

# FINAL CRUISE INSTRUCTIONS FOCI

NOAA Ship Miller Freeman MF-01-07  
May 24 to June 7, 2001  
Kevin Bailey, Chief Scientist  
Alaska Fisheries Science Center

## ENDORSEMENTS:

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RADM Nicholas Prah, Director  
Marine Operations Center-Pacific  
Seattle, WA 98102

*/s/ Eddie N. Bernard*

Dr. Eddie N. Bernard, Director  
Pacific Marine Environmental Laboratory  
Seattle, WA 98115

*/s/ James Coe*

Dr. James Coe, Acting Director  
Alaska Fisheries Science Center  
Seattle, WA 98115

Date: April 10, 2001

FINAL CRUISE INSTRUCTIONS  
NOAA Ship MILLER FREEMAN

Cruise No: MF01-07  
FOCI No: 3MF01

Applicability: These instructions, with "FOCI Standard Operating Instructions for NOAA Ship MILLER FREEMAN" present complete information for this cruise.

Area:  
Gulf of Alaska, Kennedy Entrance, Shelikof Strait to Unimak Pass

Itinerary:  
May 24, 2001 Depart Dutch Harbor  
June 2, 2001 TNG Kodiak  
June 7, 2001 Arrive Seattle

Participating organizations:  
NOAA - Alaska Fisheries Science Center (AFSC)

**CRUISE DESCRIPTION:**

Fisheries-Oceanography Coordinated Investigations (FOCI) is an effort by NOAA and associated academic scientists. At present, FOCI consists of a Shelikof Strait (western Gulf of Alaska) walleye pollock project, and a NOAA Coastal Ocean Program project: Southeast Bering Sea Carrying Capacity. FOCI also supports associated projects, such as the Arctic Research Initiative, U.S. GLOBEC and North Pacific Marine Research Program, that address scientific issues related to FOCI. FOCI's goal is to understand the effects of abiotic and biotic variability on ecosystems of the North Pacific Ocean and Bering Sea in order to discern the physical and biological processes that determine recruitment variability of commercially valuable finfish and shellfish stocks in Alaskan waters.

**CRUISE OBJECTIVES:**

The objectives of this cruise are to conduct an ichthyoplankton survey and process-oriented studies in the region between Kennedy Entrance and Shelikof Strait to Unimak Pass to estimate the abundance of young walleye pollock larvae, their transport, and factors influencing their survival. We also intend to occupy stations on Line 8 to continue our 15 yr. time series of environmental and biological conditions in Shelikof Strait.

**1.0. PERSONNEL**

**1.1. Chief Scientist:**

Kevin Bailey, M, Alaska Fisheries Science Center  
Telephone: 206-526-4243  
E-mail address: Kevin.Bailey@NOAA.gov

The Chief Scientist has the authority to revise or alter the technical portion of the instructions as work progresses provided that, after consultation with the Commanding Officer, it is ascertained that the proposed changes will not: (1) jeopardize the safety of personnel or the ship; (2) exceed the overall time allotted for the project; (3) result in undue additional expenses; (4) alter the general intent of these project instructions.

### 1.2 Participating Scientists:

Kevin Bailey	M	AFSC
Debbie Blood	F	AFSC
Rachel Cartwright	F	AFSC
Annette Brown	F	AFSC
Steve Porter	M	AFSC
Melinda Smith	F	Teacher-at-Sea

### 1.3 NOAA Marine Operations Center-Pacific Contact:

Larry Mordock  
NOAA/MOC-Pacific (MOP1)  
1801 Fairview Ave. East  
Seattle, WA 98102-3767  
(206) 553 - 4764  
Larry.Mordock@noaa.gov

### 1.4 Program Contacts:

Dr. Phyllis Stabeno  
PMEL  
7600 Sand Point Way NE  
Seattle, WA 98115  
(206) 526-6453  
Phyllis.Stabeno@noaa.gov

Dr. Jeff Napp  
AFSC  
7600 Sand Point Way NE  
Seattle, WA 98115  
(206) 526-4148  
Jeff.Napp@noaa.gov

## **2.0. OPERATIONS**

A standard oceanographic watch will be utilized which consists of a winch operator, a scientific staff of three and a Survey Tech on deck. Operations will be conducted 24 hours a day. The fluorometer and PAR units should be deployed on the CTD array. The Munson may be deployed to conduct bongo tows in shallow bays. As in the past, the Munson needs to be equipped with a winch, depth sounding capability and a pump for net washdown. All other operations will be conducted in accordance with the Standard Operating Instructions.

### 2.1. SUMMARY OF ACTIVITIES:

An ichthyoplankton survey will be conducted from Unimak Pass through Shelikof Strait and Kennedy Entrance. The standard gear for the survey will be 60 cm bongos with 0.505 mm mesh netting. Tows will be to 100 m or 10 m off bottom where the depth is shallower. A map of potential stations and station positions are in Appendices 1 and 2. Approximately 120 stations from the list will be chosen for occupation from the potential stations. Line 8 will be occupied en route. Line 8 sampling will include 20 and 60 cm bongos and CTDs with Calvet tows for microzooplankton, and bottle samples for chlorophyll and nutrients. Line 8 station positions are shown in Appendices 3 and 4. Net tows at Line 8 are to 10 m off bottom. The 60 cm bongo will be fitted with .505 and .333 mm mesh nets for Line 8 sampling.

In the event of a storm, the Chief Scientist may call for a break in the above operations in order to opportunistically monitor before and after storm conditions. Storm monitoring will include CTDs (nutrients, chlorophyll and microzooplankton), Tucker and bongo tows. Live tows will be conducted with the bongos to examine larval condition.

At the end of the cruise and depending on time available, the Munson may be deployed to conduct bongo tows in shallow bays around Kodiak I.

On June 2 in the morning the ship will make a TNG at Kodiak to disembark the scientific party.

## 2.2 PROCEDURES FOR OPERATIONS:

The following are operations to be conducted on this cruise. The procedures for these operations are listed in the FOCI Standard Operating Instructions (SOI). Operations not addressed in the SOI and changes to standard procedures are addressed below.

CTD/Water samples (SOI 2.2.1)  
MARMAP bongo tow (SOI 2.2.2)  
Bongo larval condition tow (SOI 2.2.3)  
CalCOFI vertical egg tow (SOI 2.2.6)  
Tucker trawl (SOI 2.2.9)  
Chlorophyll samples (SOI 2.2.10)  
Satellite tracked drifter buoy (SOI 2.2.11)  
ADCP (SOI 2.2.13)  
Radiometer (SOI 2.2.14)

## **3.0. FACILITIES AND EQUIPMENT**

The following systems and their associated support services are essential to the cruise. Sufficient consumables, back-up units, and on-site spares and technical support must be in place to assure that operational interruptions are minimal. All measurement instruments are expected to have current calibrations, and all pertinent calibration information shall be included in the data package.

### 3.1 Equipment and Capabilities to be provided by the Ship

- Oceanographic winch with slip rings and 3-conductor cable terminated for CTD,
- Wire-angle indicator and readout for oceanographic winch,
- Oceanographic winch for bongo net (and other nets when used) with slip rings and 3-conductor cable terminated for the SeaCat,
- Sea-Bird 911 plus CTD system with stand. Each CTD system should include underwater CTD, weights, and pinger, and there should be one deck unit and tape recorder for the two systems,
- 10-liter sampling bottles for use with rosette (10 plus 4 spares),
- For CTD field corrections: AUTOSAL salinometer,
- Sea-Bird SBE-19 Seacat system,
- Meter block for plankton tows,
- Wire speed indicators and readout for quarterdeck, Rowe and Marco winches,
- For meteorological observations: 2 anemometers (one R. M. Young system interfaced to the SCS), calibrated air thermometer (wet-and dry-bulb) and a calibrated barometer and/or barograph,
- Freezer space for storage of biological and chemical samples (blast and storage freezers),
- Simrad EQ-50 echo sounder,
- JRC JFV-200R color sounder recorder,
- RDI ADCP written to Iomega Zip disk,
- Use of Pentium PC in DataPlot for data analysis,
- SCS (Scientific Computer System),
- Stern platform in place,
- Laboratory space with exhaust hood, sink, lab tables and storage space,
- Seawater hoses and nozzles to wash nets (quarterdeck and aft deck),
- Adequate deck lighting for nighttime operations,
- Navigational equipment including GPS and radar,
- Safety harnesses for working on quarterdeck and fantail,

### 3.2 Equipment to be provided by the Project

- Sea-Bird 911 plus CTD system to be used with PMEL stand,
- Sea-Bird SBE-19 Seacat system (primary system),
- PMEL PC with SEASOFT software for CTD data collection and processing,
- Fluorometer and light meter to be mounted on CTD,
- CTD stand modified for attachment of fluorometer,
- Conductivity and temperature sensor package to provide dual sensors on the primary CTD,
- CTD rosette sampler,
- IAPSO water,
- 60-cm bongo sampling arrays,
- 20 cm bongo arrays,
- Spare wire angle indicator,
- Tucker trawl, complete 1 M<sup>2</sup> sampling array,
- ScanMar,
- CalVET net array,
- Miscellaneous scientific sampling and processing equipment,
- Scientific ultra-cold freezer,
- Cruise Operations Data Base (COD) software and forms.

### 3.3. Scientific Computer System (SCS)

The ship's Scientific Computer System (SCS) shall operate throughout the cruise, acquiring and logging data from navigation, meteorological, oceanographic, and fisheries sensors. See FOCI Standard Operating Instructions for specific requirements.

## **4.0 DATA AND REPORTS**

Data disposition, responsibilities and data requirements are listed in the FOCI Standard Operating Instructions.

## **5.0 ADDITIONAL INVESTIGATIONS AND PROJECTS**

### 5.3 Piggyback projects:

None at this time.

## **6.0 MISCELLANEOUS**

### 6.5. Hazardous Materials:

The Chief Scientist shall be responsible for complying with NC Instruction 6280A, Hazardous Waste; policy, guidance, and training, dated February 4, 1991, paragraph 7.g and paragraph 9. By federal law, the ship may not sail without a complete inventory of MSDS, and appropriate neutralizing agents, buffers, and/or absorbents in amounts adequate to address spills of a size equal to the amount aboard.

#### **Inventory:**

The following hazardous materials will be provided and controlled by the scientists with the Chief Scientist assuming responsibility for the safe handling of such substances:

- Ethanol
- formalin
- Z-fix

## 7.0 COMMUNICATIONS

### 7.4 Important phone numbers, fax numbers and e-mail addresses:

PMEL/CARD Fax: (206) 526-6485

PMEL/ADMIN Fax: (206) 526-6815

AFSC/RACE Fax: (206) 526-6723

MILLER FREEMAN COMSAT (government account numbers): These are much cheaper than Inmarsat direct numbers and should always be used first.

800-678-0872, after voice prompt dial 330-394-113, after tone dial customer ID# (Voice)

800-678-0872, after voice prompt dial 761-267-348, after tone dial customer ID# (Fax)

Inmarsat (direct numbers)

011-872-330-394-113 (voice)

011-872-761-267-348 (fax)

CELLULAR: 206-660-7167

KODIAK ROAMER: 907-528-7626

DUTCH HARBOR ROAMER: 907-391-7626

(First dial the roamer, wait for dial tone, then dial cellular number.)

PMEL person: LastName@pmel.noaa.gov OR FirstName.LastName@noaa.gov

AFSC person: FirstName.LastName@noaa.gov

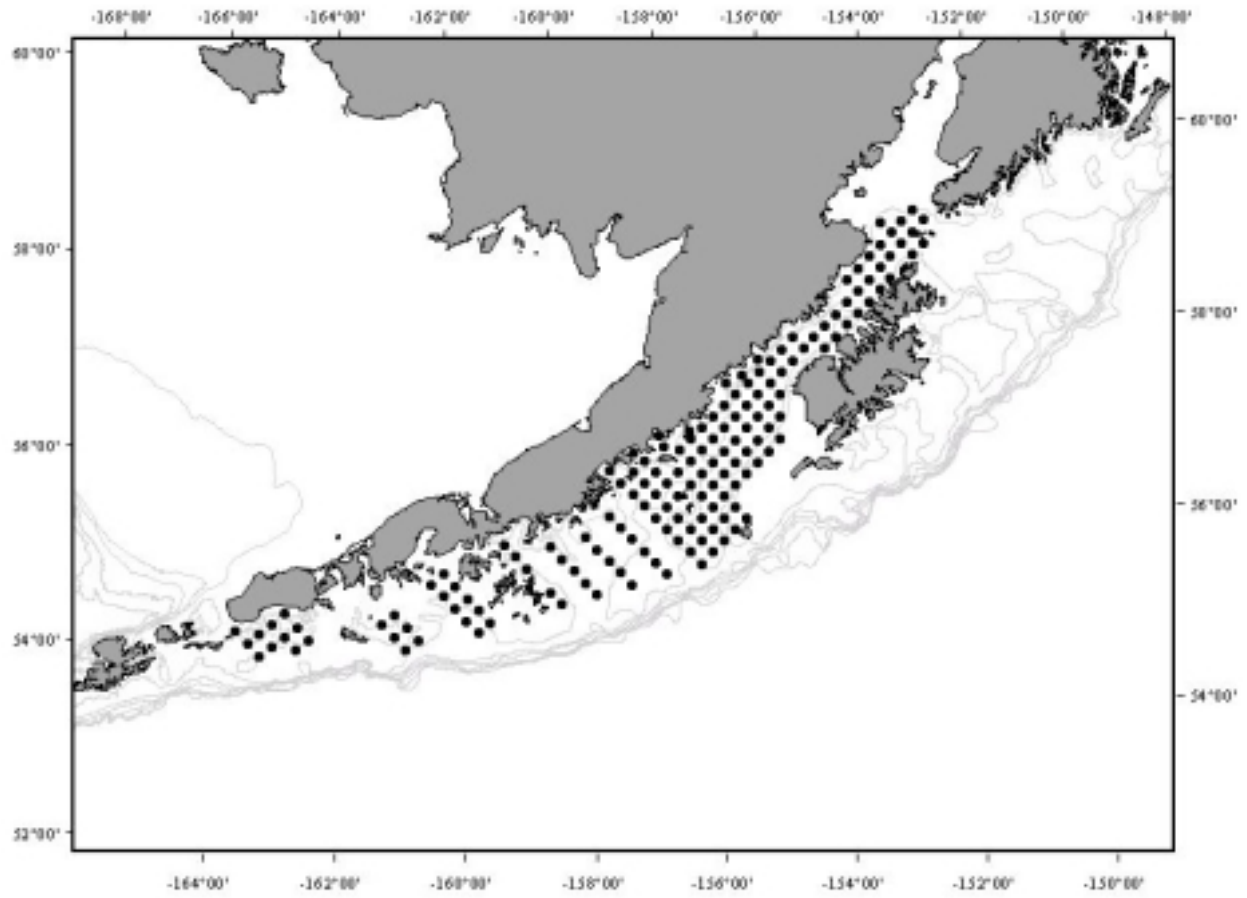
MOC-Pacific radio room: Radio.Room@noaa.gov

Direct to ship: NOAA.Ship.Miller.Freeman@noaa.gov (mention person in SUBJECT field)

## 8.0. APPENDICES

1. Map of potential ichthyoplankton stations. Not all of these stations will be occupied. A final determination will be made at a later time, or during the cruise at the discretion of the Chief Scientist.
2. Listing of potential ichthyoplankton stations. Not all of these stations will be occupied. A final determination will be made at a later time, or during the cruise at the discretion of the Chief Scientist. A file of station positions will be supplied before sailing.
3. Map of line 8 stations.
4. Listing of line 8 stations.

**Appendix 1. MF01-07 potential station positions.**



Appendix 2. MF01-07 listing of potential station positions.

Xy	Lat.dd	Long.dd	Lat-deg	Lat-min	Long-deg	Long-min
gd103	54.282	-164.711	54	16.90	164	42.63
gf103	54.167	-164.465	54	10.02	164	27.89
gf105	54.288	-164.268	54	17.27	164	16.10
gf107	54.409	-164.072	54	24.53	164	4.29
gf109	54.530	-163.874	54	31.79	163	52.44
gh103	54.052	-164.220	54	3.13	164	13.19
gh105	54.173	-164.024	54	10.39	164	1.45
gh107	54.294	-163.828	54	17.64	163	49.66
gh109	54.415	-163.631	54	24.90	163	37.84
gj107	54.179	-163.585	54	10.76	163	35.09
gj109	54.300	-163.388	54	18.01	163	23.30
gn117	54.554	-162.119	54	33.27	162	7.14
gn119	54.675	-161.921	54	40.53	161	55.25
gn125	55.038	-161.323	55	2.30	161	19.36
gn127	55.159	-161.122	55	9.56	161	7.31
gp117	54.440	-161.881	54	26.38	161	52.88
gp119	54.561	-161.684	54	33.64	161	41.02
gp125	54.924	-161.087	54	55.41	161	5.23
gp127	55.044	-160.887	55	2.67	160	53.22
gp135	55.528	-160.081	55	31.70	160	4.85
gr117	54.325	-161.644	54	19.50	161	38.66
gr119	54.446	-161.447	54	26.75	161	26.84
gr125	54.809	-160.852	54	48.53	160	51.14
gr127	54.930	-160.653	54	55.78	160	39.17
gr135	55.414	-159.849	55	24.81	159	50.94
gr151	56.381	-158.211	56	22.87	158	12.67
gt125	54.694	-160.619	54	41.64	160	37.11
gt127	54.815	-160.420	54	48.90	160	25.18
gt135	55.299	-159.618	55	17.93	159	37.08
gt139	55.541	-159.214	55	32.44	159	12.81
gt151	56.266	-157.985	56	15.98	157	59.09
gt153	56.387	-157.778	56	23.24	157	46.67
gt155	56.508	-157.570	56	30.50	157	34.21
gt163	56.850	-156.750	56	51.00	156	45.00
gt169	57.355	-156.098	57	21.30	156	5.85
gt197	59.048	-153.047	59	2.90	153	2.83
gv125	54.579	-160.385	54	34.75	160	23.12
gv127	54.700	-160.187	54	42.01	160	11.22
gv139	55.426	-158.984	55	25.55	158	59.06
gv143	55.668	-158.579	55	40.07	158	34.72
gv147	55.910	-158.170	55	54.58	158	10.21
gv151	56.152	-157.759	56	9.10	157	45.56
gv153	56.273	-157.553	56	16.35	157	33.18
gv155	56.394	-157.346	56	23.61	157	20.75
gv159	56.635	-156.930	56	38.13	156	55.79
gv161	56.756	-156.721	56	45.38	156	43.25
gv163	56.877	-156.511	56	52.64	156	30.67
gv165	56.998	-156.301	56	59.90	156	18.04
gv167	57.119	-156.090	57	7.16	156	5.38

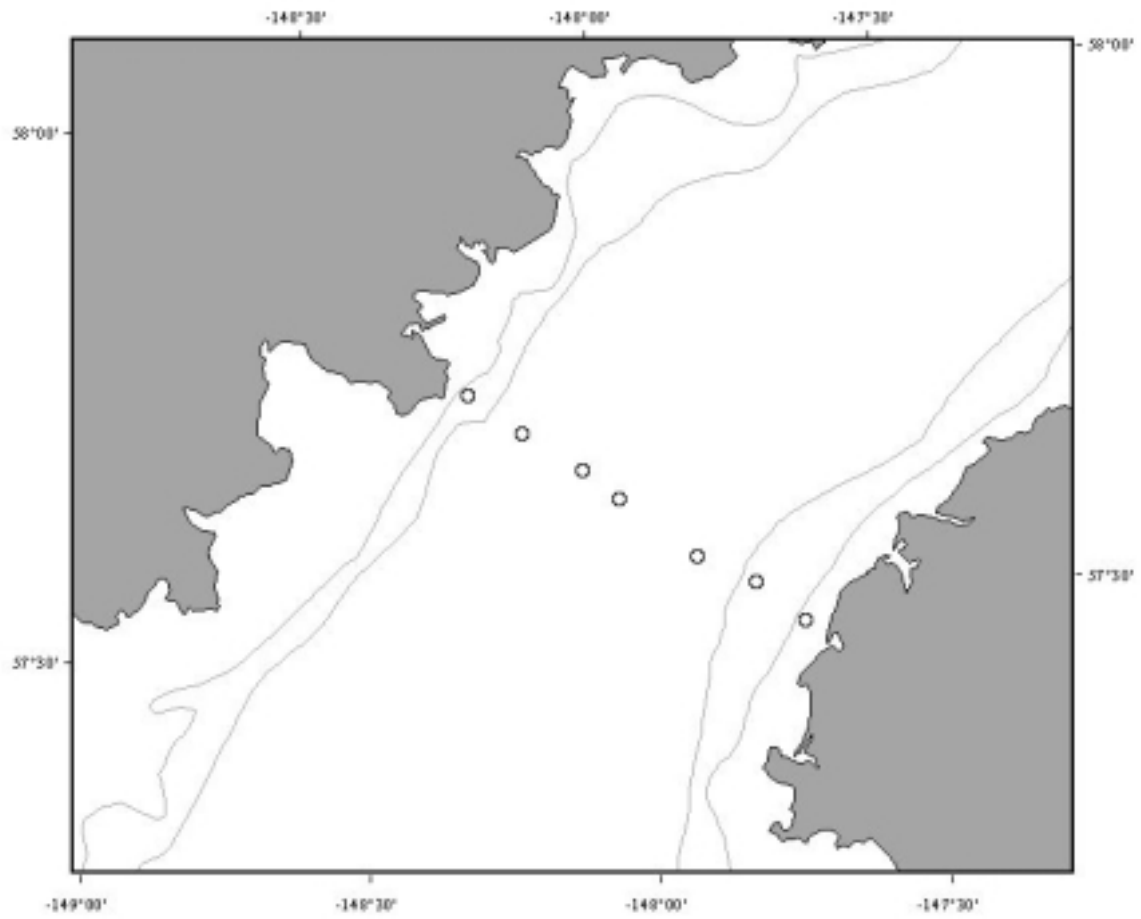


gv169	57.240	-155.878	57	14.41	155	52.67
gv171	57.361	-155.665	57	21.67	155	39.92
gv173	57.482	-155.452	57	28.93	155	27.13
gv175	57.603	-155.238	57	36.19	155	14.30
gv177	57.724	-155.024	57	43.44	155	1.42
gv179	57.845	-154.808	57	50.70	154	48.50
gv189	58.450	-153.721	58	26.99	153	43.25
gv191	58.571	-153.501	58	34.24	153	30.07
gv193	58.692	-153.281	58	41.50	153	16.83
gv195	58.813	-153.059	58	48.76	153	3.56
gv197	58.934	-152.837	58	56.02	152	50.23
gv199	59.055	-152.614	59	3.27	152	36.86
gv201	59.176	-152.391	59	10.53	152	23.45
gx135	55.069	-159.158	55	4.15	159	9.49
gx139	55.311	-158.756	55	18.67	158	45.36
gx143	55.553	-158.351	55	33.18	158	21.08
gx147	55.795	-157.944	55	47.70	157	56.65
gx151	56.037	-157.535	56	2.21	157	32.08
gx153	56.158	-157.329	56	9.47	157	19.73
gx155	56.279	-157.122	56	16.72	157	7.34
gx157	56.400	-156.915	56	23.98	156	54.92
gx159	56.521	-156.708	56	31.24	156	42.45
gx161	56.642	-156.499	56	38.50	156	29.95
gx163	56.763	-156.290	56	45.75	156	17.40
gx165	56.884	-156.080	56	53.01	156	4.82
gx167	57.004	-155.870	57	0.27	155	52.19
gx169	57.125	-155.659	57	7.53	155	39.52
gx171	57.246	-155.447	57	14.78	155	26.81
gx173	57.367	-155.234	57	22.04	155	14.06
gx175	57.488	-155.021	57	29.30	155	1.27
gx177	57.609	-154.807	57	36.56	154	48.44
gx179	57.730	-154.593	57	43.81	154	35.56
gx181	57.851	-154.377	57	51.07	154	22.64
gx183	57.972	-154.161	57	58.33	154	9.67
gx185	58.093	-153.944	58	5.59	153	56.66
gx187	58.214	-153.727	58	12.84	153	43.61
gx189	58.335	-153.509	58	20.10	153	30.52
gx191	58.456	-153.290	58	27.36	153	17.37
gx193	58.577	-153.070	58	34.62	153	4.18
gx195	58.698	-152.849	58	41.87	152	50.95
gx197	58.819	-152.628	58	49.13	152	37.67
gx199	58.940	-152.406	58	56.39	152	24.35
gx201	59.061	-152.183	59	3.64	152	10.97
gz135	54.954	-158.929	54	57.26	158	55.76
gz139	55.196	-158.528	55	11.78	158	31.70
gz143	55.438	-158.125	55	26.29	158	7.49
gz147	55.680	-157.719	55	40.81	157	43.13
gz151	55.922	-157.311	55	55.32	157	18.63
gz153	56.043	-157.105	56	2.58	157	6.32
gz155	56.164	-156.900	56	9.84	156	53.97
gz157	56.285	-156.693	56	17.10	156	41.58
gz159	56.406	-156.486	56	24.35	156	29.15

gz161	56.527	-156.278	56	31.61	156	16.69
gz163	56.648	-156.070	56	38.87	156	4.18
gz165	56.769	-155.861	56	46.12	155	51.64
gz167	56.890	-155.651	56	53.38	155	39.05
gz169	57.011	-155.440	57	0.64	155	26.42
gz171	57.132	-155.229	57	7.90	155	13.75
gz173	57.253	-155.017	57	15.15	155	1.04
gz181	57.736	-154.163	57	44.18	154	9.77
gz183	57.857	-153.948	57	51.44	153	56.85
gz185	57.978	-153.731	57	58.70	153	43.88
gz187	58.099	-153.515	58	5.96	153	30.87
gz189	58.220	-153.297	58	13.21	153	17.82
gz191	58.341	-153.079	58	20.47	153	4.72
gz193	58.462	-152.860	58	27.73	152	51.58
gz197	58.704	-152.419	58	42.24	152	25.15
gz199	58.825	-152.198	58	49.50	152	11.87
hb139	55.082	-158.301	55	4.89	158	18.08
hb143	55.323	-157.899	55	19.41	157	53.95
hb147	55.565	-157.494	55	33.92	157	29.66
hb151	55.807	-157.087	55	48.44	157	5.23
hb153	55.928	-156.883	55	55.69	156	52.96
hb157	56.170	-156.472	56	10.21	156	28.29
hb159	56.291	-156.265	56	17.47	156	15.90
hb161	56.412	-156.058	56	24.72	156	3.47
hb163	56.533	-155.850	56	31.98	155	51.00
hb165	56.654	-155.642	56	39.24	155	38.49
hb167	56.775	-155.432	56	46.49	155	25.94
hb169	56.896	-155.223	56	53.75	155	13.35
hb171	57.017	-155.012	57	1.01	155	0.72
hd143	55.209	-157.674	55	12.52	157	40.44
hd147	55.451	-157.271	55	27.03	157	16.23
hd151	55.692	-156.864	55	41.55	156	51.86
hd153	55.813	-156.661	55	48.81	156	39.63
hd155	55.934	-156.456	55	56.06	156	27.35
hd157	56.055	-156.251	56	3.32	156	15.04
hd159	56.176	-156.045	56	10.58	156	2.68
hd161	56.297	-155.838	56	17.84	155	50.29
hd163	56.418	-155.631	56	25.09	155	37.86
hd165	56.539	-155.423	56	32.35	155	25.39
hd167	56.660	-155.215	56	39.61	155	12.88
hd169	56.781	-155.005	56	46.87	155	0.32
hf147	55.336	-157.047	55	20.15	157	2.84
hf151	55.578	-156.642	55	34.66	156	38.54
hf153	55.699	-156.439	55	41.92	156	26.34
hf155	55.820	-156.235	55	49.18	156	14.10
hf157	55.941	-156.030	55	56.43	156	1.82
hf159	56.062	-155.825	56	3.69	155	49.51
hh151	55.463	-156.421	55	27.77	156	25.27
hh153	55.584	-156.218	55	35.03	156	13.10
hh155	55.705	-156.015	55	42.29	156	0.89
hh157	55.826	-155.811	55	49.55	155	48.65
hh159	55.947	-155.606	55	56.80	155	36.37

gu158	56.667	-157.217	56	40.00	157	13.00
gt171	57.450	-155.767	57	27.00	155	46.00
gt173	57.617	-155.467	57	37.00	155	28.00
B20	56.583	-157.800	56	35.00	157	48.00
B21	56.783	-157.317	56	47.00	157	19.00

Appendix 3. Line 8 stations.



Appendix 4. Station positions and activities at Line 8.

Station	LatDDeg	LongDDeg	LatDeg	LatMin	LongDeg	LongMin	CTDB	Chlor	Nuts	MZ	20/60Bon3
FOX61	57.720	-155.260	57	43.2	155	15.6	x	x	x	x	x
FOX60	57.680	-155.170	57	41.0	155	10.0	x	x	x	x	x
FOX59	57.640	-155.070	57	38.5	155	4.2	x	x	x	x	x
FOX58	57.610	-155.010	57	36.3	155	0.5	x	x	x	x	x
FOX57	57.550	-154.880	57	33.1	154	52.5	x	x	x	x	x
FOX56	57.520	-154.780	57	30.9	154	47.0	x	x	x	x	x
FOX55	57.480	-154.700	57	28.5	154	42.0	x	x	x	x	x