GLOBEC Northeast Pacific, Northern California Current

Cruise Report, R/V *Wecoma* (W0205A)

29 May – 18 June 2002

This cruise was
sponsored by the

National Science Foundation

and the

National Oceanic and
Atmospheric Administration

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Port of Departure: Newport, OR
Port of Return: Newport, OR

Cruise Goals

The cruise provided mesoscale and fine-scale oceanographic and ecological data in support of numerous objectives of the GLOBEC Northeast Pacific, Northern California Current program, with specific emphasis on the following projects:

W. T. Peterson – GLOBEC: A comparison of the effects of coastal upwelling on the population dynamics and vital rates of the euphausiids *Euphausia pacifica* and *Thysanoessa spinifera* in the Northern California Current, north and south of Cape Blanco, Oregon.

H. R. Harvey – GLOBEC: The use of molecular organic tracers to determine age structure, nutritional status and potential for trophic transfer in the euphausiids *Euphausia pacifica* and *Thysanoessa spinifera*.

M. Zhou and M. E. Huntley – U.S. GLOBEC Northeast Pacific Study: Mesocale zooplankton distribution and productivity.

Summaries of each of the GLOBEC projects may be found at the web site:
http://globec.coas.oregonstate.edu/groups/nep/projs.html.

Table 1. GLOBEC Cruise Participants

William Peterson (Leg 1)	NOAA Fisheries, Newport
Julie Keister	Oregon State University, Newport
Anders Roestad (Leg 1)	Oregon State University, Newport
Caroline Tracy Shaw	Oregon State University, Newport
Jaime Gomez-Gutiérrez	Oregon State University, Corvallis
Delphine Thibault-Botha	University of Hawaii, Honolulu
Alexandra Formeaux	Brigham Young University, Hawaii
Kristina Johnson (Leg 2)	Wake Forest University, North Carolina
Scott Maguire	University of Maryland, Solomons
Rachael Dyda-Rearick	University of Maryland, Solomons
Jim Watkins	Sea Education Association, Woods Hole
David Fields (Leg 2)	Scripps Institution of Oceanography
Daryl Swensen	Marine Tech, Oregon State University

Cruise Narrative (by Bill Peterson and Julie Keister, Chief Scientists)

Wednesday (29 May) Report. We had our doubts about this trip since the coastal weather did not cooperate prior to our scheduled departure date. Gale winds prevailed for two days; rains poured upon our heads as we loaded. What happened to summer? The forecast though was for fair weather by sailing day and the weatherman did not disappoint. The winds and rains ceased at 0100 Wednesday, 29 May (Note: all times and dates in the narrative are local time—e.g., +7 timezone). By morning, the skies were still cloudy, but the calm was a harbinger of good things to come. We pulled away from the dock at 1100 for an on-time departure. By the time we got to our first station, the seas were nearly flat calm. Que bueno! But, some of the newcomers were not feeling well. Que lastima!

We took the first few stations very slowly so that everyone could get some training in all operations – launching CTD, setting up and running the CTD software, retrieving CTD, filling nutrient bottles, taking chlorophyll samples, emptying and cocking bottles, doing the vertical net tow and mastering the MOCNESS. Those who could, also got trained in the fine art of eating dinner on the Wecoma, and this night, dinner was fabulous – prime rib, baked spuds, and halibut, with strawberry shortcake for those who cleaned their plates. Umm Umm good.

We began the first station at around 1300 Wednesday (following the fire drill--Julie did the survival suit practice demo--she hopped into a suit about 5 sizes too large for her. She looked like a cross between the Michelin man and the Pillsbury doughboy dressed in orange).

The hydrography at the first few stations was typical of downwelling conditions with a thick phytoplankton bloom prevailing at NH1, NH3, and NH5. Offshore of NH5, we found relatively clean water. Sea surface temperatures were 12.2‘C to 12.5ºC out to NH35. Zooplankton are a bit unusual in that we did not catch any euphausiids in any of our night tows. Large copepods dominate (*Calanus marshallae* and *Neocalanus plumchrus*). The other dominant taxa are pteropods, many of which are huge, in the 5-10 mm size range. We also caught perhaps a dozen pink shrimp (cocktail shrimp) at NH25, unusual since we generally do not catch more than one or two in nighttime tows. The lack of euphausiids, the presence of large numbers of pteropods, along with the occurrence of fairly large numbers of pink shrimp should produce some very interesting echograms from the HTI. We also found fair numbers of doliolids at NH25, typical of the offshore edge of the coastal upwelling zone, and huge numbers of these gelatinous zooplankton at NH35. Doliolids prevailed at NH45 as did large number of *Neocalanus cristatus*. SST at NH45 and NH65 were 12.9ºC.

Thursday (30 May) Report. Northwest winds were light through Wednesday night and blew 10-15 knots Thursday. The forecast is for NW winds at 20-25 knots on Friday continuing through the weekend. If this forecast holds, the *RV Thompson* (Tim Cowles, Chief Scientist) and *FV Frosti* (Bob Emmett, Chief Scientist) will have the good fortune of beginning their cruise with the upwelling in a near-fully spun-up condition.

Thursday night passed without incident. Everyone is feeling great and has settled into 'cruise mode'. The night shift knocked off the Bob Creek line (Line 3) quickly. Zooplankton catches were large along that line. The inner three stations were just like Newport – soupy, but BOB4 and BOB5 had low chlorophyll and very high copepod and pteropod biomass. At BOB5, we also hit a swarm of euphausiids with numbers greater than 10 per cubic meter. The night crew managed a couple of experiments--euphausiid molting rates, copepod gut pigments and copepod gut evacuation rates. BOB6 was an "oceanic' station with gobs of *Neocalanus cristatus*. Someone has got to study these critters one of these days because they are so abundant in offshore waters. They are too far offshore to be important prey for the juvenile salmon, but their large numbers might make them major consumers of phytoplankton in offshore waters.

Friday (31 May) Report. We began working the Heceta Head line (Line 4) at 0630 Friday morning. SSTs are still somewhat warm, on the order of 12ºC—just like Newport and Bob Creek. In terms of plankton, the line was different from the previous two in that there was much less phytoplankton at the inner stations. Copepods and pteropods prevailed at the shelf stations and *Neocalanus cristatus* at the offshelf stations (HH5, HH6 and HH7). We finished the line at 1615 and headed for the outer end of the FM line. Should be there by 2200 tonight. We are now in survey mode, knocking off CTDs and vertical plankton tows at a frightening pace. We hope to complete the FM line by late-morning which will then put us down at Cape Blanco by late Saturday afternoon (1 June). We can't wait for that, given that winds here are now up to 25 knots.

Monday (3 June) Report. Sorry about missing a couple of days (of reporting) but we had some unpleasantly rough weather and we got busier than heck. We all want to have lots of wind (and hence lots of upwelling) but actually working under such conditions is trying. But we are doing well. Lots of good bonding going on. Now for all the news.

FM line was uneventful in that operations progressed smoothly. Began FM11 at 2230 Friday night and finished the line at 1515 Saturday. The winds dropped considerably raising everyone's spirits. Hydrographically this line was interesting in that we began the line in moderately high (32 psu) salinity water and saw salinity drop monotonically to 30.8 psu at FM 7, then rise as we approached the coastal upwelling domain. Between FM7 and FM1, sea surface salinity climbed from 30.8 psu to 33.6 psu. Doliolids dominated in the 31 psu offshore water, but disappeared as we entered the upwelling domain.

We steamed toward the south Saturday afternoon, and as we rounded Cape Blanco, the wind picked up, jumping from 15 to 35 knots. But luckily, the winds dropped with the sunset to 25 knots. We did two MOCNESS tows at night at the mid- and outer-shelf stations, and a third tow in the wee hours of the morning at RR4 (550 m depth). Euphausiids were abundant at both RR2 and RR3 so the night crew spent quite a lot of time setting up two sets of experiments (euphausiid egg production and molting rates; copepod egg production and feeding rates [from gut pigment data]). By morning, the winds were still blowing 25 knots but were not freshening. Though windy, working conditions are not uncomfortable; a sure sign that we have all completely acclimatized to life aboard ship.

Sunday evening found us continuing to battle the winds. We had a near steady 35-40 knots of wind since about 1700 that afternoon. We are now working along Line 11 (which we have named the Pistol River (PR) line, and at the time of the writing of this sentence (2130) we still have winds greater than 35 knots. I don't know how the *Wecoma* does it but she does ride well. One way to deal with the winds is to watch an engrossing, intriguing, but thoroughly confusing film, such as "Vanilla Sky", and we did just that. In fact, we watched it twice.

Early Monday morning, the winds died exponentially, dropping from 35 knots to zero between 0100 and 0200, and the seas laid down quicker than you can say "lay down you angry sea". I never cease to be amazed at how quickly sea states can spin-up (and spin down) with the winds. As we sampled out along the line, we found sea surface temperatures of 8ºC out to CR3 (outer shelf) and <10ºC out to CR6 (water depth 700 m). You'll never see such a thing off Newport, or Coos Bay, for that matter, but you get such things when the wind blows a gale for days on end (which is what it likes to do off northern California).

We are continuing to head out along Crescent City line and will be at CR8 (water depth 2750 m) in a few minutes. We did MOCNESS tows at CR3, CR4 and CR6 and found the euphausiids in the 20-50 and 50-100 m nets. This is far shallower than off Newport or Heceta Bank by day. We have found the same thing at Crescent City on two other occasions (i.e., euphausiids very shallow in the water column) so shallow daytime distributions are not unusual

down here. But what does it all mean? A completely different pattern is seen north of Blanco--why would the euphausiids reside at depths >200 m by day off Newport, Heceta and Coos Bay, but be <100 m off Crescent City?

A note for Tim, Cyndy and David in particular: We are seeing strong frontal structure at around 125º-125.25ºW with salinity dropping more than two units (33.8 psu to 31 psu) over the space of a few miles. This was observed along FM, RR, PR and CR lines. Inside of the front are all the loveable zooplankton (euphausiids and copepods) but at, and offshore of the front, we find doliolids. We've seen humpback whales twice so far and both times they were located (feeding?) at these fronts. Also, lots of Pacific white sided dolphins are associated with these fronts. The fronts are easily seen with the flat calm conditions that we had today; also there are loads of albatross and other pelagics associated with this front, not to mention what appeared to be a lone Cassin's auklet. I suppose these fronts could be associated with the Columbia River plume but it seems a little far south and far offshore to me. All the surface water was between 31.2 psu and 31.4 psu off Newport out as far as NH65, but down south we are seeing salinities at and below 31 psu.

The plan for tonight is to sample out to CR8 then turn around and head back to CR6 and spend the night doing night MOCNESS tows at CR6, CR4, and CR3. That will put us at CR3 by around 0500 at which time we head north. I'll call Tim in the morning and see if we can possibly hook up with the *Thompson* and do an acoustics-MOCNESS comparison. Then we will redo the Newport line because we have had a fair bit of upwelling the past few days. This would be a useful comparison because our first visit was during strong downwelling conditions; and it would give us a third repeat of the NH line in a week. Then we will do a diel study either at NH20 (if there are any euphausiids) or else move south to BOB6 or HH4 where we know there are euphausiids. We'll do two MOCNESS by day and two by night, but spend most of the time collecting live zooplankton every hour for diel gut pigment samples, for some 24 h grazing studies (disappearance of chlorophyll) and copepod and euphausiid egg productions. Then, I guess we'll head in to Newport for a crew transfer.

Wednesday (5 June) Report. Tuesday was transit day. The night crew finished up early (0430). The big excitement of the evening was that Jaime found two bright red "exploding euphausiids". Remember them from 2000? You can read about it in our Science paper. Since 0430 we've been steaming north, heading for the Newport line (Line 1). The transit gave us all a chance to catch up – me with the event log, Julie with measuring and drying euphausiids for length-weight data, Jaime and Tracy with their egg production experiments, Rachel with her logbook and Anders and Jim with running salinity samples. Others took advantage of Tuesday being laundry day for scientists and washed their duds.

We are running north about 15 miles off the coast. We ran through cool water (<10ºC SST) from Crescent City up past Cape Blanco to approximately the FM line where sea surface temperatures jumped suddenly by 3ºC over the course of about five miles. SST is now greater than 14ºC! Dang! No upwelling up here.

Ran Newport Line and found somewhat salty and somewhat cool water at NH5 (32.4 psu and 13.1ºC SST) but NH10 was very fresh (31.25 psu) and warm (14.3°aC). Surface waters cooled out to 13.5ºC at NH25 and got a bit saltier (31.5 psu) and stayed that way all the way out to NH65. NH65 was showing signs of sitting at the edge of warmer and fresher water but we did not go beyond this point to find out. Still, though, it resembled what we saw way offshore along the FM, RR, PR and CR lines.

Since the winds began to freshen and turn around towards northerlies, we were given the opportunity to sample the evolution of an active upwelling event. So we are heading back to NH to repeat the line from 1-25 miles. We plan to do four more repeats between now and Saturday night. This will be a first for Newport. The repeats will be CTD and vertical plankton net tows at each station, with repeat MOCNESS tows at NH20 and repeat live nets at NH15 to monitor possible changes in copepod egg production rates.

Thursday (6 June) Morning Report. Things are well on the *Wecoma*. We are amassing lots of data and everyone is in great spirits. Our hopes and dreams of studying spin up of the upwelling along the Newport line have not materialized. The winds were too weak yesterday to have any effect. Though northerly, they never got much above 10 knots all day. Winds are now up to 15 knots (which is high for this time of day) but unless they blow like the dickens this afternoon, we're not going to be given our wished-for experiment. But such is life. Everything else has gone well, so this isn't much of a setback.

Last night went fairly well. We sampled every hour at NH20 from 2100 to 0600 to look at diel variations in gut pigments but caught virtually no adult and juvenile euphausiids. There were sufficient numbers of copepods and euphausiid furcilia larvae to do experiments, though. We set up one set of copepod egg production rates (*Calanus marshallae*, *C. pacificus*, *Pseudocalanus* sp., *Acartia longiremis*) and one molting rate (*C. marshallae* C_3 and C_4) experiment. Delphine got lots of copepod gut pigment samples taken and ran several gut evacuations so she is very pleased. We sampled lots of furcilia for gut pigments. No (or few) juveniles or adult euphausiids were captured, so we were unable to set up any egg productions or molting rates.

Now we are running in on the NH line from NH25 to the beach, doing CTD, nutrients, chlorophyll extractions and vertical plankton tows and will have completed this transect by 1400 or so. We are considering steaming down to Bob Creek (Line 3), or possibly the Heceta line (Line 4) and working there until 0600. We have to be at the dock and tied up by 1130 tomorrow to meet the radar technician and to exchange scientists. But by going down to Heceta, we give up an early morning Newport transect. So if the winds really howl this afternoon, we'll stay here, but if not, we'll go south for the evening.

Tomorrow we are dockside until 1330. Not sure where we will meet up with the fishing vessel F/V *Frosti* to do a diel time-series. Bob caught lots of fish along the Newport Line, so we will probably work there. But in some regards, our decision depends on the R/V *Thompson*, and we need input from Tim Cowles.

Saturday (June 8) Report. Yesterday (7 June), we returned dockside in Newport to exchange personnel (Bill and Anders off; Big Dave and Kristina on). Julie took over as Chief Scientist and moved into the big room. Sailed in the afternoon for the Newport Line. We completed a diel survey at station NH5 with the F/V *Frosti* at about 1100 this morning. The sampling went well: we occupied NH5 each 4 hours after the fishing vessel trawled. We did "big" bongo (60cm) trawls to attempt to catch the prey field of the juveniles. Many of the samples contained dungeness megalope and small fish, a few decapods and chaetognaths (at night), and otherwise mostly phytoplankton, jellyfish, and copepods.

Also, the night crew got gut fluorescence work done on small euphausiids at several stations and a molting rate experiment on adults. I got some young (F_1-F_3) *T. spinifera* furcilia measured and preserved for dry-weight analysis to eventually aid our biomass calculations.

We are just completing a CTD/vertical net survey of NH1-NH25 after which we will rendezvous with the R/V *Thompson* and hopefully the F/V *Frosti* this evening on Line 2a to do some MOCNESS/acoustics/fish trawl (if possible) comparisons and sample across the shelf-break with vertical nets.

Sunday (9 June) Report. Did a couple of ethanol preserved samples for Dave Fields (for forams and for copepods for genetics work by M. Ohmanuote's student). Did a drive-by with R/V *Thompson* for acoustic calibration at Station 2AT-1. F/V *Frosti* was with us, as well, so we did a bongo and live net in support of F/V *Frosti* activities. Another acoustics drive-by calibration at BOB5 in the wee hours of the morning. Ran BOB line with vertical nets and live nets (at night) to catch euphausiids for experiments. Inside of BOB line (BOB3) did another set of Bongo's with the F/V *Frosti*.

Monday (10 June) Report. Acoustics drive-by at HH5 at around 1500 on Sunday. Did vertical nets and CTD at HH5 and HH4, then met up with F/V *Frosti* and R/V *Thompson* at HH4 for another Bongo (for *Frosti*) and MOCNESS (for acoustic calibration), just after sunset last night. In the early morning of June 10, we completed the second "drive-by" of the *Thompson* which circled the *Wecoma* as we did a MOCNESS tow. We've worked out a good strategy in which we put the MOCNESS at depth without a codend on the open net so that we can tow at depth until the R/V *Thompson* is very near without potentially blowing out the net with a huge take of critters should it take awhile for the ships to position. Then, when the R/V *Thompson* gets near, we receive target depths from the *Thompson*'s acoustics team (Steve and Patrick) and we start towing the nets up as the R/V *Thompson* "pirouettes" us (as Tim says). The purpose of these drive-bys is to truth the bioacoustics with the net catches. Catches from these MOCs and from the Bongos used in conjunction with the F/V *Frosti* for catching the prey-field of juvenile salmon are pasted below.

Table 2. 60 cm Bongo Net Catches from the Diel Survey with the F/V *Frosti* and R/V *Wecoma*

7 June 1545	NH5	Jelly fish medusae, crab zoea and megalope, small fish
7 June 1915	NH5	Jelly fish medusae, copepods, crab larvae, euphausiid furcilia
7 June 2315	NH5	Jelly fish medusae, copepods, crab larvae
8 June 0315	NH5	Phytoplankton, chaetognaths, decapods, fish larvae
8 June 0725	NH5	Phytoplankton, fish larvae, copepods, chaetognaths
8 June 1105	NH5	Crab larvae, medusae, phytoplankton

Table 3. Other 60 cm Bongo Net Stations Occupied with the F/V Frosti

8 June 2130	Line 2a 80m depth	copepods, juvenile euphausiids, amphipods, jellies
9 June 1410	Bob 3	jellies, phytoplankton, ctenophores, crab larvae, copepods
9 June 2110	HH4	copepods, juvenile euphausiids, Limacina (pteropods)
9 June 2300	HH4	copepods, Limacina (pteropods), few adult euphausiids

Table 4. MOCNESS Net Catches from "Drive-by's" by R/V Thompson

Net depth	**Dominant taxa (ca. order of dominance by biomass)**
1945 8 June; Line 2a, 80m depth	
0-10m	Copepods, medusae, euphausiid furcilia
10-20m	Copepods, medusae, few euphausiid adults
20-50m	Copepods, medusae, few amphipods, few fish larvae
50-68m	Large copepods, ctenophores, few amphipods, few adult euphausiids
0200 9 June, BOB5 (Line 3), 146m depth	
0-22m	Limacina (pteropods), Beroe, copepods, ctenophonres, adult euphausiids
22-48m	Copepods, Limacina, adult euphausiids, few fish larvae
48-77m	Copepods, adult euphausiids, small Limacina, , few shrimp and squid
77-106m	Copepods, adult euphausiids, ctenophores, few fish larvae and squid
1710 9 June, HH4 (line4)m 950m depth	
0-15m	Ctenophores, crab megalope, jellies, few fish larvae/myctophids
15-30m	Euphausiid furcilia, Clione, ctenophores, Limacina, fish larvae, megalope
30-55m	Copepods, jellies, fish larvae, crab megalope
55-85m	Limacina, copepods, shrimp, jellies, few adult euphausiids
85-105m	Limacina, copepods, fish larvae, chaetognaths, siphonophores, jellies
105-200m	Copepods, chaetognaths, jellies, few squid, Limacina, amphipods
200-300m	Copepods, chaetognaths, adult euphausiids, amphipods, few fish larvae
2330 9 June, HH4 (line4)m 110m depth	
0-15m	Copepods, furcilia, Limacina, jellies, few adult euphausiids
15-20m	Copepods, furcilia, jellies, crab megalope, Limacina, few adult euphausiids
20-30m	Copepods, furcilia, ctenophores, Limacina, amphipods, crab megalope
30-50m	Copepods, furcilia, Limacina

During the rest of the night of June 9, we worked vertical and live nets out the BOB Line (Line 3). In the afternoon, we met the F/V *Frosti* to tow with them. In between, we got some molting rate experiments set up with *Thysanoessa spinifera* furcilia and several gut-fluorescence experiments run.

This morning, we ran a small grid (GD Stations) with CTDs and vertical nets exploring the south edge of Heceta bank. We occupied 12 stations between lines 4 and 4a between 125.0º and 124.4ºN. We are currently hot on the trail of the R/V *Thompson*, who is ahead of us on Line 5 going east. When we catch up, we will do another MOCNESS while they go by. In the afternoon, while working the grid, we did another acoustics calibration with R/V *Thompson* (UR3B, MOCNESS), and prey field sampling with Bongo for F/V *Frosti* at GD16 and UR2.

Thursday (13 June) Report. On 11 June (early morning), we continued to sample the GD grid. After completing the grid, we ran the FM line with vertical nets, Bongos and CTD with F/V *Frosti* alongside at all times. Apart from the diel study earlier, this was the first time working with the F/V *Frosti* on a continuous basis along a transect line. In the early morning of 12 June, we had another acoustics calibration with the R/V *Thompson* at FM7. Began sampling along Line 8 (which crosses that Bank off Coos Bay). Did Line 8 with vertical nets and CTD, and with Bongo when F/V *Frosti* was present (which was most of the line). Steamed down to RR, beginning at night.

After surveying Line 8 Wednesday doing 60cm bongos while the F/V *Frosti* set their trawl, we went offshore at night to catch spawning female euphausiids in about 350m water depth (the depth where they had been captured in the MOCNESS the night before during an R/V *Thompson* "drive-by" along Line 8). We caught them again, so set up some good egg production and growth-rate experiments. Later, we set out to survey a bit of the cold filament seen in the satellite temperature (Fig. 2a) and SeaWiFS images (Fig. 2b) along Line 10 (the RR Line). We started at 125.5ºW and worked in on Line 10 until meeting the F/V *Frosti* at 0730 to start a fine-scale survey in the vicinity of Line 10. With them, we worked from the canyon to nearshore, starting at about 124.833ºW. At about 124.6ºW, we sampled at a station with 7.7ºC surface water! Holy upwelling batman! The nearest-shore station was warmer—about 8.7ºC. We got a euphausiid furcilia molting rate experiment set up with animals from the cold-water station and we have one from offshore as well for a nice comparison.

Worked line RR (Line 10) on 13 June; usual drill: vertical nets, CTD, Bongo with F/V *Frosti* and live nets at night for euphausiid experiments. Ended in the afternoon of the 13th. Started Line 9B in the afternoon, again working with the F/V *Frosti* and R/V *Thompson* as much as possible (see event log). After finishing 9B, we returned to RR5 and RR6 to continue sampling the "tongue" of coastal water that was sweeping offshore from just south of Cape Blanco. This feature extended to about 125.5ºW. We had sampled it on the night of the 13th from the offshore tip, inbound, but due to time constraints, were unable to sample it at RR5 and RR6, thus returned there after meeting with the R/V *Thompson*.

This evening, we have just completed a drive-by with the R/V *Thompson* for another acoustic calibration with the MOCNESS at about 124.733ºW on Line 10 (RR Line). Several whales were nearby. We are now heading down to Line 12, working the outer shelf for adult euphausiids en route. Tomorrow morning, we will begin a second diel study with the F/V *Frosti* and hope for another rendezvous with the R/V *Thompson*.

Friday (14 June) Report. Wind? What wind? It's calm and beautiful here on Line 12. Not good for upwelling, but fine for whale-watching and star-gazing. Started sampling Crescent City line from CR7 heading inbound at 0330, with Vertical Nets, CTD and live nets. On the inshore end of CR, met F/V *Frosti* again and did some Bongo tows with them. In the morning, we met the F/V *Frosti* for the start of a diel study on the inside of the CR line, but the F/V *Frosti* didn't catch any juvenile salmon, so the study was aborted after 3 trawls and the F/V *Frosti* headed north. Between samplings with them, we did a couple of daytime MOCNESS tows and will compare them to night tows tonight. Somewhere between CR5 and CR6, we spotted many whales and dolphin. Too bad we have no idea what species (sorry Cyndy).

We completed another acoustic/MOCNESS comparison with the R/V *Thompson* at CR6 and will work our way back toward shore, ultimately meeting the R/V *Thompson* nearshore for another comparison before heading offshore to sample the outside of this line. Tim says the biological signal (at least in the phytoplankton), is extremely strong all the way out to about 125.1ºW. We plan to work out to 125.7ºW (station CR10), so will get out to the warm, less productive water. We are still working off of the satellite temperature and SeaWiFS images from a few days ago (Fig. 2) and wondering if things have changed since the winds relaxed. Did MOCNESS tows at CR6, CR4 and CR3 (all at night), with CR3 being another acoustics calibration. Everyone was pooped at this point.

Final Report. On 15 June, we finished the outside end of CR line (CR8, CR9 and CR10). After finishing CR10, started to transit on a northeasterly for HH7 with sampling along the way for CTD, vertical nets and experimental work, especially targeting the "tongue".

The morning of the 16th found us at HH7 and we worked the HH line inbound doing the usual (CTD and vertical nets), and did two net comparisons (Vertical nets with small Bongo) at HH4. Completed HH line during the afternoon of the 16th then ran the Newport line again with CTD, vertical nets and MOCNESS at NH15, NH20 and NH25 (during the night) with repeat of NH15 during the day.

It is now Monday (17 June) and we are still on the NH line. The Newport line took nearly 24 hours to complete.

Tuesday (18 June) Report. We are done! We steamed from NH65 to NH5, did a live tow at NH5 for copepod egg production back at the lab (for Bill), then headed home. Dockside in the morning of the 18th. Unpacked the ship for most of the day and headed to the post-cruise party. We think the *Wecoma* crew was happy to see us gone as they remarked that they were almost certain that they had never, ever in the history of cruising on the *Wecoma*, done so many stations!

Report from Bill Peterson's research group

Table 5. Summary of Cruise Activity (See Event Log in Appendix I for details)

172	CTD casts	Table 9
186	Vertical net tows	Tables 10, 11
43	Vertical tows (Ethanol preserved for Ohman genetics)	
35	60 cm Bongos	Table 12
7	20 cm Bongos	Table 13
40	MOCNESS tows	Table 14
~900	Chlorophyll samples	
~900	Nutrient samples	

Table 6. Euphausiid Molting Rate Experiments

Cruise	Station	Date	Start Time	# animals	Ep	Ts	Life Stage
MESO 3	Bob-5	5/30/02	2330	32	X		Adults
MESO 3	RR2	6/1/02	0000	30	X	X	Adults
MESO 3	RR3	6/2/02	0330	30	X	X	Adults
MESO 3	PR3	6/3/02	0000	30	X	X	Adults
MESO 3	CR4b	6/4/02	0400	30	X	X	Adults
MESO 3	NH20	6/5/02	0400	30	X	X	Adults
MESO 3	NH20	6/5/02	0400	10			Furcilia
MESO 3	NH15	6/8/02	0100	30	X		Adults
MESO 3	Bob-4	6/9/02	1300	50	X		Furcilia
MESO 3	Bob-3	6/9/02	1500	35	X	X	Adults
MESO 3	GD4	6/10/02	0400	30	X	X	Adults
MESO 3	GD16	6/10/02	2200	30	X	X	Adults
MESO 3	GD14	6/11/02	0300	30	X		Adults
MESO 3	FM3	6/11/02	1300	7	X		Furcilia
MESO 3	FM7	6/11/02	1930	15	X	X	Adults
MESO 3	8-2	6/12/02	1000	20			Furcilia
MESO 3	8-3	6/12/02	1030	20			Furcilia
MESO 3	8-11	6/12/02	1500	26			Furcilia
MESO 3	8A4B	6/12/02	2200	30	X	X	Adults
MESO 3	RR8	6/13/02	0230	30	X	X	Adults
MESO 3	RR2	6/13/02	1330	18			Furcilia
MESO 3	RR5	6/13/02	2300	30	X		Adults
MESO 3	RR6-CR7	6/14/02	0230	30	X	X	Adults
MESO 3	CR3	6/14/02	1130	28			Furcilia
MESO 3	CR10	6/15/02	1700	29			Furcilia
MESO 3	9-5b	6/16/02	0030	30	X	X	Adults
MESO 3	T1	6/16/02	0230	30			Furcilia

Table 7. Report on Euphausiid Egg Production Measurements

Station	Initial Date	Final Date	Collection Time	E. pacifica	T. spinifera	N. difficilis	T. inspinata	Total
BOB5	30-May-02	2-Jun-02	23.30	1	0	0	0	1
RR2	1-Jun-02	3-Jun-02	23.45	7	3	0	0	10
RR3	2-Jun-02	4-Jun-02	3.30	12	0	0	0	12
PR3	3-Jun-02	5-Jun-02	0.00	2	11	0	0	13
CR4B	4-Jun-02	6-Jun-02	4.00	28	2	0	0	30
NH20	5-Jun-02	7-Jun-02	4.00	7	0	0	0	7
GD4	10-Jun-02	12-Jun-02	4.00	6	1	0	0	7
UR2	10-Jun-02	12-Jun-02	0.00	7	0	0	0	7
GD!4	11-Jun-02	13-Jun-02	3.00	31	0	0	0	31
FM6	11-Jun-02	13-Jun-02	22.46	1	5	0	0	6
8A4B	12-Jun-02	14-Jun-02	22.00	2	0	0	0	2
RR8	13-Jun-02	15-Jun-02	2.30	14	1	0	0	15
RR7	13-Jun-02	15-Jun-02	5.30	0	0	0	3	3
RR5	13-Jun-02	15-Jun-02	21.32	9	0	0	0	9
RR6-CR7	14-Jun-02	16-Jun-02	2.30	35	0	0	0	35
CR6	14-Jun-02	16-Jun-02	22.30	1	0	0	2	3
9-5B	16-Jun-02	18-Jun-02	22.13	1	0	0	0	1
NH65	18-Jun-02	20-Jun-02	23.00	1	0	0	1	2

Table 8. Summary of Copepod Production Rate Experiments

Calanus marshallae	Egg Production Experiments	NH5, RR8
	Molting Rate Experiments	NH5, HH4
Pseudocalanus sp	Egg Production Experiments	NH5, NH10, BOB4, GD4, GD14, RR4, CR7
Acartia longiremis	Egg Production Experiments	BOB4, FM6, RR4, CR7
Centropages	Egg Production Experiments	FM5

Report from Rodger Harvey's Research Group

Our primary goal of this project is to understand the age structure of krill (*E. pacifica* and *T. spinifera*) using biochemical markers of age (lipofuscins) together with a suite of organic markers of nutritional status and dietary history including fatty acids, sterols, algal pigments and alcohols. For the May-June 2002 Mesoscale NEP cruise, our field group consisted of Rachael Dyda-Rearick and Scott Maguire. Animals (krill) were collected using 1m MOCNESS or vertical tow at selected stations (8 stations). Different size classes of krill (n>100) were sorted, providing an unbiased and adequate number for statistical analysis. Sorted animals for age determination by lipofuscin analysis were immediately frozen (-20°C) for shore-based analysis. For lipid analysis, animals were first sorted with different life stages (i.e. furcilia, sub-adult, and adult), and immediately frozen. To determine in-situ phytoplankton community composition (and as potential diets for krill), particles were collected on GF/F (pore size-0.720 m0m) from 3 different depths (surface, chlorophyll maximum, and below the chlorophyll maximum) at 22 different stations. Collected particle samples were immediately frozen. These particle samples will be analyzed for lipid, photosynthetic pigments together with bulk measures of total particulate carbon and nitrogen. In order to address the question of "Can gut content analysis of animals be used to estimate the long-term diet history of animals using specific lipid biomarkers", a gut purging experiment was performed on-board. 50 adult krill were placed in filtered seawater in the dark, at 10°C. After 48 hours, all animals were removed and immediately frozen. Fecal pellets were carefully collected and stored for organic marker analysis, as well.

Report from Mark Huntley's Research Group

For the June 2002 (Meso-3) cruise, our team was Delphine Thibault-Botha (University of Hawaii) and Alexandra Formeaux (BYU Hawaii). Our process studies focused on understanding zooplankton *in situ* population dynamics processes and the interaction between physical and biological processes. We use the gut fluorescence technique on different stages and sizes of target species (*Calanus marshallae, Pseudocalanus* sp.) as a direct index of feeding activity. Spatial variability of gut fluorescence reflects variability in nutritional state, and may be positively correlated with other proxies of high growth rate. Sub-samples from Bongo net catches were immediately filtered through 0.200-mm mesh, and then frozen in liquid nitrogen. Gut evacuation rates were also measured on other sub-samples from the bongo. This sub-sample was filtered through 0.200-mm mesh and placed in filtered sea water (GFF) and placed in fridge set at *in situ* temperature. Subsamples are collected at 5, 10, 15, 30, 45, 60, 90 and 120 min and frozen in liquid nitrogen. Samples will then be sorted under the microscope using a dim light in the lab. Animals sorted by species and stages will be placed in absolute methanol. Pigments will be extracted in dark at 4°C for 24 h, and measured fluorometrically following standard procedures. When enough copepods were available subsamples for DNA and RNA samples (growth rates) were also taken.

Gelatinous zooplankton were very common. One experiment on feeding rates by ctenophores (*Pleurobrachia*) was conducted. Siphonophores were also collected using buckets or large non-filtering cod end nets.

Stations sampled	35
Samples collected for gut fluorescence	46 samples
Gut evacuation rate experiments	22 experiments
Others samples collected for DNA/RNA measurements	40
Pleurobrachia feeding rate experiment	1

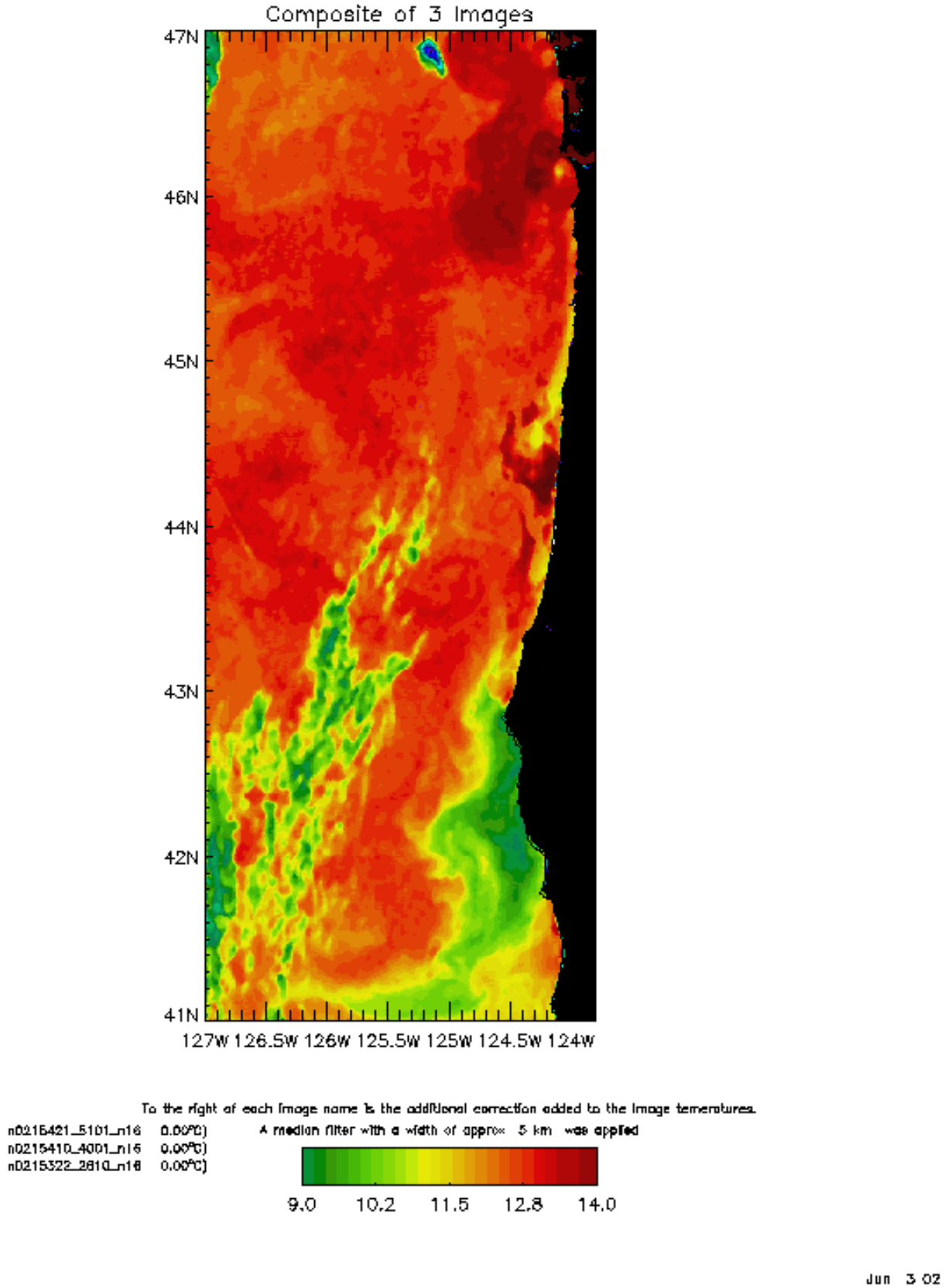

Figure 1a. AVHRR estimated SST (ºC) on 3 June 2002

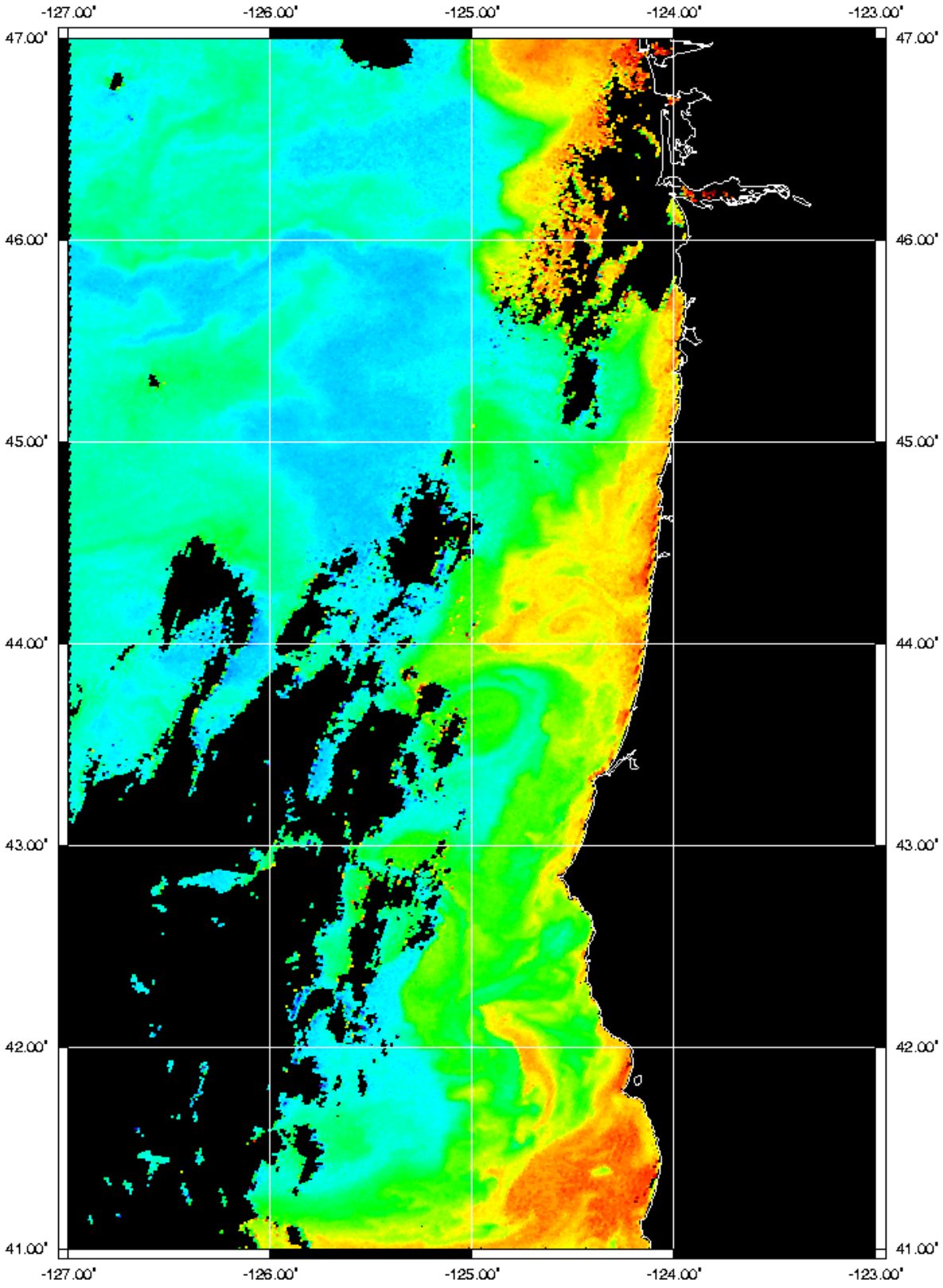

Figure 1b. SeaWiFS chlorophyll-a on 2 June 2002

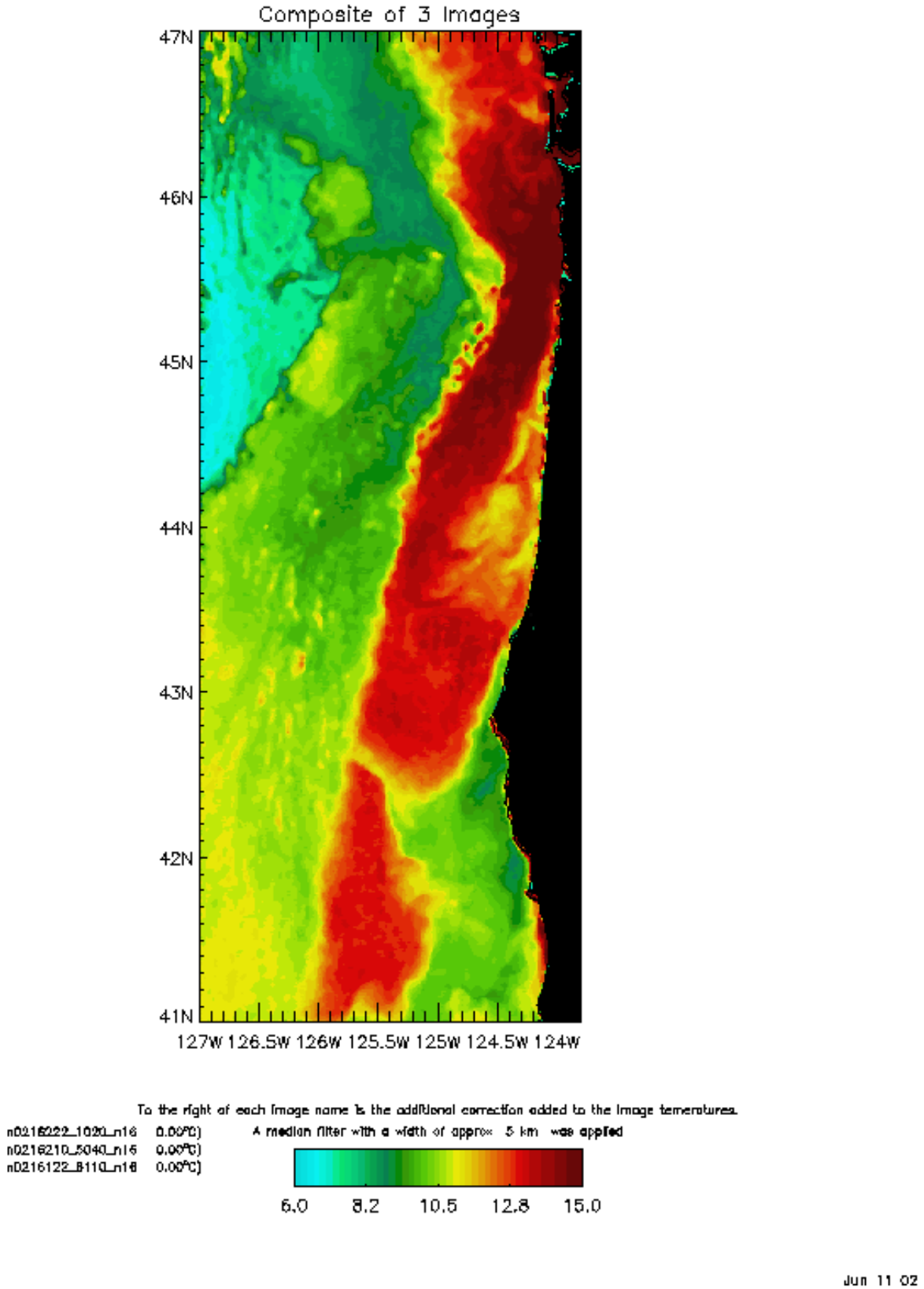

Figure 2a. AVHRR estimated SST (ºC) on 11 June 2002

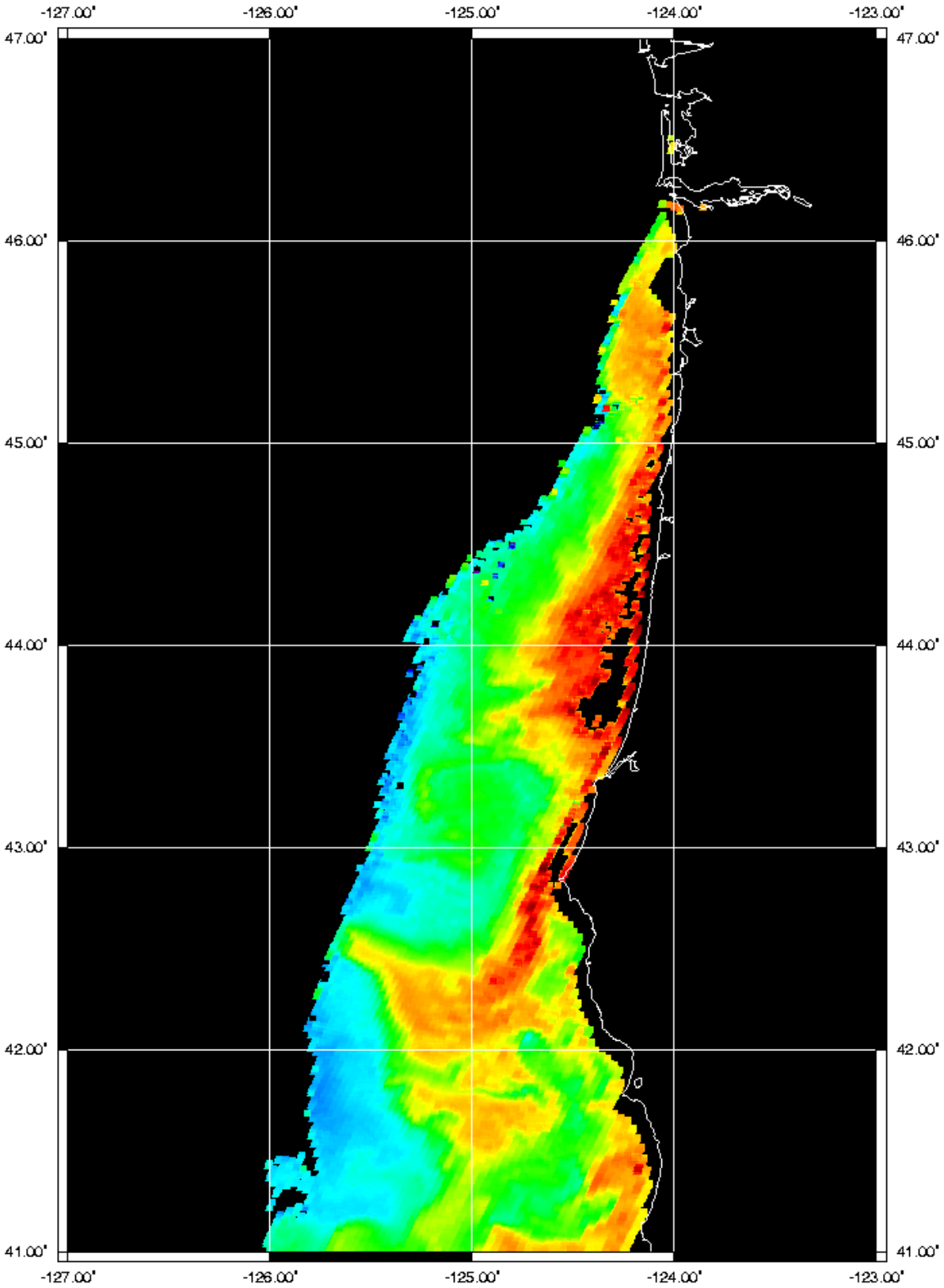

Figure 2b. SeaWiFS chlorophyll-a on 10 June 2002

Table 9: CTD Casts

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE14902.01	CTD	1	1	NH-1	29	5	1310	S	44.6521	-124.1002	29	22	
WE14902.02	CTD	1	1	NH-1	29	5	1340	E	44.6521	-124.1002	nd	nd	
WE14902.04	CTD	2	2	NH-3	29	5	1456	S	44.6521	-124.1300	46	41	
WE14902.05	CTD	2	2	NH-3	29	5	1512	E	44.6528	-124.1305	46	nd	
WE14902.06	CTD	3	3	NH-5	29	5	1541	S	44.6518	-124.1768	62	52	
WE14902.07	CTD	3	3	NH-5	29	5	1601	E	44.6521	-124.1772	62	nd	
WE14902.11	CTD	4	4	NH-10	29	5	1709	S	44.6513	-124.2943	80	73	
WE14902.12	CTD	4	4	NH-10	29	5	1727	E	44.6502	-124.2951	80	nd	
WE14902.14	CTD	5	5	NH-15	29	5	1820	S	44.6525	-124.4117	91	85	
WE14902.15	CTD	5	5	NH-15	29	5	1842	E	44.6521	-124.4129	91	nd	
WE14902.21	CTD	6	6	NH-20	29	5	2153	S	44.6518	-124.5285	140	133	
WE14902.22	CTD	6	6	NH-20	29	5	2217	E	44.6520	-124.5286	140	nd	
WE15002.05	CTD	7	8	NH-25	30	5	0414	S	44.6512	-124.6494	297	200	
WE15002.06	CTD	7	8	NH-25	30	5	0435	E	44.6512	-124.6493	297	nd	
WE15002.10	CTD	8	9	NH-35	30	5	0840	S	44.6497	-124.8847	459	200	
WE15002.11	CTD	8	9	NH-35	30	5	0907	E	44.6491	-124.8856	459	nd	
WE15002.18	CTD	9	10	NH-45	30	5	1445	S	44.6520	-125.1179	717	nd	
WE15002.19	CTD	9	10	NH-45	30	5	1512	E	44.6519	-125.1190	717	200	
WE15002.20	CTD	10	11	NH-65	30	5	1715	S	44.6514	-125.5993	2880	nd	
WE15002.21	CTD	10	11	NH-65	30	5	1741	E	44.6514	-125.6002	2880	200	
WE15002.26	CTD	11	12	BOB-6	30	5	2049	S	44.2462	-125.1106	1266	200	
WE15002.27	CTD	11	12	BOB-6	30	5	2109	E	44.2463	-125.1104	1266	nd	
WE15002.30	CTD	12	13	BOB-5	30	5	2233	S	44.2460	-124.8986	148	138	
WE15002.31	CTD	12	13	BOB-5	30	5	2252	E	44.2458	-124.8982	148	nd	
WE15102.01	CTD	13	14	BOB-4	31	5	0030	S	44.2450	-124.6991	103	93	
WE15102.02	CTD	13	14	BOB-4	31	5	0044	E	44.2448	-124.6990	103	nd	
WE15102.04	CTD	14	15	BOB-3	31	5	0150	S	44.2465	-124.5085	104	90	
WE15102.05	CTD	14	15	BOB-3	31	5	0204	E	44.2463	-124.5085	104	nd	
WE15102.08	CTD	15	16	BOB-2	31	5	0305	S	44.2470	-124.3774	90	82	
WE15102.09	CTD	15	16	BOB-2	31	5	0319	E	44.2477	-124.3783	90	nd	
WE15102.11	CTD	16	17	BOB-1	31	5	0425	S	44.2474	-124.1896	54	43	
WE15102.12	CTD	16	17	BOB-1	31	5	0437	E	44.2472	-124.1897	54	nd	
WE15102.16	CTD	17	18	HH-1	31	5	0616	S	43.9995	-124.2004	54	46	
WE15102.17	CTD	17	18	HH-1	31	5	0633	E	44.0005	-124.0171	54	nd	
WE15102.19	CTD	18	19	HH-2	31	5	0740	S	43.9990	-124.4004	120	117	
WE15102.20	CTD	18	19	HH-2	31	5	0802	E	43.9979	-124.4006	120	nd	
WE15102.22	CTD	19	20	HH-3	31	5	0920	S	43.9995	-124.6007	153	144	
WE15102.23	CTD	19	20	HH-3	31	5	0941	E	43.9996	-124.6012	153	nd	
WE15102.26	CTD	20	21	HH-4	31	5	1106	S	44.9995	-124.8009	109	100	
WE15102.27	CTD	20	21	HH-4	31	5	1128	E	44.9998	-124.8022	109	nd	
WE15102.29	CTD	21	22	HH-5	31	5	1253	S	43.9994	-125.0007	942	200	
WE15102.30	CTD	21	22	HH-5	31	5	1315	E	43.9996	-125.0023	942	nd	
WE15102.32	CTD	22	23	HH-6	31	5	1408	S	43.9992	-125.1002	1445	200	
WE15102.33	CTD	22	23	HH-6	31	5	1432	E	43.9991	-125.1021	1445	nd	
WE15102.35	CTD	23	24	HH-7	31	5	1522	S	44.0001	-125.1994	1730	200	
WE15102.36	CTD	23	24	HH-7	31	5	1548	E	43.9994	-125.2167	1730	nd	
WE15102.41	CTD	24	25	FM-11	31	5	2230	S	43.2158	-126.1971	3038	200	
WE15102.42	CTD	24	25	FM-11	31	5	2249	E	43.2153	-126.1985	3038	nd	

Table 9: CTD Casts (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE15202.01	CTD	25	26	FM-10	1	6	0216	S	43.2173	-125.6699	3089	200	
WE15202.02	CTD	25	26	FM-10	1	6	0235	E	43.2192	-125.6723	3089	nd	
WE15202.04	CTD	26	27	FM-9	1	6	0530	S	43.2178	-125.1671	1651	200	
WE15202.05	CTD	26	27	FM-9	1	6	0550	E	43.2161	-125.1686	1651	nd	
WE15202.07	CTD	27	28	FM-8	1	6	0711	S	43.2174	-124.9997	1094	200	
WE15202.08	CTD	27	28	FM-8	1	6	0734	E	43.2164	-125.0001	1094	nd	
WE15202.10	CTD	28	29	FM-7	1	6	0848	S	43.2164	-124.8340	343	200	
WE15202.11	CTD	28	29	FM-7	1	6	0912	E	43.2158	-124.8345	343	nd	
WE15202.13	CTD	29	30	FM-5	1	6	1031	S	43.2162	-124.6671	156	147	
WE15202.14	CTD	29	30	FM-5	1	6	1052	E	43.2158	-124.6672	156	nd	
WE15202.16	CTD	30	31	FM-4	1	6	1149	S	43.2160	-124.5849	86	81	
WE15202.17	CTD	30	31	FM-4	1	6	1206	E	43.2149	-124.5859	86	nd	
WE15202.19	CTD	31	32	FM-3	1	6	1257	S	43.2158	-124.5002	65	58	
WE15202.20	CTD	31	32	FM-3	1	6	1312	E	43.2108	-124.4974	65	nd	
WE15202.23	CTD	32	33	FM-2	1	6	1355	S	43.2171	-124.4674	55	45	
WE15202.24	CTD	32	33	FM-2	1	6	1411	E	43.2177	-124.4680	55	nd	
WE15202.27	CTD	33	34	FM-1	1	6	1458	S	43.2177	-124.4333	36	26	
WE15202.28	CTD	33	34	FM-1	1	6	1510	E	43.2172	-124.4333	36	nd	
WE15202.31	CTD	34	35	RR-1	1	6	1922	S	42.5002	-124.5007	38	29	
WE15202.32	CTD	34	35	RR-1	1	6	1931	E	42.5004	-124.4999	38	nd	
WE15202.34	CTD	35	36	RR-2	1	6	2022	S	42.4997	-124.6008	89	79	
WE15202.35	CTD	35	36	RR-2	1	6	2038	E	42.4995	-124.6015	89	nd	
WE15202.37	CTD	36	37	RR-3	1	6	2129	S	42.4999	-124.6996	134	125	
WE15202.38	CTD	36	37	RR-3	1	6	2146	E	42.4994	-124.7000	134	nd	
WE15302.06	CTD	37	40	RR-4	2	6	0701	S	42.4977	-124.8018	599	200	
WE15302.07	CTD	37	40	RR-4	2	6	0723	E	42.4972	-124.8012	599	nd	
WE15302.09	CTD	38	41	RR-5	2	6	0811	S	42.5000	-124.9003	1180	200	
WE15302.10	CTD	38	41	RR-5	2	6	0837	E	42.4991	-124.9013	1180	nd	
WE15302.12	CTD	39	42	RR-6	2	6	0942	S	42.5003	-125.0001	1792	200	
WE15302.13	CTD	39	42	RR-6	2	6	1006	E	42.4996	-125.0009	1792	nd	
WE15302.15	CTD	40	43	RR-7	2	6	1131	S	42.5002	-125.2004	3000	200	
WE15302.17	CTD	41	44	RR-8	2	6	1348	S	42.5007	-125.4991	nd	200	
WE15302.21	CTD	42	45	PR-7	2	6	1652	S	42.2016	-125.1002	1946	200	
WE15302.22	CTD	42	45	PR-7	2	6	1710	E	42.1985	-125.1020	1946	nd	
WE15302.24	CTD	43	46	PR-6	2	6	1848	S	42.2019	-124.8643	850	200	
WE15302.25	CTD	43	46	PR-6	2	6	1908	E	42.1996	-124.8648	850	nd	
WE15302.27	CTD	44	47	PR-5	2	6	2036	S	42.2002	-124.6943	535	200	
WE15302.28	CTD	44	47	PR-5	2	6	2057	E	42.1999	-124.6954	535	nd	
WE15302.30	CTD	45	48	PR-4	2	6	2159	S	42.1998	-124.6284	345	200	
WE15302.31	CTD	45	48	PR-4	2	6	2222	E	42.1997	-124.6288	345	nd	
WE15302.33	CTD	46	49	PR-3	2	6	2323	S	42.1998	-124.5638	164	153	
WE15302.34	CTD	46	49	PR-3	2	6	2343	E	42.2001	-124.5636	164	nd	
WE15402.01	CTD	47	50	PR-2	3	6	0054	S	42.2000	-124.4931	120	118	
WE15402.02	CTD	47	50	PR-2	3	6	0110	E	42.2004	-124.4930	120	nd	
WE15402.04	CTD	48	51	PR-1	3	6	0209	S	42.2001	-124.4235	71	62	
WE15402.05	CTD	48	51	PR-1	3	6	0221	E	42.2007	-124.4232	71	nd	
WE15402.09	CTD	49	52	CR-1	3	6	0436	S	41.9010	-124.2997	41	32	
WE15402.10	CTD	49	52	CR-1	3	6	0447	E	41.9011	-124.2997	41	nd	

Table 9: CTD Casts (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE15402.12	CTD	50	53	CR-2	3	6	0530	S	41.9000	-124.3999	69	60	
WE15402.13	CTD	50	53	CR-2	3	6	0543	E	41.8996	-124.3999	69	nd	
WE15402.15	CTD	51	54	CR-3	3	6	0629	S	41.8999	-124.4999	137	127	
WE15402.16	CTD	51	54	CR-3	3	6	0650	E	41.9001	-124.5003	137	nd	
WE15402.21	CTD	52	55	CR-4	3	6	0904	S	41.8898	-124.5999	517	200	
WE15402.22	CTD	52	55	CR-4	3	6	0932	E	41.8997	-124.5999	517	nd	
WE15402.26	CTD	53	56	CR-5	3	6	1156	S	41.9001	-124.6991	665	200	
WE15402.27	CTD	53	56	CR-5	3	6	1223	E	41.9001	-124.6999	665	nd	
WE15402.30	CTD	54	57	CR-6	3	6	1328	S	41.8994	-124.7993	750	200	
WE15402.31	CTD	54	57	CR-6	3	6	1350	E	41.8993	-124.7989	750	nd	
WE15402.34	CTD	55	58	CR-7	3	6	1614	S	41.9002	-124.9997	844	200	
WE15402.35	CTD	55	58	CR-7	3	6	1635	E	41.8991	-124.9970	844	nd	
WE15402.37	CTD	56	59	CR-8	3	6	1744	S	41.9001	-125.2011	2700	200	
WE15402.38	CTD	56	59	CR-8	3	6	1805	E	41.8999	-125.2005	2700	nd	
WE15502.07	CTD	57	64	NH-5	4	6	1908	S	44.6520	-124.1762	60	50	
WE15502.08	CTD	57	64	NH-5	4	6	1918	E	44.6517	-124.1767	60	nd	
WE15502.11	CTD	58	65	NH-10	4	6	2008	S	44.6514	-124.2888	82	73	
WE15502.12	CTD	58	65	NH-10	4	6	2021	E	44.6517	-124.2956	82	nd	
WE15502.14	CTD	59	66	NH-15	4	6	2119	S	44.6516	-124.4108	97	88	
WE15502.15	CTD	59	66	NH-15	4	6	2135	E	44.6516	-124.4115	97	nd	
WE15602.03	CTD	60	69	NH-20	5	6	0233	S	44.6517	-124.5278	143	135	
WE15602.04	CTD	60	69	NH-20	5	6	0247	E	44.6519	-124.5285	nd	nd	
WE15602.07	CTD	61	70	NH-25	5	6	0357	S	44.6517	-124.6500	297	200	
WE15602.08	CTD	61	70	NH-25	5	6	0416	E	44.6513	-124.6504	nd	nd	
WE15602.10	CTD	62	71	NH-35	5	6	0530	S	44.6517	-124.8829	436	200	
WE15602.11	CTD	62	71	NH-35	5	6	0547	E	44.6516	-124.8835	436	nd	
WE15602.13	CTD	63	72	NH-45	5	6	0659	S	44.6516	-125.1163	700	200	
WE15602.14	CTD	63	72	NH-45	5	6	0724	E	44.6515	-125.1162	700	nd	
WE15602.16	CTD	64	73	NH-65	5	6	0936	S	44.6513	-125.5996	1276	200	
WE15602.17	CTD	64	73	NH-65	5	6	0956	E	44.6517	-125.6000	1276	nd	
WE15602.20	CTD	65	74	NH-1	5	6	1624	S	44.6522	-124.1004	28	18	
WE15602.21	CTD	65	74	NH-1	5	6	1636	E	44.6519	-124.1006	28	nd	
WE15602.23	CTD	66	75	NH-3	5	6	1702	S	44.6519	-124.1298	47	37	
WE15602.24	CTD	66	75	NH-3	5	6	1714	E	44.6517	-124.1305	47	nd	
WE15602.25	CTD	67	76	NH-5	5	6	1734	S	44.6509	-124.1765	60	50	
WE15602.26	CTD	67	76	NH-5	5	6	1745	E	44.6513	-124.1764	60	nd	
WE15602.28	CTD	68	77	NH-10	5	6	1830	S	44.6508	-124.2960	72	72	
WE15602.29	CTD	68	77	NH-10	5	6	1843	E	44.6499	-124.2951	72	nd	
WE15602.31	CTD	69	78	NH-15	5	6	1928	S	44.6519	-124.4119	94	85	
WE15602.32	CTD	69	78	NH-15	5	6	1942	E	44.6517	-124.4118	94	nd	
WE15602.35	CTD	70	79	NH-20	5	6	2040	S	44.6516	-124.5284	144	134	
WE15602.36	CTD	70	79	NH-20	5	6	2056	E	44.6516	-124.5283	144	nd	
WE15702.07	CTD	71	80	NH-25	6	6	0545	S	44.6522	-124.6502	288	200	
WE15702.08	CTD	71	80	NH-25	6	6	0605	E	44.6510	-124.6517	288	nd	
WE15702.10	CTD	72	81	NH-20	6	6	0656	S	44.6528	-124.5293	143	133	
WE15702.11	CTD	72	81	NH-20	6	6	0717	E	44.6518	-124.5285	143	nd	
WE15702.13	CTD	73	82	NH-15	6	6	0811	S	44.6515	-124.4124	95	85	
WE15702.14	CTD	73	82	NH-15	6	6	0826	E	44.6516	-124.4126	95	nd	

Table 9: CTD Casts (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE15702.16	CTD	74	83	NH-10	6	6	0916	S	44.6513	-124.2952	81	71	
WE15702.17	CTD	74	83	NH-10	6	6	0930	E	44.6515	-124.2952	81	nd	
WE15702.19	CTD	75	84	NH-5	6	6	1022	S	44.6516	-124.1774	60	50	
WE15702.20	CTD	75	84	NH-5	6	6	1035	E	44.6517	-124.1775	60	nd	Broke three niskins.
WE15702.22	CTD	76	85	NH-3	6	6	1114	S	44.6514	-124.1300	48	38	
WE15702.23	CTD	76	85	NH-3	6	6	1125	E	44.6513	-124.1302	48	nd	Some new niskins did not close.
WE15702.24	CTD	77	86	NH-1	6	6	1150	S	44.6517	-124.0999	30	20	
WE15702.25	CTD	77	86	NH-1	6	6	1158	E	44.6523	-124.1012	30	nd	
WE15702.27	CTD	78	87	NH-3	6	6	1223	S	44.6517	-124.1304	48	38	Repeat of above.
WE15702.28	CTD	78	87	NH-3	6	6	1233	E	44.6516	-124.1308	48	nd	
WE15802.06	CTD	79	92	NH-25	7	6	0333	S	44.6525	-124.6514	287	200	
WE15802.07	CTD	79	92	NH-25	7	6	0353	E	44.6530	-124.6521	287	nd	
WE15802.09	CTD	80	93	NH-20	7	6	0447	S	44.6517	-124.5281	142	133	
WE15802.10	CTD	80	93	NH-20	7	6	0506	E	44.6514	-124.5293	142	nd	
WE15802.12	CTD	81	94	NH-15	7	6	0554	S	44.6519	-124.4117	93	80	
WE15802.13	CTD	81	94	NH-15	7	6	0610	E	44.6512	-124.4128	93	nd	
WE15802.15	CTD	82	95	NH-10	7	6	0701	S	44.6517	-124.2956	80	70	
WE15802.16	CTD	82	95	NH-10	7	6	0714	E	44.6500	-124.2463	80	nd	
WE15802.18	CTD	83	96	NH-5	7	6	0812	S	44.6520	-124.1769	60	50	
WE15802.19	CTD	83	96	NH-5	7	6	0825	E	nd	nd	nd	nd	
WE15802.22	CTD	84	97	NH-3	7	6	0918	S	44.6516	-124.1303	49	39	
WE15802.23	CTD	84	97	NH-3	7	6	0930	E	nd	nd	nd	nd	
WE15802.24	CTD	85	98	NH-1	7	6	0952	S	44.6522	-124.1001	28	20	
WE15802.25	CTD	85	98	NH-1	7	6	1001	E	nd	nd	nd	nd	
WE15902.05	CTD	86	102	NH-5	8	6	0335	S	44.6509	-124.1775	60	50	
WE15902.06	CTD	86	102	NH-5	8	6	0345	E	nd	nd	nd	nd	
WE15902.07	CTD	87	103	NH-10	8	6	0430	S	44.6526	-124.2947	82	72	
WE15902.08	CTD	87	103	NH-10	8	6	0444	E	nd	nd	nd	nd	
WE15902.12	CTD	88	105	NH-1	8	6	0943	S	44.6521	-124.1004	30	21	
WE15902.13	CTD	88	105	NH-1	8	6	0954	E	nd	nd	nd	nd	
WE15902.15	CTD	89	106	NH-3	8	6	1033	S	44.6521	-124.1296	49	40	
WE15902.16	CTD	89	106	NH-3	8	6	1044	E	nd	nd	nd	nd	
WE15902.18	CTD	90	107	NH-5	8	6	1133	S	44.6528	-124.1778	60	51	
WE15902.21	CTD	91	108	NH-10	8	6	1238	S	44.6505	-124.2969	83	75	
WE15902.22	CTD	91	108	NH-10	8	6	1254	E	nd	nd	nd	nd	
WE15902.25	CTD	92	109	NH-15	8	6	1348	S	44.6508	-124.4120	92	82	
WE15902.26	CTD	92	109	NH-15	8	6	1403	E	nd	nd	nd	nd	
WE15902.29	CTD	93	110	NH-20	8	6	1502	S	44.6508	-124.5283	143	135	
WE15902.30	CTD	93	110	NH-20	8	6	1519	E	nd	nd	nd	nd	
WE15902.34	CTD	94	111	NH-25	8	6	1635	S	44.6525	-124.6495	300	200	
WE15902.35	CTD	94	111	NH-25	8	6	1700	E	nd	nd	nd	nd	
WE16002.16	CTD	95	119	HH-5	9	6	1926	S	44.0019	-124.9998	940	200	
WE16002.17	CTD	95	119	HH-5	9	6	1940	E	nd	nd	nd	nd	
WE16002.19	CTD	96	120	HH-4	9	6	2122	S	44.0008	-124.7981	112	105	
WE16002.20	CTD	96	120	HH-4	9	6	2150	E	nd	nd	nd	nd	Approx. end time.
WE16102.02	CTD	97	121	GD-2	10	6	0130	S	43.9331	-124.8003	140	132	
WE16102.03	CTD	97	121	GD-2	10	6	0144	E	nd	nd	nd	nd	
WE16102.05	CTD	98	122	GD-3	10	6	0231	S	43.8662	-124.8020	285	200	

Table 9: CTD Casts (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE16102.06	CTD	98	122	GD-3	10	6	0244	E	nd	nd	nd	nd	
WE16102.08	CTD	99	123	GD-4	10	6	0327	S	43.8000	-124.8001	462	200	
WE16102.09	CTD	99	123	GD-4	10	6	0341	E	nd	nd	nd	nd	
WE16102.12	CTD	100	124	GD-5	10	6	0514	S	43.8001	-124.6003	256	200	
WE16102.13	CTD	100	124	GD-5	10	6	0530	E	nd	nd	nd	nd	
WE16102.15	CTD	101	124	GD-5	10	6	0614	S	43.8667	-124.6001	233	200	
WE16102.16	CTD	101	124	GD-5	10	6	0633	E	nd	nd	nd	nd	
WE16102.19	CTD	102	125	GD-7	10	6	0727	S	43.9332	-124.5999	190	182	
WE16102.20	CTD	102	125	GD-7	10	6	0750	E	nd	nd	nd	nd	
WE16102.22	CTD	103	126	HH-3	10	6	0835	S	44.0000	-124.5998	154	140	
WE16102.23	CTD	103	126	HH-3	10	6	0849	E	nd	nd	nd	nd	
WE16102.26	CTD	104	127	HH-2	10	6	1009	S	44.0000	-124.3998	120	105	
WE16102.27	CTD	104	127	HH-2	10	6	1023	E	nd	nd	nd	nd	
WE16102.30	CTD	105	128	GD-10	10	6	1121	S	43.9332	-124.4002	120	114	
WE16102.31	CTD	105	128	GD-10	10	6	1133	E	nd	nd	nd	nd	
WE16102.33	CTD	106	129	GD-11	10	6	1214	S	43.8663	-124.4002	117	108	
WE16102.34	CTD	106	129	GD-11	10	6	1227	E	nd	nd	nd	nd	
WE16102.36	CTD	107	130	GD-12	10	6	1310	S	43.7990	-124.4005	117	108	
WE16102.37	CTD	107	130	GD-12	10	6	1321	E	nd	nd	nd	nd	
WE16102.40	CTD	108	131	GD-13	10	6	1613	S	43.7561	-125.0004	1360	200	
WE16102.41	CTD	108	131	GD-13	10	6	1640	E	nd	nd	nd	nd	
WE16102.46	CTD	109	133	GD-16	10	6	2039	S	43.7499	-124.3999	117	108	
WE16102.47	CTD	109	133	GD-16	10	6	2052	E	nd	nd	nd	nd	
WE16102.51	CTD	110	134	UR-2	10	6	2314	S	43.7502	-124.3201	107	98	
WE16102.52	CTD	110	134	UR-2	10	6	2331	E	nd	nd	nd	nd	
WE16202.01	CTD	111	135	GD-14	11	6	0219	S	43.7499	-124.8004	604	200	
WE16202.02	CTD	111	135	GD-14	11	6	0239	E	nd	nd	nd	nd	
WE16202.05	CTD	112	136	GD-15	11	6	0407	S	43.7500	-124.6001	260	200	
WE16202.06	CTD	112	136	GD-15	11	6	0439	E	nd	nd	nd	nd	
WE16202.09	CTD	113	137	FM-4	11	6	0810	S	43.2162	-124.5840	88	78	
WE16202.10	CTD	113	137	FM-4	11	6	0833	E	nd	nd	nd	nd	
WE16202.14	CTD	114	138	FM-3	11	6	0946	S	43.2166	-124.5001	62	52	
WE16202.15	CTD	114	138	FM-3	11	6	1007	E	nd	nd	nd	nd	
WE16202.20	CTD	115	139	FM-2	11	6	1138	S	43.2165	-124.4670	56	48	
WE16202.21	CTD	115	139	FM-2	11	6	1152	E	nd	nd	nd	nd	
WE16202.25	CTD	116	140	FM-1	11	6	1244	S	43.2169	-124.4341	36	28	
WE16202.26	CTD	116	140	FM-1	11	6	1255	E	nd	nd	nd	nd	
WE16202.31	CTD	117	142	FM-5	11	6	1554	S	43.2163	-124.6666	157	147	
WE16202.32	CTD	117	142	FM-5	11	6	1615	E	nd	nd	nd	nd	
WE16202.37	CTD	118	143	FM-7	11	6	1817	S	43.2180	-124.8335	343	200	
WE16202.38	CTD	118	143	FM-7	11	6	1838	E	nd	nd	nd	nd	
WE16202.41	CTD	119	144	FM-8	11	6	2028	S	43.2169	-124.9998	1083	200	
WE16202.42	CTD	119	144	FM-8	11	6	2047	E	nd	nd	nd	nd	
WE16202.45	CTD	120	145	FM-6	11	6	2246	S	43.2165	-124.7512	318	200	
WE16202.46	CTD	120	145	FM-6	11	6	2306	E	nd	nd	nd	nd	
WE16302.04	CTD	121	147	8-2	12	6	0728	S	42.9506	-124.5505	54	50	
WE16302.05	CTD	121	147	8-2	12	6	0743	E	nd	nd	nd	nd	
WE16302.10	CTD	122	148	8-3	12	6	0853	S	42.9499	-124.5976	84	74	

Table 9: CTD Casts (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE16302.11	CTD	122	148	8-3	12	6	0909	E	nd	nd	nd	nd	
WE16302.15	CTD	123	149	8-9	12	6	1123	S	42.9499	-124.8693	188	175	
WE16302.16	CTD	123	149	8-9	12	6	1142	E	nd	nd	nd	nd	
WE16302.21	CTD	124	150	8-11	12	6	1255	S	42.9499	-124.9582	700	200	
WE16302.22	CTD	124	150	8-11	12	6	1321	E	nd	nd	nd	nd	
WE16302.26	CTD	125	151	8-7	12	6	1447	S	42.9499	-124.7790	161	153	
WE16302.27	CTD	125	151	8-7	12	6	1506	E	nd	nd	nd	nd	
WE16302.32	CTD	126	152	8-5	12	6	1633	S	42.9499	-124.6870	124	116	
WE16302.33	CTD	126	152	8-5	12	6	1651	E	nd	nd	nd	nd	
WE16302.37	CTD	127	153	8-4	12	6	1806	S	42.9503	-124.6418	101	90	
WE16302.38	CTD	127	153	8-4	12	6	1823	E	nd	nd	nd	nd	
WE16402.01	CTD	128	156	RR-8	13	6	0108	S	42.5002	-125.4999	3077	200	
WE16402.02	CTD	128	156	RR-8	13	6	0129	E	nd	nd	nd	nd	
WE16402.08	CTD	129	157	RR-7B	13	6	0332	S	42.5001	-125.3517	3077	200	
WE16402.09	CTD	129	157	RR-7B	13	6	0351	E	nd	nd	nd	nd	
WE16402.13	CTD	130	158	RR-7	13	6	0520	S	42.4999	-125.2000	2977	200	
WE16402.14	CTD	130	158	RR-7	13	6	0542	E	nd	nd	nd	nd	
WE16402.18	CTD	131	159	RR-4	13	6	0834	S	42.4998	-124.8001	607	200	
WE16402.19	CTD	131	159	RR-4	13	6	0855	E	nd	nd	nd	nd	Approx. end time.
WE16402.20	CTD	132	160	RR-3	13	6	0937	S	42.4998	-124.7001	133	124	
WE16402.21	CTD	132	160	RR-3	13	6	0955	E	nd	nd	nd	nd	
WE16402.24	CTD	133	161	RR-2	13	6	1055	S	42.5006	-124.6003	86	77	
WE16402.25	CTD	133	161	RR-2	13	6	1110	E	nd	nd	nd	nd	
WE16402.30	CTD	134	162	RR-1	13	6	1233	S	42.5005	-124.4997	37	29	
WE16402.31	CTD	134	162	RR-1	13	6	1243	E	nd	nd	nd	nd	
WE16402.35	CTD	135	163	9B-1	13	6	1349	S	42.5334	-124.5500	74	65	
WE16402.36	CTD	135	163	9B-1	13	6	1401	E	nd	nd	nd	nd	
WE16402.41	CTD	136	164	9B-2	13	6	1555	S	42.5326	-124.6504	144	137	
WE16402.42	CTD	136	164	9B-2	13	6	1613	E	nd	nd	nd	nd	
WE16402.45	CTD	137	165	9B-3	13	6	1737	S	42.5331	-124.7495	314	200	
WE16402.46	CTD	137	165	9B-3	13	6	1758	E	nd	nd	nd	nd	
WE16402.51	CTD	138	166	RR-5	13	6	2132	S	42.4999	-124.8998	1157	200	
WE16402.52	CTD	138	166	RR-5	13	6	2153	E	nd	nd	nd	nd	
WE16402.55	CTD	139	167	RR-6	13	6	2259	S	42.4999	-125.0008	1776	200	
WE16402.56	CTD	139	167	RR-6	13	6	2319	E	nd	nd	nd	nd	
WE16502.02	CTD	140	169	CR-7	14	6	0336	S	41.8997	-124.9993	1671	200	
WE16502.03	CTD	140	169	CR-7	14	6	0357	E	nd	nd	nd	nd	
WE16502.07	CTD	141	170	CR-6	14	6	0542	S	41.9000	-124.8003	699	200	
WE16502.08	CTD	141	170	CR-6	14	6	0557	E	nd	nd	nd	nd	
WE16502.11	CTD	142	171	CR-5	14	6	0653	S	41.8998	-124.7000	666	200	
WE16502.12	CTD	142	171	CR-5	14	6	0713	E	nd	nd	nd	nd	
WE16502.15	CTD	143	172	CR-4	14	6	0814	S	41.9000	-124.6004	510	200	
WE16502.16	CTD	143	172	CR-4	14	6	0835	E	nd	nd	nd	nd	
WE16502.20	CTD	144	173	CR-3	14	6	0943	S	41.9006	-124.5005	137	134	
WE16502.21	CTD	144	173	CR-3	14	6	1002	E	nd	nd	nd	nd	
WE16502.29	CTD	145	174	CR-2	14	6	1241	S	41.9008	-124.3995	67	60	
WE16502.30	CTD	145	174	CR-2	14	6	1300	E	nd	nd	nd	nd	Approx end time.
WE16502.31	CTD	146	175	CR-1	14	6	1332	S	41.9005	-124.3003	42	34	

Table 9: CTD Casts (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE16502.32	CTD	146	175	CR-1	14	6	1344	E	nd	nd	nd	nd	
WE16602.09	CTD	147	184	CR-8	15	6	1105	S	41.8994	-125.1997	2758	200	
WE16602.10	CTD	147	184	CR-8	15	6	1128	E	nd	nd	nd	nd	
WE16602.14	CTD	148	185	CR-9	15	6	1259	S	41.9002	-125.3991	3119	200	
WE16602.15	CTD	148	185	CR-9	15	6	1320	E	nd	nd	nd	nd	
WE16602.19	CTD	149	186	CR-10	15	6	1507	S	41.9003	-125.6665	2953	200	
WE16602.20	CTD	149	186	CR-10	15	6	1531	E	nd	nd	nd	nd	
WE16602.24	CTD	150	187	11-9	15	6	1747	S	41.2002	-125.5832	3086	200	
WE16602.25	CTD	150	187	11-9	15	6	1805	E	nd	nd	nd	nd	
WE16602.28	CTD	151	188	RR-8	15	6	2017	S	42.5005	-125.5003	3077	200	
WE16602.29	CTD	151	188	RR-8	15	6	2036	E	nd	nd	nd	nd	
WE16602.32	CTD	152	189	9-5B	15	6	2213	S	42.6833	-125.4664	3077	200	
WE16602.33	CTD	152	189	9-5B	15	6	2234	E	nd	nd	nd	nd	
WE16702.03	CTD	153	192	HH-7	16	6	0704	S	44.0002	-125.2000	1718	200	
WE16702.04	CTD	153	192	HH-7	16	6	0724	E	nd	nd	nd	nd	
WE16702.07	CTD	154	193	HH-6	16	6	0816	S	43.9998	-125.0997	1446	200	
WE16702.08	CTD	154	193	HH-6	16	6	0837	E	nd	nd	nd	nd	
WE16702.10	CTD	155	194	HH-5	16	6	0920	S	43.9999	-124.9998	940	200	
WE16702.11	CTD	155	194	HH-5	16	6	0941	E	nd	nd	nd	nd	
WE16702.13	CTD	156	194	HH-5	16	6	1023	S	43.9999	-124.9998	940	100	Test of TDR.
WE16702.14	CTD	156	194	HH-5	16	6	nd	E	nd	nd	nd	nd	No end time recorded.
WE16702.15	CTD	157	195	HH-4	16	6	1122	S	44.0001	-124.8003	110	101	
WE16702.16	CTD	157	195	HH-4	16	6	1138	E	nd	nd	nd	nd	
WE16702.23	CTD	158	196	HH-3	16	6	1357	S	43.9995	-124.6005	154	145	
WE16702.24	CTD	158	196	HH-3	16	6	1416	E	nd	nd	nd	nd	
WE16702.26	CTD	159	197	HH-2	16	6	1527	S	43.9994	-124.3999	121	112	
WE16702.27	CTD	159	197	HH-2	16	6	1543	E	nd	nd	nd	nd	
WE16702.29	CTD	160	198	HH-1	16	6	1649	S	44.0002	-124.1997	55	45	
WE16702.30	CTD	160	198	HH-1	16	6	1700	E	nd	nd	nd	nd	
WE16702.32	CTD	161	199	NH-15	16	6	2101	S	44.6518	-124.4115	96	85	
WE16702.33	CTD	161	199	NH-15	16	6	2116	E	nd	nd	nd	nd	
WE16802.05	CTD	162	202	NH-1	17	6	0628	S	44.6515	-124.1005	28	19	
WE16802.06	CTD	162	202	NH-1	17	6	0637	E	nd	nd	nd	nd	
WE16802.08	CTD	163	203	NH-3	17	6	0704	S	44.6523	-124.1303	48	40	
WE16802.09	CTD	163	203	NH-3	17	6	0716	E	nd	nd	nd	nd	
WE16802.10	CTD	164	204	NH-5	17	6	0736	S	44.6520	-124.1776	60	50	
WE16802.11	CTD	164	204	NH-5	17	6	0749	E	nd	nd	nd	nd	
WE16802.13	CTD	165	205	NH-10	17	6	0841	S	44.6517	-124.2948	82	73	
WE16802.14	CTD	165	205	NH-10	17	6	0854	E	nd	nd	nd	nd	
WE16802.16	CTD	166	206	NH-15	17	6	0950	S	44.6520	-124.4111	96	88	
WE16802.17	CTD	166	206	NH-15	17	6	1005	E	nd	nd	nd	nd	
WE16802.22	CTD	167	207	NH-20	17	6	1224	S	44.6514	-124.5271	141	132	
WE16802.23	CTD	167	207	NH-20	17	6	1242	E	nd	nd	nd	nd	
WE16802.25	CTD	168	208	NH-25	17	6	1357	S	44.6518	-124.6491	298	200	
WE16802.26	CTD	168	208	NH-25	17	6	1419	E	nd	nd	nd	nd	
WE16802.28	CTD	169	209	NH-35	17	6	1600	S	44.6507	-124.8807	443	200	
WE16802.29	CTD	169	209	NH-35	17	6	1621	E	nd	nd	nd	nd	
WE16802.31	CTD	170	210	NH-45	17	6	1758	S	44.6511	-125.1167	1758	200	

Table 9: CTD Casts (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE16802.32	CTD	170	210	NH-45	17	6	1816	E	nd	nd	nd	nd	
WE16802.34	CTD	171	211	NH-55	17	6	1948	S	44.6517	-125.3662	2865	200	
WE16802.35	CTD	171	211	NH-55	17	6	2008	E	nd	nd	nd	nd	
WE16802.37	CTD	172	212	NH-65	17	6	2131	S	44.6517	-125.5997	2861	200	
WE16802.38	CTD	172	212	NH-65	17	6	2218	E	nd	nd	nd	nd	

Table 10: Vertical Plankton Tows

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE14902.03	VPT	1	1	NH-1	29	5	1400	S	44.6521	-124.1002	30	25	
WE14902.08	VPT	2	3	NH-5	29	5	1609	S	44.6518	-124.1767	62	55	
WE14902.13	VPT	3	4	NH-10	29	5	1733	S	44.6506	-124.2954	80	75	
WE14902.16	VPT	4	5	NH-15	29	5	1849	S	44.6516	-124.4117	91	85	
WE14902.23	VPT	5	6	NH-20	29	5	2230	S	44.6521	-124.5286	140	100	
WE15002.07	VPT	6	8	NH-25	30	5	0443	S	44.6349	-124.6495	297	100	
WE15002.12	VPT	7	9	NH-35	30	5	0920	S	44.6485	-124.8857	459	100	
WE15002.17	VPT	8	10	NH-45	30	5	1426	S	44.6512	-125.1173	717	100	
WE15002.22	VPT	9	11	NH-65	30	5	1742	S	44.6517	-125.6000	2880	100	
WE15002.28	VPT	10	12	BOB-6	30	5	2117	S	44.2457	-125.1107	1266	100	
WE15002.32	VPT	11	13	BOB-5	30	5	2258	S	44.2455	-124.8984	148	100	
WE15102.03	VPT	12	14	BOB-4	31	5	0050	S	44.2450	-124.6990	103	90	
WE15102.06	VPT	13	15	BOB-3	31	5	0210	S	44.2466	-124.5085	104	90	
WE15102.10	VPT	14	16	BOB-2	31	5	0325	S	44.2470	-124.3774	90	80	
WE15102.13	VPT	15	17	BOB-1	31	5	0441	S	44.2472	-124.1898	54	45	
WE15102.18	VPT	16	18	HH-1	31	5	0639	S	44.0005	-124.2004	54	45	
WE15102.21	VPT	17	19	HH-2	31	5	0810	S	43.9963	-124.4014	120	100	
WE15102.24	VPT	18	20	HH-3	31	5	0949	S	43.9990	-124.6013	153	100	
WE15102.28	VPT	19	21	HH-4	31	5	1136	S	43.9993	-124.8015	109	100	
WE15102.31	VPT	20	22	HH-5	31	5	1322	S	43.9992	-125.0022	942	100	
WE15102.34	VPT	21	23	HH-6	31	5	1438	S	43.9984	-125.1027	1445	100	
WE15102.37	VPT	22	24	HH-7	31	5	1555	S	43.9995	-125.2000	1730	100	
WE15102.43	VPT	23	25	FM-11	31	5	2256	S	43.2151	-126.1985	3038	100	
WE15202.03	VPT	24	26	FM-10	1	6	0238	S	43.2194	-125.7728	3089	100	
WE15202.06	VPT	25	27	FM-9	1	6	0555	S	43.2161	-125.1693	1651	100	
WE15202.09	VPT	26	28	FM-8	1	6	0739	S	43.2170	-124.9997	1094	100	
WE15202.12	VPT	27	29	FM-7	1	6	0920	S	43.2157	-124.8339	343	100	
WE15202.15	VPT	28	30	FM-5	1	6	1058	S	43.2156	-124.6677	156	100	
WE15202.18	VPT	29	31	FM-4	1	6	1213	S	43.2143	-124.5849	86	90	
WE15202.21	VPT	30	32	FM-3	1	6	1318	S	43.2108	-124.4974	65	55	
WE15202.25	VPT	31	33	FM-2	1	6	1418	S	43.2178	-124.4679	55	55	
WE15202.26	VPT	32	34	FM-1	1	6	1445	S	43.2174	-124.4337	36	25	
WE15202.33	VPT	33	35	RR-1	1	6	1939	S	42.5005	-124.4996	38	20	
WE15202.36	VPT	34	36	RR-2	1	6	2044	S	42.4994	-124.6015	89	70	
WE15202.39	VPT	35	37	RR-3	1	6	2153	S	42.4996	-124.7001	134	100	
WE15302.08	VPT	36	40	RR-4	2	6	0729	S	42.4992	-124.8005	599	100	
WE15302.11	VPT	37	41	RR-5	2	6	0842	S	42.4991	-124.9015	1180	100	
WE15302.14	VPT	38	42	RR-6	2	6	1011	S	42.4893	-125.0007	1792	100	
WE15302.16	VPT	39	43	RR-7	2	6	1200	S	42.5002	-125.2004	3000	100	
WE15302.18	VPT	40	44	RR-8	2	6	1410	S	42.5007	-125.4991	nd	100	
WE15302.23	VPT	41	45	PR-7	2	6	1714	S	42.1983	-125.1025	1946	100	
WE15302.26	VPT	42	46	PR-6	2	6	1913	S	42.2002	-124.8650	850	100	
WE15302.29	VPT	43	47	PR-5	2	6	2104	S	42.2000	-124.6955	535	100	
WE15302.32	VPT	44	48	PR-4	2	6	2227	S	42.1997	-124.6286	345	100	
WE15302.35	VPT	45	49	PR-3	2	6	2348	S	42.1998	-124.5630	164	100	
WE15402.03	VPT	46	50	PR-2	3	6	0115	S	42.2009	-124.4934	120	100	
WE15402.06	VPT	47	51	PR-1	3	6	0227	S	42.2004	-124.4232	71	60	
WE15402.11	VPT	48	52	CR-1	3	6	0453	S	41.9015	-124.2995	41	30	

Table 10: Vertical Plankton Tows (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE15402.14	VPT	49	53	CR-2	3	6	0548	S	41.9001	-124.3999	69	60	
WE15402.17	VPT	50	54	CR-3	3	6	0658	S	41.9005	-124.5004	137	100	
WE15402.23	VPT	51	55	CR-4	3	6	0942	S	41.8999	-124.5998	517	100	
WE15402.28	VPT	52	56	CR-5	3	6	1229	S	41.9001	-124.6998	665	100	
WE15402.29	VPT	53	57	CR-6	3	6	1313	S	41.8996	-124.7995	750	100	
WE15402.36	VPT	54	58	CR-7	3	6	1640	S	41.8999	-124.9998	844	100	
WE15402.39	VPT	55	59	CR-8	3	6	1811	S	41.9000	-125.2000	2700	100	
WE15502.09	VPT	56	64	NH-5	4	6	1923	S	44.6515	-124.1767	60	55	
WE15502.13	VPT	57	65	NH-10	4	6	2029	S	44.6516	-124.2955	82	60	
WE15502.16	VPT	58	66	NH-15	4	6	2144	S	44.6517	-124.4116	97	90	
WE15602.05	VPT	59	69	NH-20	5	6	0254	S	44.6520	-124.5287	143	100	
WE15602.09	VPT	60	70	NH-25	5	6	0422	S	44.6516	-124.6508	297	100	
WE15602.12	VPT	61	71	NH-35	5	6	0551	S	44.6519	-124.8825	436	100	
WE15602.15	VPT	62	72	NH-45	5	6	0729	S	44.6515	-125.1162	700	100	
WE15602.18	VPT	63	73	NH-65	5	6	1003	S	44.6517	-125.5999	1276	100	
WE15602.22	VPT	64	74	NH-1	5	6	1641	S	44.6519	-124.1012	28	22	
WE15602.27	VPT	65	76	NH-5	5	6	1749	S	44.6514	-124.1767	60	55	
WE15602.30	VPT	66	77	NH-10	5	6	1949	S	44.6518	-124.2954	72	65	
WE15602.33	VPT	67	78	NH-15	5	6	1947	S	44.6512	-124.4116	94	80	
WE15602.37	VPT	68	79	NH-20	5	6	2102	S	44.6516	-124.5284	144	100	
WE15702.09	VPT	69	80	NH-25	6	6	0611	S	44.6517	-124.6516	288	100	
WE15702.12	VPT	70	81	NH-20	6	6	0724	S	44.6516	-124.5283	143	100	
WE15702.15	VPT	71	82	NH-15	6	6	0832	S	44.6516	-124.4124	95	90	
WE15702.18	VPT	72	83	NH-10	6	6	0937	S	44.6518	-124.2956	81	75	
WE15702.21	VPT	73	84	NH-5	6	6	1044	S	44.6517	-124.1775	60	55	
WE15702.26	VPT	74	86	NH-1	6	6	1203	S	44.6525	-124.1011	30	25	
WE15702.30	VPT	75	89	NH-10	6	6	1420	S	44.6566	-124.2975	80	75	
WE15702.31	VPT	76	89	NH-10	6	6	1431	S	44.6570	-124.2983	80	75	
WE15702.34	VPT	77	90	NH-15	6	6	1541	S	44.6583	-124.4136	93	66	Steep angle; tossed sample.
WE15702.35	VPT	78	90	NH-15	6	6	1554	S	44.6587	-124.4135	93	66	
WE15702.36	VPT	79	90	NH-15	6	6	1547	S	44.6583	-124.4136	93	66	
WE15702.40	VPT	80	91	NH-20	6	6	1900	S	44.6515	-124.5283	146	100	
WE15702.41	VPT	81	91	NH-20	6	6	2000	S	44.6513	-124.5285	146	100	
WE15702.42	VPT	82	91	NH-20	6	6	2059	S	44.6512	-124.5285	146	100	
WE15702.43	VPT	83	91	NH-20	6	6	2159	S	44.6514	-124.5292	146	100	
WE15702.46	VPT	84	91	NH-20	6	6	2310	S	44.6536	-124.5274	146	100	
WE15802.01	VPT	85	91	NH-20	7	6	0000	S	44.6512	-124.5298	146	100	
WE15802.04	VPT	86	91	NH-20	7	6	0144	S	44.6515	-124.5310	146	100	
WE15802.05	VPT	87	91	NH-20	7	6	0245	S	44.6520	-124.5287	146	100	
WE15802.08	VPT	88	92	NH-25	7	6	0357	S	44.6528	-124.6518	287	100	
WE15802.11	VPT	89	93	NH-20	7	6	0510	S	44.6514	-124.5293	142	100	
WE15802.14	VPT	90	94	NH-15	7	6	0617	S	44.6512	-124.4128	93	85	
WE15802.17	VPT	91	95	NH-10	7	6	0717	S	44.6512	-124.2964	80	75	
WE15802.20	VPT	92	96	NH-5	7	6	0832	S	44.6531	-124.1769	60	55	
WE15802.26	VPT	93	98	NH-1	7	6	1010	S	44.6521	-124.1000	28	24	
WE15902.04	VPT	94	102	NH-5	8	6	0327	S	44.6512	-124.1774	60	50	
WE15902.09	VPT	95	103	NH-10	8	6	0450	S	44.6526	-124.2947	82	70	
WE15902.14	VPT	96	105	NH-1	8	6	1003	S	44.6521	-124.1004	30	23	

Table 10: Vertical Plankton Tows (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE15902.19	VPT	97	107	NH-5	8	6	1155	S	44.6528	-124.1778	60	53	
WE15902.23	VPT	98	108	NH-10	8	6	1259	S	44.6505	-124.2969	83	75	
WE15902.27	VPT	99	109	NH-15	8	6	1411	S	44.6491	-124.4138	92	82	
WE15902.31	VPT	100	110	NH-20	8	6	1524	S	44.6515	-124.5285	143	100	
WE15902.33	VPT	101	110	NH-20	8	6	1550	S	44.6518	-124.5286	143	100	
WE15902.36	VPT	102	111	NH-25	8	6	1705	S	44.6510	-124.6504	300	100	
WE15902.42	VPT	103	113	BOB-3	8	6	2356	S	44.2464	-124.5086	105	95	
WE16002.04	VPT	104	114	BOB-5	9	6	0408	S	44.2464	-124.8984	147	100	
WE16002.06	VPT	105	115	BOB-4	9	6	0526	S	44.2468	-124.7003	100	90	
WE16002.08	VPT	106	116	BOB-6	9	6	0730	S	44.2466	-125.1102	1225	100	
WE16002.18	VPT	107	119	HH-5	9	6	1952	S	44.0019	-124.9998	940	100	
WE16002.21	VPT	108	120	HH-4	9	6	2154	S	44.0008	-124.7981	112	100	
WE16102.04	VPT	109	121	GD-2	10	6	0200	S	43.9331	-124.8003	140	100	
WE16102.07	VPT	110	122	GD-3	10	6	0256	S	43.8662	-124.8020	285	100	
WE16102.10	VPT	111	123	GD-4	10	6	0347	S	43.8000	-124.8001	462	100	
WE16102.14	VPT	112	124	GD-5	10	6	0542	S	43.8001	-124.6003	256	100	
WE16102.17	VPT	113	124	GD-5	10	6	0646	S	43.8667	-124.6001	233	100	
WE16102.21	VPT	114	125	GD-7	10	6	0803	S	43.9332	-124.5999	190	100	
WE16102.24	VPT	115	126	HH-3	10	6	0855	S	43.9999	-124.6001	154	100	
WE16102.28	VPT	116	127	HH-2	10	6	1031	S	43.9999	-124.3998	120	100	
WE16102.32	VPT	117	128	GD-10	10	6	1139	S	43.9332	-124.4003	120	100	
WE16102.35	VPT	118	129	GD-11	10	6	1233	S	43.8666	-124.3999	117	100	
WE16102.38	VPT	119	130	GD-12	10	6	1325	S	43.7997	-124.4166	117	100	
WE16102.42	VPT	120	131	GD-13	10	6	1644	S	43.7506	-125.0000	1360	100	
WE16102.48	VPT	121	133	GD-16	10	6	2059	S	43.7499	-124.4003	117	100	
WE16102.53	VPT	122	134	UR-2	10	6	2338	S	43.7502	-124.3200	107	90	
WE16202.03	VPT	123	135	GD-14	11	6	0245	S	43.7500	-124.8001	604	100	
WE16202.07	VPT	124	136	GD-15	11	6	0448	S	43.7494	-124.5999	260	100	
WE16202.11	VPT	125	137	FM-4	11	6	0839	S	43.2166	-124.5844	88	70	
WE16202.16	VPT	126	138	FM-3	11	6	1014	S	43.2166	-124.5004	62	50	
WE16202.22	VPT	127	139	FM-2	11	6	1158	S	43.2168	-124.4674	56	50	
WE16202.27	VPT	128	140	FM-1	11	6	1259	S	43.2169	-124.4341	36	30	
WE16202.33	VPT	129	142	FM-5	11	6	1621	S	43.2153	-124.6682	157	100	
WE16202.39	VPT	130	143	FM-7	11	6	1849	S	43.2173	-124.8341	343	100	
WE16202.43	VPT	131	144	FM-8	11	6	2101	S	43.2169	-125.0002	1083	100	
WE16202.47	VPT	132	145	FM-6	11	6	2315	S	43.2164	-124.7510	318	100	
WE16302.06	VPT	133	147	8-2	12	6	0752	S	42.9494	-124.5518	54	50	
WE16302.12	VPT	134	148	8-3	12	6	0916	S	42.9498	-124.5976	84	75	
WE16302.17	VPT	135	149	8-9	12	6	1147	S	42.9499	-124.8691	188	100	
WE16302.23	VPT	136	150	8-11	12	6	1326	S	42.9504	-124.9590	700	100	
WE16302.28	VPT	137	151	8-7	12	6	1512	S	42.9501	-124.7785	161	100	
WE16302.31	VPT	138	152	8-5	12	6	1621	S	42.9501	-124.6877	124	100	
WE16302.35	VPT	139	153	8-4	12	6	1745	S	42.9502	-124.6447	101	90	
WE16402.03	VPT	140	156	RR-8	13	6	0137	S	42.5004	-125.5009	3077	100	
WE16402.07	VPT	141	157	RR-7B	13	6	0316	S	42.4993	-125.3505	3077	100	
WE16402.11	VPT	142	158	RR-7	13	6	0500	S	42.5003	-125.2005	2977	100	
WE16402.17	VPT	143	159	RR-4	13	6	0818	S	42.4993	-124.8009	607	100	
WE16402.22	VPT	144	160	RR-3	13	6	1002	S	42.4997	-124.7007	133	100	

Table 10: Vertical Plankton Tows (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE16402.26	VPT	145	161	RR-2	13	6	1117	S	42.5008	-124.6001	86	76	
WE16402.32	VPT	146	162	RR-1	13	6	1249	S	42.5006	-124.4998	37	27	
WE16402.37	VPT	147	163	9B-1	13	6	1406	S	42.5337	-124.5500	74	67	
WE16402.38	VPT	148	163	9B-1	13	6	1417	S	42.5336	-124.5501	74	67	
WE16402.39	VPT	149	163	9B-1	13	6	1501	S	42.5340	-124.5495	74	67	
WE16402.43	VPT	150	164	9B-2	13	6	1622	S	42.5334	-124.6503	144	100	
WE16402.47	VPT	151	165	9B-3	13	6	1805	S	42.5334	-124.7498	314	100	
WE16402.53	VPT	152	166	RR-5	13	6	2204	S	42.4999	-124.8998	1157	100	
WE16402.57	VPT	153	167	RR-6	13	6	2332	S	42.4999	-125.0008	1776	100	
WE16502.04	VPT	154	169	CR-7	14	6	0411	S	41.8997	-124.9993	1671	100	
WE16502.09	VPT	155	170	CR-6	14	6	0602	S	41.9000	-124.8003	699	100	
WE16502.13	VPT	156	171	CR-5	14	6	0725	S	41.8998	-124.7000	666	100	
WE16502.17	VPT	157	172	CR-4	14	6	0840	S	41.9000	-124.6004	510	100	
WE16502.22	VPT	158	173	CR-3	14	6	1008	S	41.9005	-124.5004	137	100	
WE16502.27	VPT	159	174	CR-2	14	6	1154	S	41.9011	-124.3986	67	60	
WE16502.33	VPT	160	175	CR-1	14	6	1350	S	41.9002	-124.2999	42	35	
WE16602.11	VPT	161	184	CR-8	15	6	1135	S	41.8996	-125.2001	2758	100	
WE16602.16	VPT	162	185	CR-9	15	6	1324	S	41.9000	-125.4000	3119	100	
WE16602.21	VPT	163	186	CR-10	15	6	1535	S	41.8999	-125.6663	2953	100	
WE16602.26	VPT	164	187	11-9	15	6	1813	S	41.2002	-125.5835	3086	100	
WE16602.30	VPT	165	188	RR-8	15	6	2049	S	42.5005	-125.5003	3077	100	
WE16602.34	VPT	166	189	9-5B	15	6	2249	S	42.6833	-125.4664	3077	100	
WE16702.05	VPT	167	192	HH-7	16	6	0736	S	44.0002	-125.2000	1718	100	
WE16702.09	VPT	168	193	HH-6	16	6	0848	S	43.9998	-125.0997	1446	100	
WE16702.12	VPT	169	194	HH-5	16	6	0952	S	43.9999	-124.9998	940	100	
WE16702.17	VPT	170	195	HH-4	16	6	1149	S	44.0001	-124.8003	110	95	
WE16702.20	VPT	171	195	HH-4	16	6	1239	S	44.0007	-124.7990	110	70	Net comparisons.
WE16702.21	VPT	172	195	HH-4	16	6	1249	S	44.0008	-124.7994	110	70	Net comparisons.
WE16702.25	VPT	173	196	HH-3	16	6	1429	S	43.9995	-124.6005	154	100	
WE16702.28	VPT	174	197	HH-2	16	6	1554	S	43.9994	-124.3999	121	100	
WE16702.31	VPT	175	198	HH-1	16	6	1707	S	44.0002	-124.1997	55	50	
WE16702.34	VPT	176	199	NH-15	16	6	2130	S	44.6518	-124.4115	96	90	
WE16802.07	VPT	177	202	NH-1	17	6	0649	S	44.6515	-124.1005	28	25	
WE16802.12	VPT	178	204	NH-5	17	6	0753	S	44.6520	-124.1776	60	50	
WE16802.15	VPT	179	205	NH-10	17	6	0904	S	44.6517	-124.2948	82	70	
WE16802.18	VPT	180	206	NH-15	17	6	1018	S	44.6520	-124.4111	96	83	
WE16802.24	VPT	181	207	NH-20	17	6	1254	S	44.6514	-124.5271	141	100	
WE16802.27	VPT	182	208	NH-25	17	6	1431	S	44.6518	-124.6491	298	100	
WE16802.30	VPT	183	209	NH-35	17	6	1635	S	44.6507	-124.8807	443	100	
WE16802.33	VPT	184	210	NH-45	17	6	1831	S	44.6511	-125.1167	1758	100	
WE16802.36	VPT	185	211	NH-55	17	6	2021	S	44.6517	-125.3662	2865	100	
WE16802.39	VPT	186	212	NH-65	17	6	2233	S	44.6517	-125.5997	2861	100	

Table 11: Vertical Plankton Tows 150

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE14902.09	VPT150	1	3	NH-5	29	5	1619	S	44.6517	-124.1767	62	55	
WE15002.23	VPT150	2	11	NH-65	30	5	1752	S	44.6518	-125.6004	2880	100	
WE15002.29	VPT150	3	12	BOB-6	30	5	2126	S	44.2456	-125.1111	1266	100	
WE15102.07	VPT150	4	15	BOB-3	31	5	0217	S	44.2463	-124.5084	104	90	
WE15102.25	VPT150	5	20	HH-3	31	5	1000	S	43.9984	-124.6005	153	100	
WE15102.38	VPT150	6	24	HH-7	31	5	1605	S	43.9986	-125.2014	1730	100	
WE15102.44	VPT150	7	25	FM-11	31	5	2307	S	43.2153	-126.1980	3038	100	
WE15202.22	VPT150	8	32	FM-3	1	6	1326	S	43.2093	-124.4988	65	55	
WE15402.18	VPT150	9	54	CR-3	3	6	0707	S	41.9001	-124.5003	137	100	
WE15402.40	VPT150	10	59	CR-8	3	6	1821	S	41.9000	-125.2000	2700	100	
WE15502.10	VPT150	11	64	NH-5	4	6	1929	S	44.6516	-124.1768	60	55	
WE15602.19	VPT150	12	73	NH-65	5	6	1013	S	44.6517	-125.6000	1276	100	
WE15902.20	VPT150	13	107	NH-5	8	6	1201	S	44.6528	-124.1778	60	53	
WE15902.24	VPT150	14	108	NH-10	8	6	1309	S	44.6505	-124.2969	83	65	
WE15902.28	VPT150	15	109	NH-15	8	6	1421	S	44.6482	-124.4149	92	82	
WE15902.32	VPT150	16	110	NH-20	8	6	1533	S	44.6517	-124.5283	143	100	
WE15902.37	VPT150	17	111	NH-25	8	6	1716	S	#VALUE!	-124.6506	300	100	
WE16002.22	VPT150	18	120	HH-4	9	6	2205	S	44.0008	-124.7981	112	100	
WE16102.18	VPT150	19	124	GD-5	10	6	0657	S	43.8667	-124.6001	233	100	
WE16102.25	VPT150	20	126	HH-3	10	6	0904	S	43.9999	-124.6001	154	100	
WE16102.29	VPT150	21	127	HH-2	10	6	1041	S	44.0000	-124.4001	120	100	
WE16102.39	VPT150	22	130	GD-12	10	6	1335	S	43.7996	-124.4002	117	100	
WE16102.43	VPT150	23	131	GD-13	10	6	1651	S	43.7499	-125.0001	1360	100	
WE16202.17	VPT150	24	138	FM-3	11	6	1022	S	43.2166	-124.5006	62	50	
WE16202.34	VPT150	25	142	FM-5	11	6	1629	S	43.2149	-124.6685	157	100	
WE16202.44	VPT150	26	144	FM-8	11	6	2108	S	43.2169	-125.0001	1083	100	
WE16302.07	VPT150	27	147	8-2	12	6	0758	S	42.9493	-124.5517	54	50	
WE16302.13	VPT150	28	148	8-3	12	6	0924	S	42.9499	-124.5813	84	75	
WE16302.18	VPT150	29	149	8-9	12	6	1155	S	42.9527	-124.8693	188	100	
WE16302.24	VPT150	30	150	8-11	12	6	1333	S	42.9504	-124.9587	700	100	
WE16302.36	VPT150	31	153	8-4	12	6	1753	S	42.9505	-124.6444	101	90	
WE16402.04	VPT150	32	156	RR-8	13	6	0142	S	42.5002	-125.5007	3077	100	
WE16402.12	VPT150	33	158	RR-7	13	6	0508	S	42.5005	-125.2006	2977	100	
WE16402.27	VPT150	34	161	RR-2	13	6	1125	S	42.5007	-124.5998	86	76	
WE16502.05	VPT150	35	169	CR-7	14	6	0434	S	41.8997	-124.9993	1671	100	
WE16502.18	VPT150	36	172	CR-4	14	6	0850	S	41.9000	-124.6004	510	100	
WE16502.28	VPT150	37	174	CR-2	14	6	1206	S	41.9002	-124.3997	67	60	
WE16602.12	VPT150	38	184	CR-8	15	6	1142	S	41.8996	-125.2002	2758	100	
WE16602.17	VPT150	39	185	CR-9	15	6	1332	S	41.8999	-125.3998	3119	100	
WE16602.22	VPT150	40	186	CR-10	15	6	1544	S	41.9666	-125.6664	2953	100	
WE16602.35	VPT150	41	189	9-5B	15	6	2257	S	42.6833	-125.4664	3077	100	
WE16702.06	VPT150	42	192	HH-7	16	6	0744	S	44.0002	-125.2000	1718	100	
WE16802.19	VPT150	43	206	NH-15	17	6	1027	S	44.6520	-124.4111	96	83	

Table 12: 60 cm Bongo Tows

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE15802.27	Bongo60	1	99	NH-5	7	6	1540	S	44.6520	-124.1777	60	60	With Frosti.
WE15802.28	Bongo60	1	99	NH-5	7	6	1544	E	44.6538	-124.1782	60	60	With Frosti.
WE15802.32	Bongo60	2	99	NH-5	7	6	1915	S	44.6528	-124.1770	60	60	With Frosti.
WE15802.33	Bongo60	2	99	NH-5	7	6	1922	E	44.6551	-124.1787	60	60	With Frosti.
WE15802.36	Bongo60	3	99	NH-5	7	6	2315	S	44.6519	-124.1777	60	60	With Frosti.
WE15902.03	Bongo60	4	102	NH-5	8	6	0311	S	44.6522	-124.1766	60	60	With Frosti.
WE15902.10	Bongo60	5	104	NH-5	8	6	0717	S	44.6525	-124.1770	60	60	With Frosti.
WE15902.17	Bongo60	6	107	NH-5	8	6	1112	S	44.6528	-124.1778	60	60	With Frosti.
WE15902.40	Bongo60	7	112	2AT1	8	6	2132	S	44.4036	-124.4329	81	60	With Frosti.
WE16002.11	Bongo60	8	118	BOB-3	9	6	1347	S	44.2432	-124.4971	104	60	With Frosti.
WE16002.13	Bongo60	9	118	BOB-3	9	6	1417	S	44.2507	-124.4967	104	60	With Frosti; repeat because flow meter did not read.
WE16002.24	Bongo60	10	120	HH-4	9	6	2255	S	44.0000	-124.8004	112	60	With Frosti.
WE16102.49	Bongo60	11	133	GD-16	10	6	2113	S	43.7506	-124.4003	117	60	With Frosti.
WE16102.54	Bongo60	12	134	UR-2	10	6	2348	S	43.7516	-124.3205	107	60	With Frosti.
WE16202.12	Bongo60	13	137	FM-4	11	6	0849	S	43.2178	-124.5855	88	60	With Frosti.
WE16202.18	Bongo60	14	138	FM-3	11	6	1031	S	43.2184	-124.5009	62	60	With Frosti.
WE16202.24	Bongo60	15	139	FM-2	11	6	1215	S	43.2176	-124.4684	56	60	With Frosti.
WE16202.28	Bongo60	16	140	FM-1	11	6	1411	S	43.2174	-124.4340	36	40	With Frosti.
WE16202.30	Bongo60	17	141	FM-3	11	6	1453	S	43.2152	-124.5010	62	60	With Frosti.
WE16202.35	Bongo60	18	142	FM-5	11	6	1643	S	43.2167	-124.6666	157	60	With Frosti.
WE16202.40	Bongo60	19	143	FM-7	11	6	1904	S	43.2193	-124.8355	343	60	With Frosti.
WE16302.08	Bongo60	20	147	8-2	12	6	0810	S	42.9515	-124.5519	54	60	With Frosti.
WE16302.19	Bongo60	21	149	8-9	12	6	1208	S	42.9514	-124.8697	188	60	With Frosti.
WE16302.29	Bongo60	22	151	8-7	12	6	1522	S	42.9511	-124.7786	161	30	With Frosti.
WE16302.30	Bongo60	23	152	8-5	12	6	1605	S	42.9502	-124.6881	124	30	With Frosti.
WE16302.34	Bongo60	24	153	8-4	12	6	1727	S	42.9505	-124.4780	101	30	With Frosti.
WE16302.39	Bongo60	25	154	8-3	12	6	1915	S	42.9546	-124.6016	85	60	With Frosti.
WE16402.15	Bongo60	26	159	RR-4	13	6	0737	S	42.5077	-124.8011	607	60	With Frosti.
WE16402.23	Bongo60	27	160	RR-3	13	6	1013	S	42.5006	-124.6995	133	60	With Frosti.
WE16402.28	Bongo60	28	161	RR-2	13	6	1136	S	42.4998	-124.6000	86	30	With Frosti.
WE16402.33	Bongo60	29	162	RR-1	13	6	1301	S	42.5018	-124.4998	37	40	With Frosti.
WE16402.40	Bongo60	30	163	9B-1	13	6	1511	S	42.5328	-124.5493	74	60	With Frosti.
WE16402.44	Bongo60	31	164	9B-2	13	6	1655	S	42.5351	-124.6502	144	60	With Frosti.
WE16402.48	Bongo60	32	165	9B-3	13	6	1815	S	42.5343	-124.7489	314	60	With Frosti.
WE16502.25	Bongo60	33	174	CR-2	14	6	1119	S	41.9010	-124.3998	67	60	With Frosti.
WE16502.35	Bongo60	34	176	CR-2	14	6	1527	S	41.8984	-124.3998	69	60	With Frosti.
WE16502.40	Bongo60	35	179	CR-4	14	6	2002	S	41.9019	-124.5919	510	60	With Frosti.

Table 13: 20 cm Bongo Tows

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE15702.29	Bongo20	1	89	NH-10	6	6	1408	S	44.6538	-124.2966	80	75	
WE15702.32	Bongo20	2	89	NH-10	6	6	1440	S	44.6577	-124.2998	80	75	
WE15702.33	Bongo20	3	90	NH-15	6	6	1529	S	44.6531	-124.4129	93	66	
WE15702.37	Bongo20	4	90	NH-15	6	6	1603	S	44.6600	-124.4129	93	66	
WE16702.18	Bongo20	5	195	HH-4	16	6	1206	S	44.0001	-124.8003	110	85/70	Depth test for net comparisons.
WE16702.19	Bongo20	6	195	HH-4	16	6	1228	S	44.0000	-124.8014	110	85/70	Net comparisons.
WE16702.22	Bongo20	7	195	HH-4	16	6	1257	S	44.0017	-124.7982	110	85/70	Net comparisons.

Table 14: MOCNESS Deployments

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE14902.17	MOC	1	5	NH-15	29	5	1929	S	44.6502	-124.4159	91	70	
WE14902.18	MOC	1	5	NH-15	29	5	2001	E	44.6381	-124.4358	91	nd	
WE14902.19	MOC	2	6	NH-20	29	5	2042	S	44.6522	-124.5321	140	130	
WE14902.20	MOC	2	6	NH-20	29	5	2124	E	44.6238	-124.5378	140	nd	
WE14902.24	MOC	3	6	NH-20	29	5	2315	S	44.6391	-124.5305	140	125	
WE14902.25	MOC	3	6	NH-20	29	5	2358	E	44.6152	-124.5365	140	nd	
WE15002.01	MOC	4	7	NH-15	30	5	0058	S	44.6522	-124.4146	92	70	
WE15002.02	MOC	4	7	NH-15	30	5	0128	E	44.6382	-124.4285	92	nd	
WE15002.03	MOC	5	8	NH-25	30	5	0246	S	44.6660	-124.6483	297	275	
WE15002.04	MOC	5	8	NH-25	30	5	0350	E	44.6219	-124.6495	297	nd	
WE15002.08	MOC	6	8	NH-25	30	5	0639	S	44.6468	-124.6606	297	215	
WE15002.09	MOC	6	8	NH-25	30	5	0727	E	44.6217	-124.6939	297	nd	
WE15002.13	MOC	7	9	NH-35	30	5	0950	S	44.6499	-124.8898	459	350	
WE15002.14	MOC	7	9	NH-35	30	5	1057	E	44.6905	-124.8981	459	nd	
WE15002.15	MOC	8	10	NH-45	30	5	1218	S	44.6545	-125.0986	717	350	
WE15002.16	MOC	8	10	NH-45	30	5	1347	E	44.6459	-125.1938	717	nd	
WE15202.40	MOC	9	37	RR-3	1	6	2229	S	42.5042	-124.6991	nd	150	
WE15202.41	MOC	9	37	RR-3	1	6	2301	E	42.5191	-124.6987	nd	nd	
WE15302.01	MOC	10	38	RR-2	2	6	0103	S	42.5000	-124.6006	88	75	
WE15302.02	MOC	10	38	RR-2	2	6	0134	E	42.5210	-124.6050	88	nd	
WE15302.04	MOC	11	40	RR-4	2	6	0442	S	42.4918	-124.7957	535	350	
WE15302.05	MOC	11	40	RR-4	2	6	0544	E	42.5157	-124.8149	nd	nd	
WE15402.19	MOC	12	54	CR-3	3	6	0729	S	41.9057	-124.5061	148	135	
WE15402.20	MOC	12	54	CR-3	3	6	0820	E	41.9224	-124.5291	148	nd	
WE15402.24	MOC	13	55	CR-4	3	6	1003	S	41.9016	-124.6017	517	350	
WE15402.25	MOC	13	55	CR-4	3	6	1118	E	41.9478	-124.6334	517	nd	
WE15402.32	MOC	14	57	CR-6	3	6	1404	S	41.9027	-124.7994	750	350	
WE15402.33	MOC	14	57	CR-6	3	6	1508	E	41.9474	-124.8074	750	nd	
WE15402.41	MOC	15	60	CR-6	3	6	2120	S	41.9023	-124.8003	750	350	
WE15402.42	MOC	15	60	CR-6	3	6	2230	E	41.9382	-124.8022	750	nd	
WE15402.43	MOC	16	61	CR-4	3	6	2333	S	41.9010	-124.6004	517	350	
WE15502.01	MOC	16	61	CR-4	4	6	0045	E	41.9388	-124.6250	517	nd	
WE15502.02	MOC	17	62	CR-3	4	6	0140	S	41.8984	-124.4976	137	125	
WE15502.03	MOC	17	62	CR-3	4	6	0220	E	41.9224	-124.5156	137	nd	
WE15502.17	MOC	18	66	NH-15	4	6	2159	S	44.6649	-124.4143	97	65	
WE15502.18	MOC	18	66	NH-15	4	6	2223	E	44.6372	-124.4232	nd	nd	
WE15502.19	MOC	19	67	NH-20	4	6	2313	S	44.6498	-124.5314	144	130	
WE15502.20	MOC	19	67	NH-20	4	6	2345	E	44.6354	-124.5481	nd	nd	
WE15602.01	MOC	20	68	NH-25	5	6	0034	S	44.6664	-124.6488	285	260	
WE15602.02	MOC	20	68	NH-25	5	6	0109	E	44.6114	-124.6359	nd	nd	
WE15702.38	MOC	21	91	NH-20	6	6	1717	S	44.6490	-124.5298	146	130	
WE15702.39	MOC	21	91	NH-20	6	6	1756	E	44.6690	-124.5438	146	nd	
WE15802.02	MOC	22	91	NH-20	7	6	0015	S	44.6512	-124.5298	146	130	
WE15802.03	MOC	22	91	NH-20	7	6	0052	E	44.6543	-124.5324	146	nd	
WE15902.38	MOC	23	112	2AT1	8	6	1945	S	44.3772	-124.3807	81	68	With Thompson and Frosti.
WE15902.39	MOC	23	112	2AT1	8	6	2031	E	44.3958	-124.4054	81	nd	
WE16002.02	MOC	24	114	BOB-5	9	6	0200	S	44.2377	-124.8985	147	132	With Thompson.
WE16002.03	MOC	24	114	BOB-5	9	6	0308	E	44.2752	-124.8814	147	nd	

Table 14: MOCNESS Deployments (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE16002.14	MOC	25	119	HH-5	9	6	1710	S	44.0019	-124.9998	940	300	With Thompson.
WE16002.15	MOC	25	119	HH-5	9	6	1831	E	44.0594	-125.0086	940	nd	
WE16002.25	MOC	26	120	HH-4	9	6	2339	S	44.9956	-124.8056	112	100	With Thompson.
WE16102.01	MOC	26	120	HH-4	10	6	0022	E	44.0124	-124.7822	112	100	
WE16102.44	MOC	27	132	UR-3B	10	6	1920	S	43.7411	-124.4363	123	105	With Thompson.
WE16102.45	MOC	27	132	UR-3B	10	6	1959	E	43.7416	-124.4002	123	nd	
WE16302.01	MOC	28	146	FM-7	12	6	0313	S	43.2877	-124.8313	318	290	With Thompson.
WE16302.02	MOC	28	146	FM-7	12	6	0427	E	43.2327	-124.8220	318	nd	
WE16402.49	MOC	29	165	9B-3	13	6	1902	S	42.4767	-124.7339	314	nd	With Thompson.
WE16402.50	MOC	29	165	9B-3	13	6	2008	E	42.5206	-124.7382	314	nd	
WE16502.36	MOC	30	177	CR-4	14	6	1635	S	41.8988	-124.5992	510	350	
WE16502.37	MOC	30	177	CR-4	14	6	1747	E	41.9517	-124.6290	510	nd	
WE16502.38	MOC	31	178	CR-3	14	6	1840	S	41.8935	-124.4983	140	125	
WE16502.39	MOC	31	178	CR-3	14	6	1918	E	41.9176	-124.5099	140	nd	
WE16502.42	MOC	32	180	CR-6	14	6	2159	S	41.8972	-124.8017	722	305	With Thompson.
WE16502.43	MOC	32	180	CR-6	14	6	2308	E	41.9432	-124.7622	722	nd	
WE16602.01	MOC	33	181	CR-4	15	6	0009	S	41.8978	-124.6015	520	350	
WE16602.02	MOC	33	181	CR-4	15	6	0117	S	41.9400	-124.6178	520	nd	
WE16602.03	MOC	34	182	CR-3	15	6	0245	S	41.8983	-124.4997	140	130	With Thompson.
WE16602.04	MOC	34	182	CR-3	15	6	0343	E	41.9354	-124.5163	140	nd	
WE16602.05	MOC	35	182	CR-3	15	6	0524	S	41.8921	-124.4975	140	125	
WE16602.06	MOC	35	182	CR-3	15	6	0554	E	41.9099	-124.5052	140	nd	
WE16602.07	MOC	36	183	CR-6	15	6	0752	S	41.9017	-124.8003	710	350	
WE16602.08	MOC	36	183	CR-6	15	6	0916	E	41.9573	-124.8169	710	nd	
WE16702.35	MOC	37	199	NH-15	16	6	2227	S	44.6518	-124.4115	96	70	
WE16702.36	MOC	37	199	NH-15	16	6	2227	E	nd	nd	96	nd	
WE16802.01	MOC	38	200	NH-20	17	6	0030	S	44.6521	-124.5297	145	130	
WE16802.02	MOC	38	200	NH-20	17	6	0057	E	nd	nd	145	nd	
WE16802.03	MOC	39	201	NH-25	17	6	0204	S	44.6510	-124.6506	295	260	
WE16802.04	MOC	39	201	NH-25	17	6	0312	E	44.6510	-124.6506	295	nd	
WE16802.20	MOC	40	206	NH-15	17	6	1107	S	44.6520	-124.4111	96	65	Became shallower as towed.
WE16802.21	MOC	40	206	NH-15	17	6	1105	E	nd	nd	96	nd	

APPENDIX I

W0205A EVENT LOG

EVENT LOG CONTENTS

Column Label	Description
Event#	Unique identifier for each line of event log
Instrument (Instr)	CTD: Conductivity Temperature Depth profile; VPT: Vertical Plankton Tow, 0.5 m diameter with 0.200 mm mesh; VPT150: Vertical Plankton Tow, 0.5 m diameter with 0.150 mm mesh; Bongo60: 60 cm Bongo, 0.153mm mesh Bongo20: 20 cm Bongo, 0.333mm mesh MOC: 1m^2 MOCNESS with 0.333 mm mesh; LiveNet1: 1.0 m diameter ring net with 0.333 mm mesh for collecting animals for experiments.
Cast	Sequence # for a particular instrument
Station (Sta)	Consecutively numbered locations sampled
Station Standard (Sta std)	
Day	Local time basis
Month (Mos)	Local time basis
Time	Local time
Start/End (S/E) flag	S=Start of event; E-=End of event
Latitude (Lat)	Decimal degrees; north is positive
Longitude (Long)	Decimal degrees; east is positive
Water Depth	Depth of bottom
Cast Depth	Maximum depth of deployment
Comments	

APPENDIX I: Event Log

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE14902.01	CTD	1	1	NH-1	29	5	1310	S	44.6521	-124.1002	29	22	Test
WE14902.02	CTD	1	1	NH-1	29	5	1340	E	44.6521	-124.1002	nd	nd	
WE14902.03	VPT	1	1	NH-1	29	5	1400	S	44.6521	-124.1002	30	25	
WE14902.04	CTD	2	2	NH-3	29	5	1456	S	44.6521	-124.1300	46	41	
WE14902.05	CTD	2	2	NH-3	29	5	1512	E	44.6528	-124.1305	46	nd	
WE14902.06	CTD	3	3	NH-5	29	5	1541	S	44.6518	-124.1768	62	52	
WE14902.07	CTD	3	3	NH-5	29	5	1601	E	44.6521	-124.1772	62	nd	
WE14902.08	VPT	2	3	NH-5	29	5	1609	S	44.6518	-124.1767	62	55	
WE14902.09	VPT150	1	3	NH-5	29	5	1619	S	44.6517	-124.1767	62	55	
WE14902.10	Secchi	1	3	NH-5	29	5	1624	S	44.6516	-124.1769	62	nd	
WE14902.11	CTD	4	4	NH-10	29	5	1709	S	44.6513	-124.2943	80	73	
WE14902.12	CTD	4	4	NH-10	29	5	1727	E	44.6502	-124.2951	80	nd	
WE14902.13	VPT	3	4	NH-10	29	5	1733	S	44.6506	-124.2954	80	75	
WE14902.14	CTD	5	5	NH-15	29	5	1820	S	44.6525	-124.4117	91	85	
WE14902.15	CTD	5	5	NH-15	29	5	1842	E	44.6521	-124.4129	91	nd	
WE14902.16	VPT	4	5	NH-15	29	5	1849	S	44.6516	-124.4117	91	85	
WE14902.17	MOC	1	5	NH-15	29	5	1929	S	44.6502	-124.4159	91	70	
WE14902.18	MOC	1	5	NH-15	29	5	2001	E	44.6381	-124.4358	91	nd	
WE14902.19	MOC	2	6	NH-20	29	5	2042	S	44.6522	-124.5321	140	130	
WE14902.20	MOC	2	6	NH-20	29	5	2124	E	44.6238	-124.5378	140	nd	
WE14902.21	CTD	6	6	NH-20	29	5	2153	S	44.6518	-124.5285	140	133	
WE14902.22	CTD	6	6	NH-20	29	5	2217	E	44.6520	-124.5286	140	nd	
WE14902.23	VPT	5	6	NH-20	29	5	2230	S	44.6521	-124.5286	140	100	
WE14902.24	MOC	3	6	NH-20	29	5	2315	S	44.6391	-124.5305	140	125	
WE14902.25	MOC	3	6	NH-20	29	5	2358	E	44.6152	-124.5365	140	nd	
WE15002.01	MOC	4	7	NH-15	30	5	0058	S	44.6522	-124.4146	92	70	
WE15002.02	MOC	4	7	NH-15	30	5	0128	E	44.6382	-124.4285	92	nd	
WE15002.03	MOC	5	8	NH-25	30	5	0246	S	44.6660	-124.6483	297	275	
WE15002.04	MOC	5	8	NH-25	30	5	0350	E	44.6219	-124.6495	297	nd	
WE15002.05	CTD	7	8	NH-25	30	5	0414	S	44.6512	-124.6494	297	200	
WE15002.06	CTD	7	8	NH-25	30	5	0435	E	44.6512	-124.6493	297	nd	
WE15002.07	VPT	6	8	NH-25	30	5	0443	S	44.6349	-124.6495	297	100	
WE15002.08	MOC	6	8	NH-25	30	5	0639	S	44.6468	-124.6606	297	215	
WE15002.09	MOC	6	8	NH-25	30	5	0727	E	44.6217	-124.6939	297	nd	
WE15002.10	CTD	8	9	NH-35	30	5	0840	S	44.6497	-124.8847	459	200	
WE15002.11	CTD	8	9	NH-35	30	5	0907	E	44.6491	-124.8856	459	nd	
WE15002.12	VPT	7	9	NH-35	30	5	0920	S	44.6485	-124.8857	459	100	
WE15002.13	MOC	7	9	NH-35	30	5	0950	S	44.6499	-124.8898	459	350	
WE15002.14	MOC	7	9	NH-35	30	5	1057	E	44.6905	-124.8981	459	nd	
WE15002.15	MOC	8	10	NH-45	30	5	1218	S	44.6545	-125.0986	717	350	
WE15002.16	MOC	8	10	NH-45	30	5	1347	E	44.6459	-125.1938	717	nd	
WE15002.17	VPT	8	10	NH-45	30	5	1426	S	44.6512	-125.1173	717	100	
WE15002.18	CTD	9	10	NH-45	30	5	1445	S	44.6520	-125.1179	717	nd	
WE15002.19	CTD	9	10	NH-45	30	5	1512	E	44.6519	-125.1190	717	200	
WE15002.20	CTD	10	11	NH-65	30	5	1715	S	44.6514	-125.5993	2880	nd	
WE15002.21	CTD	10	11	NH-65	30	5	1741	E	44.6514	-125.6002	2880	200	
WE15002.22	VPT	9	11	NH-65	30	5	1742	S	44.6517	-125.6000	2880	100	
WE15002.23	VPT150	2	11	NH-65	30	5	1752	S	44.6518	-125.6004	2880	100	
WE15002.24	Transit	nd	nd	Transit	30	5	1755	S	44.6518	-125.6004	nd	nd	

APPENDIX I: Event Log (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE15002.25	Transit	nd	nd	Transit	30	5	2040	E	44.2462	-125.1106	nd	nd	
WE15002.26	CTD	11	12	BOB-6	30	5	2049	S	44.2462	-125.1106	1266	200	
WE15002.27	CTD	11	12	BOB-6	30	5	2109	E	44.2463	-125.1104	1266	nd	
WE15002.28	VPT	10	12	BOB-6	30	5	2117	S	44.2457	-125.1107	1266	100	
WE15002.29	VPT150	3	12	BOB-6	30	5	2126	S	44.2456	-125.1111	1266	100	
WE15002.30	CTD	12	13	BOB-5	30	5	2233	S	44.2460	-124.8986	148	138	
WE15002.31	CTD	12	13	BOB-5	30	5	2252	E	44.2458	-124.8982	148	nd	
WE15002.32	VPT	11	13	BOB-5	30	5	2258	S	44.2455	-124.8984	148	100	
WE15002.33	LiveNet1	1	13	BOB-5	30	5	2313	S	44.2467	-124.8988	148	30	Caught 100's of krill.
WE15102.01	CTD	13	14	BOB-4	31	5	0030	S	44.2450	-124.6991	103	93	
WE15102.02	CTD	13	14	BOB-4	31	5	0044	E	44.2448	-124.6990	103	nd	
WE15102.03	VPT	12	14	BOB-4	31	5	0050	S	44.2450	-124.6990	103	90	
WE15102.04	CTD	14	15	BOB-3	31	5	0150	S	44.2465	-124.5085	104	90	
WE15102.05	CTD	14	15	BOB-3	31	5	0204	E	44.2463	-124.5085	104	nd	
WE15102.06	VPT	13	15	BOB-3	31	5	0210	S	44.2466	-124.5085	104	90	
WE15102.07	VPT150	4	15	BOB-3	31	5	0217	S	44.2463	-124.5084	104	90	
WE15102.08	CTD	15	16	BOB-2	31	5	0305	S	44.2470	-124.3774	90	82	
WE15102.09	CTD	15	16	BOB-2	31	5	0319	E	44.2477	-124.3783	90	nd	
WE15102.10	VPT	14	16	BOB-2	31	5	0325	S	44.2470	-124.3774	90	80	
WE15102.11	CTD	16	17	BOB-1	31	5	0425	S	44.2474	-124.1896	54	43	
WE15102.12	CTD	16	17	BOB-1	31	5	0437	E	44.2472	-124.1897	54	nd	
WE15102.13	VPT	15	17	BOB-1	31	5	0441	S	44.2472	-124.1898	54	45	
WE15102.14	Transit	nd	nd	Transit	31	5	0445	S	44.2472	-124.1898	nd	nd	
WE15102.15	Transit	nd	nd	Transit	31	5	0610	E	43.9995	-124.2004	nd	nd	
WE15102.16	CTD	17	18	HH-1	31	5	0616	S	43.9995	-124.2004	54	46	
WE15102.17	CTD	17	18	HH-1	31	5	0633	E	44.0005	-124.0171	54	nd	
WE15102.18	VPT	16	18	HH-1	31	5	0639	S	44.0005	-124.2004	54	45	
WE15102.19	CTD	18	19	HH-2	31	5	0740	S	43.9990	-124.4004	120	117	
WE15102.20	CTD	18	19	HH-2	31	5	0802	E	43.9979	-124.4006	120	nd	
WE15102.21	VPT	17	19	HH-2	31	5	0810	S	43.9963	-124.4014	120	100	
WE15102.22	CTD	19	20	HH-3	31	5	0920	S	43.9995	-124.6007	153	144	
WE15102.23	CTD	19	20	HH-3	31	5	0941	E	43.9996	-124.6012	153	nd	
WE15102.24	VPT	18	20	HH-3	31	5	0949	S	43.9990	-124.6013	153	100	
WE15102.25	VPT150	5	20	HH-3	31	5	1000	S	43.9984	-124.6005	153	100	
WE15102.26	CTD	20	21	HH-4	31	5	1106	S	44.9995	-124.8009	109	100	
WE15102.27	CTD	20	21	HH-4	31	5	1128	E	44.9998	-124.8022	109	nd	
WE15102.28	VPT	19	21	HH-4	31	5	1136	S	43.9993	-124.8015	109	100	
WE15102.29	CTD	21	22	HH-5	31	5	1253	S	43.9994	-125.0007	942	200	
WE15102.30	CTD	21	22	HH-5	31	5	1315	E	43.9996	-125.0023	942	nd	
WE15102.31	VPT	20	22	HH-5	31	5	1322	S	43.9992	-125.0022	942	100	
WE15102.32	CTD	22	23	HH-6	31	5	1408	S	43.9992	-125.1002	1445	200	
WE15102.33	CTD	22	23	HH-6	31	5	1432	E	43.9991	-125.1021	1445	nd	
WE15102.34	VPT	21	23	HH-6	31	5	1438	S	43.9984	-125.1027	1445	100	
WE15102.35	CTD	23	24	HH-7	31	5	1522	S	44.0001	-125.1994	1730	200	
WE15102.36	CTD	23	24	HH-7	31	5	1548	E	43.9994	-125.2167	1730	nd	
WE15102.37	VPT	22	24	HH-7	31	5	1555	S	43.9995	-125.2000	1730	100	
WE15102.38	VPT150	6	24	HH-7	31	5	1605	S	43.9986	-125.2014	1730	100	
WE15102.39	Transit	nd	nd	Transit	31	5	1620	S	43.9986	-125.2014	nd	nd	

APPENDIX I: Event Log (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE15102.40	Transit	nd	nd	Transit	31	5	2230	E	43.2158	-126.1971	nd	nd	
WE15102.41	CTD	24	25	FM-11	31	5	2230	S	43.2158	-126.1971	3038	200	
WE15102.42	CTD	24	25	FM-11	31	5	2249	E	43.2153	-126.1985	3038	nd	
WE15102.43	VPT	23	25	FM-11	31	5	2256	S	43.2151	-126.1985	3038	100	
WE15102.44	VPT150	7	25	FM-11	31	5	2307	S	43.2153	-126.1980	3038	100	
WE15202.01	CTD	25	26	FM-10	1	6	0216	S	43.2173	-125.6699	3089	200	
WE15202.02	CTD	25	26	FM-10	1	6	0235	E	43.2192	-125.6723	3089	nd	
WE15202.03	VPT	24	26	FM-10	1	6	0238	S	43.2194	-125.7728	3089	100	
WE15202.04	CTD	26	27	FM-9	1	6	0530	S	43.2178	-125.1671	1651	200	
WE15202.05	CTD	26	27	FM-9	1	6	0550	E	43.2161	-125.1686	1651	nd	
WE15202.06	VPT	25	27	FM-9	1	6	0555	S	43.2161	-125.1693	1651	100	
WE15202.07	CTD	27	28	FM-8	1	6	0711	S	43.2174	-124.9997	1094	200	
WE15202.08	CTD	27	28	FM-8	1	6	0734	E	43.2164	-125.0001	1094	nd	
WE15202.09	VPT	26	28	FM-8	1	6	0739	S	43.2170	-124.9997	1094	100	
WE15202.10	CTD	28	29	FM-7	1	6	0848	S	43.2164	-124.8340	343	200	
WE15202.11	CTD	28	29	FM-7	1	6	0912	E	43.2158	-124.8345	343	nd	
WE15202.12	VPT	27	29	FM-7	1	6	0920	S	43.2157	-124.8339	343	100	
WE15202.13	CTD	29	30	FM-5	1	6	1031	S	43.2162	-124.6671	156	147	
WE15202.14	CTD	29	30	FM-5	1	6	1052	E	43.2158	-124.6672	156	nd	
WE15202.15	VPT	28	30	FM-5	1	6	1058	S	43.2156	-124.6677	156	100	
WE15202.16	CTD	30	31	FM-4	1	6	1149	S	43.2160	-124.5849	86	81	
WE15202.17	CTD	30	31	FM-4	1	6	1206	E	43.2149	-124.5859	86	nd	
WE15202.18	VPT	29	31	FM-4	1	6	1213	S	43.2143	-124.5849	86	90	
WE15202.19	CTD	31	32	FM-3	1	6	1257	S	43.2158	-124.5002	65	58	
WE15202.20	CTD	31	32	FM-3	1	6	1312	E	43.2108	-124.4974	65	nd	
WE15202.21	VPT	30	32	FM-3	1	6	1318	S	43.2108	-124.4974	65	55	
WE15202.22	VPT150	8	32	FM-3	1	6	1326	S	43.2093	-124.4988	65	55	
WE15202.23	CTD	32	33	FM-2	1	6	1355	S	43.2171	-124.4674	55	45	
WE15202.24	CTD	32	33	FM-2	1	6	1411	E	43.2177	-124.4680	55	nd	
WE15202.25	VPT	31	33	FM-2	1	6	1418	S	43.2178	-124.4679	55	55	
WE15202.26	VPT	32	34	FM-1	1	6	1445	S	43.2174	-124.4337	36	25	
WE15202.27	CTD	33	34	FM-1	1	6	1458	S	43.2177	-124.4333	36	26	
WE15202.28	CTD	33	34	FM-1	1	6	1510	E	43.2172	-124.4333	36	nd	
WE15202.29	Transit	nd	34	Transit	1	6	1530	S	43.2172	-124.4336	nd	nd	
WE15202.30	Transit	nd	34	Transit	1	6	1922	E	42.5002	-124.5007	nd	nd	
WE15202.31	CTD	34	35	RR-1	1	6	1922	S	42.5002	-124.5007	38	29	
WE15202.32	CTD	34	35	RR-1	1	6	1931	E	42.5004	-124.4999	38	nd	
WE15202.33	VPT	33	35	RR-1	1	6	1939	S	42.5005	-124.4996	38	20	
WE15202.34	CTD	35	36	RR-2	1	6	2022	S	42.4997	-124.6008	89	79	
WE15202.35	CTD	35	36	RR-2	1	6	2038	E	42.4995	-124.6015	89	nd	
WE15202.36	VPT	34	36	RR-2	1	6	2044	S	42.4994	-124.6015	89	70	
WE15202.37	CTD	36	37	RR-3	1	6	2129	S	42.4999	-124.6996	134	125	
WE15202.38	CTD	36	37	RR-3	1	6	2146	E	42.4994	-124.7000	134	nd	
WE15202.39	VPT	35	37	RR-3	1	6	2153	S	42.4996	-124.7001	134	100	
WE15202.40	MOC	9	37	RR-3	1	6	2229	S	42.5042	-124.6991	nd	150	
WE15202.41	MOC	9	37	RR-3	1	6	2301	E	42.5191	-124.6987	nd	nd	
WE15302.01	MOC	10	38	RR-2	2	6	0103	S	42.5000	-124.6006	88	75	
WE15302.02	MOC	10	38	RR-2	2	6	0134	E	42.5210	-124.6050	88	nd	

APPENDIX I: Event Log (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE15302.03	LiveNet1	2	39	RR-3	2	6	0300	S	42.5004	-124.7011	134	15	
WE15302.04	MOC	11	40	RR-4	2	6	0442	S	42.4918	-124.7957	535	350	
WE15302.05	MOC	11	40	RR-4	2	6	0544	E	42.5157	-124.8149	nd	nd	
WE15302.06	CTD	37	40	RR-4	2	6	0701	S	42.4977	-124.8018	599	200	
WE15302.07	CTD	37	40	RR-4	2	6	0723	E	42.4972	-124.8012	599	nd	
WE15302.08	VPT	36	40	RR-4	2	6	0729	S	42.4992	-124.8005	599	100	
WE15302.09	CTD	38	41	RR-5	2	6	0811	S	42.5000	-124.9003	1180	200	
WE15302.10	CTD	38	41	RR-5	2	6	0837	E	42.4991	-124.9013	1180	nd	
WE15302.11	VPT	37	41	RR-5	2	6	0842	S	42.4991	-124.9015	1180	100	
WE15302.12	CTD	39	42	RR-6	2	6	0942	S	42.5003	-125.0001	1792	200	
WE15302.13	CTD	39	42	RR-6	2	6	1006	E	42.4996	-125.0009	1792	nd	
WE15302.14	VPT	38	42	RR-6	2	6	1011	S	42.4893	-125.0007	1792	100	
WE15302.15	CTD	40	43	RR-7	2	6	1131	S	42.5002	-125.2004	3000	200	
WE15302.16	VPT	39	43	RR-7	2	6	1200	S	42.5002	-125.2004	3000	100	
WE15302.17	CTD	41	44	RR-8	2	6	1348	S	42.5007	-125.4991	nd	200	
WE15302.18	VPT	40	44	RR-8	2	6	1410	S	42.5007	-125.4991	nd	100	
WE15302.19	Transit	nd	44	Transit	2	6	nd	S	42.5002	-125.2004	nd	nd	
WE15302.20	Transit	nd	44	Transit	2	6	nd	E	42.2016	-125.1002	nd	nd	
WE15302.21	CTD	42	45	PR-7	2	6	1652	S	42.2016	-125.1002	1946	200	
WE15302.22	CTD	42	45	PR-7	2	6	1710	E	42.1985	-125.1020	1946	nd	
WE15302.23	VPT	41	45	PR-7	2	6	1714	S	42.1983	-125.1025	1946	100	
WE15302.24	CTD	43	46	PR-6	2	6	1848	S	42.2019	-124.8643	850	200	
WE15302.25	CTD	43	46	PR-6	2	6	1908	E	42.1996	-124.8648	850	nd	
WE15302.26	VPT	42	46	PR-6	2	6	1913	S	42.2002	-124.8650	850	100	
WE15302.27	CTD	44	47	PR-5	2	6	2036	S	42.2002	-124.6943	535	200	
WE15302.28	CTD	44	47	PR-5	2	6	2057	E	42.1999	-124.6954	535	nd	
WE15302.29	VPT	43	47	PR-5	2	6	2104	S	42.2000	-124.6955	535	100	
WE15302.30	CTD	45	48	PR-4	2	6	2159	S	42.1998	-124.6284	345	200	
WE15302.31	CTD	45	48	PR-4	2	6	2222	E	42.1997	-124.6288	345	nd	
WE15302.32	VPT	44	48	PR-4	2	6	2227	S	42.1997	-124.6286	345	100	
WE15302.33	CTD	46	49	PR-3	2	6	2323	S	42.1998	-124.5638	164	153	
WE15302.34	CTD	46	49	PR-3	2	6	2343	E	42.2001	-124.5636	164	nd	
WE15302.35	VPT	45	49	PR-3	2	6	2348	S	42.1998	-124.5630	164	100	
WE15302.36	LiveNet1	3	49	PR-3	2	6	2358	S	42.1843	-124.5629	164	30	
WE15402.01	CTD	47	50	PR-2	3	6	0054	S	42.2000	-124.4931	120	118	
WE15402.02	CTD	47	50	PR-2	3	6	0110	E	42.2004	-124.4930	120	nd	
WE15402.03	VPT	46	50	PR-2	3	6	0115	S	42.2009	-124.4934	120	100	
WE15402.04	CTD	48	51	PR-1	3	6	0209	S	42.2001	-124.4235	71	62	
WE15402.05	CTD	48	51	PR-1	3	6	0221	E	42.2007	-124.4232	71	nd	
WE15402.06	VPT	47	51	PR-1	3	6	0227	S	42.2004	-124.4232	71	60	
WE15402.07	Transit	nd	nd	Transit	3	6	nd	S	42.2004	-124.4232	nd	nd	
WE15402.08	Transit	nd	nd	Transit	3	6	nd	E	41.9010	-124.2997	nd	nd	
WE15402.09	CTD	49	52	CR-1	3	6	0436	S	41.9010	-124.2997	41	32	
WE15402.10	CTD	49	52	CR-1	3	6	0447	E	41.9011	-124.2997	41	nd	
WE15402.11	VPT	48	52	CR-1	3	6	0453	S	41.9015	-124.2995	41	30	
WE15402.12	CTD	50	53	CR-2	3	6	0530	S	41.9000	-124.3999	69	60	
WE15402.13	CTD	50	53	CR-2	3	6	0543	E	41.8996	-124.3999	69	nd	
WE15402.14	VPT	49	53	CR-2	3	6	0548	S	41.9001	-124.3999	69	60	

APPENDIX I: Event Log (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE15402.15	CTD	51	54	CR-3	3	6	0629	S	41.8999	-124.4999	137	127	
WE15402.16	CTD	51	54	CR-3	3	6	0650	E	41.9001	-124.5003	137	nd	
WE15402.17	VPT	50	54	CR-3	3	6	0658	S	41.9005	-124.5004	137	100	
WE15402.18	VPT150	9	54	CR-3	3	6	0707	S	41.9001	-124.5003	137	100	
WE15402.19	MOC	12	54	CR-3	3	6	0729	S	41.9057	-124.5061	148	135	
WE15402.20	MOC	12	54	CR-3	3	6	0820	E	41.9224	-124.5291	148	nd	
WE15402.21	CTD	52	55	CR-4	3	6	0904	S	41.8898	-124.5999	517	200	
WE15402.22	CTD	52	55	CR-4	3	6	0932	E	41.8997	-124.5999	517	nd	
WE15402.23	VPT	51	55	CR-4	3	6	0942	S	41.8999	-124.5998	517	100	
WE15402.24	MOC	13	55	CR-4	3	6	1003	S	41.9016	-124.6017	517	350	
WE15402.25	MOC	13	55	CR-4	3	6	1118	E	41.9478	-124.6334	517	nd	
WE15402.26	CTD	53	56	CR-5	3	6	1156	S	41.9001	-124.6991	665	200	
WE15402.27	CTD	53	56	CR-5	3	6	1223	E	41.9001	-124.6999	665	nd	
WE15402.28	VPT	52	56	CR-5	3	6	1229	S	41.9001	-124.6998	665	100	
WE15402.29	VPT	53	57	CR-6	3	6	1313	S	41.8996	-124.7995	750	100	
WE15402.30	CTD	54	57	CR-6	3	6	1328	S	41.8994	-124.7993	750	200	
WE15402.31	CTD	54	57	CR-6	3	6	1350	E	41.8993	-124.7989	750	nd	
WE15402.32	MOC	14	57	CR-6	3	6	1404	S	41.9027	-124.7994	750	350	
WE15402.33	MOC	14	57	CR-6	3	6	1508	E	41.9474	-124.8074	750	nd	
WE15402.34	CTD	55	58	CR-7	3	6	1614	S	41.9002	-124.9997	844	200	
WE15402.35	CTD	55	58	CR-7	3	6	1635	E	41.8991	-124.9970	844	nd	
WE15402.36	VPT	54	58	CR-7	3	6	1640	S	41.8999	-124.9998	844	100	
WE15402.37	CTD	56	59	CR-8	3	6	1744	S	41.9001	-125.2011	2700	200	
WE15402.38	CTD	56	59	CR-8	3	6	1805	E	41.8999	-125.2005	2700	nd	
WE15402.39	VPT	55	59	CR-8	3	6	1811	S	41.9000	-125.2000	2700	100	
WE15402.40	VPT150	10	59	CR-8	3	6	1821	S	41.9000	-125.2000	2700	100	
WE15402.41	MOC	15	60	CR-6	3	6	2120	S	41.9023	-124.8003	750	350	
WE15402.42	MOC	15	60	CR-6	3	6	2230	E	41.9382	-124.8022	750	nd	
WE15402.43	MOC	16	61	CR-4	3	6	2333	S	41.9010	-124.6004	517	350	
WE15502.01	MOC	16	61	CR-4	4	6	0045	E	41.9388	-124.6250	517	nd	
WE15502.02	MOC	17	62	CR-3	4	6	0140	S	41.8984	-124.4976	137	125	
WE15502.03	MOC	17	62	CR-3	4	6	0220	E	41.9224	-124.5156	137	nd	
WE15502.04	LiveNet1	4	63	CR-4	4	6	0330	S	41.8996	-124.5997	509	40	
WE15502.05	Transit	nd	nd	Transit	4	6	nd	S	41.8996	-124.5997	nd	nd	
WE15502.06	Transit	nd	nd	Transit	4	6	nd	E	44.6520	-124.1762	nd	nd	
WE15502.07	CTD	57	64	NH-5	4	6	1908	S	44.6520	-124.1762	60	50	
WE15502.08	CTD	57	64	NH-5	4	6	1918	E	44.6517	-124.1767	60	nd	
WE15502.09	VPT	56	64	NH-5	4	6	1923	S	44.6515	-124.1767	60	55	
WE15502.10	VPT150	11	64	NH-5	4	6	1929	S	44.6516	-124.1768	60	55	
WE15502.11	CTD	58	65	NH-10	4	6	2008	S	44.6514	-124.2888	82	73	
WE15502.12	CTD	58	65	NH-10	4	6	2021	E	44.6517	-124.2956	82	nd	
WE15502.13	VPT	57	65	NH-10	4	6	2029	S	44.6516	-124.2955	82	60	
WE15502.14	CTD	59	66	NH-15	4	6	2119	S	44.6516	-124.4108	97	88	
WE15502.15	CTD	59	66	NH-15	4	6	2135	E	44.6516	-124.4115	97	nd	
WE15502.16	VPT	58	66	NH-15	4	6	2144	S	44.6517	-124.4116	97	90	
WE15502.17	MOC	18	66	NH-15	4	6	2159	S	44.6649	-124.4143	97	65	
WE15502.18	MOC	18	66	NH-15	4	6	2223	E	44.6372	-124.4232	nd	nd	
WE15502.19	MOC	19	67	NH-20	4	6	2313	S	44.6498	-124.5314	144	130	

APPENDIX I: Event Log (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE15502.20	MOC	19	67	NH-20	4	6	2345	E	44.6354	-124.5481	nd	nd	
WE15602.01	MOC	20	68	NH-25	5	6	0034	S	44.6664	-124.6488	285	260	
WE15602.02	MOC	20	68	NH-25	5	6	0109	E	44.6114	-124.6359	nd	nd	
WE15602.03	CTD	60	69	NH-20	5	6	0233	S	44.6517	-124.5278	143	135	
WE15602.04	CTD	60	69	NH-20	5	6	0247	E	44.6519	-124.5285	nd	nd	
WE15602.05	VPT	59	69	NH-20	5	6	0254	S	44.6520	-124.5287	143	100	
WE15602.06	LiveNet1	5	69	NH-20	5	6	0303	S	44.6514	-124.5290	143	60	
WE15602.07	CTD	61	70	NH-25	5	6	0357	S	44.6517	-124.6500	297	200	
WE15602.08	CTD	61	70	NH-25	5	6	0416	E	44.6513	-124.6504	nd	nd	
WE15602.09	VPT	60	70	NH-25	5	6	0422	S	44.6516	-124.6508	297	100	
WE15602.10	CTD	62	71	NH-35	5	6	0530	S	44.6517	-124.8829	436	200	
WE15602.11	CTD	62	71	NH-35	5	6	0547	E	44.6516	-124.8835	436	nd	
WE15602.12	VPT	61	71	NH-35	5	6	0551	S	44.6519	-124.8825	436	100	
WE15602.13	CTD	63	72	NH-45	5	6	0659	S	44.6516	-125.1163	700	200	
WE15602.14	CTD	63	72	NH-45	5	6	0724	E	44.6515	-125.1162	700	nd	
WE15602.15	VPT	62	72	NH-45	5	6	0729	S	44.6515	-125.1162	700	100	
WE15602.16	CTD	64	73	NH-65	5	6	0936	S	44.6513	-125.5996	1276	200	
WE15602.17	CTD	64	73	NH-65	5	6	0956	E	44.6517	-125.6000	1276	nd	
WE15602.18	VPT	63	73	NH-65	5	6	1003	S	44.6517	-125.5999	1276	100	
WE15602.19	VPT150	12	73	NH-65	5	6	1013	S	44.6517	-125.6000	1276	100	
WE15602.20	CTD	65	74	NH-1	5	6	1624	S	44.6522	-124.1004	28	18	
WE15602.21	CTD	65	74	NH-1	5	6	1636	E	44.6519	-124.1006	28	nd	
WE15602.22	VPT	64	74	NH-1	5	6	1641	S	44.6519	-124.1012	28	22	
WE15602.23	CTD	66	75	NH-3	5	6	1702	S	44.6519	-124.1298	47	37	
WE15602.24	CTD	66	75	NH-3	5	6	1714	E	44.6517	-124.1305	47	nd	
WE15602.25	CTD	67	76	NH-5	5	6	1734	S	44.6509	-124.1765	60	50	
WE15602.26	CTD	67	76	NH-5	5	6	1745	E	44.6513	-124.1764	60	nd	
WE15602.27	VPT	65	76	NH-5	5	6	1749	S	44.6514	-124.1767	60	55	
WE15602.28	CTD	68	77	NH-10	5	6	1830	S	44.6508	-124.2960	72	72	
WE15602.29	CTD	68	77	NH-10	5	6	1843	E	44.6499	-124.2951	72	nd	
WE15602.30	VPT	66	77	NH-10	5	6	1949	S	44.6518	-124.2954	72	65	
WE15602.31	CTD	69	78	NH-15	5	6	1928	S	44.6519	-124.4119	94	85	
WE15602.32	CTD	69	78	NH-15	5	6	1942	E	44.6517	-124.4118	94	nd	
WE15602.33	VPT	67	78	NH-15	5	6	1947	S	44.6512	-124.4116	94	80	
WE15602.34	LiveNet1	6	78	NH-15	5	6	1957	S	44.6523	-124.4132	94	60	
WE15602.35	CTD	70	79	NH-20	5	6	2040	S	44.6516	-124.5284	144	134	
WE15602.36	CTD	70	79	NH-20	5	6	2056	E	44.6516	-124.5283	144	nd	
WE15602.37	VPT	68	79	NH-20	5	6	2102	S	44.6516	-124.5284	144	100	
WE15602.38	LiveNet1	7	79	NH-20	5	6	2112	S	44.6523	-124.5294	144	60	
WE15602.39	LiveNet1	8	79	NH-20	5	6	2200	S	44.6504	-124.5284	144	60	
WE15602.40	LiveNet1	9	79	NH-20	5	6	2300	S	44.6519	-124.5301	144	60	
WE15702.01	LiveNet1	10	79	NH-20	6	6	0000	S	44.6480	-124.5294	144	60	
WE15702.02	LiveNet1	11	79	NH-20	6	6	0101	S	44.6532	-124.5315	144	60	
WE15702.03	LiveNet1	12	79	NH-20	6	6	0200	S	44.6521	-124.5282	144	60	
WE15702.04	LiveNet1	13	79	NH-20	6	6	0300	S	44.6477	-124.5280	144	60	
WE15702.05	LiveNet1	14	79	NH-20	6	6	0401	S	44.6491	-124.5274	144	60	
WE15702.06	LiveNet1	15	79	NH-20	6	6	0458	S	44.6480	-124.5260	144	60	
WE15702.07	CTD	71	80	NH-25	6	6	0545	S	44.6522	-124.6502	288	200	

APPENDIX I: Event Log (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE15702.08	CTD	71	80	NH-25	6	6	0605	E	44.6510	-124.6517	288	nd	
WE15702.09	VPT	69	80	NH-25	6	6	0611	S	44.6517	-124.6516	288	100	
WE15702.10	CTD	72	81	NH-20	6	6	0656	S	44.6528	-124.5293	143	133	
WE15702.11	CTD	72	81	NH-20	6	6	0717	E	44.6518	-124.5285	143	nd	
WE15702.12	VPT	70	81	NH-20	6	6	0724	S	44.6516	-124.5283	143	100	
WE15702.13	CTD	73	82	NH-15	6	6	0811	S	44.6515	-124.4124	95	85	
WE15702.14	CTD	73	82	NH-15	6	6	0826	E	44.6516	-124.4126	95	nd	
WE15702.15	VPT	71	82	NH-15	6	6	0832	S	44.6516	-124.4124	95	90	
WE15702.16	CTD	74	83	NH-10	6	6	0916	S	44.6513	-124.2952	81	71	
WE15702.17	CTD	74	83	NH-10	6	6	0930	E	44.6515	-124.2952	81	nd	
WE15702.18	VPT	72	83	NH-10	6	6	0937	S	44.6518	-124.2956	81	75	
WE15702.19	CTD	75	84	NH-5	6	6	1022	S	44.6516	-124.1774	60	50	
WE15702.20	CTD	75	84	NH-5	6	6	1035	E	44.6517	-124.1775	60	nd	Broke three niskins.
WE15702.21	VPT	73	84	NH-5	6	6	1044	S	44.6517	-124.1775	60	55	
WE15702.22	CTD	76	85	NH-3	6	6	1114	S	44.6514	-124.1300	48	38	
WE15702.23	CTD	76	85	NH-3	6	6	1125	E	44.6513	-124.1302	48	nd	Some new niskins did not close.
WE15702.24	CTD	77	86	NH-1	6	6	1150	S	44.6517	-124.0999	30	20	
WE15702.25	CTD	77	86	NH-1	6	6	1158	E	44.6523	-124.1012	30	nd	
WE15702.26	VPT	74	86	NH-1	6	6	1203	S	44.6525	-124.1011	30	25	
WE15702.27	CTD	78	87	NH-3	6	6	1223	S	44.6517	-124.1304	48	38	Repeat of above.
WE15702.28	CTD	78	87	NH-3	6	6	1233	E	44.6516	-124.1308	48	nd	
WE15702.29	Bongo20	1	89	NH-10	6	6	1408	S	44.6538	-124.2966	80	75	
WE15702.30	VPT	75	89	NH-10	6	6	1420	S	44.6566	-124.2975	80	75	
WE15702.31	VPT	76	89	NH-10	6	6	1431	S	44.6570	-124.2983	80	75	
WE15702.32	Bongo20	2	89	NH-10	6	6	1440	S	44.6577	-124.2998	80	75	
WE15702.33	Bongo20	3	90	NH-15	6	6	1529	S	44.6531	-124.4129	93	66	
WE15702.34	VPT	77	90	NH-15	6	6	1541	S	44.6583	-124.4136	93	66	Steep angle; tossed sample.
WE15702.35	VPT	78	90	NH-15	6	6	1554	S	44.6587	-124.4135	93	66	
WE15702.36	VPT	79	90	NH-15	6	6	1547	S	44.6583	-124.4136	93	66	
WE15702.37	Bongo20	4	90	NH-15	6	6	1603	S	44.6600	-124.4129	93	66	
WE15702.38	MOC	21	91	NH-20	6	6	1717	S	44.6490	-124.5298	146	130	
WE15702.39	MOC	21	91	NH-20	6	6	1756	E	44.6690	-124.5438	146	nd	
WE15702.40	VPT	80	91	NH-20	6	6	1900	S	44.6515	-124.5283	146	100	
WE15702.41	VPT	81	91	NH-20	6	6	2000	S	44.6513	-124.5285	146	100	
WE15702.42	VPT	82	91	NH-20	6	6	2059	S	44.6512	-124.5285	146	100	
WE15702.43	VPT	83	91	NH-20	6	6	2159	S	44.6514	-124.5292	146	100	
WE15702.44	LiveNet1	16	91	NH-20	6	6	2213	S	44.6521	-124.5289	146	60	
WE15702.45	LiveNet1	17	91	NH-20	6	6	2257	S	44.6509	-124.5292	146	60	
WE15702.46	VPT	84	91	NH-20	6	6	2310	S	44.6536	-124.5274	146	100	
WE15802.01	VPT	85	91	NH-20	7	6	0000	S	44.6512	-124.5298	146	100	
WE15802.02	MOC	22	91	NH-20	7	6	0015	S	44.6512	-124.5298	146	130	
WE15802.03	MOC	22	91	NH-20	7	6	0052	E	44.6543	-124.5324	146	nd	
WE15802.04	VPT	86	91	NH-20	7	6	0144	S	44.6515	-124.5310	146	100	
WE15802.05	VPT	87	91	NH-20	7	6	0245	S	44.6520	-124.5287	146	100	
WE15802.06	CTD	79	92	NH-25	7	6	0333	S	44.6525	-124.6514	287	200	
WE15802.07	CTD	79	92	NH-25	7	6	0353	E	44.6530	-124.6521	287	nd	
WE15802.08	VPT	88	92	NH-25	7	6	0357	S	44.6528	-124.6518	287	100	
WE15802.09	CTD	80	93	NH-20	7	6	0447	S	44.6517	-124.5281	142	133	

APPENDIX I: Event Log (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE15802.10	CTD	80	93	NH-20	7	6	0506	E	44.6514	-124.5293	142	nd	
WE15802.11	VPT	89	93	NH-20	7	6	0510	S	44.6514	-124.5293	142	100	
WE15802.12	CTD	81	94	NH-15	7	6	0554	S	44.6519	-124.4117	93	80	
WE15802.13	CTD	81	94	NH-15	7	6	0610	E	44.6512	-124.4128	93	nd	
WE15802.14	VPT	90	94	NH-15	7	6	0617	S	44.6512	-124.4128	93	85	
WE15802.15	CTD	82	95	NH-10	7	6	0701	S	44.6517	-124.2956	80	70	
WE15802.16	CTD	82	95	NH-10	7	6	0714	E	44.6500	-124.2463	80	nd	
WE15802.17	VPT	91	95	NH-10	7	6	0717	S	44.6512	-124.2964	80	75	
WE15802.18	CTD	83	96	NH-5	7	6	0812	S	44.6520	-124.1769	60	50	
WE15802.19	CTD	83	96	NH-5	7	6	0825	E	nd	nd	nd	nd	
WE15802.20	VPT	92	96	NH-5	7	6	0832	S	44.6531	-124.1769	60	55	
WE15802.21	LiveNet1	18	96	NH-5	7	6	0850	S	44.6531	-124.1777	60	60	
WE15802.22	CTD	84	97	NH-3	7	6	0918	S	44.6516	-124.1303	49	39	
WE15802.23	CTD	84	97	NH-3	7	6	0930	E	nd	nd	nd	nd	
WE15802.24	CTD	85	98	NH-1	7	6	0952	S	44.6522	-124.1001	28	20	
WE15802.25	CTD	85	98	NH-1	7	6	1001	E	nd	nd	nd	nd	
WE15802.26	VPT	93	98	NH-1	7	6	1010	S	44.6521	-124.1000	28	24	
WE15802.27	Bongo60	1	99	NH-5	7	6	1540	S	44.6520	-124.1777	60	60	With Frosti.
WE15802.28	Bongo60	1	99	NH-5	7	6	1544	E	44.6538	-124.1782	60	60	With Frosti.
WE15802.29	LiveNet1	19	99	NH-5	7	6	1600	S	44.6555	-124.1782	60	60	
WE15802.30	LiveNet1	20	99	NH-5	7	6	1629	S	44.6591	-124.1824	60	60	
WE15802.31	LiveNet1	21	99	NH-5	7	6	1655	S	44.6591	-124.1824	60	60	
WE15802.32	Bongo60	2	99	NH-5	7	6	1915	S	44.6528	-124.1770	60	60	With Frosti.
WE15802.33	Bongo60	2	99	NH-5	7	6	1922	E	44.6551	-124.1787	60	60	With Frosti.
WE15802.34	LiveNet1	22	99	NH-5	7	6	2039	S	44.6551	-124.1787	60	60	
WE15802.35	LiveNet1	23	99	NH-5	7	6	2204	S	44.6551	-124.1787	60	60	
WE15802.36	Bongo60	3	99	NH-5	7	6	2315	S	44.6519	-124.1777	60	60	With Frosti.
WE15902.01	LiveNet1	24	100	NH-10	8	6	0000	S	44.6517	-124.2968	80	40	
WE15902.02	LiveNet1	25	101	NH-15	8	6	0050	S	44.6538	-124.4121	90	40	
WE15902.03	Bongo60	4	102	NH-5	8	6	0311	S	44.6522	-124.1766	60	60	With Frosti.
WE15902.04	VPT	94	102	NH-5	8	6	0327	S	44.6512	-124.1774	60	50	
WE15902.05	CTD	86	102	NH-5	8	6	0335	S	44.6509	-124.1775	60	50	
WE15902.06	CTD	86	102	NH-5	8	6	0345	E	nd	nd	nd	nd	
WE15902.07	CTD	87	103	NH-10	8	6	0430	S	44.6526	-124.2947	82	72	
WE15902.08	CTD	87	103	NH-10	8	6	0444	E	nd	nd	nd	nd	
WE15902.09	VPT	95	103	NH-10	8	6	0450	S	44.6526	-124.2947	82	70	
WE15902.10	Bongo60	5	104	NH-5	8	6	0717	S	44.6525	-124.1770	60	60	With Frosti.
WE15902.11	LiveNet1	26	104	NH-5	8	6	0729	S	44.6525	-124.1770	60	60	
WE15902.12	CTD	88	105	NH-1	8	6	0943	S	44.6521	-124.1004	30	21	
WE15902.13	CTD	88	105	NH-1	8	6	0954	E	nd	nd	nd	nd	
WE15902.14	VPT	96	105	NH-1	8	6	1003	S	44.6521	-124.1004	30	23	
WE15902.15	CTD	89	106	NH-3	8	6	1033	S	44.6521	-124.1296	49	40	
WE15902.16	CTD	89	106	NH-3	8	6	1044	E	nd	nd	nd	nd	
WE15902.17	Bongo60	6	107	NH-5	8	6	1112	S	44.6528	-124.1778	60	60	With Frosti.
WE15902.18	CTD	90	107	NH-5	8	6	1133	S	44.6528	-124.1778	60	51	
WE15902.19	VPT	97	107	NH-5	8	6	1155	S	44.6528	-124.1778	60	53	
WE15902.20	VPT150	13	107	NH-5	8	6	1201	S	44.6528	-124.1778	60	53	
WE15902.21	CTD	91	108	NH-10	8	6	1238	S	44.6505	-124.2969	83	75	

APPENDIX I: Event Log (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE15902.22	CTD	91	108	NH-10	8	6	1254	E	nd	nd	nd	nd	
WE15902.23	VPT	98	108	NH-10	8	6	1259	S	44.6505	-124.2969	83	75	
WE15902.24	VPT150	14	108	NH-10	8	6	1309	S	44.6505	-124.2969	83	65	
WE15902.25	CTD	92	109	NH-15	8	6	1348	S	44.6508	-124.4120	92	82	
WE15902.26	CTD	92	109	NH-15	8	6	1403	E	nd	nd	nd	nd	
WE15902.27	VPT	99	109	NH-15	8	6	1411	S	44.6491	-124.4138	92	82	
WE15902.28	VPT150	15	109	NH-15	8	6	1421	S	44.6482	-124.4149	92	82	
WE15902.29	CTD	93	110	NH-20	8	6	1502	S	44.6508	-124.5283	143	135	
WE15902.30	CTD	93	110	NH-20	8	6	1519	E	nd	nd	nd	nd	
WE15902.31	VPT	100	110	NH-20	8	6	1524	S	44.6515	-124.5285	143	100	
WE15902.32	VPT150	16	110	NH-20	8	6	1533	S	44.6517	-124.5283	143	100	
WE15902.33	VPT	101	110	NH-20	8	6	1550	S	44.6518	-124.5286	143	100	
WE15902.34	CTD	94	111	NH-25	8	6	1635	S	44.6525	-124.6495	300	200	
WE15902.35	CTD	94	111	NH-25	8	6	1700	E	nd	nd	nd	nd	
WE15902.36	VPT	102	111	NH-25	8	6	1705	S	44.6510	-124.6504	300	100	
WE15902.37	VPT150	17	111	NH-25	8	6	1716	S	#VALUE!	-124.6506	300	100	
WE15902.38	MOC	23	112	2AT1	8	6	1945	S	44.3772	-124.3807	81	68	With Thompson and Frosti.
WE15902.39	MOC	23	112	2AT1	8	6	2031	E	44.3958	-124.4054	81	nd	
WE15902.40	Bongo60	7	112	2AT1	8	6	2132	S	44.4036	-124.4329	81	60	With Frosti.
WE15902.41	LiveNet1	27	112	2AT1	8	6	2332	S	44.4143	-124.4571	81	40	
WE15902.42	VPT	103	113	BOB-3	8	6	2356	S	44.2464	-124.5086	105	95	
WE16002.01	LiveNet1	28	113	BOB-3	9	6	0005	S	44.2463	-124.5089	105	20	
WE16002.02	MOC	24	114	BOB-5	9	6	0200	S	44.2377	-124.8985	147	132	With Thomspon.
WE16002.03	MOC	24	114	BOB-5	9	6	0308	E	44.2752	-124.8814	147	nd	
WE16002.04	VPT	104	114	BOB-5	9	6	0408	S	44.2464	-124.8984	147	100	
WE16002.05	LiveNet1	29	114	BOB-5	9	6	0416	S	44.2462	-124.8984	147	20	
WE16002.06	VPT	105	115	BOB-4	9	6	0526	S	44.2468	-124.7003	100	90	
WE16002.07	LiveNet1	30	115	BOB-4	9	6	0535	S	44.2468	-124.7003	100	20	
WE16002.08	VPT	106	116	BOB-6	9	6	0730	S	44.2466	-125.1102	1225	100	
WE16002.09	LiveNet1	31	116	BOB-6	9	6	0745	S	44.2466	-125.1102	1225	20	
WE16002.10	LiveNet1	32	117	BOB-4	9	6	1044	S	44.2468	-124.5087	103	20	
WE16002.11	Bongo60	8	118	BOB-3	9	6	1347	S	44.2432	-124.4971	104	60	With Frosti.
WE16002.12	LiveNet1	33	118	BOB-3	9	6	1406	S	44.2432	-124.4971	104	20	
WE16002.13	Bongo60	9	118	BOB-3	9	6	1417	S	44.2507	-124.4967	104	60	With Frosti; repeat because flow meter did not read.
WE16002.14	MOC	25	119	HH-5	9	6	1710	S	44.0019	-124.9998	940	300	With Thomspon.
WE16002.15	MOC	25	119	HH-5	9	6	1831	E	44.0594	-125.0086	940	nd	
WE16002.16	CTD	95	119	HH-5	9	6	1926	S	44.0019	-124.9998	940	200	
WE16002.17	CTD	95	119	HH-5	9	6	1940	E	nd	nd	nd	nd	
WE16002.18	VPT	107	119	HH-5	9	6	1952	S	44.0019	-124.9998	940	100	
WE16002.19	CTD	96	120	HH-4	9	6	2122	S	44.0008	-124.7981	112	105	
WE16002.20	CTD	96	120	HH-4	9	6	2150	E	nd	nd	nd	nd	Approx. end time.
WE16002.21	VPT	108	120	HH-4	9	6	2154	S	44.0008	-124.7981	112	100	
WE16002.22	VPT150	18	120	HH-4	9	6	2205	S	44.0008	-124.7981	112	100	
WE16002.23	LiveNet1	34	120	HH-4	9	6	2221	S	44.0008	-124.7981	112	60	
WE16002.24	Bongo60	10	120	HH-4	9	6	2255	S	44.0000	-124.8004	112	60	With Frosti.
WE16002.25	MOC	26	120	HH-4	9	6	2339	S	44.9956	-124.8056	112	100	With Thomspon.
WE16102.01	MOC	26	120	HH-4	10	6	0022	E	44.0124	-124.7822	112	100	
WE16102.02	CTD	97	121	GD-2	10	6	0130	S	43.9331	-124.8003	140	132	

APPENDIX I: Event Log (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE16102.03	CTD	97	121	GD-2	10	6	0144	E	nd	nd	nd	nd	
WE16102.04	VPT	109	121	GD-2	10	6	0200	S	43.9331	-124.8003	140	100	
WE16102.05	CTD	98	122	GD-3	10	6	0231	S	43.8662	-124.8020	285	200	
WE16102.06	CTD	98	122	GD-3	10	6	0244	E	nd	nd	nd	nd	
WE16102.07	VPT	110	122	GD-3	10	6	0256	S	43.8662	-124.8020	285	100	
WE16102.08	CTD	99	123	GD-4	10	6	0327	S	43.8000	-124.8001	462	200	
WE16102.09	CTD	99	123	GD-4	10	6	0341	E	nd	nd	nd	nd	
WE16102.10	VPT	111	123	GD-4	10	6	0347	S	43.8000	-124.8001	462	100	
WE16102.11	LiveNet1	35	123	GD-4	10	6	0357	S	43.8000	-124.8001	462	100	
WE16102.12	CTD	100	124	GD-5	10	6	0514	S	43.8001	-124.6003	256	200	
WE16102.13	CTD	100	124	GD-5	10	6	0530	E	nd	nd	nd	nd	
WE16102.14	VPT	112	124	GD-5	10	6	0542	S	43.8001	-124.6003	256	100	
WE16102.15	CTD	101	124	GD-5	10	6	0614	S	43.8667	-124.6001	233	200	
WE16102.16	CTD	101	124	GD-5	10	6	0633	E	nd	nd	nd	nd	
WE16102.17	VPT	113	124	GD-5	10	6	0646	S	43.8667	-124.6001	233	100	
WE16102.18	VPT150	19	124	GD-5	10	6	0657	S	43.8667	-124.6001	233	100	
WE16102.19	CTD	102	125	GD-7	10	6	0727	S	43.9332	-124.5999	190	182	
WE16102.20	CTD	102	125	GD-7	10	6	0750	E	nd	nd	nd	nd	
WE16102.21	VPT	114	125	GD-7	10	6	0803	S	43.9332	-124.5999	190	100	
WE16102.22	CTD	103	126	HH-3	10	6	0835	S	44.0000	-124.5998	154	140	
WE16102.23	CTD	103	126	HH-3	10	6	0849	E	nd	nd	nd	nd	
WE16102.24	VPT	115	126	HH-3	10	6	0855	S	43.9999	-124.6001	154	100	
WE16102.25	VPT150	20	126	HH-3	10	6	0904	S	43.9999	-124.6001	154	100	
WE16102.26	CTD	104	127	HH-2	10	6	1009	S	44.0000	-124.3998	120	105	
WE16102.27	CTD	104	127	HH-2	10	6	1023	E	nd	nd	nd	nd	
WE16102.28	VPT	116	127	HH-2	10	6	1031	S	43.9999	-124.3998	120	100	
WE16102.29	VPT150	21	127	HH-2	10	6	1041	S	44.0000	-124.4001	120	100	
WE16102.30	CTD	105	128	GD-10	10	6	1121	S	43.9332	-124.4002	120	114	
WE16102.31	CTD	105	128	GD-10	10	6	1133	E	nd	nd	nd	nd	
WE16102.32	VPT	117	128	GD-10	10	6	1139	S	43.9332	-124.4003	120	100	
WE16102.33	CTD	106	129	GD-11	10	6	1214	S	43.8663	-124.4002	117	108	
WE16102.34	CTD	106	129	GD-11	10	6	1227	E	nd	nd	nd	nd	
WE16102.35	VPT	118	129	GD-11	10	6	1233	S	43.8666	-124.3999	117	100	
WE16102.36	CTD	107	130	GD-12	10	6	1310	S	43.7990	-124.4005	117	108	
WE16102.37	CTD	107	130	GD-12	10	6	1321	E	nd	nd	nd	nd	
WE16102.38	VPT	119	130	GD-12	10	6	1325	S	43.7997	-124.4166	117	100	
WE16102.39	VPT150	22	130	GD-12	10	6	1335	S	43.7996	-124.4002	117	100	
WE16102.40	CTD	108	131	GD-13	10	6	1613	S	43.7561	-125.0004	1360	200	
WE16102.41	CTD	108	131	GD-13	10	6	1640	E	nd	nd	nd	nd	
WE16102.42	VPT	120	131	GD-13	10	6	1644	S	43.7506	-125.0000	1360	100	
WE16102.43	VPT150	23	131	GD-13	10	6	1651	S	43.7499	-125.0001	1360	100	
WE16102.44	MOC	27	132	UR-3B	10	6	1920	S	43.7411	-124.4363	123	105	With Thomspon.
WE16102.45	MOC	27	132	UR-3B	10	6	1959	E	43.7416	-124.4002	123	nd	
WE16102.46	CTD	109	133	GD-16	10	6	2039	S	43.7499	-124.3999	117	108	
WE16102.47	CTD	109	133	GD-16	10	6	2052	E	nd	nd	nd	nd	
WE16102.48	VPT	121	133	GD-16	10	6	2059	S	43.7499	-124.4003	117	100	
WE16102.49	Bongo60	11	133	GD-16	10	6	2113	S	43.7506	-124.4003	117	60	With Frosti.
WE16102.50	LiveNet1	36	133	GD-16	10	6	2144	S	43.7549	-124.4046	117	60	

APPENDIX I: Event Log (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE16102.51	CTD	110	134	UR-2	10	6	2314	S	43.7502	-124.3201	107	98	
WE16102.52	CTD	110	134	UR-2	10	6	2331	E	nd	nd	nd	nd	
WE16102.53	VPT	122	134	UR-2	10	6	2338	S	43.7502	-124.3200	107	90	
WE16102.54	Bongo60	12	134	UR-2	10	6	2348	S	43.7516	-124.3205	107	60	With Frosti.
WE16202.01	CTD	111	135	GD-14	11	6	0219	S	43.7499	-124.8004	604	200	
WE16202.02	CTD	111	135	GD-14	11	6	0239	E	nd	nd	nd	nd	
WE16202.03	VPT	123	135	GD-14	11	6	0245	S	43.7500	-124.8001	604	100	
WE16202.04	LiveNet1	37	135	GD-14	11	6	0254	S	43.7501	-124.8001	604	60	
WE16202.05	CTD	112	136	GD-15	11	6	0407	S	43.7500	-124.6001	260	200	
WE16202.06	CTD	112	136	GD-15	11	6	0439	E	nd	nd	nd	nd	
WE16202.07	VPT	124	136	GD-15	11	6	0448	S	43.7494	-124.5999	260	100	
WE16202.08	LiveNet1	38	136	GD-15	11	6	0456	S	43.7499	-124.6002	260	60	
WE16202.09	CTD	113	137	FM-4	11	6	0810	S	43.2162	-124.5840	88	78	
WE16202.10	CTD	113	137	FM-4	11	6	0833	E	nd	nd	nd	nd	
WE16202.11	VPT	125	137	FM-4	11	6	0839	S	43.2166	-124.5844	88	70	
WE16202.12	Bongo60	13	137	FM-4	11	6	0849	S	43.2178	-124.5855	88	60	With Frosti.
WE16202.13	LiveNet1	39	137	FM-4	11	6	0859	S	43.2208	-124.5881	88	60	
WE16202.14	CTD	114	138	FM-3	11	6	0946	S	43.2166	-124.5001	62	52	
WE16202.15	CTD	114	138	FM-3	11	6	1007	E	nd	nd	nd	nd	
WE16202.16	VPT	126	138	FM-3	11	6	1014	S	43.2166	-124.5004	62	50	
WE16202.17	VPT150	24	138	FM-3	11	6	1022	S	43.2166	-124.5006	62	50	
WE16202.18	Bongo60	14	138	FM-3	11	6	1031	S	43.2184	-124.5009	62	60	With Frosti.
WE16202.19	LiveNet1	40	138	FM-3	11	6	1044	S	43.2223	-124.5017	62	20	
WE16202.20	CTD	115	139	FM-2	11	6	1138	S	43.2165	-124.4670	56	48	
WE16202.21	CTD	115	139	FM-2	11	6	1152	E	nd	nd	nd	nd	
WE16202.22	VPT	127	139	FM-2	11	6	1158	S	43.2168	-124.4674	56	50	
WE16202.23	LiveNet1	41	139	FM-2	11	6	1206	S	43.2167	-124.4676	56	50	
WE16202.24	Bongo60	15	139	FM-2	11	6	1215	S	43.2176	-124.4684	56	60	With Frosti.
WE16202.25	CTD	116	140	FM-1	11	6	1244	S	43.2169	-124.4341	36	28	
WE16202.26	CTD	116	140	FM-1	11	6	1255	E	nd	nd	nd	nd	
WE16202.27	VPT	128	140	FM-1	11	6	1259	S	43.2169	-124.4341	36	30	
WE16202.28	Bongo60	16	140	FM-1	11	6	1411	S	43.2174	-124.4340	36	40	With Frosti.
WE16202.29	LiveNet1	42	140	FM-1	11	6	1418	S	43.2176	-124.4407	36	20	
WE16202.30	Bongo60	17	141	FM-3	11	6	1453	S	43.2152	-124.5010	62	60	With Frosti.
WE16202.31	CTD	117	142	FM-5	11	6	1554	S	43.2163	-124.6666	157	147	
WE16202.32	CTD	117	142	FM-5	11	6	1615	E	nd	nd	nd	nd	
WE16202.33	VPT	129	142	FM-5	11	6	1621	S	43.2153	-124.6682	157	100	
WE16202.34	VPT150	25	142	FM-5	11	6	1629	S	43.2149	-124.6685	157	100	
WE16202.35	Bongo60	18	142	FM-5	11	6	1643	S	43.2167	-124.6666	157	60	With Frosti.
WE16202.36	LiveNet1	43	142	FM-5	11	6	1656	S	43.2199	-124.6655	157	60	
WE16202.37	CTD	118	143	FM-7	11	6	1817	S	43.2180	-124.8335	343	200	
WE16202.38	CTD	118	143	FM-7	11	6	1838	E	nd	nd	nd	nd	
WE16202.39	VPT	130	143	FM-7	11	6	1849	S	43.2173	-124.8341	343	100	
WE16202.40	Bongo60	19	143	FM-7	11	6	1904	S	43.2193	-124.8355	343	60	With Frosti.
WE16202.41	CTD	119	144	FM-8	11	6	2028	S	43.2169	-124.9998	1083	200	
WE16202.42	CTD	119	144	FM-8	11	6	2047	E	nd	nd	nd	nd	
WE16202.43	VPT	131	144	FM-8	11	6	2101	S	43.2169	-125.0002	1083	100	
WE16202.44	VPT150	26	144	FM-8	11	6	2108	S	43.2169	-125.0001	1083	100	

APPENDIX I: Event Log (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE16202.45	CTD	120	145	FM-6	11	6	2246	S	43.2165	-124.7512	318	200	
WE16202.46	CTD	120	145	FM-6	11	6	2306	E	nd	nd	nd	nd	
WE16202.47	VPT	132	145	FM-6	11	6	2315	S	43.2164	-124.7510	318	100	
WE16202.48	LiveNet1	44	145	FM-6	11	6	2333	S	43.2210	-124.7521	318	60	
WE16202.49	LiveNet1	45	145	FM-6	11	6	2346	S	43.2266	-124.7529	318	60	
WE16302.01	MOC	28	146	FM-7	12	6	0313	S	43.2877	-124.8313	318	290	With Thomspon.
WE16302.02	MOC	28	146	FM-7	12	6	0427	E	43.2327	-124.8220	318	nd	
WE16302.03	LiveNet1	46	146	FM-7	12	6	0511	S	43.2490	-124.8358	318	60	
WE16302.04	CTD	121	147	8-2	12	6	0728	S	42.9506	-124.5505	54	50	
WE16302.05	CTD	121	147	8-2	12	6	0743	E	nd	nd	nd	nd	
WE16302.06	VPT	133	147	8-2	12	6	0752	S	42.9494	-124.5518	54	50	
WE16302.07	VPT150	27	147	8-2	12	6	0758	S	42.9493	-124.5517	54	50	
WE16302.08	Bongo60	20	147	8-2	12	6	0810	S	42.9515	-124.5519	54	60	With Frosti.
WE16302.09	LiveNet1	47	147	8-2	12	6	0823	S	42.9552	-124.5515	54	60	
WE16302.10	CTD	122	148	8-3	12	6	0853	S	42.9499	-124.5976	84	74	
WE16302.11	CTD	122	148	8-3	12	6	0909	E	nd	nd	nd	nd	
WE16302.12	VPT	134	148	8-3	12	6	0916	S	42.9498	-124.5976	84	75	
WE16302.13	VPT150	28	148	8-3	12	6	0924	S	42.9499	-124.5813	84	75	
WE16302.14	LiveNet1	48	148	8-3	12	6	0933	S	42.9504	-124.5985	84	60	
WE16302.15	CTD	123	149	8-9	12	6	1123	S	42.9499	-124.8693	188	175	
WE16302.16	CTD	123	149	8-9	12	6	1142	E	nd	nd	nd	nd	
WE16302.17	VPT	135	149	8-9	12	6	1147	S	42.9499	-124.8691	188	100	
WE16302.18	VPT150	29	149	8-9	12	6	1155	S	42.9527	-124.8693	188	100	
WE16302.19	Bongo60	21	149	8-9	12	6	1208	S	42.9514	-124.8697	188	60	With Frosti.
WE16302.20	LiveNet1	49	149	8-9	12	6	nd	S	nd	nd	188	30	
WE16302.21	CTD	124	150	8-11	12	6	1255	S	42.9499	-124.9582	700	200	
WE16302.22	CTD	124	150	8-11	12	6	1321	E	nd	nd	nd	nd	
WE16302.23	VPT	136	150	8-11	12	6	1326	S	42.9504	-124.9590	700	100	
WE16302.24	VPT150	30	150	8-11	12	6	1333	S	42.9504	-124.9587	700	100	
WE16302.25	LiveNet1	50	150	8-11	12	6	1343	S	42.9505	-124.9586	700	30	
WE16302.26	CTD	125	151	8-7	12	6	1447	S	42.9499	-124.7790	161	153	
WE16302.27	CTD	125	151	8-7	12	6	1506	E	nd	nd	nd	nd	
WE16302.28	VPT	137	151	8-7	12	6	1512	S	42.9501	-124.7785	161	100	
WE16302.29	Bongo60	22	151	8-7	12	6	1522	S	42.9511	-124.7786	161	30	With Frosti.
WE16302.30	Bongo60	23	152	8-5	12	6	1605	S	42.9502	-124.6881	124	30	With Frosti.
WE16302.31	VPT	138	152	8-5	12	6	1621	S	42.9501	-124.6877	124	100	
WE16302.32	CTD	126	152	8-5	12	6	1633	S	42.9499	-124.6870	124	116	
WE16302.33	CTD	126	152	8-5	12	6	1651	E	nd	nd	nd	nd	
WE16302.34	Bongo60	24	153	8-4	12	6	1727	S	42.9505	-124.4780	101	30	With Frosti.
WE16302.35	VPT	139	153	8-4	12	6	1745	S	42.9502	-124.6447	101	90	
WE16302.36	VPT150	31	153	8-4	12	6	1753	S	42.9505	-124.6444	101	90	
WE16302.37	CTD	127	153	8-4	12	6	1806	S	42.9503	-124.6418	101	90	
WE16302.38	CTD	127	153	8-4	12	6	1823	E	nd	nd	nd	nd	
WE16302.39	Bongo60	25	154	8-3	12	6	1915	S	42.9546	-124.6016	85	60	With Frosti.
WE16302.40	LiveNet1	51	155	8A-4B	12	6	2115	S	42.8180	-124.8330	300	80	
WE16402.01	CTD	128	156	RR-8	13	6	0108	S	42.5002	-125.4999	3077	200	
WE16402.02	CTD	128	156	RR-8	13	6	0129	E	nd	nd	nd	nd	
WE16402.03	VPT	140	156	RR-8	13	6	0137	S	42.5004	-125.5009	3077	100	

APPENDIX I: Event Log (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE16402.04	VPT150	32	156	RR-8	13	6	0142	S	42.5002	-125.5007	3077	100	
WE16402.05	LiveNet1	52	156	RR-8	13	6	0155	S	42.4995	-125.5001	3077	60	
WE16402.06	LiveNet1	53	156	RR-8	13	6	0209	S	42.4947	-125.4989	3077	60	
WE16402.07	VPT	141	157	RR-7B	13	6	0316	S	42.4993	-125.3505	3077	100	
WE16402.08	CTD	129	157	RR-7B	13	6	0332	S	42.5001	-125.3517	3077	200	
WE16402.09	CTD	129	157	RR-7B	13	6	0351	E	nd	nd	nd	nd	
WE16402.10	LiveNet1	54	158	RR-7	13	6	0441	S	42.5018	-125.2003	2977	60	
WE16402.11	VPT	142	158	RR-7	13	6	0500	S	42.5003	-125.2005	2977	100	
WE16402.12	VPT150	33	158	RR-7	13	6	0508	S	42.5005	-125.2006	2977	100	
WE16402.13	CTD	130	158	RR-7	13	6	0520	S	42.4999	-125.2000	2977	200	
WE16402.14	CTD	130	158	RR-7	13	6	0542	E	nd	nd	nd	nd	
WE16402.15	Bongo60	26	159	RR-4	13	6	0737	S	42.5077	-124.8011	607	60	With Frosti.
WE16402.16	LiveNet1	55	159	RR-4	13	6	0751	S	42.4979	-124.8039	607	60	
WE16402.17	VPT	143	159	RR-4	13	6	0818	S	42.4993	-124.8009	607	100	
WE16402.18	CTD	131	159	RR-4	13	6	0834	S	42.4998	-124.8001	607	200	
WE16402.19	CTD	131	159	RR-4	13	6	0855	E	nd	nd	nd	nd	Approx. end time.
WE16402.20	CTD	132	160	RR-3	13	6	0937	S	42.4998	-124.7001	133	124	
WE16402.21	CTD	132	160	RR-3	13	6	0955	E	nd	nd	nd	nd	
WE16402.22	VPT	144	160	RR-3	13	6	1002	S	42.4997	-124.7007	133	100	
WE16402.23	Bongo60	27	160	RR-3	13	6	1013	S	42.5006	-124.6995	133	60	With Frosti.
WE16402.24	CTD	133	161	RR-2	13	6	1055	S	42.5006	-124.6003	86	77	
WE16402.25	CTD	133	161	RR-2	13	6	1110	E	nd	nd	nd	nd	
WE16402.26	VPT	145	161	RR-2	13	6	1117	S	42.5008	-124.6001	86	76	
WE16402.27	VPT150	34	161	RR-2	13	6	1125	S	42.5007	-124.5998	86	76	
WE16402.28	Bongo60	28	161	RR-2	13	6	1136	S	42.4998	-124.6000	86	30	With Frosti.
WE16402.29	LiveNet1	56	161	RR-2	13	6	1149	S	42.4954	-124.5994	86	30	
WE16402.30	CTD	134	162	RR-1	13	6	1233	S	42.5005	-124.4997	37	29	
WE16402.31	CTD	134	162	RR-1	13	6	1243	E	nd	nd	nd	nd	
WE16402.32	VPT	146	162	RR-1	13	6	1249	S	42.5006	-124.4998	37	27	
WE16402.33	Bongo60	29	162	RR-1	13	6	1301	S	42.5018	-124.4998	37	40	With Frosti.
WE16402.34	LiveNet1	57	162	RR-1	13	6	1317	S	42.5076	-124.4987	37	40	
WE16402.35	CTD	135	163	9B-1	13	6	1349	S	42.5334	-124.5500	74	65	
WE16402.36	CTD	135	163	9B-1	13	6	1401	E	nd	nd	nd	nd	
WE16402.37	VPT	147	163	9B-1	13	6	1406	S	42.5337	-124.5500	74	67	
WE16402.38	VPT	148	163	9B-1	13	6	1417	S	42.5336	-124.5501	74	67	
WE16402.39	VPT	149	163	9B-1	13	6	1501	S	42.5340	-124.5495	74	67	
WE16402.40	Bongo60	30	163	9B-1	13	6	1511	S	42.5328	-124.5493	74	60	With Frosti.
WE16402.41	CTD	136	164	9B-2	13	6	1555	S	42.5326	-124.6504	144	137	
WE16402.42	CTD	136	164	9B-2	13	6	1613	E	nd	nd	nd	nd	
WE16402.43	VPT	150	164	9B-2	13	6	1622	S	42.5334	-124.6503	144	100	
WE16402.44	Bongo60	31	164	9B-2	13	6	1655	S	42.5351	-124.6502	144	60	With Frosti.
WE16402.45	CTD	137	165	9B-3	13	6	1737	S	42.5331	-124.7495	314	200	
WE16402.46	CTD	137	165	9B-3	13	6	1758	E	nd	nd	nd	nd	
WE16402.47	VPT	151	165	9B-3	13	6	1805	S	42.5334	-124.7498	314	100	
WE16402.48	Bongo60	32	165	9B-3	13	6	1815	S	42.5343	-124.7489	314	60	With Frosti.
WE16402.49	MOC	29	165	9B-3	13	6	1902	S	42.4767	-124.7339	314	nd	With Thomspon.
WE16402.50	MOC	29	165	9B-3	13	6	2008	E	42.5206	-124.7382	314	nd	
WE16402.51	CTD	138	166	RR-5	13	6	2132	S	42.4999	-124.8998	1157	200	

APPENDIX I: Event Log (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE16402.52	CTD	138	166	RR-5	13	6	2153	E	nd	nd	nd	nd	
WE16402.53	VPT	152	166	RR-5	13	6	2204	S	42.4999	-124.8998	1157	100	
WE16402.54	LiveNet1	58	166	RR-5	13	6	2212	S	42.4999	-124.8998	1157	60	
WE16402.55	CTD	139	167	RR-6	13	6	2259	S	42.4999	-125.0008	1776	200	
WE16402.56	CTD	139	167	RR-6	13	6	2319	E	nd	nd	nd	nd	
WE16402.57	VPT	153	167	RR-6	13	6	2332	S	42.4999	-125.0008	1776	100	
WE16402.58	LiveNet1	59	167	RR-6	13	6	2346	S	42.4999	-125.0008	1776	60	
WE16502.01	LiveNet1	60	168	nd	14	6	0132	S	42.2273	-125.0011	nd	60	
WE16502.02	CTD	140	169	CR-7	14	6	0336	S	41.8997	-124.9993	1671	200	
WE16502.03	CTD	140	169	CR-7	14	6	0357	E	nd	nd	nd	nd	
WE16502.04	VPT	154	169	CR-7	14	6	0411	S	41.8997	-124.9993	1671	100	
WE16502.05	VPT150	35	169	CR-7	14	6	0434	S	41.8997	-124.9993	1671	100	
WE16502.06	LiveNet1	61	169	CR-7	14	6	0419	S	41.8997	-124.9993	1671	60	
WE16502.07	CTD	141	170	CR-6	14	6	0542	S	41.9000	-124.8003	699	200	
WE16502.08	CTD	141	170	CR-6	14	6	0557	E	nd	nd	nd	nd	
WE16502.09	VPT	155	170	CR-6	14	6	0602	S	41.9000	-124.8003	699	100	
WE16502.10	LiveNet1	62	170	CR-6	14	6	0622	S	41.9000	-124.8003	699	60	
WE16502.11	CTD	142	171	CR-5	14	6	0653	S	41.8998	-124.7000	666	200	
WE16502.12	CTD	142	171	CR-5	14	6	0713	E	nd	nd	nd	nd	
WE16502.13	VPT	156	171	CR-5	14	6	0725	S	41.8998	-124.7000	666	100	
WE16502.14	LiveNet1	63	171	CR-5	14	6	0739	S	41.8998	-124.7000	666	60	
WE16502.15	CTD	143	172	CR-4	14	6	0814	S	41.9000	-124.6004	510	200	
WE16502.16	CTD	143	172	CR-4	14	6	0835	E	nd	nd	nd	nd	
WE16502.17	VPT	157	172	CR-4	14	6	0840	S	41.9000	-124.6004	510	100	
WE16502.18	VPT150	36	172	CR-4	14	6	0850	S	41.9000	-124.6004	510	100	
WE16502.19	LiveNet1	64	172	CR-4	14	6	0900	S	41.9000	-124.6004	510	60	
WE16502.20	CTD	144	173	CR-3	14	6	0943	S	41.9006	-124.5005	137	134	
WE16502.21	CTD	144	173	CR-3	14	6	1002	E	nd	nd	nd	nd	
WE16502.22	VPT	158	173	CR-3	14	6	1008	S	41.9005	-124.5004	137	100	
WE16502.23	LiveNet1	65	173	CR-3	14	6	1019	S	41.8993	-124.5006	137	60	
WE16502.24	LiveNet1	66	173	CR-3	14	6	1030	S	41.8963	-124.5014	137	60	
WE16502.25	Bongo60	33	174	CR-2	14	6	1119	S	41.9010	-124.3998	67	60	With Frosti.
WE16502.26	LiveNet1	67	174	CR-2	14	6	1129	S	41.9050	-124.3990	67	60	
WE16502.27	VPT	159	174	CR-2	14	6	1154	S	41.9011	-124.3986	67	60	
WE16502.28	VPT150	37	174	CR-2	14	6	1206	S	41.9002	-124.3997	67	60	
WE16502.29	CTD	145	174	CR-2	14	6	1241	S	41.9008	-124.3995	67	60	
WE16502.30	CTD	145	174	CR-2	14	6	1300	E	nd	nd	nd	nd	Approx. end time.
WE16502.31	CTD	146	175	CR-1	14	6	1332	S	41.9005	-124.3003	42	34	
WE16502.32	CTD	146	175	CR-1	14	6	1344	E	nd	nd	nd	nd	
WE16502.33	VPT	160	175	CR-1	14	6	1350	S	41.9002	-124.2999	42	35	
WE16502.34	LiveNet1	68	175	CR-1	14	6	1402	S	41.9011	-124.3012	42	35	
WE16502.35	Bongo60	34	176	CR-2	14	6	1527	S	41.8984	-124.3998	69	60	With Frosti.
WE16502.36	MOC	30	177	CR-4	14	6	1635	S	41.8988	-124.5992	510	350	
WE16502.37	MOC	30	177	CR-4	14	6	1747	E	41.9517	-124.6290	510	nd	
WE16502.38	MOC	31	178	CR-3	14	6	1840	S	41.8935	-124.4983	140	125	
WE16502.39	MOC	31	178	CR-3	14	6	1918	E	41.9176	-124.5099	140	nd	
WE16502.40	Bongo60	35	179	CR-4	14	6	2002	S	41.9019	-124.5919	510	60	With Frosti.
WE16502.41	LiveNet1	69	180	CR-6	14	6	2137	S	41.8994	-124.8003	722	60	

APPENDIX I: Event Log (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE16502.42	MOC	32	180	CR-6	14	6	2159	S	41.8972	-124.8017	722	305	With Thomspon.
WE16502.43	MOC	32	180	CR-6	14	6	2308	E	41.9432	-124.7622	722	nd	
WE16602.01	MOC	33	181	CR-4	15	6	0009	S	41.8978	-124.6015	520	350	
WE16602.02	MOC	33	181	CR-4	15	6	0117	S	41.9400	-124.6178	520	nd	
WE16602.03	MOC	34	182	CR-3	15	6	0245	S	41.8983	-124.4997	140	130	With Thomspon.
WE16602.04	MOC	34	182	CR-3	15	6	0343	E	41.9354	-124.5163	140	nd	
WE16602.05	MOC	35	182	CR-3	15	6	0524	S	41.8921	-124.4975	140	125	
WE16602.06	MOC	35	182	CR-3	15	6	0554	E	41.9099	-124.5052	140	nd	
WE16602.07	MOC	36	183	CR-6	15	6	0752	S	41.9017	-124.8003	710	350	
WE16602.08	MOC	36	183	CR-6	15	6	0916	E	41.9573	-124.8169	710	nd	
WE16602.09	CTD	147	184	CR-8	15	6	1105	S	41.8994	-125.1997	2758	200	
WE16602.10	CTD	147	184	CR-8	15	6	1128	E	nd	nd	nd	nd	
WE16602.11	VPT	161	184	CR-8	15	6	1135	S	41.8996	-125.2001	2758	100	
WE16602.12	VPT150	38	184	CR-8	15	6	1142	S	41.8996	-125.2002	2758	100	
WE16602.13	LiveNet1	70	184	CR-8	15	6	1154	S	41.9003	-125.2005	2758	60	
WE16602.14	CTD	148	185	CR-9	15	6	1259	S	41.9002	-125.3991	3119	200	
WE16602.15	CTD	148	185	CR-9	15	6	1320	E	nd	nd	nd	nd	
WE16602.16	VPT	162	185	CR-9	15	6	1324	S	41.9000	-125.4000	3119	100	
WE16602.17	VPT150	39	185	CR-9	15	6	1332	S	41.8999	-125.3998	3119	100	
WE16602.18	LiveNet1	71	185	CR-9	15	6	1341	S	41.9001	-125.3990	3119	60	
WE16602.19	CTD	149	186	CR-10	15	6	1507	S	41.9003	-125.6665	2953	200	
WE16602.20	CTD	149	186	CR-10	15	6	1531	E	nd	nd	nd	nd	
WE16602.21	VPT	163	186	CR-10	15	6	1535	S	41.8999	-125.6663	2953	100	
WE16602.22	VPT150	40	186	CR-10	15	6	1544	S	41.9666	-125.6664	2953	100	
WE16602.23	LiveNet1	72	186	CR-10	15	6	1554	S	41.9003	-125.6670	2953	60	
WE16602.24	CTD	150	187	11-9	15	6	1747	S	41.2002	-125.5832	3086	200	
WE16602.25	CTD	150	187	11-9	15	6	1805	E	nd	nd	nd	nd	
WE16602.26	VPT	164	187	11-9	15	6	1813	S	41.2002	-125.5835	3086	100	
WE16602.27	LiveNet1	73	187	11-9	15	6	1823	S	41.2000	-125.5851	3086	60	
WE16602.28	CTD	151	188	RR-8	15	6	2017	S	42.5005	-125.5003	3077	200	
WE16602.29	CTD	151	188	RR-8	15	6	2036	E	nd	nd	nd	nd	
WE16602.30	VPT	165	188	RR-8	15	6	2049	S	42.5005	-125.5003	3077	100	
WE16602.31	LiveNet1	74	188	RR-8	15	6	2104	S	42.5005	-125.5003	3077	60	
WE16602.32	CTD	152	189	9-5B	15	6	2213	S	42.6833	-125.4664	3077	200	
WE16602.33	CTD	152	189	9-5B	15	6	2234	E	nd	nd	nd	nd	
WE16602.34	VPT	166	189	9-5B	15	6	2249	S	42.6833	-125.4664	3077	100	
WE16602.35	VPT150	41	189	9-5B	15	6	2257	S	42.6833	-125.4664	3077	100	
WE16602.36	LiveNet1	75	189	9-5B	15	6	2311	S	42.6833	-125.4664	3077	60	
WE16702.01	LiveNet1	76	190	T-1	16	6	0202	S	43.1780	-125.3691	3100	60	
WE16702.02	LiveNet1	77	191	T-2	16	6	0331	S	43.3850	-125.3447	2546	60	
WE16702.03	CTD	153	192	HH-7	16	6	0704	S	44.0002	-125.2000	1718	200	
WE16702.04	CTD	153	192	HH-7	16	6	0724	E	nd	nd	nd	nd	
WE16702.05	VPT	167	192	HH-7	16	6	0736	S	44.0002	-125.2000	1718	100	
WE16702.06	VPT150	42	192	HH-7	16	6	0744	S	44.0002	-125.2000	1718	100	
WE16702.07	CTD	154	193	HH-6	16	6	0816	S	43.9998	-125.0997	1446	200	
WE16702.08	CTD	154	193	HH-6	16	6	0837	E	nd	nd	nd	nd	
WE16702.09	VPT	168	193	HH-6	16	6	0848	S	43.9998	-125.0997	1446	100	
WE16702.10	CTD	155	194	HH-5	16	6	0920	S	43.9999	-124.9998	940	200	

APPENDIX I: Event Log (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE16702.11	CTD	155	194	HH-5	16	6	0941	E	nd	nd	nd	nd	
WE16702.12	VPT	169	194	HH-5	16	6	0952	S	43.9999	-124.9998	940	100	
WE16702.13	CTD	156	194	HH-5	16	6	1023	S	43.9999	-124.9998	940	100	Test of TDR.
WE16702.14	CTD	156	194	HH-5	16	6	nd	E	nd	nd	nd	nd	No end time recorded.
WE16702.15	CTD	157	195	HH-4	16	6	1122	S	44.0001	-124.8003	110	101	
WE16702.16	CTD	157	195	HH-4	16	6	1138	E	nd	nd	nd	nd	
WE16702.17	VPT	170	195	HH-4	16	6	1149	S	44.0001	-124.8003	110	95	
WE16702.18	Bongo20	5	195	HH-4	16	6	1206	S	44.0001	-124.8003	110	85/70	Depth test for net comparisons.
WE16702.19	Bongo20	6	195	HH-4	16	6	1228	S	44.0000	-124.8014	110	85/70	Net comparisons.
WE16702.20	VPT	171	195	HH-4	16	6	1239	S	44.0007	-124.7990	110	70	Net comparisons.
WE16702.21	VPT	172	195	HH-4	16	6	1249	S	44.0008	-124.7994	110	70	Net comparisons.
WE16702.22	Bongo20	7	195	HH-4	16	6	1257	S	44.0017	-124.7982	110	85/70	Net comparisons.
WE16702.23	CTD	158	196	HH-3	16	6	1357	S	43.9995	-124.6005	154	145	
WE16702.24	CTD	158	196	HH-3	16	6	1416	E	nd	nd	nd	nd	
WE16702.25	VPT	173	196	HH-3	16	6	1429	S	43.9995	-124.6005	154	100	
WE16702.26	CTD	159	197	HH-2	16	6	1527	S	43.9994	-124.3999	121	112	
WE16702.27	CTD	159	197	HH-2	16	6	1543	E	nd	nd	nd	nd	
WE16702.28	VPT	174	197	HH-2	16	6	1554	S	43.9994	-124.3999	121	100	
WE16702.29	CTD	160	198	HH-1	16	6	1649	S	44.0002	-124.1997	55	45	
WE16702.30	CTD	160	198	HH-1	16	6	1700	E	nd	nd	nd	nd	
WE16702.31	VPT	175	198	HH-1	16	6	1707	S	44.0002	-124.1997	55	50	
WE16702.32	CTD	161	199	NH-15	16	6	2101	S	44.6518	-124.4115	96	85	
WE16702.33	CTD	161	199	NH-15	16	6	2116	E	nd	nd	nd	nd	
WE16702.34	VPT	176	199	NH-15	16	6	2130	S	44.6518	-124.4115	96	90	
WE16702.35	MOC	37	199	NH-15	16	6	2227	S	44.6518	-124.4115	96	70	
WE16702.36	MOC	37	199	NH-15	16	6	2227	E	nd	nd	96	nd	
WE16802.01	MOC	38	200	NH-20	17	6	0030	S	44.6521	-124.5297	145	130	
WE16802.02	MOC	38	200	NH-20	17	6	0057	E	nd	nd	145	nd	
WE16802.03	MOC	39	201	NH-25	17	6	0204	S	44.6510	-124.6506	295	260	
WE16802.04	MOC	39	201	NH-25	17	6	0312	E	44.6510	-124.6506	295	nd	
WE16802.05	CTD	162	202	NH-1	17	6	0628	S	44.6515	-124.1005	28	19	
WE16802.06	CTD	162	202	NH-1	17	6	0637	E	nd	nd	nd	nd	
WE16802.07	VPT	177	202	NH-1	17	6	0649	S	44.6515	-124.1005	28	25	
WE16802.08	CTD	163	203	NH-3	17	6	0704	S	44.6523	-124.1303	48	40	
WE16802.09	CTD	163	203	NH-3	17	6	0716	E	nd	nd	nd	nd	
WE16802.10	CTD	164	204	NH-5	17	6	0736	S	44.6520	-124.1776	60	50	
WE16802.11	CTD	164	204	NH-5	17	6	0749	E	nd	nd	nd	nd	
WE16802.12	VPT	178	204	NH-5	17	6	0753	S	44.6520	-124.1776	60	50	
WE16802.13	CTD	165	205	NH-10	17	6	0841	S	44.6517	-124.2948	82	73	
WE16802.14	CTD	165	205	NH-10	17	6	0854	E	nd	nd	nd	nd	
WE16802.15	VPT	179	205	NH-10	17	6	0904	S	44.6517	-124.2948	82	70	
WE16802.16	CTD	166	206	NH-15	17	6	0950	S	44.6520	-124.4111	96	88	
WE16802.17	CTD	166	206	NH-15	17	6	1005	E	nd	nd	nd	nd	
WE16802.18	VPT	180	206	NH-15	17	6	1018	S	44.6520	-124.4111	96	83	
WE16802.19	VPT150	43	206	NH-15	17	6	1027	S	44.6520	-124.4111	96	83	
WE16802.20	MOC	40	206	NH-15	17	6	1107	S	44.6520	-124.4111	96	65	Became shallower as towed.
WE16802.21	MOC	40	206	NH-15	17	6	1105	E	nd	nd	96	nd	
WE16802.22	CTD	167	207	NH-20	17	6	1224	S	44.6514	-124.5271	141	132	

APPENDIX I: Event Log (cont'd)

Event#	Instr	Cast	Sta	Sta std	Day	Mos	Time	S/E Flag	Lat	Long	Water Depth	Cast Depth	Comments
WE16802.23	CTD	167	207	NH-20	17	6	1242	E	nd	nd	nd	nd	
WE16802.24	VPT	181	207	NH-20	17	6	1254	S	44.6514	-124.5271	141	100	
WE16802.25	CTD	168	208	NH-25	17	6	1357	S	44.6518	-124.6491	298	200	
WE16802.26	CTD	168	208	NH-25	17	6	1419	E	nd	nd	nd	nd	
WE16802.27	VPT	182	208	NH-25	17	6	1431	S	44.6518	-124.6491	298	100	
WE16802.28	CTD	169	209	NH-35	17	6	1600	S	44.6507	-124.8807	443	200	
WE16802.29	CTD	169	209	NH-35	17	6	1621	E	nd	nd	nd	nd	
WE16802.30	VPT	183	209	NH-35	17	6	1635	S	44.6507	-124.8807	443	100	
WE16802.31	CTD	170	210	NH-45	17	6	1758	S	44.6511	-125.1167	1758	200	
WE16802.32	CTD	170	210	NH-45	17	6	1816	E	nd	nd	nd	nd	
WE16802.33	VPT	184	210	NH-45	17	6	1831	S	44.6511	-125.1167	1758	100	
WE16802.34	CTD	171	211	NH-55	17	6	1948	S	44.6517	-125.3662	2865	200	
WE16802.35	CTD	171	211	NH-55	17	6	2008	E	nd	nd	nd	nd	
WE16802.36	VPT	185	211	NH-55	17	6	2021	S	44.6517	-125.3662	2865	100	
WE16802.37	CTD	172	212	NH-65	17	6	2131	S	44.6517	-125.5997	2861	200	
WE16802.38	CTD	172	212	NH-65	17	6	2218	E	nd	nd	nd	nd	
WE16802.39	VPT	186	212	NH-65	17	6	2233	S	44.6517	-125.5997	2861	100	
WE16902.01	LiveNet1	78	212	NH-65	18	6	2237	S	44.6517	-125.5997	2861	100	
WE16902.02	LiveNet1	79	213	NH-5	18	6	0538	S	44.6521	-124.1761	60	60	
WE16902.03	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	Return to port 0800 June 18.