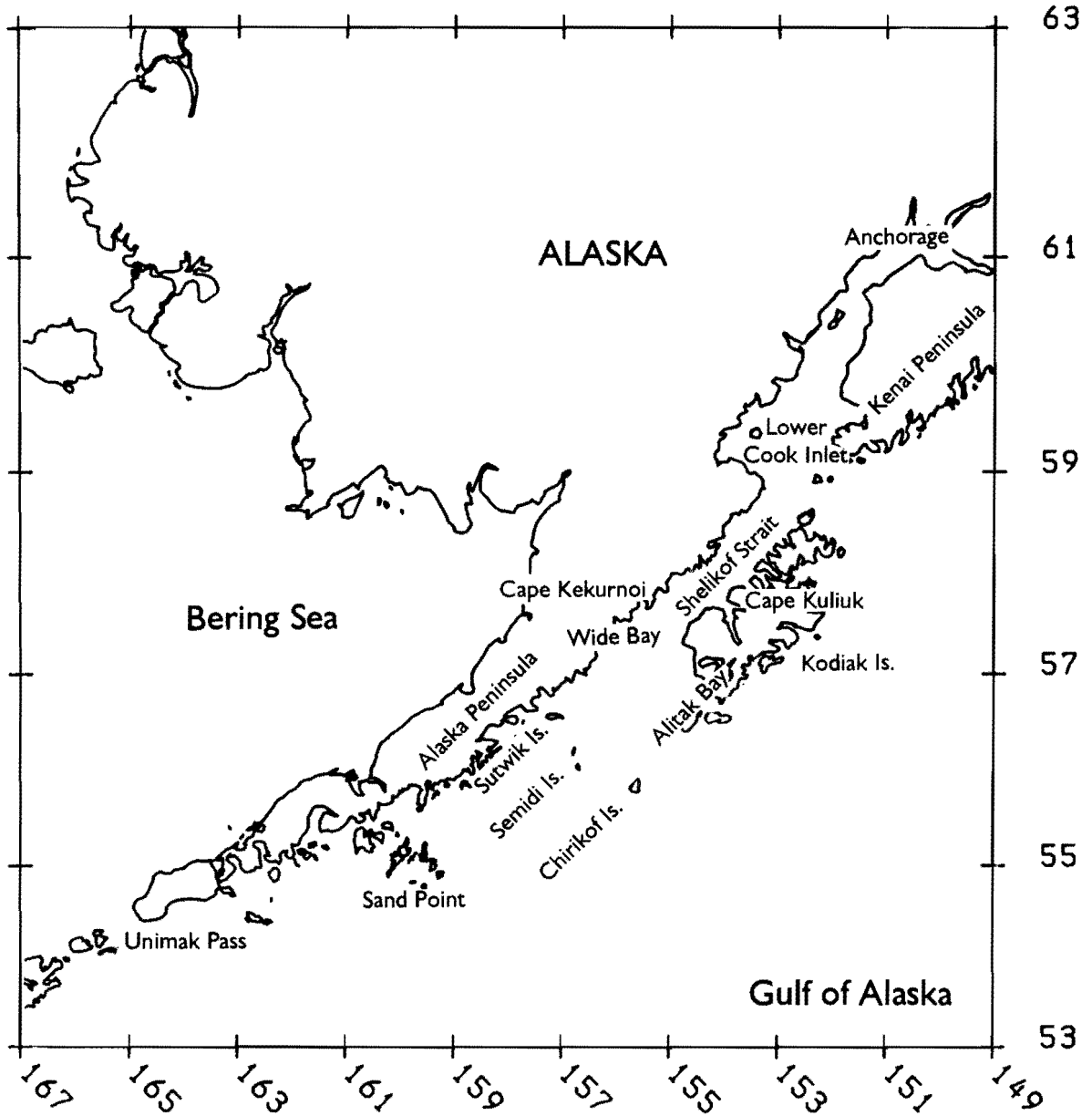


FOX 1985 - THE NORTHWEST GULF OF ALASKA
FISHERY OCEANOGRAPHY EXPERIMENT

SCALE 6313813
AT LAT. 58.000



Frontispiece.--Geographical area of FOX and commonly referenced place names.

NOAA Data Report ERL PMEL-15

FOX 1985 - THE NORTHWEST GULF OF ALASKA
FISHERY OCEANOGRAPHY EXPERIMENT

Judith G. Wilson
Lewis S. Incze
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Pacific Marine Environmental Laboratory
Seattle, Washington
March 1986



**UNITED STATES
DEPARTMENT OF COMMERCE**

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Secretary**

**NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION**

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FOX 1985 - THE NORTHWEST GULF OF ALASKA
FISHERY OCEANOGRAPHY EXPERIMENT

Judith G. Wilson¹
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1. INTRODUCTION

The Fishery Oceanography Experiment (FOX), a coordinated investigation by the Pacific Marine Environmental Laboratory (PMEL) and the Northwest and Alaska Fisheries Center (NAFAC), was a one-year study of the biotic and abiotic environment of the early life stages of pollock (*Theragra chalcogramma*) spawned in Shelikof Strait, Alaska. FOX provided initial research for a long-term research program, Fisheries-Oceanography Coordinated Investigations (FOCI). The goal of FOCI is to better understand the variation in year-classes of fish populations through interdisciplinary research into the biotic and abiotic environment in which they occur. The long-range objective is to predict changes in abundance one to three years before recruitment to the fishable population. FOX concentrated on pollock in Shelikof Strait because this stock is an important resource for domestic fishermen and because recruitment variability is already closely monitored through annual surveys of the spawning stock and assessment of fisheries data. The majority of pollock in Shelikof Strait spawn in a well-defined area (the deepest part of the Strait, an area roughly 20 × 115 km) during a brief period in spring (late March-early April). Eggs and larvae resulting from this spawning sometimes can be followed for more than 50 days as a large "patch", or region of high abundance, readily distinguished from "background" abundances. This combination of an intense spawning coupled with close

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monitoring of the population provides an exceptional opportunity for studies in fisheries oceanography.

One model which has guided the development of FOX and FOCI objectives is that prevailing conditions and shorter term variability in the biotic and abiotic environment during egg, larval or early juvenile development are major determinants of year-class strength. Physical factors such as oceanic transport, mixing and temperature vary as a result of atmospheric variability. These, in turn, directly influence the transport and growth of planktonic communities and may indirectly influence feeding success and predatory losses of the early life stages of fish and shellfish. For the stock of pollock in Shelikof Strait, we hypothesize that an initial constraint on year-class success is transport; larvae and juveniles which remain near the coast of the Alaska Peninsula are more likely to survive than those transported away from the shelf.

The primary objectives of FOX during 1985 were to:

- 1) Elucidate the unique meteorological conditions in Shelikof Strait and along the coast of Alaska including gap winds, ageostrophic along-shore wind accelerations, katabatic winds, and the modification of storm systems upon encountering a mountainous coastline.
- 2) Describe currents and water properties (temperature and salinity) in Shelikof Strait and along the Alaska Peninsula from the time of spawning through the early life stages of pollock.
- 3) Estimate the population of eggs and larvae from the Shelikof spawning event and estimate mortality for two distinct periods: early egg to first-feeding larvae, and first-feeding larvae to advanced stage larvae (approximately 15 mm total length).

- 4) Describe the vertical distribution of eggs and larvae and their planktonic predators and prey.
- 5) Compare the growth rate and birthdate distributions of larvae inside and outside the patch.
- 6) Describe the seasonal development and spatial distribution of zooplanktonic communities, with particular emphasis on species which may be important predators and prey of pollock.

Other objectives, designed to provide a background for future studies, included comparison of abundance of prey inside and outside the larval patch and a description of the temporal changes in nutrient and chlorophyll concentrations.

Six oceanographic cruises, two current meter mooring cruises plus FOX 85 I to FOX 85 IV, were conducted between August 1984 and August 1985. Operations during these cruises included the deployment of ten current meter and bottom pressure moorings; the collection of 563 water samples for nutrient analysis and 344 for chlorophyll measurements; 449 zooplankton and 144 microzooplankton samples; the acquisition of CTD data from 324 stations; and 40 atmospheric radiosonde observations in support of aircraft operations. Sampling locations varied according to the specific objectives of each cruise and are detailed in the ship operations and CTD logs. A master station grid was established for FOX 85 I to provide a baseline for future studies. Parts of this grid were sampled during most cruises to establish a time-series of measurements at critical locations. The master station grid is illustrated in Figure 1 and positions are given in Appendix A. Figure 1 also shows current meter mooring locations during 1985.

Nine flights were made with the NOAA WP-3D aircraft to study meteorological conditions in Shelikof Strait and along the southern coast of Alaska. Ancillary meteorological data were collected from three land-based

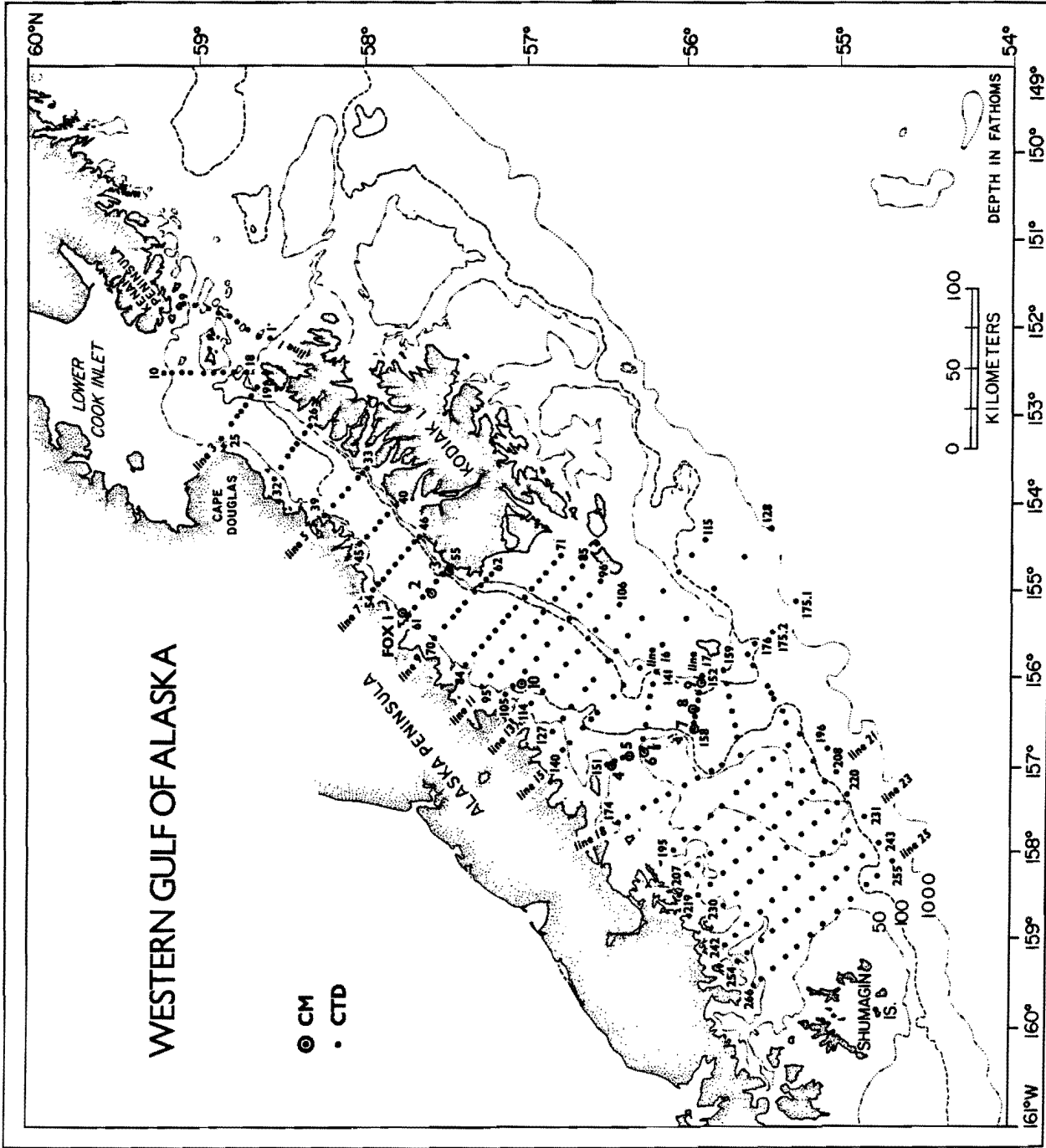


Figure 1.--FOX 85 CTD station grid and current meter locations.

platforms southwest of Shelikof Strait (an OCSEAP program); ship weather logs, and NWS and FAA observations. Satellite data (infrared, visible, and coastal zone color scanner) are being acquired.

While most of the work of FOX 85 progressed as expected, we were surprised not to find any significant numbers of larvae during the FOX 85 III cruise (the first "larval" cruise). Eggs were abundant at the anticipated time and location during the FOX 85 II cruise, so the absence of eggs or larvae just 20 days later is in dramatic contrast to past experience and presents a significant and challenging research problem. A cooperative Soviet research cruise which encompassed the period of FOX 85 III and covered a much larger area (with a wider station spacing) corroborated our findings that larvae were scarce over a fairly large area. The Soviet cruise extended from east of Kodiak Island to Unimak Pass and from near shore (3 miles) to the shelf edge. The apparent larval disappearance in the study area (or transport off-shelf) eliminated the need for a second larval cruise, and this cruise was not conducted. All other work proceeded according to schedule. In total, there were six cruises with physical, chemical and biological sampling on four cruises and deployment and recovery of current meters and pressure gauges on three. The meteorological studies involved nine airplane flight-days and forty radiosonde launches during one cruise (FOX 85 I).

This data report summarizes sampling activities during Fiscal Year (FY) 1985.

2. FOX 85 SHIP AND AIRCRAFT ACTIVITIES

2.1. FOX 85 Ship Activities ^{1,2}

Vessel, Cruise, Dates	Research Activities								
	N	C	B-60	B-20	MZ	CTD	T	MWT	OTHER
NOAA <i>Fairweather</i> , RP-22-FA-84 20-24 Aug 84 (mooring deployment)						31			Deploy 35 current meters and 6 pressure gauges at 9 mooring stations
USCG <i>Firebush</i> , 14-17 Jan 85 (mooring deployment/ recovery)									Retrieve 15 current meters and 2 pressure gauges at 3 mooring stations. Deploy 2 current meters at 1 mooring station
NOAA <i>Discoverer</i> , RP-22-DI-85 11 Mar - 2 Apr 85 (FOX 85 I)	25 (184)	24 (172)	71		13 (78)	189			40 airsondes; 9 Tucker trawls for the International Pacific Halibut Commission
NOAA <i>Miller Freeman</i> , MF-85-04 1-12 Apr 85 (FOX 85 II)	9 (90)		13	103 (206)		29	5 (21)	1	
NOAA <i>Miller Freeman</i> , MF-85-06 1-12 May 85 (FOX 85 III)	14 (141)	8 (63)	147		12 (78)	42			
NOAA <i>Discoverer</i> , RP-22-DI-85 24-28 July 85 (FOX 85 IV)	14 (139)	14 (108)	11			36			Retrieve 20 current meters and 6 pressure gauges at 7 mooring stations
TOTAL	62 (554)	46 (343)	242	103 (206)	25 (156)	327	5 (21)	1	

¹ Numbers are of stations sampled; numbers of samples are the same unless given in parentheses

² N = nutrients; C = chlorophyll; B-60 = 60 cm bongo (plankton) tow; B-20 = 20 cm bongo tow; MZ = microzooplankton sample; CTD = Conductivity/Temperature/Depth Cast; T = Tucker trawl; MWT = midwater trawl

2.2 FOX 85 Aircraft Activities

- Flight #1 850303 JD62¹ Survey flight #1: Kenai Peninsula
- a) Variations in the low-level wind field: mountain wall vs. gap and nearshore vs. offshore including one vertical stack oriented perpendicular to the coast, SST² and AXBT³ mapping.
 - b) Weather: offshore winds with a low-pressure center at Queen Charlotte Islands.
- Flight #2 850306 JD65 Survey flight #3: Alaska Peninsula
oceanography - ABORTED
- a) Never descended from ferry altitude.
- Flight #3 850310 JD69 Survey flight #3: Alaska Peninsula
oceanography.
- a) Nearshore SST and AXBT mapping, winds through mountain gaps, and the response of ocean temperature to gap winds.
 - b) Weather: offshore winds on south side of Alaska Peninsula with a low-pressure center over the Kenai Peninsula.
- Flight #4 850312 JD71 Comma cloud flight
- a) Structure and dynamics within a developing comma cloud system via aircraft profiling and an ODW⁴ survey.
 - b) Weather: 500 mb temperatures near -50°C, intense low-level convection.
- Flight #5 850314 JD73 Storm/coast interaction - Gulf of Alaska
- a) Vertical and horizontal, nearshore and offshore structure of a storm as it encounters a mountainous coastline, ODW survey.
 - b) Weather: low-pressure system in the Gulf of Alaska moving toward Yakutat (in southeast Alaska).

¹ JD - Julian Day

² SST - Sea-Surface Temperature

³ AXBT - Aircraft eXpendable BathyThermograph (ocean temperature vs. depth)

⁴ ODW - Omega DropWindsonde (atmospheric profiles)

- Flight #6 850320 JD79 Oceanography flight - Shelikof Strait
- a) SST and AXBT surveys of southwest Shelikof Strait and the Strait exit region including the expanded wavelike feature where Gulf of Alaska water mixes with Cook Inlet water, low-level winds.
 - b) Weather: low-pressure center south of flight area, mostly cloudy with some cloud breaks in the Strait and occasional showers where the flow down the Strait met the large-scale onshore flow.
- Flight #7 850323 JD82 Survey flight #2: Alaska Peninsula meteorology
- a) Near-shore wind modification on the south side of the Alaska Peninsula, low-level winds and vertical stacks oriented perpendicular to the coast.
 - b) Weather: low-pressure center in the central Gulf of Alaska, winds light near Unimak Pass and offshore near Shelikof Strait.
- Flight #8 850328 JD87 Meteorology - Shelikof Strait
- a) Vertical and horizontal characteristics of Shelikof Strait gap winds via five vertical stacks oriented parallel or perpendicular to the Strait.
 - b) Weather: low-pressure center south-southwest of flight area, the pressure gradient was approximately aligned with the axis of the Strait.
- Flight #9 850329 JD88 Storm/coast interaction - Gulf of Alaska
- a) Vertical and horizontal, nearshore and offshore structure of a storm as it encounters a mountainous coastline, ODW survey.
 - b) Weather: low-pressure system in the Gulf of Alaska moving toward Yakutat.

3. MATERIALS AND METHODS

3.1 Shipboard Sampling

General

There were four cruises that conducted sampling for FOX during FY 1985 (designated as FOX 85 I through IV). There were two additional cruises to deploy and/or retrieve current meter moorings. The vessels, dates, and activities of all these cruises are summarized in section 2.1 and details of the sampling conducted during each cruise are given in section 4.

Meteorological Surface Observations

Ship personnel conducted hourly measurements of surface meteorological variables during all cruises. Sea-level pressure was determined from an aneroid barometer, air temperature and wet-bulb temperature from sling psychrometer readings on the upwind bridge wing, wind speed and direction from a Bendix-Friez aerovane mounted on the mast head, and sea-surface temperature from the ship's seawater-intake port or bucket thermometer. All sensors were calibrated before each cruise by the Seattle National Weather Service port meteorological officer; calibrations are traceable to the National Bureau of Standards. Additional estimates of visibility, cloud type, wave and swell height and direction were made when possible.

Radiosondes

During FOX 85 I we routinely (nominally daily at 00 and 12 GMT) sampled the vertical atmospheric temperature and humidity structure. Each sounding was made by an expendable, lightweight airsonde™ bearing an aneroid pressure capsule and dry- and wet-bulb aspirated thermistors. A 100-g helium-filled balloon carried the sonde aloft at a rate of about 200 m min⁻¹ to an altitude

of 3 to 9 km. As it ascended, the sonde radioed a frame of data (pressure, temperature, wet-bulb temperature) every 5 seconds to an Atmospheric Instrumentation Research, Inc. model TS-2AR receiver/computer/data logger. Appendix B contains a list of ascent times and locations.

CTD

Three CTD transects were conducted during the NOAA Ship FAIRWEATHER mooring deployment cruise in August 1984. Each transect had a station spacing of 5 km and followed a line formed by the current meter arrays. The CTD used was a 1500 m Grundy Model 9041.

The FOX 85 I cruise on the NOAA Ship DISCOVERER included 189 CTDs on the grid shown in Figure 1. The temperature sensor on the 1500 m CTD failed on the fourth cast so a 6000 m Grundy Model 9041 was used for the remainder of the cruise.

FOX 85 cruises II and III were conducted aboard the NOAA Ship MILLER FREEMAN. The CTD instrument used was a 1500 m Grundy Model 9040/9041. Calibration bottles were not collected to calibrate the CTD for FOX 85 II or III and the conductivity data was noisy.

CTD locations for each cruise are shown in the ship cruise summary section 4.

Nutrients and Chlorophyll

Nutrient and chlorophyll samples were obtained from 10-l Niskin bottles deployed with a rosette sampler/CTD system and tripped at 0, 5, 10, 20, 30, 50, 75, and 100-m depths. Additional nutrient samples were taken below 100 m, usually at 50-m intervals. The deepest samples were taken approximately 15 m from the bottom.

Nutrient samples were frozen in 250-ml aged polyethylene bottles and returned to the laboratory where they were analyzed on a Technicon Auto Analyzer™ II. Chlorophyll samples (100 ml) were filtered at sea through 0.45-micrometer Millipore HA acetate filters. Filters were placed in 10 ml of 85% acetone in polyethylene storage vials and kept in the dark until laboratory analysis ashore (Phinney and Yentsch, 1985).

Plankton

Microzooplankton were sampled with 10-l Niskin bottles tripped at 0, 10, 20, 30, 40 and 50 m. Water was filtered through 60-micrometer mesh filter bags that were inverted and flushed into storage jars with 3% buffered formalin.

Net plankton (including ichthyoplankton) were sampled with 333-micrometer mesh nets. A 60-cm (diameter) bongo collector (Posgay and Marak, 1980) was the most widely used equipment. During FOX 85 II, 20-cm bongo collectors were used for collecting eggs, but zooplankton collections still were made with a 60-cm frame. A 1-m Tucker trawl (Clarke, 1969) also was used for vertical distribution samples during FOX 85 II.

Bongo nets were towed according to MARMAP procedures (Smith and Richardson, 1977) except that the tows were made to near bottom where bottom depths were less than 300 m. The few tows taken over deeper water generally did not sample below 300 m. Wire angles were monitored throughout all tows and a bathykymograph (BKG) calibrated against the CTD system was used to monitor the depth and trajectory of bongo tows taken during FOX 85 II and III. Volume filtered by the nets was estimated using a General Oceanics flowmeter mounted inside the mouth of each net. Samples were stored in 3% buffered formalin.

3.2 Moored Instruments

During August 1984, nine current meter moorings were deployed at the positions given in Table 1 and shown in Figure 1. The configuration of each mooring is illustrated in Figures 2a and b. Rotor revolutions were related to current speed by ratios of 4 to 1 or 8 to 1. All the meters had a one hour sampling interval. Bottom pressure gauges were mounted on selected moorings.

Moorings 1 through 9 were deployed in August 1984. With intense fishing in the vicinity of the Shelikof Strait moorings during February and March, local representatives of the joint-venture fishery suggested that nets could be fouled on the moorings resulting in loss of equipment and data and a disruption in fishing. These three moorings (numbers 1-3) were recovered in January 1985, and one mooring (number 10) was deployed in the Strait west of the most highly fished areas. This work was accomplished due to the cooperation of the United States Coast Guard, in particular LCDR Charles A. Farnsworth (Commanding Officer of the USCGC FIREBUSH) and his officers and crew. The seven moorings were recovered in July 1985 during FOX 85 IV.

3.3 Aircraft Sampling

The NOAA WP-3D aircraft (NOAA-43) collected flight-level data at a rate of once-per-second. Measurement and calibration procedures are summarized here from Merceret and Davis (1981) and Merceret *et al.* (1983).

Latitude, longitude, wind speed and wind direction were computed from the Omega-aided inertial navigation system. The position is determined to within one minute of one degree. Since there were no turns during the legs, the horizontal wind components are accurate to $\pm 1 \text{ m s}^{-1}$ and the vertical wind is accurate to $\pm 1.5 \text{ m s}^{-1}$. These are median absolute errors based upon tower

Table 1.--FOX 85 current meter mooring locations.

Mooring No.	Latitude (N)	Longitude (W)	Depth (m)	Dates (GMT)	
				Deployed (YYMMDD)	Recovered (YYMMDD)
1	57°43.5'	155°15.5'	260	840822	850116
2	57°35.7'	155°00.5'	234	840822	850116
3	57°30.4'	154°46.5'	235	840823	850115
4	56°26.8'	156°59.0'	74	840824	850726
5	56°21.0'	156°54.0'	125	840824	850726
6	56°16.8'	156°49.2'	94	840824	850726
7	55°57.0'	156°36.0'	200	840824	850725
8	55°56.4'	156°21.6'	222	840825	850725
9	55°54.6'	156°09.0'	184	840825	850725
10	57°00.0'	156°10.2'	120	850117	850727

FOX 85 MOORING ARRAYS

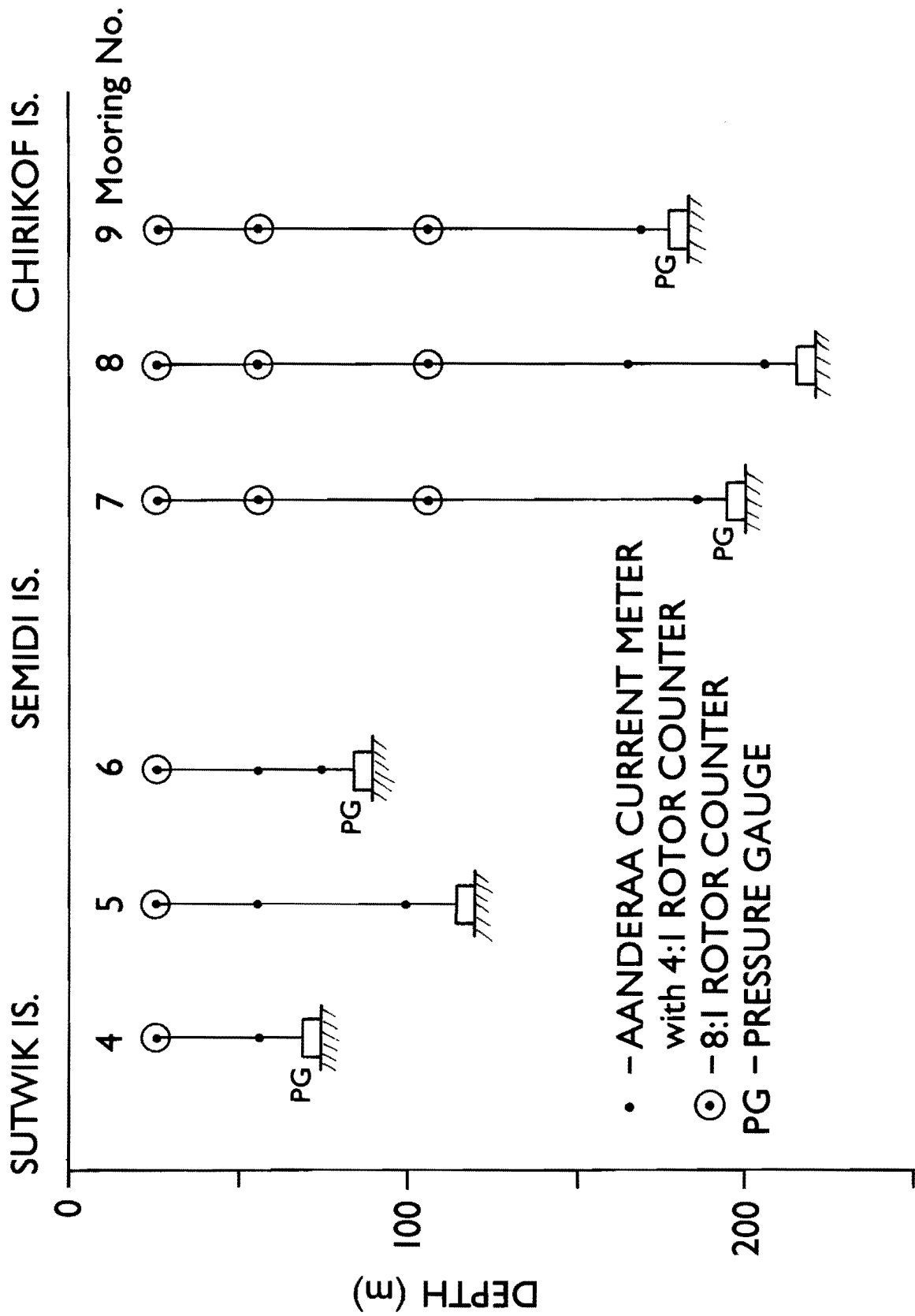


Figure 2a.--FOX 85 current meter mooring configurations.

FOX 85 MOORING ARRAYS
SHELIKOF STRAIT

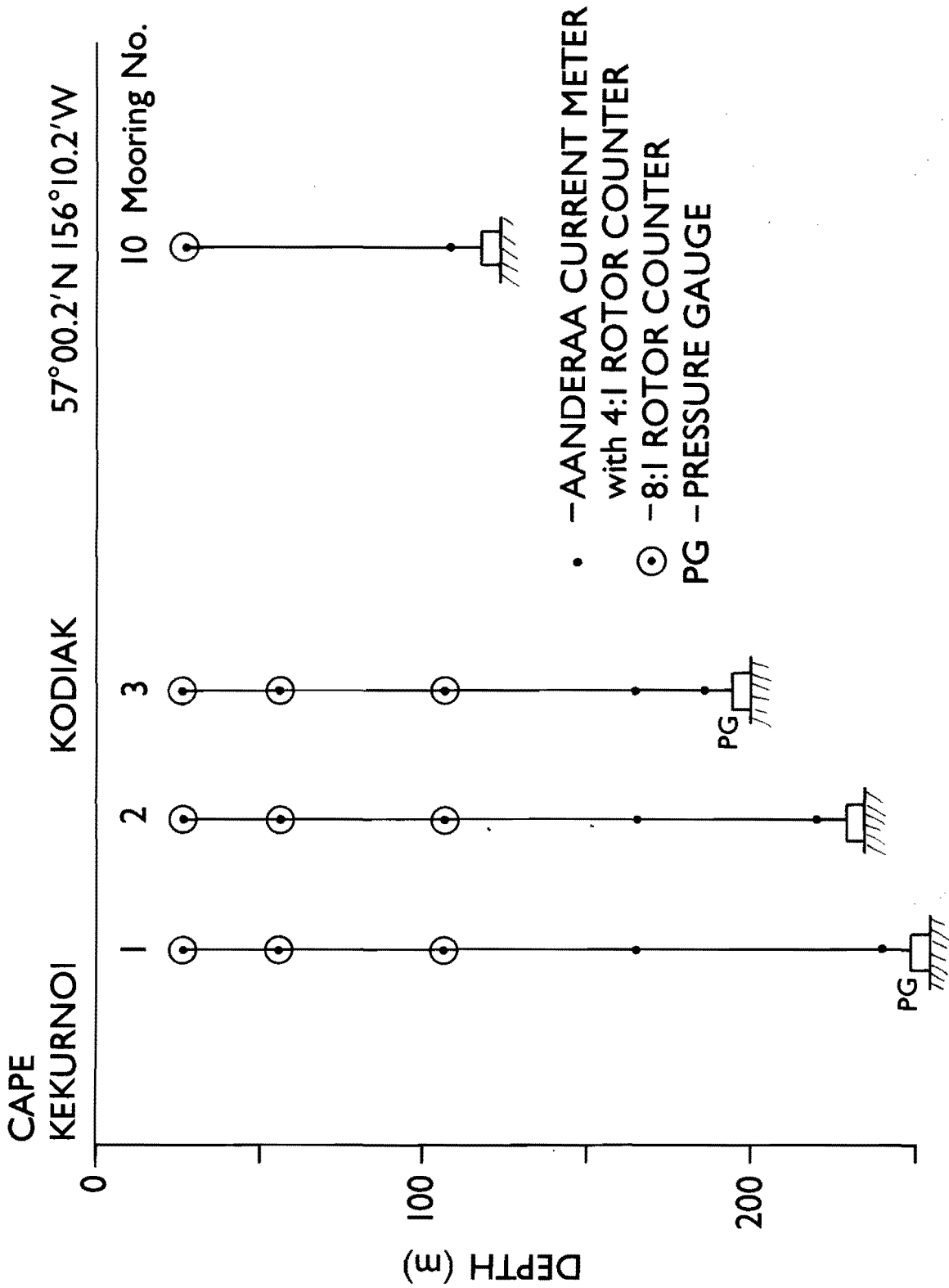


Figure 2b.---FOX 85 current meter mooring configurations.

flybys and accumulated positive errors over a flight (Merceret, 1983). It assumes in-flight calibration to remove heading-dependent errors and no serious errors in Omega updating during the flight.

Air temperature was measured by a platinum resistance thermometer corrected for compressibility and exposure effects with an accuracy of $\pm 0.2^{\circ}\text{C}$. The error may be greater in very wet environments.

Dew point was measured by a platinum resistance thermometer embedded in a thermoelectrically cooled mirror. The mirror temperature was automatically adjusted until dew formed on its surface. The error in dewpoint temperature is about 1°C .

A radar altimeter measured the radar altitude with an error of ± 3 to 15 m.

The temperature of the sea surface was measured by a downward-looking Barnes precision radiation thermometer (PRT-5), an infrared radiometer with a window of 9.5-11.5 μm . The measurement error is $\pm 2^{\circ}\text{C}$ or up to $\pm 10^{\circ}\text{C}$ when there are clouds in the optical path between the radiometer and the sea surface. Errors can also be introduced during partly cloudy conditions, because the PRT-5 also records sky reflectance from the sea surface (K.B. Katsaros, University of Washington, Seattle, WA, personal communication, 1982). For this reason, a separate upward-looking PRT-5 recorded the sky temperature.

The accuracy of the surface pressure is ± 1 or 2 mb if the flight altitude was less than 500 m.

Vertical atmospheric profiles of wind, temperature, and moisture were measured with Omega dropwindsondes (ODW; free-falling, expendable probes launched from the aircraft).

Vertical oceanic profiles of temperature were measured with aircraft-expendable bathythermographs (AXBT). These instruments, too, were launched from the airplane, and fell to the ocean surface. A water-activated transmitter and a hard-wired, descending thermistor radioed ocean temperature to a receiver on the plane.

There were four 16-mm cameras that took visual photographs at a rate of 1 frame per 5 seconds. The cameras faced forward, downward, and out both sides of the aircraft.

3.4 Satellite Imagery

Infrared and Coastal Zone Color Scanner (CZCS) imagery (photographs and digital tapes) from the NOAA-6, NOAA-9, and Nimbus-7 polar orbiting satellites is being ordered from NOAA/NESDIS. The infrared images are available for most of the duration of the experiment but the CZCS imagery is intermittent with a total of 9 images ordered for the following dates: 24 March, 30 March, 4 April, and 8 April, 1985.

4. SHIP CRUISE SUMMARIES

This section provides a brief summary of the objectives and activities of each cruise. A figure illustrating the position of CTD casts is given for each cruise. In general, all other measurements were made at a subset of the CTD stations. During FOX 85 II and III, sampling of plankton was much more extensive than CTD sampling; for these cruises an additional figure shows the plankton sampling stations. Details of all sampling activities are provided in the operations and CTD logs for each cruise in Tables 3-6.

The CTD logs are listed separately in a format compatible with the R2D2 (Pearson, 1981) CTD data analysis routines used at PMEL. Geographical positions are reported as degrees and minutes (to two decimal places) on operations logs and as degrees (to two decimal places) on CTD logs. Date is in Julian days in the CTD logs.

Notations used in ship logs:

B-20 = 20 cm bongo net tow

B-60 = 60 cm bongo net tow

C - chlorophyll

Cast No. - refers to consecutive CTD casts

Cruise Sta. No. - refers to consecutive operations. Multiple samples from devices such as the EMPS are given letter designations, such as 104A, 104B, etc.

CTD - conductivity and temperature with depth

FOX Sta. No. - station number on the master FOX grid (Figure 1 and Appendix A)

GMT - Greenwich Mean Time

Line No. - line number on master FOX grid (Figure 1) except where otherwise noted

Master Reference No. refers to the accessing system for R2D2 (Pearson, 1981) computer data processing at PMEL

MZ - microzooplankton

N - nutrients

T - Tucker trawl

4.1 FOX 85 Mooring Deployment

Scientific Party: T. Jackson (Chief Scientist), PMEL
R. Miller, PMEL

The FOX mooring deployment cruise was conducted aboard the NOAA Ship FAIRWEATHER from 20-24 August 1984. The principal objective was to deploy 9 moorings in the study area. CTD data were collected to compare with current meter sensors and to provide sections of physical properties (Figure 3 and Table 2). There were digitizer problems and the CTD data for this cruise are uncorrected.

Based on the hypothesis that transport along the Alaska Peninsula is favorable for larval survival, three sections consisting of three moorings each were located in the region of intense spawning (southwestern end of Shelikof Strait), between Sutwik Island and the Semidi Islands, and between the Semidi Islands and Chirikof Island (Figures 2a and b). Pressure gauges were deployed on the two outer moorings of each of the sections. This design permits estimation of transport through Shelikof Strait which should be balanced by the sum of transport along the coast and seaward through the sea valley. The pressure gauge data will permit estimation of along- and across-sea-valley pressure differences. Current meters were nominally located at 26, 56, 106 and 156 m depths (except where the bottom depth was less than 156 m), and a near-bottom current meter was located 15 m above the bottom.

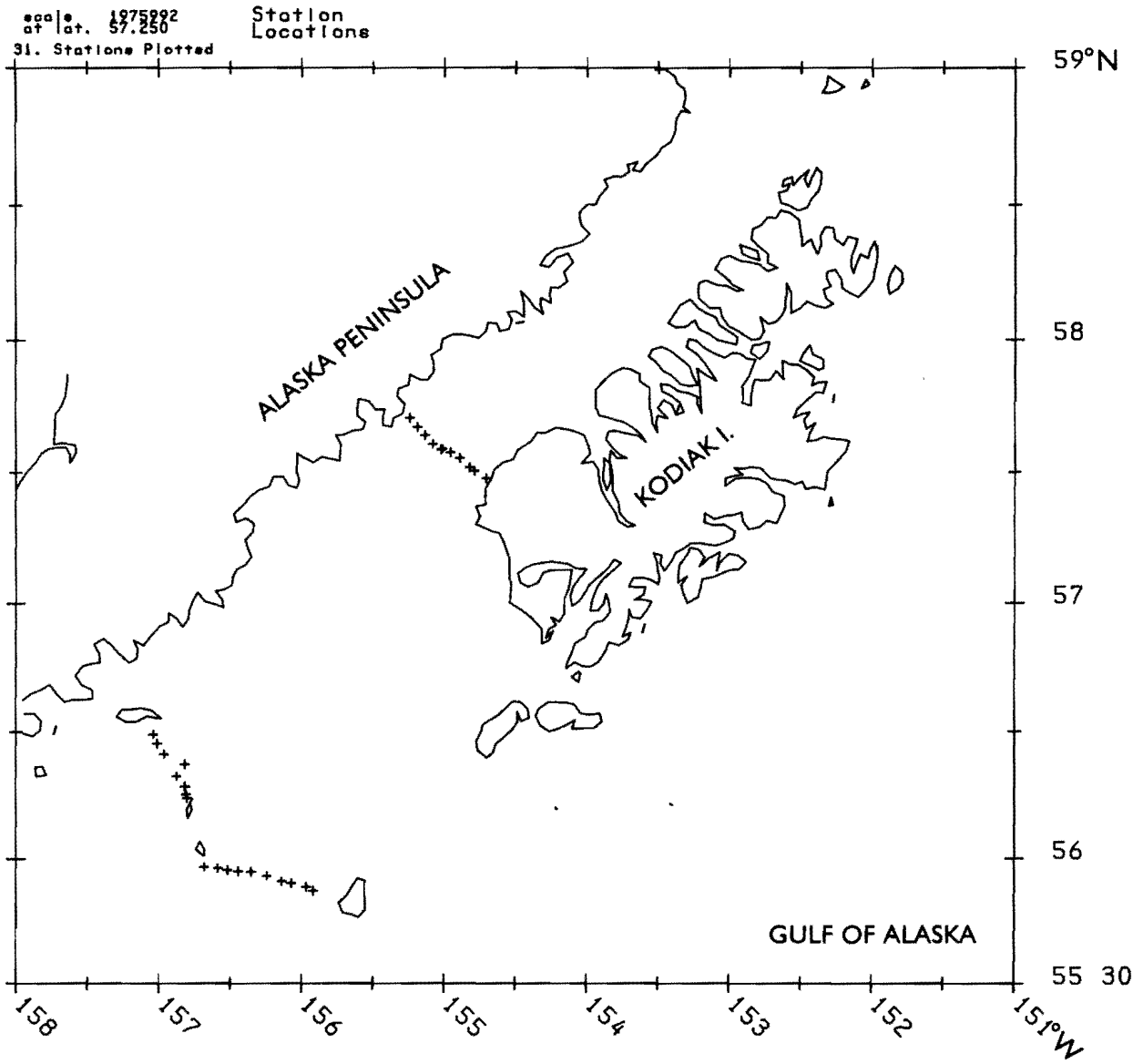


Figure 3.--Location of CTD casts conducted during the FOX 85 mooring deployment cruise.

Table 2.--FOX 85 mooring deployment - CTD log

Line No.	CTD Cast No.	FOX Sta. No.	Lat (N)	Long (W)	Date-Time (GMT)	Master Reference No.
8	1	1	57.48°	154.71°	842350533	6386
8	2	2	57.51°	154.79°	842350629	6387
8	3	3	57.52°	154.82°	842350719	6388
8	4	4	57.55°	154.89°	842350810	6389
8	5	5	57.58°	154.96°	842350922	6390
8	6	6	57.59°	155.01°	842351021	6391
8	7	7	57.61°	155.08°	842351206	6392
8	8	6	57.59°	155.02°	842351304	6393
8	9	8	57.64°	155.13°	842351359	6394
8	10	9	57.67°	155.19°	842351446	6395
8	11	10	57.71°	155.24°	842351531	6396
8	12	10	57.71°	155.24°	842351722	6397
16	13	12	56.24°	156.80°	842360928	6398
16	14	13	56.25°	156.81°	842361011	6399
16	15	14	56.28°	156.82°	842361056	6400
16	16	14	56.28°	156.82°	842361130	6401
16	17	15	56.32°	156.88°	842361216	6402
16	18	16	56.37°	156.82°	842361252	6403
16	19	17	56.41°	156.96°	842361331	6404
16	20	18	56.45°	157.01°	842361413	6405
16	21	19	56.49°	157.04°	842361502	6406
17	22	20	55.87°	155.92°	842370255	6407
17	23	21	55.89°	155.97°	842370325	6408
17	24	22	55.90°	156.07°	842370400	6409
17	25	23	55.91°	156.14°	842370447	6410
17	26	24	55.93°	156.25°	842370529	6411
17	27	25	55.95°	156.35°	842370613	6412
17	28	26	55.95°	156.45°	842370706	6413
17	29	27	55.95°	156.52°	842370746	6414
17	30	28	55.96°	156.59°	842350939	6415
17	31	29	55.97°	156.68°	842371026	6416

4.2 FOX 85 Mooring Recovery/Deployment

Scientific Party: J. Schumacher (Chief Scientist), PMEL
W. Parker, PMEL

The second cruise of FOX 85 was conducted aboard the USCGC FIREBUSH from 14 to 17 January, 1985. The objective of this cruise was to remove the three moorings in southwestern Shelikof Strait and redeploy one mooring off Wide Bay. Representatives of commercial fishing interests for the joint venture fishery in Shelikof Strait noted that the three moorings in Shelikof Strait were in jeopardy of being trawled. This would impact both the scientific objectives of FOX and interfere with fishing operations. It was decided that the best course of action was to remove the three moorings. This was made possible through the cooperation of the USCG, and, in particular, the captain and crew of the FIREBUSH. Future moorings in Shelikof Strait proper should be limited to the vicinity of Cape Kekurnoi. This location was felt to be the most secure during fishing operations. In the future, the better alternative may be the use of bottom-mounted acoustic doppler current profilers.

4.3 FOX 85 I

Scientific Party: J. Schumacher (Chief Scientist), PMEL
A. Roach, PMEL
S. Maupin, NWAFC
F. Hoelzl, ERL
K. Parker, IPHC
P. Hagen, IPHC

The third FOX cruise was conducted aboard the NOAA Ship DISCOVERER from 11 March to 2 April 1985. The principal objective was to characterize meteorological, oceanographic, and biological conditions during the time when pollock are spawning. A "piggy-back" objective was to conduct sampling for halibut larvae in support of the International Pacific Halibut Commission (K. Parker and P. Hagen). The Public Affairs Office of ERL sent F. Hoelzl to document FOX operations.

Based on previous data from Shelikof Strait, a CTD station grid was designed to permit resolution of small-scale (order 10 km) wave-like features which propagate along-strait (Mysak *et al.*, 1981), and to identify water mass characteristics which vary along-strait due to the different characteristics of water contributions from Lower Cook Inlet, the Alaska Coastal Current, and continental slope waters. CTD data were collected at 189 stations between line 1 and 19 (Figure 4 and Table 3b), with nutrient samples collected at 25 stations, chlorophyll samples at 24 stations, and bongo tows at 71 stations (Table 3a). In support of aircraft operations, 40 radiosondes were released at the rate of two per day except when flights were being conducted. Positions and surface meteorological data at the time of radiosonde releases are given in Appendix C.

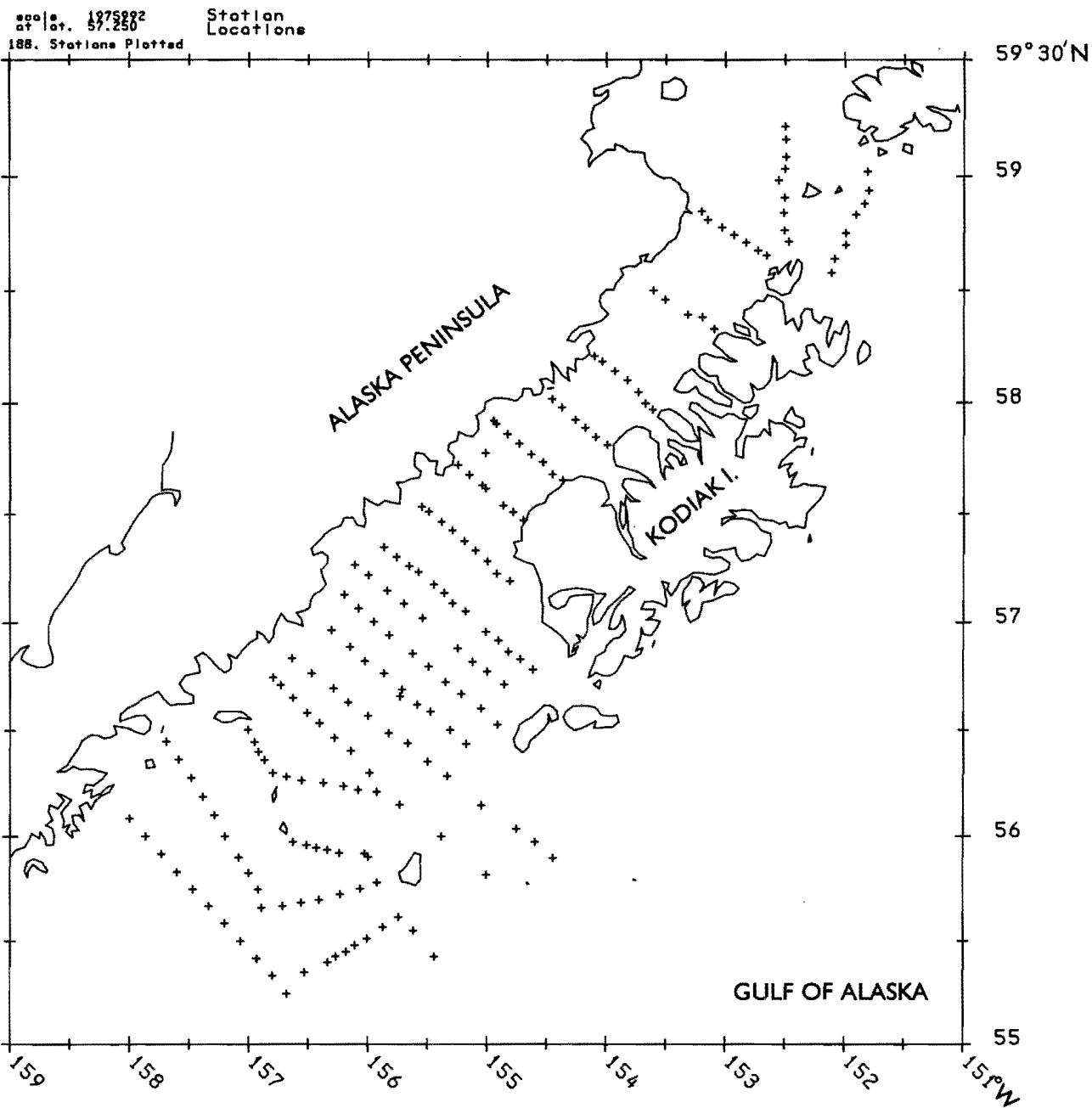


Figure 4.--FOX 85 I CTD station locations.

Table 3a.--FOX 85 I - Operations log

Line No.	Cruise Sta. No.	FOX Sta. No.	Lat (N)	Long (W)	Operations				
1	2	2	58°38.3'	152°05.6'	B-60 CTD				
1	3	3	58°41.2'	151°59.0'	B-60 CTD		N		C
1	5	5	58°48.6'	151°56.6'	B-60 CTD				
1	5	5	58°48.5'	151°58.6'	B-60				
1	7	7	58°55.7'	151°47.9'	B-60 CTD	MZ	N		C
1	7	7	58°53.9'	151°47.5'	B-60				
1	8	8	59°00.7'	151°50.6'	B-60 CTD				
1	9	9	59°03.4'	151°46.1'	B-60 CTD	MZ	N		C
2	11	11	59°09.0'	152°28.5'	B-60 CTD				
2	14	14	58°58.4'	152°31.6'	B-60 CTD	MZ			
2	16	16	58°50.4'	152°30.7'	B-60 CTD				
2	18	18	58°42.5'	152°30.9'	B-60 CTD	MZ			
3	19	19	58°39.8'	152°37.7'	B-60 CTD				
3	20	20	58°40.5'	152°43.6'	CTD		N		C
3	21	21	58°42.5'	152°48.9'	B-60 CTD				
3	22	22	58°44.0'	152°55.7'	CTD	T	MZ	N	C
3	24	24	58°48.2'	153°07.3'	B-60 CTD				
3	25	25	58°50.4'	153°12.0'	B-60 CTD	MZ	N		C
4	32	32	58°31.5'	153°39.8'	B-60 CTD	MZ			
4	29	29	58°25.2'	153°26.3'	B-60 CTD	MZ			
4	26	26	58°20.0'	153°11.5'	B-60 CTD				
5	34	34	57°59.9'	153°40.3'	CTD			N	C
5	36	36	58°06.5'	153°49.4'	CTD	MZ	N		C
5	38	38	58°11.0'	154°02.0'	CTD			N	C
5	39	39	58°12.5'	154°06.0'	CTD	MZ	N		C
6	45	45	58°01.1'	154°26.5'	B-60 CTD				
6	43	43	57°55.8'	154°17.4'	B-60 CTD				
6	41	41	57°51.4'	154°05.5'	B-60 CTD				
8	61	61	57°42.4'	155°14.5'	B-60 CTD	MZ	N		C
8	60	60	57°41.2'	155°11.0'	B-60 CTD			N	C
8	59	59	57°38.4'	155°04.2'	B-60 CTD				
8	58	58	57°34.0'	155°00.5'	B-60 CTD	MZ	N		C
8	57	57	57°33.2'	154°52.8'	B-60 CTD				
8	56	56	57°30.9'	154°46.9'	B-60 CTD			N	C
8	55	55	57°28.7'	154°42.0'	B-60 CTD				
9	62	62	57°12.0'	154°49.1'	B-60 CTD				
9	64	64	57°16.6'	155°02.3'	CTD	T			
9	64	64	57°17.0'	155°03.2'		T is lost			
9	65	65	57°19.4'	155°06.1'	B-60 CTD				
9	68	68	57°26.9'	155°24.0'	B-60 CTD				
9	70	70	57°32.9'	155°32.4'	B-60 CTD				
10	80	80	57°11.4'	155°27.2'	B-60 CTD				
10	71	71	56°46.7'	154°36.3'	B-60 CTD				
10	76	76	57°00.2'	155°07.4'	B-60 CTD				
10	84	84	57°21.1'	155°52.7'	B-60 CTD				
11	92	92	57°05.2'	155°42.0'	CTD			N	C
11	87	87	56°45.7'	155°00.2'	CTD	T			

Table 3a.--FOX 85 I - Operations log continued

Line No.	Cruise Sta. No.	FOX Sta. No.	Lat (N)	Long (W)	Operations			
11	86	86	56°41.4'	154°48.6'	CTD		N	C
12	97	97	56°35.7'	155°02.0'	B-60 CTD			
12	99	99	56°43.0'	155°20.7'	B-60 CTD			
12	102	102	56°55.8'	155°47.7'	B-60 CTD			
12	105	105	57°07.0'	156°11.2'	B-60 CTD			
13	114	114	56°58.2'	156°18.7'	B-60 CTD			
13	112	112	56°48.3'	155°58.6'	CTD	T		
13	111	111	56°45.9'	155°53.0'	B-60 CTD			
13	110	110	56°41.2'	155°42.8'	CTD	T		
13	108	108	56°34.5'	155°28.6'	B-60 CTD			
13	106	106	56°26.3'	155°12.3'	B-60 CTD			
14	116	116	55°59.3'	154°38.8'	CTD	T		
14	119	119	56°17.1'	155°20.2'	CTD		N	C
14	121	121	56°26.3'	155°40.1'	CTD		N	C
14	123	123	56°50.2'	156°38.4'	CTD		N	C
14	125	125	56°41.8'	156°17.8'	CTD		N	C
14	127	127	56°50.2'	156°38.4'	CTD		N	C
15	139	139	56°42.7'	156°43.8'	B-60 CTD			
15	135	135	56°28.6'	156°17.9'	B-60 CTD			
15	132	132	56°08.2'	155°43.7'	B-60 CTD			
15	131	131	55°59.5'	155°22.3'	B-60 CTD			
15	130	130	55°48.4'	154°59.0'	B-60 CTD		N	C
15	129	129	55°36.2'	154°39.5'	B-60			
19	180	180	55°29.3'	156°05.3'	B-60 CTD			
19	181	181	55°25.6'	156°14.1'	CTD	T		
18	164	164	55°40.1'	156°41.6'	B-60 CTD			
18	162	162	55°41.8'	156°25.9'	B-60 CTD			
18	161	161	55°43.8'	156°16.1'	B-60 CTD			
18	159	159	55°46.4'	155°57.5'	B-60 CTD			
17	154	154	55°55.1'	156°14.2'	B-60 CTD		N	C
17	156	156	55°56.3'	156°25.4'	B-60 CTD			
17	157	157	55°57.6'	156°31.1'	CTD		N	
	T	T	56°05.3'	156°16.7'		T		
16	142	142	56°13.4'	156°03.4'	B-60 CTD			
16	144	144	56°15.0'	156°23.5'	B-60 CTD			
16	146	146	56°16.7'	156°39.4'	B-60 CTD			
16	148	148	56°21.0'	156°51.4'	B-60 CTD			
16	150	150	56°25.8'	156°56.9'	B-60 CTD			
18	168	168	55°53.2'	157°04.3'	B-60 CTD			
19	186	186	55°19.3'	156°47.5'	B-60 CTD			
19	188	188	55°29.6'	157°03.3'	B-60 CTD			
19	190	190	55°39.4'	157°19.4'	B-60 CTD			
19	192	192	55°49.4'	157°35.5'	B-60 CTD			
19	194	194	55°59.6'	157°51.5'	B-60 CTD			
19	195	195	56°04.4'	157°59.5'	B-60 CTD			
	T2	T2	55°59.0'	157°26.2'		T		
19	175.2	175.2	55°28.4'	155°30.4'	B-60 CTD		MZ	N C

Table 3b.--FOX 85 I - CTD log

Line No.	CTD Cast No.	FOX Sta. No.	Lat (N)	Long (W)	Date-Time ¹ (GMT)	Master Reference No.
1	1	1	58.58°	152.11°	850710414	6417
1	2	2	58.64°	152.09°	850710542	6418
1	3	3	58.70°	151.99°	850710742	6419
1	5	4	58.75°	151.99°	850711233	6420
1	6	5	58.83°	151.90°	850711405	6421
1	7	6	58.88°	151.84°	850711622	6422
1	8	7	58.94°	151.80°	850711744	6423
1	10	8	59.02°	151.81°	850720019	6424
1	12	9	59.05°	151.78°	850720300	6425
2	13	10	59.22°	152.50°	850720645	6426
2	14	11	59.16°	152.49°	850720745	6427
2	15	12	59.08°	152.49°	850720916	6428
2	16	13	59.03°	152.50°	850721011	6429
2	17	14	58.98°	152.55°	850721151	6430
2	18	15	58.91°	152.50°	850721316	6431
2	19	16	58.84°	152.51°	850721458	6432
2	20	17	58.76°	152.51°	850721618	6433
2	21	18	58.71°	152.46°	850721819	6434
3	22	19	58.65°	152.65°	850722005	6435
3	23	20	58.67°	152.73°	850722128	6436
3	24	21	58.71°	152.83°	850722300	6437
3	25	22	58.74°	152.93°	850730204	6438
3	27	23	58.78°	153.03°	850730345	6439
3	28	24	58.81°	153.15°	850730516	6440
3	29	25	58.85°	153.20°	850730616	6441
4	32	31	58.50°	153.60°	850731055	6442
4	33	30	58.46°	153.50°	850731154	6443
4	35	28	58.39°	153.31°	850731423	6444
4	36	27	58.38°	153.19°	850731529	6445
4	37	26	58.33°	153.09°	850731653	6446
5	38	33	57.97°	153.61°	850732202	6447
5	39	34	58.00°	153.67°	850732259	6448
5	40	35	58.05°	153.73°	850740033	6449
5	41	36	58.10°	153.82°	850740424	6450
5	43	37	58.14°	153.93°	850740640	6451
5	44	38	58.18°	154.03°	850740748	6452
5	45	39	58.21°	154.10°	850740900	6453
6	47	45	58.02°	154.46°	850741226	6454
6	48	44	57.98°	154.38°	850741341	6455
6	49	43	57.92°	154.26°	850741522	6456
6	50	42	57.89°	154.18°	850741616	6457
6	51	41	57.85°	154.09°	850741729	6458
6	52	40	57.81°	153.99°	850741820	6459

¹ Dates are Julian Dates

Table 3b.--FOX 85 I - CTD log continued

Line No.	CTD Cast No.	FOX Sta. No.	Lat (N)	Long (W)	Date-Time (GMT)	Master Reference No.
7	53	46	57.65°	154.37°	850742019	6460
7	54	47	57.68°	154.45°	850742119	6461
7	55	48	57.73°	154.53°	850742215	6462
7	56	49	57.77°	154.63°	850742311	6463
7	57	50	57.82°	154.73°	850750007	6464
7	58	51	57.86°	154.83°	850750119	6465
7	59	52	57.90°	154.93°	850750226	6466
7	60	53	57.92°	154.95°	850750250	6467
	61	54	57.78°	155.01°	850750424	6468
8	62	61	57.72°	155.25°	850750659	6469
8	64	60	57.67°	155.15°	850751005	6470
8	65	59	57.63°	155.04°	850751205	6471
8	66	58	57.61°	155.01°	850751412	6472
8	68	57	57.54°	154.87°	850751634	6473
8	69	56	57.51°	154.78°	850751807	6474
8	70	55	57.47°	154.70°	850751938	6475
9	71	62	57.19°	154.81°	850752142	6476
9	72	63	57.22°	154.92°	850752247	6477
9	73	64	57.28°	155.00°	860752357	6478
9	74	65	57.33°	155.10°	850760659	6479
9	75	66	57.38°	155.19°	850760802	6480
9	76	67	57.42°	155.29°	850760911	6481
9	77	68	57.46°	155.38°	850761054	6482
9	78	69	57.51°	155.49°	850761210	6483
9	79	70	57.53°	155.55°	850770251	6484
10	80	80	57.17°	155.45°	850770715	6485
10	81	79	57.13°	155.37°	850770846	6486
10	82	71	56.78°	154.62°	850772118	6487
10	83	72	56.83°	154.72°	850772217	6488
10	84	73	56.87°	154.82°	850772315	6489
10	85	74	56.92°	154.91°	850780007	6490
10	86	75	56.96°	155.01°	850780104	6491
10	88	77	57.05°	155.18°	850780527	6492
10	89	78	57.09°	155.29°	850780700	6493
10	90	81	57.24°	155.58°	850780926	6494
10	91	82	57.26°	155.66°	850781032	6495
10	92	83	57.30°	155.76°	850781136	6496
10	93	84	57.35°	155.87°	850781257	6497
11	94	95	57.27°	156.11°	850781444	6498
11	95	94	57.22°	156.00°	850781551	6499
11	96	93	57.15°	155.84°	850781713	6500
11	97	92	57.09°	155.70°	850781829	6501
11	98	91	57.02°	155.54°	850781959	6502
11	100	89	56.88°	155.25°	850782232	6503
11	101	88	56.82°	155.12°	850782330	6504
11	102	87	56.78°	155.00°	850790213	6505
11	103	86	56.72°	154.86°	850790326	6506
11	104	85	56.66°	154.73°	850790432	6507

Table 3b.--FOX 85 I - CTD log continued

Line No.	CTD Cast No.	FOX Sta. No.	Lat (N)	Long (W)	Date-Time (GMT)	Master Reference No.
12	105	96	56.53°	154.92°	850790603	6508
12	106	97	56.60°	155.05°	850790715	6509
12	107	98	56.67°	155.22°	850790820	6510
12	108	99	56.72°	155.35°	850790944	6511
12	109	100	56.80°	155.49°	850791058	6512
12	110	101	56.86°	155.63°	850791204	6513
12	111	102	56.94°	155.82°	850791356	6514
12	112	103	57.00°	155.95°	850791557	6515
12	113	104	57.06°	156.09°	850791704	6516
12	114	105	57.13°	156.20°	850791811	6517
13	115	114	56.96°	156.31°	850792009	6518
13	116	113	56.89°	156.15°	850800249	6519
13	117	112	56.82°	156.03°	850800401	6520
13	118	111	56.76°	155.87°	850800659	6521
13	119	110	56.69°	155.72°	850800835	6522
13	120	109	56.62°	155.59°	850801039	6523
13	121	108	56.59°	155.48°	850801220	6524
13	122	107	56.50°	155.32°	850801337	6525
13	123	106	56.44°	155.18°	850801504	6526
14	124	115	55.90°	154.45°	850801931	6527
14	125	116	55.97°	154.60°	850802112	6528
14	126	117	56.03°	154.75°	850810008	6529
14	127	118	56.15°	155.05°	850810238	6530
14	128	119	56.28°	155.34°	850810452	6531
14	129	120	56.35°	155.50°	850810608	6532
14	130	121	56.44°	155.67°	850810721	6533
14	131	122	56.49°	155.83°	850810835	6534
14	132	123	56.57°	156.00°	850811000	6535
14	133	124	56.63°	156.16°	850811130	6536
14	134	125	56.70°	156.29°	850811235	6537
14	135	126	56.77°	156.48°	850811410	6538
14	136	127	56.84°	156.64°	850811534	6539
15	137	140	56.75°	156.80°	850811713	6540
15	138	139	56.71°	156.73°	850811808	6541
15	139	138	56.65°	156.63°	850811928	6542
15	140	137	56.58°	156.51°	850812037	6543
15	141	136	56.53°	156.41°	850812129	6544
15	142	135	56.46°	156.29°	850812320	6545
15	143	134	56.40°	156.15°	850820039	6546
15	144	133	56.30°	155.99°	850820158	6547
15	145	132	56.15°	155.74°	850820419	6548
15	146	131	56.00°	155.39°	850820636	6549
15	147	130	55.81°	155.01°	850820947	6550
19	148	177	55.61°	155.74°	850831824	6551
19	149	178	55.57°	155.87°	850831921	6552
19	150	179	55.51°	156.01°	850832022	6553

Table 3b.--FOX 85 I - CTD log continued

Line No.	CTD Cast No.	FOX Sta. No.	Lat (N)	Long (W)	Date-Time (GMT)	Master Reference No.
19	151	180	55.48°	156.11°	850832142	6554
19	152	181	55.45°	156.18°	850832228	6555
19	153	182	55.42°	156.27°	850840029	6556
19	154	183	55.40°	156.34°	850840117	6557
19	155	184	55.35°	156.54°	850840234	6558
18	156	164	55.67°	156.72°	850840512	6559
18	157	163	55.68°	156.56°	850840654	6560
18	158	162	55.70°	156.41°	850840837	6561
18	159	161	55.72°	156.23°	850841032	6562
18	160	160	55.75°	156.07°	850841140	6563
18	161	159	55.78°	155.93°	850841252	6564
17	162	152	55.90°	156.00°	850841416	6565
17	163	153	55.92°	156.03°	850841529	6566
17	164	154	55.92°	156.24°	850841702	6567
17	165	155	55.94°	156.34°	850841819	6568
17	166	156	55.95°	156.43°	850841938	6569
17	167	157	55.96°	156.52°	850842030	6570
17	168	158	55.97°	156.63°	850842145	6571
16	169	141	56.21°	155.93°	850850156	6572
16	170	142	56.22°	156.09°	850850353	6573
16	171	143	56.24°	156.21°	850850454	6574
16	172	144	56.25°	156.38°	850850636	6575
16	173	145	56.27°	156.56°	850851036	6576
16	174	146	56.28°	156.68°	850851141	6577
16	175	147	56.30°	156.80°	850851228	6578
16	176	148	56.36°	156.87°	850851341	6579
16	177	149	56.40°	156.92°	850851425	6580
16	178	150	56.44°	156.96°	850851530	6581
16	179	151	56.50°	157.01°	850851628	6582
18	180	174	56.45°	157.69°	850851850	6583
18	181	173	56.37°	157.59°	850852006	6584
18	182	172	56.28°	157.48°	850852112	6585
18	183	171	56.19°	157.39°	850852221	6586
18	184	170	56.10°	157.29°	850852333	6587
18	185	169	56.00°	157.20°	850860047	6588
18	186	168	55.90°	157.09°	850860237	6589
18	187	167	55.82°	157.00°	850860342	6590
18	188	166	55.75°	156.92°	850860441	6591
18	189	165	55.66°	156.89°	850860541	6592
19	190	185	55.24°	156.68°	850860811	6593
19	191	186	55.33°	156.80°	850861003	6594
19	192	187	55.42°	156.94°	850861118	6595
19	193	188	55.50°	157.07°	850861241	6596
19	194	189	55.58°	157.21°	850861402	6597
19	195	190	55.67°	157.34°	850861535	6598
19	196	191	55.75°	157.47°	850861651	6599

Table 3b.--FOX 85 I - CTD log continued

Line No.	CTD Cast No.	FOX Sta. No.	Lat (N)	Long (W)	Date-Time (GMT)	Master Reference No.
19	197	192	55.83°	157.60°	850861819	6600
19	198	193	55.92°	157.74°	850861920	6601
19	199	194	56.00°	157.87°	850862037	6602
19	200	195	56.08°	158.00°	850862203	6603
19	201	176	55.55°	155.62°	850870612	6604
19	202	175.2	55.42°	155.45°	850870941	6605

4.4 FOX 85 II

Scientific Party: A. Matarese (Chief Scientist), NWAFC
J. Clark, NWAFC
R. Bates, NWAFC
S. Kim, NWAFC

The FOX 85 II cruise was conducted aboard the NOAA Ship MILLER FREEMAN from 1-12 April. The principal objective was to chart and quantify the spatial distribution and abundance of pollock eggs spawned in Shelikof Strait. Plankton sampling locations are shown in Figure 5a and listed in Table 4a. Other objectives were to collect CTD data (Figure 5b and Table 4b), net zooplankton and nutrients at selected stations as a continuation of the FOX 85 time series; to describe the vertical distribution of eggs; and to sample the water column for vertebrate predators which might be ingesting eggs. The CTD data are of limited use because no temperature or salinity field corrections were made and the conductivity cell was noisy.

Based on planktonic sampling from previous years and on the distribution of spawning adults ascertained from several years of hydroacoustic surveys (including the present year), peak abundance of eggs was expected along the Alaska Peninsula side of the strait, roughly between Cape Kekurnoi and Cape Kuliuk. The plan was to sample this region intensively, sampling far enough to the northeast and southwest to permit an accurate depiction of the "patch" which we wished to follow for approximately 60-70 days (early April to early or middle June). A high abundance of eggs is easily ascertained by visual inspection of the net samples.

Plankton samples for collecting pollock eggs were taken with 20-cm bongo gear equipped with 333-micrometer mesh nets. A 60-cm bongo collector with nets and a standard weight was attached to the wire 1 m below the 20 cm collector. Nets on the 60-cm collector were not equipped with "cod end"

collectors except when separate zooplankton samples were desired. Nutrients were collected at selected stations (Table 4a).

Adverse wind and sea conditions prevailed during most of the cruise and this prevented deployment of the Electronic Multiple Plankton Sampler (EMPS), which was awkward to launch with the winch and conducting cable that were available. Some experimentation with deployment of this gear was made in the protected waters of Alitak Bay during the return trip to Kodiak.

A mechanical 1-meter Tucker trawl was deployed in the region of high egg abundance using the stern A-frame. There were 4 nets on the trawl and sampling was concentrated at depths greater than 100 m based on earlier findings. Five Tucker trawls were conducted over a 24-hr period near a vane-type drifter that was drogued at 200 m of line (most eggs are believed to be below 150 m). During this period a single diamond trawl was used to sample fish from depths where eggs were most abundant. Stomachs of the fish were examined for the presence of pollock eggs.

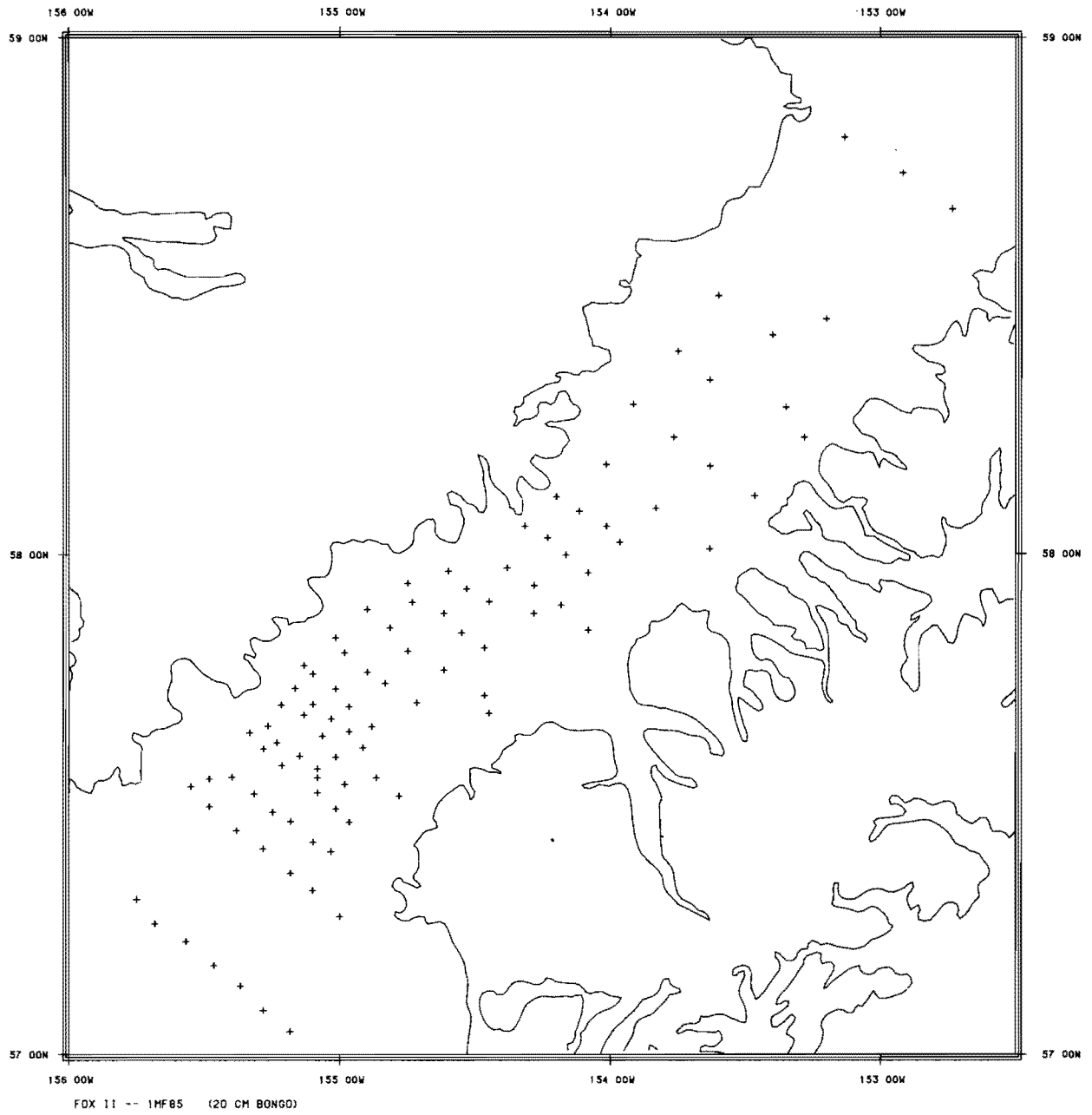


Figure 5a.--FOX 85 II Plankton station locations.

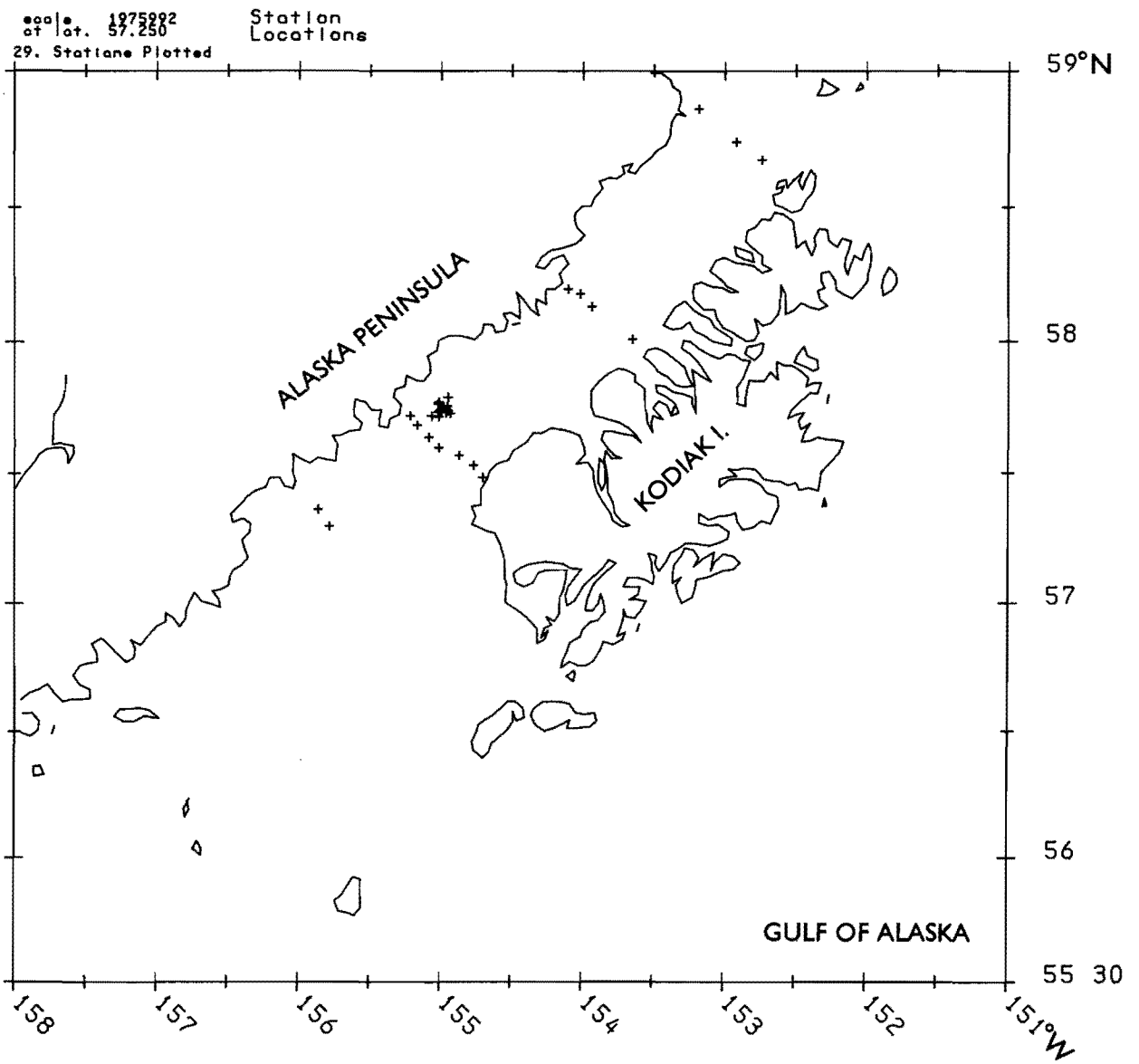


Figure 5b.--FOX 85 II CTD station locations.

Table 4a.--FOX 85 II - Operations log

Line No.	Cruise Sta. No.	FOX Sta. No.	Lat (N)	Long (W)	Operations			
3	1	20	58°40.4'	152°44.0'	B-20	B-60	N	CTD
3	2	22	58°44.5'	152°55.0'	B-20	B-60	N	CTD
	3		58°48.6'	153° 8.0'	B-20			
3	4	25	58°51.0'	153°13.0'	B-20	B-60		CTD
	5		58°30.3'	153°36.0'	B-20			
	6		58°25.7'	153°24.0'	B-20			
	7		58°27.6'	153°12.0'	B-20			
	8		58°13.8'	153°17.0'	B-20			
	9		58°17.3'	153°21.0'	B-20			
	10		58°20.5'	153°38.0'	B-20			
	11		58°23.9'	153°45.0'	B-20			
	12		58°17.6'	153°55.0'	B-20			
	13		58°13.8'	153°46.0'	B-20			
	14		58°10.4'	153°38.0'	B-20			
	15		58° 6.9'	153°28.0'	B-20			
5	16	34	58° 0.6'	153°38.0'	B-20	B-60	N	CTD
5	17	36	58° 5.4'	153°50.0'	B-20			
5	18	37	58° 7.9'	153°56.0'		B-60	N	CTD
5	19	38	58°10.6'	154° 1.0'	B-20		N	CTD
5	20	39	58°11.6'	154° 6.0'	B-20	B-60	N	CTD
	21		58° 6.8'	154°12.0'	B-20			
	22		58° 5.1'	154° 7.0'	B-20			
	23		58° 3.3'	154° 1.0'	B-20			
	24		58° 1.4'	153°58.0'	B-20			
	25		57°57.8'	154° 5.0'	B-20			
	26		57°59.9'	154°10.0'	B-20			
	27		58° 1.9'	154°14.0'	B-20			
	28		58° 3.3'	154°19.0'	B-20			
6	29	44	57°58.4'	154°23.0'	B-20			
6	30	43	57°56.3'	154°17.0'	B-20			
6	31	42	47°54.0'	154°11.0'	B-20			
6	32	41	57°51.0'	154° 5.0'	B-20			
	33		57°53.0'	154°17.0'	B-20			
	34		57°54.4'	154°27.0'	B-20			
	35		57°55.9'	154°32.0'	B-20			
	36		57°58.0'	154°36.0'	B-20			
	37		57°56.6'	154°45.0'	B-20			
	38		57°54.3'	154°44.0'	B-20			
	39		57°53.0'	154°37.0'	B-20			
	40		57°50.7'	154°33.0'	B-20			
	41		57°48.9'	154°28.0'	B-20			
7	42	48	57°43.2'	154°28.0'	B-20			
7	43	47	57°41.1'	154°27.0'	B-20			
7	44	49	57°46.2'	154°37.0'	B-20			
7	45	50	57°48.5'	154°45.0'	B-20			
7	46	51	57°51.3'	154°49.0'	B-20			
7	47	52	57°53.5'	154°54.0'	B-20			

Table 4a.--FOX 85 II - Operations log continued

Line No.	Cruise Sta. No.	FOX Sta. No.	Lat (N)	Long (W)	Operations		
	48		57°50.1'	155° 1.0'	B-20		
	49		57°48.3'	154°59.0'	B-20		
	50		57°46.0'	154°54.0'	B-20		
	51		57°44.7'	154°50.0'	B-20		
	52		57°42.4'	154°43.0'	B-20		
	53		57°39.5'	154°53.0'	B-20		
	54		57°41.9'	154°58.0'	B-20		
	55		57°44.0'	155°11.0'	B-20		
	56		57°45.8'	155° 6.0'	B-20		
	57		57°46.8'	155° 8.0'	B-20		
	58		57°38.8'	155°20.0'	B-20		
	59		57°36.9'	155°17.0'	B-20		
	60		57°34.9'	155°13.0'	B-20		
	61		57°33.4'	155° 5.0'	B-20		
	62		57°31.6'	155° 5.0'	B-20		
	63		57°29.3'	155°15.0'	B-20		
	64		57°31.5'	155°19.0'	B-20		
	65		57°33.5'	155°24.0'	B-20		
	66		57°33.3'	155°29.0'	B-20		
8	67	61	57°42.1'	155°13.0'	B-20	B-60	CTD
8	68	60	57°40.9'	155° 8.0'	B-20	B-60	CTD
8	69	59	57°38.4'	155° 4.0'	B-20		CTD
8	70	58	57°35.9'	155° 1.0'	B-20	B-60	N CTD
8	71	57	57°33.4'	154°52.0'	B-20		CTD
8	72	56	57°31.2'	154°47.0'	B-20	B-60	N CTD
8	73	55	57°29.0'	154°42.0'	B-20		CTD
9	74	64	57°16.7'	155° 0.0'	B-20		
9	75	65	57°19.9'	155° 6.0'	B-20		
9	76	66	57°22.0'	155°11.0'	B-20		
9	77	67	57°24.9'	155°17.0'	B-20		
9	78	68	57°27.1'	155°23.0'	B-20		
9	79	69	57°30.0'	155°29.0'	B-20		
9	80	70	57°32.4'	155°33.0'	B-20		
10	81	84	57°21.4'	155°51.0'	B-20	B-60	CTD
10	82	83	57°18.8'	155°45.0'	B-20	B-60	N
	83		57°28.1'	154°58.0'	B-20		
	84		57°29.7'	155° 1.0'	B-20		
	85		57°28.2'	155°11.0'	B-20		
	86		57°25.7'	155° 6.0'	B-20		
	87		57°24.6'	155° 2.0'	B-20		
	88		57°39.6'	155°16.0'	B-20		
	89		57°37.6'	155°14.0'	B-20		
	90		57°36.0'	155° 9.0'	B-20		
	91		57°34.5'	155° 5.0'	B-20		
	92		57°32.6'	154°59.0'	B-20		
	93		57°37.0'	154°55.0'	B-20		

Table 4a.--FOX 85 II - Operations log continued

Line No.	Cruise Sta. No.	FOX Sta. No.	Lat (N)	Long (W)	Operations	
	94		57°38.9'	154°58.0'	B-20	
	95		57°40.5'	155° 3.0'	B-20	
	96		57°42.2'	155° 6.0'	B-20	
	97		57°44.1'	155°10.0'	B-20	
	98		57°15.9'	155°41.0'	B-20	
10	99	81	57°13.7'	155°34.0'	B-20	B-60 CTD
	100		57°10.8'	155°28.0'	B-20	
10	101	79	57° 8.3'	155°22.0'	B-20	CTD
10	102	78	57° 5.4'	155°17.0'	B-20	
10	103	78	57° 5.4'	155°17.0'	B-20	
	104A		57°45.0'	155° 0.0'	B-20	T
	104B		57°45.0'	155° 0.0'		T
	104C		57°45.0'	155° 0.0'		T
	104D		57°45.0'	155° 0.0'		T
	104E		57°45.0'	155° 0.0'		T

Table 4b.--FOX 85 II - CTD log¹

Line No.	CTD Cast No.	Cruise Sta. No.	FOX Sta. No.	Lat (N)	Long (W)	Date-Time (GMT)	Master Reference No.
3	1	001	20	58.67°	152.73°	850921336	6606
3	2	002	22	58.74°	152.92°	850921630	6607
3	3	003	25	58.86°	153.18°	850922209	6608
5	4	015	34	58.01°	153.65°	850932113	6609
5	5	HO37	37	58.13°	153.93°	850940017	6610
5	6	017	38	58.18°	154.02°	850940053	6611
5	7	HO39	39	58.19°	154.10°	850940250	6612
8	8	HO61	61	57.72°	155.22°	850960753	6613
8	9	065	60	57.68°	155.17°	850961056	6614
8	10	066	59	57.64°	155.08°	850961456	6615
8	11	067	58	57.60°	155.02°	850961608	6616
8	12	068	57	57.57°	154.87°	850961834	6617
8	13	069	56	57.53°	154.77°	850961957	6618
8	14	HO55	55	57.48°	154.70°	850962133	6619
10	15	HO84	84	57.36°	155.86°	850970727	6620
10	16	077	83	57.29°	155.78°	850971759	6621
	17	V001		57.74°	155.00°	850990223	6622
	18	V002A		57.72°	155.07°	850990915	6623
	19	V002B		57.73°	154.93°	850991013	6624
	20	V002C		57.71°	155.02°	850991105	6625
	21	V002D		57.76°	154.98°	850991200	6626
	22	V003A		57.73°	155.02°	850991514	6627
	23	V003B		57.73°	154.96°	850991548	6628
	24	V003C		57.74°	154.95°	850991619	6629
	25	V003D		57.76°	155.02°	850991708	6630
	26	V004		57.77°	155.01°	851000328	6631
	27	V004A		57.74°	155.01°	851000416	6632
	28	V004B		57.75°	154.95°	851000500	6633
	29	V004C		57.79°	154.95°	851000555	6634

¹ No temperature or salinity field correction - conductivity cell noisy.

4.5 FOX 85 III

Scientific Party: L. Incze (Chief Scientist), NWAFC
A. Kendall, NWAFC
A. Matarese, NWAFC
J. Clark, NWAFC

FOX 85 III was conducted aboard the NOAA Ship MILLER FREEMAN from 1-12 May. The principal objectives were to locate the "patch" of larvae anticipated from the eggs sampled during FOX 85 II; to describe the spatial extent and patterns of abundance within the patch; to describe the birthdate and size distribution of larvae inside, "upstream", and "downstream" of the patch; to deploy a drogue and sample with a multiple depth sampler (EMPS) over 24-hr periods inside and outside the patch; to sample microzooplankton at the two drogue stations; and to continue the net zooplankton, nutrient, chlorophyll (Figure 6a and Table 5a), and CTD time series (Figure 6b and Table 5b; problems continued with the CTD data as during FOX 85 II). Sampling with the EMPS and Niskin bottles (microzooplankton) at drogue stations was designed to describe the vertical distribution and any diurnal vertical movements of larvae and their prey (a limited amount of larval stomach sampling was planned) and to compare the growth of larvae and abundance of their prey inside and outside the patch. Several hundred larvae were going to be collected and subsampled for the following measurements: fresh-caught length, preserved length, fresh dry weight and preserved dry weight. These were to be used to improve the usefulness of past, preserved samples in estimating growth rates and energy or carbon budgets of larvae.

A 60-cm bongo collector equipped with 333-micrometer mesh nets was used in the initial survey to locate the high abundance region of larvae. The initial survey began at the western end of the area where the egg patch was described during FOX 85 II. From there the survey extended westward a distance commensurate with mean residual circulation velocities and larval

drift patterns seen in previous years. When larvae were not found in significant numbers the survey pattern was extended further to the west, still without success. The search was continued until the allotted time for the cruise was nearly over. A cross-shelf transect for zooplankton, nutrient and chlorophyll measurements was sampled east of Chirikof Island and a final search for larvae was conducted in Shelikof Strait before returning to Kodiak. The spring bloom of large diatoms had occurred by our second sampling in Shelikof Strait so an extra station of nutrient and chlorophyll sampling was added.

Near the end of the cruise two deployments of the EMPS were made from the stern A-frame to test the ease of launching from this location for future studies. Clearances were ample to permit EMPS operations even in a high sea state, and this was judged far easier and safer than launching from the quarterdeck. However, none of the stern winches were equipped with the necessary conducting wire at the time of the FOX 85 cruises.

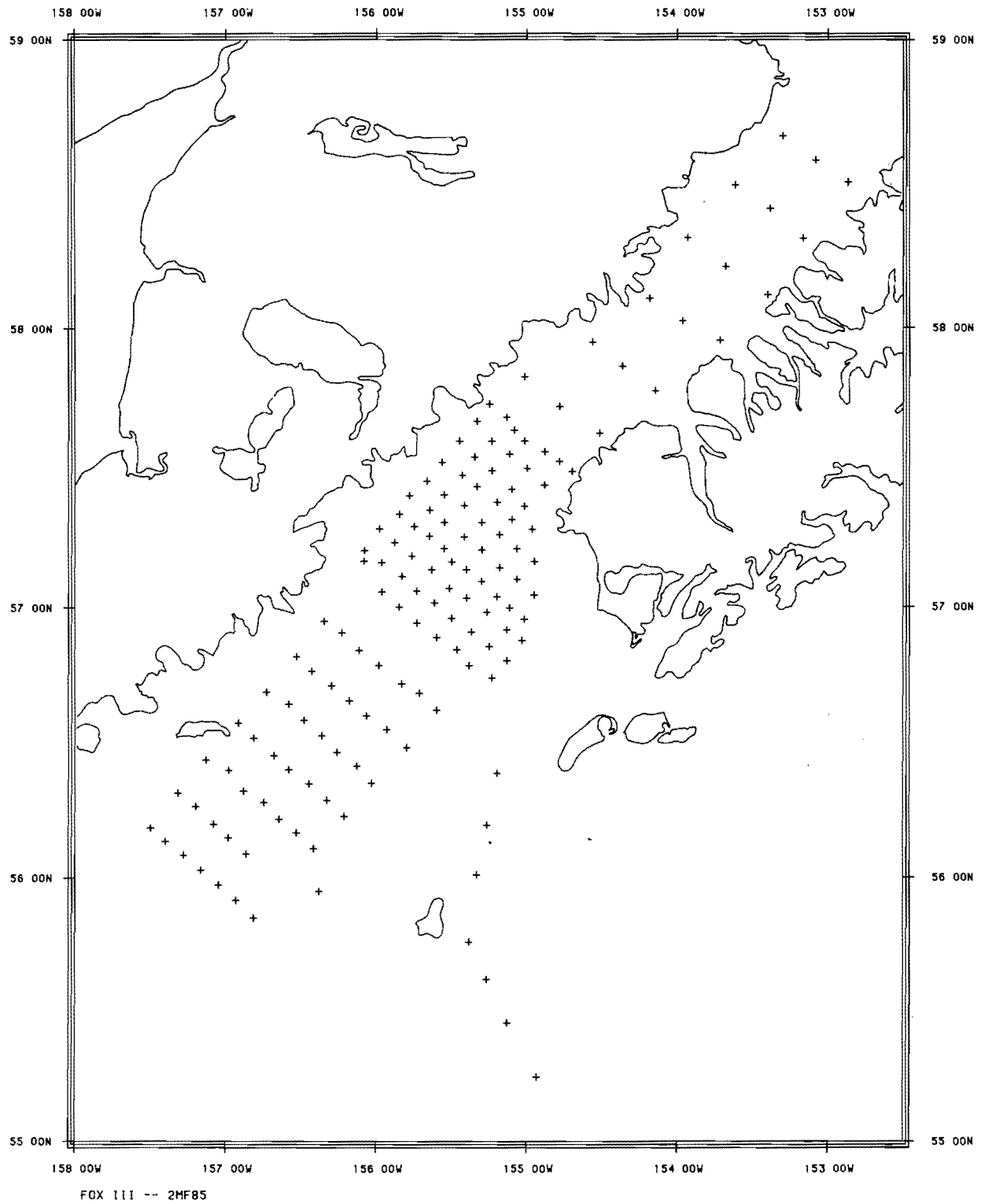


Figure 6a.--FOX 85 III Plankton station locations.

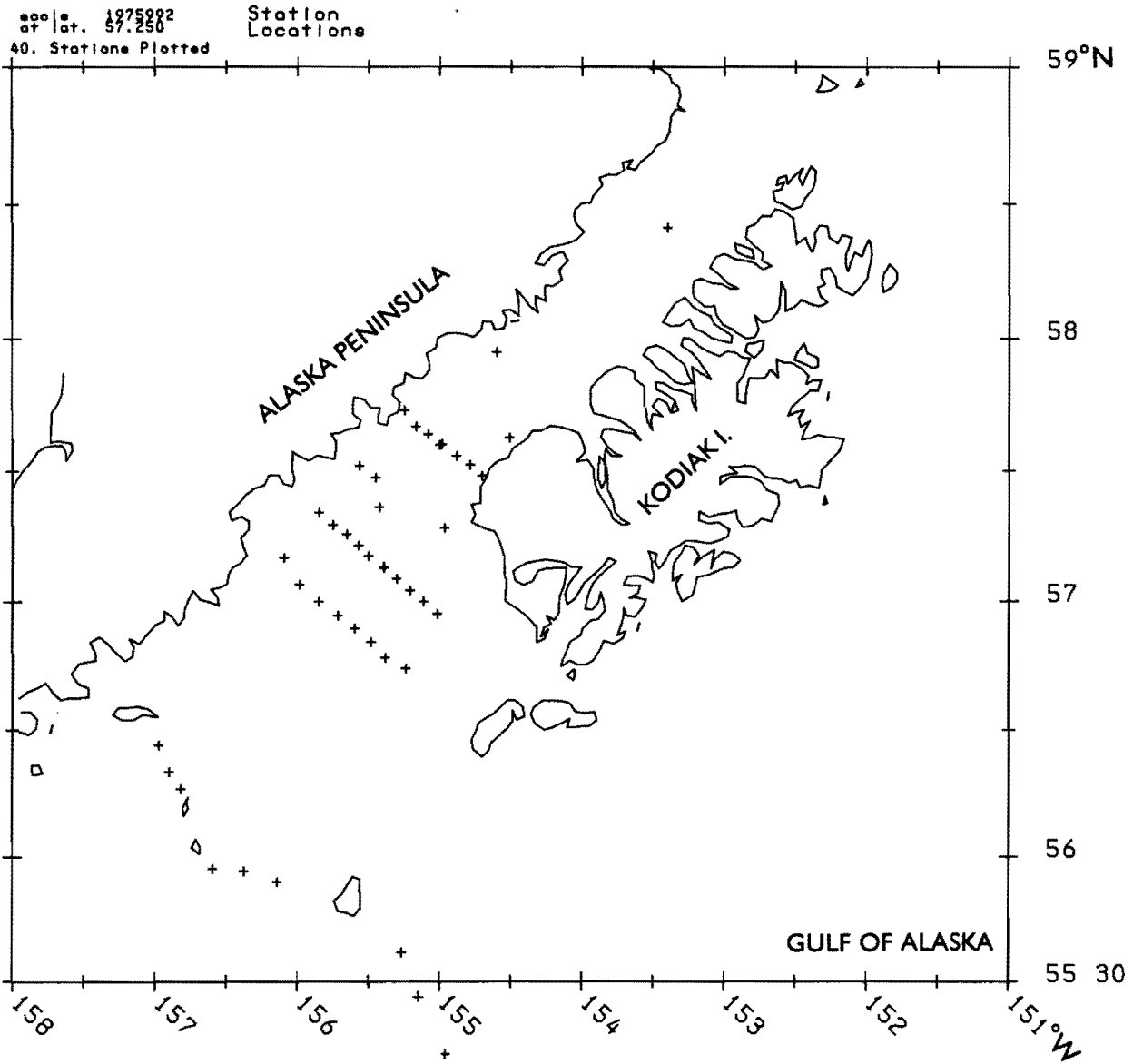


Figure 6b.--FOX 85 III CTD station locations.

Table 5a.--FOX 85 III - Operations log

Line No.	Cruise Sta. No.	FOX Sta. No.	Lat (N)	Long (W)	Operations
8	1	55	57°28.5'	154°42.0'	B-60 CTD MZ
8	2	56	57°30.9'	154°47.0'	B-60 CTD N C
8	3	57	57°33.1'	154°52.5'	B-60 CTD
8	4	58	57°36.3'	154°59.5'	B-60 CTD MZ N C
8	5	59	57°38.5'	155°04.2'	B-60 CTD
8	6	60	57°41.0'	155°10.0'	B-60 CTD N BKG Calibration
8	7	61	57°43.2'	155°15.6'	B-60 CTD MZ N C
	8		57°39.2'	155°21.1'	B-60
	9		57°35.8'	155°14.1'	B-60
	10		57°32.9'	155°06.9'	B-60
	11		57°29.8'	155°00.0'	B-60
	12		57°26.5'	154°52.8'	B-60
	13		57°22.7'	155°10.0'	B-60
	14		57°25.9'	155°06.9'	B-60
	15		57°29.2'	155°13.6'	B-60
	16		57°32.0'	155°20.5'	B-60
	17		57°35.4'	155°27.3'	B-60
	18		57°31.3'	155°34.0'	B-60 CTD MZ
	19		57°28.2'	155°26.6'	B-60 CTD
	20		57°25.3'	155°19.4'	B-60 CTD MZ
	21		57°22.1'	155°12.6'	B-60 CTD XBT
	22		57°19.0'	155°05.1'	B-60 XBT
	23		57°16.1'	154°58.1'	B-60 CTD MZ
	24		57°09.6'	154°57.1'	B-60
	25		57°12.4'	155°04.0'	B-60
	26		57°15.4'	155°11.6'	B-60
	27		57°18.5'	155°19.0'	B-60
	28		57°21.8'	155°26.0'	B-60 CTD MZ
	29		57°24.5'	155°32.9'	B-60
	30		57°27.7'	155°40.5'	B-60
	31		57°24.2'	155°47.0'	B-60
	32		57°21.6'	155°39.9'	B-60
	33		57°18.7'	155°32.8'	B-60
	34		17°15.2'	155°25.5'	B-60
	35		57°12.0'	155°18.1'	B-60
	36		57°08.4'	155°10.9'	B-60
	37		57°05.7'	155°03.9'	B-60
	38		57°02.4'	154°56.1'	B-60
10	39	75	56°57.0'	155°00.2'	B-60 CTD
10	40	76	57°00.0'	155°06.9'	B-60 CTD MZ N C
10	41	77	57°02.8'	155°12.5'	B-60 CTD
10	42	78	57°05.6'	155°18.5'	B-60 CTD
10	43	79	57°08.0'	155°24.1'	B-60 CTD
10	44	80	57°10.6'	155°30.0'	B-60 CTD
10	45	81	57°13.0'	155°34.0'	B-60 CTD MZ N C
10	46	82	57°15.6'	155°40.0'	B-60 CTD
10	47	83	57°18.1'	155°45.5'	B-60 CTD

Table 5a.--FOX 85 III - Operations log continued

Line No.	Cruise Sta. No.	FOX Sta. No.	Lat (N)	Long (W)	Operations
10	48	84	57°20.9'	155°51.5'	B-60 CTD MZ N C
	49		57°17.0'	155°59.4'	B-60
	50		57°14.0'	155°53.0'	B-60
	51		57°11.0'	155°45.2'	B-60
	52		57°07.8'	155°38.0'	B-60
	53		57°04.5'	155°30.6'	B-60
	54		57°01.6'	155°23.6'	B-60
	55		56°58.6'	155°15.9'	B-60
	56		56°55.2'	155°08.5'	B-60
	57		56°52.5'	155°01.9'	B-60
	58		56°48.2'	155°08.2'	B-60
	59		56°51.1'	155°14.2'	B-60
	60		56°54.2'	155°22.2'	B-60
	61		56°57.5'	155°29.9'	B-60
	62		57°01.0'	155°36.9'	B-60
	63		57°03.7'	155°43.9'	B-60
	64		57°06.8'	155°51.0'	B-60
	65		57°10.0'	155°58.5'	B-60
	66		57°13.3'	156°06.9'	B-60
	67		57°09.7'	156°05.9'	B-60 CTD
	68		57°03.5'	155°58.2'	B-60 CTD
	69		57°00.4'	155°51.0'	B-60 CTD
	70		56°57.0'	155°43.3'	B-60 CTD
	71		56°53.7'	155°36.5'	B-60 CTD
	72		56°50.3'	155°29.1'	B-60 CTD
	73		56°47.0'	155°21.6'	B-60 CTD
	74		56°43.9'	155°14.2'	B-60 CTD
	75		56°37.5'	155°36.0'	B-60
	76		56°40.9'	155°43.6'	B-60
	77		56°44.0'	155°50.4'	B-60
	78		56°47.2'	155°58.0'	B-60
	79		56°50.5'	156°05.9'	B-60
	80		56°54.2'	156°12.9'	B-60
	81		56°57.2'	156°20.3'	B-60
	82		56°49.1'	156°31.8'	B-60
	83		56°45.7'	156°24.8'	B-60
	84		56°42.8'	156°17.5'	B-60
	85		56°39.2'	156°10.1'	B-60
	86		56°36.0'	156°03.0'	B-60
	87		56°33.0'	155°55.4'	B-60
	88		56°29.0'	155°48.0'	B-60
	89		56°41.8'	156°44.5'	B-60
	90		56°38.2'	156°37.1'	B-60
	91		56°34.8'	156°29.2'	B-60
	92		56°31.5'	156°22.4'	B-60
	93		56°28.0'	156°15.3'	B-60
	94		56°24.9'	156°07.9'	B-60

Table 5a.--FOX 85 III - Operations log continued

Line No.	Cruise Sta. No.	FOX Sta. No.	Lat (N)	Long (W)	Operations
	95		56°21.8'	156°01.0'	B-60
	96		56°34.0'	156°56.0'	B-60
	97		56°31.0'	156°48.6'	B-60
	98		56°27.2'	156°41.0'	B-60
	99		56°24.2'	156°34.4'	B-60
	100		56°20.9'	156°27.0'	B-60
	101		56°17.8'	156°20.1'	B-60
	102		56°14.1'	156°13.0'	B-60
	103		56°06.7'	156°24.8'	B-60
	104		56°10.2'	156°31.8'	B-60
	105		56°13.3'	156°38.9'	B-60
	106		56°16.8'	156°45.9'	B-60
	107		56°20.0'	156°53.0'	B-60
	108		56°23.5'	157°00.0'	B-60
	109		56°26.5'	157°07.8'	B-60
	110		56°19.0'	157°19.8'	B-60
	111		56°15.6'	157°12.2'	B-60
	112		56°12.0'	157°05.2'	B-60
	113		56°09.0'	156°58.0'	B-60
	114		56°05.8'	156°50.9'	B-60
	115		55°51.2'	156°48.5'	B-60
	116		55°55.0'	156°55.6'	B-60
	117		55°58.3'	157°03.1'	B-60
	118		56°01.7'	157°10.0'	B-60
	119		56°05.0'	157°17.3'	B-60
	120		56°08.3'	157°24.2'	B-60
	121		56°11.5'	157°30.6'	B-60
Current meter transects					
	122		56°26.5'	156°59.0'	CTD MZ N
	123		56°21.1'	156°54.1'	CTD MZ N C
	124		56°17.1'	156°49.1'	CTD N
	125		55°57.1'	156°35.5'	CTD N
	126		55°56.2'	156°21.4'	CTD N B-60 (to bottom) BKG Calibration
	127		55°54.4'	156°09.0'	CTD N
Cross-shelf transect ²					
	128		55°15.0'	154°53.9'	B-60 CTD (300 m) XBT MZ
	129		55°27.1'	155°08.6'	B-60 CTD (200 m) XBT
	130		55°37.1'	155°16.5'	B-60 CTD (200 m) XBT
	131		55°45.3'	155°23.2'	B-60 XBT

² B-60 tows no deeper than 200 m.

Table 5a.--FOX 85 III - Operations log continued

Line No.	Cruise Sta. No.	FOX Sta. No.	Lat (N)	Long (W)	Operations	
	132		56°00.8'	155°18.9'	B-60	XBT
	133		56°12.2'	155°14.9'	B-60	XBT
	134		56°23.4'	155°11.6'	B-60	XBT
Upper Shelikof Strait						
	135		57°37.1'	154°31.1'	B-60	XBT
	136		57°40.2'	154°38.1'		XBT
	137		57°43.4'	154°45.9'	B-60	XBT
	138		57°46.5'	154°54.0'		XBT
	139		57°49.6'	155°01.7'	B-60	XBT
	140		57°57.6'	154°35.0'	B-60	CTD BKG Calibration
	141		57°52.4'	154°22.1'	B-60	
	142		57°46.9'	154°08.7'	B-60	
	143		57°56.8'	153°41.4'	B-60	
	144		58°01.5'	153°58.4'	B-60	
	145		58°06.2'	154°10.0'	B-60	
	146		58°18.9'	153°55.9'	B-60	
	147		58°12.8'	153°40.5'	B-60	
	148		58°06.8'	153°25.0'	B-60	
	149		58°18.9'	153°09.2'	B-60	
	150		58°24.5'	153°23.5'	B-60	CTD N C
	151		58°30.4'	153°38.4'	B-60	
	152		58°40.4'	153°18.0'	B-60	
	153		58°35.3'	153°05.0'	B-60	
	154		58°30.3'	152°51.9'	B-60	

Table 5b.--FOX 85 III - CTD log

Line No.	CTD Cast No.	FOX Sta. No.	Lat (N)	Long (W)	Date-Time (GMT)	Master Reference No.
8	1	1	57.48°	154.70°	851221811	6671
8	2	2	57.52°	154.79°	851221940	6672
8	3	3	57.56°	154.88°	851222152	6673
8	4	4	57.60°	154.98°	851222303	6674
8	5	4	57.60°	155.00°	851222359	6675
8	6	5	57.64°	155.08°	851230146	6676
8	7	6	57.67°	155.17°	851230316	6677
8	8	7	57.73°	155.25°	851230548	6678
9	9	18	57.52°	155.57°	851231902	6679
9	10	19	57.47°	155.45°	851232059	6680
9	11	23	57.28°	154.97°	851240418	6681
	12	28	57.36°	155.42°	851240919	6682
10	13	39	56.95°	155.02°	851242116	6683
10	14	40	57.00°	155.12°	851242221	6684
10	15	41	57.04°	155.21°	851250023	6685
10	16	42	57.09°	155.30°	851250140	6686
10	17	43	57.13°	155.40°	851250256	6687
10	18	44	57.17°	155.50°	851250418	6688
10	19	45	57.22°	155.57°	851250548	6689
10	20	46	57.26°	155.65°	851250814	6690
10	21	47	57.29°	155.75°	851250929	6691
10	22	48	57.34°	155.85°	851251047	6692
12	23	67	57.17°	156.09°	851261215	6693
12	24	68	57.07°	155.98°	851261331	6694
12	25	69	57.00°	155.85°	851261452	6695
12	26	70	56.94°	155.72°	851261630	6696
12	27	71	56.90°	155.60°	851261819	6697
12	28	72	56.84°	155.48°	851261951	6698
12	29	73	56.78°	155.38°	851262121	6699
12	30	74	56.74°	155.24°	851262301	6700
16	31	122	56.44°	156.97°	851290153	6701
16	32	123	56.33°	156.90°	851290425	6702
16	33	124	56.27°	156.82°	851290600	6703
17	34	125	55.95°	156.59°	851290839	6704
17	35	126	55.94°	156.37°	851291010	6705
17	36	127	55.90°	156.14°	851291234	6706
~19	37	128	55.22°	154.91°	851291840	6707
~19	38	129	55.44°	155.15°	851300107	6708
~19	39	130	55.62°	155.27°	851300314	6709
~7	40	135	57.63°	154.51°	851302057	6710
~6	42	140	57.95°	154.60°	851310224	6711
4	43	150	58.41°	153.40°	851311820	6712

4.6 FOX 85 IV

Scientific Party: J. Schumacher (Chief Scientist), PMEL
J. Fletcher, Administrator, OAR
E. Bernard, Director, PMEL
L. Incze, NWAFC
T. Jackson, PMEL

The FOX 85 IV cruise was conducted aboard the NOAA Ship DISCOVERER from 24 to 28 July. The principal objective was to recover seven moorings. Other objectives were to collect net zooplankton and nutrient samples (Table 6a) and CTD data (Figure 7 and Table 6b) at selected stations to continue the FOX 85 time series.

All moorings were recovered with no loss of equipment. There was significant biological growth, however, on the upper current meters. Both kelp and bryzoans grew to the extent of affecting rotor movement on several of the current meters. The use of nonmechanical meters may be necessary in order to obtain useful current records over spring/summer deployments.

1975222
of tot. 57.250
36. Stations Plotted

Station
Locations

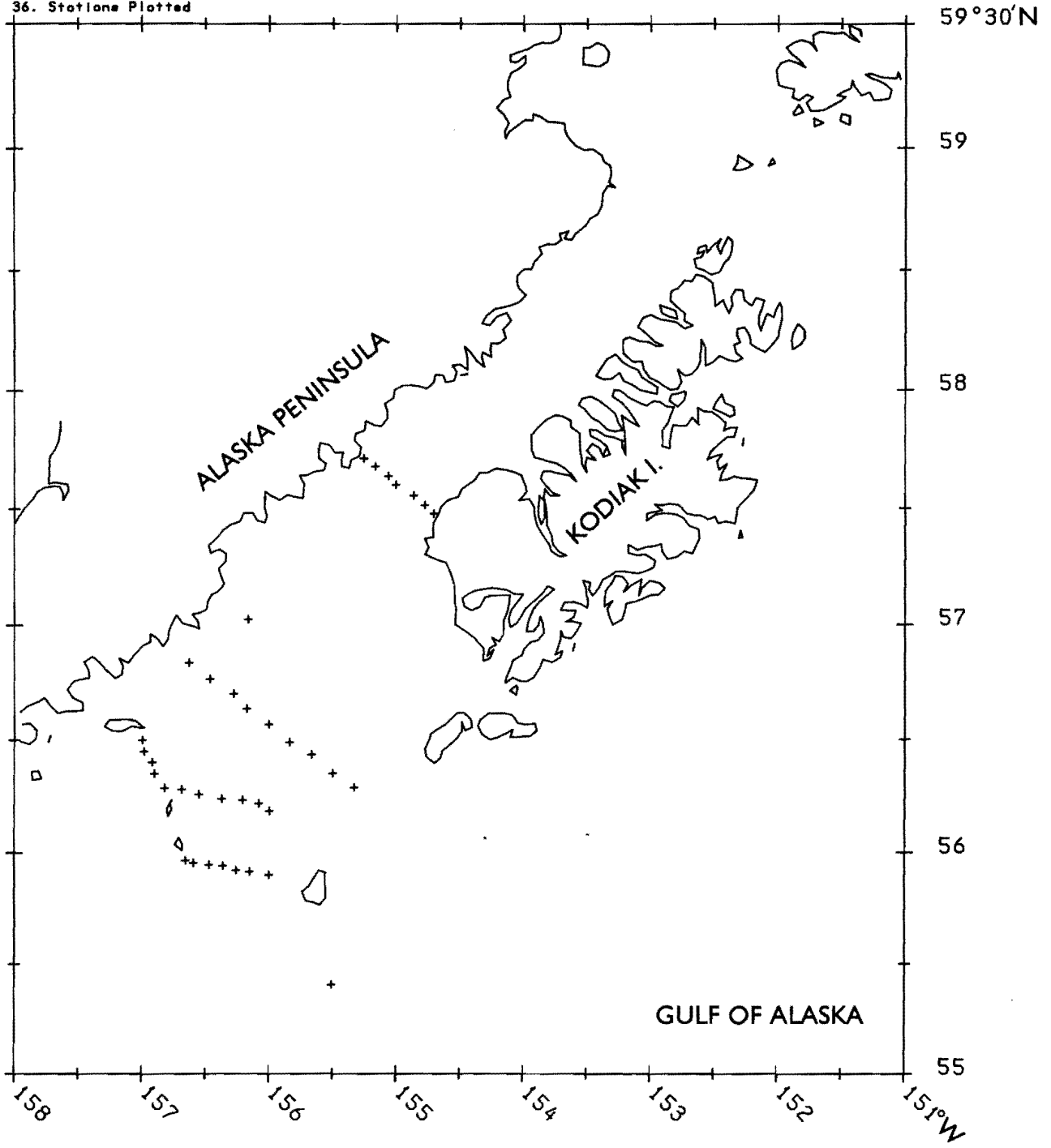


Figure 7.--FOX 85 IV CTD station locations.

Table 6a.--FOX 85 IV - Operations log

Line No.	Cruise Sta. No.	FOX Sta. No.	Lat (N)	Long (W)	Operations			
19	175.2	175.2	55°25.5'	155°26.7'	B-60	CTD	N	C
17	154	154	55°55.5'	156°15.0'		CTD	N	C
17	155	155	55°56.4'	156°21.5'	B-60	CTD		
17	157	157	55°57.2'	156°36.0'		CTD	N	C
16	142	142	56°13.1'	156°05.0'	B-60	CTD		
16	144	144	56°15.0'	156°22.0'	B-60	CTD		
16	148	148	56°21.2'	156°54.2'	B-60	CTD	N	C
16	150	150	56°26.8'	156°59.0'	B-60	CTD	N	C
8	61	61	57°43.2'	155°15.6'	B-60	CTD	N	C
8	60	60	57°41.0'	155°10.0'	B-60	CTD	N	C
8	58	58	57°36.3'	155°00.5'	B-60	CTD	N	C
8	57	57	57°33.3'	154°51.7'	B-60	CTD		
8	56	56	57°30.9'	154°47.0'	B-60	CTD	N	C
14	127	127	56°50.0'	156°38.0'		CTD	N	C
14	125	125	56°42.0'	156°17.0'		CTD	N	C
14	123	123	56°34.0'	156°00.0'		CTD	N	C
14	121	121	56°26.0'	155°40.0'		CTD	N	C
14	119	119	56°17.0'	155°20.0'		CTD	N	C

Table 6b.--FOX 85 IV - CTD log

Line No.	CTD Cast No.	FOX Sta. No.	Lat (N)	Long (W)	Date-Time (GMT)	Master Reference No.
19	1	175.2	55.41°	155.51°	852060835	6635
17	2	152	55.90°	156.00°	852061350	6636
17	3	153	55.92°	156.15°	852061448	6637
17	4	154	55.92°	156.26°	852061544	6638
17	5	158	55.97°	156.66°	852062222	6639
17	6	157	55.95°	156.60°	852062331	6640
17	7	158	55.95°	156.48°	852070056	6641
17	8	155	55.94°	156.36°	852070157	6642
16	9	141	56.18°	156.00°	852070508	6643
16	10	142	56.22°	156.08°	852070608	6644
16	11	143	56.24°	156.21°	852070749	6645
16	12	144	56.24°	156.37°	852070904	6646
16	13	145	56.26°	156.55°	852071104	6647
16	14	146	56.28°	156.69°	852071212	6648
16	15	147	56.28°	156.82°	852071308	6649
16	16	148	56.35°	156.90°	852071409	6650
16	17	149	56.40°	156.92°	852071553	6651
16	18	150	56.45°	156.98°	852071647	6652
16	19	151	56.50°	157.00°	852071839	6653
14	20	119	56.29°	155.33°	852080353	6654
14	21	120	56.35°	155.50°	852080504	6655
14	22	121	56.44°	155.67°	852080616	6656
14	23	122	56.49°	155.84°	852080808	6657
14	24	123	56.57°	156.00°	852080932	6658
14	25	124	56.64°	156.18°	852081115	6659
14	26	125	56.70°	156.28°	852081226	6660
14	27	126	56.76°	156.46°	852081355	6661
14	28	127	56.83°	156.63°	852081512	6662
	29	M10 ¹	57.02°	156.16°	852081812	6663
8	30	61	57.71°	155.26°	852082311	6664
8	31	60	57.68°	155.17°	852090106	6665
8	32	59	57.64°	155.07°	852090242	6666
8	33	58	57.60°	155.01°	852090333	6667
8	34	57	57.56°	154.87°	852090532	6668
8	35	56	57.51°	154.78°	852090657	6669
8	36	55	57.48°	154.71°	852090845	6670

¹ M10 is a CTD cast at the location of current meter mooring number 10

5. AIRCRAFT FLIGHT SUMMARIES - FOX 85 I

The flight summaries are depicted in the following figures (8 through 16). The flight logs (Tables 7-15) provide the times and exact locations of the operations. Dates are given as calendar dates (YYMMDD) preceding the flight names.

Notations used in aircraft logs:

ANC - Anchorage, AK

AXBT - Aircraft eXpendable BathyThermograph

BT - Near surface water temperature from an AXBT

GA - Geopotential Altitude

HD - Aircraft Heading

HT - Standard Height of aircraft based on the ambient pressure and a "standard" atmosphere

LA - Latitude

LO - Longitude

NWS - National Weather Service

ODW - Omega DropWindsonde

PA - Pressure Altitude

PI - Principal Investigator

PT - Point, refers to locations in the FOX Aircraft Operations Plan

RA - Radar Altitude

RD - Surface temperature from the down-looking radiation thermometer (PRT-5)

SDP - Sand Point, AK

SP - Surface Pressure

TA - Air Temperature

TD - Dew point Temperature

TK - Aircraft Track

WD - Wind Direction

W - Wind Speed

5.1 850303 Survey Flight #1: Kenai Peninsula

Scientific Party: A. Macklin (Principal Investigator), PMEL
J. Overland, PMEL
K. Parker, IPHC
B. Richwien, NWS
J. Schumacher, PMEL

The flight along the coast of the Kenai Peninsula (Figure 8a) began at the Copper River Valley and extended westward to the north entrance to Shelikof Strait. The survey was designed to: 1) study variations in the nearshore wind field under large-scale meteorological conditions that would produce offshore flow through valleys (excluding the complicated wind patterns within Prince William Sound); 2) look for the existence of an along-shore jet seaward of the Kenai Peninsula mountains where there are no gaps; and 3) map SST and vertical ocean temperatures (with AXBTs) for entrance conditions to Shelikof Strait thus providing the upstream conditions for the pollock spawning ground.

To examine the difference between the wind and temperature characteristics of the air mass east of the coastal mountains and the airmass over the Gulf, an ODW was dropped inland at the confluence of the Chitina and Copper Rivers and another near the Copper River delta. These will be compared to an ODW dropped near Middleton Island where the flow should not be affected by the proximity of coastal mountains.

The variation of the wind field with distance from shore and with height was studied in two ways. First there were two long, low-level legs parallel to the shore, one near shore and one at about 50 km offshore. The second method (a vertical section, Figure 8b) was a stack of three low-level flight legs oriented perpendicular to the axis of the shore and extending 100 km offshore. During the vertical section, AXBTs were launched. At the north end of Shelikof Strait, two AXBTs were launched; one off Cape Douglas and another

off Shuyak Island. These AXBTs provide the thermal structure of the water column upstream of the pollock spawning area with one profile in the Cook Inlet outflow and the other in the water entering from the Gulf through the Kennedy and Stevenson Entrances. The SST was mapped throughout the flight.

During the flight, five AXBTs were launched with all five good, four ODWs were launched with three good. A detailed flight log is given in Table 7.

SCALE. 25:000

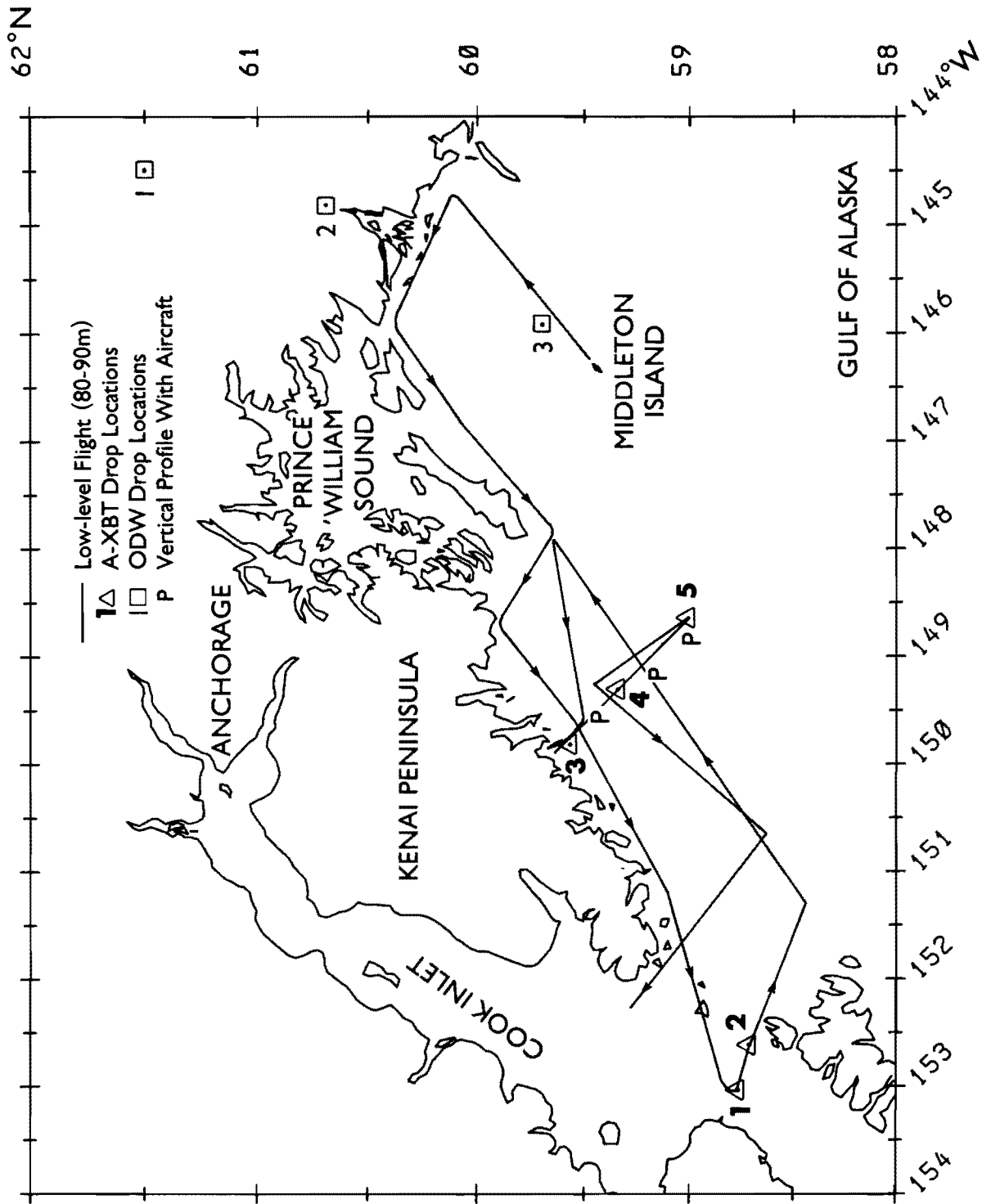


Figure 8a.--850303 Survey flight #1: Kenai Peninsula.

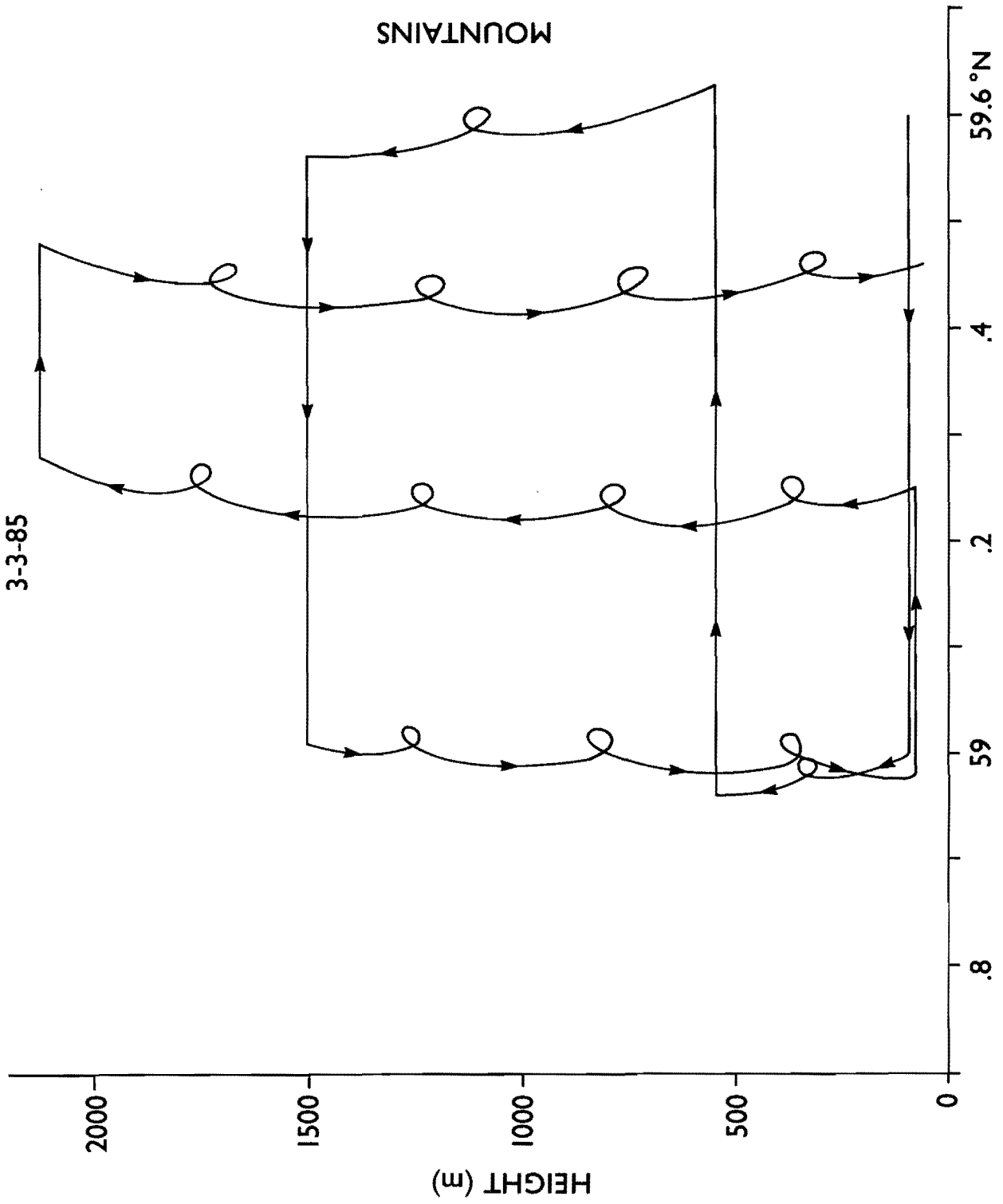


Figure 8b.---850303 Vertical cross-section during Kenai Peninsula flight.

Table 7.--850303 Survey flight #1: Kenai Peninsula flight log

TIME GMT (HHMMSS)	TK (deg)	LA (N)	LO (W)	RA (m)	PA (m)	SP (mb)	TA (°C)	TD (°C)	WD (deg)	WS (ms ⁻¹)	COMMENTS
NWS PRESSURE 1023.9 AIRCRAFT STATION PRESSURE 1024.3											
173957											OUT ANC
175025											OFF ANC
183550	187	61.46°	144.46°		5801		-37	-41	326	13	ODW #1
184450	189	60.65°	144.71°		5799		-36	-39	331	16	ODW #2 BAD
GOING BACK TO REPEAT - (WIND CALIBRATION)											
185820	186	60.66°	144.82°		5793		-36	-41	330	17	ODW #3 REPEAT
191230	212	59.67°	145.98°		5789		-35	-38	330	13	ODW #4
1917											BEGIN DESCENT TO 300'
1937	051	59.46°	146.31°	98	58 1018		02	-12	325	16	PT 5
1946	052	59.75°	145.52°	90	651 1016		02	-10	324	17	
				88	75 1015		01	-13	345	21	
1957	283	60.12°	144.59°	95	92 1014		01	-14	343	18	PT 6
2010	248	60.37°	145.89°	104	70 1017		02	-13	320	14	PT 7
2021	227	60.06°	146.93°	99	58 1019		02	-12	324	19	PT 8
2032	304	59.64°	147.76°	91	32 1021		03	-11	323	15	PT 9
2042	231	59.90°	148.63°	98	16 1023		02	-12	311	05	PT 10
2102	249	59.32°	150.40°	93	-12 1026		02	-12	274	11	PT 11
2113	259	59.08°	151.47°	101	-31 1030		00	-8	288	17	PT 12
2131		58.84°	153.16°								PT 13
2133	100	58.77°	153.06°	90	-61 1032		03	-10	258	83	AXBT 1
2137	112	58.71°	152.63°	93	-59		02	-07	318	6	AXBT 2
2148		58.43°	151.39°	97	-45 1031		01	-07	243	16	PT 14
2224	250	59.62°	147.82	98	26 1023		03	-13	297	17	PT 9
PI MODIFICATION - SKIP PT 10 TO PT 15											
2248		59.59°	149.92°								PT 16
2249	118	59.57°	149.84°	96	-2		03	12	260	11	AXBT 3
2254	136	59.35°	149.30°	94	-4		02	-11	270	17	AXBT 4
2302		59.00°	148.63°	94	-2		02	-10	280	18	AXBT 5 PT 17
2321		59.63°	149.84°	1527	1483		-9	-16	325	14	PT 16
233540-233630											
233820-234030											
234200-234410 SOUNDING 18											
234530-234730											
234915-235115											
235250-235355											
000750-000850											
001030-001330 SOUNDING 17											
001500-001700											
001856-002120											
002250-002500											

Table 7.--850303 Survey flight #1: Kenai Peninsula flight log continued

TIME GMT (HHMMSS)	TK (deg)	LA (N)	LO (W)	RA (m)	PA (m)	SP (mb)	TA (°C)	TD (°C)	WD (deg)	WS (ms ⁻¹)	COMMENTS
003400-003500											
003600-003850											
004020-004220			SOUNDING 25								
004400-004620											
004800-005050											
005230-005520											
005650-005930											
0102	221	59.42°	149.36°	89	-15	1026	03	-11	220	13	
0122		58.65°	150.67°	101	-40	1031	02	-04	297	20	PT 20
0144											PT 22
022640											LAND ANC
023120											IN ANC

5.2 850306 Survey Flight #3: Alaska Peninsula Oceanography

Scientific Party: A. Macklin (Principal Investigator), PMEL
F. Hoelzl, ERL
K. Parker, IPHC
J. Schumacher, PMEL
J. Wilson, PMEL

This mission was aborted due to a generator failure in the number two engine. The aircraft never descended below ferry altitude. On the return to Anchorage, three ODWs were launched in the Shelikof Strait exit region with all three good. Details of the flight are provided in Table 8.

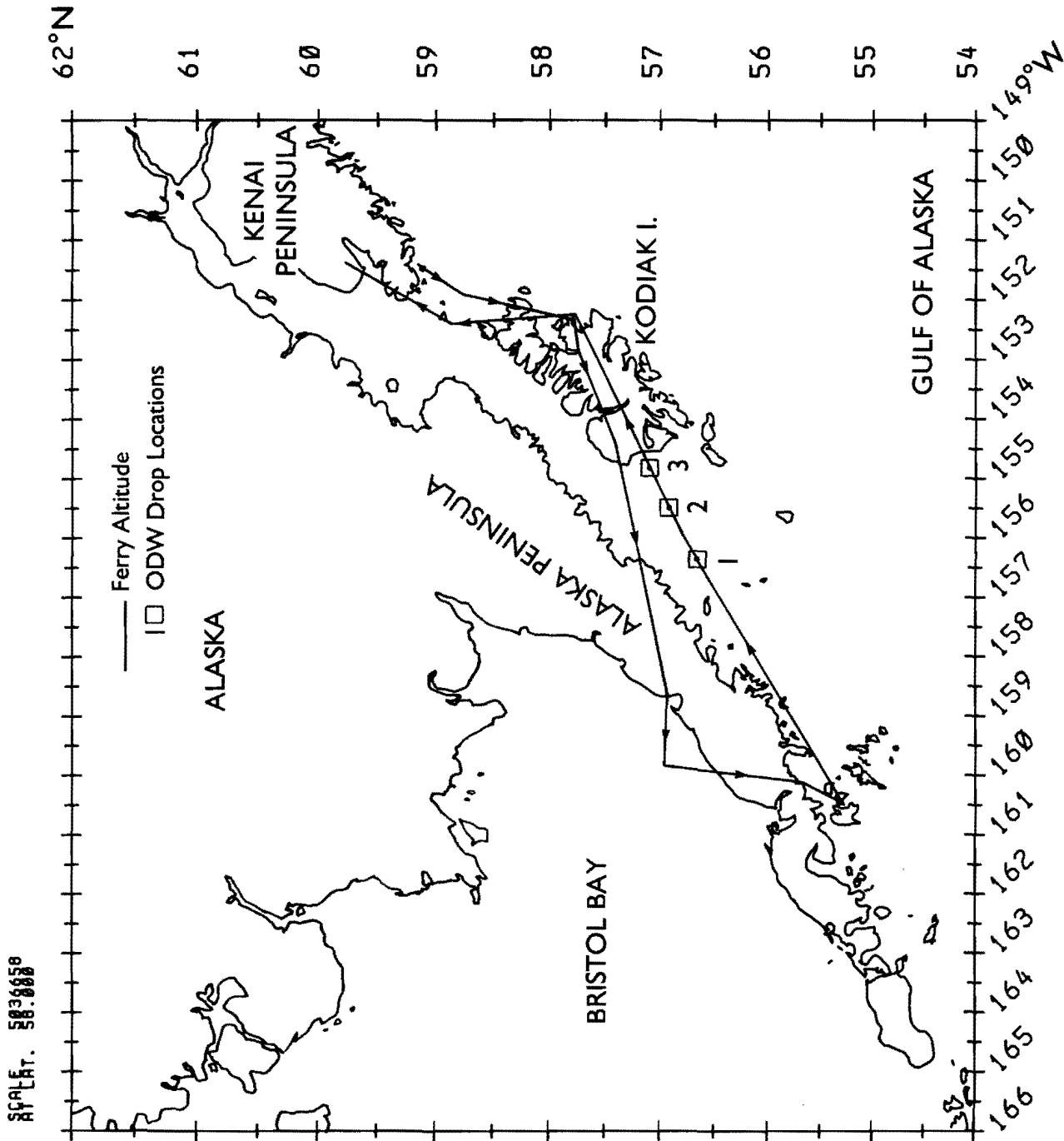


Figure 9.--850306 Survey flight #3: Alaska Peninsula oceanography (aborted).

Table 8.--850306 Survey flight #3: Alaska Peninsula oceanography flight log (aborted)¹

TIME GMT (HHMMSS)	TK (deg)	LA (N)	LO (W)	RA (m)	GA (m)	SP (mb)	TA (°C)	TD (°C)	WD (deg)	WS (ms ⁻¹)	HD (deg)	COMMENTS
2200	307	61.22°	150.08°			925	-27	-4.3	047	8.5	312	
2207	210	61.06°	150.62°		2500	989	-13.2	-16	109	5	208	
2218	190	60.37°	151.26°		2910	987	-16	-19	100	3	190	
2258	260	57.71°	153.03°				-21	-26	300	18	267	
2307	259	57.59°	154.10°		2680	984	-22	-28	309	15	265	
2325	257	57.39°	156.04°		2805	1005	-22	-28	305	30	265	
2342	260	57.00°	157.94°				-22	-28	306	28	269	
2348	198	56.90°	158.68°		2890	1014	-22	-28	296	25	210	SDP
0021	54	55.47°	159.78°		2920	1016	-21	-27	303	22	46	
0046	60	56.52°	156.79°		4290	1015	-34	-38	305	28	51	
004925	59	56.66°	156.36°			1014	-34	-38	310	25	57	ODW 1
005634	57	57.00°	155.20°		4153	1004	-31	-37	315	24	56	ODW 2
010100	57	57.10°	154.70°		4252	1006	-31	-36	315	24	55	ODW 3
011200	65	57.48°	153.45°				-28	-36	316	13	61	
012000	66	57.64°	152.83°				-27	-35	290	10	65	
012700	354	58.23°	152.33°				-28	-33	330	9	354	
015600	002	60.25°	157.36°		4377	990	-27	-30	138	5	004	
020900	62	61.05°	150.48°		960	991	-5.6	-8.5	020	10	59	

¹ Flight aborted at 0030 due to a generator failure in number 2 engine.

5.3 850310 Survey Flight #3: Alaska Peninsula Oceanography

Scientific Party: A. Macklin (Principal Investigator), PMEL

This flight along the Alaska Peninsula to near Unimak Pass (Figure 10) examined: 1) near-shore SST variability along the peninsula; 2) the intensity and vertical and low-level horizontal extent of gap winds through mountain valleys; and 3) the response of the SST and vertical thermal structure of the ocean to gap winds.

The flight began by mapping the SST and measuring the wind outflow from mountain valleys along the length of the Alaska Peninsula from lower Cook Inlet to near Unimak Pass. One of the broadest regions of gap winds along the Peninsula is near Wide Bay at the south exit from Shelikof Strait in the region of pollock spawning. The vertical extent of the gap wind was measured by ODWs launched on two onshore runs (altitude 4250 m) oriented perpendicular to the peninsula. The plane flew five low-level legs parallel to the Peninsula at increasing distances offshore. This grid from the Semidis to Cape Kekurnoi will: 1) determine the distance from the gap at which the gap winds are no longer felt; 2) map the SST; and 3) 13 AXBTs will give the oceanic response to the gap winds.

Eighteen AXBTs were launched with seventeen good. AXBTs numbered 13 through 18 were deployed along the onshore runs. They are not shown in Figure 10 due to an overcrowding of information. Thirteen ODWs were launched with eleven good. Details of the flight are given in Table 9.

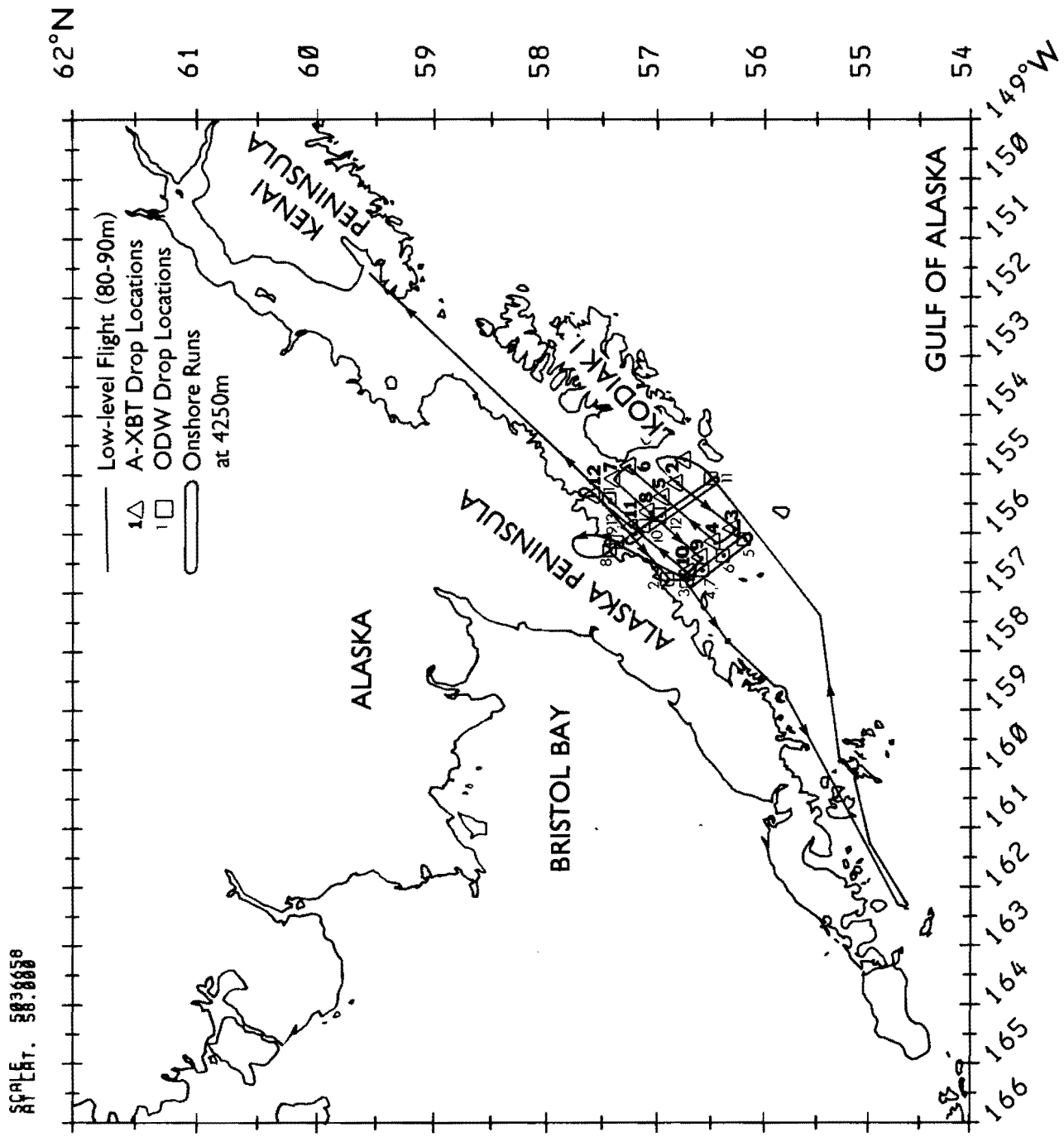


Figure 10.--850310 Survey flight #3: Alaska Peninsula oceanography. Three A-XBTs were dropped on each inshore run; offshore, mid-way, and nearshore.

Table 9.--850310 Survey flight #3: Alaska Peninsula oceanography flight log

TIME GMT (HHMMSS)	TK (deg)	LA (N)	LO (W)	RA (m)	GA (m)	SP (mb)	TA (°C)	TD (°C)	WD (deg)	WS (ms ⁻¹)	HD (deg)	COMMENTS
1906	204	60.97°	150.41°		2730		-15	-17	160	24	196	
1912	206	60.66°	150.75°		2870		-16	-19	159	18	202	
1932	195	59.48°	151.55°		2671		-16	-19	190	12	195	
1942	193	58.76°	151.91°		2940	988	-16	-18	224	7	196	
1954	192	58.00°	152.17°		2950	991	-16	-19	260	5	195	
2000	270	57.72°	152.55°				-15	-20	200	7	270	
2011	261	57.62°	153.90°		2960	994	-17	-21	260	11	261	
2015	255	57.57°	154.36°		2570		-16	-20	265	10	256	
2022	255	57.42°	155.35°								256	ODW 1
2030												ASCEND
2037	202	57.13°	156.29°								205	
2042	246	56.91°	156.57°		105	1000	-2.9	-9.1	270	13	250	
2051	235	56.75°	156.92°		103	1002	-3.0	-9	260	18	241	
2057	231	56.54°	157.44°		103	1003	-3.2	-10	290	16	241	
2108	213	56.21	158.10°		98	1004	-2.2	-13	263	5	216	
2112	213	56.02°	158.30°		102	1004	-2	-13	220	4	216	
2115	226	55.90°	158.48°		103	1005	-2	-11	252	11	231	
2120	255	55.76°	158.80°		103	1005	-1	-12	255	10	256	
2130	250	55.53°	159.58°		99	1006	-1	-11	260	8	258	
2137	258	55.45°	160.27°		99	1006	0	-9	230	5	257	
2141	260	55.41°	160.65°		96	1006	0	-9	265	7	259	
2146	234	55.29°	161.00°		97	1006	0	-8	185	7	233	
2152	230	55.08°	161.46°		91	1005	0	-9	190	8	229	
2212	060	54.74°	161.93°		99	1004	0	-4	165	9	066	
2222	070	55.00°	160.96°		100	1005	0	-9	215	7	073	
2231	065	55.21°	160.00°		104	1006	0	-9	235	11	070	
2243	065	55.52°	158.87°		100	1005	0	-10	249	10	066	
2250	063	55.73°	158.08°		96	1006	0	-11	246	15	064	
2257	069	55.94°	157.31°		96	1005	0	-10	260	17	069	
2303	067	56.08°	156.69°		93	1004	-1	-10	266	15	067	
2310	068	56.28°	155.85°		97	1004	-1	-10	265	16	066	
2315	067	56.39°	155.40°		99		-1	-9	265	19	063	
2322	032	56.70°	154.78°				-2	-9	268	17	026	AXBT 1 BAD
2332	225	57.00°	154.80°				-1	-8	270	12	231	
2336	230	56.81°	155.10°				-2	-9	260	17	228	AXBT 2
2345	219	56.46°	155.65°				-1	-9	265	12	226	
2350	300	56.29°	155.90°				-2	-10	270	12	297	AXBT 3
235420	039	56.44°	156.13°				-1	-10	260	14	035	AXBT 4
0000	042	56.66°	155.80°		100		-2	-9	260	18	037	
0005	040	56.95°	155.36°		95		-2	-10	258	18	036	AXBT 5
0010	042	57.18°	155.01°		100		-2	-8	256	13	037	
0011	042	57.25°	154.88°		155		-3	-8	258	17	037	AXBT 6

Note: The dynamic angle of attack sensor was inoperative between 1915 and 2040 GMT.

Table 9.--850310 Survey flight #3: Alaska Peninsula oceanography flight log continued

TIME GMT (HHMMSS)	TK (deg)	LA (N)	LO (W)	RA (m)	GA (m)	SP (mb)	TA (°C)	TD (°C)	WD (deg)	WS (ms ⁻¹)	HD (deg)	COMMENTS
002030	221	57.43°	155.06°		95		-3	-8	270	13	227	AXBT 7
002958	218	57.05°	155.66°		103		-2	-10	253	10	223	AXBT 8
0038	218	56.73°	156.16°		106		-2	-9	275	15	227	
004215	218	56.55°	156.44°		160		-2	-10	285	9	225	AXBT 9
004800	042	56.70°	156.67°		100		-2	-9	260	10	038	AXBT 10
005840	041	57.20°	155.85°		100		-2	-11	290	9	036	AXBT 11
010630	52	57.56°	155.36°		100		-2	-10	280	15	49	AXBT 12
011100	231	57.45°	155.42°		1851		-13	-18	266	18	239	CLIMB
012000	236	57.21°	156.20°		4245		-23	-27	265	24	243	SUTWIK I. RUN
013100	160	56.92°	156.85°		4258	994	-21	-28	263	25	173	ODW 2
013400	159	56.72°	156.72°		4269	994	-21	-28	261	25	170	ODW 3
013420	157	56.70°	156.70°		4272	994	-21	-28	262	24	169	AXBT 13
013630	152	56.56°	156.57°		4279	996	-22	-28	262	25	163	ODW 4
013730	147	56.49°	156.50°		4275	995	-21	-28	263	25	158	AXBT 14
014750	106	56.17°	156.04°		4289	995	-21	-25	260	26	114	AXBT 15
105036		56.2°	156.0°									ODW 5
015200	323	56.17°	156.06°		4290		-21	-25	260	26	313	
015720	322	56.42°	156.40°		4283	996	-21	-25	259	24	314	ODW 6
020100	325	56.61°	156.66°		4275	996	-21	-24	257	25	316	ODW 7 REPEAT OF ODW 4
020300	18	56.76°	156.63°		4272		-21	-27	260	23	10	
021020	19	57.31°	156.31°		4241		-23	-28	265	22	11	
021850	163	57.57°	156.37°		4033		-22	-29	267	21	173	WIDE BAY RUN
022100	157	57.44°	156.26°		4235	992	-22	-28	265	25	168	ODW 8
022230	145	57.34°	156.15°		4253	995	-22	-28	267	24	155	AXBT 16
022320	145	57.30°	156.08°		4256	996	-22	-28	267	24	155	ODW 9
022545		57.2°	155.9°									ODW 10
022700	146	57.06°	155.81°		4259	996	-22	-28	267	26	157	AXBT 17
022930	145	56.92°	155.62°		4270		-22	-26	270	27	156	
023640	056										051	
024000	238										244	
024430	326	56.47°	155.05°		4286	996	-20	-26	266	23	318	ODW 11
024510	327	56.50°	155.09°		4282	996	-21	-24	267	24	318	AXBT 18
025410	324	56.96°	155.68°		4271	996	-22	-25	260	24	316	ODW 12
030545		57.3°	156.1°									ODW 13 REPEAT OF ODW 9
031000	038	57.21°	155.71°		4360		-22	-28	256	23	033	
032000	041	57.88°	154.67°		4396		-21	-29	270	23	035	
033500	039	58.83°	152.99°		4400		-26	-31	220	13	040	
034900	350	59.77°	151.32°		4286		-26	-32	260	10	348	
040400	015	60.95°	151.21°		2876		-15	-19	185	8	019	

5.4 850312 Comma Cloud Flight

Scientific Party: A. Macklin (Principal Investigator), PMEL
S. Businger, University of Washington

In the Gulf of Alaska and Bering Sea, the post frontal region of a low pressure system brings dry, cold, Arctic air southward over relatively warm, open water. The tremendous flux of heat and moisture can become organized at many scales including the formation of mini low-pressure systems with their own unique pressure troughs and low-pressure centers. These are called polar lows or comma clouds due to the shape of their clouds in satellite imagery. The high winds and fluxes can have a great affect on the underlying ocean. The comma cloud flight was designed to examine the structure and dynamics of one of these features in its developing stages. The flight configuration (Figure 11; Table 10) involved the deployment of 16 ODWs (14 good) and 2 AXBTs (2 good) over a butterfly pattern at near 6000 m altitude. One leg was oriented nearly parallel to the pressure trough and the other was nearly perpendicular. The plane also flew a vertical sounding from 5700 m to 50 m and back to 6000 m near the center of the pattern. There were problems with the radar altimeter from 2158 to 13/0010 GMT.

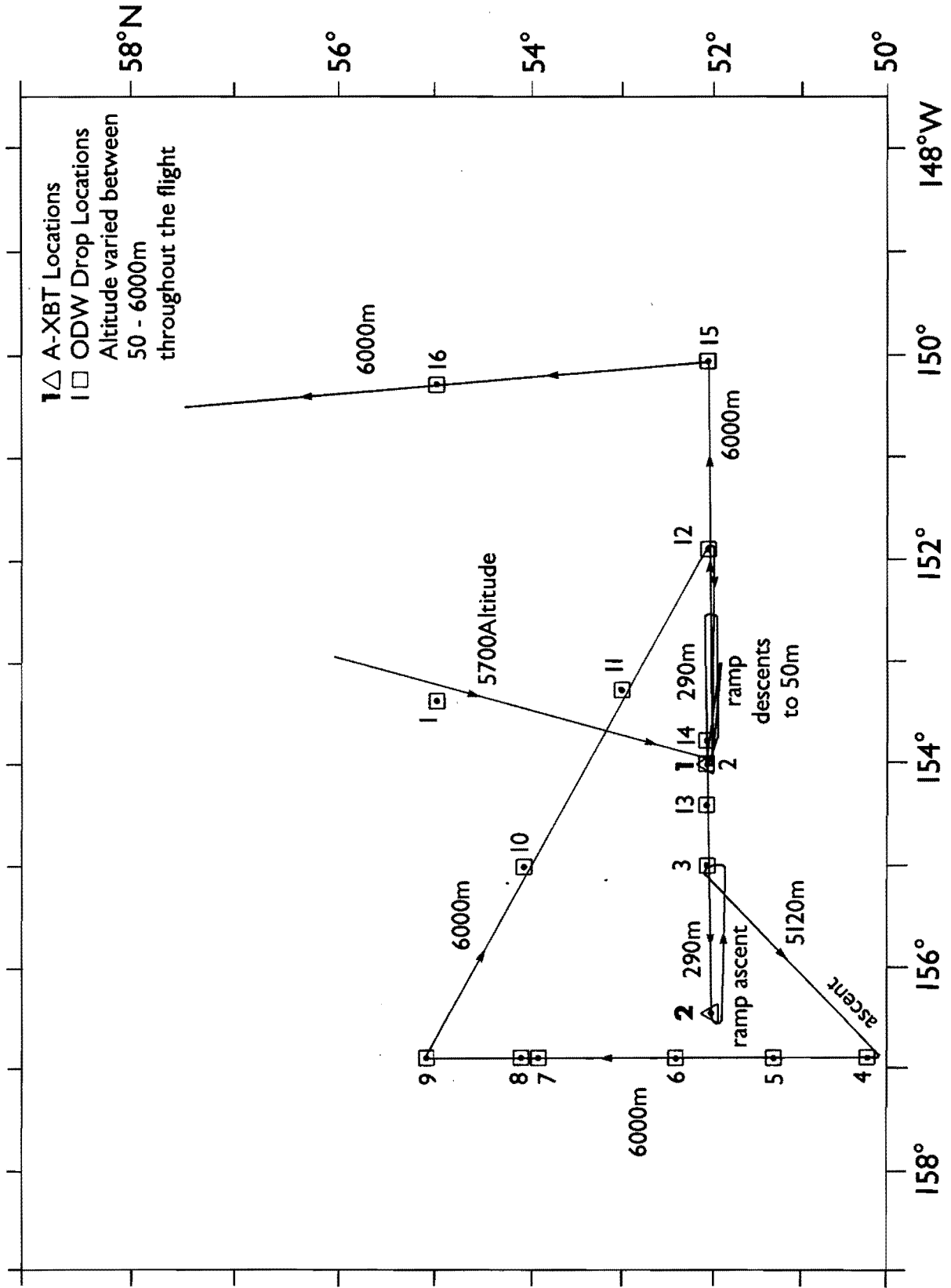


Figure 11.--850312 Comma cloud flight.

Table 10.--850312 Comma cloud flight log

TIME GMT (HHMMSS)	TK (deg)	LA (N)	LO (W)	RA ² (m)	PA (m)	HT ¹ SP (mb)	TA (°C)	TD (°C)	WD (deg)	WS (ms ⁻¹)	COMMENTS	
195115											OUT ANC	
200350											OFF ANC	
2025	207	60.06°	151.11°		6098		-45		215	13		
2045	192	58.70°	151.97°	5617	6019	5140	-43	-44	218	17		
2100	195	57.69°	152.35°	5637	6103	5151	-44	-44	216	11		
2115	193	56.65°	152.76°	5649	6095	5167	-42	-43	224	20		
2130	188	55.66°	153.09°	5659	6088	5183	-41	-44	222	22		
2146	188	54.50°	153.39°	5675	6081	5201	-41	-43	224	22	ODW 1	
2200	189	53.53°	153.63°		6097		-41	-43	220	24		
2220	187	53.13°	153.96°	5726	6092	5247	-43	-44	218	28	ODW 2	
2223	092	51.94°	153.87°	BEGIN ASCENT SOUNDING TO 10,000' AT 1000'/MIN								
224250 - 224650	BEGIN DESCENT FROM 10,000 AT 600'/MIN - HEADING 090											
224850 - 225420	HEADING 270											
225600 - 230600	HEADING 090 END DESCENT SOUNDING											
2325	272	52.01°	154.00°	290	323	1011	0	-7	225	15	AXBT 1	
2325		RD = +4.0		BT = +.8								
2342	269	52.01°	155.41°	294	341	1009	-2	-7	245	14		
2350	269	52.00°	156.07°	300	351	1010	-3	-6	270	15		
2355	270	52.00°	156.45°	294	346	1009	-3	-10	274	15	AXBT 2	
2357	089											BEGIN CLIMB
0012	272	52.08°	155.03°	5126	5495	5203	-42		205	25	ODW 3	
0038	210	50.65°	156.36°	6003	6427	5218	-47	-53	268	23		
0048	008	50.17°	156.91°	6013	6424	5225	-45	-49	265	23	ODW 4	
0103	000	51.32°	156.86°	5980	6422	5194	-48	-48	265	17	ODW 5	
0119	359	52.61°	156.87°	5939	6414	5173	-48	-50	231	16	ODW 6	
0134	001	53.87°	156.89°	5933	6418	5164	-50	-50	200	14	ODW 7 BAD TEMPERATURE	
0137	000	54.11°	156.89°	5932	6417	5169	-51		205	11	ODW 8	
0150	142	55.12°	156.74°	5921	6412	5166	-50	-51	210	18	ODW 9	
0209	136	54.11°	154.98°	5952	6403	5195	-50	-52	210	14	ODW 10	
0228	138	53.02°	153.29°	5980	6400	5220	-46	-49	210	21	ODW 11	
0247	274	51.99°	151.91°	6020	6399	5254	-45	-48	205	23	ODW 12	
0308	267	52.00°	154.36°	5980	6396	5227	-47	-49	255	16	ODW 13 Bad	
0316	089	52.07°	154.36°	5976	6395	5225	-47	-50	250	21	ODW 13 Bad	
0320	082	52.08°	153.71°	5985	6397	5231	-49	-50	224	20	ODW 14	
0348	357	52.11°	150.00°	6035	6395	5290	-44	-48	211	23	ODW 15	
0421	358	55.02°	150.20°	6001	6394	5238	-43	-48	195	18	ODW 16	
054042											LAND ANC	
0545											IN ANC	

ANC PRESSURE 999.7 STATION PRESSURE 996.5

¹ Surface pressure at low flight level (SP), else, standard height of aircraft (HT) in meters.

² From 2158 to 13/0010 GMT the radar altimeter readings were erratic.

5.5 850314 Storm/Coast Interaction

Scientific Party: J. Overland (Principal Investigator), PMEL
R. Eaton, NWS
J. Eise, State of Alaska
J. Green, NWS
U. Schwarz, University of Calgary
J. Wilson, PMEL

As a storm approaches a mountainous coastline such as the southeast coast of Alaska, the structure of the storm can be modified considerably. The features of the storm often go undetected in synoptic analyses because of the lack of data in this region. The objectives of this flight were to study the vertical and horizontal structure of a storm as it impacts the coast, by deploying 16 ODWs (13 good; Table 11) along the tracks shown in Figure 12. Three AXBTs were launched with all good.

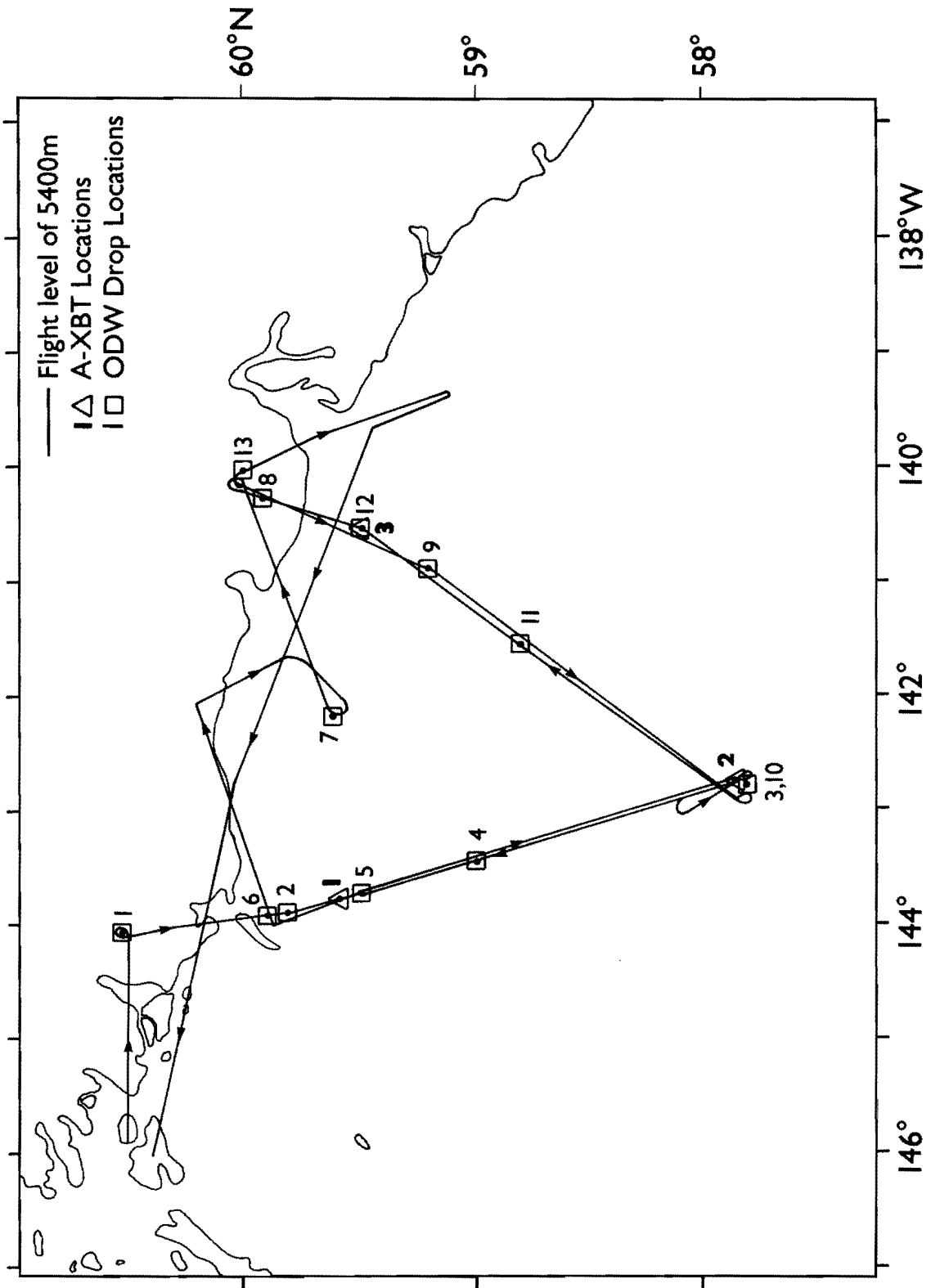


Figure 12.--850314 Storm/coast interaction.

Table 11.--850314 Storm/coast interaction flight log

TIME GMT (HHMMSS)	TK (deg)	LA (N)	LO (W)	GA (m)	PA (m)	SP (mb)	TA (°C)	TD (°C)	WD (deg)	WS (ms ⁻¹)	COMMENTS
223138		61.17°	149.96°								
232740	162	60.47°	144.15°				-36	-40	197	6	
232900	162	60.50°	144.10°		482		-36	-40	200	9	ODW 1
233800	172	59.80°	143.90°		482		-36	-41	174	6	ODW 2
234245	164	59.59°	143.78°								AXBT 1
000752	164	57.83°	142.76°								AXBT 2
002300	343	57.80°	142.80°		484		-35	-40	134	17	ODW 3
003800	343	59.00°	143.40°		483		-35	-40	145	11	ODW 4
004400	343	59.50°	143.70°		483		-36	-39	154	8	ODW 5
005100	336	59.90°	143.90°		484		-36		165	7	ODW 6
011800	090	59.60°	142.20°		408		-45	-46			ODW 7
013500	201	59.90°	140.30°		408		-44	-46	199	12	ODW 8
014500	201	59.20°	140.90°		483						ODW 9
021200	215	57.80°	142.80°		484						ODW 10
022800	035	58.80°	141.40°		483		-35	-38	137	14	ODW 11
023800	035	59.50°	140.50°		416		-41	-41	157	10	ODW 12
024104	016	59.50°	140.49°								AXBT 3
024700	016	60.00°	140.00°		408		-45	-46	194	12	ODW 13
030800		59.47°	139.68°				-46	-48	170	14	

Note: The dynamic angle of attack sensor was inoperative from 2300 GMT.

5.6 850320 Shelikof Strait Oceanography

Scientific Party: A. Macklin (Principal Investigator), PMEL
J. Brooks, U.S. Air Force
S. Businger, University of Washington
L. Incze, NWAFC, University of Washington
J. Wilson, PMEL

The oceanography flight was designed to: 1) survey the SST and surface wind field in Shelikof Strait and its exit region; and 2) locate a wavelike feature near the exit region of the Strait and determine its horizontal and vertical extent.

Investigation of infrared satellite photographs show wavelike features on the interface between Cook Inlet outflow and water entering Shelikof Strait from the Gulf of Alaska (Mysak et al., 1981). These waves propagate down the Strait in the direction of the mean flow. At the southwest end of the Strait the waves expand rapidly, slow their propagation speed, and dissipate. This expanded wavelike feature is a quasi-permanent feature in the late winter. It exists in the pollock spawning area and may be important to the transport of nutrients, eggs, and larvae.

The SST was mapped in a sawtooth pattern from Cape Douglas down Shelikof Strait at low altitude (Figure 13). After the Shelikof Strait SST survey, the plane flew a dense grid ('mow the lawn') to map the SST and examine the horizontal characteristics and extent of the wave at the exit region from the Strait. The subsurface vertical and horizontal signature of the expanded wavelike feature will be determined from AXBTs deployed over the grid. Similarly, AXBTs were dropped within Shelikof Strait to define a wavelike feature.

A total of 45 AXBTs were launched with 41 good. A detailed flight log is given in Table 12.

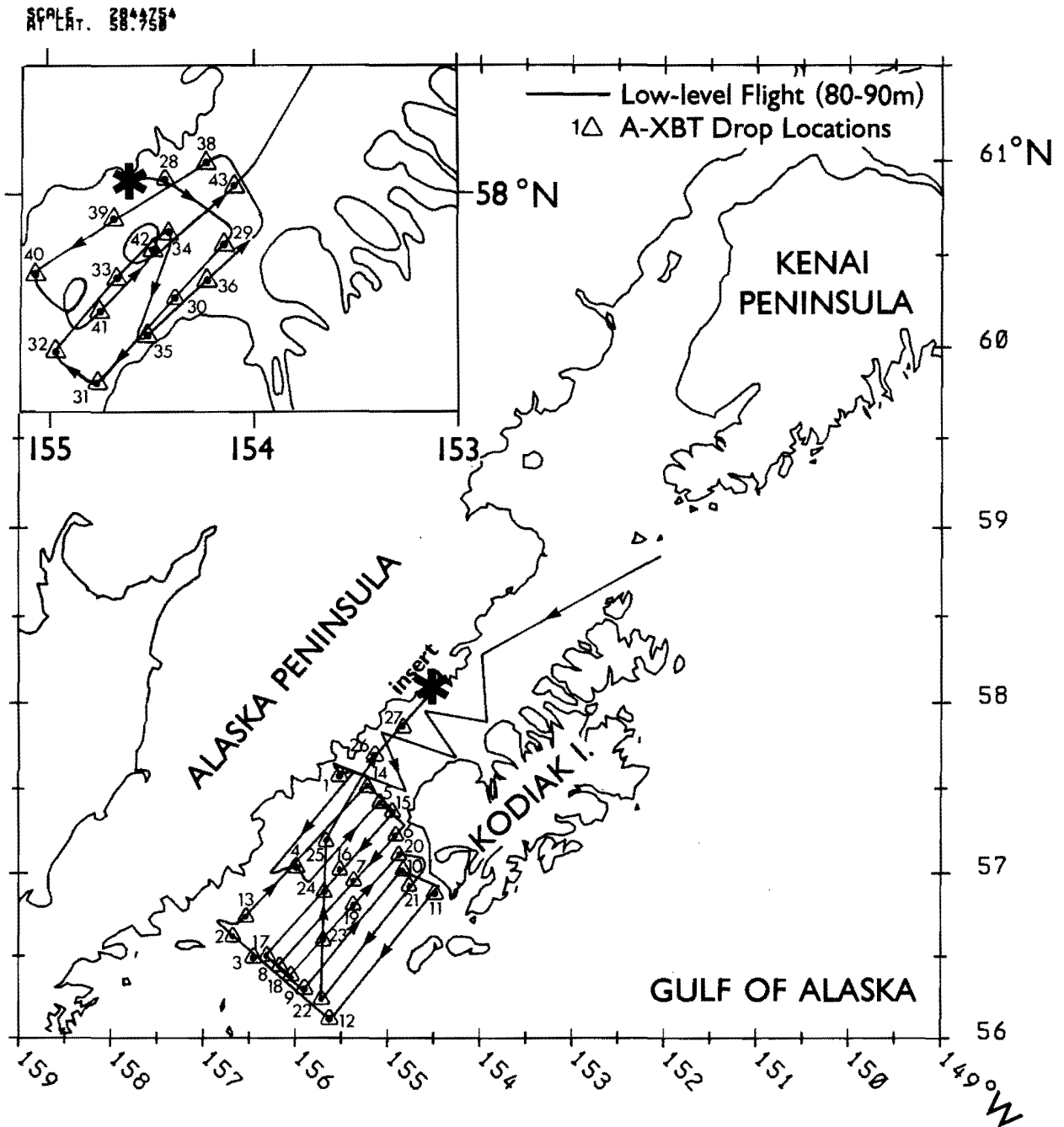


Figure 13.--850320 Shelikof Strait oceanography.

Table 12.--850320 Shelikof Strait oceanography flight log

TIME GMT (HHMMSS)	TK (deg)	LA (N)	LO (W)	RA (m)	PA (m)	SP (mb)	TA (°C)	TD (°C)	WD (deg)	WS (ms ⁻¹)	COMMENTS
184730											OUT ANC
185442											OFF ANC
1933	216	59.58°	152.73°	204	327	1000	-1	-7	070	3	
1945	223	58.81°	153.07°	79	205	999	2	-5	130	6	PT 2
1957	169	58.23°	153.96°	81	213	998	0	-2	030	6	PT 3
2004	285	57.88°	154.02°	82	216	998	1	-5	075	5	PT 4
2010	152	57.90°	154.59°	90	224	997	1	-4	055	9	PT 5
2015	303	57.66°	154.38°	81	222	997	1	-5	065	7	PT 6
2022	149	57.83°	155.11°	84	225	997	1	-2	054	9	PT 7
2030	305	57.42°	154.79°	84	229	997	1	-6	650	7	PT 8
2038	135	57.65°	155.54°	160	304	997	1	-3	050	8	PT 9
2042	219	57.55°	155.40°	81	225	997	2	-3	055	9	AXBT 1
2055		56.91°	156.25°								AXBT 2*
2101	033	56.90°	155.84°	91	242		2	-1	095	8	AXBT 3*
2105	039	57.06°	155.58°	86	230		2	-3	103	5	AXBT 4
2113	040	57.43°	155.09°								AXBT 5
2119	223	57.25°	154.89°	80	228		2	-5	104	4	AXBT 6
2126	222	57.95°	155.40°	84	235	996	1	0	088	8	AXBT 7 BAD
2137	217	56.44°	156.16°								AXBT 8
2141	038	56.30°	155.88°	87	241		1	-4	205	5	AXBT 9
2157	041	57.02°	154.80°			995					AXBT 10
2204	221	56.83°	154.62°	81	234		1	0	159	6	AXBT 11
2219	219	56.15°	155.64°	80	238	995	1	-6	200	4	AXBT 12 BAD
2229	314	56.51°	156.39°								PICKUP AXBT 3
2233	318	56.68°	156.73°								PICKUP AXBT 2
2237	043	56.70°	156.52°	85	247		2	-2	105	6	AXBT 13
2257	040	57.50°	155.23°								AXBT 14
2302	220	57.35°	154.97°	84	235		2	-4	060	8	AXBT 15
2309	222	57.02°	155.51°	81	247	995	1	-1	060	8	AXBT 16
2321	218	56.50°	156.30°	84	250	994	1	-2	170	2	AXBT 17
2325	040	56.36°	156.04°	73	240		1	-5	195	4	AXBT 18
2336	041	56.87°	155.25°	85	249	994	1	-2	193	6	AXBT 19
2342	041	57.13°	154.84°	88	247		1	-2	140	7	AXBT 20
2348	219	56.93°	154.80°	86	244	995	1	-1	150	5	AXBT 21
0004	219	56.23°	155.71°	83	249	994	1	-6	140	3	AXBT 22 BAD
0011	002	56.58°	155.70°	87	255	994	1	-5	180	7	AXBT 23
0016	000	56.88°	155.69°	88	255	994	1	-3	165	6	AXBT 24
0022	000	57.20°	155.69°	87	252		1	-3	075	8	AXBT 25
0033	042	57.68°	155.16°	92	251	995	2	-2	061	12	AXBT 26
0038	048	57.85°	154.81°	90	246	995	2	-4	058	12	AXBT 27
0043	054	58.02°	154.45°	89	240		3	-6	040	7	AXBT 28
0049	233	57.81°	154.00°	87	240	995	2	-1	048	11	AXBT 29

* AXBTs 2 and 3 were dropped early due to a rain squall,
 AXBTs were dropped at the planned 2 and 3 locations later in the flight

Table 12.--850320 Shelikof Strait oceanography flight log continued

TIME GMT (HHMMSS)	TK (deg)	LA (N)	LO (W)	RA (m)	PA (m)	SP (mb)	TA (°C)	TD (°C)	WD (deg)	WS (ms ⁻¹)	COMMENTS
0053	229	57.64°	154.37°	80	238		3	-3	048	11	AXBT 30
0057	233	57.49°	154.76°	80	240		3	-4	065	10	AXBT 31
0101	048	57.58°	154.94°	87	247		2	-2	065	12	AXBT 32
0106	047	57.76°	154.62°	87	245	995	2	-1	045	12	AXBT 33
0111	047	57.93°	154.26°	90	246	995	2	-2	040	12	AXBT 34
0121	049	57.57°	154.51°	81	241	995	3	-3	060	10	AXBT 35 BAD
0126	047	57.74°	154.18°	81	241		3	-2	051	11	AXBT 36
											AXBT 37 SKIPPED
0136	241	58.07°	154.25°	85	236		1	-2	040	12	AXBT 38
0140	237	57.93°	154.65°	83	237	995	2	-4	052	12	AXBT 39
0144	228	57.75°	155.02°	79	238		2	-3	059	15	AXBT 40
0153	046	57.68°	154.77°	88	247	995	2	-1	056	13	AXBT 41
0158	048	57.84°	154.45°	90	247		2	-1	048	12	AXBT 42
0213	057	58.00°	154.01°	83	243	995	2	-2	030	8	AXBT 43
0243	007	59.38°	152.48°	131	253	992	0	0	039	12	
032942											LAND ANC
033330											IN ANC

5.7 850323 Survey Flight #2: Alaska Peninsula Meteorology

Scientific Party: A. Macklin (Principal Investigator), PMEL
S. Brewer, NBC-TV, Anchorage
H. Jackson, FAA
B. McCubbin, NOS
J. Overland, PMEL
D. Seleski, NBC-TV, Anchorage

The objectives of survey flight #2, were to: 1) locate and measure the intensity and extent of a coastal jet that is forced by the high mountains; and 2) survey the nearshore, low-level meteorological conditions. The low-level survey extended from lower Cook Inlet to Unimak Pass along the shore of the Alaska Peninsula (Figure 14a). In addition to the meteorological measurements (winds, temperature, pressure, humidity, etc.) the SST was mapped. To locate and measure the coastal jet, two cross sections were flown perpendicular to the axis of the Alaska Peninsula. An onshore run with ODWs and AXBTs was flown in the vicinity of Mitrofanina Island, a line that has been repeatedly occupied by research vessels over the last year. Three AXBTs were launched; one near the beach, one at about 50 km, and one at about 100 km offshore. A three level vertical stack was flown off Ugaiushak Island (Figure 14b) including three vertical profiles, AXBTs, and a flyover of a shore-based meteorological platform. Two ODWs between the Shumagin Islands and Unimak Pass will give additional information on the profile of wind with height.

A total of seven AXBTs were deployed with 6 good and 6 ODWs were dropped with all good. Details are provided in Table 13.

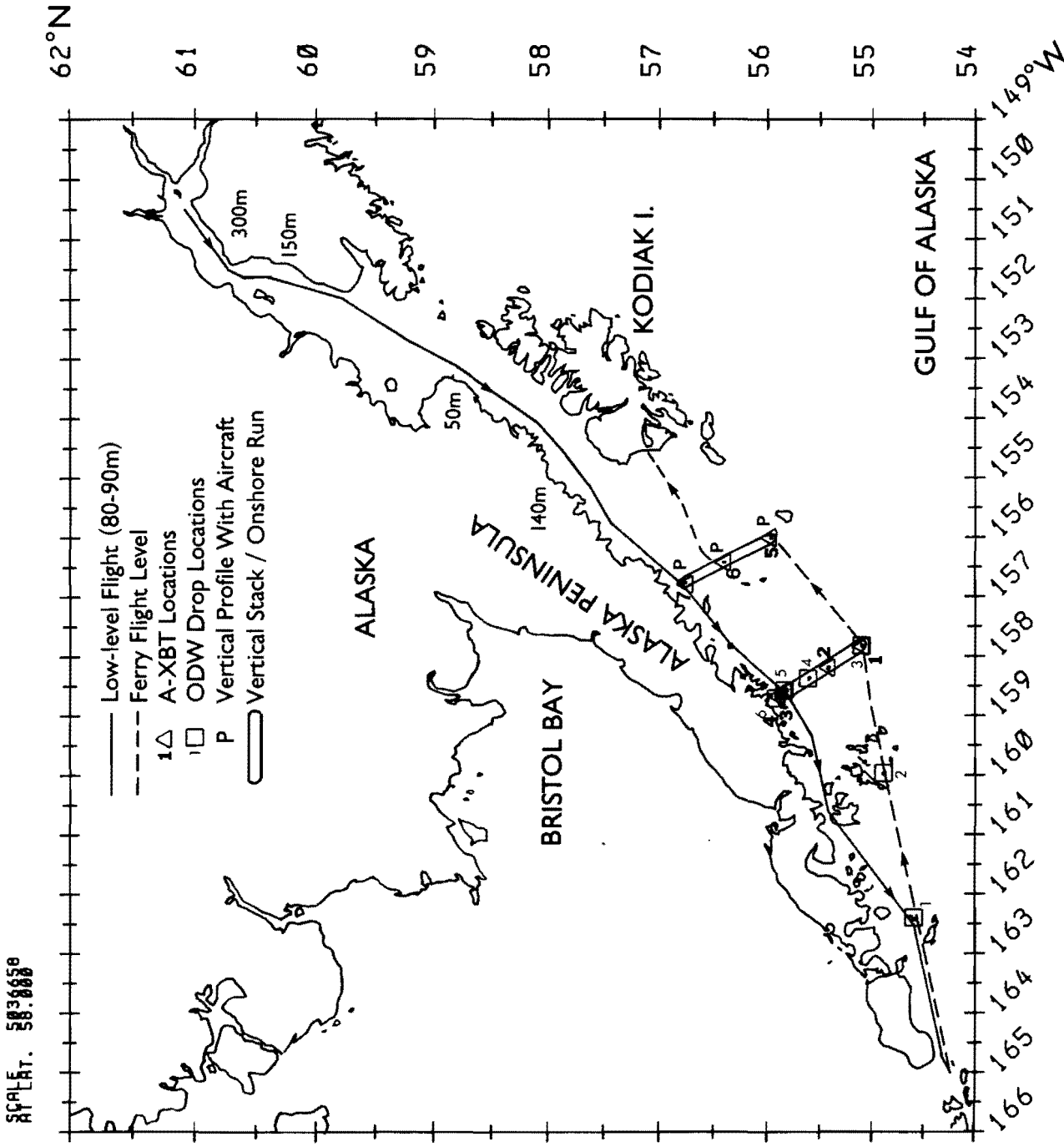


Figure 14a.--850323 Survey flight #2: Alaska Peninsula meteorology. The southwestern onshore run was flown at 3650 m altitude, the northeastern stack is shown in Figure 14b.

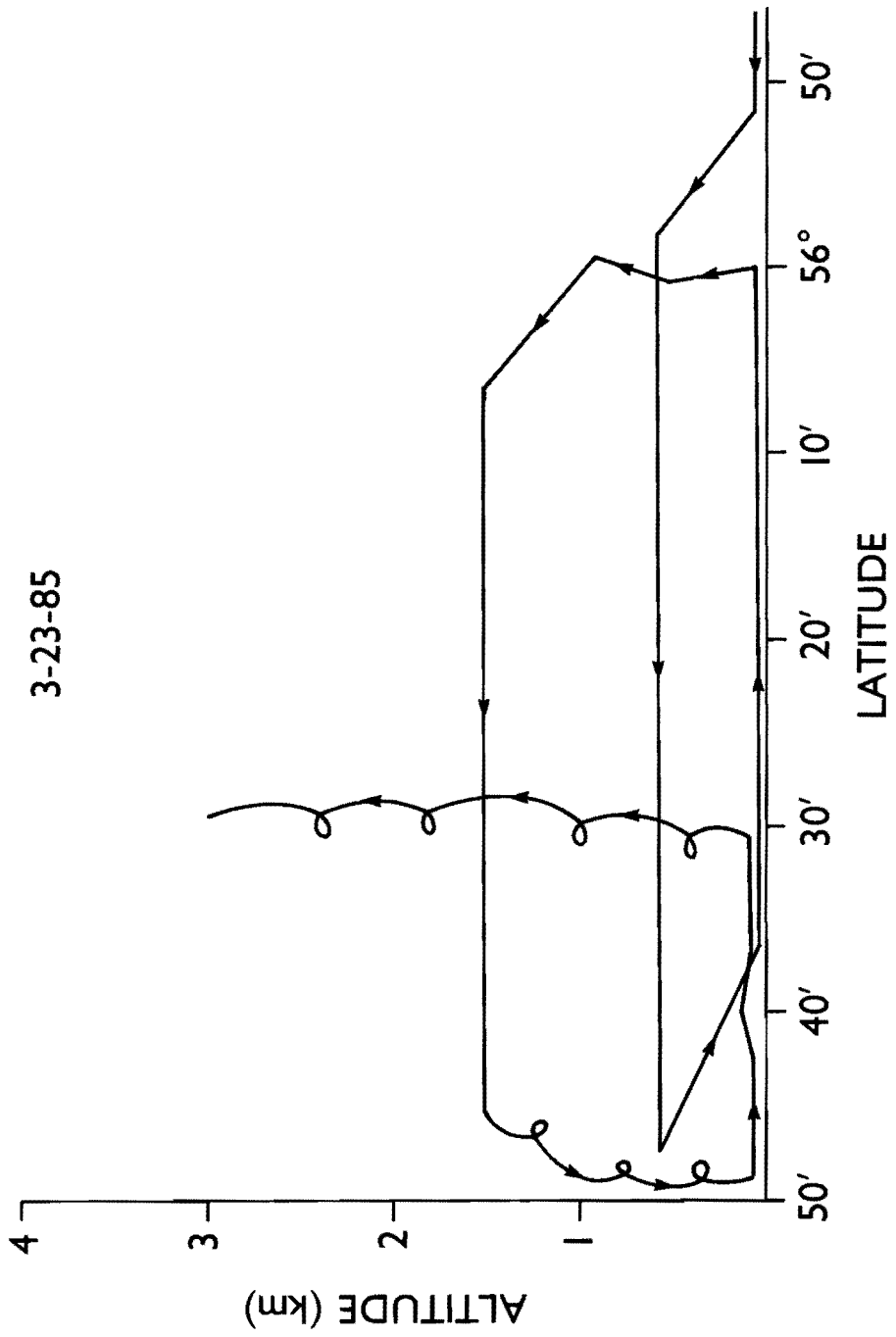


Figure 14b.--850323 Vertical stack during survey flight #2: Alaska Peninsula meteorology.

Table 13.--850323 Survey flight #2: Alaska Peninsula meteorology flight log

TIME GMT (HHMMSS)	TK (deg)	LA (N)	LO (W)	GA (m)	PA (m)	SP (mb)	TA (°C)	TD (°C)	WD (deg)	WS (ms ⁻¹)	HD (deg)	COMMENTS
180600	234	60.87°	151.18°	295	411	1001	0	-12			234	
182700	212	59.66°	152.14°	151	262	1001	1	-4	040	3.5	213	
183700	206	59.09°	152.80°	146	260	1000	1	-2	090	4.0	204	
183900				85								
184700	216	58.60°	153.38°	79	195	1000	1	-4	045	5.0	218	
191100	234	57.66°	155.20°	144	257	1000	-4	-9	315	17	242	
192100	215	57.25°	156.10°	86	186	1007	-5	-13	314	28	230	
193700	236	56.60°	157.21°	96	178	1005	-6	-12	317	20	249	
195800	245	55.77°	158.75°	98	165	1006	-3	-16	340	12	254	
201740	258	55.43°	163.51°	90	113	1012	-6	-15	335	14	269	
203100	231	54.97°	161.70°	86	84	1014	-5	-14	325	12	240	
204700	257	54.61°	162.75°	81	67	1016	-4	-11	329	9	263	
213000	077	54.47°	163.44°	3338	3555	1013	-24	-31	290	15	074	
213750	077	54.62°	162.33°							74		ODW 1
215600	79	54.84°	160.17°	3313	3556	1011	-25	-35			76	
215800												ODW 2
223600	331	55.05°	157.78°	3650	3917	1008	-25	-30	208	6	330	ODW 3
224250												AXBT 1
224250	324	55.45°	158.22°	3650	3923	1006	-25	-29			324	AXBT 2
224500	327	55.56°	158.36°	3650	3922		-25	-29			326	ODW 4
224900		55.83°	158.64°									ODW 5 AXBT 3 BAD
225500	131	55.88°	158.73°								134	ODW 6
225615		55.82°	158.65°									AXBT 4
232100	051	55.66°	156.65°	87	151	1006	-4	-9			043	
232820	329	55.98°	156.02°								330	AXBT 5
233822												AXBT 6
234650	330	56.78°	156.81°	600	707		-9	-16	319	19	329	AXBT 7
234750	060										075	
235050	240										245	
225220												END
000230	149	56.19°	156.19°	85	154	1006	-5	-11			154	
002700	060										050	
000830												END
000950	240										247	
001120												END
002400		56.64°	156.64°	1516	1669		-11	-15				
002645	060										059	
002945												END
003125	240										243	
003425												END
003615	060										057	
003915												END
004140	240										247	
004600												END
005050	060										065	4th profile
005350												END

Table 13.--850323 Survey flight #2: Alaska Peninsula meteorology flight log continued

TIME GMT (HHMMSS)	TK (deg)	LA (N)	LO (W)	RA (m)	PA (m)	SP (mb)	TA (°C)	TD (°C)	WD (deg)	WS (ms ⁻¹)	HD (deg)	COMMENTS
005530	240										244	
005845												END
010030	060										57.5	
010300												END
010520	240										243	
010820												END
011000	060										061	
011300												END
014200	068	57.72°	152.47°	5380	5807	1011	-40	-43			068	

5.8 850328 Shelikof Strait Meteorology

Scientific Party: A. Macklin (Principal Investigator), PMEL
B. McCubbin, NOS
A. Miller, NWS
J. Overland, PMEL
R. Scheidt, NWS
J. Wilson, PMEL

There is a lot of interest in the physics and predictability of local wind fields in Shelikof Strait, as it is an active shipping and fishing area. The meteorology flight was designed to address: 1) the horizontal and vertical characteristics of gap winds in Shelikof Strait; and 2) the abrupt return to geostrophic conditions in the exit region. Figure 15 shows the flight pattern. The plane descended to 50 m and dropped two AXBTs - one off Cape Douglas, the other off Shuyak Island in the same positions as those of the Kenai Peninsula survey flight in order to observe the time rate of change of thermal structure with depth north of the Strait. After one zig-zag across the Strait, a 4-level section 50 km long was oriented across the northern end of the Strait. A second 50 km long stack was oriented along the axis of the Strait and crossed the first stack. At the southwestern end of the Strait, a 5-level, 50 km long cross-strait stack was flown. This was followed by a 100 km long, 5-level vertical stack oriented along the strait southwestward into the exit region. The last 5-level stack was about 75 km long, located in the exit region, and was oriented cross-strait. The stacks were flown at 80, 300, 600, 1050, and 1500 m and were connected by low-level (80 m) sawtooth tracks. AXBTs were deployed at the end of each cross-strait stack with an additional AXBT in the middle of the exit-region, cross-strait stack and at the ends of the zig-zag pattern. The return flight to Anchorage included an ODW east of Kodiak Island to establish the offshore wind profile.

Fifteen AXBTs and one ODW were launched with all good. Locations of specific events are given in Table 14.

SCALE: 28:1250
REF. 28:958

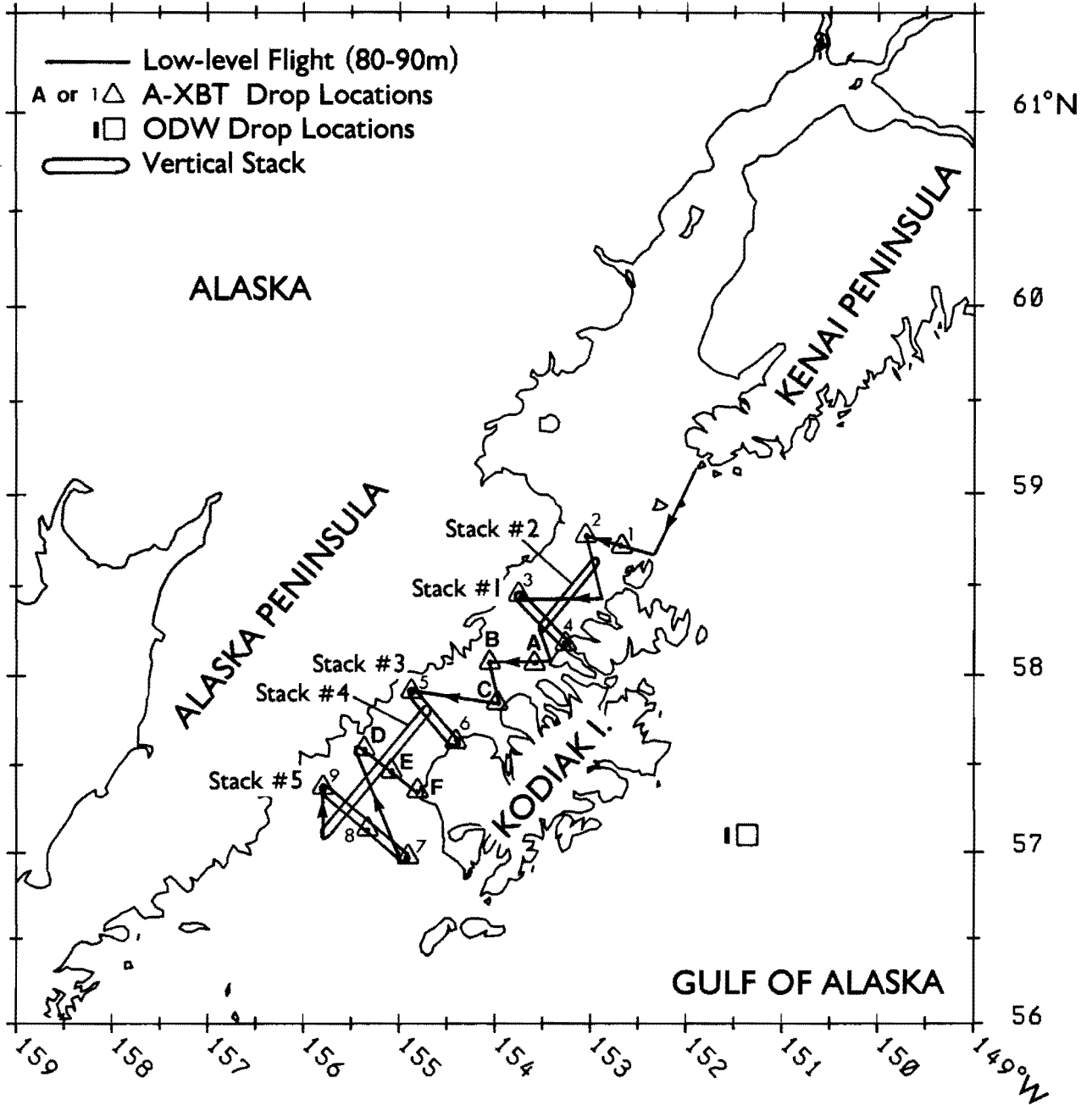


Figure 15.--850328 Shelikof Strait meteorology.

Table 14.--850328 Shelikof Strait meteorology flight log

TIME GMT (HHMMSS)	TK (deg)	LA (N)	LO (W)	RA (m)	PA (m)	SP (mb)	TA (°C)	TD (°C)	WD (deg)	WS (ms ⁻¹)	COMMENTS
195006											OUT ANC
2042	210	59.09°	151.90°	86	112	1011	-2	-7	245	1	PT 2
205540	297	58.70°	152.67°	85	114	1011	-2	-9	360	5	AXBT 1
205950	297	58.80°	153.09°	87	112	1010	-3	-11	002	6	AXBT 2
2107	161	58.43°	152.89°	77	112	1010	-2	-6	070	8	PT 5
211740	131	58.38°	153.78°	81	116	1010	-2	-7	050	8	AXBT 3
212230	130	58.20°	153.37°	78	114	1009	0	-6	045	8	AXBT 4
2125	312	58.21°	153.29°	300	350		-3	-6	065	6	STACK #1
2133	131	58.39°	153.72°	611	669		-6	-8	080	5	
2146	310	58.45°	153.84°	1514	1621		-9	-19	185	6	↓
2150	044	58.33°	153.55°	1216	1308		-9	-14	170	7	↑
2200	224	58.61°	153.00°	600	662		-7	-10	090	5	STACK #2
2210	041	58.32°	153.58°	300	346		-4	-8	065	9	
2227	225	58.32°	153.58°	86	117	1010	-2	-9	053	8	↓
223350	285	58.04°	153.59°	84	123	1009	0	-5	040	7	AXBT A
223800	285	58.10°	154.06°	83	122	1009	0	-6	045	8	AXBT B
224310	161	57.83°	153.96°	85	134	1009	0	-4	045	9	AXBT C
225420	129	57.87°	154.86°	85	130	1009	0	-8	050	8	AXBT 5
230010	132	57.65°	154.40°	80	128	1008	0	-5	045	10	AXBT 6
2304	311	57.72°	154.47°	297	354		-2	-5	045	12	STACK #3
2311	130	57.86°	154.84°	615	684		-5	-9	055	8	
2319	309	57.71°	154.40°	1068	1153		-6	-16	170	2	
2328	121	57.89°	154.87°	1520	1634		-9	-19	175	5	↓
2330	223	57.78	154.69°	1527	1640		-9	-20	155	5	↑
2347	042	57.15°	155.74°	1058	1151		-6	-17	125	4	STACK #4
0005	223	57.83°	154.64°	605	676		-4	-9	065	9	
0022	042	57.16°	155.71°	306	375		-1	-5	045	9	
0054	220	57.15°	155.73°	81	151	1005	1	-4	050	12	↓
010100	130	57.35°	155.81°	80	148	1005	1	-4	056	11	AXBT 9
010640	129	57.16°	155.37°	79	157	1004	1	-5	035	11	AXBT 8
011120	128	56.99°	155.00°						025	7	AXBT 7
0115	306	56.99°	154.95°	305	389		1	-8	060	7	STACK #5
0129	130	57.39°	155.90°	590	686		-4	-6	045	9	
0143	312	57.01°	155.04°	1056	1164		-6	-8	095	8	
0203	131	57.01°	155.02°	1508	1647		-9	-11	115	6	↓
0208	345	57.03°	155.06°	81	165	1003	2	-5	035	8	PT 20
022140	143	57.60°	155.35°	81	155	1005	0	-4	050	13	AXBT D
022420	130	57.49°	155.14°	80	155	1005	1	-2	048	13	AXBT E
022840		57.34°	154.82°	80	162	1004	2	-2	040	12	AXBT F
025630	351	57.07°	151.41°	5533	5793		-28	-33	225	16	ODW 1
035150											LAND ANC
035631											IN ANC

5.9 850329 Storm/Coast Interaction

Scientific Party: A. Macklin (Principal Investigator), PMEL
L. Knudsen, NOS
J. Overland, PMEL
K. Robin, Anchorage Times

A second storm/coast flight (Figure 16) was conducted in the vicinity of the 850314 flight, shifted toward the southeast. Eight AXBTs were deployed with all good and twelve ODWs were dropped with eleven good. Details are given in Table 15.

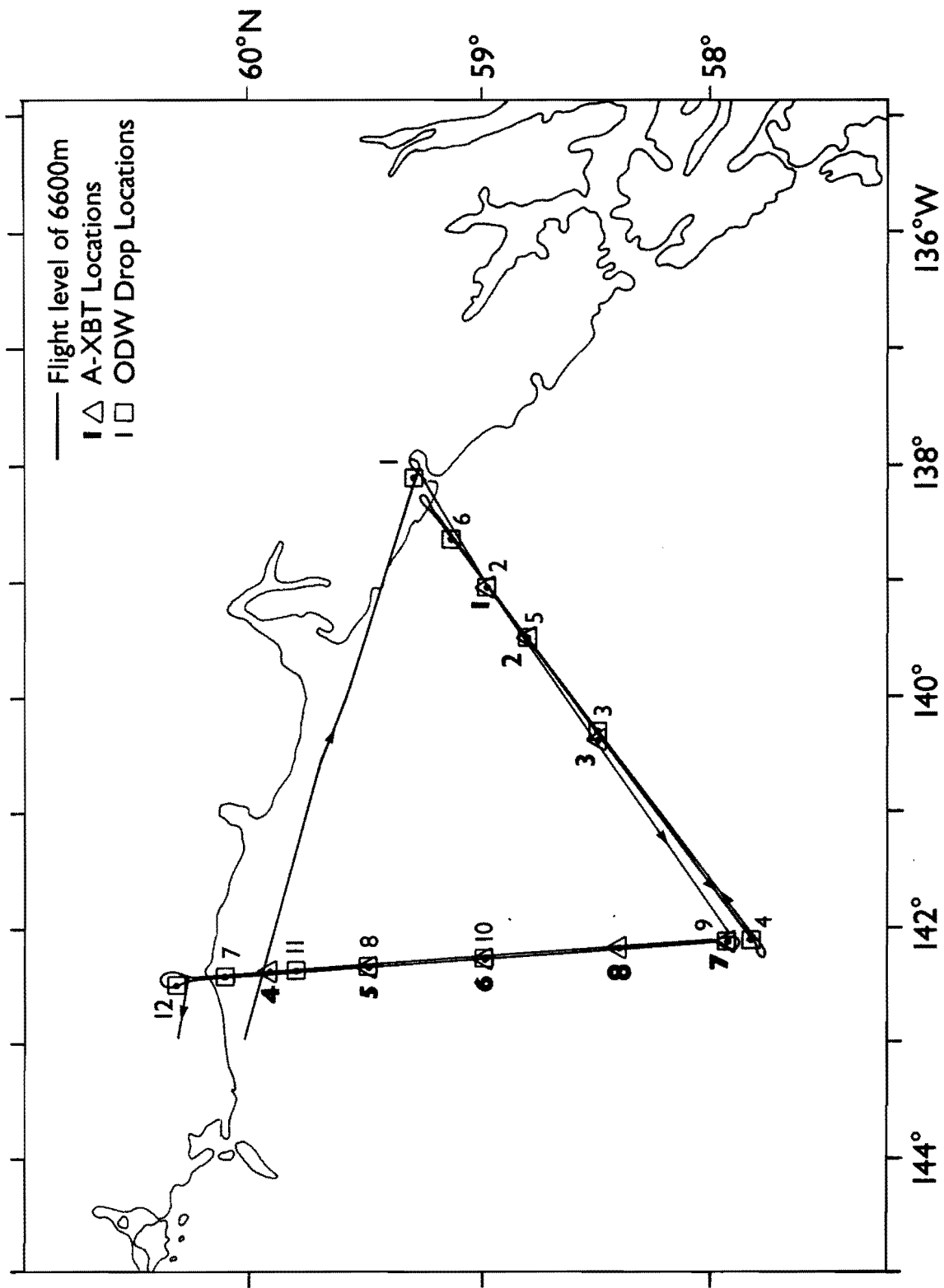


Figure 16.--850329 Storm/coast interaction.

Table 15.--850329 Storm/coast interaction flight log

TIME GMT (HHMMSS)	TK (deg)	LA (N)	LO (W)	PA (m)	SP (mb)	TA (°C)	TD (°C)	WD (deg)	WS (ms ⁻¹)	COMMENTS
205530	116	60.81°	147.94°	6512	6974	-41	-39	237	11	
213100	105	59.92°	142.23°	6631	7028	-40	-43	224	9	
220415	241	59.27°	138.08°		7000	-39	-41	187	14	ODW 1
221230	235	58.95°	139.13°		7000	-39		200	9	ODW 2
222230	233	58.50°	140.32°		7000	-38		270	14	ODW 3
224345	051	57.78°	142.03°		6991	-37		241	15	ODW 4
230250	056	58.81°	139.46°					251	12	ODW 5
230855	052	59.14°	138.61°					200	11	ODW 6
231920	232	59.03°	138.96°							BEGIN DESCENT
232045	235	58.96°	139.08°							AXBT 1
232405	236	58.81°	139.49°							AXBT 2
233130	236	58.49°	140.38°							AXBT 3
233700	237	58.30°	140.94°	1520	1718	-7	-9	130	16	
000500	355	58.97°	142.28°	1526	1719	-8	-10	125	10	
002730	170	60.21°	142.47°	6430	7032	-40	-40	223	7	
002930	178	60.07°	142.42°	6620	7031	-40	-42	233	8	ODW 7 BAD
003130	175	59.90°	142.40°					238	10	AXBT 4
003615	176	59.52°	142.36°	6625	7030	-40	-43	039	9	ODW 8 AXBT 5
004300	175	58.99°	142.28°	6630	7028	-40	-44	245	9	AXBT 6
005945	356	57.90°	142.11°	6647	7024	-38	-42	243	13	ODW 9 AXBT 7
010550	354	58.41°	142.20°	6635	7024	-38	-41	245	12	AXBT 8
011250	355	59.01°	142.27°	6626	7022	-39	-41	237	11	ODW 10
012140	355	59.80°	142.37°	6617	7020	-40	-42	230	12	ODW 11
012800	270	60.30°	142.61°		7019	-40	-42	220	11	ODW 12
013630	272	60.32°	144.00°	6534	7017	-41	-43	230	9	
015700	277	60.75°	147.45°	5743	5502	-31	-36	207	8	

6. ACKNOWLEDGMENTS

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7. REFERENCES

- Clarke, M.R., 1969: A midwater trawl for sampling discrete depth horizons. *J. Mar. Biol. Assoc. U.K.*, 49, 945-960.
- Merceret, F.J. and H.W. Davis, 1981: *The determination of navigational and meteorological variables measured by NOAA/RFC WP3D aircraft*. Tech. Memo. ERL-RFC-7, Environ. Res. Lab., Natl. Oceanic and Atmos. Admin., Boulder, CO, 21 pp.
- Merceret, F.J., R.J. De Vivo, H.W. Davis, and J.R. Parrish, 1983: *Calibration of meteorological measurements made by NOAA WP3D aircraft - 1983*. Tech. Memo. OAO-1, Office of Aircraft Ops., Natl. Oceanic and Atmos. Admin., Miami, FL, 48 pp.
- Mysak, L.A., R.D. Muench, and J.D. Schumacher, 1981: Baroclinic instability in a downstream varying channel: Shelikof Strait, AK. *J. Phys. Oceanogr.*, 11(7), 950-969.
- Pearson, C.A., 1981: *R2D2 - Rapid Retrieval Data Display*. Tech. Memo ERL-PMEL-29, Environ. Res. Lab., Natl. Oceanic and Atmos. Admin., Boulder, CO, 148 pp.
- Phinney, D.A. and C.S. Yentsch, 1985: A novel phytoplankton chlorophyll technique: toward automated analysis. *J. Plankton Res.*, 7, 633-642.
- Posgay, J.A. and R.R. Marak, 1980: The MARMAP bongo zooplankton sampler. *J. Northwest Atl. Fish. Sci.*, 1, 91-99.
- Smith, P.E. and S.L. Richardson, 1977: *Standard techniques for pelagic fish egg and larva surveys*. FAO Fisheries Tech. Paper No. 175, Food and Agriculture Organization of the United Nations, Rome, 100 pp.

Appendix A: Fishery Oceanography Experiment CTD Station Numbers

LINE 1 (CHART 16580 & 16640)

STATION NO.	LATITUDE	LONGITUDE	DEPTH (fm)	DEPTH (m)
1	58°34.6'	152°07.0'	50	91
2	58°38.5'	152°04.7'	70	128
3	58°42.0'	152°00.0'	75	137
4	58°46.0'	151°56.4'	65	119
5	58°49.0'	151°53.5'	65	119
6	58°52.7'	151°50.0'	60	110
7	58°56.8'	151°48.2'	80	146
8	59°01.0'	151°45.8'	75	137
9	59°03.7'	151°43.0'	103	188

LINE 2 (CHART 16580 & 16640)

10	59°13.0'	151°30.0'	44	80
11	59°09.5'	151°30.0'	58	106
12	59°05.5'	151°30.0'	58	106
13	59°01.8'	151°30.0'	76	139
14	58°58.2'	151°30.0'	72	132
15	58°54.5'	151°30.0'	87	159
16	58°50.5'	151°30.0'	106	194
17	58°46.5'	151°30.0'	85	155
18	58°42.5'	151°30.0'	95	174

LINE 3 (CHART 16580)

19	58°39.2'	152°39.1'	50	91
20	58°40.6'	152°43.8'	105	192
21	58°42.7'	152°49.5'	86	157
22	58°44.5'	152°55.5'	78	143
23	58°46.4'	153°02.0'	75	137
24	58°48.5'	153°08.0'	101	185
25	58°51.0'	153°13.5'	35	64

LINE 4 (CHART 16580)

26	58°19.4'	153°05.8'	50	91
27	58°21.6'	153°12.7'	103	188
28	58°24.0'	153°19.2'	93	170
29	58°25.9'	153°24.6'	100	183
30	58°28.0'	153°31.5'	80	146
31	58°30.0'	153°36.5'	70	128
32	58°31.5'	153°41.0'	30	55

LINE 5 (CHART 16580)

33	57°59.2'	153°34.0'	50	91
34	58°00.5'	153°37.5'	100	183
35	58°03.0'	153°43.0'	108	198
36	58°05.4'	153°49.0'	106	194

STATION NO.	LATITUDE	LONGITUDE	DEPTH (fm)	DEPTH (m)
37	58°08.0'	153°54.6'	110	201
38	58°10.7'	154°00.9'	140	256
39	58°13.0'	154°07.6'	50	91

LINE 6 (CHART 16580)

40	57°48.5'	153°59.5'	50	91
41	57°51.0'	154°05.0'	115	210
42	57°53.9'	154°11.0'	110	201
43	57°56.5'	154°16.5'	118	216
44	57°56.5'	154°22.5'	166	304
45	58°01.5'	154°28.5'	50	91

LINE 7 (CHART 16580)

46	57°39.0'	154°21.0'	50	91
47	57°41.1'	154°25.6'	112	205
48	57°43.5'	154°31.5'	115	210
49	57°46.1'	154°37.3'	120	219
50	57°48.8'	154°42.9'	133	243
51	57°51.4'	154°49.0'	154	282
52	57°54.1'	154°55.0'	100	183
53	57°55.2'	154°57.0'	35	64
54	57°46.7'	155°00.0'	170	311

LINE 8 (CHART 16580)

55	57°28.5'	154°42.0'	35	64
56	57°30.9'	154°47.0'	110	201
57	57°33.1'	154°52.5'	126	230
58	57°36.3'	155°00.5'	125	229
59	57°38.5'	155°04.2'	138	252
60	57°41.0'	155°10.0'	155	283
61	57°43.2'	155°15.6'	100	183

LINE 9 (CHART 16580)

62	57°12.0'	154°49.0'	42	77
63	57°14.3'	154°54.6'	80	146
64	57°17.0'	155°00.0'	117	214
65	57°19.5'	155°05.9'	130	238
66	57°22.0'	155°11.1'	132	241
67	57°24.8'	155°17.0'	138	252
68	57°27.3'	155°22.6'	152	278
69	57°30.0'	155°28.6'	161	294
70	57°32.5'	155°34.5'	50	91

STATION NO.	LATITUDE	LONGITUDE	DEPTH (fm)	DEPTH (m)
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LINE 10 (CHART 16580)

71	56°47.4'	154°37.5'	17	31
72	56°49.8'	154°43.7'	20	37
73	56°52.4'	154°48.5'	25	46
74	56°55.1'	154°54.5'	28	51
75	56°57.6'	155°00.2'	50	91
76	57°00.0'	155°06.9'	20	37
77	57°02.8'	155°11.5'	130	238
78	57°05.6'	155°17.5'	135	247
79	57°08.0'	155°22.5'	137	250
80	57°10.6'	155°28.0'	143	261
81	57°13.0'	155°34.0'	150	274
82	57°15.6'	155°40.0'	148	271
83	57°18.1'	155°45.5'	140	256
84	57°20.9'	155°51.5'	50	91

LINE 11 (CHART 16013)

85	56°39.5'	154°44.0'	11	20
86	56°43.0'	154°51.5'	16	29
87	56°46.5'	155°00.0'	34	62
88	56°49.5'	155°07.0'	102	186
89	56°53.5'	155°15.0'	125	229
90	56°57.0'	155°25.0'	127	232
91	57°01.0'	155°33.0'	123	225
92	57°05.0'	155°42.0'	165	302
93	57°09.0'	155°51.0'	145	265
94	57°13.0'	156°00.0'	134	245
95	57°16.0'	156°07.0'	100	183

LINE 12 (CHART 16013)

96	56°31.5'	154°55.0'	14	26
97	56°36.0'	155°03.0'	20	37
98	56°40.0'	155°13.0'	35	64
99	56°43.5'	155°21.0'	115	210
100	56°48.0'	155°30.0'	138	252
101	56°51.5'	155°38.0'	135	247
102	56°56.0'	155°48.0'	137	250
103	57°00.0'	155°57.0'	130	238
104	57°04.0'	156°05.0'	101	185
105	57°07.5'	156°12.0'	39	71

LINE 13 (CHART 10613)

106	56°26.0'	155°11.0'	16	29
107	56°30.0'	155°19.0'	29	53
108	56°34.0'	155°28.0'	100	183
109	56°37.0'	155°35.0'	110	201
110	56°41.0'	155°43.0'	116	212
111	56°45.5'	155°52.0'	118	216

STATION NO.	LATITUDE	LONGITUDE	DEPTH (fm)	DEPTH (m)
112	56°49.5'	156°02.0'	120	219
113	56°53.5'	156°09.0'	100	183
114	56°57.5'	156°19.0'	65	119

LINE 14 (CHART 16013)

115	55°53.0'	154°26.0'	430	786
116	55°58.0'	154°36.0'	221	404
117	56°02.0'	154°45.0'	100	183
118	56°09.0'	155°03.0'	16	29
119	56°17.0'	155°20.0'	28	51
120	56°21.0'	155°30.0'	34	62
121	56°26.0'	155°40.0'	110	201
122	56°29.0'	155°50.0'	134	245
123	56°34.0'	156°00.0'	150	274
124	56°38.0'	156°10.0'	130	238
125	56°42.0'	156°17.0'	100	183
126	56°46.0'	156°28.0'	68	124
127	56°50.0'	156°38.0'	60	110

LINE 15 (CHART 16013)

128	55°28.0'	154°19.0'	800	1463
129	55°38.0'	154°38.0'	520	951
130	55°49.0'	155°00.0'	130	238
131	56°00.0'	155°23.0'	20	37
132	56°09.0'	155°44.0'	33	60
133	56°18.0'	156°00.0'	56	102
134	56°24.0'	156°09.0'	100	183
135	56°28.0'	156°17.0'	120	219
136	56°32.0'	156°25.0'	90	165
137	56°35.0'	156°31.0'	100	183
138	56°39.0'	156°38.0'	75	137
139	56°43.0'	156°44.0'	60	110
140	56°46.0'	156°50.0'	35	64

LINE 16 (CHART 16013)

141	56°12.4'	155°56.0'	100	183
142	56°13.1'	156°05.0'	134	245
143	56°14.2'	156°12.0'	140	256
144	56°15.0'	156°22.0'	120	219
145	56°16.0'	156°33.0'	100	183
146	56°17.0'	156°41.0'	50	91
147	56°18.0'	156°48.0'	54	99
148	56°21.5'	156°52.0'	56	102
149	56°24.0'	156°55.0'	60	110
150	56°26.5'	156°57.0'	50	91
151	56°30.0'	157°00.0'	24	44

STATION NO.	LATITUDE	LONGITUDE	DEPTH (fm)	DEPTH (m)
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LINE 17 (CHART 16013)

152	55°54.0'	156°00.0'	62	113
153	55°55.0'	156°11.0'	100	183
154	55°55.5'	156°15.0'	115	210
155	55°56.1'	156°21.0'	115	210
156	55°56.5'	156°26.0'	115	210
157	55°57.3'	156°31.0'	110	201
158	55°58.1'	156°38.0'	100	183

LINE 18 (CHART 16013)

159	55°46.6'	155°56.0'	45	82
160	55°45.1'	156°04.0'	100	183
161	55°43.8'	156°15.0'	130	238
162	55°42.0'	156°25.0'	134	245
163	55°41.0'	156°34.0'	131	240
164	55°39.8'	156°43.0'	100	183
165	55°39.6'	156°53.0'	60	110
166	55°45.0'	156°55.0'	120	219
167	55°49.5'	157°00.0'	140	256
168	55°54.0'	157°05.0'	50	91
169	56°00.0'	157°11.0'	40	73
170	56°06.0'	157°17.0'	62	113
171	56°11.0'	157°23.0'	81	148
172	56°16.0'	157°29.0'	84	154
173	56°22.0'	157°35.0'	28	51
174	56°27.0'	157°41.0'	49	90

LINE 19 (CHART 16013)

175.1	55°18.0'	155°08.5'	1000	1829
175.2	55°28.0'	155°30.0'	300	549
176	55°33.0'	155°37.0'	95	174
177	55°37.0'	155°44.0'	71	130
178	55°34.0'	155°52.0'	80	146
179	55°30.5'	156°00.0'	100	183
180	55°29.0'	156°06.0'	105	192
181	55°27.0'	156°11.0'	110	201
182	55°25.5'	156°16.0'	103	188
183	55°24.0'	156°20.2'	100	183
184	55°21.0'	156°32.0'	81	148
185	55°15.0'	156°40.0'	57	104
186	55°20.0'	156°48.0'	52	95
187	55°25.0'	156°56.0'	43	79
188	55°30.0'	157°04.0'	45	82
189	55°35.0'	157°12.0'	45	82
190	55°40.0'	157°20.0'	50	91
191	55°45.0'	157°28.0'	50	91
192	55°50.0'	157°36.0'	50	91
193	55°55.0'	157°44.0'	50	91
194	56°00.0'	157°52.0'	69	126
195	56°05.0'	158°00.0'	52	95

STATION NO.	LATITUDE	LONGITUDE	DEPTH (fm)	DEPTH (m)
LINE 20 (CHART 16013)				
196	55°05.0'	156°48.0'	350	640
197	55°10.0'	156°56.0'	90	165
198	55°15.0'	157°04.0'	54	99
199	55°20.0'	157°12.0'	49	90
200	55°25.0'	157°20.0'	47	86
201	55°30.0'	157°28.0'	46	84
202	55°35.0'	157°36.0'	51	93
203	55°40.0'	157°44.0'	68	124
204	55°45.0'	157°52.0'	65	119
205	55°50.0'	158°00.0'	70	128
206	55°55.0'	158°08.0'	98	179
207	56°00.0'	158°16.0'	45	82

LINE 21 (CHART 16013)				
208	55°00.0'	157°04.0'	405	741
209	55°05.0'	157°12.0'	80	146
210	55°10.0'	157°20.0'	53	97
211	55°15.0'	157°28.0'	48	88
212	55°20.0'	157°36.0'	42	77
213	55°25.0'	157°44.0'	45	82
214	55°30.0'	157°52.0'	58	106
215	55°35.0'	158°00.0'	73	133
216	55°40.0'	158°08.0'	70	128
217	55°45.0'	158°16.0'	52	95
218	55°50.0'	158°24.0'	60	110
219	55°55.0'	158°32.0'	40	73

LINE 22 (CHART 16013)				
220	54°55.0'	157°20.0'	234	428
221	55°00.0'	157°28.0'	51	93
222	55°05.0'	157°36.0'	42	77
223	55°10.0'	157°44.0'	40	73
224	55°15.0'	157°52.0'	40	73
225	55°20.0'	158°00.0'	50	91
226	55°25.0'	158°08.0'	68	124
227	55°30.0'	158°16.0'	75	137
228	55°35.0'	158°24.0'	75	137
229	55°40.0'	158°32.0'	70	128
230	55°45.0'	158°40.0'	35	64

STATION NO.	LATITUDE	LONGITUDE	DEPTH (fm)	DEPTH (m)
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LINE 23 (CHART 16013)

231	54°50.0'	157°36.0'	150	274
232	54°55.0'	157°44.0'	60	110
233	55°00.0'	157°52.0'	45	82
234	55°05.0'	158°00.0'	42	77
235	55°10.0'	158°08.0'	58	106
236	55°15.0'	158°16.0'	85	155
237	55°20.0'	158°24.0'	88	161
238	55°25.0'	158°32.0'	80	146
239	55°30.0'	158°40.0'	82	150
240	55°35.0'	158°48.0'	83	152
241	55°40.0'	158°56.0'	82	150
242	55°45.0'	159°04.0'	50	91

LINE 24 (CHART 16013)

243	54°45.0'	157°52.0'	250	457
244	54°50.0'	158°00.0'	58	106
245	54°55.0'	158°08.0'	52	95
246	55°00.0'	158°16.0'	90	165
247	55°05.0'	158°24.0'	88	161
248	55°10.0'	158°32.0'	105	192
249	55°15.0'	158°40.0'	118	216
250	55°20.0'	158°48.0'	97	177
251	55°25.0'	158°56.0'	62	113
252	55°30.0'	159°04.0'	60	110
253	55°35.0'	159°12.0'	44	80
254	55°40.0'	159°20.0'	50	91

LINE 25 (CHART 16013)

255	54°40.0'	158°08.0'	490	896
256	54°45.0'	158°16.0'	105	192
257	54°50.0'	158°24.0'	100	183
258	54°55.0'	158°32.0'	90	165
259	55°00.0'	158°40.0'	87	159
260	55°05.0'	158°48.0'	79	144
261	55°10.0'	158°56.0'	63	115
262	55°15.0'	159°04.0'	102	186
263	55°20.0'	159°12.0'	102	186
264	55°25.0'	159°20.0'	81	148

CONTINUED ON CHART 16540

265	55°30.0'	159°28.0'	84	154
266	55°32.0'	159°32.0'	36	66

Appendix B: NOAA ship DISCOVERER deck weather log (March, 1985)

Appendices B and D use the following abbreviations for present weather:

- C - clear
- CL - cloudy
- F - fog
- H - hail
- IP - ice pellets
- L - drizzle
- OVC - overcast
- PC - partly cloudy
- R - rain
- RW - rain showers
- RS - rain mixed with snow
- S - snow
- SL - sleet
- SP - snow pellets
- SW - snow showers

Time ¹ (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind Dir. Speed (True)(Kts.)	Sea Wave Height (Ft.)	Swell Waves Dir. Height (True) (Ft.)	Sea Water Temp. (°C)	Sea Level Pressure (mb)	Temperature (°C)	
	Lat (°N)	Long (°W)								Dry Bulb	Wet Bulb
85031112	57°43'	152°32'	PC	12	calm	-		2.0	990.1	7.8	4.1
13	57°44'	152°28'	PC	12	calm	-		2.0	990.7	5.2	2.5
14	57°45'	152°03'	PC	12	235	16	165	2.0	991.1	5.4	2.4
15	57°44'	152°06'	PC	12	320	4	165	1.9	991.3	6.2	3.9
16	57°53'	152°03'	PC	12	350	2	170	4.5	991.2	7.0	4.0
17	58°07'	151°58'	PC	12	350	5	170	4.6	991.0	5.0	3.0
18	58°24'	151°48'	PC	12	240	6	180	3.9	991.0	5.0	2.5
19	58°33'	152°05'	PC	12	265	7	150	4.3	990.5	4.6	2.4
20	58°38'	152°04'	PC	12	280	5	150	4.2	990.6	3.5	2.0
21	58°36'	152°05'	CL	12	calm	-	150	4.3	991.0	3.6	2.4
22	58°42'	152°10'	CL	12	205	15	150	4.3	991.8	5.0	3.2
23	58°42'	152°59'	CL	12	210	20	200	4.5	992.0	3.0	1.8
24	58°43'	151°58'	PC	12	205	26	200	4.6	992.9	2.6	1.6
85031201	58°45'	151°57'	PC	10	205	24	200	4.1	993.2	2.5	1.2
02	58°44'	151°58'	PC	10	210	24	200	4.6	994.0	2.8	1.2
03	58°44'	151°56'	SW	4	215	24	200	4.4	995.1	1.5	0.9
04	58°45'	152°00'	PC	10	230	19	200	5.1	995.2	1.9	0
05	58°45'	151°58'	SW	5	230	25	230	5.0	995.3	1.8	0
06	58°48'	151°58'	PC	12	235	15	240	4.8	996.0	1.5	0
07	58°49'	151°56'	PC	12	240	18	240	4.9	996.0	1.0	0
08	58°55'	151°49'	PC	12	210	20	240	4.4	996.0	2.0	1.2
09	58°56'	151°47'	PC	12	210	20	200	4.3	996.8	2.4	1.0
10	58°56'	151°47'	PC	12	170	20	190	4.4	997.7	2.4	0.4
11	58°56'	151°47'	PC	12	190	18	190	4.7	998.6	3.5	1.0
12	58°53'	151°47'	PC	12	190	18	190	4.7	997.9	3.6	1.0
13	58°51'	151°47'	PC	12	185	16	190	4.6	999.0	4.0	1.9
14	58°59'	151°46'	PC	12	172	14	190	4.4	999.1	6.5	3.2
15	59°01'	151°46'	PC	12	170	12	190	4.2	999.1	4.2	1.5
16	59°00'	151°51'	PC	12	180	18	190	3.9	999.0	4.1	1.0
17	59°03'	151°44'	PC	12	180	12	190	4.2	998.9	4.0	2.0
18	59°02'	151°46'	PC	12	195	4	190	4.0	999.0	3.0	1.9
19	59°03'	151°46'	PC/SW	8	080	2	190	4.2	999.2	2.9	1.8

¹ Times are local (GMT = local + 9 hours)

Time (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind		Sea Wave Height (Ft.)	Swell Waves		Sea Water Temp. (°C)	Sea Level Pressure (mb)	Temperature	
	Lat (°N)	Long (°W)			Dir. (True)	Speed (Kts.)		Dir. (True)	Height (Ft.)			Temp. (°C)	Dry Bulb
20	59°06'	151°56'	PC	12	145	5	2	190	3	3.6	999.4	1.0	0.3
21	59°13'	151°30'	PC/SW	12	200	20	2	190	3	4.2	999.2	2.5	0.4
22	59°13'	151°30'	PC/SW	12	195	18	2	190	3	4.1	999.8	2.0	0.5
23	59°10'	152°30'	PC	12	180	25	2	190	3	4.3	999.8	1.8	0.4
24	59°05'	152°29'	PC	12	215	30	2	190	3	4.3	1000.1	2.8	0.2
85031301	59°02'	152°30'	PC	12	270	14	2	190	3	4.5	1001.3	2.0	-0.3
02	58°58'	152°29'	PC	12	270	12	2	190	3	4.5	1001.5	0.8	-0.3
03	58°58'	152°29'	PC	12	265	8	2	190	3	4.5	1001.5	0.8	-0.3
04	58°59'	152°31'	PC	12	210	16	2	180	3	4.4	1001.5	0	0
05	58°52'	152°32'	PC	12	220	10	2	190	3	4.5	1002.0	0	0
06	58°50'	152°30'	PC	12	200	8	1	200	3	4.4	1001.8	0	0
07	58°50'	152°31'	PC/SW	12	195	9	1	200	3	4.0	1002.0	0	0
08	58°42'	152°31'	PC	12	200	10	1	200	3	4.0	1001.4	1.0	0
09	58°42'	152°31'	PC	12	180	10	1	240	2	4.1	1001.4	1.2	0
10	58°42'	152°30'	PC	12	170	12	1	240	2	3.9	1001.2	1.5	-0.3
11	58°39'	152°39'	PC	12	200	10	1	240	2	3.6	1001.4	2.2	0.5
12	58°40'	152°43'	PC	12	230	12	1	240	2	3.9	1001.5	2.4	0.3
13	58°40'	152°44'	PC	12	230	14	1	240	2	3.9	1001.0	2.4	0.3
14	58°42'	152°49'	PC	12	235	12	2	-	-	4.3	1000.5	2.1	0.8
15	58°43'	152°54'	PC	12	225	10	2	-	-	4.3	1001.1	2.4	0.4
16	58°43'	152°56'	PC	12	260	2	-	-	-	4.4	999.5	4.0	2.0
17	58°42'	152°56'	PC	12	calm	-	-	230	1	4.5	998.2	4.2	2.0
18	58°42'	152°56'	PC	12	045	6	-	230	1	4.4	998.0	3.8	1.8
19	58°40'	153°03'	PC	12	030	7	-	230	1	3.3	996.0	1.2	0
20	58°49'	153°08'	PC	12	305	10	-	230	1	3.2	995.8	0.8	0
21	58°50'	153°13'	PC	12	330	6	-	230	1	0.2	995.8	0.3	-0.8
22	58°50'	153°13'	PC	12	315	5	-	230	1	0.2	995.7	0.0	-0.5
23	58°46'	153°10'	PC	12	170	14	-	230	1	0.2	995.2	1.5	0.0
24	58°34'	153°31'	PC	12	calm	-	-	-	-	1.4	995.2	0.8	0.0
85031401	58°31'	153°41'	PC	12	calm	-	-	-	-	1.2	994.8	1.0	0.2
02	58°30'	153°36'	PC	12	025	10	1	040	2	1.2	994.2	1.2	0.2
03	58°28'	153°31'	PC	12	090	14	1	040	2	1.0	993.8	1.2	0.2
04	58°25'	153°26'	PC	12	095	12	1	-	-	3.0	993.1	0.5	0
05	58°24'	153°27'	PC	12	070	14	1	-	-	2.5	993.2	0	0
06	58°23'	153°17'	PC	12	075	15	1	-	-	3.6	992.0	0.5	0
07	58°21'	153°11'	PC/SW	12	065	16	1	-	-	3.5	991.2	0.5	0
08	58°20'	153°06'	CL/SW	4	055	17	1	-	-	3.4	991.2	0.1	0

Time (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind		Sea Wave Height (Ft.)	Swell Waves		Sea Water Temp. (°C)	Sea Level Pressure (mb)	Temperature	
	Lat (°N)	Long (°W)			Dir. (True)	Speed (Kts.)		Dir. (True)	Height (Ft.)			Dry Bulb	Wet Bulb
09	58°17'	153°19'	CL	12	075	20	1	-	-	3.9	991.2	2.4	1.0
10	58°14'	153°32'	CL	12	060	18	1	040	2	3.5	991.2	2.8	0.9
11	58°11'	153°44'	CL	12	055	22	1	040	2	3.7	991.0	3.0	1.0
12	58°05'	153°46'	CL	10	075	20	1	040	2	3.7	990.0	2.5	0.8
13	57°59'	153°33'	CL	10	035	20	1	-	-	3.5	990.4	2.6	0.7
14	58°01'	153°37'	CL	10	050	16	1	-	-	3.6	990.2	2.6	1.1
15	58°03'	153°42'	SW/CL	4	035	16	2	-	-	3.3	990.0	2.2	1.7
16	58°00'	153°44'	SW	3	035	18	3	080	2	3.7	990.0	1.2	1.0
17	58°00'	153°44'	SW	0.5	035	40	5	080	7	3.6	989.9	0	0
18	58°01'	153°46'	SW	0.3	035	30	5	080	7	3.5	989.0	0	0
19	58°06'	153°43'	SW	0.1	030	45	7	040	8	3.4	990.0	0	0
20	58°06'	153°50'	SW	6	010	36	6	020	6	3.5	990.2	1.0	0.5
21	58°08'	153°55'	CL	6	010	28	6	020	6	3.1	989.9	1.5	0.5
22	58°08'	153°56'	CL	10	350	28	6	020	6	3.5	991.0	1.5	0.5
23	58°11'	154°01'	CL	10	350	28	6	010	6	3.4	990.9	1.2	-0.3
24	58°11'	154°05'	CL	10	355	28	6	010	6	2.0	991.5	1.5	-0.4
85031501	58°11'	154°03'	CL	10	000	34	4	-	-	1.8	991.3	1.5	-0.5
02	58°05'	154°13'	CL	10	350	12	4	-	-	1.6	992.0	1.7	-0.8
03	58°01'	154°28'	CL	12	340	4	2	-	-	1.5	992.1	2.0	0.2
04	58°00'	154°30'	CL	12	320	3	-	-	-	1.5	993.0	1.1	0
05	57°58'	154°22'	PC	12	300	3	-	-	-	2.2	993.2	1.5	0.5
06	57°58'	154°17'	PC	12	calm	-	-	-	-	3.1	993.0	1.4	0.4
07	57°56'	154°12'	PC	12	calm	-	-	260	3	2.8	994.0	1.9	0.9
08	57°51'	154°05'	PC	12	calm	-	-	*	3	3.5	993.6	1.8	-0.4
09	57°49'	154°00'	PC	12	050	6	-	*	3	3.4	994.0	1.6	-0.2
10	57°46'	154°04'	PC	12	260	12	-	*	3/5	3.3	994.1	1.6	0.2
11	57°40'	154°18'	PC	12	255	26	4	*	4/6	3.0	994.6	-0.8	-1.5
12	57°40'	154°27'	PC	12	275	20	4	*	4	3.2	995.1	-1.0	-2.0
13	57°43'	154°31'	PC	12	275	20	4	*	4	3.3	996.1	-1.2	-1.8
14	57°45'	154°37'	PC	12	300	26	4	*	4	3.3	996.1	-1.4	-2.0
15	57°48'	154°42'	PC	12	310	40	6	-	-	3.2	996.2	-1.4	-1.4
16	57°51'	154°43'	PC	12	320	45	8/10	*	*	3.2	997.0	-2.0	-2.0
17	57°53'	154°47'	PC	12	320	36	8/10	*	*	2.7	996.8	-2.0	-2.2
18	55°55'	154°56'	PC	12	310	43	8/10	*	*	2.2	997.0	-2.0	-2.3

* Confused swell

Time (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind Dir. Speed (True)(Kts.)	Sea Wave Height (Ft.)	Swell Waves Dir. Height (True) (Ft.)	Sea Water Temp. (°C)	Sea Level Pressure (mb)	Temperature	
	Lat (°N)	Long (°W)								Dry Bulb	Wet Bulb
19	57°48'	154°53'	PC	12	295 22	5/8	*	2.1	998.0	-2.5	-2.5
20	57°46'	155°04'	PC	12	320 30	5/8	*	2.3	998.2	-2.8	-3.0
21	57°42'	155°14'	PC	12	320 20	5/8	*	2.6	999.8	-2.0	-1.8
22	57°43'	155°15'	PC	12	290 14	5/8	*	2.6	1000.2	-4.0	-4.2
23	57°43'	155°15'	PC	12	300 14	4/6	*	2.7	1000.5	-4.0	-4.2
24	57°41'	155°11'	C	12	280 20	4/6	*	2.7	1001.2	-0.7	-1.2
85031601	57°40'	155°09'	PC	12	285 28	4/6	-	2.7	1001.0	-1.5	-2.0
02	57°38'	155°04'	PC	12	280 29	4/6	-	2.7	1001.0	-2.5	-2.5
03	57°37'	155°03'	PC	12	285 30	4/6	-	2.7	1001.0	-2.5	-2.7
04	57°36'	155°00'	PC	12	290 25	5/4	-	2.6	1001.2	-2.5	-2.5
05	57°33'	155°00'	PC	12	285 20	5/4	-	2.7	1001.0	-2.5	-2.5
06	57°37'	155°01'	PC	12	285 18	5/4	-	2.6	1001.0	-2.5	-2.5
07	57°33'	154°53'	PC	12	280 10	2/3	-	2.7	1001.0	-2.5	-2.5
08	57°32'	154°53'	C	12	265 11	2/3	-	3.4	999.8	-2.0	-2.0
09	57°31'	154°46'	C	12	205 10	2/3	-	2.9	999.8	-1.4	-1.4
10	57°29'	154°42'	C	12	140 18	2/3	-	2.9	999.5	-1.4	-1.4
11	57°27'	154°44'	C	12	145 10	2/3	-	3.2	999.2	-2.5	-2.5
12	57°15'	154°52'	PC	12	120 16	2	-	3.1	998.5	-0.5	-1.2
13	57°11'	154°49'	PC	12	130 12	2	-	3.2	998.2	1.0	0.0
14	57°13'	154°54'	PC	12	120 18	2	-	3.2	997.5	1.1	0.0
15	57°17'	155°00'	PC	12	116 20	2	-	3.2	996.0	3.8	1.8
16	57°16'	155°03'	PC	12	110 18	2	-	3.1	994.5	3.5	1.7
17	57°19'	155°06'	PC	12	110 20	2	-	3.2	994.0	3.0	1.5
18	57°17'	155°04'	CL	12	090 20	3	-	3.2	992.0	1.9	0.2
19	57°16'	155°03'	CL	12	095 25	3/4	-	3.2	990.2	0.5	-1.0
20	57°16'	155°03'	CL	12	090 22	3/4	-	3.2	988.9	0.5	-1.0
21	57°16'	155°03'	CL	12	095 25	3/6	-	3.2	987.5	3.0	1.4
22	57°20'	155°06'	CL	12	055 22	4/6	-	3.0	986.0	2.2	0.8
23	57°22'	155°12'	CL	12	060 28	4/6	-	3.1	984.1	2.2	1.0
24	57°25'	155°17'	CL	12	055 46	6	-	3.2	982.0	2.1	1.0
85031701	57°26'	155°24'	CL/RW	7	060 50+	8/12	-	3.4	980.0	1.8	1.1
02	57°27'	155°23'	RW/CL	7	060 50	12	-	3.4	979.8	2.2	1.8
03	57°30'	155°30'	RW/CL	7	060 52+	12	-	3.1	978.8	2.8	1.9

* Confused swell
+ Gusts to 60 Kts

Time (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind		Sea Wave Height (Ft.)	Swell Waves		Sea Water Temp. (°C)	Sea Level Pressure (mb)	Temperature	
	Lat (°N)	Long (°W)			Dir. (True)	Speed (Kts.)		Dir. (True)	Height (Ft.)			Dry Bulb	Wet Bulb (°C)
04	57°32'	155°31'	CL	6	060	40	12	-	-	3.0	978.0	2.6	1.6
05	57°35'	155°33'	CL	8	065	40	6/8	-	-	3.0	977.0	2.5	1.6
06	57°39'	155°33'	CL	9	070	42	6/8	-	-	2.5	977.0	2.0	1.0
07	57°42'	155°30'	CL/R	5	070	40	6/8	-	-	2.3	977.0	1.8	0.9
08	57°43'	155°26'	CL	8	080	35	6/8	-	-	1.8	977.5	2.8	2.2
09	57°43'	155°26'	CL/R	8	075	36	6/8	-	-	1.9	977.8	3.0	2.5
10	57°43'	155°26'	CL/SW	8	080	30	6/8	-	-	1.8	977.8	3.0	2.4
11	57°43'	155°26'	PC	8	085	28	6/8	-	-	1.9	977.5	3.0	2.5
12	57°43'	155°26'	SW/CL	4	090	26	3	180	4	2.1	977.8	2.5	2.0
13	57°43'	155°26'	CL	10	080	24	2	180	4	2.1	977.2	3.9	3.0
14	57°43'	155°26'	SW/SL	5	135	24	2	180	4	2.1	977.2	2.0	1.8
15	57°43'	155°26'	CL	7	100	20	1	180	4	2.2	977.5	1.8	1.7
16	57°41'	155°31'	PC/SW	8	140	22	2	180	4/5	2.1	977.5	1.5	1.5
17	57°35'	155°33'	PC/SW	0.5	155	22	4	180	6/8	2.4	977.9	1.8	1.4
18	57°32'	155°33'	PC/SW	1	175	35	4	180	8/9	2.6	977.9	1.2	1.0
19	57°27'	155°32'	CL/SW	3	180	30	4	180	8/9	3.4	978.0	1.0	0.5
20	57°21'	155°30'	CL	6	150	30	4	180	8/9	3.4	978.8	1.0	0.5
21	57°15'	155°29'	CL/SW	10	152	34	4	180	8/9	3.1	979.0	1.8	1.0
22	57°10'	155°26'	CL/SW	6	155	32	4	180	8/10	2.9	979.2	1.5	0.8
23	57°10'	155°24'	CL	6	140	30	4	190	8/10	3.0	979.8	1.0	0.6
24	57°07'	155°20'	SW/CL	6	155	38	4	190	8/12	2.9	980.0	2.5	1.2
85031801	57°04'	155°17'	PC/SW	10	155	38	4	190	8/12	3.1	980.1	2.5	1.2
02	56°59'	155°05'	C	12	145	38	4	190	8/12	3.2	980.7	2.4	1.2
03	56°52'	154°48'	C	12	145	38	4	190	8/12	3.5	981.1	2.4	1.2
04	56°41'	154°27'	SW/PC	4	115	26	3	180*	4	2.0	980.5	1.2	0.8
05	56°39'	154°20'	SW/PC	4	145	26	3	-	-	2.1	979.8	1.5	1.4
06	56°40'	154°21'	CL/RW	3	220	16	3	-	-	2.3	980.4	1.5	1.2
07	56°40'	154°22'	CL/S	2	215	18	3	-	-	2.0	980.6	1.2	1.1
08	56°39'	154°22'	CL/S	5	220	22	3	220	3/6	2.0	981.1	2.0	1.9
09	56°40'	154°22'	CL/S	7	180	30	4/6	-	-	2.0	982.3	1.9	1.7
10	56°40'	154°23'	CL	6	185	35	4/6	-	-	2.0	984.9	3.6	2.3
11	56°42'	154°25'	CL	7	180	35	5/7	-	-	2.0	984.5	3.1	2.1
12	56°46'	154°36'	CL	12	185	26	5/7	-	-	2.1	985.3	3.1	2.3
13	56°49'	154°42'	PC	12	172	34	5/8	-	-	2.7	986.3	3.1	2.4

* Estimated due to darkness

Time (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind Dir. Speed (True)(Kts.)	Sea Wave Height (Ft.)	Swell Waves Dir. Height (True) (Ft.)	Sea Water Temp. (°C)	Sea Level		Temperature	
	Lat (°N)	Long (°W)							Pressure (mb)	Dry Bulb	Wet Bulb	Dry Bulb
14	56°51'	154°47'	PC	12	165 36	8/10	220 3/6	2.7	987.0	2.7	2.3	
15	56°54'	154°53'	PC	12	150 32	8/10	220 3/6	2.9	987.7	3.3	2.5	
16	56°58'	155°00'	PC	12	165 32	8/10	220 3/6	2.9	987.6	2.8	1.8	
17	56°57'	155°03'	PC	12	165 36	8/12	-	3.2	987.9	2.2	1.2	
18	56°56'	155°05'	F	5	146 32	8/10	210 3/6	3.4	988.5	1.3	1.0	
19	57°00'	155°07'	PC	10	143 31	6/8	150 3/7	3.4	989.0	1.9	1.0	
20	57°03'	155°11'	PC	10	125 30	4	170 6/8	3.3	989.2	2.0	1.2	
21	57°04'	155°13'	SW	1	130 30	4	170 6/8	3.3	989.6	0.4	0.2	
22	57°05'	155°17'	S	1	125 36	4/6	170 6/8	3.1	989.1	1.0	0.6	
23	57°08'	155°23'	S	1	130 34	4/6	170 6/8	3.3	989.4	1.2	0.8	
24	57°37'	154°01'	S	1	125 40	4/6	170 6/8	3.1	989.6	0.2	0.2	
85031901	57°15'	155°38'	S	1	125 42	5/7	190 4/6	3.2	989.2	0.2	0.2	
02	57°16'	155°41'	S	1	135 40	5/7	190 5/7	3.4	989.0	1.0	0.8	
03	57°18'	155°45'	S	1	130 42	5/7	190 5/7	3.4	989.0	1.0	1.0	
04	57°21'	155°52'	CL	8	125 32	5/7	-	3.3	989.7	1.2	1.2	
05	57°19'	156°00'	CL	8	126 21	4/6	-	2.8	990.0	1.5	1.3	
06	57°15'	156°05'	S	1	175 19	4/6	-	2.6	990.0	0.5	0.5	
07	57°13'	156°00'	CL	5	135 22	2/3	-	2.9	990.5	1.0	0.9	
08	57°09'	156°50'	PC	10	115 22	4	150 6/8	2.9	991.8	1.8	1.2	
09	57°06'	155°44'	PC	10	115 22	4	150 6/8	3.2	992.2	2.1	1.6	
10	57°05'	155°42'	PC	10	110 20	4	150 6/8	3.4	992.2	2.3	1.6	
11	57°01'	155°33'	PC	10	100 20	3	150 6/8	3.2	992.8	2.6	1.8	
12	56°57'	155°25'	PC	12	110 16	3	150 6/8	3.1	992.5	2.6	1.8	
13	56°54'	155°18'	PC	12	085 12	3	150 6/8	3.1	992.5	2.8	2.0	
14	56°51'	155°11'	PC	12	090 10	3	150 4/6	3.1	992.5	2.7	1.8	
15	56°46'	155°00'	PC	12	095 10	3	150 3	3.6	992.5	2.8	2.0	
16	56°45'	155°01'	PC	12	110 7	-	190 3	3.0	992.8	2.8	2.0	
17	56°41'	155°00'	PC	12	117 8	-	200 3	3.0	993.0	3.5	2.7	
18	56°44'	154°55'	PC	12	105 9	-	220 3	3.0	993.0	3.1	2.1	
19	56°41'	156°49'	PC	12	075 9	-	220 3	3.0	993.4	3.0	2.1	
20	56°36'	156°49'	PC	12	110 10	-	220 3	2.7	993.9	2.5	2.1	
21	56°32'	154°54'	PC	12	110 10	-	220 3/4	2.7	994.2	2.5	2.0	
22	56°35'	155°02'	PC	12	110 10	-	220 3/4	3.1	994.9	2.5	2.0	
23	56°40'	155°13'	PC	12	140 6	-	220 3/4	3.1	995.2	2.6	2.2	
24	56°42'	155°18'	PC	12	070 8	-	220 3/4	3.2	996.2	3.0	2.5	
85032001	56°43'	155°21'	PC	12	090 8	1	200 3	3.2	996.2	2.7	2.1	
02	56°47'	155°29'	PC	12	090 10	1	200 3	3.2	996.5	2.7	2.0	

Time (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind		Sea Wave Height (Ft.)	Swell Dir. Height (True) (Ft.)	Waves Height (Ft.)	Sea Water Temp. (°C)	Sea Level Pressure (mb)	Temperature	
	Lat (°N)	Long (°W)			Dir. (True)(Kts.)	Speed (Kts.)						Dry Bulb	Wet Bulb (°C)
03	56°51'	155°37'	PC	12	090	10	1	200	3	3.1	996.7	2.0	1.8
04	56°55'	155°45'	PC	10	170	7	1	200	3	3.3	997.0	2.0	1.8
05	56°57'	155°49'	S	1	-	-	1	-	-	3.5	997.0	1.5	1.5
06	57°00'	155°57'	PC	8	-	-	1	-	-	3.3	997.0	1.4	1.0
07	57°00'	155°57'	PC	5	-	-	-	210	3	2.8	997.5	1.6	1.1
08	57°04'	156°05'	SW	2	345	15	1	210	4	2.9	997.2	0.8	0.7
09	57°07'	156°12'	CL/SW	7	355	19	1	210	4	2.8	997.6	1.2	0.8
10	57°03'	156°15'	CL	6	010	18	2	210	4	3.4	997.2	3.8	2.4
11	56°58'	156°19'	CL/SW	6	010	18	2	210	4	3.4	997.2	3.6	2.2
12	56°58'	156°25'	CL/SW	6	010	17	2	210	4	3.4	995.9	2.5	2.0
13	57°01'	156°33'	CL/SW	6	030	16	1	-	-	3.3	995.7	3.5	2.5
14	57°02'	156°36'	CL/SW	6	035	14	1	-	-	3.4	995.6	4.5	3.1
15	57°02'	156°36'	CL/SW	2	050	10	1	-	-	3.4	994.8	4.5	3.2
16	56°59'	156°28'	CL/SW	1.5	030	17	2	120	4	3.3	994.2	0.9	0.5
17	56°57'	156°25'	PC	12	125	13	2	-	-	3.4	993.5	1.9	1.1
18	56°59'	156°09'	PC	12	135	14	2	-	-	3.2	993.8	1.9	0.9
19	56°49'	156°02'	PC	10	095	9	2	-	-	3.6	993.4	1.9	1.0
20	56°48'	155°08'	CL	10	095	10	1	180	3	3.6	993.1	1.8	1.0
21	56°46'	155°53'	CL	10	060	14	1	180	3	2.8	992.8	2.2	1.7
22	56°46'	155°52'	CL	10	055	22	1	180	3	3.1	992.8	2.0	1.5
23	56°43'	155°46'	CL	10	035	18	1	180	3	3.1	992.1	2.1	1.1
24	56°41'	155°42'	CL	10	025	18	1	180	3	3.2	991.8	2.2	1.1
85032101	56°39'	155°39'	SW/CL	10	000	18	1	200	3	3.2	991.2	1.1	0.9
02	56°36'	155°34'	SW/CL	10	335	28	2	200	3	3.4	990.0	1.0	0.8
03	56°34'	155°28'	SW/CL	10	350	34	2	200	3	3.2	989.9	2.1	1.2
04	56°33'	155°24'	CL	10	350	35	2	200	3	3.4	989.0	2.6	1.9
05	56°29'	155°17'	CL	10	350	32	3	-	-	3.0	988.5	2.5	1.5
06	56°26'	155°11'	CL	10	355	34	3	-	-	3.3	988.0	2.6	2.0
07	56°21'	155°06'	CL	10	340	33	3	330	4	3.2	988.0	2.5	1.9
08	56°12'	154°55'	CL	8	350	32	4	000/120	6/8	3.4	987.2	2.2	1.8
09	56°00'	154°38'	CL/RW	3	340	34	4	000/120	6/8	3.4	985.5	1.9	1.8
10	55°53'	154°27'	RW/SW	3	330	40	10/14	-	-	3.9	984.5	2.0	1.8
11	55°53'	154°27'	RW	3	330	35	10/14	-	-	3.9	984.2	2.3	2.0
12	55°58'	154°35'	RW/SW	4	330	36	10/14	-	-	3.9	984.8	2.2	2.0
13	55°59'	154°37'	RW/SW	4	310	38	10/14	-	-	3.7	984.5	2.2	2.0
14	55°59'	154°38'	RW/SW	5	335	38	10/14	-	-	3.5	984.8	2.6	2.2
15	56°02'	154°45'	RW/SW	5	335	40	10/14	-	-	3.6	984.7	3.2	3.0

Time (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind		Sea Wave Height (Ft.)	Swell Dir. Height (True) (Ft.)	Sea Water Temp. (°C)	Sea Level Pressure (mb)	Temperature	
	Lat (°N)	Long (°W)			Dir. (True)	Speed (Kts.)					Dry Bulb (°C)	Wet Bulb (°C)
16	56°03'	154°52'	RW/SW	5	320	24	10/14	-	3.5	984.4	3.4	3.0
17	55°07'	155°00'	RW/SW	6	330	27	10/14	-	3.5	984.2	3.2	2.8
18	56°09'	155°05'	RW/SW	5	305	26	10/14	-	3.5	983.8	3.1	2.8
19	56°13'	155°14'	RW/SW	5	321	17	10/14	-	3.5	983.5	3.0	2.9
20	56°17'	155°20'	CL	5	350	18	10/14	-	3.1	984.1	3.0	2.9
21	56°20'	155°30'	CL/RW	6	345	22	10/14	-	3.1	984.2	3.3	3.0
22	56°25'	155°37'	RW	6	350	18	10/14	-	3.0	984.2	3.3	3.0
23	56°27'	155°44'	CL/R	6	020	16	8/12	-	2.8	984.2	3.8	3.3
24	56°29'	155°51'	CL	6	055	10	8/10	-	3.0	984.8	3.5	3.2
85032201	56°34'	156°00'	CL/L	10	060	8	5/7	-	2.7	984.9	3.2	3.0
02	56°36'	156°05'	CL/L	10	045	12	5/7	-	3.0	984.9	4.0	3.7
03	56°38'	156°10'	CL	10	035	18	5/7	-	3.1	984.9	3.7	3.2
04	56°42'	156°19'	CL	8	025	30	5/7	-	3.3	985.0	3.6	3.0
05	56°45'	156°27'	CL/L	4	030	30	5/7	-	3.3	984.5	4.0	3.2
06	56°47'	156°34'	CL/L	4	350	18	5/7	-	3.0	986.0	3.0	2.5
07	56°50'	156°39'	CL	5	000	10	1/3	060	3.1	986.5	3.8	2.9
08	56°45'	156°48'	PC	10	330	5	1	070	3.6	986.8	4.3	3.3
09	56°43'	156°45'	PC	10	330	5	1	080	3.5	986.8	4.1	3.0
10	56°40'	156°39'	CL	10	000	14	2	070	3.3	987.8	4.1	3.0
11	56°37'	156°35'	CL	10	330	16	2	060	3.4	987.8	3.0	2.2
12	56°33'	156°28'	L/CL	7	350	20	2	055	3.3	987.8	2.5	2.0
13	56°30'	156°21'	SW/CL	7	355	22	3	055	2.8	988.0	3.0	2.4
14	56°28'	156°17'	CL	10	345	20	3	055	3.0	988.0	3.2	2.5
15	56°27'	156°15'	CL	10	335	18	3	050	2.3	988.2	3.3	2.7
16	56°23'	156°07'	CL/L	10	330	18	4/8	-	2.4	988.5	3.7	3.0
17	56°18'	155°59'	SW/CL	7	310	30	4/8	-	2.9	989.5	3.0	2.1
18	56°12'	155°51'	SW	6	310	33	6/10	-	3.2	989.5	2.2	1.9
19	56°08'	155°44'	SW/RW	3	310	36	8/12	-	3.3	989.5	2.0	1.8
20	56°06'	155°39'	R	4	340	32	8/12	-	3.3	990.2	1.5	1.2
21	56°00'	155°24'	S/R	4	325	36	8/12	-	3.3	990.8	1.5	1.2
22	55°57'	155°16'	S	1	320	38	8/12	-	3.3	991.2	1.3	1.1
23	55°54'	155°09'	S	1	315	28	8/12	-	3.4	991.8	1.2	1.0
24	55°48'	154°58'	S	1	310	40	8/12	-	3.5	992.5	0.8	0.4
85032301	55°48'	155°00'	S	4	310	40	8/12	-	3.5	992.5	0.8	0.4
02	55°44'	154°50'	S	4	315	36	8/12	-	3.3	993.1	0.8	0.6

Time (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind		Sea Wave Height (Ft.)	Swell Waves Dir. Height (True) (Ft.)	Sea Water Temp. (°C)	Sea Level		Temperature	
	Lat (°N)	Long (°W)			Dir. Speed (True)(Kts.)	Dir. Height (Ft.)				Pressure (mb)	Dry Bulb	Wet Bulb	(°C)
03†	55°38'	154°38'	SW/CL	7	000	14	8/12	-	4.0	993.1	0.8	0.6	
04	55°35'	154°40'	SW/CL	4	320	40	8/12	-	3.9	993.7	1.4	1.4	
05	55°35'	154°41'	CL/L	2	315	34	8/12	-	4.1	994.5	0.9	0.8	
06	55°33'	154°32'	PC	8	330	35	3/5	330 6/10	3.8	995.2	2.1	1.9	
07	55°27'	154°24'	PC	10	345	30	3/5	330 4/6	3.9	995.7	3.1	2.1	
08	55°22'	154°13'	PC	10	350	28	10/15	*	3.9	995.9	1.8	1.0	
09	55°22'	154°16'	CL	10	335	36	10/15	*	3.7	996.8	2.2	1.8	
10	55°22'	154°25'	CL	4	330	40	10/15	*	3.9	999.0	2.1	1.7	
11	55°26'	154°33'	CL	6	320	40	10/15	*	4.2	1000.2	0.8	0.2	
12	55°28'	154°39'	CL	6	320	40	10/15	*	4.2	1001.0	0.8	0.2	
13	55°31'	154°47'	CL	6	320	34	10/15	*	4.2	1002.2	-0.2	-0.9	
14	55°34'	154°57'	CL/L	8	310	30	8/12	*	3.6	1003.1	-0.7	-1.5	
15	55°37'	155°05'	CL/SW	8	315	34	8/12	*	3.6	1003.5	-1.0	-1.5	
16	55°39'	155°18'	CL/L	8	315	36	8/12	*	3.9	1004.5	-1.6	-2.1	
17	55°43'	155°27'	PC/H	6	310	32	8/12	*	3.6	1005.2	-2.2	-3.0	
18	55°44'	155°38'	PC/S	10	310	32	4/8	-	3.3	1006.0	-2.5	-3.1	
19	55°45'	155°40'	CL	10	310	35	4/8	-	3.3	1006.9	-2.5	-3.2	
20	55°43'	155°39'	PC	10	315	28	4/8	-	3.2	1007.2	-2.2	-2.8	
21	55°42'	155°45'	PC	10	270	30	4/8	-	3.3	1007.6	-2.4	-2.8	
22	55°45'	155°41'	CL	10	305	24	4/8	-	3.3	1008.5	-2.4	-2.8	
23	55°44'	155°37'	PC	12	310	24	4/6	-	3.3	1008.5	-2.2	-2.8	
24	55°45'	155°40'	PC	12	315	26	3/5	-	3.2	1007.7	-2.6	-3.0	
85032401	55°44'	155°41'	PC	12	315	34	3/5	-	3.3	1008.7	-2.1	-3.2	
02	55°45'	155°39'	PC	12	305	30	3/4	-	3.3	1008.9	-4.1	-4.4	
03	55°45'	155°39'	C	12	300	28	3/5	-	3.2	1008.8	-4.1	-4.2	
04	55°44'	155°36'	C	12	300	22	3/5	-	3.3	1009.0	-3.7	-3.8	
05	55°44'	155°36'	PC	12	300	22	3/5	-	3.3	1009.0	-4.0	-4.0	
06	55°44'	155°36'	PC	12	305	20	3/5	-	3.3	1009.0	-4.0	-4.0	
07	55°44'	155°36'	PC	12	290	20	1/3	-	3.2	1008.9	-4.0	-4.0	
08	55°43'	155°40'	PC	12	305	12	2	-	3.2	1008.6	-3.3	-3.5	
09	55°37'	155°44'	PC	12	320	16	3/4	-	3.3	1008.4	-3.0	-3.2	

† 0235 Abrupt wind direction and speed change
0300 Wind shifts 30° or more every few minutes
0325 Sleet/snow storm
* Sea confused

Time (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind Dir. Speed (True)(Kts.)	Sea Wave Height (Ft.)	Swell Waves Dir. Height (True) (Ft.)	Sea Water Temp. (°C)	Sea Level Pressure (mb)	Temperature	
	Lat (°N)	Long (°W)								Dry Bulb	Wet Bulb (°C)
10	55°35'	155°51'	PC	12	310 10	3/4	-	3.3	1008.2	-3.0	-3.3
11	55°30'	156°00'	PC	12	290 10	3/4	-	3.3	1008.0	-1.0	-1.8
12	55°29'	156°04'	PC	12	290 6	3/4	-	3.6	1007.5	1.0	0.2
13	55°27'	156°08'	PC	12	285 6	3/4	-	3.5	1006.9	1.5	1.0
14	55°26'	156°12'	PC	12	calm	-	*	3.4	1006.2	1.5	0.0
15	55°26'	156°13'	PC	12	calm	-	*	3.4	1006.0	1.5	0.0
16	55°24'	156°19'	PC	12	calm	-	*	3.7	1004.6	-0.5	-1.4
17	55°22'	156°26'	PC	12	080 8	-	*	3.7	1003.6	-0.4	-1.3
18	55°22'	156°33'	PC	12	075 9	1/2	-	3.7	1002.9	1.1	0.0
19	55°35'	156°39'	PC	12	070 13	1/2	-	3.7	1002.5	-1.3	-2.0
20	55°40'	156°43'	PC	12	075 12	2	-	3.6	1002.3	-1.8	-2.2
21	55°40'	156°42'	PC	12	080 10	2	-	3.6	1002.2	-2.5	-2.8
22	55°40'	156°34'	PC	12	070 12	2	-	3.5	1002.2	-2.3	-2.5
23	55°42'	156°26'	PC	12	080 8	2	-	3.5	1002.2	-2.3	-2.5
24	55°41'	156°23'	PC	12	080 8	2	-	3.5	1002.0	-2.2	-2.4
85032501	55°43'	156°15'	PC	12	060 8	1	-	3.6	1001.9	-2.8	-2.9
02	55°44'	156°11'	PC	12	065 8	1	-	3.6	1001.0	-3.0	-3.4
03	55°45'	156°03'	PC	12	065 8	1	-	3.4	1001.0	-2.0	-2.2
04	55°47'	155°55'	PC	12	060 14	1	-	3.5	1000.5	-1.5	-1.5
05	55°53'	156°00'	PC	12	040 12	1	-	3.6	1000.5	-1.1	-1.2
06	55°55'	156°07'	PC	12	040 10	1	-	3.6	1000.3	-1.4	-1.4
07	55°55'	156°14'	PC	12	050 8	-	-	3.3	1000.4	-1.3	-1.3
08	55°55'	156°17'	PC	12	030 10	1	-	3.3	1000.4	-2.0	-2.0
09	55°55'	156°20'	PC	12	060 5	1	-	3.3	1000.8	-1.0	-1.0
10	55°56'	156°25'	PC	12	030 10	1	-	3.3	1001.0	0.2	0.2
11	55°57'	156°31'	PC	12	010 10	1	-	3.3	1001.8	1.8	1.3
12	55°57'	156°32'	CL	12	005 8	1	-	3.2	1002.3	1.2	1.0
13	55°58'	156°36'	CL	12	020 12	1	-	3.3	1002.4	-1.0	-1.4
14	56°04'	156°17'	CL	12	340 14	1	200	3.5	1002.9	-1.5	-1.5
15	56°05'	156°16'	CL	12	345 16	1	200	3.5	1003.2	-0.8	-1.0
16	56°09'	156°09'	CL	12	350 15	1	200	3.3	1003.2	-0.5	-0.8
17	56°13'	155°56'	PC	11	345 20	1	200	3.4	1003.2	-0.2	-0.2
18	56°13'	156°03'	PC	11	340 15	2	200	3.3	1004.1	0.6	0.5
19	56°13'	156°05'	PC	12	350 10	2	200	3.3	1005.0	-0.2	-0.8

Time (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind		Sea Wave Height (Ft.)	Swell Waves Dir. Height (True) (Ft.)	Sea Water Temp. (°C)	Sea Level Pressure (mb)	Temperature	
	Lat (°N)	Long (°W)			Dir. (True)	Speed (Kts.)					Dry Bulb	Wet Bulb
20	56°14'	156°14'	PC	12	315	16	2	200	3.5	1005.2	-1.0	-1.2
21	56°15'	156°21'	PC	12	300	12	1	200	3.4	1006.0	-1.0	-1.2
22	56°15'	156°23'	PC	12	300	12	1	200	3.4	1006.6	-1.0	-1.2
23	56°14'	156°18'	PC	12	300	12	1	200	3.3	1007.0	-1.5	-1.5
24	56°14'	156°12'	PC	12	295	8	1	200	3.6	1007.0	-1.0	-1.1
85032601	56°15'	156°26'	PC	12	300	13	1	200	3.2	1007.5	-1.9	-2.0
02	56°16'	156°35'	PC	12	305	10	1	200	3.4	1007.2	-2.0	-2.0
03	56°17'	156°41'	PC	12	310	14	1	200	3.2	1007.2	-2.3	-2.4
04	56°20'	156°50'	PC	12	315	16	1	200	3.6	1007.5	-2.8	-2.9
05	56°23'	156°53'	PC	12	325	20	1	200	3.6	1007.2	-3.1	-3.1
06	56°26'	156°57'	PC	12	325	25	2	200	3.4	1007.0	-3.7	-3.8
07	56°28'	156°59'	PC	12	315	29	3/5	-	3.4	1007.5	-4.0	-4.0
08	56°29'	157°06'	PC	12	330	28	3/5	-	3.3	1007.0	-4.2	-4.2
09	56°27'	157°22'	PC	12	310	25	4/6	-	3.4	1008.6	-2.8	-2.8
10	56°26'	157°41'	PC	12	310	26	4/6	-	3.1	1010.8	-1.0	-1.0
11	56°22'	157°35'	PC	12	310	30	4/6	-	3.3	1010.5	-1.0	-1.0
12	56°16'	157°29'	PC	12	310	28	4/6	-	3.6	1011.3	0.2	0.0
13	56°12'	157°24'	PC	12	305	34	4/6	-	3.6	1011.5	0.2	0.0
14	56°09'	157°20'	PC	12	310	38	4/6	-	3.7	1011.5	-1.8	-2.0
15	56°06'	157°17'	PC	12	310	36	4/6	-	3.7	1011.7	-2.0	-2.3
16	56°00'	157°12'	PC	12	315	35	5/8	-	3.5	1012.5	-1.2	-2.0
17	55°53'	157°04'	PC	12	315	30	5/8	-	3.5	1012.8	-1.9	-2.0
18	55°54'	157°05'	PC	12	320	30	4/6	-	3.5	1012.8	-1.5	-1.5
19	55°48'	156°59'	PC	12	325	33	4/6	-	3.5	1013.0	-2.2	-2.2
20	55°44'	156°55'	PC	12	325	28	6/8	-	3.4	1013.3	-2.2	-2.2
21	55°40'	156°54'	PC	12	325	34	8/10	-	3.5	1014.0	-2.8	-2.6
22	55°29'	156°48'	PC	12	325	26	8/10	-	3.6	1014.8	-2.8	-2.8
23	55°16'	156°40'	PC	12	315	22	6/8	320	3.5	1015.6	-1.5	-1.5
24			PC	12	320	20	6/8	-	3.6	1016.2	-2.6	-2.7
85032701	55°20'	156°48'	PC	12	315	28	8/10	-	3.5	1016.3	-2.3	-2.6
02	55°24'	156°55'	PC	12	320	28	8/10	-	3.5	1016.1	-2.3	-2.6
03	55°27'	156°59'	CL	12	320	30	8/10	-	3.5	1016.9	-2.7	-2.9
04	55°30'	157°05'	PC	12	320	30	6/8	-	3.5	1017.2	-2.5	-2.5
05	55°35'	157°12'	PC	12	325	28	6/8	-	3.5	1017.5	-2.5	-2.5
06	55°39'	157°19'	PC	12	325	25	4/6	-	3.5	1017.5	-2.6	-2.6
07	55°41'	157°22'	PC	12	325	25	5/7	-	3.5	1018.1	-3.0	-3.0
08	55°44'	157°28'	PC	12	330	24	4/6	-	3.4	1018.3	-3.0	-3.0

Time (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind		Sea Wave Height (Ft.)	Swell Waves Dir. Height (True) (Ft.)	Sea Water Temp. (°C)	Sea Level Pressure (mb)	Temperature	
	Lat (°N)	Long (°W)			Dir. (True)	Speed (Kts.)					Dry Bulb (°C)	Wet Bulb (°C)
09	55°50'	157°36'	PC	12	330	20	4/6	-	3.4	1018.8	-2.5	-2.5
10	55°53'	157°42'	PC	12	330	24	4/6	-	3.3	1018.9	-2.5	-2.5
11	55°58'	157°49'	PC	12	330	20	4/6	-	3.2	1019.0	-2.2	-2.2
12	56°01'	157°53'	C	12	335	20	4/6	-	3.2	1019.0	-1.0	-1.0
13	56°05'	158°00'	C	12	340	22	4	-	3.0	1018.5	-1.3	-1.8
14	56°03'	157°43'	C	12	325	22	4	-	3.1	1018.8	-2.0	-2.0
15	55°59'	157°30'	PC	12	355	14	4	-	3.3	1018.2	-1.5	-1.7
16	55°59'	157°25'	PC	12	345	15	4	-	3.3	1017.5	-1.3	-1.3
17	55°57'	157°17'	PC	12	340	16	4	-	3.4	1017.0	-1.0	-1.0
18	55°52'	156°54'	PC	12	345	10	4	-	3.4	1016.2	-0.5	-0.7
19	55°46'	156°28'	PC	12	340	4	2/3	-	3.4	1015.5	0	0
20	55°36'	156°48'	CL	12	calm	-	-	030	3.3	1015.2	0.8	0.2
21	55°34'	156°40'	CL	12	calm	-	-	010	4.2	1015.1	0.8	0.2
22	55°26'	156°30'	CL/SW	12	calm	-	-	010	4.2	1015.1	1.0	0.2
23	55°20'	156°30'	CL	12	calm	-	-	010	4.2	1015.2	1.0	0.2
24	55°26'	155°27'	CL	12	calm	-	-	010	4.1	1014.0	1.5	0.5
85032801	55°26'	155°27'	CL	12	calm	-	-	010	4.1	1013.2	1.4	0.4
02	55°26'	155°27'	CL	12	calm	-	-	010	4.1	1013.0	1.3	0.6
03	55°23'	155°14'	CL	12	065	10	1	-	4.2	1012.5	1.4	0.2
04	55°23'	154°50'	CL	12	050	12	1	-	4.3	1012.2	1.5	0
05	55°22'	154°23'	CL	12	050	12	1	-	4.3	1011.1	1.1	0
06	55°20'	153°56'	CL	12	050	14	1	-	4.2	1010.1	1.5	0.4
07	55°18'	153°29'	CL	12	055	14	1	-	3.9	1009.2	2.1	1.0
08	55°15'	153°04'	CL	12	055	12	1	250	3.9	1008.4	2.8	2.0
09	55°13'	152°33'	CL	12	155	18	1	100	3.9	1007.8	2.8	2.0
10	55°11'	152°04'	CL	12	140	16	2	110	3.9	1007.5	3.0	2.0
11	55°09'	151°34'	CL	12	120	16	2	110	3.9	1007.1	3.1	1.8
12	55°08'	151°07'	CL/IP	7	100	20	2/4	090	3.7	1007.1	2.5	1.8
13	55°07'	150°38'	CL/SW	7	100	15	2/4	090	3.7	1006.8	2.5	1.9
14	55°04'	150°10'	CL/SW	7	120	22	3/5	090	3.7	1006.0	4.5	3.5
15	55°01'	149°44'	CL/SW	7	095	22	3/5	090	3.8	1003.8	3.7	3.0
16	54°58'	149°16'	CL/RW	7	100	25	3/5	140	3.8	1002.4	3.7	2.9
17	54°55'	148°50'	CL/RW	7	115	25	4/6	125	3.9	1001.5	3.0	2.6
18	54°51'	148°24'	CL/RW	7	115	25	4/6	125	3.9	1000.5	3.4	3.0
19	54°47'	147°58'	CL/RW	5	115	29	6/8	125	3.9	999.0	3.1	2.9
20	54°42'	147°34'	R	4	100	34	6/8	-	4.0	997.6	3.2	3.0
21	54°36'	147°11'	R	4	100	32	8/12	-	4.0	996.1	3.5	3.2

Time (YYMMDDHH)	Position Lat (°N) Long (°W)	Present Weather	Visi- bility (n.m.)	Wind Dir. Speed (True)(Kts.)	Sea Wave Height (Ft.)	Swell Waves Dir. Height (True) (Ft.)	Sea Water Temp. (°C)	Sea Level Pressure (mb)	Temperature Dry Bulb Wet Bulb (°C)
22	54°32' 146°48'	R	4	115 30	8/12	-	4.2	995.0 3.5	
23	54°30' 146°23'	CL	4	125 26	8/12	-	4.2	993.0 4.5	
24	54°27' 145°58'	CL	4	150 22	8/12	-	4.2	993.1 5.0	

Appendix C: NOAA ship DISCOVERER surface meteorological data at time of airsonde launches (March, 1985)

Launch No.	Julian Day	Time (GMT)	Location Lat (°N) Long (°W)	Pressure (mb)	Air Temp (°C)	Wet Bulb Temp (°C)	Surface Speed (kt)	Wind Dir (deg)	Max Height (mb)
1	071	0026	57°46.2' 152°08.1'	991.3	7.5	6.0	4	320	416
2	071	1136	58°45.9' 151°56.1'	995.0	2.0	1.5	18	215	392
3	071	2328	59°01.3' 151°46.6'	999.1	6.0	3.0	14	172	477
4	072	1136	58°58.8' 152°37.4'	1001.5	2.2	0.5	12	270	650
5	072	2326	58°43.1' 152°51.6'	1000.5	4.5	2.8	12	235	494
6	073	1125	58°28.9' 153°32.8'	994.0	2.1	0.8	10	025	666
7	074	0001	58.02.2' 153°40.9'	990.0	2.8	2.5	16	035	752
8	074	1201	58°01.1' 154°26.5'	992.2	3.0	1.0	4	340	445
9	075	0016	57°49.0' 154°43.5'	996.2	0.5	0.2	50	310	390
10	075	1200	57°37.8' 155°03.0'	1001.0	-3.2	-4.5	30	285	394
11	075	1904	57°29.4' 154°42.7'	999.6	-0.4	-0.4	18	140	455
12	075	2104	57°13.6' 154°50.3'	996.5	0.5	-1.0	16	120	441
13	076	0001	57°16.8' 154°59.9'	996.0	0.0	2.7	18	120	578
15	077	0017	57°43.0' 155°26.0'	977.5	1.8	1.7	20	100	490
16	078	0002	56°95.1' 154°54.6'	987.7	3.3	2.5	32	150	435
17	078	1128	57°18.2' 155°45.9'	988.2	1.0	0.8	42	130	366
18	079	0002	56°47.2' 155°02.4'	992.5	2.8	2.0	10	095	369
19	079	1142	56°49.2' 155°33.0'	996.6	2.5	2.0	10	090	447
20	079	1613	57°00.0' 155°57.0'	997.4	2.2	1.8	calm	calm	414
21	079	1821	57°07.6' 156°12.0'	997.6	1.2	0.8	19	355	317
22	080	0003	57°02.0' 156°36.0'	994.8	4.5	3.1	14	035	
23	080	0309	56°52.7' 156°08.7'	993.8	3.1	1.1	14	135	391
24	080	1145	56°36.0' 155°34.0'	990.0	2.8	1.2	28	335	399

Launch No.	Julian Day	Time (GMT)	Location		Pressure (mb)	Air Temp (°C)	Wet Bulb Temp (°C)	Surface Speed (kt)	Wind Dir (deg)	Max Height (mb)
			Lat (°N)	Long (°W)						
25	081	0042	56°01.1'	154°43.6'	984.5	3.7	3.2	40	335	453
26	081	1153	56°38.9'	156°12.2'	984.9	4.0	3.1	18	035	660
27	082	0001	56°26.2'	156°13.6'	988.2	3.3	2.7	20	345	
28	082	1201	55°37.1'	154°37.8'	993.1	0.8	0.4	25	330	455
29	082	1530	55°30.2'	154°27.8'	995.4	2.1	1.9	35	330	
30	082	1726	55°21.7'	154°13.2'	995.9	1.8	1.0	28	350	
31	083	0329	55°44.6'	155°37.4'	1006.1	-2.5	-3.1	32	310	425
32	083	0616	55°45.3'	155°42.1'	1007.2	-2.4	-2.8	22	315	315
33	083	2359	55°25.5'	156°14.2'	1005.7	1.5	0.0	calm	calm	388
34	084	1203	55°45.6'	156°01.3'	1001.0	-2.0	-2.2	8	065	550
35	085	0004	56°06.4'	156°15.8'	1002.9	-0.8	-1.0	14	340	423
36	085	1220	56°18.0'	156°48.0'	1007.2	-2.3	-2.4	14	310	
37	086	0001	56°04.1'	157°15.4'	1011.7	-2.0	-2.3	36	310	504
38	086	1158	55°27.9'	157°00.6'	1016.8	-2.7	-2.9	30	320	540
39	086	2355	55°59.6'	157°28.6'	1018.8	-1.5	-1.7	14	355	600
40	087	1154	55°23.9'	155°15.0'	1012.5	1.4	0.2	10	065	345

Appendix D: NOAA ship MILLER FREEMAN deck weather log (March, 1985)

Time ¹ (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind Dir. Speed (True)(Kts.)	Sea Wave Height (Ft.)	Swell Dir. Height (True) (Ft.)	Sea Water Temp. (°C)	Sea Level Pressure (mb)	Temperature	
	Lat (°N)	Long (°W)								Dry Bulb	Wet Bulb (°C)
85030101	56°26.6'	155°46.8'	CL	10	144	4	150	4.9	1019.2	5.0	4.8
02	56°26.5'	155°42.8'	CL	10	148	4	150	4.8	1018.8	5.8	5.0
03	56°25.3'	155°43.6'	CL/R	6	133	4	145	5.0	1016.2	5.0	4.8
04	56°24.4'	155°43.2'	CL/R	6	132	4	145	5.1	1013.1	4.9	4.7
05	56°31.8'	155°43.0'	CL/R	4	146	4	145	4.8	1011.9	4.9	4.3
06	56°43.0'	155°37.2'	CL/R	2	148	4	140	5.1	1011.0	5.1	4.9
07	56°58.1'	155°29.8'	CL	6	165	4	145	5.5	1009.1	6.0	5.5
08	57°08.0'	155°25.2'	CL	8	190	3	150	5.6	1008.5	6.1	6.0
09	57°26.8'	155°07.6'	PC	12	220	3	170	5.6	1009.0	5.5	5.0
10	57°29.7'	155°03.8'	PC	12	260	3	180	5.5	1010.0	5.0	5.0
11	57°37.9'	154°43.9'	PC	12	305	3	200	5.7	1011.5	3.8	3.8
12	57°45.2'	154°26.9'	PC	12	261	4	250	5.4	1012.5	3.2	3.0
13	57°54.1'	154°10.4'	PC	12	255	4	250	5.0	1014.0	2.8	2.2
14	58°02.0'	153°50.0'	PC	12	246	4	250	4.9	1014.8	3.5	3.0
15	58°09.9'	153°30.2'	PC	12	253	4	250	5.0	1015.2	3.5	3.0
16	58°16.8'	153°10.1'	PC	12	248	2	250	4.6	1017.9	5.0	4.0
17	58°14.4'	153°06.5'	PC	12	282	2	190	4.8	1019.0	5.2	4.1
18	58°21.2'	153°14.0'	PC	12	280	2	195	5.0	1020.0	4.0	3.5
19	58°25.1'	153°25.5'	PC	12	267	2	200	4.6	1021.5	4.0	3.5
20	58°25.2'	153°44.2'	C	12	285	2	170	4.8	1022.0	2.8	2.0
21	58°25.2'	153°47.1'	C	12	295	3	180	4.7	1024.5	2.0	1.8
22	58°25.5'	153°47.1'	C	12	292	3	170	4.9	1025.0	1.8	1.8
23	58°23.8'	153°49.0'	C	12	298	3/4	175	4.4	1025.0	1.3	1.2
24	58°27.5'	153°42.0'	PC	12	327	3	180	4.4	1025.8	1.8	1.5
85030201	58°20.0'	153°37.3'	PC	12	291	2	180	4.4	1026.0	2.8	2.5
02	58°23.1'	153°41.6'	PC	12	306	2	310	4.5	1026.0	2.1	1.6
03	58°21.0'	153°38.1'	PC	12	289	2	300	4.3	1026.0	2.8	2.1
04	58°21.8'	153°40.2'	PC	12	187	2	300	4.3	1026.1	3.1	3.0
05	58°22.5'	153°41.0'	PC	12	185	2	210	4.6	1026.0	3.1	4.0
06	58°20.4'	153°38.7'	PC	12	180	2	210	4.4	1026.0	4.0	3.6

¹ Times are local (GMT = local + 9 hours)

Time (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind		Sea Wave Height (Ft.)	Swell Waves		Sea Water Temp. (°C)	Sea Level Pressure (mb)	Temperature	
	Lat (°N)	Long (°W)			Dir. (True)	Speed (Kts.)		Dir. (True)	Height (Ft.)			Dry Bulb	Wet Bulb
07 58°10.8'	153°25.2'	PC	12	128	6	1	210	1	4.5	1024.0	3.1	3.1	
08 58°08.7'	153°23.6'	PC	12	195	6	0	220	1	4.7	1024.0	2.8	2.8	
09 58°14.4'	153°42.0'	C	12	200	3	0	210	1	4.9	1023.0	2.0	2.0	
10 58°18.5'	153°58.5'	C	12	-	-	0	200	1	5.3	1022.5	2.8	2.0	
11 58°13.1'	153°54.1'	C	12	-	-	0	200	2	5.2	1022.0	2.0	2.0	
12 58°06.0'	153°43.1'	CL	12	053	3	1	200	2	5.0	1021.5	2.8	2.1	
13 58°00.3'	153°37.5'	CL	12	068	9	1	055	2	5.0	1020.8	2.5	2.0	
14 58°04.0'	153°53.3'	CL	12	317	5	1	125	2	4.8	1020.2	5.5	4.0	
15 58°06.6'	154°05.7'	CL	12	328	8	1	140	2	5.1	1020.0	4.8	4.1	
16 58°07.7'	154°03.0'	CL	12	020	6	1	200	1	4.8	1019.5	4.0	3.0	
17 58°07.8'	154°00.7'	CL	12	010	5	1	200	1	4.9	1019.5	2.1	2.0	
18 58°08.7'	153°59.7'	CL	12	020	5	1	210	1	4.7	1019.5	4.0	3.1	
19 58°06.4'	154°07.7'	CL	12	218	8	1	205	1	4.5	1020.0	3.1	2.5	
20 58°05.2'	154°05.1'	CL	12	240	8	1	205	1	4.7	1020.0	4.0	2.0	
21 57°54.0'	153°51.3'	CL	12	235	10	1	200	2	5.0	1021.0	4.0	3.8	
22 57°54.3'	153°52.8'	CL	12	260	23	3	200	4	4.9	1021.5	2.0	1.8	
23 57°54.4'	153°54.9'	CL	12	270	25	3	240	5	5.2	1023.0	2.0	2.0	
24 58°00.3'	153°56.5'	PC	12	280	21	2	250	5	4.7	1025.0	2.5	1.8	
85030301 57°58.4'	153°57.1'	PC	12	284	18	2	240	5	4.7	1026.5	3.5	2.9	
02 58°02.4'	154°00.1'	PC	12	284	25	2	230	5	4.3	1026.8	2.2	1.5	
03 57°57.8'	153°55.7'	PC	12	286	22	2	245	5	4.4	1027.2	3.1	2.1	
04 57°59.8'	153°58.3'	PC	12	270	16	2	245	4	5.2	1027.5	2.5	1.5	
05 57°53.2'	153°57.5'	PC	12	244	14	2	250	4	5.0	1030.5	3.0	2.5	
06 57°55.6'	154°02.0'	PC	12	238	28	2	245	5	4.9	1031.0	1.0	0.1	
07 56°01.2'	154°22.1'	PC	12	245	26	2	250	4	4.5	1031.0	1.0	0.5	
08 57°55.0'	154°15.6'	C	12	250	25	2	240	4	4.6	1031.0	3.0	2.0	
09 57°46.7'	154°09.5'	PC	12	250	22	2	240	4	4.6	1032.0	3.9	3.0	
10 57°50.7'	154°23.9'	PC	12	242	28	3	270	5	4.7	1033.0	1.0	1.0	
11 57°55.2'	154°38.0'	PC	12	245	25	4	265	5	5.0	1033.0	1.2	1.0	
12 57°55.8'	154°42.6'	PC	12	251	20	3	260	5	4.4	1033.2	3.2	2.9	
13 57°56.0'	154°44.7'	PC	12	258	21	3	260	5	3.6	1034.0	5.2	3.8	
14 57°54.2'	154°49.2'	PC	12	261	27	3	260	5	3.1	1034.0	6.0	5.2	
15 57°53.1'	154°39.1'	PC	12	262	20	3	260	5	3.7	1034.0	5.2	4.0	
16 57°45.1'	154°30.1'	PC	12	280	20	3	260	5	4.5	1034.5	5.5	5.0	
17 57°39.8'	154°22.9'	PC	12	274	21	2	260	4	4.6	1034.5	5.5	5.0	
18 57°42.6'	154°30.8'	PC	12	250	29	2	260	4	4.3	1034.5	3.0	2.2	
19 57°46.1'	154°49.4'	PC	12	252	34	2	260	4	4.1	1034.5	2.5	2.0	

Time (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind		Sea Wave Height (Ft.)	Swell Waves Dir. Height (True) (Ft.)	Sea Water Temp. (°C)	Sea Level Pressure (mb)	Temperature (°C)	
	Lat (°N)	Long (°W)			Dir. Speed (True)(Kts.)	Dir. Height (True)(Ft.)					Dry Bulb	Wet Bulb
20	57°50.5'	155°02.6'	PC	12	272	18	2	250	5	4.5	3.2	2.8
21	57°42.8'	154°52.3'	CL	12	275	20	2	250	5	3.9	3.0	2.8
22	57°42.8'	154°50.7'	C/R	12	280	21	2	255	4	4.0	2.8	2.2
23	57°46.4'	154°54.9'	CL	12	270	30	2	270	4	4.0	2.0	2.0
24	57°47.2'	154°58.6'	CL	12	280	14	2	250	4	3.4	2.2	2.0
85030401	57°42.8'	154°52.2'	CL	12	254	31	3	250	5	3.4	3.9	3.2
02	57°46.9'	154°57.9'	CL/R	10	251	27	3	250	5	3.5	1.8	1.4
03	57°44.6'	154°54.3'	CL	12	275	22	3	250	5	3.8	3.2	2.4
04	57°46.4'	154°57.3'	CL	12	262	18	2	260	2	4.0	2.0	2.0
05	57°46.8'	154°58.2'	CL	12	265	10	2	260	2	3.6	3.0	2.1
06	57°44.9'	154°55.0'	CL	12	255	8	2	260	2	3.4	3.9	3.0
07	57°39.2'	154°47.6'	CL	12	260	10	1	260	1	4.3	4.1	4.0
08	57°36.1'	154°44.0'	CL	12	245	12	1	220	2	4.5	5.0	4.0
09	57°35.0'	154°48.3'	CL	12	253	14	2	230	3	4.7	3.0	2.0
10	57°38.4'	154°02.4'	CL	12	270	20	2	240	4	4.9	3.0	2.8
11	57°39.5'	155°13.1'	CL	12	265	8	1	250	3	5.0	5.0	3.0
12	57°36.1'	155°08.7'	CL	12	251	10	1	240	4	3.4	6.5	5.0
13	57°38.6'	155°12.6'	CL	12	233	17	1	240	3	4.2	5.2	4.0
14	57°40.6'	155°15.3'	CL	12	233	15	1	240	3	3.6	5.4	3.6
15	57°37.6'	155°11.0'	PC	12	246	15	1	240	3	3.3	6.5	5.1
16	57°32.7'	154°59.5'	PC	12	190	15	1	220	2	3.3	7.3	6.5
17	57°25.0'	155°02.1'	PC	12	195	12	1	200	2	4.8	4.1	3.9
18	57°26.6'	155°08.5'	PC	12	197	5	1	190	1	4.5	4.9	3.9
19	57°30.5'	155°21.9'	PC	12	228	17	1	220	1	4.5	4.9	3.1
20	57°31.5'	155°29.0'	PC	12	175	14	1	210	1	4.7	4.5	3.8
21	57°20.6'	155°11.9'	C	12	180	12	1	240	1	4.9	6.0	5.0
22	57°18.3'	155°07.0'	C	12	190	14	1	230	1	4.5	6.0	5.0
23	57°10.0'	154°59.8'	C	12	195	15	1	220	3	4.3	6.0	5.0
24	57°11.6'	155°00.1'	C	12	197	15	2	240	4	4.5	5.0	4.8
85030501	57°09.4'	154°55.3'	CL	12	151	11	2	210	4	4.6	6.2	5.0
02	57°08.1'	154°52.9'	R	8	192	14	2	210	4	4.6	6.8	6.0
03	57°09.4'	154°53.9'	L	6	169	15	2	190	4	4.6	6.2	6.0
04	57°11.5'	154°56.1'	L	0.5	150	5	1	190	2	4.9	6.9	5.0
05	57°11.3'	154°59.4'	L	1	140	8	1	190	2	6.2	5.1	4.9
06	57°16.1'	155°14.4'	L	4	200	13	1	190	2	5.9	5.0	4.9
07	57°20.8'	155°30.0'	R	3	130	10	2	190	3	5.8	4.9	4.1
08	57°24.7'	155°41.7'	R	4	154	16	2	200	4	5.5	4.8	4.3

Time (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind		Sea Wave Height (Ft.)	Swell Waves		Sea Water Temp. (°C)	Sea Level Pressure (mb)	Temperature	
	Lat (°N)	Long (°W)			Dir. (True)	Speed (Kts.)		Dir. (True)	Height (Ft.)			Dry Bulb (°C)	Wet Bulb (°C)
09 57°21.5'	155°38.5'	R	2	135	22	2	180	4	5.0	1013.2	5.0	5.0	
10 57°16.8'	155°39.7'	R	4	165	19	2	175	3	5.7	1012.0	5.8	5.0	
11 57°13.1'	155°31.2'	R	4	170	15	2	180	4	5.5	1010.0	6.0	6.0	
12 57°17.1'	155°33.9'	R/F	5	184	15	2	180	4	4.6	1010.5	5.8	5.5	
13 57°13.9'	155°26.3'	R/F	3	149	18	2	180	4	5.0	1009.2	6.0	5.6	
14 57°06.5'	155°14.5'	R/F	2	162	19	2	180	4	5.0	1008.2	6.2	5.8	
15 56°58.7'	155°02.7'	R/F	3	167	16	2	180	4	4.9	1007.7	6.2	5.8	
16 56°59.7'	155°08.8'	R/F	3	190	16	2	200	4	5.5	1006.0	6.5	6.5	
17 57°06.6'	155°27.2'	F	2	210	14	1	190	3	5.5	1004.0	5.1	5.1	
18 57°10.3'	155°37.6'	F	0.5	207	16	2	210	4	5.4	1003.0	4.9	4.8	
19 57°17.1'	155°58.3'	F	6	230	9	1	210	2	5.6	1002.0	5.0	4.9	
20 57°14.1'	155°54.7'	F	5	055	8	0	140	4	5.4	1002.0	5.0	4.8	
21 57°08.1'	155°44.9'	C	12	220	4	0	150	4	5.1	1000.0	6.5	5.8	
22 57°01.2'	155°33.0'	F	2	225	5	0	150	3	5.5	1001.0	6.1	5.4	
23 56°55.3'	155°22.6'	F/R	3	275	8	0	150	5	5.2	999.0	6.0	5.8	
24 56°48.4'	155°13.7'	F/R	2	306	14	1	180	5	5.0	998.8	6.1	5.8	
85030601 56°48.3'	155°17.8'	CL/R	8	328	38	4	180	5	4.3	997.5	3.8	3.5	
02 56°53.3'	155°28.9'	R/S	2	316	37	3	320	8	3.6	997.5	1.9	1.6	
03 56°57.2'	155°41.8'	S	2	317	40	3	320	10	3.5	997.8	1.5	1.1	
04 57°00.7'	155°52.0'	S	2	315	28	4	320	8	4.1	998.5	1.9	1.2	
05 57°02.7'	155°58.9'	CL	5	310	24	4	330	6	5.3	998.5	2.0	1.8	
06 56°55.5'	155°52.7'	CL	12	288	30	4	330	6	5.4	999.0	3.0	2.0	
07 56°54.9'	155°51.6'	CL	12	275	26	4	300	6	5.3	999.5	1.5	1.1	
08 56°55.3'	155°53.0'	PC	12	280	30	3	280	5	5.5	1000.0	2.0	1.5	
09 56°50.1'	155°43.3'	PC	12	280	28	3	270	4	5.2	1000.0	4.0	3.0	
10 56°43.4'	155°33.7'	PC	12	280	35	3	290	5	5.6	1000.0	6.0	5.0	
11 56°37.9'	155°26.2'	PC	12	280	35	4	290	5	5.7	1000.0	5.0	5.3	
12 56°39.5'	155°30.4'	PC	12	276	34	4	290	8	3.7	1000.0	2.1	1.9	
13 56°43.3'	155°41.8'	PC	12	284	41	4	280	9	3.9	1000.8	3.5	3.0	
14 56°47.3'	155°53.6'	PC	12	281	34	4	280	9	3.9	1001.6	3.0	2.0	
15 56°51.4'	156°05.5'	PC/S	12	286	33	4	280	7	4.0	1002.1	3.1	2.0	
16 56°52.7'	156°08.3'	PC	12	270	28	4	280	6	4.1	1003.5	3.1	2.0	
17 56°52.4'	156°09.4'	PC	12	285	32	4	280	8	4.0	1003.5	1.2	1.0	
18 56°56.1'	156°20.9'	PC	12	280	22	4	270	6	6.3	1005.0	2.0	1.0	
19 56°47.0'	156°05.6'	PC	12	290	25	4	270	6	5.7	1005.1	3.0	2.1	
20 56°41.9'	155°56.9'	PC	12	300	28	4	280	6	5.8	1006.0	2.0	1.9	
21 56°35.5'	155°46.6'	PC	12	300	30	4	290	8	5.6	1006.5	1.5	1.5	

Time (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind		Sea Wave Height (Ft.)	Swell Waves		Sea Water Temp. (°C)	Sea Level Pressure (mb)	Temperature	
	Lat	Long (°W)			Dir. (True)	Speed (Kts.)		Dir. (True)	Height (Ft.)			Dry Bulb	Wet Bulb
22 56°33.8'	155°40.1'	PC	12	290	45	5	290	8/10	5.5	1007.0	1.2	1.0	
23 56°33.9'	155°42.8'	PC	12	300	45	5	290	10	5.0	1008.0	1.2	1.2	
24 56°30.8'	155°39.0'	PC	12	287	42	5	300	12	4.6	1009.0	2.5	1.2	
85030701 56°31.0'	155°43.4'	PC	12	289	45	5	310	14	4.7	1010.0	1.0	0.8	
02 56°28.3'	155°34.3'	PC	12	292	40	5	310	14	4.3	1011.2	0.8	0.2	
03 56°25.7'	155°26.3'	PC	12	291	44	5	310	15	4.4	1011.2	1.0	0.2	
04 56°24.4'	155°20.4'	PC	12	290	35	5	310	15	5.1	1012.0	1.0	0.9	
05 56°18.9'	155°12.3'	PC	12	285	38	5	310	15	5.4	1012.0	1.1	0.9	
06 56°15.9'	155°14.5'	PC	12	290	39	6	300	15	5.3	1013.5	1.5	1.0	
07 56°14.4'	155°16.7'	PC	12	290	35	5	290	15	5.6	1014.9	1.1	0.9	
08 56°15.8'	155°19.5'	PC	12	290	33	3	290	10/12	5.7	1016.0	1.2	1.0	
09 56°24.9'	155°07.0'	PC	12	290	35	3	290	10	5.3	1016.0	0	0	
10 56°35.2'	154°50.6'	PC	12	295	25	3	290	6	4.0	1015.0	0	0	
11 56°42.7'	154°31.2'	PC	12	300	22	2	295	5	4.0	1015.0	0.5	0.5	
12 56°49.5'	154°12.9'	PC	12	293	25	2	290	5	3.9	1012.9	0.8	0.5	
13 56°55.7'	154°13.9'	PC	12	275	20	1	280	2	2.8	1013.9	0.8	0.5	
14 56°55.7'	154°13.9'	PC	12	245	11	1	280	1	2.8	1013.9	3.2	2.8	
15 56°55.7'	154°13.9'	PC	12	250	13	1	280	1	2.8	1013.9	2.9	2.0	
16 56°55.7'	154°13.9'	PC	12	210	8	1	280	1	3.4	1012.5	2.1	1.9	
17 56°55.7'	154°13.9'	S	4	180	11	1	180	1	3.9	1010.9	2.0	1.9	
18 56°55.7'	154°13.9'	R/S	1	120	15	-	120	1	3.7	1009.1	3.5	2.0	
19 56°55.7'	154°13.9'	R/S	1.5	120	19	-	120	1	3.5	1007.1	4.0	3.0	
20 56°55.7'	154°13.9'	R/S	3	150	13	-	-	-	3.8	1006.2	2.0	1.8	
21 56°55.7'	154°13.9'	S	1	150	17	-	-	-	3.9	1003.0	2.0	2.0	
22 56°55.7'	154°13.9'	R	1	200	18	1	200	1	4.0	1001.5	4.0	3.4	
23 56°55.7'	154°13.9'	R	0.5	200	25	1	200	1	3.2	1000.0	4.8	4.0	
24 56°55.7'	154°13.9'	R	10	200	24	1	200	1	2.9	998.9	5.1	4.2	
85030801 55°56.7'	154°13.9'	PC	12	200	24	1	200	1	2.9	998.0	4.2	3.2	
02 55°56.7'	154°13.9'	PC	12	265	21	1	265	1	2.8	998.0	4.0	3.1	
03 55°56.7'	154°13.9'	PC	12	260	25	1	260	1	2.8	998.0	4.0	3.0	
04 55°56.7'	154°13.9'	PC	12	265	12	1	265	1	3.5	999.5	4.9	3.9	
05 55°56.7'	154°13.9'	PC	12	265	15	1	265	1	3.4	999.5	4.5	4.0	
06 55°56.7'	154°13.9'	PC/S	12	270	14	1	270	1	4.4	1000.9	5.0	4.1	
07 55°56.7'	154°13.9'	PC	12	280	18	1	280	1	4.4	1001.5	4.2	4.0	
08 55°56.7'	154°13.9'	PC	12	210	7	-	210	4	4.9	1002.5	5.0	4.0	
09 56°44.5'	154°25.7'	PC	10	220	26	2	250	2	4.5	1003.5	5.0	4.0	
10 56°42.0'	154°37.2'	PC	12	225	34	3	250	6	4.3	1003.5	5.8	4.0	

Time (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind Dir. Speed (True)(Kts.)	Sea Wave Height (Ft.)	Swell Waves Dir. Height (True) (Ft.)	Sea Water Temp. (°C)	Sea Level Pressure (mb)	Temperature (°C)	
	Lat (°N)	Long (°W)								Dry Bulb	Wet Bulb
11	56°39.0'	154°51.1'	CL	12	230	3	240	5.0	1004.0	7.0	5.8
12	56°35.2'	155°06.2'	PC	12	216	3	240	4.8	1003.8	6.5	5.2
13	56°32.2'	155°19.4'	PC	12	240	3	240	4.8	1004.8	6.5	6.0
14	56°30.3'	155°24.9'	PC	12	237	3	240	4.9	1004.8	8.0	6.4
15	56°28.4'	155°36.2'	PC	12	226	3	240	4.8	1005.3	7.0	5.5
16	56°34.0'	155°53.8'	PC	12	230	3	240	5.1	1005.5	4.5	3.4
17	56°39.2'	156°06.7'	PC	12	231	3	240	5.4	1005.9	4.5	3.9
18	56°44.3'	156°24.3'	PC	12	238	3	240	5.3	1007.1	4.9	4.0
19	56°41.9'	156°18.6'	PC	12	228	3	240	5.5	1008.0	5.1	4.9
20	56°34.8'	156°09.9'	PC	12	230	2	240	5.7	1010.0	6.0	5.0
21	56°31.3'	156°04.3'	PC	12	230	2	230	5.9	1011.0	4.5	4.0
22	56°20.0'	156°05.9'	C	12	235	2	230	5.3	1011.0	5.0	4.6
23	56°26.6'	156°06.3'	C	12	230	2	240	4.7	1011.3	5.2	4.9
24	56°28.7'	156°05.5'	CL	12	227	2	250	4.9	1011.3	5.2	4.8
85030901	56°27.1'	155°59.1'	CL	12	210	2	230	4.3	1011.3	5.1	4.6
02	56°20.3'	155°49.1'	CL	12	212	2	220	4.3	1011.0	5.6	5.0
03	56°20.5'	155°54.1'	CL	12	208	2	230	4.3	1011.3	5.0	4.2
04	56°25.9'	156°06.0'	CL	12	210	3	230	4.5	1011.1	4.1	3.9
05	56°30.6'	156°21.2'	CL	12	207	2	230	4.4	1010.5	4.1	3.9
06	56°35.4'	156°32.8'	CL	12	195	2	230	4.5	1009.5	4.9	4.2
07	56°31.9'	156°32.4'	CL	12	142	1	180	5.1	1008.5	5.0	4.1
08	56°28.0'	156°27.9'	R	12	145	1	170	4.3	1007.5	5.0	4.0
09	56°16.7'	156°11.4'	R	12	125	1	160	5.0	1006.5	4.0	3.8
10	56°10.6'	156°00.8'	R	10	120	2	170	4.8	1003.5	3.0	3.0
11	56°08.5'	155°59.5'	R	10	120	2	150	4.7	1002.5	3.5	3.0
12	56°11.7'	156°15.1'	R	5	116	2	150	4.8	1001.0	3.4	3.0
13	56°10.4'	156°17.3'	R	2	130	2	145	4.3	997.8	4.2	4.0
14	56°09.8'	156°16.1'	R	3	148	2	150	4.6	995.7	5.0	4.8
15	56°14.8'	156°27.6'	CL	3	134	2	160	5.1	994.5	5.0	4.8
16	56°14.4'	156°44.5'	R	1.5	110	4	120	5.3	998.0	5.0	4.9
17	56°11.0'	155°38.2'	R	2	110	5	120	5.6	985.5	5.0	5.0
18	56°07.1'	156°32.3'	CL/R	2	145	5	140	5.7	981.1	4.9	4.2
19	56°12.1'	156°28.0'	CL	2	120	5	120	5.6	979.0	4.9	4.7
20	56°17.9'	156°13.4'	C	5	135	4	120	5.0	978.0	4.9	4.8
21	56°28.3'	156°06.2'	C	5	140	4	125	5.4	977.2	5.5	5.0
22	56°39.8'	155°59.4'	C	8	120	4	130	5.5	976.0	6.0	5.0
23	56°51.8'	155°50.1'	C	8	130	4	130	5.5	975.0	6.0	5.4

Time (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind Dir. Speed (True)(Kts.)	Sea Wave Height (Ft.)	Swell Dir. Height (True) (Ft.)	Sea Water Temp. (°C)	Sea Level Pressure (mb)	Temperature (°C)	
	Lat (°N)	Long (°W)								Dry Bulb	Wet Bulb
24 57°00.4'	155°37.6'	R	6	140	4	130	12	4.5	975.0	6.2	5.5
85031001	57°09.0'	155°24.8'	CL	12	132	3	10	4.7	975.0	6.2	5.8
02 57°17.9'	155°10.6'	R/F	3	107	3	105	7	4.5	975.0	5.5	5.2
03 57°27.4'	154°55.6'	R/F	3	120	3	095	6	4.0	975.0	5.8	5.3
04 57°35.9'	154°37.4'	R/F	3	095	3	095	6	4.5	975.1	5.1	4.9
05 57°43.1'	154°20.3'	R	3	095	2	095	3	4.9	977.5	5.1	4.8
06 57°48.7'	154°08.6'	CL/R	7	240	1	250	2	5.3	979.1	4.1	4.0
07 57°53.2'	153°52.8'	CL/L	10	240	3	230	6	5.5	981.9	3.5	3.0
08 57°55.7'	153°42.9'	C	8	230	3	240	5	5.4	984.0	2.0	2.0
09 58°03.2'	153°29.4'	C	8	235	5	240	6	5.0	987.0	0	0
10 58°10.2'	153°21.4'	C	4	230	6	240	8	5.2	988.5	1.2	0.8
11 58°07.2'	153°11.4'	C	8	250	1	-	-	5.4	992.0	1.0	1.0
12 58°05.4'	153°04.4'	CL	6	232	2	220	2	4.2	992.5	2.5	2.0
13 58°03.5'	153°02.7'	CL/S	8	220	2	285	2	4.0	994.5	-0.8	-0.8
14 58°06.1'	153°08.8'	PC	10	238	3	230	3	4.2	995.4	-1.0	-1.2
15 58°08.2'	153°12.4'	PC	12	260	1	230	3	4.0	996.0	-1.0	-1.0
16 58°05.9'	153°05.0'	PC	12	255	1	270	2	4.3	996.1	1.0	0.5
17 58°02.9'	153°02.7'	PC	12	250	1	270	2	5.0	998.5	0.9	0.7
18 58°05.2'	153°05.2'	PC	12	255	1	270	1	5.3	999.1	-0.5	-0.5
19 58°16.1'	153°12.0'	PC	12	230	3	240	5	5.3	999.5	-0.9	-1.0
20 58°23.7'	153°03.7'	PC	12	205	4	205	7	5.6	999.0	-0.5	-1.0
21 58°35.0'	152°52.6'	PC	12	220	4	210	6	5.4	999.0	0.0	-0.2
22 58°45.2'	152°48.7'	PC	12	210	4	210	6	5.0	999.0	0.5	0.0
23 58°53.6'	152°31.4'	PC	12	230	4	210	6	5.6	999.8	1.2	0.5
24 59°00.0'	152°26.3'	PC	12	208	4	210	6	5.1	999.0	1.2	0.6
85031101	59°06.8'	152°21.7'	PC	12	182	3	6	4.5	998.8	2.8	1.6
02 59°13.4'	152°17.3'	PC	12	166	3	160	5	4.7	997.2	3.3	2.8
03 59°20.4'	152°12.6'	PC	12	161	3	160	5	4.4	996.3	3.5	3.0
04 59°23.7'	152°00.5'	PC	12	110	3	130	5	4.9	993.5	3.9	3.0
05 59°29.1'	151°51.9'	S	1	085	3	120	5	5.1	991.0	3.1	2.9
06 59°31.6'	151°46.3'	R/S	1	070	3	120	5	4.6	990.0	3.9	3.0
07 59°33.9'	151°30.1'	CL/R	10	123	2	100	2	4.6	987.5	4.9	3.9
08 59°36.8'	151°24.7'	OVC	10	120	3	085	3		984.5	3.3	3.2

+ 1200-1600 m Evading heavy seas and high winds in Raspberry Strait (northeast end of Kodiak Is.). Valley outflow winds gusting 40-65 kts

Time (YYMMDDHH)	Position (°N °W)		Present Weather	Visi- bility (n.m.)	Wind (True)(Kts.)		Sea Wave Height (Ft.)	Swell Waves Dir. Height (True) (Ft.)		Sea Water Temp. (°C)	Sea Level Pressure (mb)	Temperature (°C)	
	Lat	Long			Dir.	Speed		Dir.	Height			Dry Bulb	Wet Bulb
12†59°36.8'	151°24.4'	PC	10	175	16	1	165	2	4.6	989.1	6.4	6.1	
16 59°36.8'	151°24.4'	CL	8	145	5	1	-	-	2.7	989.9	5.6	4.9	
20 59°38.3'	151°33.2'	CL	12	156	2	-	-	-	2.6	990.0	4.5	5.8	
24 59°36.6'	151°24.8'	PC/S	12	073	8	-	-	-	2.8	991.8	3.2	3.0	
85031204	59°36.6'	PC	12	170	4	-	-	-	3.0	993.1	3.0	2.8	
08 59°38.3'	151°33.1'	SW	8	185	8	-	-	-	2.7	996.1	2.1	1.8	
12 59°38.3'	151°33.3'	PC	10	130	8	-	-	-	2.7	999.1	6.4	4.9	
16 59°37.9'	151°33.0'	PC	12	185	10	-	-	-	-	999.2	7.0	6.8	
20 59°37.9'	151°33.0'	CL	12	225	14	-	-	-	2.7	999.4	3.9	3.8	
24 59°36.7'	151°24.4'	PC	12	105	10	-	-	-	2.7	1001.0	2.2	2.0	
85031304	59°36.7'	PC	12	170	11	-	-	-	2.7	1001.5	2.2	2.0	
08 59°36.7'	151°24.4'	PC	12	095	7	-	-	-	2.8	1002.0	2.0	1.3	
12 59°36.7'	151°24.4'	PC	12	040	8	-	-	-	2.7	1002.1	4.8	4.4	
16 59°36.7'	151°24.4'	PC	12	140	10	-	-	-	2.7	1000.7	6.5	6.2	
20 59°36.7'	151°24.4'	PC	12	115	11	-	-	-	2.7	998.5	3.5	2.6	
21 59°33.8'	151°30.9'	SW/PC	10	129	22	1	220	2	4.1	998.5	1.5	1.0	
22 59°26.4'	151°55.4'	SW	12	125	15	1	190	3	4.3	997.2	1.5	1.2	
24*59°20.6'	152°11.3'	SW	6	120	32	2	140	4	4.7	997.0	2.0	0.8	
85031401	59°09.0'	SW	10	138	22	3	140	5	5.9	996.0	1.5	0.5	
02 58°57.9'	152°27.9'	S	4	153	24	3	170	7	5.3	995.7	2.0	1.2	
03 58°47.0'	152°39.0'	CL	12	126	13	2	165	6	5.0	995.7	1.3	0.8	
04 58°35.9'	152°51.1'	CL	10	076	9	2	160	3	4.5	994.5	1.5	1.5	
05 58°24.6'	153°02.5'	SW	4	076	19	3	160	4	4.3	993.4	2.6	2.0	
06 58°17.4'	153°11.2'	CL	12	035	13	2	040	3	4.3	993.0	2.9	2.1	
07 58°21.4'	153°26.3'	CL	12	075	13	1	060	3	5.1	992.5	3.9	3.1	
08 58°25.0'	153°39.2'	CL/SW	12	103	12	1	070	2	1.9	993.5	4.6	3.7	
09 58°21.7'	153°39.2'	CL	10	053	22	1	060	3	4.0	991.7	2.5	1.8	
10 58°14.5'	153°29.2'	CL	10	065	14	1	060	3	4.5	991.3	2.2	1.8	
11 58°09.2'	153°24.2'	CL	10	054	14	1	010	3	4.2	991.2	3.4	2.2	
12 58°13.4'	153°40.1'	CL	10	065	20	2	055	4	5.0	991.2	6.0	5.2	
13 58°17.5'	153°55.9'	CL/SW	8	027	28	2	040	5	4.3	991.5	6.5	5.1	
14 58°13.3'	153°53.0'	SW	6	035	26	2	050	6	4.5	991.8	2.2	1.9	
15 58°05.9'	153°42.6'	CL	7	042	31	3	025	7	4.7	991.0	2.4	2.0	

† Four-hourly fixes
* Return to hourly fixes

Time (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind		Sea Wave		Swell Waves		Sea Water Temp. (°C)	Sea Level		Temperature	
	Lat (°N)	Long (°W)			Dir. (True)	Speed (Kts.)	Height (Ft.)	Dir. (True)	Height (Ft.)	Dir. (True)		Height (Ft.)	Pressure (mb)	Dry Bulb	Wet Bulb
16	58°00.0'	153°36.1'	S	4	024	24	2	025	7		4.8	990.5	3.2	2.3	
17	58°01.9'	153°42.0'	CL/RW	7	028	25	2	030	6		5.1	989.8	5.2	3.8	
18	58°01.0'	153°38.8'	CL/RW	4	040	36	5	040	8		4.5	989.7	2.5	1.4	
19	58°01.4'	153°43.7'	F/RW	0.5	013	34	5	010	8		4.1	989.5	2.1	2.0	
20	58°05.2'	153°58.5'	R	8	023	40	4	015	7		3.5	991.0	2.2	1.3	
21	58°08.9'	154°10.7'	SW	10	356	24	3	010/060	7		3.8	992.0	1.8	0.5	
22	58°05.0'	154°09.4'	CL/SW	10	006	27	3	010	4/5		3.8	990.8	1.8	1.2	
23	58°05.7'	154°08.2'	CL	10	355	26	3	010	4		3.6	990.8	2.0	1.2	
24	58°02.0'	154°03.9'	CL	12	355	19	3	000	5		3.7	991.0	2.0	1.2	
85031501	58°00.7'	154°01.1'	CL	12	359	35	3	010	7		4.1	991.0	2.1	1.2	
02	57°53.5'	153°50.7'	CL	12	009	35	3	055	8		4.3	991.0	2.5	1.2	
03	57°56.3'	154°03.4'	CL	12	000	25	3	345	8		4.7	992.0	3.2	2.0	
04	58°00.4'	154°18.5'	CL	12	320	10	3	320	6		5.2	992.3	3.5	2.7	
05	57°55.8'	154°19.2'	CL	12	031	6	3	300	6		5.5	992.4	3.7	3.0	
06	57°58.7'	154°13.3'	CL	12	265	17	3	275	7		5.4	993.0	2.6	2.3	
07	57°53.1'	154°15.7'	CL	12	270	11	3	275	7		5.2	993.3	2.0	1.2	
08	57°53.7'	154°14.2'	CL	12	282	5	1	260/100	4		3.8	993.8	2.8	1.5	
09	57°46.9'	154°07.8'	CL	12	284	14	2	240/020	5		4.2	994.2	4.2	3.0	
10	57°42.7'	154°04.6'	CL	12	243	21	2	250	5		4.3	994.8	-1.0	-1.2	
11	57°47.6'	154°18.7'	CL	12	270	26	3	270	6		4.6	994.9	-0.5	-1.1	
12	57°53.2'	154°33.7'	PC	12	282	23	3	270	6		4.0	994.9	-0.5	-1.3	
13	57°53.6'	154°41.4'	PC	12	290	37	3	285	6		3.8	995.2	1.5	0.5	
14	57°45.6'	154°31.0'	PC	12	290	31	3	280	8		4.3	996.0	2.0	0.8	
15	57°38.9'	154°24.5'	PC	12	267	19	3	280	8		4.5	996.0	2.8	1.2	
16	57°43.8'	154°38.6'	PC	12	295	34	3	285	9		5.0	996.4	3.0	1.0	
17	57°47.9'	154°53.6'	PC	12	279	16	3	290	8		3.1	996.6	2.8	1.6	
18	57°49.5'	154°59.6'	C	12	317	17	4	310	8		3.2	997.0	2.4	-0.6	
19	57°48.0'	154°54.2'	PC	12	313	21	4	310	7		3.0	997.2	0.4	-1.0	
20	57°48.8'	154°59.6'	PC	12	294	24	1	240/020	3		2.7	998.4	-0.2	-1.3	
21	57°42.4'	154°52.3'	PC	12	302	27	1	300	3		3.5	998.5	0.6	-0.5	
22	57°44.8'	154°55.5'	PC	12	276	29	2	290	4		3.8	999.2	-2.0	-2.3	
23	57°38.0'	154°46.9'	C	12	282	29	2	300	4		3.7	999.5	0.4	-0.6	
24	57°32.0'	154°40.2'	C	12	282	23	2	280	4		4.0	999.8	0.0	-0.2	
85031601	57°33.6'	154°43.8'	C	12	273	27	3	280	5		4.5	1000.1	-2.4	-2.9	
02	57°32.9'	154°41.1'	C	12	291	26	3	280	6		3.0	1000.5	-1.0	-2.1	
03	57°34.4'	154°49.0'	C	12	278	22	3	280	6		3.8	1000.8	-1.8	-2.2	
04	57°38.0'	155°02.5'	C	12	284	21	3	280	6		3.1	1000.6	-2.5	-2.6	

Time (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind		Sea Wave Height (Ft.)	Swell		Sea Water Temp. (°C)	Sea Level Pressure (mb)	Temperature	
	Lat (°N)	Long (°W)			Dir. (True)	Speed (Kts.)		Dir. (True)	Height (Ft.)			Dry Bulb (°C)	Wet Bulb (°C)
05 57°41.2'	155°14.7'	C	12	272	25	3	280	6	3.4	1000.5	-3.3	-3.3	
06 57°36.9'	155°10.1'	C	12	294	23	2	280	5	4.1	1000.6	-1.4	-2.6	
07 57°28.9'	154°59.3'	C	12	293	14	2	280	5	4.0	1000.6	-0.5	-1.5	
08 57°24.4'	154°51.8'	C	12	260	8	1	280	3	3.5	1000.6	0.0	-1.0	
09 57°25.4'	154°57.5'	C	12	280	2	1	290	2	3.8	1000.2	-0.2	-1.0	
10†57°22.7'	154°45.0'	C	12	145	7	0/1	280	1/2	3.9	1000.0	-0.2	-0.5	
11 57°22.9'	154°50.3'	PC	12	157	12	1	250	3	3.7	999.9	3.2	2.0	
12 57°23.5'	154°50.6'	PC	12	146	7	1	260	3	4.0	999.5	4.8	3.2	
13 57°21.3'	154°52.7'	PC	12	144	11	1	250	2	3.9	998.8	4.0	1.0	
14 57°23.3'	154°51.6'	PC	12	137	9	1	250	2	4.0	998.0	5.0	3.0	
15 57°24.6'	154°48.5'	PC	12	112	9	1	250	2	4.0	996.9	5.8	3.8	
16†57°26.5'	154°47.9'	PC	12	050	12	1	230	2	4.1	996.0	8.7	5.9	
17 57°28.7'	155°04.5'	CL	12	071	12	2	190	4	4.2	994.5	8.4	7.5	
18 57°31.5'	155°17.0'	CL	12	085	20	3	210	4	3.8	993.0	8.0	6.5	
19 57°35.7'	155°16.2'	CL	12	060	33	3	070	4	3.5	991.3	5.3	5.4	
20 57°37.3'	155°13.9'	CL	12	065	27	2	070	4	3.8	990.2	3.5	2.5	
21 57°38.0'	155°11.4'	CL	12	055	33	3	070	5	3.8	989.9	2.0	1.8	
22 57°38.2'	154°54.3'	CL	12	063	33	3	060	6	4.3	987.3	1.0	0.8	
23 57°38.6'	154°38.1'	PC	12	052	32	3	055	6	4.5	985.8	0.8	0.4	
24 57°41.7'	154°21.9'	PC	12	054	31	3	060	7	4.3	985.8	1.5	0.8	
85031701 57°47.8'	154°07.2'	PC	12	050	28	3	060	7	4.1	985.0	2.6	1.8	
02 57°53.6'	153°51.8'	S	3	057	29	3	060	7	4.4	984.5	3.0	2.4	
03 57°59.2'	153°36.1'	S	4	063	42	3	060	7	4.5	984.5	3.2	2.2	
04 58°00.9'	153°19.1'	R	4	080	40	4	060	8	5.5	983.0	3.6	2.7	
05 57°59.7'	153°09.3'	S	0.1	086	36	4	*	7	4.8	982.5	2.0	2.0	
06 58°01.0'	153°15.4'	CL	6	074	20	2	*	5	4.6	982.5	2.0	2.0	
07 57°55.9'	153°15.1'	S	4	074	15	2	110	3	4.6	982.4	1.8	1.6	
08 57°54.0'	153°12.0'	PC	10	082	17	0/1	135	1	4.6	980.0	3.0	2.5	
09 58°00.3'	153°12.5'	PC	10	064	21	0/1	100	1	4.7	981.5	3.3	2.5	
10 57°55.0'	152°47.5'	SW/RW	4	088	15	-	-	-	4.9	981.3	3.6	2.8	
11 58°00.5'	152°28.1'	CL	3	120	20	2	095	7	4.6	981.5	4.8	3.8	
12 57°54.0'	152°11.0'	SW/RW	3	152	20	2	100	8	4.8	982.0	4.8	4.0	

† Hove to in Halibut Bay, Kodiak Is. (across Shelikof Strait from Cape Kekurnoi)

+ set course

* confused swell

Time (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind Dir. Speed (True)(Kts.)	Sea Wave Height (Ft.)	Swell Waves Dir. Height (True) (Ft.)	Sea Water Temp. (°C)	Sea Level Pressure (mb)	Temperature (°C)	
	Lat (°N)	Long (°W)								Dry Bulb	Wet Bulb
14	57°43.8'	152°30.9'	CL	6	145	8	-	-	981.9	8.0	5.4
18	57°43.5'	152°30.8'	PC	10	210	18	-	-	981.9	6.0	6.0
20	57°43.5'	152°30.8'	SW	4	210	20	-	-	983.0	4.8	4.5
22	57°44.2'	152°23.8'	PC	12	180	16	-	-	983.7	3.3	2.7
23	57°44.7'	152°13.3'	SW	12	180	15	3	4.3	986.0	4.4	3.2
24	57°51.2'	152°08.0'	SW	12	178	25	2	5.0	986.5	4.8	3.6
85031801	57°59.5'	152°22.5'	PC	12	154	36	3	4.8	986.4	4.0	2.9
02	57°58.4'	152°35.8'	PC	12	162	16	2	5.0	986.7	2.2	1.4
03	57°54.2'	152°45.2'	PC	12	169	12	2	4.6	986.2	2.8	1.7
04	57°58.0'	152°59.9'	PC	10	297	11	2	4.6	986.2	3.2	2.7
05	58°00.6'	153°22.6'	PC	10	299	23	2	5.1	985.4	3.0	2.5
06	57°57.3'	153°46.5'	CL	10	082	21	2	5.3	984.5	3.1	2.0
07	57°50.2'	154°07.6'	CL	12	080	22	3	4.7	983.1	3.0	2.1
08	57°43.8'	154°22.9'	CL	12	087	24	2	4.7	982.3	2.8	2.0
09	57°33.6'	154°41.7'	CL/SW	12	102	13	1	4.4	981.6	2.0	1.7
10	57°23.9'	154°50.3'	CL	4	185	22	2	4.7	981.3	2.0	1.8
11	57°24.8'	155°04.1'	CL	8	194	28	3	4.7	982.0	3.0	2.8
12	57°26.0'	155°03.6'	CL	10	193	30	3	4.2	982.0	4.2	3.0
13	57°29.9'	155°17.8'	S/SP	2	197	28	3	4.1	983.5	2.2	2.0
14	57°32.9'	155°32.4'	CL	5	159	28	3	4.2	984.0	3.2	2.4
15	57°27.5'	155°22.1'	PC	6	153	32	3	4.1	984.5	4.0	3.0
16	57°20.9'	155°11.6'	PC	7	153	40	3	4.5	985.0	4.3	3.3
17	57°14.5'	155°00.5'	SP	7	152	42	4	4.5	988.1	4.0	3.0
18	57°09.5'	154°54.5'	PC	8	163	38	4	4.6	988.8	2.6	2.4
19	57°14.4'	155°08.5'	PC	7	142	34	4	4.8	988.9	2.1	1.5
20	57°13.3'	155°14.7'	S	0.5	132	30	3	4.6	988.9	1.1	1.0
21	57°12.4'	155°15.0'	PC	8	120	28	3	4.7	989.0	1.5	1.0
22	57°18.3'	155°21.9'	CL/SW	2	133	34	3	5.1	989.7	1.0	0.5
23	57°23.8'	155°32.7'	SW	2	140	32	2	5.3	989.6	1.0	0.8
24	57°25.0'	155°46.0'	SW	2	115	36	3	5.1	989.2	1.4	0.8
85031901	57°19.3'	155°36.6'	S	2	120	28	3	5.2	989.2	1.2	0.8
02	57°13.2'	155°26.0'	S	2	122	32	3	5.0	989.5	1.4	1.1
03	57°07.2'	155°16.4'	S	2	123	34	4	5.1	990.0	1.6	1.2

† Whale Passage, intermittent fixes until the 2200 exit from Women's Bay, Kodiak Is. (eastern corner of the island)

Time (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind		Sea Wave Height (Ft.)	Swell Waves		Sea Water Temp. (°C)	Sea Level Pressure (mb)	Temperature (°C)	
	Lat (°N)	Long (°W)			Dir. (True)	Speed (Kts.)		Dir. (True)	Height (Ft.)			Dir. (True)	Temp.
04	57°01.6'	155°07.4'	S	0.5	130	41	4	130	9	4.5	990.5	2.1	1.2
05	56°57.6'	155°03.3'	S	1	154	27	3	130	7	4.5	991.4	1.8	1.6
06	57°02.8'	155°16.6'	S	3	137	30	3	130	7	4.5	991.4	2.2	1.7
07	57°07.7'	155°29.8'	CL	4	127	23	2	130	6	5.2	991.6	2.6	1.9
08	57°12.3'	155°43.3'	CL	12	122	24	2	140	5	4.7	992.6	3.4	2.6
09	57°16.1'	155°54.8'	PC	12	122	25	2	140	5	4.4	992.6	4.7	3.5
10	57°13.3'	155°52.3'	PC	10	113	21	2	150	5	4.6	992.3	3.3	2.7
11	57°06.8'	155°42.2'	PC	12	105	19	2	150	5	4.8	992.3	3.5	2.8
12	57°00.3'	155°32.2'	PC	12	117	16	2	150	5	4.5	992.4	4.4	3.8
13	56°58.8'	155°26.8'	PC	12	085	12	2	140	4	4.6	992.5	4.4	4.1
14	57°00.6'	155°32.9'	PC	12	084	14	2	150	4	4.6	992.5	4.3	4.0
15	56°55.4'	155°24.5'	PC	12	087	11	2	150	4	4.6	992.5	4.0	3.0
16	56°48.3'	155°14.8'	PC	12	100	12	2	150	4	4.5	992.5	4.0	3.0
17	56°50.2'	155°26.5'	PC	12	098	4	2	180	4	4.6	992.8	14.2	9.0
18	56°54.4'	155°37.5'	PC	12	161	4	2	190	4	4.8	993.1	16.0	12.7
19	56°59.6'	155°51.1'	PC	12	189	2	2	185	4	4.7	993.4	12.8	12.4
20	57°03.5'	156°04.9'	PC	12	085	4	1	185	3	4.5	995.3	8.5	7.2
21	56°59.1'	155°57.9'	PC	12	064	5	1	190	3	4.7	995.5	4.0	3.8
22	56°51.0'	155°45.1'	PC	12	062	6	1	190	2/3	4.9	995.5	3.5	2.8
23	56°43.6'	155°34.2'	PC	12	078	14	1	180	3	4.8	995.8	3.0	2.6
24	56°37.6'	155°24.9'	R	8	065	11	1	180	3	4.6	996.0	2.8	2.6
85032001	56°40.5'	155°37.7'	PC	12	051	10	2	000	4	4.8	996.0	4.5	3.5
02	56°43.9'	155°53.0'	PC	12	017	2	1	300	4	4.6	996.0	4.2	3.8
03	56°47.1'	156°07.8'	PC	12	330	10	1	315	4	4.8	996.0	4.1	3.5
04	56°48.4'	156°18.5'	PC	12	020	6	1	315	4	4.6	996.0	2.9	2.9
05	56°44.0'	156°07.3'	PC	12	088	4	1	315	4	4.6	996.0	3.1	2.9
06	56°37.5'	156°01.9'	F/S	2	130	2	1	180	4	4.6	996.0	2.0	2.0
07	56°30.8'	155°51.7'	CL	8	165	4	1	180	5	4.6	996.0	3.3	2.5
08	56°26.9'	155°50.9'	RS	8	305	4	0/1	160/240	5	4.6	996.2	3.3	3.0
09	56°24.2'	156°00.4'	CL	8	343	9	1	210	4/5	4.7	996.2	4.0	3.2
10	56°30.6'	156°10.1'	PC	12	023	12	1	175	5	4.8	996.2	4.2	3.7
11	56°28.6'	156°08.3'	CL/SW	2	100	8	1	190	5	4.8	996.2	4.8	3.6
12	56°31.9'	156°12.7'	CL/SW	3	141	4	1	190	5	4.8	996.2	4.9	4.0
13	56°35.1'	156°27.5'	PC	8	171	3	1	190	5	4.8	996.1	5.4	4.8
14	56°32.8'	156°30.5'	SW	5	164	2	1	190	4	4.9	995.5	5.2	4.4
15	56°25.6'	156°20.9'	PC	12	164	7	1	190	4	4.9	995.0	6.0	4.8
16	56°18.1'	156°11.5'	CL	10	140	7	1	190	4	5.0	994.5	5.0	4.0

Time (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind		Sea Wave Height (Ft.)	Swell Waves		Sea Water Temp. (°C)	Sea Level Pressure (mb)	Temperature (°C)	
	Lat (°N)	Long (°W)			Dir. (True)	Speed (Kts.)		Dir. (True)	Height (Ft.)			Dry Bulb	Wet Bulb
17	56°10.7'	156°00.5'	CL	12	075	12	1	215	4	4.8	993.8	2.6	3.0
18	56°10.9'	156°09.8'	CL	12	023	8	1	205	3	4.5	993.4	4.5	3.2
19	56°13.7'	156°25.2'	CL	10	042	12	1	180	2	4.5	993.3	5.0	4.0
20	56°16.9'	156°41.3'	CL	12	021	11	1	190	2	4.8	993.2	4.8	4.1
21	56°13.5'	156°36.3'	CL/SW	2	017	14	1	180	2	4.7	993.2	2.8	2.5
22	56°06.1'	156°21.6'	CL/SW	4	035	17	1	100	3	4.6	992.6	1.5	1.2
23	56°00.7'	156°10.8'	CL/SW	2	023	20	1	010	3	4.7	991.8	1.8	1.7
24	55°58.1'	156°01.3'	S	2	002	25	2	010	3	4.6	991.3	1.8	1.6
85032101	56°06.7'	155°53.5'	S	2	005	28	2	010	5	4.7	990.7	2.0	1.8
02	56°13.5'	155°56.1'	S	2	351	30	2	000	5	4.7	990.2	2.8	2.1
03	56°18.1'	156°09.8'	S	2	340	28	2	330	5	4.5	990.2	2.9	2.4
04	56°23.4'	156°22.6'	S	1	335	28	2	330	5	6.0	990.5	2.8	2.4
05	56°27.0'	156°29.0'	S	1	339	27	3	330	5	5.5	991.0	1.8	1.8
06	56°25.9'	156°13.7'	S	2	012	28	3	350	6	5.5	990.5	2.0	2.0
07	56°25.2'	155°59.2'	R	2	342	22	3	000	7	4.9	990.0	1.7	1.7
08	56°23.0'	155°49.0'	CL	2	344	30	3	020	8	4.5	989.0	1.5	1.3
09	56°28.6'	155°46.0'	CL	2	322	30	4	000	8	4.5	988.7	2.0	1.5
10	56°35.0'	155°58.7'	CL	6	315	30	4	000	8	4.8	989.2	2.5	2.2
11	56°38.1'	156°00.2'	CL	10	327	30	3	000	7	4.8	981.2	3.3	2.8
12	56°36.8'	156°00.3'	CL	10	327	31	3	000	8	4.5	988.8	4.0	3.4
13	56°38.4'	156°06.8'	CL	10	328	32	4	000	8	4.8	988.2	5.0	4.0
14	56°44.0'	156°16.4'	S	5	307	26	4	325	8	4.6	988.2	3.8	3.2
15	56°41.7'	156°01.5'	CL	8	336	31	4	320	8	5.2	988.2	3.1	2.8
16	56°39.8'	155°47.6'	S	6	337	30	4	350	8	5.3	987.0	2.0	2.0
17	56°37.3'	155°33.4'	S	4	344	40	4	350	8	5.2	986.0	1.8	1.7
18	56°39.0'	155°33.0'	R	1	325	32	4	000	9	5.2	985.1	5.5	3.1
19	56°45.2'	155°42.3'	SW	0/1	330	32	4	000	10	4.9	985.4	2.7	2.1
20	56°51.2'	155°54.9'	S	0.5	323	27	4	000	10	4.6	985.5	2.6	2.2
21	56°55.5'	156°04.3'	S	1	328	28	4	000	10	4.5	985.5	2.7	2.2
22	56°55.3'	155°52.3'	CL	10	021	33	4	045	9	5.2	985.2	3.0	2.8
23	56°52.9'	155°34.3'	CL	10	030	29	4	050	8	5.2	985.0	3.2	3.0
24	56°50.8'	155°20.3'	CL	10	052	12	3	070	5	5.0	985.2	3.8	3.4
85032201	56°49.9'	155°08.4'	PC	12	328	8	2	330	4	5.1	985.0	4.1	3.8
02	56°51.2'	155°11.9'	PC	12	002	16	2	010	4	5.0	984.5	6.1	5.0
03	56°51.8'	155°13.7'	PC	12	009	18	2	010	4	5.0	984.0	5.8	5.0
04	56°52.8'	155°15.8'	PC	12	007	25	2	010	4	5.1	983.3	6.3	5.3
05	56°51.9'	155°16.9'	PC	6	005	26	2	010	4	4.7	983.3	4.3	4.1

Time (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind		Sea Wave Height (Ft.)	Swell Waves		Sea Water Temp. (°C)	Sea Level Pressure (mb)	Temperature	
	Lat (°N)	Long (°W)			Dir. (True)	Speed (Kts.)		Dir. (True)	Height (Ft.)			Dry Bulb	Wet Bulb (°C)
06	56°48.3'	155°16.3'	PC	10	022	27	2	010	4	5.0	983.5	4.6	4.0
07	56°52.4'	155°15.5'	CL	12	011	24	3	010	6	5.1	983.8	4.7	4.4
08	56°54.8'	155°21.3'	CL	8	025	27	2	010	6	4.8	983.7	5.1	4.4
09	56°59.4'	155°31.3'	CL	8	010	32	4	005	10	5.0	984.5	5.5	5.0
10	57°06.2'	155°45.6'	CL	12	007	30	4	010/050	9/10	4.6	986.2	6.2	5.0
11	57°12.4'	155°59.8'	CL	12	342	15	3	060	8	4.6	987.2	7.0	6.5
12	57°12.6'	155°56.6'	CL	12	014	22	3	060	8	4.8	987.0	5.2	4.8
13	57°09.6'	155°42.7'	CL	12	003	27	3	060	8	4.6	987.9	4.2	4.0
14	57°06.3'	155°28.3'	CL	12	357	25	3	060	8	4.9	987.6	4.4	4.0
15	57°03.2'	155°13.2'	CL	10	354	31	4	060	8	5.4	987.2	3.5	3.2
16	57°05.0'	155°13.4'	CL	6	005	28	4	030	8	5.2	987.0	4.0	3.7
17	57°03.3'	155°10.7'	PC	12	023	30	4	355	7	5.2	987.4	3.8	3.6
18	57°00.8'	154°59.6'	PC	10	000	26	4	355	7	5.2	987.3	6.1	4.4
19	57°06.5'	155°08.5'	PC	8	024	28	4	000	6	4.6	988.0	6.6	5.7
20	57°11.7'	155°19.6'	CL/RW	8	340	17	3	010	6	4.7	988.5	5.5	5.0
21	57°17.0'	155°31.8'	PC/RW	8	310	21	3	015	6	4.7	990.2	4.0	3.8
22	57°23.3'	155°44.2'	CL	12	304	25	2	300	5	4.2	991.8	4.8	4.0
23	57°22.4'	155°34.4'	SW	2	330	20	2	310	5	4.9	993.0	4.2	3.6
24	57°20.5'	155°24.9'	CL	10	041	25	2	060	5	5.3	993.0	4.0	3.8
85032301	57°21.4'	155°31.9'	PC	12	054	16	2	040	5	5.4	993.6	5.8	5.0
02	57°21.3'	155°36.6'	PC	12	061	19	2	045	5	5.2	994.1	5.8	5.0
03	57°21.2'	155°28.8'	PC	12	036	23	2	040	5	5.4	995.0	4.2	3.9
04	57°21.3'	155°35.6'	PC	12	065	12	2	040	5	5.5	995.8	4.6	4.4
05	57°21.2'	155°35.5'	PC	10	306	28	3	040	6	5.2	996.9	4.7	4.6
06	57°19.5'	155°25.8'	CL	12	294	30	3	040/220	4	5.5	998.1	1.9	1.5
07	57°18.2'	155°13.1'	S	2	315	26	4	240	6	5.6	998.2	1.2	1.0
08	57°16.0'	155°03.7'	CL	2	317	26	3	240	4/6	4.9	999.0	1.0	0.8
09	57°15.7'	154°54.6'	CL	3	303	28	3/4	270/325	6/8,4/6	4.6	999.5	1.0	0.5
10	57°22.1'	155°09.2'	CL	2	301	27	4	330	6	4.6	1001.2	-0.2	-0.5
11	57°27.5'	155°21.4'	CL	8	310	28	3	320	6	3.0	1002.3	-1.0	-1.5
12	57°33.0'	155°34.0'	CL	10	286	32	3	320	6	3.0	1002.7	-1.0	-1.6
13	57°29.0'	155°24.3'	CL	10	300	30	3	310	6	3.0	1003.2	-2.0	-2.5
14	57°29.3'	155°24.1'	CL	10	301	31	3	300	7	3.0	1003.5	-2.0	-2.4
15	57°28.7'	155°25.2'	CL	10	305	30	3	310	8	3.0	1003.2	-2.2	-2.5

+ 0915 - 0945 heavy snow shower

Time (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind		Sea Wave Height (Ft.)	Swell Waves		Sea Water Temp. (°C)	Sea Level Pressure (mb)	Temperature	
	Lat (°N)	Long (°W)			Dir. (True)	Speed (Kts.)		Dir. (True)	Height (Ft.)			Dry Bulb	Wet Bulb
16	57°28.9'	155°24.9'	CL	10	310	31	4	310	8	3.0	1003.8	-2.5	-3.5
17	57°23.7'	155°14.8'	CL	10	309	32	4	310	7	5.0	1003.7	-3.6	-4.2
18	57°21.4'	155°10.0'	CL	10	310	26	4	310	8	5.2	1004.1	-3.2	-3.3
19	57°18.9'	155°03.8'	CL	10	305	30	4	280	8	5.4	1004.9	-3.0	-3.2
20	57°14.3'	154°51.2'	CL	8	303	29	3	320	8	4.4	1005.2	-3.8	-4.0
21	57°19.3'	154°55.7'	CL	8	296	27	3	300	8	3.9	1006.0	-4.5	-4.8
22	57°24.3'	154°58.2'	CL	8	290	33	3	300	8	3.9	1006.7	-4.5	-5.0
23	57°21.0'	154°57.3'	PG	12	297	29	3	300	8	3.7	1007.4	-4.0	-4.7
24	57°22.3'	155°00.5'	PG	12	312	28	3	300	8	3.8	1007.0	-4.6	-5.0
85032401	57°23.7'	154°58.0'	C	12	290	23	3	300	8	3.7	1007.0	-5.2	-5.4
02	57°23.3'	154°58.0'	C	12	298	34	3	290	8	4.6	1006.8	-5.2	-5.5
03	57°23.8'	154°54.8'	C	12	286	26	3	290	8	4.6	1006.8	-5.6	-5.8
04	57°22.5'	154°57.4'	C	12	297	26	3	290	8	5.2	1006.8	-6.0	-6.8
05	57°27.9'	155°02.4'	C	12	277	26	3	280	8	5.4	1006.7	-6.1	-6.9
06	57°35.0'	155°08.8'	PG	10	273	35	3	280	8	3.2	1006.0	-5.5	-6.4
07	57°42.4'	155°14.9'	PG	6	270	44	3	280	8	3.9	1005.0	-6.0	-6.2
08	57°37.4'	155°03.1'	PG	8	277	37	3	280	7	3.6	1005.5	-6.0	-7.0
09	57°33.3'	154°53.0'	PG	8	265	36	3	270	7	4.5	1005.0	-2.5	-4.0
10	57°28.4'	154°41.5'	PG	12	270	20	3	270	7	4.4	1006.3	-3.0	-3.5
11	57°30.8'	154°47.3'	PG	12	252	19	3	280	7	4.6	1006.1	-5.0	-5.2
12	57°33.0'	154°51.6'	PG	12	263	21	3	275	7	4.5	1006.0	-6.3	-6.5
13	57°36.0'	154°58.1'	PG	12	279	30	3	280	8	4.1	1004.2	-6.1	-6.3
14	57°38.5'	155°05.9'	PG	12	278	27	3	285	8	3.9	1003.5	-5.0	-5.3
15	57°39.6'	155°07.9'	PG	12	276	28	3	285	8	4.2	1003.5	-4.6	-5.0
16	57°41.2'	155°10.8'	PG	12	279	27	3	280	8	4.3	1003.3	-4.5	-4.0
17	57°43.3'	155°15.4'	PG	12	281	11	1	280	3	4.4	1003.3	-2.5	-3.9
18	57°41.5'	155°12.4'	PG	12	280	16	1	280	3	3.3	1003.3	-2.3	-2.6
19	57°40.4'	155°17.9'	PG	12	290	24	1	275	3	3.3	1003.2	-3.2	-3.6
20	57°40.3'	155°13.7'	PG	12	292	14	1	270	2	3.6	1003.4	-4.8	-5.2
21	57°40.9'	155°11.4'	PG	12	297	8	0/1	280	1/2	4.1	1003.3	-3.8	-5.0
22	57°42.1'	155°07.8'	C	12	312	5	0/1	285	1	3.8	1003.3	-3.5	-4.5
23	57°42.8'	155°15.7'	C	12	297	9	0	280	0/1	4.2	1003.3	-3.0	-4.2
24	57°43.3'	155°12.9'	C	12	331	10	1	290	1	4.5	1003.3	-3.1	-3.8
85032501	57°42.5'	155°14.5'	C	12	301	7	1	340	2	4.7	1003.3	-1.2	-3.1
02	57°43.4'	155°12.5'	C	12	035	7	1	350	2	4.6	1003.3	-1.8	-2.8
03	57°43.7'	155°10.5'	PG	12	043	11	1	050	2	4.3	1003.3	-1.4	-2.2
04	57°42.4'	155°15.7'	PG	12	019	9	1	050	2	5.0	1002.8	-1.2	-1.9

Time (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind		Sea Wave Height (Ft.)	Swell Waves		Sea Water Temp. (°C)	Sea Level Pressure (mb)	Temperature	
	Lat (°N)	Long (°W)			Dir. (True)	Speed (Kts.)		Dir. (True)	Height (Ft.)			Dry Bulb	Wet Bulb (°C)
05	57°44.0'	155°09.7'	PC	12	008	13	1	050	2	4.5	1002.5	-2.5	-2.6
06	57°43.2'	155°11.7'	PC	12	010	11	1	060	2	4.3	1002.6	-1.7	-2.5
07	57°41.7'	154°59.1'	CL	10	007	17	1	060	2	4.9	1002.4	-2.4	-3.0
08	57°40.8'	154°44.3'	CL	12	072	12	1	010	1	4.4	1002.0	-0.8	-1.8
09	57°34.2'	154°28.8'	CL	12	058	10	0	010	1	4.3	1002.3	-1.5	-2.6
10	57°44.3'	154°32.4'	CL	12	030	17	1	010	2	4.4	1002.3	1.2	-0.5
11	57°51.3'	154°44.0'	PC	12	357	8	1	090	2	3.5	1003.3	1.7	0.7
12	57°53.8'	154°49.5'	CL	12	332	11	1	340	2	4.0	1003.3	1.8	0.8
13	57°51.3'	154°43.7'	CL	12	012	11	1	080	2	4.2	1003.3	0.8	0.4
14	57°48.2'	154°39.2'	CL	12	023	12	1	090	2	4.2	1003.3	-0.2	-0.4
15	57°42.7'	154°29.9'	CL	12	029	20	1	040	3	4.5	1003.3	-0.4	-0.8
16	57°41.4'	154°24.1'	CL	12	032	11	1	030	3	4.6	1003.3	2.7	0.1
17	57°50.3'	154°26.0'	CL	12	282	7	1	060	3	4.3	1003.4	2.0	2.0
18	57°58.9'	154°28.1'	CL	12	263	10	1	060	2	3.5	1003.4	0	-0.9
19	57°59.0'	154°24.5'	CL	12	020	3	1	060	1	4.4	1003.7	2.7	1.2
20	57°58.7'	154°21.6'	CL	10	110	1	0	190	1	4.2	1003.7	2.8	2.2
21	57°59.7'	154°27.0'	CL	10	018	5	0/1	260	1	3.4	1003.8	2.2	1.7
22	57°51.9'	154°18.9'	CL/S	12	351	11	1	260	2	4.9	1004.8	0.0	-0.4
23	57°48.2'	154°01.5'	S	2	252	15	1	260	1/2	5.3	1005.0	1.0	0.2
24	57°51.1'	154°07.3'	S	3	266	9	1	260	2	4.4	1005.0	0.8	0.2
85032601	57°53.5'	154°12.5'	S	3	254	11	1	260	2	4.2	1005.6	-0.1	-0.8
02	57°56.1'	154°19.2'	S	7	253	13	1	255	2	4.2	1005.8	-0.8	-1.1
03	57°58.8'	154°26.3'	S	8	262	10	1	255	2	4.4	1005.8	-0.2	-0.9
04	57°59.5'	154°20.5'	S	6	085	7	1	255	2	4.3	1005.6	0.5	0.7
05	58°00.4'	154°03.7'	S	4	197	9	1	255	2	5.0	1005.7	1.9	1.0
06	58°00.6'	153°45.9'	S	1	070	2	1	025/255	2	5.2	1005.8	2.3	1.6
07	58°00.7'	153°42.9'	S	1	250	6	1	025	2	5.0	1005.7	-0.2	0.0
08	58°00.9'	153°42.5'	S	0.5	352	17	1	025	3	4.8	1005.8	1.2	0.6
09	58°09.1'	153°46.8'	S	1	008	19	1	025	3	4.9	1006.2	2.5	1.5
10	58°00.1'	153°36.4'	CL	2	343	22	2	025	4	5.2	1006.3	2.2	1.8
11	58°03.4'	153°42.5'	CL	2	329	22	2	015	4	5.0	1006.2	2.8	2.0
12	58°08.7'	153°56.1'	CL	8	341	17	2	010	4	5.3	1006.2	3.8	3.0
13	58°12.3'	154°04.8'	CL	8	008	12	2	020	4	5.3	1006.8	3.8	3.5
14	58°11.0'	154°01.5'	CL	8	357	20	2	015	4	5.4	1007.2	2.2	2.0
15	58°09.7'	153°59.6'	CL	8	355	18	2	010	4	5.3	1007.5	1.3	1.0
16	58°05.8'	153°51.8'	CL	8	351	22	2	010	4	4.8	1007.9	3.0	2.4
17	57°59.8'	153°34.8'	CL	7	020	21	3	015	6	5.0	1008.0	2.0	1.9

Time (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind		Sea Wave Height (Ft.)	Swell Dir. Height (True) (Ft.)	Waves Dir. Height (Ft.)	Sea Water Temp. (°C)	Sea Level		Temperature	
	Lat (°N)	Long (°W)			Dir. Speed (True)(Kts.)	Dir. (True)					Pressure (mb)	Dry Bulb	Wet Bulb (°C)	
18	58°06.0'	153°38.5'	S	3	345	20	3	020	6	4.8	1008.4	2.6	2.0	
19	58°13.7'	153°45.1'	CL	8	312	24	4	340	6	6.0	1008.8	1.5	1.5	
20	58°21.2'	153°49.4'	CL	10	300	28	2	320	4	5.2	1009.2	0.5	0.0	
21	58°23.9'	153°48.6'	CL	10	306	28	2	305	4	5.5	1010.5	0.0	-0.7	
22	58°21.7'	153°45.8'	PC	12	292	26	2	305	4	5.5	1011.0	1.4	0.8	
23	58°23.7'	153°49.3'	C	12	285	29	3	310	5	4.6	1011.0	-0.8	-1.0	
24	58°21.0'	153°41.7'	PC	12	292	27	2	305	5	5.3	1011.2	0.1	-0.8	
85032701	58°15.7'	153°28.1'	PC	12	302	27	3	315	5	5.3	1011.2	1.4	0.2	
02	58°11.3'	153°18.7'	PC	12	299	22	3	310	5	5.3	1011.2	2.8	1.2	
03	58°10.8'	153°20.7'	PC	12	297	21	3	310	6	5.5	1011.2	3.4	2.2	
04	58°14.2'	153°13.7'	PC	12	285	20	3	310	6	4.7	1011.3	2.7	2.0	
05	58°12.4'	153°16.6'	PC	12	297	22	3	310	6	4.4	1011.3	2.5	2.0	
06	58°13.3'	153°14.8'	PC	10	290	12	3	290	5	5.6	1011.2	2.0	1.6	
07	58°16.2'	153°12.0'	PC	12	279	20	3	290	5	5.4	1012.0	1.0	0.8	
08	58°18.1'	153°11.4'	PC	12	287	24	3	280	5	5.4	1012.4	0.5	0.0	
09	58°18.2'	153°20.9'	PC	12	287	20	2	290	4/5	5.8	1013.8	1.4	0.8	
10	58°16.5'	153°38.3'	PC	12	288	20	3	295	4/5	5.3	1013.2	4.2	2.8	
11	58°14.5'	154°00.4'	PC	12	103	6	0/1	155	1/2	4.6	1014.0	5.8	5.2	
12	58°06.4'	154°09.0'	PC	12	188	14	1	210	2	3.8	1014.2	5.0	4.8	
13	58°01.0'	154°21.2'	PC	12	201	8	1	210	3	5.3	1014.0	6.0	4.0	
14	57°57.0'	154°34.2'	PC	12	234	9	2	220	3	4.5	1014.0	8.8	7.4	
15	57°53.0'	154°46.9'	PC	12	269	20	2	270	3	4.5	1014.0	10.2	8.2	
16	57°48.7'	154°57.1'	C	12	278	14	2	260	3	4.2	1014.0	9.1	7.1	
17	57°44.7'	154°56.4'	C	12	278	14	2	270	3	3.8	1014.0	3.5	3.0	
18	57°47.0'	154°58.7'	PC	12	290	19	2	270	4	4.0	1014.8	5.0	2.3	
19	57°47.3'	155°03.7'	PC	12	295	20	2	280	4	4.5	1013.8	3.2	1.5	
20	57°48.5'	154°54.5'	CL	12	272	7	1	275	3	3.9	1013.5	2.5	0.6	
21	57°49.9'	154°49.2'	PC	12	220	5	1	270	3	3.9	1013.5	2.0	1.2	
22	57°45.2'	154°58.4'	PC	12	275	13	1	270	3	3.7	1013.6	1.4	0.5	
23	57°43.6'	155°03.9'	PC	12	300	10	1	285	2	3.9	1013.5	1.0	0.5	
24	57°44.6'	154°59.5'	PC	12	266	12	1	280	2	4.3	1013.8	-0.1	-1.0	
85032801	57°42.9'	155°06.7'	PC	12	303	6	1	280	3	4.3	1013.9	0.2	-0.5	
02	57°43.6'	155°04.0'	PC	12	317	10	1	300	3	4.5	1013.8	0.3	-0.1	
03	57°44.7'	154°58.9'	PC	12	316	11	1	300	3	4.6	1013.6	-0.4	-0.9	
04	57°43.7'	155°04.6'	PC	12	317	9	1	300	3	4.5	1013.1	0.5	-0.2	
05	57°44.5'	155°00.5'	PC	12	330	9	1	300	3	4.0	1013.0	-0.4	-0.5	
06	57°49.7'	154°45.0'	PC	12	080	3	1	300	3	4.4	1012.4	0	-0.7	

Time (YYMMDDHH)	Position		Present Weather	Visi- bility (n.m.)	Wind Dir. Speed (True)(Kts.)	Sea Wave Height (Ft.)	Swell Waves Dir. Height (True) (Ft.)	Sea Water Temp. (°C)	Sea Level Pressure (mb)	Temperature (°C)		
	Lat (°N)	Long (°W)								Dry Bulb	Wet Bulb	
07	57°56.6'	154°26.3'	PC	12	030	5	1	300	2	4.4	1.0	-0.4
08	57°57.4'	154°32.4'	PC	12	027	12	0	010	1	4.3	0.2	0.0
09	57°56.8'	154°29.6'	PC	12	358	13	1	025	2	4.1	1.8	0.7
10	58°03.7'	154°16.1'	CL	12	015	18	1	025	2	3.8	0.5	0.2
11	58°01.4'	154°19.7'	CL	12	015	10	1	040	2	4.5	5.5	3.0
12	58°00.6'	154°00.3'	CL	12	029	11	2	060	3	5.6	0.0	0.4
13	58°01.5'	153°34.9'	CL	12	085	12	2	060	3	5.7	2.8	1.2
14	57°59.9'	153°10.5'	CL	12	073	16	2	095	3	5.7	2.3	2.0
15	57°55.7'	152°49.7'	CL	12	075	17	2	110	3	5.4	1.2	2.2
16	57°50.7'	152°51.6'	S/F	6	069	18	1	110	3	4.9	3.7	2.1
17	57°52.4'	152°48.1'	SW	1	050	22	2	070	3	4.7	3.2	2.2
18	57°57.1'	152°37.0'	S	1	030	16	2	060	3	5.0	1.1	1.1
19	57°59.1'	152°23.4'	CL	4	055	20	3	100	5	5.5	2.0	2.0
20	57°50.3'	152°07.6'	CL	3	080	18	2	100	4	5.0	2.0	1.8

Appendix E: Acronym List

A-XBT	Aircraft-eXpendable BathyThermograph (ocean temperature vs. depth)
BKG	BathyKymoGraph
CTD	Conductivity and Temperature with Depth
EMPS	Electronic Multiple Plankton Sampler
ERL	Enviromental Research Laboratories (NOAA/OAR)
FAA	Federal Aviation Administration
FOCI	Fisheries-Oceanography Coordinated Investigations
FOX	Fishery Oceanography eXperiment
IPHC	International Pacific Halibut Commission (U.S. State Department)
JD	Julian Day
NESDIS	National Environmental Satellite, Data, and Information Service (NOAA)
NMFS	National Marine Fisheries Service (NOAA)
NOAA	National Oceanic and Atmospheric Administration (U.S. Department of Commerce)
NOS	National Ocean Service (NOAA)
NWAFIC	NorthWest and Alaska Fisheries Center (NOAA/NMFS)
NWS	National Weather Service (NOAA)
OAQ	Office of Aircraft Operations (NOAA; formerly named RFC)
OAR	[Office of] Oceanic and Atmospheric Research (NOAA)
OCSEAP	Outer Continental Shelf Environmental Assessment Program (an interagency program with NOAA and the Minerals Management Service)
ODW	Aircraft-expendable Omega DropWindsonde (atmospheric profiles of air temperature, humidity, and horizontal wind)

PMEL Pacific Marine Environmental Laboratory (NOAA/OAR/ERL)
PRT Precision Radiation Thermometer
RFC Research Flight Center (NOAA; recently renamed OAO)
SST Sea-Surface Temperature