	01	3	05	4.0	18 53 n	112 02 w	100.0	50.0	35.0
870813	03	07	02	10	12	4	68	0.0	14 58 n	110 16 w	50.0	2.0	2.0
870813	05	01	05	04	03	3	04	3.2	13 57 n	109 48 w	100.0	0.0*	5.0
870816	04	03	03	06	12	1	04	6.0	07 57 n	112 56 w	100.0	7.0	4.0
870816	05	01	04	02	12	1	68	4.7	07 53 n	112 58 w	100.0	15.0	11.0
870817	06	02	03	11	02	4	51	2.9	10 01 n	116 25 w	20.0	0.0*	27.0
870819	10	02	08			5	51	0.6	11 09 n	110 00 w	100.0	2.0	1.0
870820	01	07	01	12	02	3	68	7.0	11 22 n	107 47 w	21.7	250.0	78.0
870821			03	01	01	3	29	0.9	13 35 n	105 05 w	100.0	0.0*	0.0*
870822	01	07	01	01	02	3	51	6.1	16 02 n	102 55 w	0.0*	42.0	29.0
870822	02	01	02	02	01	3	05	0.1	16 11 n	102 51 w	100.0	3.0	2.0
870822	03	03	04	02	01	3	05	0.2	16 19 n	102 45 w	100.0	0.0*	1.0
870825	03	01	04	11	03	2	04	5.2	15 09 n	097 05 w	100.0	0.0*	4.0
870825	06	01	07	11	02	2	67	0.1	15 01 n	096 57 w	100.0	0.0*	5.0
870825	13	01	13	06	12	1	51	1.5	14 49 n	096 11 w	100.0	0.0*	2.0
870826	02	04	03	12	12	3	68	0.7	14 04 n	093 27 w	100.0	0.0*	1.0
870826	08	03	08			4	05	5.7	14 00 n	092 53 w	25.0	15.0	14.0
870828	03	02	03			3	51	1.5	15 05 n	091 47 w	100.0	0.0*	1.0
870828	03	03	04			3	04	1.0	13 07 n	091 45 w	71.0	0.0*	4.0
870828	05	01	06	07	02	2	05	4.1	13 17 n	091 12 w	100.0	0.0*	2.0
870906	01	01	01			4	68	3.3	13 54 n	093 51 w	10.0	24.0	18.0
870906	04	01	04			4	68	0.4	13 56 n	094 04 w	100.0	0.0*	2.0
870906	08	10	06	12	03	2	51	0.0	14 02 n	095 47 w	70.7	0.0*	71.0
870907	04	02	02	11	01	3	05	8.9	14 17 n	099 14 w	3.8	80.0	74.0
870908	01	02	01			2	68	0.7	14 37 n	101 04 w	100.0	4.0	3.0
870908	01	02	02			2	68	0.8	14 37 n	101 04 w	100.0	8.0	4.0
870912	01	30	01			5	22	2.4	05 55 n	110 27 w	100.0	1.0	1.0
870916			03	06	01	5	12	0.0	01 24 n	116 52 w	100.0	1.0	1.0
870916	02	31	04			4	04	1.8	01 25 n	116 50 w	100.0	0.0*	2.0

Table 3. (continued)

Sightings by Species										species code: 77		
species: UNIDENTIFIED DOLPHIN												
date	series	leg	sight	sun position		beauf. detected	perp. dist. (km)	latitude	longitude	proportion (% of school)	mean school size est	
				number	vert.			deg min	deg min		best	low
yr	mo	day	hr	horz.	horz.	by						
870917	03	01	04	12	12	51	0.5	01 38 n	114 21 w	100.0	3.0	3.0
870919			02	09	02	51	0.0	00 32 n	110 15 w	100.0	1.0	1.0
870920			01	01	02	68	1.3	02 02 s	109 56 w	15.0	0.0*	6.0
870921			03	01	01	70	1.3	00 27 s	106 54 w	100.0	100.0	75.0
870922	07	02	06			51	0.5	01 11 n	103 17 w	100.0	1.0	1.0
870923	05	02	04	12	12	68	0.8	02 35 n	100 40 w	100.0	18.0	10.0
870923	07	10	06	07	03	67	0.2	02 55 n	100 00 w	100.0	10.0	8.0
870925	02	01	02			05	0.0	05 33 n	094 56 w	100.0	0.0*	15.0
870926	07	02	08	01	01	68	3.2	07 26 n	091 33 w	100.0	36.0	28.0
870927	02	01	02	10	03	04	4.4	07 47 n	091 08 w	100.0	0.0*	75.0
870927	04	01	08	10	02	67	4.2	08 46 n	088 48 w	100.0	0.0*	5.0
870927	04	01	08	10	02	04	8.9	08 30 n	088 37 w	100.0	0.0*	35.0
870927	10	06	19	03	02	04	7.9	07 39 n	088 12 w	100.0	0.0*	1.0
871001	05	01	08			51	0.5	07 48 n	079 08 w	100.0	3.0	3.0
871001	05	02	10			04	1.3	07 51 n	079 06 w	100.0	0.0*	2.0
871001	06	02	11	07	01	05	1.1	07 58 n	079 01 w	100.0	0.0*	11.0
871009			12			19	0.0	07 44 n	078 46 w	100.0	2.0	2.0
871009	04	02	04			56	7.0	08 35 n	078 54 w	100.0	1.0	1.0
871009	04	04	05			31	6.1	08 31 n	078 50 w	100.0	20.0	15.0
871009	11	08	17			69	3.2	07 12 n	078 55 w	100.0	2.0	2.0
871010			07	12	12	55	5.0	04 35 n	079 43 w	100.0	7.0	5.0
871010	04	01	06	12	12	56	0.1	04 38 n	079 39 w	100.0	22.0	13.0
871010	06	01	10	10	01	31	4.8	04 47 n	079 53 w	100.0	1.0	1.0
871012	06	01	07			64	1.0	04 46 n	085 33 w	100.0	2.0	2.0
871014			08			25	0.6	08 16 n	088 02 w	100.0	2.0	2.0
871014	01	02	02	03	03	69	5.1	07 34 n	087 28 w	100.0	8.0	8.0
871014	02	02	03	03	03	31	5.4	07 44 n	087 31 w	100.0	1.0	1.0
871014	04	04	06	05	01	69	7.9	08 05 n	087 37 w	100.0	12.0	10.0
871017	09	01	13	07	01	55	7.7	10 05 n	089 58 w	100.0	3.0	3.0
871018	02	01	02	08	03	64	0.3	08 53 n	091 16 w	100.0	1.0	1.0
871018	10	01	17	01	01	31	4.7	08 02 n	091 53 w	100.0	12.0	10.0
871021	01	01	01	03	01	55	0.5	06 46 n	095 22 w	100.0	4.0	4.0
871021	04	03	03	03	01	56	3.6	07 22 n	095 02 w	100.0	3.0	2.0
871021	09	04	07	08	02	69	0.6	07 58 n	094 52 w	100.0	7.0	7.0
871022			04	03	02	69	1.3	10 30 n	094 21 w	100.0	3.0	3.0
871022	04	04	05	04	01	55	5.4	10 39 n	094 18 w	100.0	10.0	7.0
871022	04	02	04			55	2.1	12 15 n	094 06 w	100.0	1.0	1.0
871023	08	04	06	01	02	69	4.6	11 45 n	094 32 w	100.0	3.0	3.0
871023	08	04	07	01	02	69	0.6	11 43 n	094 34 w	100.0	7.0	7.0
871023	10	04	09			55	1.9	11 35 n	094 43 w	100.0	4.0	4.0
871028			08	04	02	55	3.2	09 19 n	099 51 w	100.0	6.0	5.0
871028			11	04	02	55	0.8	09 15 n	099 54 w	100.0	7.0	6.0
871028	01	01	09	03	03	64	7.9	09 35 n	099 43 w	100.0	20.0	10.0

Table 3. (continued)

Sightings by Species										species code: 77		
species: UNIDENTIFIED DOLPHIN												
date	series	leg	sight	sun	position	beauf.	detected	perp.	latitude	longitude	proportion	mean school size est
ymrday			number	horz.	vert.	number	by	dist.(km)	deg min	deg min	(% of school)	best low
871028	01	01	02	09	03	2	64	0.2	09 34 n	099 43 w	40.0	14.0 13.0
871028	02	01	07			1	56	1.2	09 19 n	099 51 w	100.0	6.0 5.0
871028	03	01	09	09	02	2	55	5.4	09 16 n	099 54 w	100.0	15.0 12.0
871028	07	01	17	11	01	1	56	3.7	08 51 n	100 05 w	100.0	1.0 1.0
871028	07	02	18	12	01	1	55	7.7	08 46 n	100 07 w	100.0	15.0 12.0
871028	07	03	19	12	01	1	56	8.5	08 43 n	100 08 w	100.0	3.0 3.0
871028	07	04	20	01	01	1	69	6.5	08 33 n	100 11 w	100.0	1.0 1.0
871028	08	01	23	01	02	2	63	0.4	08 18 n	100 16 w	100.0	15.0 2.0
871031	02	03	03	05	01	4	69	0.1	10 25 n	101 42 w	100.0	1.0 1.0
871101	01	11	01	06	01	5	69	2.0	12 40 n	103 30 w	100.0	2.0 2.0
871102	01	04	01	06	02	2	31	9.3	14 34 n	106 36 w	100.0	30.0 20.0
871102	03	08	03	07	02	3	69	8.8	15 13 n	106 28 w	100.0	8.0 8.0
871109	08	04	06	02	03	0	63	3.0	15 40 n	105 21 w	100.0	15.0 10.0
871111	03	02	04	01	02	3	69	7.9	13 11 n	101 42 w	100.0	8.0 8.0
871111	07	04	07	03	02	4	31	0.0	12 45 n	100 48 w	100.0	6.0 4.0
871111	08	01	08			4	64	0.5	12 44 n	100 47 w	100.0	5.0 5.0
871113	01	03	01	12	03	3	56	0.9	10 06 n	100 02 w	100.0	1.0 1.0
871113	02	08	03	11	02	4	64	0.5	09 56 n	099 53 w	100.0	2.0 2.0
871114			03			3	99	0.5	08 37 n	096 52 w	100.0	0.0* 10.0
871115	03	02	03			2	31	7.7	07 49 n	099 29 w	100.0	30.0 30.0
871115	07	03	07			3	55	0.4	07 39 n	100 11 w	100.0	1.0 1.0
871116	02	02	02	06	02	2	56	0.3	07 03 n	102 07 w	100.0	1.0 1.0
871116	03	07	03			3	55	6.1	07 01 n	102 22 w	100.0	5.0 4.0
871118	03	01	03			5	64	0.1	03 09 n	106 10 w	100.0	8.0 6.0
871118	05	06	04	01	01	5	56	8.9	02 56 n	106 11 w	100.0	7.0 5.0
871119	06	01	05	08	01	5	69	1.1	01 38 n	107 47 w	60.0	230.0 185.0
871120	01	01	01	06	03	4	69	0.0	02 14 n	110 32 w	100.0	11.0 9.0
871120	01	01	02	06	03	4	69	0.0	02 15 n	110 33 w	25.0	57.0 47.0
871120	03	01	04	06	02	4	56	3.7	02 27 n	110 50 w	100.0	3.0 1.0
871120	05	02	07	09	01	4	55	2.8	02 48 n	111 25 w	100.0	1.0 1.0
871122	11	05	06			4	31	0.9	05 13 n	118 43 w	100.0	1.0 1.0
871125	01	02	01			3	56	0.1	10 56 n	119 58 w	100.0	1.0 1.0
871129	01	02	01	11	03	3	55	0.9	12 57 n	112 42 w	100.0	3.0 3.0
871130	04	01	03	04	01	2	31	7.6	15 10 n	109 30 w	100.0	2.0 2.0
871201	03	01	03			2	31	0.0	16 34 n	110 59 w	100.0	8.0 5.0
871202	01	07	02			5	55	2.2	17 40 n	114 50 w	100.0	2.0 2.0
871204	04	03	05			4	55	5.6	18 25 n	114 59 w	100.0	10.0 8.0
871204	04	07	06	04	02	4	56	1.5	18 22 n	114 52 w	100.0	1.0 1.0

Table 3. (continued)

Sightings by Species										species code: 78		
species: UNIDENTIFIED SMALL WHALE												
date	series	leg	sight	sun position	beauf. detected	perp. dist. (km)	latitude	longitude	proportion	mean school size	size est	
ymdy	number	horz.	vert.	number	by		deg min	deg min	(% of school)	best	low	
870808	01	04	02	02	05	0.0	32 18 n	117 13 w	100.0	1.0	1.0	
870812	06	01	12	3	05	0.9	18 51 n	112 02 w	100.0	1.0	1.0	
870812	07	03	01	3	05	3.3	18 16 n	111 45 w	100.0	2.0	2.0	
870815	06	01	05	3	67	0.7	08 41 n	109 29 w	100.0	4.0	3.0	
870816	01	02	01	1	67	4.1	08 10 n	112 01 w	100.0	1.0	1.0	
870816	03	08	02	1	67	2.8	07 59 n	112 47 w	100.0	3.0	3.0	
870816	09	02	09	1	22	0.4	07 42 n	113 35 w	100.0	1.0	1.0	
870822		07	06	1	70	0.3	16 18 n	102 17 w	100.0	3.0	2.0	
870828		07	07	2	70	0.0	13 17 n	091 12 w	100.0	0.0*	1.0	
870908	06	02	10	2	05	1.1	14 45 n	101 43 w	100.0	1.0	1.0	
870915	03	12	02	2	04	1.6	01 47 n	117 04 w	100.0	1.0	1.0	
870915	04	01	03	4	51	0.0	01 47 n	117 06 w	100.0	0.0*	1.0	
870917	02	04	02	4	67	0.3	01 45 n	114 28 w	100.0	1.0	1.0	
870921	04	01	04	3	05	0.6	00 28 s	106 50 w	100.0	1.0	1.0	
870921	06	06	08	2	51	0.3	00 08 s	106 11 w	100.0	1.0	1.0	
870922	01	01	01	3	70	0.4	00 42 n	104 22 w	100.0	2.0	2.0	
870922	09	03	08	3	51	0.0	01 17 n	103 00 w	100.0	1.0	1.0	
870927				1	99	0.3	08 27 n	088 36 w	100.0	4.0	4.0	
870927				1	04	1.4	07 36 n	088 11 w	100.0	2.0	2.0	
870927	03	04	04	1	51	0.6	08 40 n	088 42 w	100.0	0.0*	1.0	
871010	03	03	04	2	64	5.2	04 59 n	079 32 w	100.0	2.0	2.0	
871017	05	01	05	2	55	0.8	09 43 n	090 10 w	100.0	1.0	1.0	
871017	05	01	06	2	55	5.6	09 43 n	090 10 w	100.0	2.0	2.0	
871017	08	02	11	2	55	0.2	10 05 n	089 58 w	100.0	1.0	1.0	
871018		07	08	2	56	1.1	08 42 n	091 23 w	100.0	4.0	3.0	
871018	05	01	10	3	64	2.6	08 28 n	091 35 w	100.0	3.0	3.0	
871021	03	02	02	2	31	2.0	07 13 n	095 06 w	100.0	2.0	2.0	
871027	03	01	05	2	31	4.0	11 17 n	098 41 w	100.0	29.0	22.0	
871028	07	01	16	1	55	0.0	08 56 n	100 03 w	100.0	2.0	2.0	
871109	05	02	04	2	63	0.8	15 55 n	105 22 w	100.0	1.0	1.0	
871111	05	02	06	4	55	0.0	12 57 n	101 01 w	100.0	1.0	1.0	
871117		03	03	4	99	0.2	05 52 n	105 28 w	100.0	1.0	1.0	
871122	07	05	04	4	69	0.0	05 02 n	117 42 w	100.0	6.0	5.0	
871126	05	01	02	4	55	0.8	14 37 n	118 20 w	100.0	1.0	1.0	

Table 3. (continued)

Sightings by Species												
species: UNIDENTIFIED LARGE WHALE												
species code: 79												
date	series	leg	sight	sun position		beauf.	detected	perp.	lat.	long.	proportion	mean school size
				horz.	vert.							
yr	mo	day	number	by	dist.(km)	deg	min	deg	min	(% of school)	best	low
870809	05	16	02	04	02	3	51	4.2	28 37 n	117 17 w	100.0	1.0
870812			03	01	03	2	05	0.8	19 15 n	112 18 w	100.0	1.0
870922	05	09	04	06	01	4	67	7.9	01 09 n	103 31 w	100.0	1.0
871119			03			4	31	1.5	01 30 n	107 03 w	100.0	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.	latitute	longitute	proportion	mean school size	
				horz.	vert.							best	low
yr	mo	day	number	by	dist.(km)	deg min	deg min	deg min	deg min	(% of school)	best	low	
870822	07	01	06	05	7.9	16 17 n	102 21 w	100.0	0.0*	12.0			
870825	10	01	11	22	1.3	14 51 n	096 27 w	100.0	27.0	22.0			
870905	01	02	03	68	0.2	13 45 n	091 06 w	100.0	1.0	1.0			
871009	04	05	07	31	0.0	08 26 n	078 43 w	100.0	9.0	9.0			

Table 3. (continueud)

Sightings by Species													
species: UNIDENTIFIED CETACEAN													
species code: 96													
date	series	leg	sight	sun position		beauf. detected	perp. dist.(km)	latitude deg min	longitude deg min	proportion (% of school)	mean school size est		size est
				number	vert.						best	low	
yr	mody		horz.			by							
870819	03	02	02	01	05	05	0.1	10 55 n	111 20 w	100.0	1.0	1.0	1.0
870823		03	03	01	15	15	0.2	15 46 n	099 49 w	100.0	2.0	2.0	2.0
870823	01	03	01	03	51	51	0.6	15 57 n	100 48 w	100.0	1.0	1.0	1.0
871009	07	06	11		64	64	1.9	07 47 n	078 46 w	100.0	2.0	2.0	2.0
871012	05	03	05	02	56	56	0.1	04 41 n	085 23 w	100.0	1.0	1.0	1.0
871013	03	01	04	02	69	69	0.0	05 41 n	087 04 w	100.0	1.0	1.0	1.0
871029	03	03	03		63	63	0.4	06 09 n	101 12 w	100.0	1.0	1.0	1.0
871201	08	01	06	02	55	55	0.7	16 50 n	111 53 w	100.0	0.0*	0.0*	2.0

Table 3. (continued)

Sightings by Species											
species: UNIDENTIFIED WHALE											
species code: 98											
date	series	leg	sight	sun position	beauf. detected	perp. dist.(km)	latitude deg min	longitude deg min	proportion (% of school)	mean school size	size est
yr	mo	day	number	horz.	vert.	by	deg min	deg min	best	low	low
870818	02	01	01			51	10 41 n	114 00 w	100.0	0.0*	1.0
870818	03	06	04			04	10 48 n	113 40 w	100.0	1.0	1.0
870820	03	08	02	12		51	11 26 n	107 19 w	100.0	1.0	1.0
870821	02	01	02	01	03	04	13 09 n	105 29 w	100.0	1.0	1.0
871001	02	09	02	02	01	04	07 18 n	079 25 w	100.0	1.0	1.0
871001	02	09	03	02	01	51	07 19 n	079 24 w	100.0	1.0	1.0
871010			02			64	05 27 n	079 27 w	100.0	1.0	1.0
871018	03	01	05	08	02	2	08 45 n	091 20 w	100.0	1.0	1.0
871109	05	01	03	01	02	63	15 59 n	105 21 w	100.0	1.0	1.0
871120			03	02	03	64	02 18 n	110 35 w	100.0	1.0	1.0
871125	04	05	03			56	11 47 n	119 33 w	100.0	1.0	1.0
871203	01	01	01			63	18 38 n	118 00 w	100.0	1.0	1.0

*Denotes that no estimate was made.

species	2	date	sight no.	obs 4		obs 5		obs 12		obs 22		obs 51		obs 67		obs 68		obs 70	
				best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct
870813	04	350	60	325	60	85	75	130	75	235	30	85	40						
870815	01	10	100	26	100	7	100	12	100	11	100	16	100						
870815	02	50	100	85	100	44	100	43	100	51	100	40	100						
870815	03	250	75	450	75	56	98			155	70								
870818	02	150	80	80	80					50	90								
870819	01	15	100					12	100			29	100						
870819	07			300	98					250	90								
870820	01	250	5																
870820	03	250	100			120	100					260	100						
870821	01	50	35			20	20					75	15						
870821	04			60	30	60	70			67	40								
870821	07	60	92			15	100												
870821	08	40	100					18	100										
870822	01	50	40																
870822	03	45	100	26	100	15	100			41	100	34	100						
870822	05	60	100	57	100	17	100			73	100	22	100						
870822	10	20	100	15	100	9	100	18	100	10	100	63	100						
870824	01	150	65	65	38	39	80	50	60	67	90	55	55						
870824	02	200	60	130	50	135	86			85	50	45	45						
870824	04	25	100	15	100	16	100	28	100	25	100	14	100						
870824	07	225	100	70	100	34	100	73	100	65	100	73	100						
870824	08	500	20	375	20			120	30	225	70								
870825	02	30	50			17	55					15	30						
870825	03	400	70			68	40					115	65						
870825	06	300	85	250	90	66	70			120	70	63	55						
870825	08			145	85					55	80								
870825	10	450	59			85	89	350	37			130	49						
870825	12	400	45			135	74												
870825	14	250	50			245	67			375	40								
870906	03	35	100			85	25	225	35	110	30	115	25						
870906	05	175	85			98	60	12	100			28	100						
870907	02			110	90														
870908	03	25	80	90	75	75	90			70	80								
870908	04	12	100	35	95	24	93			85	45	65	23						
870908	06	100	100	8	100	27	90	20	98	27	90	38	93						
870908	08	70	100	32	100	6	100			22	100	14	100						
870908	11	60	85	46	100	24	100	30	100	27	100	17	100						
870908	13	40	100	46	100	31	100	26	100	40	100	46	100						
870908	14	10	100	75	75	52	88	65	60	65	75	64	70						
870908	15	40	100	30	100	15	100	45	100	25	100	23	100						
870908	16	10	100	8	100	8	100	8	100	27	100	10	100						
870908	17	125	80	125	80	67	69	75	65			145	65						
870908	01	150	80	42	100	21	100	21	100	30	100	48	100						
870909	01	35	100	44	100	18	100	18	100	25	100	52	100						
870909	02	175	98									34	50						
870909	03	210	97	210	97	85	91	65	94	80	93								
870909	03	125	100	325	100	150	100			150	100	185	100						

Table 4. (continued)

	date	sight no.	obs 4		obs 5		obs 12		obs 22		obs 51		obs 67		obs 68		obs 70	
			best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct
species 2	870915	01	200	100							35	100			140	100		
	870917	01	12	100							10	100	15	100	8	100		
	870919	04									22	100	75	100	75	100		
	870921	05			55	100			63	100			75	100				
	870922	03	700	65											450	65		
	870922	05	600	98	500	98			320	90	450	95	350	90	750	97		
	870924	04	500	25	1050	15			610	15	350	30	650	5	930	6		
	870925	01	50	100	80	100			29	100			50	100				
	870925	03	60	100	50	100			60	100			35	100	54	100		
	870925	05			75	100			75	100			37	100				
species 3	870925	07	20	100							16	100			30	100		
	870926	03	175	100	250	100			150	100	200	100	180	100	300	100		
	870818	02	150	20	80	20							50	10				
	870819	07			300								250	10				
species 5	870828	05	400	100	375	100			480	100	200	100	350	100	185	100		
	870808	03			450	100							50	100				
	870808	06													110	100		
	870809	01													14	100		
	870811	01	75	100														
	870811	04	130	100	185	100			51	100	60	100	100	100	120	100		
	870811	14	200	100	135	100					115	100	65	100	42	100		
	870812	05	45	100	40	100			25	100	185	100	95	100	32	100		
	870828	02	200	100											87	100		
	870926	09	40	100							40	100			88	100	55	100
species 10	870926	12	425	100	450	100			340	100	400	100	590	100	265	100		
	870926	15	750	100	1850	100			1200	100	1300	100	1500	100	1500	100		
	870927	01	75	100	80	100			65	100			75	100	115	100		
	870927	07	325	100	350	100			660	100	450	100	560	100	190	100		
	870813	04	350	40	325	40			85	25	130	25	235	70	85	60		
	870819	04	45	100							25	100			38	100		
	870819	05	50	100							35	100			40	100		
	870820	01	250	30														
	870821	01	50	65							20	80			75	85		
	870821	04			60	70			60	30			67	60				
species 10	870821	06	30	100	55	100			37	100	32	100	38	100	45	100		
	870821	07	60	8														
	870822	09	60	100	30	100			35	100	30	100						
	870824	01	150	34	65	60			39	18	50	38	67	8	55	43		
	870824	02	200	40	130	50			135	14			85	50	45	55		
	870824	03	100	100											38	100		
	870824	08	500	80	375	80					120	70	225	30				
	870825	01													4	100		
	870825	02	30	50							17	45			15	70		

Table 4. (continued)

species	date	sight no.	obs 4		obs 5		obs 12		obs 22		obs 51		obs 67		obs 68		obs 70	
			best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	
species 10	870825	03	400	30							68	60			115	35		
	870825	05	30	100	18	100	10	100			11	100	37	100	12	100		
	870825	06	300	15	250	10	85	11			66	30	120	30	63	45		
	870825	08			145	15	135	26					55	20				
	870825	10	450	40			245	31			350	60			130	49		
	870825	12	400	55			85	75					375	60				
	870825	14	250	50			98	40			225	65	110	70	115	75		
	870826	02	40	100							19	100			17	100		
	870906	01	25	90							17	88			30	92		
	870906	02	15	100							22	100						
	870906	05	175	15	110	10	75	10					70	20				
	870907	02			90	24							85	50	65	72		
	870908	03	25	20	35	5	24	7			20	2	27	10	38	7		
	870908	11	60	15	75	25	52	12			45	40	65	25	64	30		
	870908	15	150	20	125	20	67	31			75	35			145	35		
870909	01													34	50			
870909	02	175	1	210	1	85	1			65	1	80	1					
species 11	870815	03	250	25	450	25	56	2					155	30				
	870922	03	700	35											450	35		
	870922	05	600	2	500	2	320	10			450	5	350	10	750	3		
	870924	04	500	75	1050	85	610	85			350	70	650	95	930	94		
species 13	870811	15	15	100							26	100			38	100		
	870812	02	30	100	50	100	11	100					25	100	30	100		
	870815	04			26	100	11	100					11	100				
	870816	08	100	100	225	100	72	100			70	100	77	100	63	100		
	870819	06	25	100							15	100			40	100		
	870917	03	125	100	140	100	95	100			104	100	115	100	140	100		
	870918	01	15	100											12	100		
	870919	01	200	100	165	100	45	100			150	100	525	100	125	100		
	870921	01	40	100	35	100	28	100			30	100	67	100	58	100		
	870921	02	40	100	28	100	20	100			35	100	45	100	36	100		
	870922	07	40	100	35	100	20	100										
	870924	01			60	100	55	100			60	100	33	100	130	100		
	870924	03	30	100							25	100			68	100		
	870925	06	15	100							15	100			24	100		
	870925	08											25	100				
	870926	01	55	100							18	100			34	100		
	870926	10	35	100							35	100			70	100		
	870927	11	70	100	100	100	80	100			55	100	250	100	155	100		
	870927	18	20	100			9	100							14	100		
	870927	26	35	100	45	100	15	100			30	100	30	100	45	100		
	870930	02	45	100							25	100						
	871001	01			67	100	40	100					30	100				

Table 4. (continued)

	date	sight no.	obs 4		obs 5		obs 12		obs 22		obs 51		obs 67		obs 68		obs 70	
			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 15	870816	06	20	100	22	100			11	100	12	100	22	100	16	100		
	870916	02			9	100			6	100			10	100				
	870929	05											6	100	4	100		
species 18	870811	06	30	10	13	10			9	10								
	870812	04	10	100	60	100			39	100	30	100			7	100		
	870812	10	50	100											55	100		
	870812	14	15	100														
	870813	01	150	100									15	100				
	870817	02	25	100	35	100			9	100	53	100			70	100		
	870819	03	20	100	20	90			9	90	14	100	25	100				
	870823	04	100	50					15	40	20	75	168	60	48	45		
	870824	01	150	1	65	2			39	2	50	2	67	2	55	2		
	870825	09	6	100									7	100				
	870825	10	450	1					245	2	350	3			130	2		
	870827	02			12	10							15	90				
	870909	02	175	1	210	2			85	8	65	5	80	6				
	870927	06	105	41	65	45			42	50	35	30	45	30	128	50		
	870927	14	40	50							16	40			38	50		
	870929	02	20	100							9	100			14	100		
	870929	03													6	100		
	871001	06	35	14	21	10							12	20				
	871001	07	75	100			4	100										
species 21	870813	02	2	50											2	50		
	870819	03			20	10			9	10								
	870823	04	100	50					15	60	20	25	168	40	48	55		
	870826	04									7	100			4	100		
	870826	08			15	75												
	870827	02			12	90							15	10				
	870907	01	5	100							6	100			4	100		
	870920	03	6	100							5	100			3	100		
	870927	23	15	100	12	100					8	100			9	100	7	100
	870929	01	6	100											7	100		
	870929	04	8	100							7	100			13	100		
species 26	870921	06	225	100	200	100			100	100	150	100	165	100	135	100		
species 32	870822	08	17	100														
	870916	01	20	100	11	100			7	100	8	100	13	100	8	100		
	870923	02	50	100							19	100			19	100		
species 34	870810	02	9	100														
	870924	02	35	100					13	100	14	100			14	100		

Table 4. (continued)

species	date	sight no.	obs 31		obs 55		obs 56		obs 63		obs 64		obs 69
			best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	
2	871013	05	660	15	400	15	450	15	240	20			
	871014	04	410	99	300	98	400	99	120	99	300	99	340
	871022	06	12	100									8
	871023	03	120	40	70	50	85	35	30	30	90	25	120
	871025	01					50	95					30
	871027	07	80	100			75	100	45	100	50	100	70
	871028	05			50	100	35	100					100
	871028	12	75	61							86	43	95
	871030	04			275	100	525	100	120	100			475
	871031	01	270	30	250	50	250	50	50	30	190	40	240
	871031	05	160	100			100	100	30	100	65	100	35
	871101	02			175	40	175	15	60	60	75	100	35
	871102	02	32	100									100
	871102	04			50	100	100	100	40	100			140
	871103	01	222	100	225	100	125	100	60	100	220	100	45
	871103	03	50	100	40	100	50	100	40	100	78	100	40
	871103	05	40	100	50	100	40	100	25	100	58	100	40
	871109	02	166	96	80	87	120	92	35	71	105	86	189
	871110	01			200	98	200	97	55	90	195	65	475
	871115	10	210	60							240	100	440
	871116	01	270	95					25	100			97
	871119	01			150	100	90	100			72	100	80
	871119	02	50	100									20
	871119	05	400	60							360	55	725
871119	06											60	
871119	07			250	75	110	90	25	75	65	80	320	
871120	02	50	70									100	
871120	05	340	100	250	100	400	100	70	100	290	100		
871120	11			275	30	175	40	60	40				
871120	12			325	40	325	60	100	65				
871125	05			700	2	500	5	200	10				
871128	05	400	40	400	50	200	30	80	60	280	40	375	
871128	07	450	100	500	100	500	100	120	100	330	100	150	
871129	02	200	80							255	100	280	
871130	01	420	100	250	75					80	100	160	
871201	02	140	100	35	100	20	100	10	100			100	
871202	04												
871202	05	1400	10			20	100			825	5	950	
871202	06			950	30	850	20	150	30			8	
871204	03	380	20	600	35	275	25	130	30	425	30	650	
species 3	871116	01	270	5								440	3

Table 4. (continued)

		obs 31		obs 55		obs 56		obs 63		obs 64		obs 69		
date	sight no.	best est.	pct	obs 55		obs 56		obs 63		obs 64		obs 69		
				best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	
species 5	871015	01	210	100	275	100				160	100	180	100	
	871016	02	28	100						34	100	26	100	
	871018	13	890	100	425	100	650	100	210	100	950	100	850	100
	871018	22	680	100	475	100	525	100					375	100
	871022	01	180	100							330	100	140	100
871022	02			175	100	200	100	90	100					
871113	05	28	100	60	100	45	100	18	100	36	100	22	100	
species 6	871009	03			50	100	50	100	13	100				
	871009	09			10	100	9	100	8	100				
	871009	13	180	100							210	100	80	100
species 10	871013	05	660	85	400	85	450	85	240	80				
	871014	04	410	1	300	2	400	1	120	1	300	1	340	1
	871014	09	400	100			300	100					280	100
	871023	03	120	60	70	50	85	65	30	70	90	75	120	70
	871025	01					50	5						
	871028	12	75	39							86	57	95	41
	871031	01	270	70	250	50	250	50	50	70	190	60	240	75
	871101	02			175	60	175	85	60	40				
	871115	10	210	40							195	35	475	35
	871125	05			700	98	500	95	200	90				
	871128	02	460	100	375	100	400	100	150	100	360	100	475	100
	871128	03	230	100	200	100	175	100	70	100	235	100	220	100
871128	05	400	60	400	50	200	70	80	40	280	60	375	55	
871129	02	200	20	250	25							150	10	
871202	05	1400	90							825	95	950	92	
871202	06			950	70	850	80	150	70					
871204	03	380	80	600	65	275	75	130	70	425	70	650	60	
species 11	871119	06												
	871119	07			250	25	110	10	25	25	360	45	725	40
	871120	09			45	100	45	100	18	100				
	871120	11			275	70	175	60	60	60				
871120	12			325	60	325	40	100	35					
species 13	871010	01	35	100	150	100	150	100	45	100	52	100	30	100
	871010	03	110	100	75	100	80	100	45	100	52	100	60	100
	871010	05	46	100										
	871010	11			50	100	40	100	20	100				
	871011	02	55	100	50	100	25	100	20	100	52	100	30	100
	871011	07			50	100	60	100	30	100				
	871012	03	45	100	60	100	60	100	18	100	50	100	38	100
	871012	04	20	100	30	100	25	100	15	100	30	100	40	100
871012	08	20	100							30	100			

Table 4. (continued)

species	date	sight no.	obs 31			obs 55			obs 56			obs 63			obs 64			obs 69		
			best est.	pct		best est.	pct		best est.	pct		best est.	pct		best est.	pct		best est.	pct	
13																				
871013	02		24	100		30	100		40	100		16	100					27	100	
871014	05		15	100		20	100		25	100		12	100		18	100		21	100	
871017	03		40	100		50	100		40	100		20	100		30	100		35	100	
871017	04		200	100		125	100		45	100		70	100							
871017	12		75	100		75	100		45	100		40	100		78	100		45	100	
871017	15		160	100											94	100		180	100	
871018	01		30	100		45	100		50	100		30	100		24	100		20	100	
871018	06		50	100		60	100		30	100		18	100							
871018	12		12	100											14	100		9	100	
871018	14																			
871021	04					90	100		95	100		60	100							
871021	05		45	100		45	100		50	100		40	100							
871021	10		40	100		40	100		25	100		25	100							
871022	03		50	100											28	100		60	100	
871023	05		30	100		45	100		30	100		20	100		36	100		28	100	
871023	08		80	100											95	100		60	100	
871024	01					15	100		10	100		10	100							
871024	03					45	100		28	100		30	100							
871027	02		50	100		70	100		55	100		40	100		92	100		110	100	
871028	03		55	100		115	100		80	100		45	100		235	100		105	100	
871028	10					60	100		45	100		40	100							
871028	13		36	100											60	100		65	100	
871028	14		32	100		40	100		35	100		16	100		40	100		50	100	
871028	21		75	100		70	100		95	100		35	100		92	100		80	100	
871028	24					50	100		38	100		30	100							
871029	01		70	100		110	100		150	100		60	100		62	100		140	100	
871029	02																			
871030	01					18	100		25	100		28	100							
871030	02		50	100					55	100								27	100	
871031	04		14	100					25	100					20	100		15	100	
871109	01		12	100														20	100	
871109	05		35	100											46	100		34	100	
871113	06		30	100														40	100	
871114	02		110	100								20	100		145	100		230	100	
871114	04		70	100								30	100		56	100		80	100	
871114	06					60	100		55	100										
871115	01					60	100		75	100		40	100							
871115	08		65	100		40	100		20	100					82	100		75	100	
871118	01					70	100		75	100		28	100							
871118	02		55	100		35	100		20	100		15	100		66	100		120	100	
871122	01		35	100		50	100		45	100		30	100		28	100		45	100	
871128	01		17	100											24	100		38	100	
871129	04					35	100		20	100		20	100							
871129	05		17	100		18	100		20	100		12	100		16	100		30	100	
871130	02		8	100		25	100		15	100		8	100		22	100		27	100	
871201	01					30	100		18	100		9	100							
871201	05		9	100		50	100		50	100		27	100							
871204	01														16	100		12	100	
871205	01					25	100					8	100							

Table 4. (continued)

	date	sight no.	obs 31		obs 55		obs 56		obs 63		obs 64		obs 69	
			best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct
species 13	871205	04	120	100	50	100	60	100	23	100	33	100	80	100
	871205	05	60	100			40	100			23	100	55	100
species 15	871009	16			12	100			8	100				
	871013	03	160	100	45	100	60	100	45	100	125	100	35	100
	871018	11	42	100							24	100	10	100
	871027	11					8	100	6	100			16	100
	871103	06	12	100							18	100	5	100
	871103	07	6	100	5	100	5	100	3	100	26	100	32	100
	871117	02	22	100							9	100	13	100
	871117	04	16	100							13	100	14	100
	871122	02	13	100							2	100		
	871122	03			12	100	22	100	20	100				
	871126	01												
species 18	871009	01	16	100	8	100	7	100	6	100				
	871009	02			15	100	19	100	13	100				
	871009	10	10	100	6	100					2	100		
	871011	06			2	100								
	871012	06					25	50					30	60
	871014	01	55	80									16	100
	871016	03	30	100					18	100	18	100	40	60
	871017	07	55	80							40	60	32	60
	871017	08	92	100							70	100	75	100
	871017	14	13	40										
	871018	16	40	70							18	30		
	871018	20			56	100								
	871021	09	15	28	20	47	20	47	17	38				
	871023	01			13	100	13	100	55	10				
	871110	01	200	2	200	3	200	3						
	871111	05	6	100									7	100
	871127	01	10	100							8	100	32	100
	871202	03	60	100							21	100		
species 21	871012	02	17	100							18	100	21	100
	871012	06			25	50	25	50						
	871021	08	10	100	8	100	8	100	7	100				
	871021	09	15	7	20	5	20	5	17	6			3	100
	871023	02	6	100									12	100
	871024	04	18	100							15	100		
	871114	05			20	100	20	100	8	100			11	100
	871117	01	7	100	12	100	12	100			7	100	12	100
	871130	04	14	100	18	100	12	100	12	100				

Table 4. (continued)

	date	sight no.	obs 31		obs 55		obs 56		obs 63		obs 64		obs 69														
			best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct															
species 32	871017	01	46	100	30	100	25	100	20	100	20	100	28	100													
	871021	06			25	100	25	100	25	100	18	100															
	871101	03			16	100	25	100																			
species 33	871025	02			6	100	25	100	8	100	11	100															
	871120	06																									
species 34	871017	02	12	100							14	100	16	100													
	871017	07													55	20	40	32	40								
	871017	09													11	100	12	100	9	100							
	871017	14													13	60											
	871021	09	22	100	15	65	20	48	17	56	17	100	13	100													
	871030	03													9	100	8	100	10	100							
	871115	06													9	100	8	100	10	100							
	871115	09													11	100	8	100	10	100							
	871122	05													15	100	15	100	7	100							
species 37	871014	07	5	100							4	100	5	100													
	871018	08													4	100											
	871110	03													5	100	4	100	4	100							
	871115	04													12	100	6	100	6	100							
	871125	02													6	100	8	100	5	100							
species 46	871009	15	28	100	25	100	11	100	5	100	17	100	16	100													
	871011	05													55	20	13	100	30	40							
	871014	01																	5	100							
	871016	04													40	30	4	100	18	70							
	871018	16																	6	100							
	871028	02																	13	100							
	871028	04													20	100			13	100							
	871029	06																	3	100							
	871103	02																	105	14							
	871109	02													166	4	80	13	120	8	35	29	189	5			
	871115	05													9	100					7	100					
	871125	04															1	100	11	100	11	100					
	871202	01																									
	species 48	871027													04	2	100	1	100	1	100	1	100				
		871121													01												
species 49	871029	07	2	100							1	100	1	100													
	871110	02																									
	871111	03																									

Table 4. (continued)

species	date	sight no.	obs 31		obs 55		obs 56		obs 63		obs 64		obs 69
			best est.	pct	best est.	pct	best est.	pct	best est.	pct	best est.	pct	
77													
871009	04						1	100					
871009	05		20	100									2
871009	17												100
871010	06				15	100	30	100					
871010	10		1	100									
871012	07												
871014	02												
871014	03		1	100									
871014	06												
871017	13				3	100							
871018	02												
871018	17												
871021	01				4	100							
871021	03						3	100					
871021	07												
871022	05				10	100							
871023	04				1	100							
871023	06												
871023	07												
871023	09				4	100							
871028	01												
871028	02												
871028	07						6	100					
871028	09				15	100							
871028	17						1	100					
871028	18				15	100							
871028	19						3	100					
871028	20												
871028	23								15	100			1
871031	03												100
871101	01												
871102	01												
871102	03												
871109	06												
871111	04												
871111	07												
871111	08												
871113	01												
871113	03												
871115	03		30	100									
871115	07				1	100							
871116	02												
871116	03				5	100							
871118	03												
871118	04						6	100					
871119	05		400	40									60
871120	01		10	100									80
871120	02		50	30									12
871120	04						3	100					100

Table 5. (continued)

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

Table 6. Summary of distance searched, large dolphin schools detected, and rates of encountering dolphins by observers aboard the Jordan in the eastern tropical Pacific during August 8 through December 10, 1987.

	Distance Searched (km)	Percent km Searched	Number Schools Detected	Percent All Schools Detected	Detection Rate (Schools/ 1000 km)	S.E. Detection Rate	Number ¹ Days Searched
All Data	13260	100	263	100	19.83	2.18	95
Inshore	8270	62	195	74	23.58	3.08	61
Middle	4789	36	68	26	14.20	2.35	34
West	37	<1	0	0	0	0	0
South	164	1	0	0	0	0	0
Sea State Conditions							
Calm	2711	20	108	41	39.84	5.63	51
Rough	10549	80	155	59	14.69	1.56	90
Visibility Conditions							
Good	11397	86	234	89	20.53	2.34	94
Poor	1863	14	29	11	15.57	4.78	67
Observers							
Legs 1 and 2							
4	3212	24	38	14	11.83	2.44	44
5	3134	24	21	8	6.70	1.63	42
22	3140	24	9	3	2.87	0.95	43
51	3176	24	18	7	5.67	1.80	44
67	3143	24	19	7	6.05	1.40	43
68	3205	24	23	9	7.18	1.77	44
Observer							
31	3364	25	25	10	7.43	1.75	51
55	3538	27	31	12	8.76	1.69	51
56	3532	27	22	8	6.23	1.48	51
63	3540	27	17	6	4.80	1.55	51
64	3375	25	17	6	5.04	1.43	51
69	3363	25	23	9	6.84	2.45	51
Teams ²							
Legs 1 and 2							
Team 1	3206 ³	24	78	30	24.33	4.29	44
Team 2	3128	24	50	19	15.99	2.96	42

Table 6. (continued)

	Distance Searched (km)	Percent km Searched	Number Schools Detected	Percent All Schools Detected	Detection Rate (Schools/ 1000 km)	S.E. Detection Rate	Number ¹ Days Searched
Teams ²							
Legs 3 and 4							
Team 3	3359	25	65	25	19.35	3.44	51
Team 4	3527	27	68	26	19.28	3.16	51

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

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

³40km of trackline was searched when either both or neither of the team leaders were on duty and is not used for team analysis.

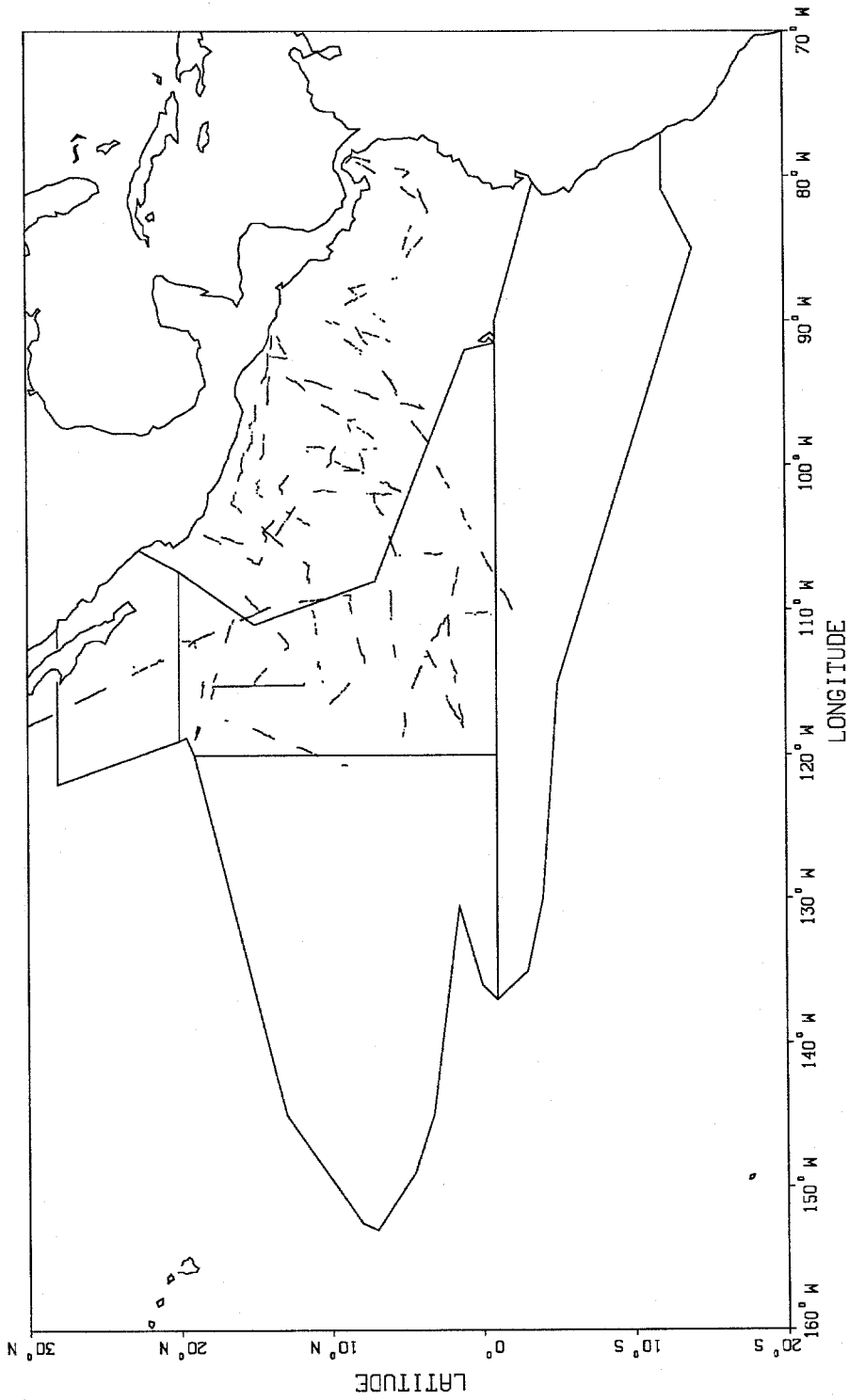


Figure 1. Tracklines surveyed by the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

CRUISE #		DATE			SIGHT #	SERIES #	LEG #	CARD #
1	4	6	8	10	12	14	16	0 1

RESEARCH SHIP MARINE MAMMAL SIGHTING RECORD

SIGHTING CUE				ENVIR. COND. AT CUE				POSITION AT TIME OF CUE				OBSERVER POSITIONS							
TIME	BEARING FROM SHIP	DISTANCE nm & 10ths	HEAVY	SURF TEMP °F & 10ths	HORZ SUN	VERT SUN	LATITUDE	N S	LONGITUDE	E W	TIME M.M. SIGHTED	Y N	LEFT BIND	RIGHT BIND	REC	MAM DETECTED BY			
18	22	23	24	27	30	31	34	36	38	42	43	48	49	50	54	55	57	59	61

OBSERVER 1

SCHOOL SIZE ESTIMATE				SPECIES PROPORTIONS											
OBS. CODE	BEST	HIGH	LOW	CARD #	SPECIES 1 %	SP 1 CODE	SPECIES 2 %	SP 2 CODE	SPECIES 3 %	SP 3 CODE	SPECIES 4 %	SP 4 CODE			
63	65	69	73	76	16	18	21	23	26	28	31	33	36		
S P 1				S P 2				S P 3				S P 4			

OBSERVER 2

SCHOOL SIZE ESTIMATE				SPECIES PROPORTIONS											
OBS. CODE	BEST	HIGH	LOW	SPECIES 1 %	SP 1 CODE	SPECIES 2 %	SP 2 CODE	SPECIES 3 %	SP 3 CODE	SPECIES 4 %	SP 4 CODE				
38	40	44	48	52	55	57	60	62	65	67	70				
S P 1				S P 2				S P 3				S P 4			

OBSERVER 3

SCHOOL SIZE ESTIMATE				SPECIES PROPORTIONS											
OBS. CODE	BEST	CARD #	HIGH	LOW	SPECIES 1 %	SP 1 CODE	SPECIES 2 %	SP 2 CODE	SPECIES 3 %	SP 3 CODE	SPECIES 4 %	SP 4 CODE			
72	74	77	16	18	22	26	29	31	34	36	39	41	44		
S P 1				S P 2				S P 3				S P 4			

OBSERVER 4

SCHOOL SIZE ESTIMATE				SPECIES PROPORTIONS											
OBS. CODE	BEST	HIGH	LOW	SPECIES 1 %	SP 1 CODE	SPECIES 2 %	SP 2 CODE	SPECIES 3 %	SP 3 CODE	SPECIES 4 %	CARD #	SP 4 CODE			
46	48	52	56	60	63	65	68	70	73	75	77	16	18		
S P 1				S P 2				S P 3				S P 4			

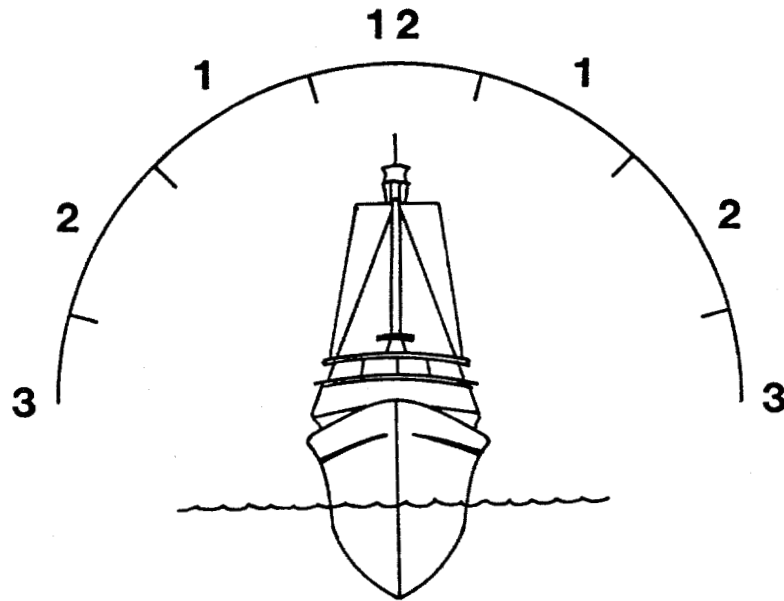
OBSERVER 5

SCHOOL SIZE ESTIMATE				SPECIES PROPORTIONS											
OBS. CODE	BEST	HIGH	LOW	SPECIES 1 %	SP 1 CODE	SPECIES 2 %	SP 2 CODE	SPECIES 3 %	SP 3 CODE	SPECIES 4 %	SP 4 CODE				
20	22	26	30	34	37	39	42	44	47	49	52				
S P 1				S P 2				S P 3				S P 4			

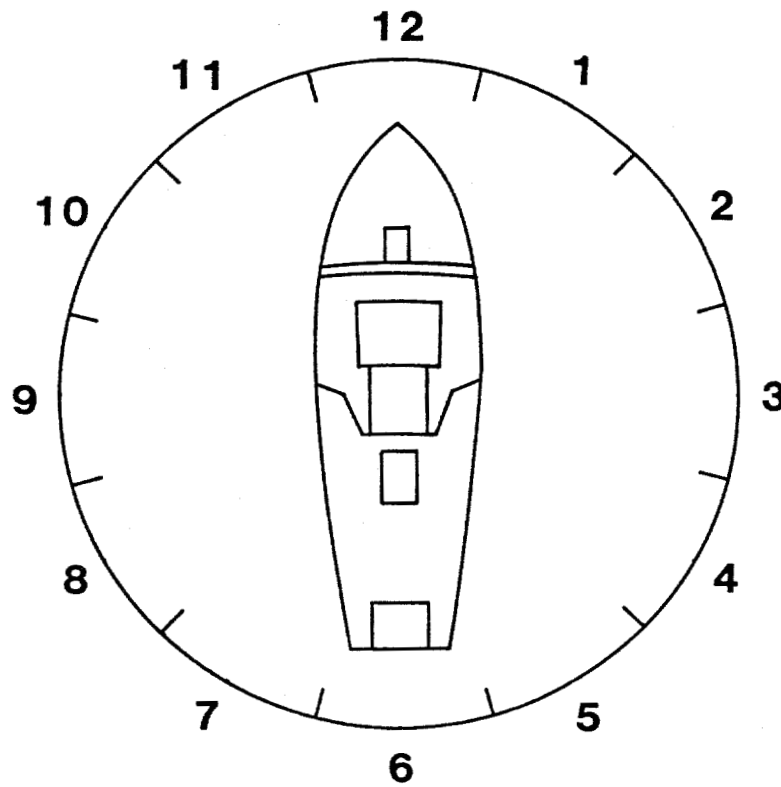
OBSERVER 6

SCHOOL SIZE ESTIMATE				SPECIES PROPORTIONS								RC									
OBS. CODE	BEST	HIGH	LOW	SPECIES 1 %	SP 1 CODE	SPECIES 2 %	SP 2 CODE	CARD #	SPECIES 3 %	SP 3 CODE	SPECIES 4 %	SP 4 CODE	RC 1	RC 2	RC 3	RC 4	RC 5	RC 6			
54	56	60	64	68	71	73	76	16	18	21	23	26	28	29	30	31	32	33			
S P 1				S P 2				S P 3				S P 4									

Figure 3. Research ship marine mammal sighting record.



VERTICAL SUN POSITION



HORIZONTAL SUN POSITION

Figure 4. Vertical and horizontal sun position categories.

CRUISE #	DATE			SIGHT #	SERIES #	LEG #	OBS. CODE
	YEAR	MONTH	DAY				
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.

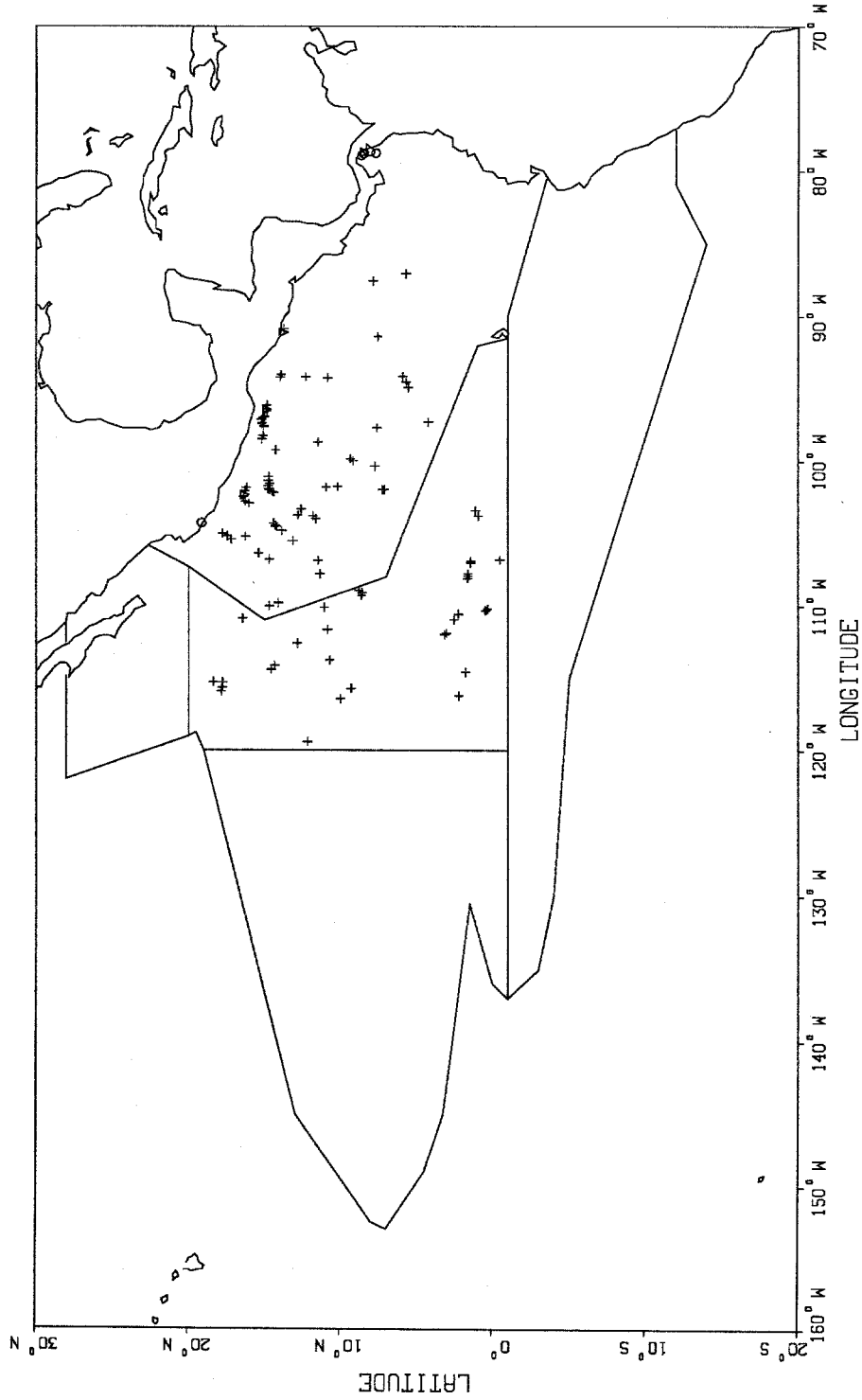


Figure 6. Offshore (+), coastal (o) and unidentified (v) spotted dolphins detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

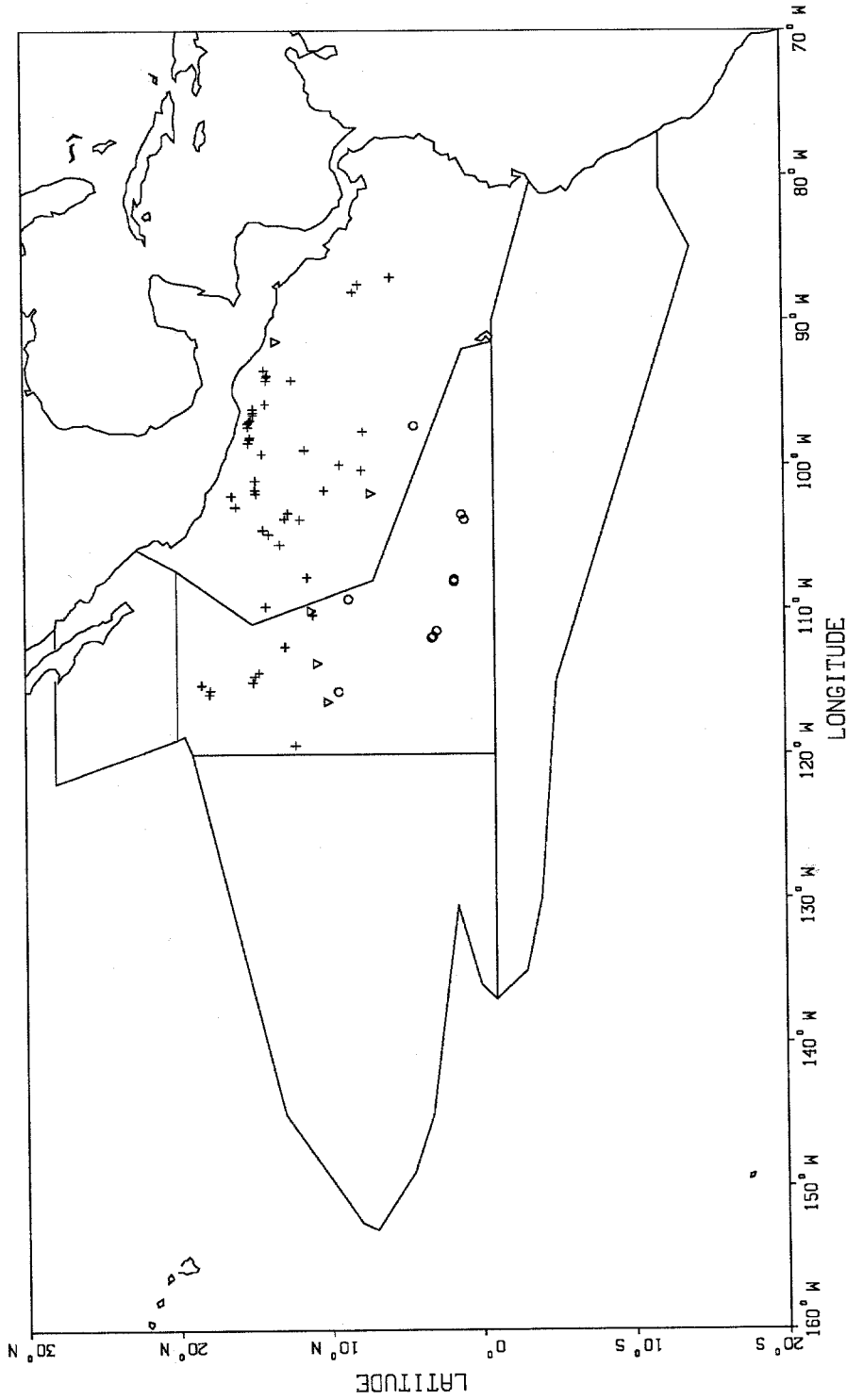


Figure 7. Eastern (+), whitebelly (o) and unidentified (v) spinner dolphins detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

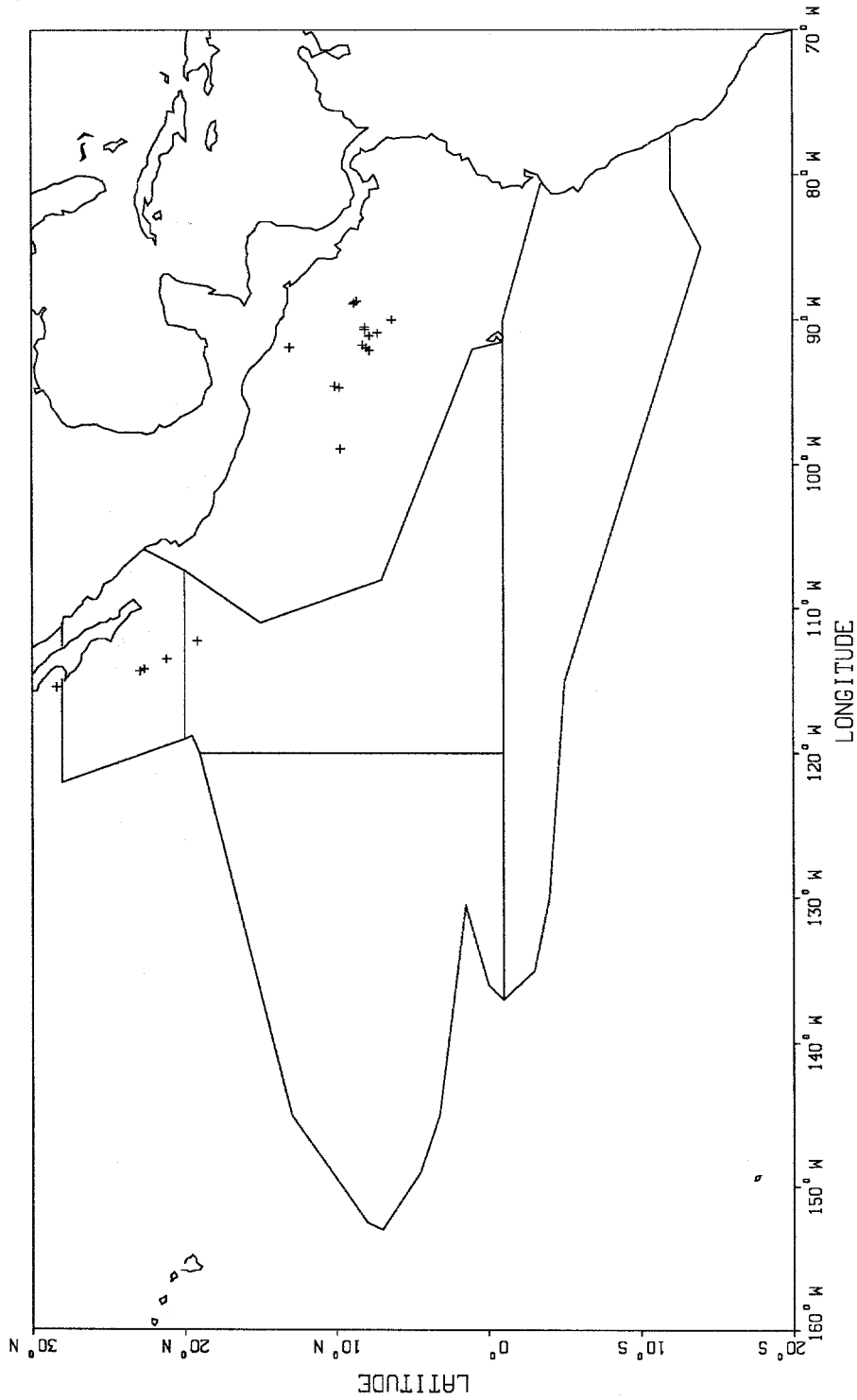


Figure 8. Common dolphins (+) detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

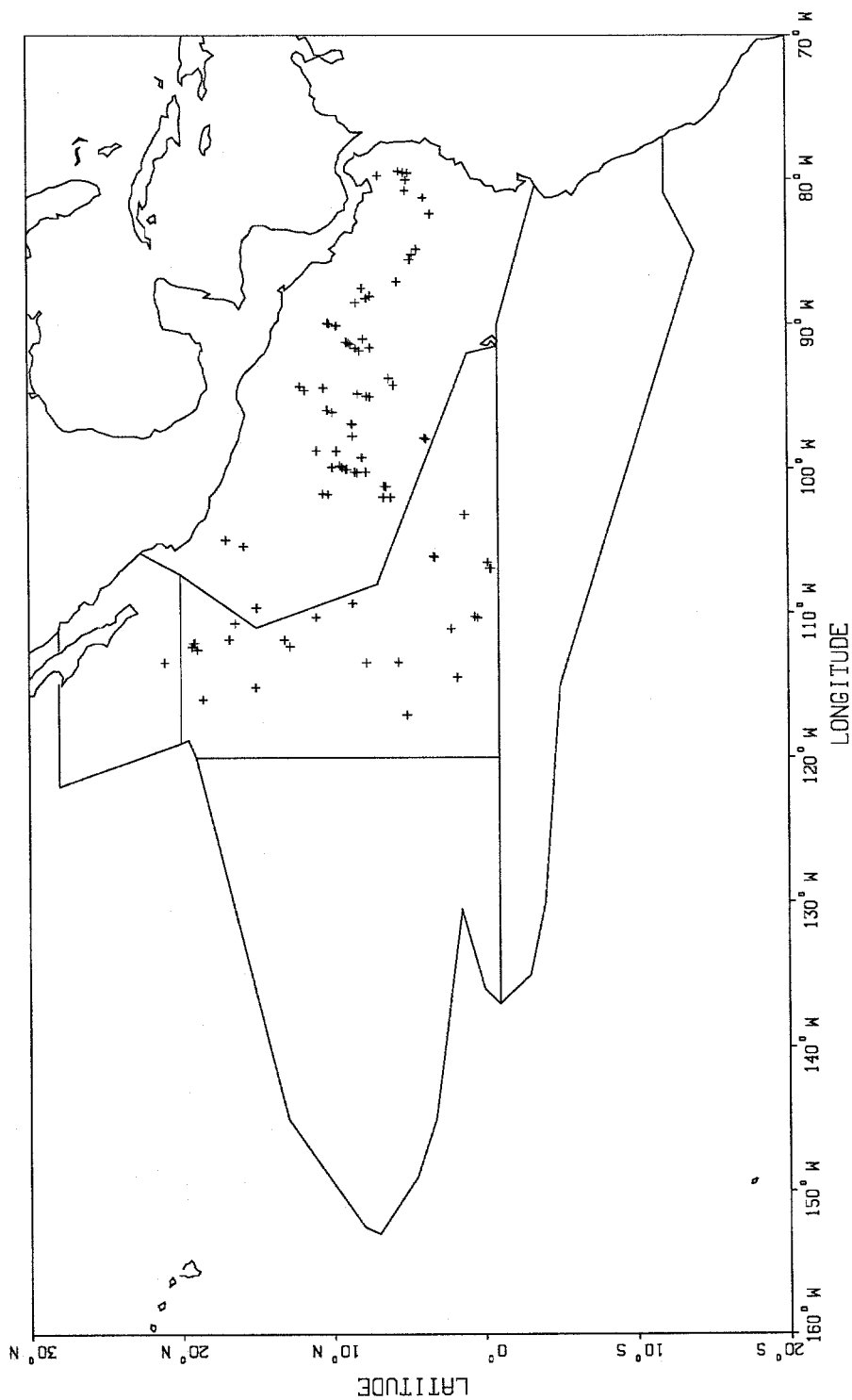


Figure 9. Striped dolphins (+) detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

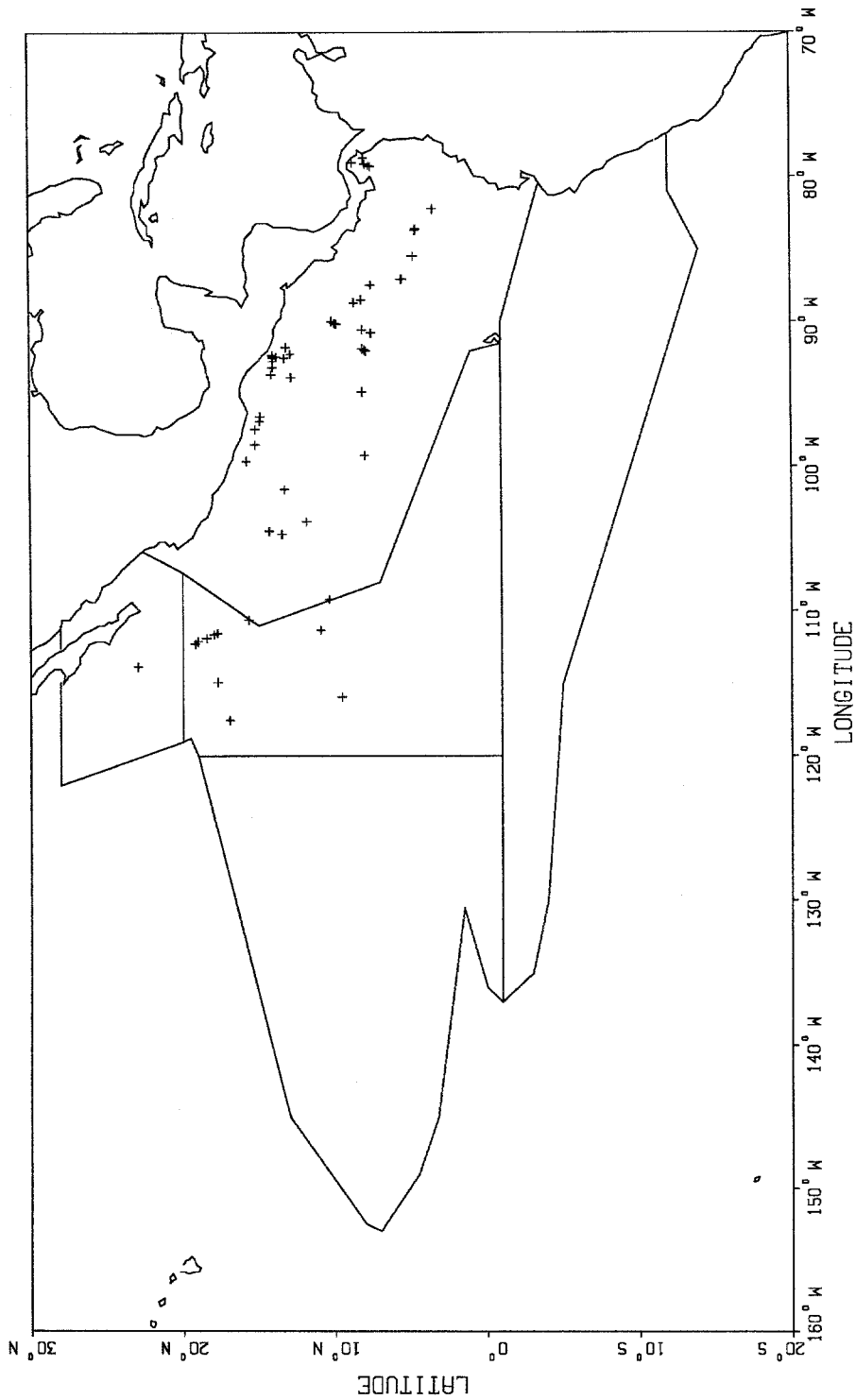


Figure 10. Bottlenose dolphins (+) detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

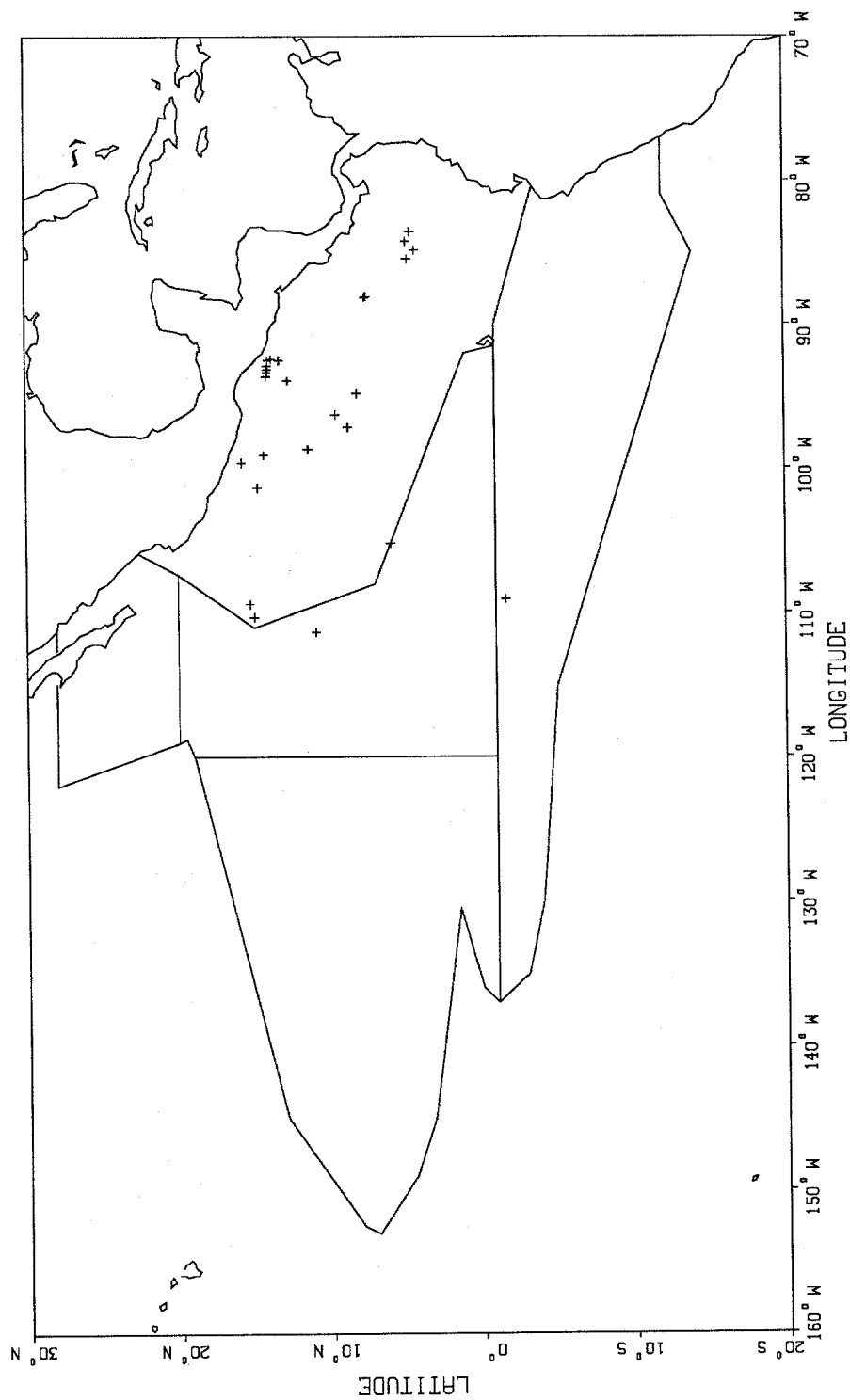


Figure 11. Risso's dolphins (+) detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

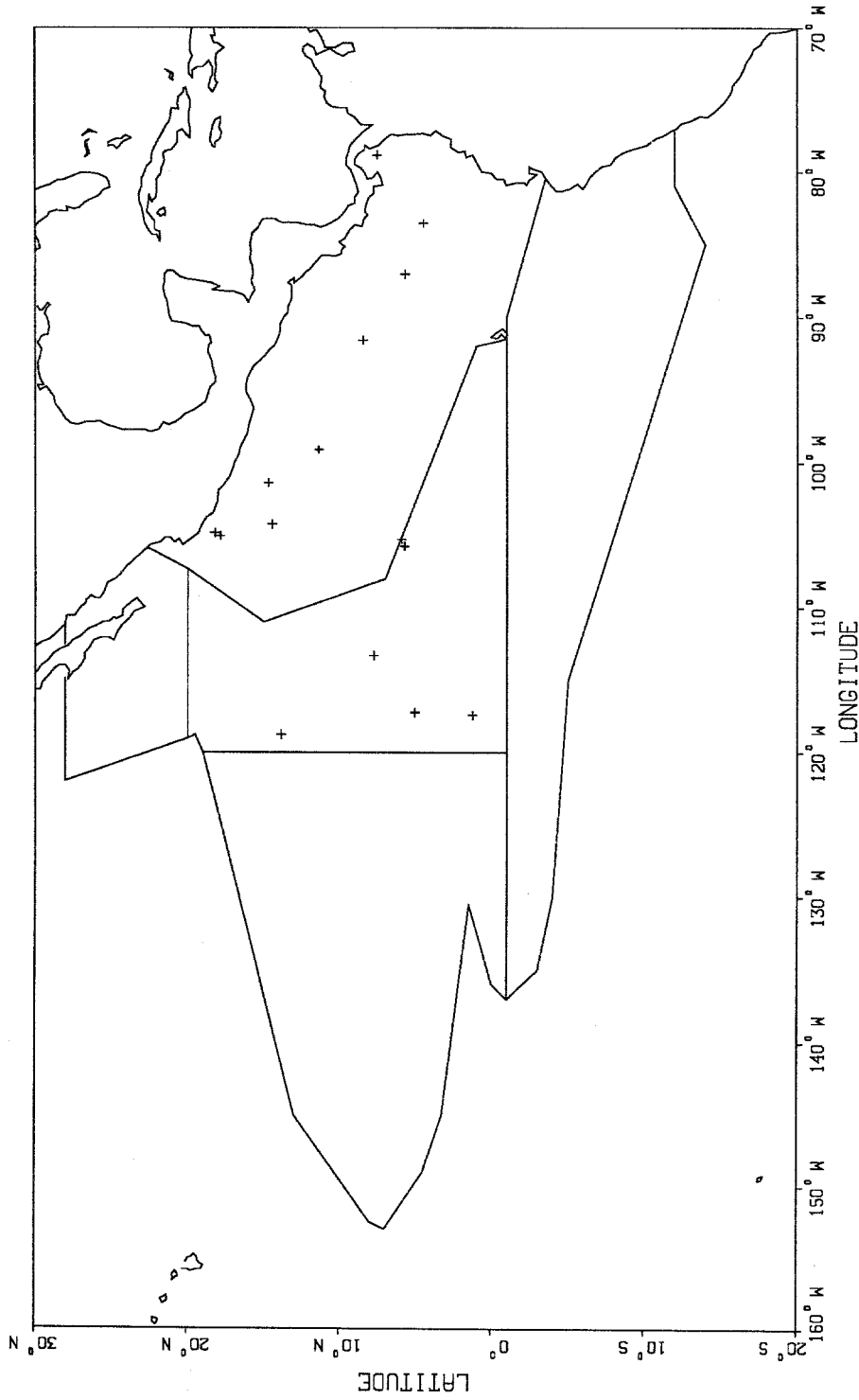


Figure 12. Rough-toothed dolphins (+) detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

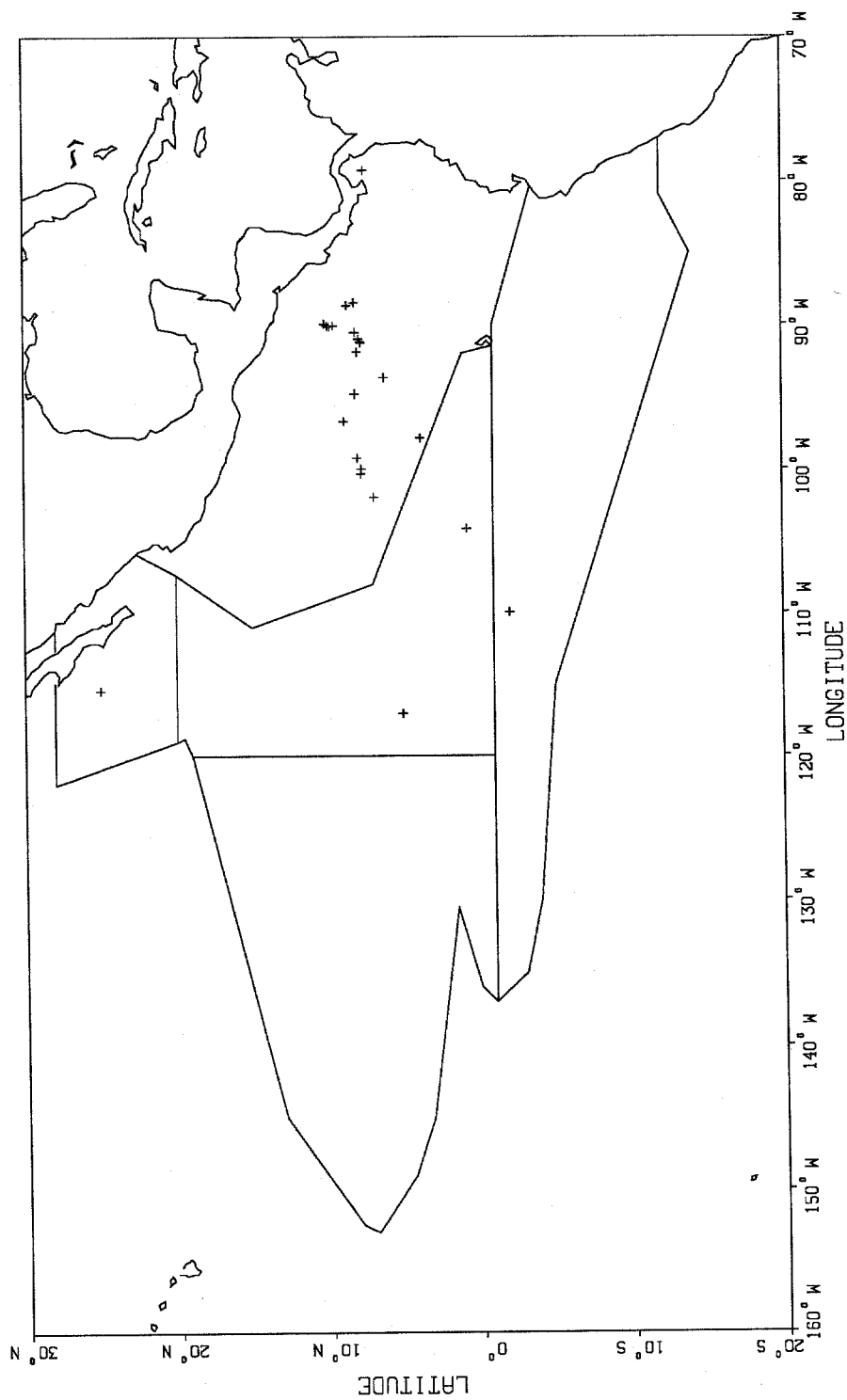


Figure 13. Pilot whales (+) detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

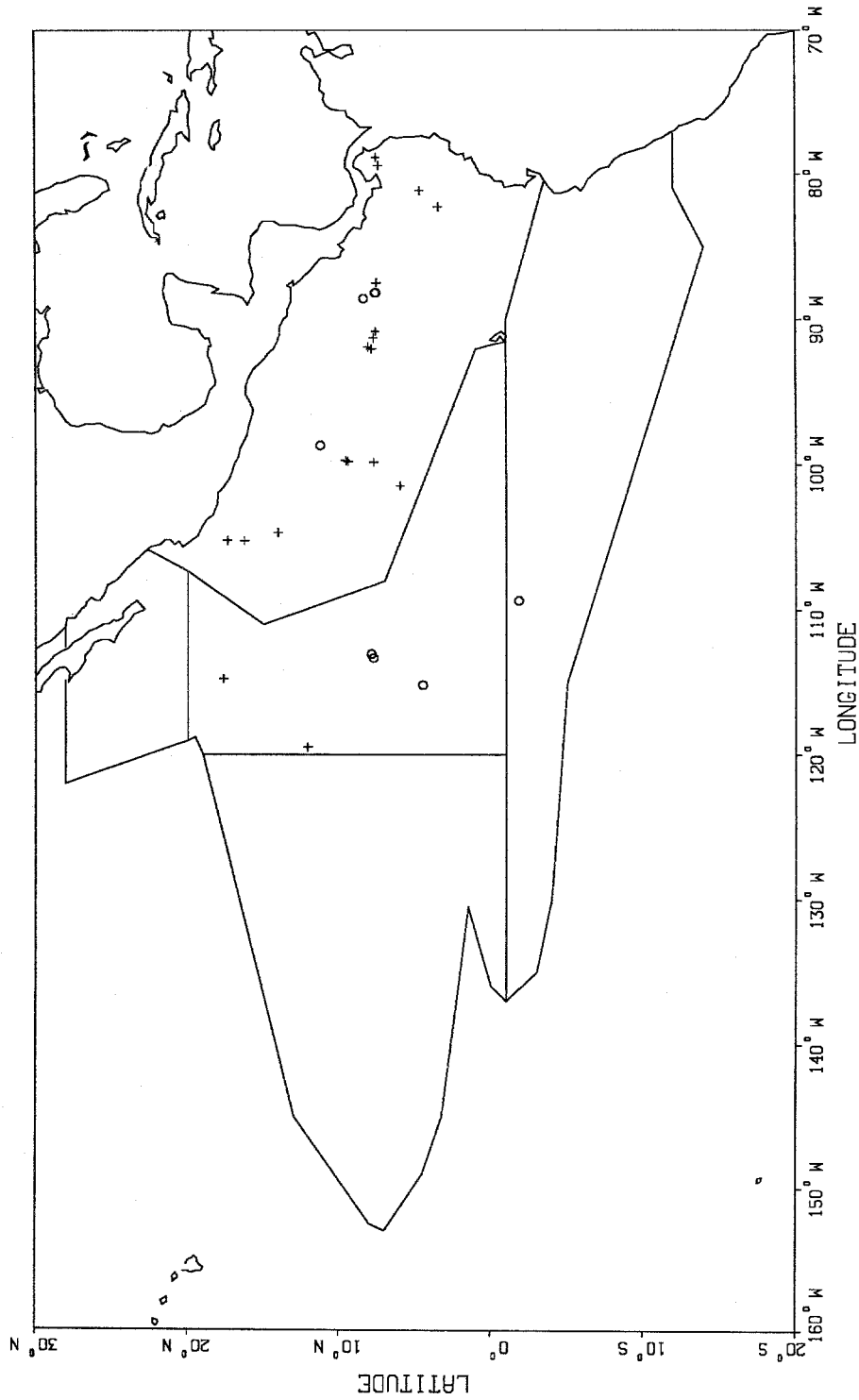


Figure 14. Sperm (+) and dwarf sperm (o) whales detected from aboard the NOAA ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

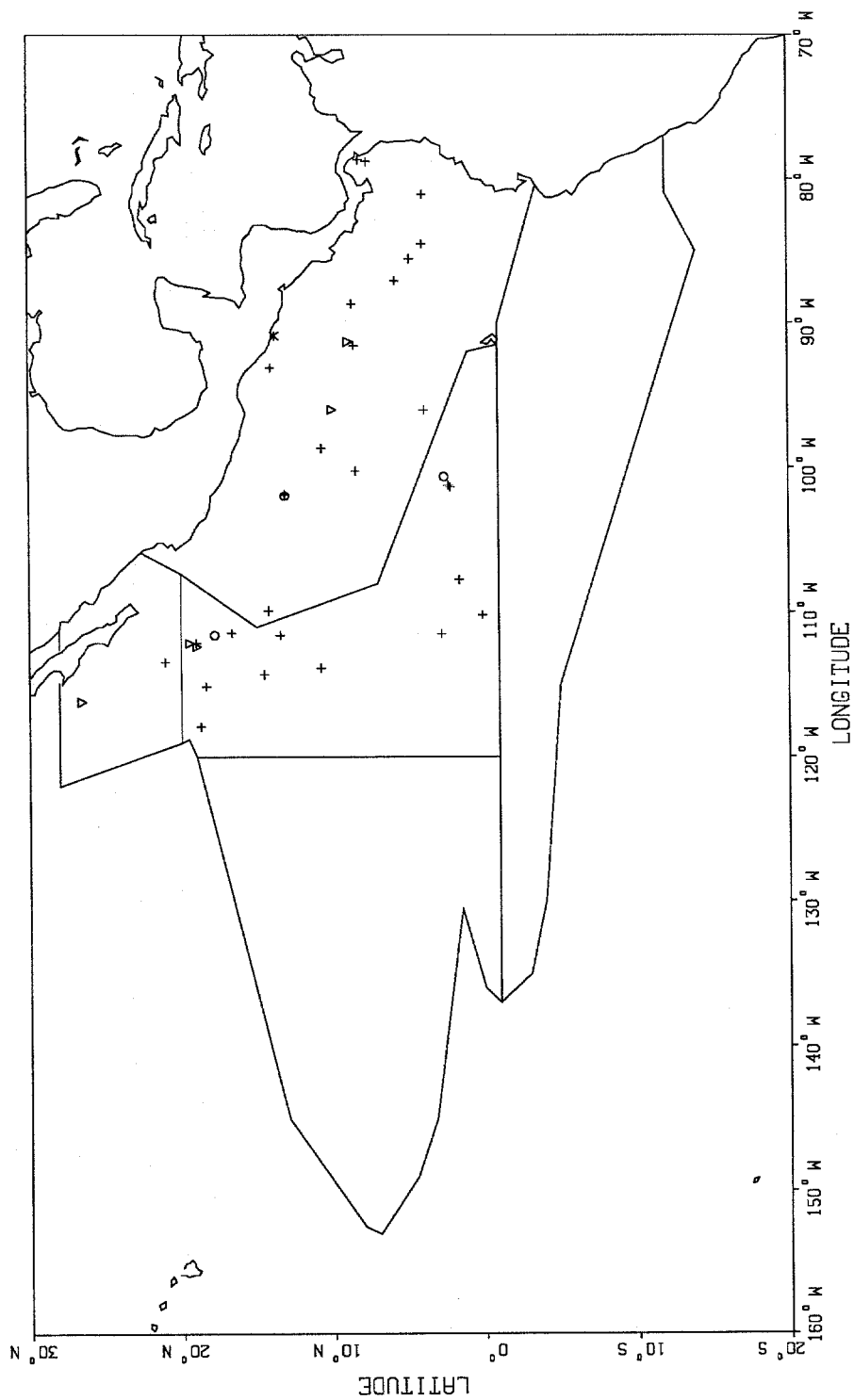


Figure 15. Unidentified rorquals (+), Bryde's (o), blue (v) and humpback (*) whales detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

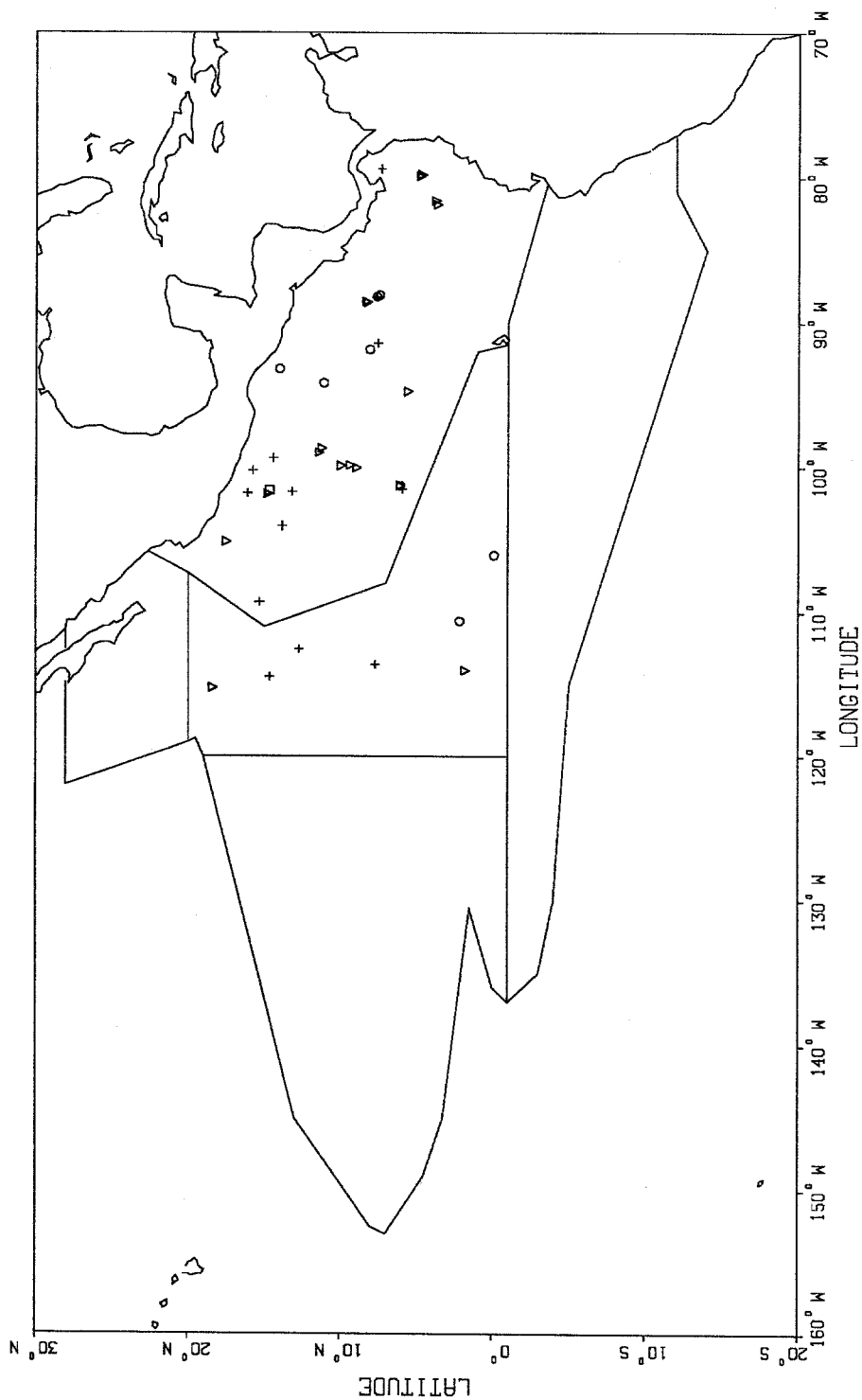


Figure 16. Unidentified beaked (+), Cuvier's beaked (o), mesoplodon (▽) and southern bottlenose (□) whales detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

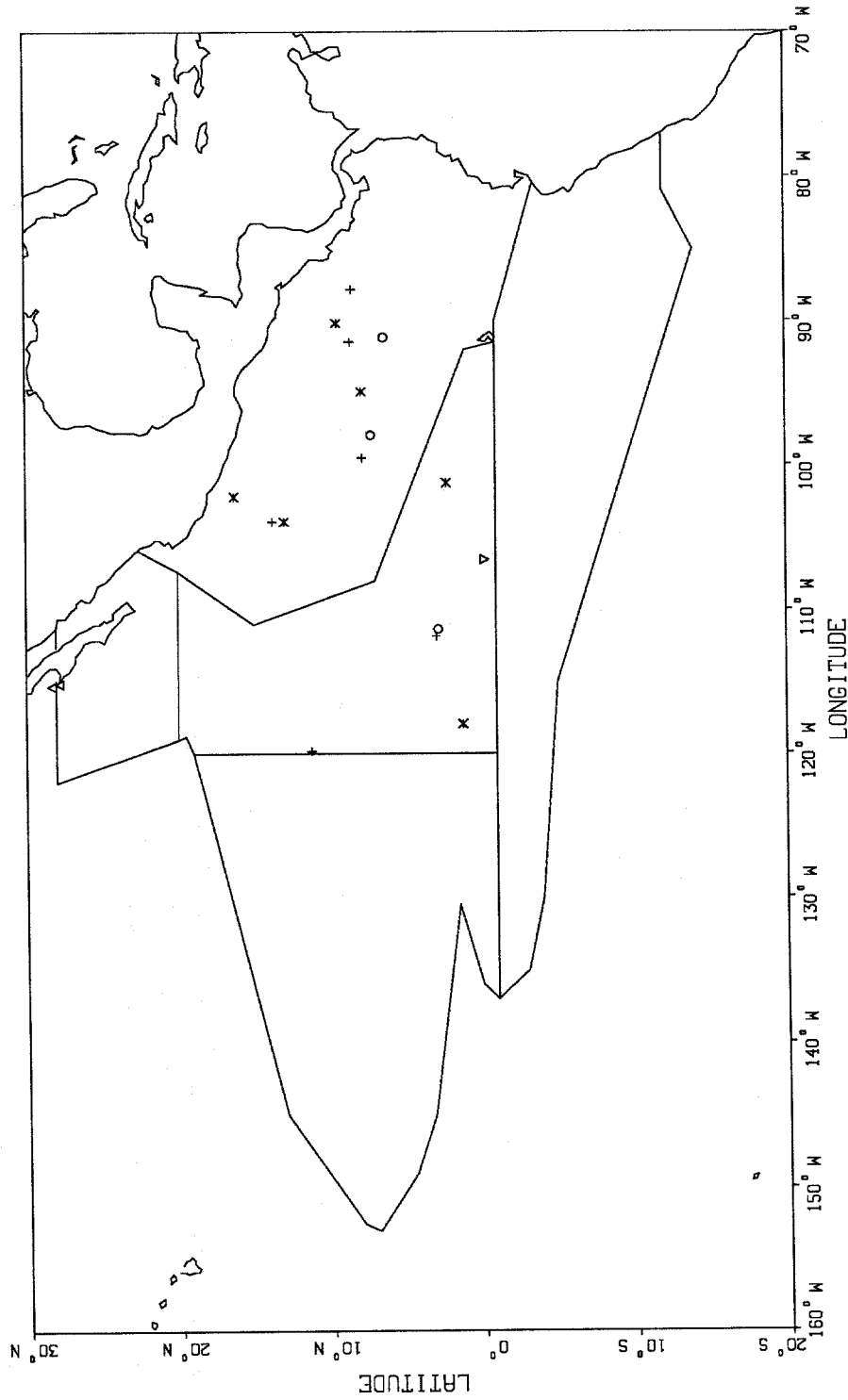


Figure 17. Killer (+) and false killer (o) whales, Fraser's dolphins (▽), pygmy killer (*) whales and Pacific white-sided dolphins (Δ) detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

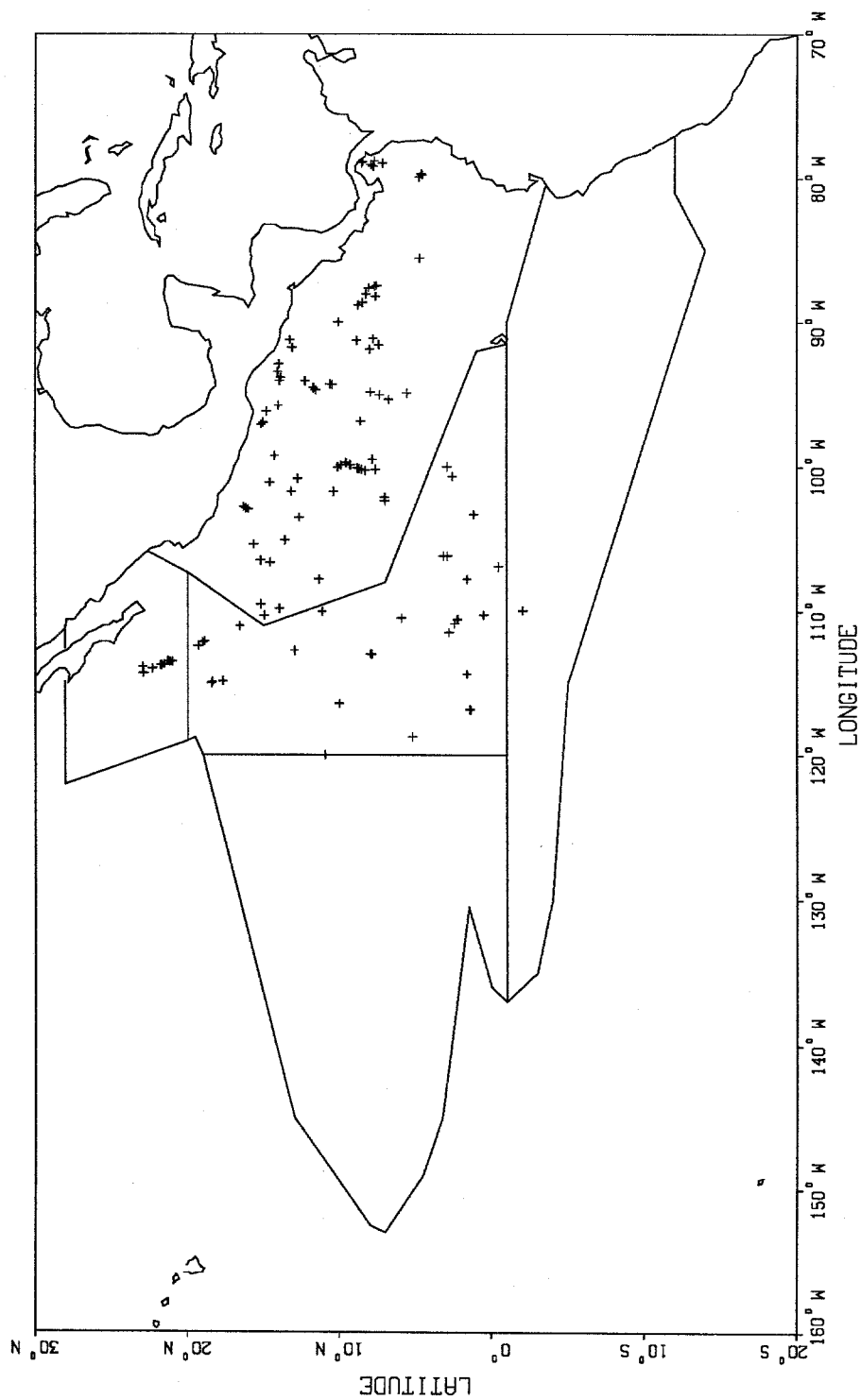


Figure 18. Unidentified dolphins (+) detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

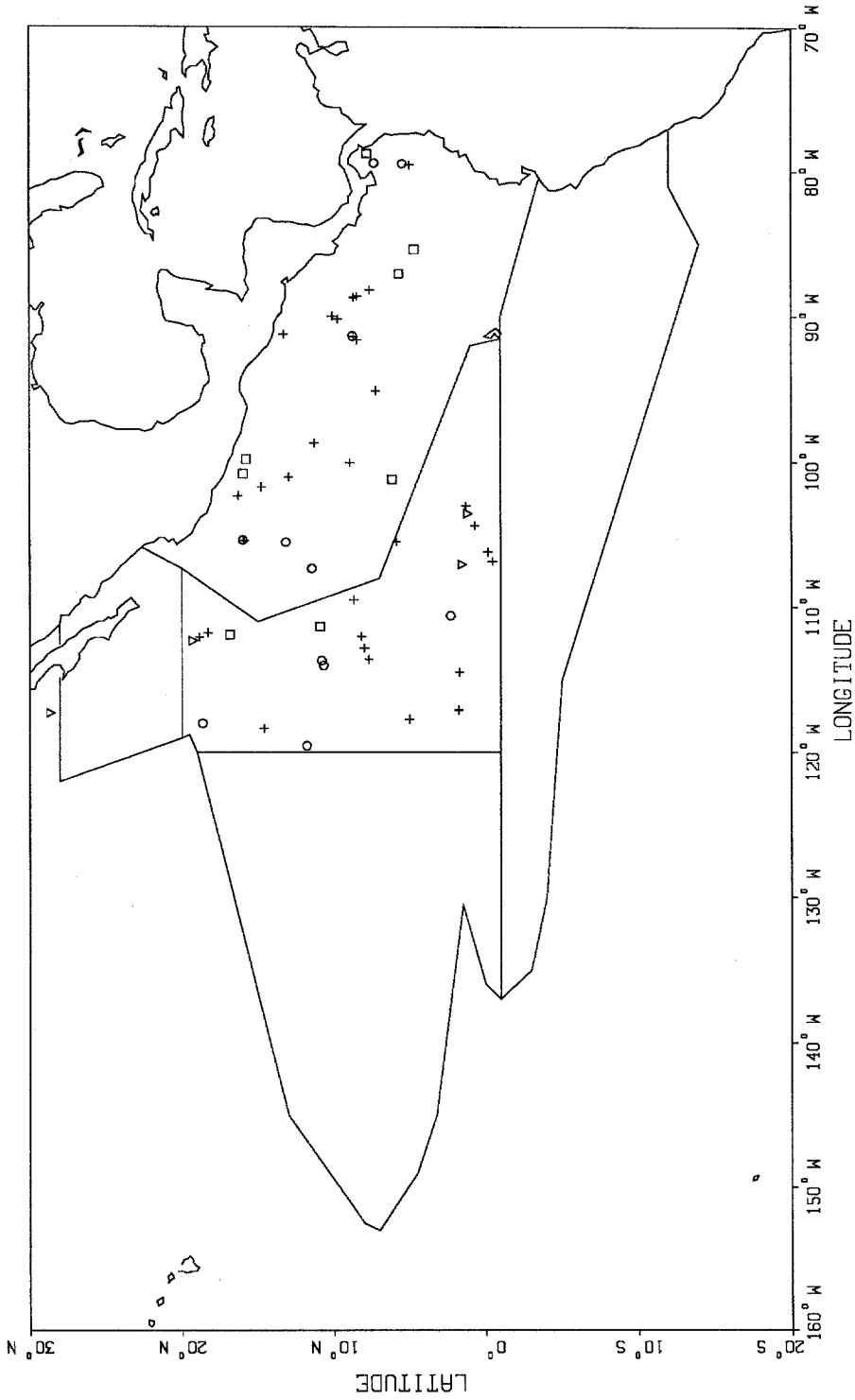


Figure 19. Unidentified small whales (+), unidentified whales (o), unidentified large whales (v) and unidentified cetaceans (□) detected from aboard the NOAA Ship David Starr Jordan from August 8 through December 10, 1987, in the eastern tropical Pacific.

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