

Northern Gulf of Alaska Long-Term Ecological Research

Cruise Report April/May 2018

Cruise ID: SKQ2018-10s

Funding Sources: NSF, NPRB, AOOS, EVOS/GWA

Purpose:

The NGA is a highly productive subarctic Pacific marine biome where intense environmental variability has profound impacts on lower trophic level organisms and community dynamics that, directly or indirectly, support the iconic fish, crabs, seabirds and marine mammals of Alaska. In the NGA, a pronounced spring bloom and regions of sustained summer production support a stable base of energy-rich zooplankton grazers that efficiently transfers primary production up the food chain and a substantial sinking flux of organic matter that exports carbon to the sea bottom communities. The LTER research cruises examine features, mechanisms and processes that drive this productivity and system-wide resilience to understand how short- and long-term climate variability propagates through the environment to influence organisms.

This cruise represents a continuation of sampling begun in fall 1997 under the NSF/NOAA NE Pacific GLOBEC program, and subsequently a consortium of the North Pacific Research Board (NPRB), the Alaska Ocean Observing System (AOOS), and the Exxon Valdez Oil Spill Trustee Council's (EVOSTC) Gulf Watch. This is the first cruise with expanded domain, measurements and investigators under the NSF's Northern Gulf of Alaska Long-term Ecological Program (NGA-LTER). This cruise marks the 21st consecutive spring cruise for the Seward Line in the NGA, including Prince William Sound (PWS), and the 48th year of observations at GAK1.



The LTER sampling stations. CTDs cast without water sampling as open symbols. Yellow diamonds represent locations of meteorological data from NOAA buoys or ground stations

Daily summary

April 17 – Mobilization proceeded in a flurry of activity as everyone scrambled to prepare for our first Sikuliaq cruise and the first with expanded efforts associated with the LTER. John Horne from UW worked with the marine techs to ensure optimal setup of active acoustic data for the cruise.

April 18 –Day 1. We got underway at around 9am and conducted out first CTD cast at GAK1 shortly after 10am, followed by a Calvet. After completing our water sample work at GAK1 we successfully retrieved and redeployed the GAK1 mooring. Mooring tech Pete Shipton was transferred to a water taxi and we left station around 7pm for the Kodiak Line.

April 19 – Day 2. We began Intensive Station KOD5 around 9:30am with a Trace-metal Clean (TMC) CTD cast that failed to auto-fire its bottles. This was followed by a CTD productivity cast, a Calvet, a regular CTD, a Calvet and a recast of the TMC CTD. We left station ~1pm and continued to work northward to KOD1, wrapping up daywork there ~10pm. The switchover to night work was delayed by communication errors to the Bongo net Fastcat CTD. Ultimately casts began at 1am using wire angle and wire out to estimate depth. Night work moved southward completing and ended at KOD5 at 5am. Preliminary casts were conducted with the Methot trawl to work out deployment protocols

April 20 – Day 3. We began at KOD6 with CTD and Calvets, deployed the iron fish between KOD8 & KOD9 and making an extra Calvet and TMC cast at KOD9. We ended daywork at ~10:30pm. Night work began at ~11pm at KOD10, with the Fastcast stopping transmission on the first Bongo trawl. The trawl was repeat and the reminder of the night completed without the Fastcat, and Bongo collections ending at ~5:30am. A Methot trawl was executed with sampling ending at ~6:30am.

April 21 – Day 4. With a storm advancing from the west, we spent the day transiting into Prince William Sound (PWS). Multinet night sampling began at ~12:30am at KIP2, and proceeded Northward ending at PWS3 at ~6am.

April 22 – Day 5. We began daywork 11:30 with Calvet net at CG1. Waters were virtually icefree, but we lacked time to proceed to CG0 and the Sikuliaq's draft would have been problematic for sailing across the shallow sill to the north. A TMC CTD was executed at CG1, flowed by an Iron-fish deployment. CG2 was bypassed at we proceeded to PWSA to begin an Intensive Station~14:30 with a productivity cast. The Acrobat was deployed and towed to PWSC, where a CTD and Calvet were completed. The Acrobat was towed form PWSC to PWSE, followed by a CTD and Calvet that ended at ~midnight. Night work conducted Multinets at PWSE, PWSC and PWS3 ending at ~6am.

April 23 – Day 6. Day work began at ~7:30 at PWS3 with a Calvet and CTD. The iron fish was towed into intensive station PWS2 that began with a Calvet at 10am, followed by a productivity cast, another Calvet, a regular CTD, a deep vertical multinet, a TMC CTD and finally a shallow vertical multinet ending at 4:30pm. Stations PWS1 and KIP2 were sampled while on route to Icy Bay. The Sikuliaq broke about 200m into 0.3-0.5 m think ice stopping in Nassau Fjord just

past IB1 where a Calvet and CTD were deployed. A regular CTD was conducted at IB1, and a CTD cast was conducted without bottle work at IB2 ending daywork at 12:15am. No night work had been planned as planned PWS stations had been completed and weather was too bad to leave the sound. Hopcroft had discovered a potentially new species of sea-tadpole in deep PWS2 samples, so 2 additional deep-multinets were conducted at PWS2 while transiting north to explore College Fjord: the second cast was completed at ~5am.

April 24 – Day 7. The day was sent awaiting the passage of storm system. The morning was spent transiting to College Fjord, where a CTD cast was made in front of Smith Glacier at ~12pm. The Acrobat was deployed heading south once we escaped water with floating ice chunks at ~2pm and towed through Knight Islands Passage as far as KIP2 before recovering at 10p. There were no night activities.

April 25 – Day 8. Day sampling began with bottleless CTD cast at KIP0 at ~6am, and proceeded to the MS line MS1-4 where sampling was completed between ~9am to noon. Bottle work was only conducted at MS2 & MS3, and Calvet only as MS2. The Acrobat was deployed shortly after leaving MS4 and recovered at ~6pm while on route to Middleton Island. Night activities began with a Bongo net at MID6 and worked inshore to MID2 ending at 5am. A Methot trawl was executed at MID2 ending at 6:30am.

April 26 – Day 9. Day sampling began with Intensive Station MID2 at ~7am. Sampling at MID2 included 2 Calvets, a productivity cast, a regular CTD, a TMC CTD cast and deployment of iron fish. We proceeded shoreward sampling MID1 then worked our way our sampling MID1i, MID2i, MID3, MID3i, MID4, and MID4i until ~8pm then headed to MID7 to begin night work. We sampled MID7, MID8, MID9 and MID10 with Bongo nets, until ~3:30 then conducted a TMC cast and a Methot before heading back to MID5.

April 27 – Day 10. Day sampling began at Intensive Station MID5 with a production cast at 10:30am, and finished the station at ~1pm. We proceeded out ward sampling MID5i, MID6, MID6i, MID7, MID7i, MID8, MID9 and MID10 ending at ~3am. We then Transited to the CS Line.

April 28 – Day 11. Day sampling began at CS2i with a CTD cast at 10:30am, then onward to Intensive Station CS2 that began at 11:30am and finished the station at ~2pm. We proceeded inshore sampling CS2, CS1.75, CS1i, CS1.25 and CS1 ending at 10:15. Night work began immediately and worked south completing at 5 stations plus a Methot ending at 5:30am

April 29 – Day 12. Day sampling started at sampling CS3 at 7:30am, followed by CS3i, and conducted Intensive Station CS4 from ~1-4pm and ended CS5 at 7pm. We then began the transit to the Seward Line.

April 30 – Day 13. Although we had not expected to conduct day sampling, a change in the weather forecast for the next few days suggested we should start sampling today. Intensive Station GAK15 began at noon. The full suite of sampling was completed including a CTD cast to 1500 m, a vertical Multinet to 1200m, and a second multinet to 200m. Gak15 ended at ~3pm and we headed northward sampling GAK14 to 1000m and GAK13 to 1500m ending day

activities at ~9:30pm. Night work began at GAK13 at ~10pm and proceeded to GAK15 with both Bongos and Multinets run at odd-numbered stations, and only the multinet deployed at even-numbered stations.

May 1 – Day 14. The day began early at 4am a deployment of the Acrobat at GAK15, towing it northward. The Acrobat was recovered at GAK12 and sampling there began at 11:30 and included at 1000m cast. During the 1500m cast at GAK11, excess wire was deployed with the CTD on the seafloor, and it was retrieved without firing any bottles. Several hockles in the wire required 80m be removed and the wire re-terminated. We headed to GAK10 where we conducted at Calvet and waited for the termination to be completed, then conducted at 1000m CTD cast. At 6pm we deployed the Acrobat and towed it out back out to GAK12. Night activity began at ~11pm, and ended at GAK9 at 6:30am. During the night at 12:30 -1:30am the CTD cast at GAK11 was repeated to 1000m (for bottle sampling).

May 2 – Day 15. Day work began with Intensive Station GAK9 at 7am, including at 200m vertical multinet, with the station completed by 10am. We worked northward to GAK7, then at 2pm redeployed the Acrobat and towed it to GAK10, then repositioned to GAK8 to begin night work at ~11pm. Night sampling covered GAK8 through GAK5 with multinets, and bongo's at odd-numbered stations, and ended at 6:30am.

May 3 – Day 16. Day work began at GAK6 with a Calvet and CTD at ~7:30, then proceeded to Intensive Station GAK5, where the full suite of activities was conducted and completed by 2pm. We proceeded to the deployment location of McDonnell's lost mooring near GAK4 and tried without luck to see the mooring with ship's acoustics or communicate with it via deck-box. The release command was sent repeatedly and after no mooring was found on the surface, we proceeded to GAK4 for sampling and then worked northward ending GAK2 at 9pm. We repositioned for night work at GAK4 and worked northward ending at GAK1 at 7am. At GAK3 the multinet failed to operate, so a Bongo was deployed and fished to 100m to provide continuity with the existing time-series. Time constraints precluded a third cast using the second multinet.

May 4 – Day 17. Day work at Intensive Station GAK1 began at 8am to strong winds that were partly sheltered by Rugged Island. The full suite of activities was completed at ~11am, and the deck secured for transit to GAK7 where the Acrobat was deployed at ~8pm and recovers in Resurrection Bay the next morning at 6am.

May 5 – Day 18. Day work began at Res2.5 with a CTD cast at ~6:30 followed by a Calvet that ended formal sampling activities at ~7:15. Calibration routines were conducted for the EK80 acoustics, and the ship prepared for a 1am docking at SMC. Much of the deck and lab demobilization occurred upon docking with activities pausing at ~5pm. Final experimental and laboratory work was completed by midnight.

May 6 – Demobilazation. Remaining demobilization was completed by noon and the remaining science party left Seward shortly thereafter.

Physics Report:

PI: Seth Danielson, Participants: Seth Danielson, Hank Statscewich, Pete Shipton

On this cruise we conducted 90 casts for water column hydrography at 69 stations (Figure 1) using a 24 x 10 liter bottle rosette. Bottle trips were made at standard levels: 0, 10, 20, 30, 40, 50, 75, 100, 125, 150, 200, 250, 500, 750, 1000, 1250 and 1500 m depths and within 5 m of the bottom when the bottom depth was less than 1500 m. The SBE9-11 CTD was outfitted with pressure, dual temperature, dual conductivity and dual oxygen sensors. Ancillary sensors included a WetLabs fluorometer, a WetLabs C-Star transmissometer, a Biospherical PAR sensor, and a Tritech altimeter. One channel was assigned to a self-logging Sequoia LISST particle size spectra instrument; one channel provided power to a self-logging SUNA nitrate sensor. A self-logging Underwater Vision Profiler (UVP) was also attached to the CTD rosette frame. The UVP instrument required a 30 meter soak depth so for profiles needing UVP data recording the CTD had an unusually deep soak that may have impacted the profiles' depiction of the near-surface stratification. Only one profile at each station required a UVP profile so stations with multiple casts had a combination of deep and shallow soak depths.



Figure 1. Map of CTD stations occupied in SKQ201810S (left) and trackline (right) with colors denoting the day of the month over 18 April to 5 May 2018.

The CTD stations were occupied on four shelf transects (Kodiak, Middleton, Cape Suckling and Seward Line; Figure 2) plus stations in Prince William Sound, including stations across Montague Strait, in three fjords (Icy Bay, College Fjord and Columbia Glacier fjord), and along Knight Island Passage.



Figure 2. Hydrographic sections over 300 dbar of the Cape Suckling, Middleton Island, Seward and Kodiak lines in four-panel grouping showing (clockwise from upper left) temperature, salinity, density (sigma-t) and geostrophic velocity referenced to 300 m. Note that color scale changes between panels.

Ocean velocity data was collected using Teledyne RDI 75 kHz and 10 kHz Ocean Surveyor instruments. The 75 kHz instrument collected data using a 16 m bin thickness and the 150 kHz instrument collected data in 8 and 4 meter bins at different times through the cruise. Mid-cruise adjustments to the setup prompted us to create two data directories: SKQ201810S and SKQ201810S_A. The trackline associated with each setup are shown in Figure 3. Due to hull depth and bubble sweep along the hull, the first good bin of the 150 kHz ADCP was typically at 18 m below the surface or deeper, so we generally did not well capture near-surface currents.

We ran the ADCPs triggered from the K-sync system so as to provide an interference-free time interval for the EK-60 fisheries acoustics pings. Over shallow waters (< 1000 m depth) all acoustic instruments could be run simultaneously. In deep water (>1000 m depth) the time for the return acoustic pings become exceedingly long so we ran in one of two modes in deeper water. In "night operations mode" we would secure the EM302 mulitbeam during night station



Figure 3. Tracklines associated with each of the two different ADCP setups.

work and operate only the ADCP and EK-60 so as to have concurrent acoustics data alongside the nighttime trawl operations. In the "day operations mode" we would secure the EK-60 and run the EM-302 so as to map the seafloor along our trackline.

Regions previously unmapped by multibeam acoustics were preferentially selected for ship routes in order to map uncharted areas of the seafloor. Many portions of the cruise occurred in previously unmapped regions, including especially portions of Prince William Sound, between Middleton Island and the Copper River, and east of Kayak Island. Future cruises will continue to fill in mapping coverage gaps.

Other underway data collected include the ship's operational data, meteorological data and ocean surface data. Operational data of ships equipment (e.g., navigation and winch payout and tensions) are also logged. Navigation data parameters include GMT date time, latitude, longitude and water depth. Atmospheric data parameters include atmospheric pressure, wind speed/direction, air temperature, humidity, CO₂, shortwave downwelling irradiance, longwave downwelling irradiance, and PAR. Surface seawater underway data samples include temperature, salinity, chlorophyll a fluorescence, phycoerytherin, partial pressure of CO₂, and nitrate.

Two nitrate dataloggers were used on the cruise. An ISUS instrument was plumbed into the underway uncontaminated seawater throughflow system that feeds the thermosalinograph sensors. This instrument was set to take three samples every five minutes. The initial instrument installed was providing somewhat noisy data returns so we swapped it for a backup instrument midway through the cruise. The new instrument noise level was appreciably lower. We conducted one spot-check on the calibration of each of these instruments using 0 μ M DI water and a 30 μ M standard. We found moisture underneath the lens of the noisy instrument and are working the manufacturer to replace this component and get the instrument running again. The ISUS instruments were provided by Terry Whitledge and may become permanent fixtures on the vessel.



Figure 4. Battery pack (left) and SUNA (right) mounted on the CTD frame.

The second nitrate sensor was a SUNA instrument strapped to the CTD frame (Fig. 4). The SUNA was powered by a stand-alone battery pack that was energized when the CTD sent power to the bulkhead connectors. This dataset was stored internally to the SUNA and will require a matching of dataset time stamps to align the nitrate profile with the rest of the CTD profile. The external battery pack was constructed using the pressure housing of an RCM5 Aanderaa current meter. The rechargeable batteries required an overnight charge cycle; this was determined to be sufficient to keep the instrument powered for sampling all casts the following day.



Plots of the underway data are provided in Figures 5-8.

Figure 5. Surface underway water temperature and salinity.



Figure 6. *Surface underway nitrate, Colored Dissolved Organic Matter (CDOM),* chlorophyll a fluorescence and phycoerytherin.



Figure 7. Surface underway turbidity, Photosynthetically Available Radiation (PAR), downward longwave and shortwave radiation.



Figure 8. Surface underway relative humidity, sea level pressure, wind speed and direction.

Oceanographic station GAK1 is the long-term hydrographic profile station at the mouth of Resurrection Bay, sampled nominally monthly since December, 1970. A mooring has been deployed at GAK1 since 1998, with typically six temperature/conductivity/pressure dataloggers (Figure 9) located between 250 and 20 m depths. We recovered the 2017-2018 GAK1 mooring on this cruise. Data was recovered from all instruments (Figure 10).



Figure 9. Top float and SBE37 MicroCat instruments recovered from the 2017-2018 mooring.



Figure 10. GAK1 mooring temperature, salinity and density data recovered from the mooring. Initial data de-spiking and cleanup has been applied.

High resolution (~ 300m horizontal spacing) CTD profiles over the upper water column (50 to 60 m depth) were collected using a towed Sea Sciences Acrobat system, which undulates at a rate of about 0.5 to 1.0 m s⁻¹ while being towed at a ship speed of 3-4 m s⁻¹ (Figure 11). The Acrobat was equipped with a SBE49 FastCat CTD and a WetLabs ECO-Triplett optical sensor with channels for chlorophyll a fluorescence, CDOM and optical backscatter (OBS) at 700 nm. We towed the Acrobat in eight different legs, including four that covered the length of the Seward Line, one that covered the inner portion of the Cape Sucking Line, one in central Prince William Sound and one from upper College Fjord to southern Knight Island Passage. For ship speeds of about 7 knots and 220 m of Acrobat cable paid out from the winch we were able to consistently profile to about 50 m depth (Figure 12). When combined with traditional casts, spatial cover over the upper 50m is extensive (Figure 13).



Figure 11. Recovery of towed undulating Acrobat instrument.

We struggled with sensor noise on the Acrobat pressure channel, which rendered the autopilot function inoperable at times. Under guidance from the manufacturer, we were able to clean up a portion of the noise by soldering a 120 ohm resistor across two pins of an IC on the Acrobat motor printed circuit board and across the incoming data feed from the winch to the deck box. A second cause of pressure sensor noise turned out to be leakage into the motor drive unit. The pressure housing wound up with about a teaspoon of seawater inside and two tantalum capacitors were found damaged. Although the motor housing was still operational, we decided to replace that unit with a backup and send the damaged unit back to the manufacturer for assessment and refurbishment. We believe that the leakage was ultimately due to excessive

cable strum associated with profile depth, vessel speed, background current speed/direction, and sea state.



Figure 12. Acrobat transect of the Seward Line from station RES2.5 to station GAK15, occupied over 1-5 May 2018.



Figure 13. Temperature, salinity, density, chlorophyll a fluorescence, optical backscatter, and CDOM over 0-50m from CTD profiles and Acrobat tows.

Macro- and Micronutrient sample collection and processing

PI: Ana M. Aguilar-Islas

Participants: Mette Kaufman (technician), Channing Bolt (graduate student volunteer)

During this field effort our goal was to determine ambient distribution of dissolved inorganic macronutrients (nitrate, nitrite ammonium, phosphate and silicic acid) and the micronutrient iron. Nutrient distributions in conjunction with hydrography are used to determine resource variability to the phytoplankton community in space and time and to identify the relative importance of various processes in supplying nutrients to surface waters. A secondary aim was to train technical staff in sample collection and processing.

Sample collection and processing for macronutrient analysis:

Filtered seawater samples were collected from 51 vertical profiles (see Table 1) from surface to 1500 m using the ship's CTD rosette bottles. Samples were filtered through Whatman GF/F filter disks using a syringe, and were frozen (-80 °C) following collection. Samples were also obtained from 11 primary production vertical profiles, and all replicates from an iron addition experiment. Channing Bolt was responsible for most of the sampling with some help with Mette Kaufman, Ana Aguilar-Islas and members of the Strom team. In total ~680 samples were collected for nutrient analysis.

Sample collection for iron analysis:

a) Seawater samples were collected from 13 vertical profiles (see Table 2) from 20 -700m using a trace metal clean (TMC) rosette made of powder coated aluminum and loaded with Tefloncoated Niskin bottles with external springs. A dedicated winch (MASH2K) with 5/16" Amsteel line and a TMC block mounted on the starboard crane were used to deploy the TMC rosette. The winch, line and block were borrowed from the UNOLS east coast winch pool. Channing Bolt, Mette Kaufman and Ana Aguilar-Islas were involved in deck operations, with assistance from the bosun, a crane operator and the marine technician who drove the winch. Mette Kaufman was taught how to operate the winch, and eventually she was in charge of this task.

b) Surface seawater samples were collected underway from 13 stations to complete vertical profiles and in between some stations (see Table 2). These samples were obtained from a custom-made surface sampler (IronFish) deployed from the starboard crane, and kept at a distance of ~ 5 m from the hull of the ship. Channing Bolt, Mette Kaufman and Ana Aguilar-Islas were involved in deck operations, with assistance from the bosun, and a crane operator.

Sample processing for iron analysis:

Two plastic enclosures supplied with HEPA filtered air were constructed to house the processing of samples for iron analysis. A small enclosure was built in the wet lab that housed the sampling manifold with tubing coming from the IronFish. A second larger enclosure was built in the analytical lab to house the Nisking bottles and filtration apparatus. Immediately after collection Niskin bottles and IronFish samples were transferred to the analytical lab. Filtered subsamples for dissolved Fe analysis were processed from all casts at all depths, and from all

IronFish samples. Filtered subsamples for the analysis of iron-binding organic ligands, soluble iron, unfiltered samples for total dissolvable iron analysis, and filters for particulate iron analysis were obtained from a subset of samples (see Table 2). Samples were filtered through 0.2 um polycarbonate filter discs (Nuclepore) using trace metal clean techniques. Ana Aguilar-Islas was responsible for all sample filtration. Samples for soluble iron were further filtered through 0.02 um Anotop syringe filters, and Channing Bolt was responsible for the ultrafiltration.

Seawater collection and processing for the iron addition experiment

An experiment was conducted in collaboration with the Strom Lab using unfiltered surface seawater from Station GAK 15 (HNLC region) amended with filter subsurface seawater from Station KDK5 and with filtered surface water collected in the inner shelf near Station MID2. Surface seawater was collected with the ironFish into 20L carboys, and when needed filtered inline through 0.2 um Acropak filter cartridges. The subsurface water was collected with the TMC rosette and transferred to a 20L carboy after filtration through 0.2 um filters. Filtered seawater was kept in the dark inside the walking freezer until the initiation of the experiment. Replicates of controls (1:1 mixture of filtered and unfiltered GAK15 surface water), plus subsurface iron (1:1 mixture of unfiltered GAK 15 surface water and filtered KDK5 subsurface water), and plus river water iron (1:1 mixture of untilgered GAK 15 surface water and filtered MID surface water) samples were obtained from 3 time points (a total of 24 bottles) for the analysis of nutrients, iron and biological parameters.

General Notes

We like to highlight the additional effort from the galley staff to accommodate Channing Bolt's dietary needs. They consistently provided hand-made gluten-free breads, pasta, pizza crust, desserts, etc. The deck crew provided excellent support and their help ensure the success of our deployments. The marine technicians also provided excellent support throughout the cruise. They help build a rack in the analytical lab to hold the Niskin bottles, worked with the winch pool technician to fix the level wind which was not working properly on the winch, provided help troubleshooting software for communicating with the sensors in the TMC rosette. They also assisted with the forklift to help load gear into a UHaul at the end of the cruise. In general the crew was always helpful responding promptly to requests in a cheerful and professional manner. We experienced no issues with ship's facilities needed for macro- and micronutrient work. Laboratory spaces were adequate, the ship's deck gear, -80 °C freezer and walk-in refrigerator were in good working condition. Although not essential for this cruise, the heated decks were nice to have.

We like to emphasize the need for improved internet access. The extremely slow and at times unavailable internet access was frustrating. Just checking email became a challenge on some days.

Station	Date	# of	Station	Date	# of
		samples			samples
Res 2.5	4/18/2018	13	MD7	4/27/2018	5
GAK1	4/18/2018	13	MD8*	4/27/2018	14
KDK5	4/19/2018	8	MD9	4/27/2018	16
KDK4	4/19/2018	7	MD10	4/28/2018	16
KDK3	4/19/2018	7	CS2	4/28/2018	9
KDK2	4/19/2018	9	CS1	4/28/2018	7
KDK1	4/19/2018	7	CS3	4/29/2018	12
KDK6	4/20/2018	8	CS4	4/29/2018	16
KDK7	4/20/2018	11	CS5	4/29/2018	18
KDK8	4/20/2018	13	GAK15	4/30/2018	18
KDK9	4/20/2018	15	GAK14	4/30/2018	15
KDK10	4/20/2018	16	GAK13	4/30/2018	17
CG1	4/22/2018	11	GAK12	5/1/2018	15
PWSA	4/22/2018	12	GAK10	5/1/2018	16
PWSC	4/22/2018	12	GAK11	5/1/2018	16
PWS3	4/22/2018	14	GAK9	5/2/2018	14
PWS1	4/23/2018	13	GAK8	5/2/2018	12
KIP2	4/23/2018	14	GAK7	5/2/2018	12
IB1	4/23/2018	11	GAK6	5/3/2018	10
MS2	4/25/2018	11	GAK5	5/3/2018	12
MS3	4/25/2018	11	GAK4	5/3/2018	11
MiD2	4/26/2018	13	GAK3	5/3/2018	11
MD3	4/26/2018	8	GAK2	5/3/2018	12
MD4	4/26/2018	8	GAK1	5/4/2018	13
MD5	4/27/2018	8	RES2.5	5/6/2018	12
MD6	4/27/2018	5			

Table 1 Nutrient Sample Collection

Station	Date	DFe	TDFe	SFe	Ligands	PFe	Notes
KDK5	4/19/2018	6	4	4	4	4	
KDK9	4/20/2018	12	6	5	0	0	
CG1	4/22/2018	8	4	4	4	4	
PWS2	4/23/2018	12	8	5	5	5	
MID2	4/26/2018	6	6	3	3	3	
MID5	4/27/2018	5	5	0	2	3	
MID10	4/28/2018	12	6	6	6	5	Crane oil drip
CS2	4/28/2018	6	4	3	3	4	
CS4	4/29/2018	12	12	5	4	8	
GAK15	4/30/2018	12	5	5	5	5	
GAK9	5/2/2018	8	5	4	4	4	
GAK5	5/3/2018	8	5	3	3	3	
GAK1	5/4/2018	8	5	4	3	4	
Line	Date	DFe	TDFe	SFe	Ligands	PFe	Notes
KDK	4/20/2018	1	1	1	1	0	KDK9
GC	4/22/2018	1	1	1	1	1	GC1
PWS	4/23/2018	2	2	1	1	1	PWS2
MID	4/26/2018	2	2	1	1	1	MID2
MID	4/27/2018	2	2	2	2	2	MID5, MID10
CS	4/28/2018	1	1	1	1	1	CS2
CS	4/29/2018	1	1	1	1	1	CS4
GAK	4/30/2018	1	1	1	1	1	GAK15
GAK	5/2/2018	8	1	1	1	8	GAK9
GAK	5/3/2018	1	1	1	1	1	GAK5

 Table 2. Samples for iron parameters

DFe = dissolved iron (< 0.2 um), TDFe = total dissolvable iron (unfiltered),

SFe = soluble Fe (< 0.02 um), PFe = particulate iron (> 0.2 um)

Carbonate Chemistry

PI: Claudine Hauri

Samples for DIC analysis were collected at GAK1, GAK5, GAK9, GAK15 and PWS2 to be run at OSU by Burke Hales. An independent set of triplicate samples were collected from the surface and bottom bottles of GAK1 to be analyzed at UAF's OARC.

Particles

PI: Andrew McDonnell, Participant: Jessica Pretty

The LISST-Deep (Laser-in-situ-scattering-transmissivity rated to 3000m) and UVP5 (Underwater Vision Profiler 5) were mounted on the CTD rosette for all casts, but did not collect data at the beginning of the cruise. The LISST was not programmed to autostart when powered, so it did not collect data until CG1, after the KOD (Kodiak) line was finished when this problem was discovered and resolved.

The UVP stopped responding to acquisition commands after the test casts at RES2.5 and GAK1, so data was not collected after the first GAK1 cast until the problem was resolved at the end of the KOD line. Eventually the problem was found to be a discrepancy between the camera's internal time and the time set on the computer issuing the acquisition commands. After the camera's internal computer time was fixed, the UVP started collecting data for stations from CG1 and continued to do so for the rest of the cruise. To ensure data acquisition, manual collection (IO mode) was used for stations CG1 to PWS1 (the majority of stations within Prince William Sound). At the next station, KIP2, the depth trigger was tested and used for all other casts over 50 meters in depth. The depth trigger allows for smaller file sizes for each cast and makes post-processing easier and more efficient. For an unknown reason, the UVP did not collect data at GAK8.

In summary, both instruments collected data for all stations after the KOD line, with the exception of GAK8 where only LISST data was collected.

Microbes

PI: Eric Collins. Participants: Jesse Klejka

The Collins group uses genetic analyses to explore microbial communities within the Gulf of Alaska. At each station, seawater from the surface, chlorophyll maximum, and bottom was collected and filtered onto 0.2um Sterivex filters to retain bacteria, archaea, and protists. DNA will be extracted from the filters at UAF and the V4 region of the 16S rRNA gene (bacteria and archaea) and 18S rRNA gene (protists), along with the ITS1 region (fungi), will be sequenced on an Illumina MiSeq to an average depth of 10,000 reads per sample. These metabarcodes provide insight into the microbial communities that reside within the Gulf of Alaska, including primary producers, biogeochemical cycling bacteria and archaea, and harmful algal bloom forming taxa. During the April/May 2018 LTER cruise aboard R/V Sikuliaq, we collected 168 samples from 53 stations.

Stn	bottom	chlorophyll max	midwater	surface	Total
CG1	1	1		1	3
CS1	1	1		1	3
CS2	1	1		1	3
CS3	1	1		1	3
CS4	1	1		1	3
CS5	1	1		1	3
GAK1	2	2		2	6
GAK2	1	1		1	3
GAK3	1	1		1	3
GAK4	1	1		1	3
GAK5	1	1		1	3
GAK6	1	1		1	3
GAK7	1	1		1	3
GAK8	1	1	2	1	5
GAK9	1	1		1	3
GAK10	1	2		1	4
GAK11	1	1		1	3
GAK12	1	1	2	1	5
GAK13	1	1		1	3
GAK14	1	1		1	3
GAK15	1	1		1	3
ICB1	1	1	1	1	4
KIP2	1	1		1	3
KOD1	1	1		1	3
KOD2	1	1		1	3
KOD3	1	1		1	3
KOD4	1	1		1	3
KOD5	1		1	1	3
KOD6	1	1		1	3
KOD7	1	1		1	3
KOD8		1			1
KOD8	1			1	2
KOD9	1	1		1	3
KOD10	1	1		1	3
MID1	1	1		1	3
MID2	1	1		1	3
MID3	1	1	1	1	4
MID4	1	1		1	3
MID5	1	1		1	3
MID6	1	1		1	3
MID7	1		1	1	3
MID8	1	1		1	3
MID9	1	1		1	3
MID10	1	1		1	3
MS2	1	1		1	3
MS3	1	1		1	3
PWS1	1	1		1	3
PWS2	1	1		1	3
PWS3	1	1		1	3
PWSA	1	1	1	1	4
PWSC	1	1	1	1	4
PWSE	1	1	1		3
RES 2.5	1		1	1	3
Total	53	51	12	52	168

Phytoplankton and Microzooplankton

PI: Suzanne Strom, Participants: Kerri Fredrickson, Hana Busse, Clay Mazur (all WWU)

Phytoplankton biomass and performance: Phytoplankton biomass was characterized by sizefractionated chlorophyll at all non-intermediate shelf stations and most PWS stations (total = 54 vertical profiles); only total chl (GFF) was measured in glacial fjords. Samples were analyzed fluorimetrically on board (6-7 depths per station depending on depth of CTD fluorescence profile). Samples for determination of photosynthetic efficiency (Fv/Fm, Walz WaterPAM) were also taken at all the above depths and stations except fjord stations heavily impacted by suspended particulates. Primary production estimates were made at all intensive stations (total = 11) using the 13-C method and 24-h deck incubations. 5-6 'light depths' were sampled per station based on the attenuation coefficient as estimated from the CTD PAR profile. Chlorophyll (GFF only) and nutrient samples were also taken from each of these productivity depths during experiment set-up.

Community characterization: Photosynthetic organisms and other protists were sampled at approximately every other shelf station, generally at 10 m depth only, as well as at selected stations in PWS. Samples were fixed in acid Lugol's for standard microzooplankton biomass and composition estimates, and in borate-buffered formalin for characterization of diatoms. Additional samples collected in conjunction with our mixotrophy project were i) fixed in glutaraldehyde, DAPI-stained, and made into slides for biomass and composition of nano- and picoplankton, and ii) fixed in HMTA-buffered formalin for inverted-epifluorescence microscopy to assess mixotrophy in ciliates and larger dinoflagellates. At intensive stations only, additional samples were taken from 10 and either 20 or 30 m for HPLC analysis of phytoplankton pigments (chemotaxonomy) and from 10 m only (in duplicate) for molecular characterization of the protist community. At intensive stations a 4-depth vertical profile of acid Lugol's samples was also collected.

Organic carbon characterization: Samples were filtered and frozen at approximately every other shelf station as well as two in PWS (total = 20) for DOC profiles; depths sampled were mainly 150 m and above, and corresponded to nutrient sampling depths. At intensive stations only (total = 11), a 4-depth vertical profile (10, 30, 50, 75 m) was sampled for POC and PIC.

Additional work for NPRB-funded mixotrophy project: Individual chloroplast-retaining ciliates were isolated from a range of stations for i) molecular analysis; ii) estimation of chlorophyll content; iii) examination in acid Lugol's for comparison with standard microzooplankton analyses. For an unfunded pilot study, individual dinoflagellates were picked into TritonX/RNAlater buffer and frozen for transcriptomics.

Iron source experiment: An experiment was conducted to assess the effect of deep shelf versus Copper River Fe sources on the Gulf of Alaska HNLC community. Three filtered seawater sources were used: the deep shelf sampled at KOD=5 line, Copper River-influenced surface seawater sampled near CS-1, and offshore water sampled near GAK-15 (as a control). Each fsw type was combined with plankton collected, using the iron fish, from near GAK-15 where underway salinity, nitrate, and chlorophyll fluorescence indicated oceanic and potentially Fe-

limited conditions. Bottles containing the three mixtures were incubated on deck and sampled at intervals over a 4-d period for Fe chemistry, nutrients, and planktonic community composition and physiology.

Preliminary observations: The shelf was a complex mix of waters that appeared to be pre-bloom (Kodiak line, with some areas possibly represented intrusions of HNLC water), in full bloom (much of the CS and MID lines and the outer shelf//slope on the Seward Line), and post-bloom (mid and inner shelf on the Seward Line). PWS stations had lower chlorophyll in the east but the western stations were some of the greenest observed on the cruise. A mix of diatom species was present in high chlorophyll waters, with the exception of CS-4 where the bloom appeared to be flagellate-dominated. Ciliates were abundant at many stations including a high proportion of chloroplast-retaining species; heterotrophic dinoflagellates were observed in the more developed diatom blooms but were especially numerous on the mid-shelf Seward Line, in conjunction (probably not coincidentally) with the declining bloom. Stations with high chlorophyll concentrations sometimes had deep layers of chlorophyll, suggesting sinking of earlier production events. This appears to have been an early bloom year with vigorous production in most of the sampled region.



Stn	SF	Tot	Lugol's	Diatom	Mixo	Nano/	HPLC	Euk	DOC	POC/	13C	Fv/Fm
	Chl	Chl	μzoo			pico		Mol		PIC	prod	
Res 2.5	х		-			-					-	х
GAK1	х											x
KOD5	х		x	x	х	X	X	x	x	х	x	X
KOD4	х											х
KOD3	х		x	х	х	х			х			х
KOD2	х											x
KOD1	х		x	х	Х	х			х			X
KOD6	х											X
KOD7	х								x			X
KOD8	х											x
KOD9	х											x
KOD10	х		x	x	х	х			x			x
CG1		х										х
PWSA	х		x	x	х	х	2x	x	x	х	x	х
PWSC	х											x
PWSE	х											х
PWS3	х											X
PWS2	х		x	x	х	х	2x	x	x	х	x	х
PWS1	х											x
KIP2	х											X
IB0		х										X
IB1		х										
MS2	х		x	x								x
MID1	х		x	х	х	х			х			x
MID2	х		x	x	х	х	2x	х	х	Х	х	X
MID3	х		x	x	х	х			х			х
MID4	х		x	x	х	х						х
MID5	х		x	x	х	х	2x	х	х	Х	х	X
MID6	х		x	x								х
MID7	х		x	x	х	х			х			х
MID8	х											х
MID9	х		x	x	х	х			х			х
MID10	х											х
CS1	х		x	x	х	х			x			X
CS2	х		x	x	X	X	2x	х	X	X	X	X
CS3	х		x	x								х
CS4	х		x	x	X	X	2x	х	X	X	X	X
CS5	х		x	х								х
GAK15	х		x	x	X	X	2x	х	X	X	X	X
GAK14	х											x
GAK13	X		X	х	X	X						Х
GAK12	X											x
GAK11	х		x	х	х	х						х
GAK10	х											X
GAK9	х		x	X	X	Х	2x	X	X	X	X	x
GAK8	х											х
GAK7	х		X	X	x	X				ſ		х
GAK6	x											х
GAK5	х		X	X	X	X	2x	X	X	X	X	х
GAK4	х											x
GAK3	х		X	X	X	x						X
GAK2	X	1				1						x
GAK1	X		X	X	X	x	2x	X	X	X	X	X
RES2.3	X											
Total	51	3	11	28	24	24	11	11	20	11	11	52

Table 3: Sampling effort for Strom component, by station. Intensive stations highlighted

Meso/Macro Zooplankton

PI:Hopcroft, Participants: Ken Coyle, Caitlin Smoot, Alicia Schuler, Jordi Maisch (volunteer)

Zooplankton sampling operations were divided into distinct day and night activities. During daytime, Quadnets (Quad frame has 4 nets, 2 of 150µm mesh and 2 of 53µm mesh) casts were conducted at all stations (except "i" stations) to 100m depth, or within 5m of the bottom at shallower stations. At intensive stations, and additional Quadnet cast was taken, with the 150µm net preserved in ethanol for molecular studies and the 53µm nets used for live sorting. Additionally, at intensive stations along the Seward Line and at PWS2, a multinet equipped with 150µm-mesh nets was deployed vertically to 200 m (shelf) with a second cast deployed to 750m (PWS2) or 1200m (GAK15) dividing strata at 600, 400, 300, 200,100, 60, 40, and 20 m. During night-time a Bongo net of 505µm mesh was towed obliquely to 200m depth (or 5 m above the bottom) at all shelf stations. Bongo depths were monitored using a Fastcat (SBE49) CTD mounted immediately above the nets. Along the Seward Line and within PWS, a multinet equipped with 505µm-mesh nets was towed obliquely to 200m depth (or 5 m above the bottom) dividing strata at 100, 60, 40, and 20 m. Due to time constrains, both the Bongo and Multinets could not be deployed at all Seward Line stations, so Bongo nets were not deployed at even-numbered stations. All standard gear was deployed without notable issues.

On several occasions at the new Methot net was deployed to determine best strategy for deployment, and optimal tow speeds. Deployment of the net alone at 2-3 knots resulted in typical line tension of ~1000lbs, however towing at 4 knots with the depressor attached was typically 2000-3000 lbs and peaked at nearly 8000lbs under moderate sea-states. Modifications will be requires to strengthen net corners.

Live sorting of epipelagic samples at intensive stations showed the *Neocalanus* community shifted toward *N. plumchrus* and away from *N. flemingeri*. Developmental stages were dominated by C.IV and C.V stages. Lipid storage was variable between stations, but tended to be greater for *N. flemingeri* than *N. plumchrus*. Live sorting of mesopelagic samples in PWS revealed what is likely to be an undescribed *Oikopleura* species common below 300-400m. Specimens were imaged and preserve in both formalin and ethanol. After more than a dozen years of service the 4Mpx Spot camera died, and imaging shifted to the 8Mpx Jenopix camera. Live material was sorted on both shifts for the use by the media team.

Neocalanus physiology

Pls: Petra Lenz (UH), Russ Hopcroft, Participant: Lillian Tuttle (UH)

Project Goals:

Interannual and spatial variability in physiological profiles CV *Neocalanus flemingeri* at 4 stations along the Seward Line (GAK1, GAK4, GAK9, GAK13/14) and 2 stations in Prince William Sound (PWS2, PWSA)

Physiological profiling using global gene expression and lipid sac size to investigate preparation for diapause in the spring in 4 target species (*N. flemingeri*, *Neocalanus plumchrus*, *Neocalanus cristatus*, *Calanus marshallae*). Use gene expression patterns to investigate individual responses to food enhancement.

Activities:

- Live sorting of copepods from CalVet 53 μm collections for RNA-seq and for imaging at intensive stations (KOD5, KOD9, PWSA, PWS2, MID2, MID5, CS2, CS4, GAK15, GAK9, GAK5, 2 time points for GAK1).
 - o Preservation of individual CV N. flemingeri in RNALater from all stations..
 - Sorting and imaging for lipid sac analysis, *N. flemingeri* and *N. plumchrus* (CIV and CV) (Russ)
 - Other preserved species (*N. plumchrus* CV, *N. cristatus* CV, *C. marshallae* Ad fem; *Eucalanus bungii* Ad fem) at selected stations mostly depending on occurrence.
 - o A few individuals of Oikopleura labradoriensis were preserved in RNAlater.
- Pilot experiments on the effect of food addition to gene expression profiles with CIV (GAK1; time points: 2, 4, 6, 8 days) and CV (PWS2 time points: 3, 6 days, GAK15, GAK9, GAK5 time points: 3 days) individuals of *N. flemingeri*. Third treatment for GAK15 experiment: filtered seawater (FSW).
- Live sorting of copepods collected at PWS2 using vertical tow with Multinet 150 μm mesh) to check for presence of *N. flemingeri* below 400 m. Plus preserved samples for quantitative analysis (Russ). Deep vertical net tow at GAK15, inspected by naked eye before preserving. Few individuals occurred at depth, with no obvious *Neocalanus* (*N. flem, N. plum* or *N. cristatus*) found.



Marine bird and marine mammal surveys (USFWS)

PI: Kathy Kuletz, Participants: Dan Cushing, Toby Burke

We conducted marine bird and marine mammal surveys in the northern Gulf of Alaska (GOA), during April 18 to May 4, 2018, as a component of the GOA Long-term Ecological Research cruise aboard the 80-m R/V *Sikuliaq*. A single observer conducted visual surveys using line-transect methods during daylight hours while the vessel was underway. We conducted a total of 124 hours of surveys totaling 1919 linear km (Figure 15).

On-transect, we observed a total of 3601 individuals of 36 species of birds, with an additional 20 species observed off-transect during surveys or while at stations (Table 4). The most abundant species of marine bird was the northern fulmar (24%). Along the Seward Line, fulmars occurred in greater numbers, and also further inshore, than in recent May cruises (Figure 16). The highest densities of fulmars were encountered near Middleton Island. Fulmars are not among the species of seabird that breed at the island, and their abundance is suggestive of accessible food resources in the area. Also abundant were black-legged kittiwake (18%), fork-tailed stormpetrel (13%), and common murre (9%); no other species comprised more than 5% of the total. Black-legged kittiwakes have been among the most abundant species during recent spring Seward Line cruises. We observed the highest densities near Prince William Sound (PWS) and Middleton Island, where colonies are located. Along the Seward Line, kittiwakes were more abundant offshore than in recent years. Fork-tailed storm-petrels are also typically abundant during spring Seward Line cruises. In 2018, as in 2016-17, relatively high densities of stormpetrels occurred further inshore along the Seward Line than in prior years. Concentrations of storm-petrels were also observed near or beyond the shelf-slope break, and over Portlock Bank, which was also seen during the spring 2011 GOAIERP cruise. Common murres were primarily observed on the inner shelf, which is typical for the species; however, unlike 2015-17, no murres were observed in PWS. 152° W 150° W 148° W 146° W 144° W

The abundance of shearwater species has been variable during Seward Line cruises, with the highest numbers seen during 2011 and 2015. While sooty shearwaters usually predominate along the Seward Line, occurring in low or moderate numbers, short-tailed shearwaters were abundant during these years. We observed relatively low numbers of both species during this cruise, but on May 4, over the middle shelf along the Seward Line, we began to frequently encounter small groups of short-tailed shearwaters. During the 2011 GOAIERP cruise, T. Burke noted a shift in species composition from sooty to short-tailed shearwaters around this time, suggesting possible influx of short-tailed shearwaters in some years.



Figure 15. Location of seabird and marine mammal transects and CTD/net stations.

Albatross species were frequently observed during the cruise. Black-footed albatross were most numerous near the 1000m isobath, and flocks of hundreds occurred at some stations. Laysan albatross were unusually numerous and widely distributed. Usually outnumbered by black-footed albatross, Laysan were the predominant species of albatross at the outer stations of the Seward Line. Laysan albatross also occurred over the inner shelf and were seen as far inshore as Resurrection Bay, at station GAK1. Also notable were 15 observations of immature short-tailed albatross, a species with an estimated world population of ~ 4000. During the cruise, we also observed the migration of thousands of ducks, geese, and swans, many of them far offshore, as well as migrating shorebirds and Pacific loons.

We observed a total of 9 species of marine mammals (Table 5). The most abundant marine mammal was Dall's porpoise, which occurred from PWS to the shelf-break (Figure 17). Minke whales were numerous in the vicinity of Montague Island; south of Cape Cleare, over a distance of 9 km, a total of 24 whales were observed on- and off-transect. Fin whales were seen in offshore areas. One humpback whale was observed in PWS, and a single gray whale occurred off the barrier islands of the Copper River. Four northern fur seals were encountered over the middle shelf and slope; fur seals were also seen during recent May cruises along the Seward Line. One Steller sea lion occurred near the Copper River, and a large group was seen hauled out on the northwestern point of Middleton Island. Harbor seals were seen in the glacial fjords of PWS, often hauled out on ice, and sea otters occurred nearshore, and were most numerous in the fjords.

Common Name	Scientific Name	Number	% of total
Greater white-fronted goose	Anser albifrons	40	1.1%
Brant	Branta bernicla	2	0.1%
Canada goose	Branta canadensis	*	0.0%
Swan spp.	<i>Cygnus</i> spp.	*	0.0%
Northern shoveler	Spatula clypeata	6	0.2%
Mallard	Anas platyrhynchos	22	0.6%
Northern pintail	Anas acuta	55	1.5%
Green-winged teal	Anas crecca	2	0.1%
Greater scaup	Aythya marila	2	0.1%
Surf scoter	Melanitta perspicillata	2	0.1%
White-winged scoter	Melanitta fusca	*	0.0%
Black scoter	Melanitta americana	*	0.0%
Barrow's goldeneye	Bucehpala islandica	1	0.0%
Red-breasted merganser	Mergus serrator	*	0.0%
Waterfowl spp.	Anatidae spp.	1	0.0%
Black oystercatcher	Haematopus bachmani	*	0.0%
Hudsonian godwit	Limosa fedoa	*	0.0%
Red-necked phalarope	Phalaropus lobatus	76	2.1%
Phalarope spp.	Phalaropus spp.	40	1.1%
Pomarine jaeger	Stercorarius pomarinus	*	0.0%
Parasitic jaeger	Stercorarius parasiticus	*	0.0%
Jaeger spp.	Stercorarius spp.	1	0.0%

Table 4. Avian species observed during the April-May 2018 Gulf of Alaska Long-term Ecological Research cruise. Numbers include on-transect observations only. Additional species observed off-transect during surveys or while at stations are indicated by an asterisk.

Common Name	Scientific Name	Number	% of total
Pigeon guillemot	Cepphus columba	*	0.0%
Common murre	Uria aalge	312	8.7%
Marbled murrelet	Brachyramphus marmoratus	19	0.5%
Kittlitz's murrelet	Brachyramphus brevirostris	1	0.0%
Marbled or Kittlitz's murrelet	Brachyramphus spp.	21	0.6%
Ancient murrelet	Synthliboramphus antiquus	*	0.0%
Parakeet auklet	Aethia psittacula	11	0.3%
Rhinocerous auklet	Cerorhinca monocerata	16	0.4%
Horned puffin	Fratercula corniculata	1	0.0%
Tufted puffin	Tufted Puffin	116	3.2%
Alcid spp.	Alcidae spp.	1	0.0%
Black-legged kittiwake	Rissa tridactyla	655	18.2%
Sabine's gull	Xema sabini	8	0.2%
Bonanarte's gull	Chroicocenhalus nhiladelnhia	g	0.2%
Mew gull	Larus canus	77	2.1%
Herring gull	Larus argentatus	56	1.6%
Glaucous-winged gull	Larus algunascons	160	1.0%
Arctic tern	Sterna paradisaga	5	/0 0.1%
Red_throated loop	Gavia stellata	*	0.1%
Pacific loon	Gavia pacifica	27	0.0%
Common Joon	Gavia pacifica Gavia immor	*	0.7 %
Vallow billed loop	Gavia infine Gavia adamsii	*	0.0%
	Dhochostria immutabilia	62	0.0%
Laysan albalioss Plack footod albatrass	Phoebastria nigripoa	120	1.7 %
Short tailed albetrass	Phoebastria albetrus	129	0.0%
Shortharm fulmer		950	
Northern Iumar	Fuimarus giaciaiis	609	23.9%
	Pterodroma inexpectata	0	0.2%
Short-tailed shearwater	Ardenna tenuirostris	161	4.5%
Sooty shearwater	Ardenna griseus	85	2.4%
Dark shearwater spp.	Ardenna spp.	46	1.3%
Fork-tailed storm-petrel	Oceanodroma furcata	470	13.1%
Leach's storm-petrel	Oceanodroma leucorhoa	6	0.2%
Red-faced cormorant	Phalacrocorax urile	*	0.0%
Pelagic cormorant	Phalacrocorax pelagicus	3	0.1%
Pelagic or red-faced cormorant	Phalocrocorax spp.	24	0.7%
Cormorant spp.	Phalocrocorax spp.	1	0.0%
Bald eagle	Haliaeetus leucocephalus	1	0.0%
Merlin	Falco columbarius	*	0.0%
Peregrine Falcon	Falco peregrinus	*	0.0%
Northwestern crow	Corvus caurinus	1	0.0%
Common raven	Corvus corax	*	0.0%
Fox sparrow	Passerella iliaca	*	0.0%
Total		2601	100.00/



Figure 16. Seabirds observations during the April/May 2018 NGA-LTER



Table 2. Marine mammal species observed during the April-May 2018 Gulf of Alaska Long-term Ecological Research cruise. Numbers include on-transect observations only. Additional species observed off-transect during surveys or while at stations are indicated by an asterisk.

Common Name	Scientific Name	Number	% of total
Fin whale	Balaenoptera physalus	2	2.9%
Minke whale	Balaenoptera acutorostrata	9	13.0%
Humpback whale	Megaptera novaeangliae	*	0.0%
Gray whale	Eschrichtius robustus	*	0.0%
Whale spp.	Cetacea spp.	3	4.3%
Dall's porpoise	Phocoenoides dalli	37	53.6%
Steller sea lion	Eumetopias jubatus	*	0.0%
Northern fur seal	Callorhinus ursinus	2	2.9%
Harbor seal	Phoca vitulina	4	5.8%
Sea otter	Enhydra lutris	12	17.4%
Total	•	69	100.0%



Figure 17. Cetaceans, pinnepeds and sea otters observations during the April/May 2018 NGA-LTER.

Outreach

At Sea Lead: Michele Hoffman Trotter, Participants: Carlee Belt, Katherine Brennan

<u>PURPOSE</u>

Michele Hoffman Trotter MS, JD and Dr. Russ Hopcroft collaborated on a plan to roll out a virtual education opportunity aimed toward students 6th through 12th grade, homeschooling families, and adults that would focus on the work conducted on board the RV Sikuliaq during the 2018 NGA-LTER cruise. Educational content focused on three key areas: climate variability, biodiversity, and food web ("learning modules"). In addition to educational content, it was an opportunity for participants to see what day to day life on a research cruise is like, and see what and how equipment is used.

Prior to the start of the cruise, educator participants were provided with three power point presentations on each of the planned learning modules, and activities (curriculum) with extension concepts aimed at the target grade levels.

Once the cruise began, participants received a daily newsletter with brief cruise updates, and links to videos highlighting cruise activities, interviews, and special topics. Participants could follow the video links and post questions for the RV Sikuliaq team. Scientists and crew posted responses to the questions posted by participants.

PARTICIPANTS

Enrollment break down for this pilot program is as follows:

Schools	Homeschool Families	Adult Participants
Alaska (2)	California (20)	Alaska (6)
California (1)	Illinois (4)	Illinois (16)
Illinois (4)		California (5)
Canada (1)		Colorado (3)
		Texas (2)
Total: 8	Total: 24	Total: 32

For a pilot program, the number of participants was ideal in terms of representing the various target age groups, and some diversity in terms of location.

The timing of the program was not optimal as it began just as most schools were concluding spring break and preparing for the rapid end of the school year. In addition, the lead-time for advertising was not as good as it could have been to recruit a higher number of participants. In summary, a number of lessons were learned from this pilot run that will serve as a starting point for perfecting and expanding programming for the future.

EDUCATION PRODUCTS OF THE CRUISE

Prior to and through the duration of the cruise, a number of educational materials were prepared and distributed to promote science education and connectivity between work in the field and the classroom environment.

Course materials were prepared in an effort to promote STEAM and also 21st Century learning strategies. While the fundamental core concepts are driven by science, the materials traversed goals for literacy, research skill building, analytical thinking, creative process, the arts and more.

A list of the tangible resources that were generated is as follows:

- Three powerpoint slide presentations (averaging 40 slides each) that educators could use or modify to suit the needs of their audiences. Three topics included were: climate variability, biodiversity, and food web interactions.
- Curriculum packets containing activities and experiments.
- Fourteen newsletters containing updates, video links and activities.
- 18 Scientist Interview videos
- 11 Science and ship procedure videos
- 8 "Creature Feature" animal videos

LOGISTICAL PROGRAM DETAILS

Given the internet capabilities anticipated on the ship, and the variable time zones of registered participants, it was determined early on that live streaming was not a desirable option for a first run.

Instead, daily updates took the form of a newsletter sent to participants that included short stories, links to videos containing interviews, animal profiles, ship operations, and a few educational activity suggestions.

The video links were uploaded to YouTube and set to "private" so only registered participants with a link could access the videos. This approach allowed participants to post questions for the team and receive answers without outside interference from public web traffic.

Over all, this approach worked well, and a newsletter was successfully transmitted every single business day for the duration of the cruise. Spotty internet connectivity posed a substantial challenge, but we were able to establish workarounds that enabled us to maintain our presence with participants.

The quality materials produced for this cruise, the workarounds that were established, and positive feedback received from participants are all reasons to conclude that this program can expand and grow in the future. The next task is to investigate ways to take the archived material and utilize it as a virtual education library.

LOOKING FORWARD

From the lessons learned on this pilot run, the next steps to be taken include the following:

- 1) Create a formal application process to ascertain better demographic information about participants. This will help us ensure content is geared toward appropriate age groups and presented in a way that is most user-friendly for educators.
- 2) Set up advance participation with scientists willing to support curriculum development.
- 3) Have a designated individual in charge of education support from shore to ensure timely dissemination of updates.
- 4) Revisit the best-case scenario timetables for content delivery to audience participants in light of the lessons learned regarding internet capabilities.
- 5) Design an exit survey for educators to ascertain what percentage of the material provided was used in the classroom, and to collect feedback from participants that will help us refine and perfect programming strategies.

L	atitude N	Long	itude W		
(degr	ees, minutes)	(degree	s, minutes)	Station Name	Depth
20	4 5	Resurre	ection Bay Station	DE00 5	000
60	1.5	149	21.5	RES2.5	298
	F0 7	5	Seward Line	0.4/(4	000
59	50.7	149	28	GAKT	269
59	40	149	23.8	GAKI	220
59	41.5	149	19.6	GAK2	228
59	37.0	149	10.0	GAK2I	010
59 50	33.2	149	71.3	GAK3	213
59 50	28.9	149	7.1	GAKJ	201
59 50	24.5	149	2.9	GAK4	201
59	20.1	148	58.7	GAK4I	407
59	15.7	148	54.5	GAKO	107
59	11.4	148	50.3	GAKO	151
50	<u> </u>	140	40.2	CAKO	101
59 59	<u> </u>	140	42		040
20	52.0	140	37.0 32.6		243
58	JZ.9 10 5	140	20.0 20.4		266
58	40.0 11 G	140	29.4 25.2	GAKO	200
50	44.0	140	20.2	GANO	076
50	40.0	140	16.7	GAKO	210
00	30.7	140	10.7	GAK9I CAK10	1450
20	32.3	140	12.1	GAK10 CAK11	1459
0	23.3	140	4.3	GAK11 CAK12	2124
0	14.0 5.0	147	17.6	GAK12 CAK12	2134
57	5.9	147	47.0	GAK13 CAK14	2000
57	47.5	147	39	GAK14 GAK15	3510
)/	47.5	Prince Wil	Juiom Sound Station	GANIS	4040
20	7.5				
30	16.7	147	50.2		500
	22.78	147	56.17		248
0	22.70	147	JU. 17	PW31	240
	32.1	147	40.2	FW32	790
0	40	147	40	PWS3	/42
	4920 AF	147	<u> </u>	PWSA	4/2
<u> </u>	40 20 4	147	14	FVVSB	0.15
30	30.1 21 F	147	10		245
30	24.2	147	7.0 58.2		004
30 30	24.3	147	JU.J /F		291
U	۲4	140 Calur	40 nhia Glacier	FWOF	
1	7 /	1/7		CC0	
	<i>1.</i> 4	147	J.O 4 D		400
30	09.0 57 6	147	<u>4.2</u>		192
50	07.0	147	0.9	CGZ	
0	16.0	140	by Day		
	10.3	148	21.7	IBU	4
0	15.5	148	20.1	IB.1	172
U	16.3	148	14	IB2	157
		Mont	ague Strait Line		
59	57.257	147	55.602	MS1	
59	56.6	147	53.7	MS2	194
59	55.9	147	51.4	MS3	169
59	55.2	147	49.7	MS4	119

Appendix. STANDARD STATIONS (intensive stations highlighted)

L (dogu	atitude N	Long (dogroo	itude W	Station Namo	Donth						
(degi	ees, minutes)	(degree:	s, minutes) Kodiak Lino	Station Name	Deptil						
58	1/1 7	151 r		KOD1	71						
58	7.9	151	23.07	KOD2	107						
58	7.0	151	23.07	KOD2	9/						
57	0.9	150	F0.74	KOD4	70						
57	17 1	150	JU. 17	KOD4	07						
57	47.1	150	40.0	KODS	0/						
57	40.20	150	32.97	KOD0	102						
57	33.42	150	20.34	KOD7	1/8						
57	20.37	150	7.95	KOD8	708						
57	19.32	149	55.50	KOD9	1310						
57	12.27	149	43.17	KOD10	2503						
Cape Suckling Line											
59	56.35	143	53.5	CS1	63						
59	53.85	143	53.5	CS1.25	85						
59	51.35	143	53.5	CS1i	104						
59	48.85	CS1.75	116								
59	46.35	143	53.5	CS2	124						
59	41.35	143	53.5	CS2i	134						
59	36.35	143	53.5	CS3	193						
59	31.35	143	53.5	CS3i	1316						
59	26.35	143	53.5	CS4	2010						
59	16.35	143	53.5	CS5	2810						
		Middl	eton Island Line								
60	15	145	30	MID1	35						
60	10.5	145	34.5	MID1i	100						
60	6	145	39	MID2	116						
60	1.5	145	43.5	MID2i	98						
59	57	145	48	MID3	87						
59	52.5	145	52.5	MID3i	100						
59	48	145	57	MID4	90						
59	43.5	146	1.5	MID4i	72						
59	39	146	6	MID5	97						
59	34.5	146	10.5	MID5i	114						
59	30	146	15	MID6	41						
59	25.7	146	10	MID6i	65						
59	23	146	18	MID7	65						
59	18.267	146	15	MID7i	420						
59	13.534	146	12	MID8	611						
59	4.067	MID9	2900								
58	54.6	146	0	MID10	4444						

ID	Date	Event	Instrument	Action	Transect	Station	Cast		Latitude	Longitude	Seafloor	Author	Comment
1	Wed 18 Apr 2018 18:12:01	20180418.1811.001	CTD911	deploy	NaN	RES2.5		1	60.01916	-149.359	290	sDanielson	
2	Wed 18 Apr 2018 18:44:41	20180418.1844.001	CTD911	recover	NaN	RES2.5		1	60.01916	-149.359	290	sDanielson	
3	Wed 18 Apr 2018 19:13:45	20180418.1913.001	Calvet Net	deploy	NaN	RES2.5		1	60.01916	-149.359	291	Caitlin	calvet1 - late log
4	Wed 18 Apr 2018 19:14:44	20180418.1914.001	Calvet Net	recover	NaN	RES2.5		1	60.01916	-149.359	291	Caitlin	calvet1
5	Wed 18 Apr 2018 19:26:43	20180418.1926.001	centerBoard	start	NaN	RES2.5	NaN		60.01916	-149.359		sDanielson	Deployed for cruise
6	Wed 18 Apr 2018 19:37:49	20180418.1937.001	OS150	service	NaN	NaN	NaN		60.01053	-149.357		eRoth	switch over to external trigger
7	Wed 18 Apr 2018 19:39:45	20180418, 1939, 001	OS75	service	NaN	NaN	NaN		60.00602	-149.356		eRoth	switch over to external trigger
8	Wed 18 Apr 2018 19:41:49	20180418,1941,001	EM302	start	NaN	NaN	NaN		60.00119	-149.355		eRoth	started pinging prior to first ctd cast
9	Wed 18 Apr 2018 19:47:02	20180418 1946 001	EK60	start	NaN	NaN	NaN		59 98826	-149 353		eRoth	
· ·		2010011011010001	Mooring Acoustic	otart					00.00020	1.01000		er tetti	
10	Wed 18 Apr 2018 21:21:07	20180418 2121 001	Search	other	NaN	GAK1	NaN		59 85365	-149 496		HStats	
11	Wed 18 Apr 2018 23:31:07	20180418 2331 001	Calvet Net	denlov	NaN	GAK1	Hart	2	59 84674	-149 469	270	RRH	
12	Wed 18 Apr 2018 23:36:01	20180418 2335 001	Calvet Net	recover	NaN	GAK1		2	59 84672	-149 469	270	RRH	
13	Thu 19 Apr 2018 00:22:21	20180419 0022 001	Calvet Net	denlov	NaN	GAK1	02a	2	59 84641	-149 465	270	RRH	LIVE
14	Thu 19 Apr 2018 00:22:21	20180419 0031 001	Calvet Net	recover	NaN	GAK1	020		50 84630	-149.465	270	RRH	live net
15	Thu 19 Apr 2018 01:00:12	20180419.0001.001		denlov	NaN	GAK1	020	2	59 8464	-149.405	270	sDanielson	
16	Thu 10 Apr 2018 01:38:13	20100410.0100.001		recover	NaN	GAK1		2	50 8/638	-1/0 /65	270	eDanielson	
17	Thu 19 Apr 2018 02:58:12	20180419.0150.001	Mooring	denlov	NaN	GAK1	NaN	2	59 85068	-140 5	210	sDanielson	
18	Thu 10 Apr 2018 11:20:27	20100410.0230.001	MBARLISLIS	startSample	NaN	NaN	NaN		58 800/2	_1/0 00		Born	Started recording 5 min intervals
10	Thu 10 Apr 2018 15:45:20	20100419.1120.001		other	NaN	NaN	NaN		57 08556	-150 621		Bern	changed filters
20	Thu 10 Apr 2010 13:43:23 Thu 10 Apr 2018 17:33:08	20100413.1343.001		doploy	KOD	KODE	INCIN	1	57 78/01	150.021			changed mens
20	Thu 10 Apr 2018 17:33:00	20100419.1735.001		recover	KOD	KOD5		1	57 7818/	-150.70	87	AnaA	
21	Thu 19 Apr 2010 17:40:45	20100419.1740.001		doploy	KOD	KODS		3	57 78608	150.701	07 97	Setrom	prod cast 1
22	Thu 19 Apr 2010 10.10.21 Thu 10 Apr 2018 10:17:50	20100419.1010.001	Calvot Not	deploy	KOD	KODS		2	57 78/50	150.701	87		prod cast i
23	Thu 19 Apr 2018 19:17:30	20100419.1917.001	Calvet Net	recover	KOD	KODS		2	57 78206	-150.70	87		82m wire out
24	Thu 10 Apr 2018 20:10:34	20100413.1324.001		doploy	KOD	KODS		1	57 78/07	150.702	87	cDanielson	
20	Thu 10 Apr 2018 20:00:28	20100419.2019.001	CTD011	rocovor	KOD	KODS		4	57 7700	150.701	87	sDanielson	
20	Thu 19 Apr 2010 20.20.20 Thu 10 Apr 2018 20:51:28	20100419.2020.001	Calvot Not	doploy	NoN	KODS		4	57 78155	-150.705	86		
21	Thu 10 Apr 2018 21:00:31	20100419.2001.001	Calvet Net	recover	NaN	KOD5		4	57 7700/	-150.705	86	DDH	LIVE wire out 80m
20	Thu 10 Apr 2018 22:00:31	20100413.2100.001		doploy	KOD	KODS	NaN	4	57 78/07	150.700	87	Δης	
20	Thu 10 Apr 2018 22:00:27	20100419.2200.001		rocovor	KOD	KODS	NaN		57 78/73	150.705	87	AnaA	DEI EOT AND RECOVER TIME ALT ROXIMA
30	Thu 10 Apr 2018 22:01:00	20100419.2200.002		doploy	KOD	KODJ	India	5	57 001/6	-150.770	77	Danielson	
30	Thu 19 Apr 2010 23.02.21 Thu 10 Apr 2018 23:21:20	20100419.2302.001		receiver	KOD	KOD4		5	57 00/28	-150.975	255	sDanielson	
22	Thu 19 Apr 2010 23.21.29	20100419.2321.001	Column Not	doploy	KOD	KOD4		5	57.90430	-130.979	233		72m wire out
24	Thu 19 Apr 2010 23.49.14	20100419.2349.001	Calvet Net	depidy	KOD	KOD4		5	57.90251	-100.97	70		75m wile out
25	Fri 20 Apr 2010 23.59.59	20100419.2009.001	Calvet Net	doploy	KOD			6	57.90551	-150.975	10		wire out 79
20	Fii 20 Apr 2010 01:00.22	20100420.0100.001	Calvet Net	depidy	KOD	KOD3		6	50.01045	-131.179	03		wile out 76
27	Eri 20 Apr 2010 01:14:40	20100420.0114.001		doploy	KOD	KOD3		6	50.01000	-131.170	04	Danialaan	
20	Fil 20 Apr 2010 01.27.30	20100420.0127.001		depidy	KOD	KOD3		6	50.01000	-131.170	04	Danielson	
30 20	Fil 20 Apr 2010 01.45.00	20100420.0145.001	Cill911 Colvet Net	doploy	NoN	KOD3		0	00.0209	-101.170	107	SDanielson	
39	Fil 20 Apr 2010 02:09:50	20100420.0209.001	Calvet Net	depidy	NaN	KODZ		7	50.13024	-101.004	127		100 wire out
40	Fil 20 Apr 2010 03:00:51	20100420.0300.001		doploy	KOD	KODZ		7	50.13010	-101.000	127	nnn Danielean	
41	Fil 20 Apr 2010 03:25:22	20100420.0325.001		depidy	KOD	KODZ		7	50.12900	-101.002	127	Danielson	
42	Fil 20 Apr 2010 03:45:20	20100420.0345.001	CID9II Caluat Nat	recover	NUD	KOD2		1	00.12007	-101.079	127	SDanielson	CC
43	FII 20 Apr 2018 05:10:00	20100420.0515.001		uepioy	NaN	KOD1		ŏ	20.24070	-101.000	[] 74	KKH DUU	oom whe out
44	FII 20 Apr 2018 05:22:14	20100420.0522.001		deploy	KOD			ŏ	50.23/01	-101.00/	/ 1		
45	FII 20 Apr 2010 05:47:24	20100420.0547.001		depioy	KOD	KODI		ŏ	50.23022	-101.09	10	SDanielson	
40	FII 20 Apr 2018 05:57:14	20100420.0007.001		recover	KOD	KODI		ŏ	20.22004	-151.591	69	spanielson	NO FACTOAT wire as 1 22
4/	Fri 20 Apr 2018 06:56:27	20180420.0656.001	Bongo Net	aepioy	KOD	KODI		1	58.2254	-151.591	68	nen Opition	
48	FTI 20 Apr 2018 06:59:44	20180420.0659.001	Bongo Net	maxDepth	KUD	KOD1		1	58.22614	-151.591	68	Caltiin	NO FASTCAT WIRE OUT 80

49	Fri 20 Apr 2018 07:03:22	20180420.0703.001	Bongo Net	recover	KOD	KOD1		1	58.22662	-151.591	69	Caitlin	NO FASTCAT wire out 80
50	Fri 20 Apr 2018 08:18:34	20180420.0818.001	Bongo Net	deploy	KOD	KOD2		2	58.12792	-151.384	126	Ken	NO FASTCAT 160 M WIRE
51	Fri 20 Apr 2018 08:23:48	20180420.0823.001	Bongo Net	maxDepth	KOD	KOD2		2	58.13084	-151.384	126	Ken	NO FASTCAT 150 M WIRE
52	Fri 20 Apr 2018 08:31:19	20180420.0831.001	Bongo Net	recover	KOD	KOD2		2	58.13517	-151.385	126	Ken	NO FASTCAT 150 M WIRE
53	Fri 20 Apr 2018 09:51:10	20180420.0951.001	Bongo Net	deploy	KOD	KOD3		3	58.01314	-151.18	81	Ken	NO FASTCAT wire out 95
54	Fri 20 Apr 2018 09:55:00	20180420.0954.001	Bongo Net	maxDepth	KOD	KOD3		3	58.01576	-151.18	82	Ken	NO FASTCAT wire out 90
55	Fri 20 Apr 2018 09:59:37	20180420.0959.001	Bongo Net	recover	KOD	KOD3		3	58.01898	-151.18	83	Ken	NO FASTCAT wire out 90
56	Fri 20 Apr 2018 11 18 41	20180420 1118 001	Bongo Net	deploy	KOD	KOD4		4	57 89798	-150 969	80	Ken	NO FASTCAT wire out 90
57	Fri 20 Apr 2018 11:21:56	20180420 1121 001	Bongo Net	maxDepth	KOD	KOD4		4	57 90038	-150 97	78	Ken	NO FASTCAT wire out 90
58	Fri 20 Apr 2018 11:26:19	20180420 1126 001	Bongo Net	recover	KOD	KOD4		4	57 90393	-150 971	80	Ken	NO FASTCAT wire out 90
59	Fri 20 Δpr 2018 12:44:01	20180420 1243 001	Bongo Net	denlov	KOD			5	57 78756	-150.571	00	Ken	NO FASTCAT wire out 105
60	Fri 20 Apr 2018 12:44:01	20100420.1240.001	Bongo Net	maxDenth	KOD	KOD5		5	57 78528	-150.76	80	Kon	NO FASTCAT wire out 105
61	Fri 20 Apr 2018 12:40.22	20100420.1240.001	Bongo Net	recover	KOD	KOD5		5	57 78288	-150.70	00 00	Ken	NO FASTCAT wire out 105
62	Fri 20 Apr 2010 12:33:14	20100420.1233.001	Colvet Net	doploy	KOD	KODS		0	57.70200	-150.70	102	Coitlin	
62	Fil 20 Apr 2010 15:24:40	20100420.1524.001	Calvet Net	depioy	KOD	KODO		9	57.07007	-100.00	102		
03	FII 20 Apr 2010 15.52.00	20100420.1002.001		recover	KOD	KODO		9	57.07049	-150.549	102	ккп «Denialaan	97m wire out
04	Fri 20 Apr 2018 15:56:22	20180420.1556.001	CID9II	deploy	KOD	KOD6		9	57.67003	-150.547	101	sDanielson	
65	Fri 20 Apr 2018 16:08:21	20180420.1608.001	CTD911	recover	KOD	KOD6		9	57.66972	-150.545	101	sDanielson	
66	Fri 20 Apr 2018 17:18:05	20180420.1718.001	Calvet Net	deploy	KOD	KOD7		10	57.5578	-150.339	1/8	RRH	100
67	Fri 20 Apr 2018 17:25:59	20180420.1725.001	Calvet Net	recover	KOD	KOD7		10	57.55598	-150.339	179	RRH	100m wire
68	Fri 20 Apr 2018 17:49:40	20180420.1749.001	CTD911	deploy	KOD	KOD7		10	57.5563	-150.339	180	sDanielson	
69	Fri 20 Apr 2018 18:57:30	20180420.1857.001	CTD911	recover	KOD	KOD7		10	57.55078	-150.34	180	sDanielson	
70	Fri 20 Apr 2018 19:46:33	20180420.1946.001	Calvet Net	deploy	KOD	KOD8		11	57.43914	-150.133	708	RRH	
71	Fri 20 Apr 2018 19:55:51	20180420.1955.001	Calvet Net	recover	KOD	KOD8		11	57.43699	-150.135	708	RRH	
72	Fri 20 Apr 2018 20:17:17	20180420.2017.001	CTD911	deploy	KOD	KOD8		11	57.4376	-150.134	707	sDanielson	
73	Fri 20 Apr 2018 23:28:36	20180420.2328.001	Calvet Net	deploy	KOD	KOD9		12	57.32292	-149.926	1307	RRH	
74	Fri 20 Apr 2018 23:36:48	20180420.2336.001	Calvet Net	recover	KOD	KOD9		12	57.32185	-149.929	1309	RRH	
75	Sat 21 Apr 2018 00:06:24	20180421.0006.001	CTD911	deploy	KOD	KOD9		12	57.32115	-149.93	1310	HStats	
76	Sat 21 Apr 2018 00:09:07	20180421.0009.001	Iron Fish	recover	KDK0	KDK8	NaN		57.31845	-149.939		AnaA	logged after the fact
77	Sat 21 Apr 2018 00:10:16	20180421.0010.001	Iron Fish	recover	KDK0	KDK9	NaN		57.32058	-149.931		AnaA	Logged after the fact
78	Sat 21 Apr 2018 01:17:22	20180421.0117.001	CTD911	recover	KOD	KOD9		12	57.3227	-149.927	1310	HStats	
79	Sat 21 Apr 2018 01:44:30	20180421.0144.001	Calvet Net	deploy	KOD	KOD9		12	57.32237	-149.929	1310	RRH	LIVE
80	Sat 21 Apr 2018 01:52:14	20180421.0152.001	Calvet Net	recover	KOD	KOD9		12	57.32251	-149.931	1310	RRH	
81	Sat 21 Apr 2018 04:34:58	20180421.0434.001	EM302	stop	NaN	NaN	NaN		57.20594	-149.723		eRoth	
82	Sat 21 Apr 2018 04:36:12	20180421.0436.001	Calvet Net	deploy	KOD	KOD10		14	57.20608	-149.723	2503	RRH	
83	Sat 21 Apr 2018 04:44:14	20180421.0444.001	Calvet Net	recover	KOD	KOD10		14	57.20678	-149.723	2503	RRH	
84	Sat 21 Apr 2018 04:58:45	20180421.0458.001	CTD911	deploy	KOD	KOD10		14	57,20587	-149,722	2503	sDanielson	
85	Sat 21 Apr 2018 05:11:01	20180421.0510.001	CTD911	recover	KOD	KOD10		14	57.20587	-149.722	2503	sDanielson	
86	Sat 21 Apr 2018 05:14:40	20180421.0514.001	CTD911	deploy	KOD	KOD10		15	57.20587	-149.722	2503	HStats	
87	Sat 21 Apr 2018 06:30:31	20180421 0630 001	CTD911	recover	KOD	KOD10		15	57 20588	-149 722		HStats	
88	Sat 21 Apr 2018 06:54:28	20180421 0654 001	Bongo Net	denlov	KOD	KOD10		6	57 20191	-149 722	2502	Ken	NO FASTCAT wire out 280
89	Sat 21 Apr 2018 07:08:37	20180421.0004.001	Bongo Net	maxDenth	KOD	KOD10		ĥ	57 19485	-149 722	2502	Ken	NO FASTCAT wire out 280
90	Sat 21 Apr 2018 07:26:39	20180421 0726 001	Bongo Net	recover	KOD	KOD10		ñ	57 18562	-149 723	2502	Ken	no fastcat wire out 370
Q1	Sat 21 Apr 2018 08:57:06	20180421.0720.001	Bongo Net	denlov	KOD	KOD10		7	57 31227	-140.720	2502	Ken	no fastcat wire out 350
02	Sat 21 Apr 2018 00:07:30	20100421.0007.001	Bongo Net	maxDenth	KOD	KOD10		7	57 31700	-140.020	2502	Kon	no fastcat wire out 350
9Z 02	Sat 21 Apr 2010 09:07:34	20100421.0507.001	Bongo Not	raaavar	KOD	KODIU		7	57 20202	-149.927	2500	Ken	no lasical wile out 550
90	Sat 21 Apr 2010 09.10.31	20100421.0310.001	Bongo Not	doploy	KOD	KODa		0	57 12503	-149.920	2002	Kon	no factost wire out 250
94 05	Sat 21 Apr 2010 10.20.20	20100421.1020.001	Bongo Not	uepioy	KOD	KODO		0	57 43320	-130.130	000	Kon	no rasical wire out 500
90	Sat 21 Apr 2010 10.36:04	20100421.1030.001	Dongo Net	maxDepth	KOD	KODO		0	57 44170	-100.100	094	Ken	
90	Sat 21 Apr 2018 10:50:01	20100421.1049.001	Bongo Net	recover	KOD	KOD8		ŏ	57.441/8	-150.127	/11	Ken	
9/	Sat 21 Apr 2018 11:58:38	20180421.1158.001	Bongo Net	aeploy	KOD	KOD7		9	57.55591	-150.341	182	Ken	NO FASTCAT wire out 230
98	Sat 21 Apr 2018 12:00:04	20180421.1200.001	Bongo Net	deploy	KOD	KOD7		9	57.55643	-150.34	182	Ken	real start, fixed codend

99	Sat 21 Apr 2018 12:06:33	20180421.1206.001	Bongo Net	maxDepth	KOD	KOD7	9	57.55872	-150.339	180	Ken	
100	Sat 21 Apr 2018 12:14:22	20180421.1214.001	Bongo Net	recover	KOD	KOD7	9	57.5615	-150.337	181	Ken	
101	Sat 21 Apr 2018 13:24:20	20180421.1324.001	Bongo Net	deploy	KOD	KOD6	10	57.67115	-150.551	101	Ken	NO FASTCAT wire out 115
102	Sat 21 Apr 2018 13:26:57	20180421.1326.001	Bongo Net	deploy	KOD	KOD6	10	57.67062	-150.548	102	Ken	real start
103	Sat 21 Apr 2018 13:30:22	20180421.1330.001	Bongo Net	maxDepth	KOD	KOD6	10	57.67	-150.545	102	Ken	
104	Sat 21 Apr 2018 13:34:00	20180421.1333.001	Bongo Net	recover	KOD	KOD6	10	57.66943	-150.542	102	Ken	
105	Sat 21 Apr 2018 14:16:07	20180421.1416.001	Methot Trawl	deploy	KOD	KOD6	1	57.65827	-150.511	104	Ken	Test Methot with multinet v-fin
106	Sat 21 Apr 2018 14:25:18	20180421.1425.001	Methot Trawl	maxDepth	KOD	KOD6	1	57,64961	-150,508	94	Ken	100 m wire out net at surface
107	Sat 21 Apr 2018 14:34:34	20180421 1434 001	Methot Trawl	recover	KOD	KOD6	1	57 64287	-150 506	100	Ken	2 min early
108	Sat 21 Apr 2018 14:55:42	20180421 1455 001	FM302	start	NaN	NaN	NaN	57 65446	-150 489		Bern	Start pinging and logging
109	Sun 22 Apr 2018 06:48:47	20180422 0648 001	UCSW	other	NaN	NaN	NaN	60 05126	-147 779		Bern	Swanned filters
110	Sun 22 Apr 2018 08:36:48	20180422 0836 001	Towed Multinet	denlov	PWS	KIP2	1	60 2791	-147 987		Ken	
111	Sun 22 Apr 2018 08:41:20	20180422 0841 001	Towed Multinet	deploy	PWS	KIP2	1	60 28172	-147 986	588	Ken	
112	Sun 22 Apr 2018 09:19:39	20180422.0041.001	Towed Multinet	recover	PW/S	KIP2	1	60 30563	-147.000	000	Ken	
112	Sun 22 Apr 2018 00:57:23	20100422.0013.001	Towed Multinet	deploy	DW/S	D\\/Q1	2	60 37312	-147.074		Kon	
11/	Sun 22 Apr 2018 10:41:16	20100422.0337.001	Towed Multinet	recover	DW/S	DW/91	2	60.07512	147.042		Kon	
114	Sun 22 Apr 2018 11:41:56	20100422.1041.001	Towed Multinet	doploy	F W3	FW31	2	60 52807	-147.913		Kon	
110	Sun 22 Apr 2010 11.41.50	20100422.1141.001	Towed Multinet	uepioy	FW3	F W 32	3	60 54707	-147.009	706	Kon	
110	Sun 22 Apr 2018 12:20:12	20100422.1220.001	Towed Multinet	recover	PWS	PW52	3	00.04727	-14/./00	720	Ken	
11/	Sun 22 Apr 2010 13.19.31	20100422.1319.001		deploy	PWS	PW33	4	00.00017	-147.09	100	Ken	
110	Sun 22 Apr 2018 14:00:50	20180422.1400.001		recover	PWS	PW53	4	00.00130	-147.038	104	Ken	
119	Sun 22 Apr 2018 17:24:45	20180422.1724.001	Calvet Net	deploy	CG	CGI	10	60.98925	-147.073	107	RKH	
120	Sun 22 Apr 2018 17:31:42	20180422.1731.001	Calvet Net	recover	CG	CG1	16	60.98859	-147.074	167	RKH .	
121	Sun 22 Apr 2018 18:03:20	20180422.1803.001	CTD911	deploy	CG	CG1	16	60.98692	-147.076	1/8	sDanielson	
122	Sun 22 Apr 2018 18:33:32	20180422.1833.001	CID911	recover	CG	CG1	16	60.98368	-147.077	192	sDanielson	
123	Sun 22 Apr 2018 19:11:50	20180422.1911.001	IMCID	deploy		CG1	5	60.98821	-147.075		Mette	BOTTLES DID NOT FIRE
124	Sun 22 Apr 2018 19:25:57	20180422.1925.001	CID911	other	CG	CG1	016SUNA	60.98367	-147.077	192	sDanielson	SUNA ON-DECK CALIBRATION
125	Sun 22 Apr 2018 19:47:32	20180422.1947.001	TM CTD	deploy	NaN	CG1	NaN	60.98947	-147.072		AnaA	
126	Sun 22 Apr 2018 20:10:05	20180422.2010.001	TM CTD	recover	NaN	CG1	NaN	60.97724	-147.09		AnaA	
127	Sun 22 Apr 2018 20:15:10	20180422.2015.001	Iron Fish	deploy	NaN	GC1	NaN	60.93987	-147.115		AnaA	
128	Sun 22 Apr 2018 21:42:26	20180422.2142.001	OS150	service	pas	pwsa	nan	60.8642	-147.361	95	sDanielson	change adcp 150 nb to 80 bins/4 m
129	Sun 22 Apr 2018 22:35:15	20180422.2235.001	CTD911	recover	NaN	PWSA	17	60.82167	-147.398	470	SStrom	PROD CAST
130	Sun 22 Apr 2018 22:36:09	20180422.2236.001	CTD911	deploy	PWS	PWSA	17	NaN	NaN	470	SStrom	
131	Sun 22 Apr 2018 22:41:12	20180422.2241.001	Calvet Net	deploy	NaN	PWSA	17	60.82167	-147.398	470	RRH	
132	Sun 22 Apr 2018 22:48:44	20180422.2248.001	Calvet Net	recover	NaN	PWSA	17	60.82167	-147.398	470	RRH	
133	Sun 22 Apr 2018 23:03:51	20180422.2303.001	CTD911	deploy	PWS	PWSA	18	60.82166	-147.398	478	sDanielson	
134	Sun 22 Apr 2018 23:46:25	20180422.2346.001	CTD911	recover	PWS	PWSA	18	60.82166	-147.398	472	sDanielson	
135	Sun 22 Apr 2018 23:54:18	20180422.2354.001	Calvet Net	deploy	PWS	PWSA	18	60.82166	-147.398	472	RRH	
136	Mon 23 Apr 2018 00:02:03	20180423.0002.001	Calvet Net	recover	PWS	PWSA	18	60.82166	-147.398	472	RRH	
137	Mon 23 Apr 2018 00:25:11	20180423.0025.001	Acrobat CTD	other	PWS	PWSA	NaN	60.81958	-147.398	479	HStats	
138	Mon 23 Apr 2018 02:46:33	20180423.0246.001	Acrobat CTD	other	PWS	PWSA	NaN	60.62556	-147.157		HStats	
139	Mon 23 Apr 2018 03:07:44	20180423.0307.001	Calvet Net	deploy	PWS	PWSC	19	60.63574	-147.169	245	RRH	
140	Mon 23 Apr 2018 03:14:37	20180423.0314.001	Calvet Net	recover	PWS	PWSC	19	60.63687	-147.168	245	RRH	
141	Mon 23 Apr 2018 03:34:35	20180423.0334.001	CTD911	deploy	PWS	PWSC	19	60.63686	-147.168	245	sDanielson	
142	Mon 23 Apr 2018 04:03:23	20180423.0403.001	CTD911	recover	PWS	PWSC	19	60.63684	-147.168	245	sDanielson	
143	Mon 23 Apr 2018 04:52:39	20180423.0452.001	Acrobat CTD	other	PWS	pws	NaN	60.63867	-147.167	254	HStats	
144	Mon 23 Apr 2018 06:35:37	20180423.0635.001	Acrobat CTD	other	PWS	PWS	NaN	60.47416	-147.06	1004	HStats	
145	Mon 23 Apr 2018 07:29:24	20180423.0729.001	Calvet Net	deploy	PWS	PWSE	20	60.40367	-146.974	311	Ken	
146	Mon 23 Apr 2018 07:37:01	20180423.0736.001	Calvet Net	recover	PWS	PWSE	20	60,40356	-146.973	311	Ken	
147	Mon 23 Apr 2018 08:05:15	20180423.0805.001	CTD911	deploy	PWS	PWSE	20	60,40414	-146.972	291	HStats	
148	Mon 23 Apr 2018 08:33:23	20180423.0833.001	CTD911	recover	PWS	PWSE	20	60,40529	-146.973	312	HStats	
							20	001.0020		U.L		

149	Mon 23 Apr 2018 08:46:13	20180423.0846.001	Towed Multinet	deploy	PWS	PWSE		5	60.40625	-146.965	316	Ken	
150	Mon 23 Apr 2018 09:22:59	20180423.0922.001	Towed Multinet	recover	PWS	PWSE		5	60.40854	-146.911	316	Ken	
151	Mon 23 Apr 2018 11:26:57	20180423.1126.001	Towed Multinet	deploy	PWS	PWS3		6	60.63476	-147.173	259	Ken	
152	Mon 23 Apr 2018 12:03:37	20180423.1203.001	Towed Multinet	recover	PWS	PWS3		6	60.63743	-147.119	259	Ken	
153	Mon 23 Apr 2018 13:28:33	20180423.1328.001	Towed Multinet	deploy	PWS	PWSA		7	60.8028	-147.364		Ken	
154	Mon 23 Apr 2018 14:03:07	20180423.1403.001	Towed Multinet	recover	PWS	PWSA		7	60.81967	-147.399	422	Ken	
155	Mon 23 Apr 2018 15:28:01	20180423.1527.001	Calvet Net	deploy	PWS	PWS3		21	60.66727	-147.667	735	RRH	
156	Mon 23 Apr 2018 15:35:55	20180423.1535.001	Calvet Net	recover	PWS	PWS3		21	60.66787	-147.668	735	RRH	
157	Mon 23 Apr 2018 16:28:53	20180423.1628.001	Iron Fish	recover	NaN	CG1	NaN		60.98962	-147.072		AnaA	
158	Mon 23 Apr 2018 16:38:02	20180423.1638.001	CTD911	deploy	PWS	PWS3		21	60.66786	-147.668	742	sDanielson	
159	Mon 23 Apr 2018 16:39:16	20180423.1639.001	CTD911	recover	PWS	PWS3		21	60.66761	-147.668	742	sDanielson	
160	Mon 23 Apr 2018 16:54:52	20180423.1654.001	Iron Fish	deploy	PWS0	PWS2	NaN		60.65228	-147.684		AnaA	
161	Mon 23 Apr 2018 17:20:42	20180423.1720.001	Iron Fish	deploy	PWS	PWS3	NaN		60.66752	-147.668	740	AnaA	
162	Mon 23 Apr 2018 17:59:45	20180423.1759.001	Iron Fish	recover	PWS	PWS2	NaN		60.53596	-147.803		AnaA	
163	Mon 23 Apr 2018 18:02:28	20180423.1802.001	Calvet Net	deploy	PWS	PWS2		23	60.53592	-147.803	728	RRH	
164	Mon 23 Apr 2018 18:10:06	20180423.1810.001	Calvet Net	recover	PWS	PWS2		23	60.53593	-147.803	728	RRH	
165	Mon 23 Apr 2018 18:21:37	20180423.1821.001	CTD911	deploy	PW	PWS2		22	60.53593	-147.803	728	sDanielson	
166	Mon 23 Apr 2018 18:37:54	20180423.1837.001	CTD911	recover	PW	PWS2		22	60.53594	-147.803	728	sDanielson	PRIM PROD CAST
168	Mon 23 Apr 2018 18:45:40	20180423.1845.001	Calvet Net	deploy	PW	PWS2		23	60.53593	-147.803	738	RRH	
169	Mon 23 Apr 2018 18:51:49	20180423.1851.001	Calvet Net	recover	PW	PWS2		23	60.53593	-147.803	738	RRH	
170	Mon 23 Apr 2018 19:05:48	20180423.1905.001	CTD911	deploy	PW	PWS2		23	60.53593	-147.803	738	sDanielson	
171	Mon 23 Apr 2018 20:03:07	20180423.2003.001	CTD911	recover	PW	PWS2		23	60.53594	-147.803	738	sDanielson	
172	Mon 23 Apr 2018 20:33:18	20180423.2033.001	Vertical MulitNet	other	PW	PWS2		23	60.53594	-147.803	738	RRH	
173	Mon 23 Apr 2018 21:09:44	20180423.2109.001	Vertical MulitNet	other	PW	PWS2		23	60.53593	-147.803	738	RRH	DEEP RECOVER
174	Mon 23 Apr 2018 21:47:30	20180423.2147.001	TM CTD	deploy	NaN	PWS2	NaN		60.53537	-147.802		AnaA	
175	Mon 23 Apr 2018 22:06:56	20180423.2206.001	TM CTD	recover	NaN	PWS2	NaN		60.5336	-147.799		AnaA	
176	Mon 23 Apr 2018 22:19:57	20180423.2219.001	Vertical MulitNet	other	PW	PWS2		23	60.5343	-147.8	738	RRH	sHALLOW
177	Mon 23 Apr 2018 22:33:03	20180423.2233.001	Vertical MulitNet	other	PW	PWS2		23	60.53429	-147.8	738	RRH	RECOVER SHALLOW
178	Mon 23 Apr 2018 23:59:29	20180423.2359.001	CTD911	deploy	PW	pws1		24	60.38001	-147.936	348	HStats	
179	Tue 24 Apr 2018 00:33:47	20180424.0033.001	CTD911	recover	PW	PW1		24	60.38	-147.936	348	HStats	
180	Tue 24 Apr 2018 00:42:18	20180424.0042.001	Calvet Net	deploy	PW	pws1		24	60.38001	-147.936	348	RRH	
181	Tue 24 Apr 2018 00:49:25	20180424.0049.001	Calvet Net	recover	PW	pws1		24	60.37948	-147.936	348	RRH	
182	Tue 24 Apr 2018 01:41:49	20180424.0141.001	Calvet Net	deploy	PWS	KIP2		25	60.27852	-147.987	588	RRH	
183	Tue 24 Apr 2018 01:48:46	20180424.0148.001	Calvet Net	recover	PWS	KIP2		25	60.27852	-147.987	588	RRH	
184	Tue 24 Apr 2018 01:59:20	20180424.0159.001	CTD911	deploy	PWS	KIP2		25	60.27852	-147.987	588	sDanielson	
185	Tue 24 Apr 2018 02:43:46	20180424.0243.001	CTD911	recover	KIP	KIP2		25	60.27852	-147.987	583	HStats	
186	Tue 24 Apr 2018 03:41:31	20180424.0341.001	CTD911	deploy	IB	IB1		26	60.24728	-148.35	172	HStats	
187	Tue 24 Apr 2018 03:43:31	20180424.0343.001	CTD911	recover	IB	IB1		26	60.24353	-148.346	172	HStats	
188	Tue 24 Apr 2018 06:27:49	20180424.0627.001	CTD911	deploy	IB	IB1		27	60.24094	-148.335	162	HStats	
189	Tue 24 Apr 2018 06:58:56	20180424.0658.001	CTD911	recover	IB	IB1		27	60.24094	-148.335	162	HStats	this event emcompasses casts # 027 and 028.
190	Tue 24 Apr 2018 08:06:32	20180424.0806.001	CTD911	deploy	IB	IB2		29	60.27138	-148.233	157	HStats	·
191	Tue 24 Apr 2018 08:16:44	20180424.0816.001	CTD911	recover	IB	IB2		29	60.27138	-148.233	156	HStats	
192	Tue 24 Apr 2018 11:03:49	20180424.1103.001	Vertical MulitNet	other	PWS	PWS2		3	60.535	-147.804	736	Ken	Deploy
193	Tue 24 Apr 2018 11:46:36	20180424.1146.001	Vertical MulitNet	other	PWS	PWS2		3	60.53499	-147.804	736	Ken	Retrieval
194	Tue 24 Apr 2018 12:21:57	20180424,1221,001	Vertical MulitNet	other	PWS	PWS2		4	60.53499	-147.804	736	Ken	Deploy
195	Tue 24 Apr 2018 13:08:41	20180424,1308,001	Vertical MulitNet	other	PWS	PWS2		4	60.535	-147.804	736	Ken	Retrieval
196	Tue 24 Apr 2018 20:04:25	20180424,2004.001	CTD911	deploy	NaN	SG		30	61,2487	-147,747	199	sDanielson	(Smith Glacier)
197	Tue 24 Apr 2018 20:19:33	20180424,2019,001	CTD911	recover	NaN	SG		30	61.2487	-147,747	199	sDanielson	()
198	Tue 24 Apr 2018 22:04:54	20180424,2204,001	Acrobat CTD	other	CF	CF1		3	61,18059	-147 811	227	HStats	
199	Wed 25 Apr 2018 01:19:04	20180425.0119.001	OS150	other	PWS	NaN	NaN	÷	60.82315	-148.228		sDanielson	Change 150 ADCP from 4 back to 8 m bins
	•												-

200 201	Wed 25 Apr 2018 06:15:27 Wed 25 Apr 2018 14:07:20	20180425.0615.001 20180425.1407.001	Acrobat CTD CTD911	other deploy	PWS PWS	KIP2 KIP0	NaN	31	60.35447 60.12508	-147.952 -147.833	383 292	sDanielson sDanielson	end of transect
202	Wed 25 Apr 2018 14:25:40	20180425.1425.001	CTD911	recover	PWS	KIP0		31	60.12508	-147.833	292	sDanielson	
203	Wed 25 Apr 2018 16:15:31	20180425.1615.001	CTD911	deploy	MS	MS1		32	59.95466	-147.926		sDanielson	
204	Wed 25 Apr 2018 16:27:59	20180425.1627.001	CTD911	recover	MS	MS1		32	59.95467	-147.926		sDanielson	
205	Wed 25 Apr 2018 17:04:05	20180425.1704.001	CTD911	deploy	MS	MS2		33	59.94415	-147.895	194	sDanielson	
206	Wed 25 Apr 2018 17:33:47	20180425.1733.001	CTD911	recover	MS	MS2		33	59.94416	-147.895	194	sDanielson	
207	Wed 25 Apr 2018 17:41:10	20180425.1741.001	Calvet Net	deploy	MS	MS2		33	59.94415	-147.895	194	RRH	
208	Wed 25 Apr 2018 17:48:28	20180425.1748.001	Calvet Net	recover	MS	MS2		33	59.94416	-147.895	196	RRH	
209	Wed 25 Apr 2018 18:46:12	20180425.1846.001	CTD911	deploy	MS	MS3		34	59.93141	-147.86	169	sDanielson	
210	Wed 25 Apr 2018 19:12:49	20180425.1912.001	CTD911	recover	MS	MS3		34	59.9314	-147.86	169	sDanielson	
211	Wed 25 Apr 2018 19:45:52	20180425.1945.001	CTD911	deploy	MS	MS4		35	59.92193	-147.828	119	HStats	
212	Wed 25 Apr 2018 20:07:05	20180425.2007.001	CTD911	recover	MS	MS4		35	59.92193	-147.828	119	HStats	
213	Thu 26 Apr 2018 07:45:56	20180426 0745 001	Bongo Net	deploy	MID	MID6		11	59 49856	-146 244		Ken	
214	Thu 26 Apr 2018 07:48:28	20180426 0748 001	Bongo Net	maxDepth	MID	MID6		11	59 4973	-146 241	41	Ken	
215	Thu 26 Apr 2018 07:54:43	20180426 0754 001	Bongo Net	recover	MID	MID6		11	59 49305	-146 235	42	Ken	
216	Thu 26 Apr 2018 09:05:17	20180426 0905 001	Bongo Net	deploy	MID	MID5		12	59 64842	-146 102		Ken	
217	Thu 26 Apr 2018 09:13:12	20180426 0913 001	Bongo Net	maxDenth	MID	MID5		12	59 65299	-146 097	97	Ken	
218	Thu 26 Apr 2018 09:29:20	20180426 0929 001	Bongo Net	recover	MID	MID6		12	59 66178	-146 088	95	Ken	
219	Thu 26 Apr 2018 10:31:24	20180426 1031 001	Bongo Net	denlov	MID	MID4		12	59 79429	-145 953	87	Ken	
220	Thu 26 Apr 2018 10:36:13	20180426 1036 001	Bongo Net	maxDenth	MID	MID4		12	59 79676	-145 951	87	Ken	
221	Thu 26 Apr 2018 10:41:44	20180426 1041 001	Bongo Net	recover	MID	MID4		13	59 79947	-145 949	89	Ken	
222	Thu 26 Apr 2018 11:47:03	20180426 1147 001	Bongo Net	denlov	MID	MID3		14	59 94693	-145 803	86	Ken	
222	Thu 26 Apr 2018 11:52:48	20180426 1152 001	Bongo Net	mayDenth	MID	MID3		14	59 95035	-145.8	86	Ken	
223	Thu 26 Apr 2018 11:57:32	20180426 1157 001	Bongo Net	recover	MID	MID3		14	59 95315	-145 797	86	Ken	
225	Thu 26 Apr 2018 13:04:18	20180426 1304 001	Bongo Net	denlov	MID	MID3		15	60 09756	-145 652	120	Ken	
226	Thu 26 Apr 2018 13:10:52	20180426 1310 001	Bongo Net	mayDenth	MID	MID2		15	60 1016	-145.652	120	Ken	
220	Thu 26 Apr 2018 13:17:40	20100420.1310.001	Bongo Net	recover	MID	MID2		15	60 10588	-145.652	120	Kon	
221	Thu 26 Apr 2018 14:16:31	20100420.1317.001	Methot Trawl	mayDenth	NaN	NaN	NaN	10	60.00466	-145.052	120	Kon	
220	Thu 26 Apr 2018 14:16:36	20180426 1416 002	Methot Trawl	maxDepth	NaN	NaN	NaN		60.00400	-145.661		Ken	
220	Thu 26 Apr 2018 14:10:00	20100420.1410.002	Methot Trawl	maxDepth			INCIN	2	60 08354	-145.001		Kon	The first d-record did not have the station nam
230	Thu 26 Apr 2018 15:10:28	20100420.1400.001	Calvet Net	deploy	MID	MID2		36	60.0004	-145.652	116	Caitlin	
231	Thu 26 Apr 2018 15:28:20	20100420.1519.001	Calvet Net	recover	MID	MID2		36	60 008/7	-145.052	110	Caitlin	cv22 prev cast number wrong
232	Thu 26 Apr 2018 15:44:00	20100420.1520.001		deploy	MID	MID2		36	60.00047	-145.054	112	s Danielson	CV22.prev cast number wrong
233	Thu 26 Apr 2018 16:05:30	20100420.1045.001	CTD011	recover	MID	MID2		36	60 10084	145.655	110	sDanielson	
234	Thu 26 Apr 2018 16:06:30	20100420.1005.001	Colvet Net	doplov	MID	MID2		36	60.00807	-145.055	116		
235	Thu 26 Apr 2018 16:20:32	20100420.1020.001	Calvet Net	recover	MID	MID2		36	60.09697	-145.05	110		
230	Thu 26 Apr 2018 17:08:42	20100420.1034.001		doplov	MID	MID2		50	60.090074	-145.052	110		
230	Thu 26 Apr 2019 17:00:43	20100420.1700.001		depidy		MID2		6	60 10014	-145.051	110		
239	Thu 20 Apr 2010 17.13.09	20100420.1713.001		deploy				27	60.10014	-145.055	110	aDanialaan	
240	Thu 20 Apr 2010 17:19:35	20100420.1719.001		deploy				31 27	60.10007	-140.002	119	sDanielson	PRIM PROD CAST
241	Thu 20 Apr 2010 17:30.45	20100420.1730.001	UID911	recover				31	00.10010	-140.000	119	SDanielson	
242	Thu 26 Apr 2018 10:22:07	20100420.1707.001		deploy				20	60.1000Z	-140.002	119	aDanialaan	
243	Thu 20 Apr 2010 19.22.07	20100420.1922.001		deploy				20	00.23303	-145.517	35	sDanielson	
244	Thu 20 Apr 2010 19:31:39	20100420.1931.001	CID911 Caluat Nat	recover				30 20	00.23503	-145.517	30	SDanielson	
245	Thu 26 Apr 2018 19:38:06	20180426.1938.001	Calvet Net	aepioy	MID	NIID I		30	60.23502	-145.517	35	KKH	
240	Thu 20 Apr 2010 19:40:40	20100420.1940.001		recover				30 20	00.23003	-145.517	35	KKH •Donieleen	CTD Only Station
247	Thu 20 Apr 2010 21:03:07	20100420.2103.001		deploy				39	00.1/518	-145.5/5	100	spanielson	CID Only Station
24ŏ	Thu 20 Apr 2018 21:04:42	20100420.2104.001		recover		MD'II	N1 - N1	39	00.1/518	-145.5/5	100	spanielson	
250	Thu 26 Apr 2018 21:09:03	20180426.2109.001		recover	MID	MD2i	NaN	40	60.17519	-145.5/5	00	AnaA	
251	1 nu 26 Apr 2018 22:43:37	20180426.2243.001	CIDALI	deploy	MID	MDIZI		40	00.02478	-145.724	96	HStats	

252	Thu 26 Apr 2018 22:55:51	20180426.2255.001	CTD911	recover	MID	MDI2i		40	60.02388	-145.721	100	HStats	
253	Thu 26 Apr 2018 23:32:49	20180426.2332.001	Calvet Net	deploy	MID	MDI3		41	59.95112	-145.801	87	RRH	
254	Thu 26 Apr 2018 23:39:09	20180426.2339.001	Calvet Net	recover	MID	MDI3		41	59.95076	-145.801	87	RRH	
255	Thu 26 Apr 2018 23:51:14	20180426.2351.001	CTD911	deploy	MID	MDI3		41	59.95028	-145.799	87	sDanielson	
256	Fri 27 Apr 2018 00:08:17	20180427.0008.001	CTD911	recover	MID	MID3		41	59.94979	-145.798	86	HStats	
257	Fri 27 Apr 2018 00:58:12	20180427.0058.001	CTD911	deploy	MID	MID3i		42	59.87521	-145.875	101	HStats	
258	Fri 27 Apr 2018 01:47:05	20180427.0147.001	CTD911	recover	MID	MDI3i		42	59.79964	-145.951	100	HStats	
259	Fri 27 Apr 2018 01:48:57	20180427.0148.001	Calvet Net	deploy	MID	MID4		43	59.7994	-145.951	90	RRH	
260	Fri 27 Apr 2018 01:55:21	20180427.0155.001	Calvet Net	recover	MID	MID4		43	59.79873	-145.951	90	RRH	85m wire out
261	Fri 27 Apr 2018 02:00:44	20180427.0200.001	CTD911	deplov	MID	MID4		43	59.79789	-145.951	88	HStats	
262	Fri 27 Apr 2018 02:23:42	20180427.0223.001	CTD911	recover	MID	MID4		43	59.79663	-145.951	89	HStats	
263	Fri 27 Apr 2018 03:17:19	20180427.0317.001	CTD911	deplov	MID	MID4i		44	59.72669	-146.025	72	HStats	
264	Fri 27 Apr 2018 03:31:03	20180427.0331.001	CTD911	recover	MID	MID4i		44	59.72716	-146.025	74	HStats	
265	Fri 27 Apr 2018 06:26:58	20180427.0626.001	Bongo Net	deploy	MID	MID7		16	59.38242	-146,299	65	Ken	
266	Fri 27 Apr 2018 06:31:10	20180427.0631.001	Bongo Net	maxDepth	MID	MID7		16	59.37995	-146.299	65	Ken	
267	Fri 27 Apr 2018 06:34:45	20180427 0634 001	Bongo Net	recover	MID	MID7		16	59 37778	-146 299	54	Ken	
268	Fri 27 Apr 2018 07:56:31	20180427 0756 001	Bongo Net	deploy	MID	MID8		17	59 22765	-146 21	51	Ken	
269	Fri 27 Apr 2018 08:08:41	20180427 0808 001	Bongo Net	maxDenth	MID	MID8		17	59 22332	-146 198	521	Ken	
270	Fri 27 Apr 2018 08:16:05	20180427 0816 001	PCO2	other	NaN	NaN	NaN		59 33871	-146.303	021	Bern	swapped to fresh Nitrogen bottle
271	Fri 27 Apr 2018 08:23:50	20180427 0823 001	Rongo Net	recover	MID	MID8	- Tuan t	17	59 21707	-146 184	930	Ken	
272	Fri 27 Apr 2018 09:25:24	20180427 0925 001	Bongo Net	denlov	MID	MID9		18	59 07488	-146 104	2599	Ken	
273	Fri 27 Apr 2018 09:36:50	20180427 0936 001	Bongo Net	mayDenth	MID	MID9		18	59 06835	-146 1	2500	Ken	
274	Fri 27 Apr 2018 09:48:38	20180427 0948 001	Bongo Net	recover	MID	MIDS		18	59 06138	-146.096	2500	Ken	
275	Fri 27 Apr 2018 10:02:03	20100427.0040.001	EM302	ston	NaN	NaN	NaN	10	50 0/022	-146.090	2000	Born	Secured EM302 due to excessive depth 3300
275	Fri 27 Apr 2018 10:52:05	20100427.1002.001	Bongo Net	deploy	MID	MID10	INCIN	10	58 01708	-146.001	/1301	Kon	Secured Linibuz due to excessive depth 3500
270	Fri 27 Apr 2018 11:06:14	20100427.1052.001	Bongo Net	maxDenth	MID	MID10		10	58 9087/	-140.004	/201	Kon	
278	Fri 27 Apr 2018 11:00:14	20100427.1100.001	Bongo Net	recover	MID	MID10		10	58 8005/	-140	/301	Ken	
270	Fil 27 Apr 2018 12:11:24	20100427.1120.001		doplov	MID	MID10		15	58 80756	-145.995	4591		
219	Eri 27 Apr 2010 12:11:24	20100427.1211.001	TMCTD	receiver	MID	MID10		7	58 00003	145.991		AnaA	
200	Eri 27 Apr 2010 12:01:00	20100427.1231.001	Mothot Trowl	maxDonth	MID	MID10		2	58 01177	-145.992		Kon	No conor
201	Eri 27 Apr 2010 13:07.23	20100427.1307.001	Methot Trowl	racover	MID			2	50.01177	-145.995		Ken	NO SOLIDI
202	FII 27 Apr 2010 13.22.10	20100427.1322.001	Inen Lich	deploy			NaN	3	50.92247	-145.995		AnaA	
203	FII 27 Apr 2010 14:11:35	20100427.1411.001		deploy	NeN	NID IU	NaN		50.90955	-140.901		AnaA	Leasing both mutar
204	FII 27 Apr 2010 14.14.52	20100427.1414.001	EIVIJUZ	Start	MID		NaN		50.97029	-140.902		AnoA	Logging bainymytry
200	FII 27 Apr 2010 14.20.15	20100427.1420.001	Iron Fish	deploy			NaN		50.93901	-145.905		AnaA	Lindenum enligit. 20.4
200	Fil 27 Api 2010 14.21.34	20100427.1421.001		recover	NaN	MID IU	NaN		00.9000Z	-145.903		AnaA	
207	Fri 27 Apr 2018 15:02:43	20180427.1502.001	EIVIJUZ	stop	Nan	inain	INAIN		59.09142	-145.997		Bern	Secured EM302
200	FII 27 Apr 2010 10.30.30	20100427.1000.001	MDARI ISUS	stopSample	NaN	INAIN	NaN		09.40200 50.40000	-140.041		sDanielson	Stopping ISUS to reonent now cell and plumble Deak anline. Found a hit of hisfouling. Draham
209	FII 27 Apr 2010 17:37:32	20100427.1737.001	MBARI 1505	stansample	INAIN	INAIN	INGIN	45	59.433ZZ	-140.041	05	sDanielson	Back online. Found a bit of biofouling. Probe h
290	Fri 27 Apr 2018 18:32:49	20180427.1832.001	CTD911	deploy	MID	MID5		45	59.65227	-146.096	95	sDanielson	
291	Fri 27 Apr 2018 18:50:56	20180427.1850.001	CTD911	recover	MID	MID5		45	59.65538	-146.088	95	sDanielson	
292	Fri 27 Apr 2018 19:09:29	20180427.1909.001	Calvet Net	deploy	MID	MID5		45	59.64919	-146.103	95	RKH	
293	Fri 27 Apr 2018 19:16:03	20180427.1916.001	Calvet Net	recover	MID	MID5		45	59.65084	-146.101	97	ккн	92m wire out
294	Fri 27 Apr 2018 19:31:42	20180427.1931.001	CTD911	deploy	MID	MID5		46	59.6545	-146.094	95	sDanielson	
295	Fri 27 Apr 2018 19:50:26	20180427.1950.001	CID911	recover	MID	MID5		46	59.65572	-146.086	95	sDanielson	
296	Fri 27 Apr 2018 20:15:53	20180427.2015.001	TM CTD	deploy	MID	MID5		9	59.65015	-146.097		AnaA	
297	Fri 27 Apr 2018 20:35:06	20180427.2035.001	IM CTD	recover	MID	MID5		9	59.65113	-146.092	97	AnaA	DEPLOY AND RECOVER TIME APPROXIMA
298	Fri 27 Apr 2018 20:38:20	20180427.2038.001	Calvet Net	deploy	MID	MID5		46	59.64936	-146.1	97	KKH	92m wire out
299	Fri 27 Apr 2018 20:45:11	20180427.2045.001	Calvet Net	recover	MID	MID5		46	59.64979	-146.096	97	RRH	
300	Fri 27 Apr 2018 20:56:29	20180427.2056.001	Iron Fish	deploy	MD	MD5	NaN		59.64433	-146.1		AnaA	
301	Fri 27 Apr 2018 21:14:35	20180427.2114.001	Iron Fish	recover	MiD	MiD5	NaN		59.61691	-146.134		AnaA	

302	Fri 27 Apr 2018 21:52:04	20180427.2152.001	CTD911	deploy	MID	MID5i		47	59.57566	-146.174	114	HStats	
303	Fri 27 Apr 2018 21:59:12	20180427.2159.001	CTD911	recover	MID	MID5I		47	59.57517	-146.172	116	HStats	
304	Fri 27 Apr 2018 22:53:40	20180427.2253.001	Calvet Net	deploy	MID	MID6		48	59.50022	-146.251	37	RRH	32m wire out
305	Fri 27 Apr 2018 22:56:36	20180427.2256.001	Calvet Net	recover	MID	MID6		48	59.4994	-146.249	37	RRH	
306	Fri 27 Apr 2018 23:11:42	20180427.2311.001	CTD911	deploy	MID	MID6		48	59.49906	-146.249	37	HStats	
307	Sat 28 Apr 2018 00:12:15	20180428.0012.001	CTD911	recover	MID	MID6		48	59,42932	-146,167	38	HStats	
308	Sat 28 Apr 2018 00:13:41	20180428.0013.001	CTD911	deploy	MID	MID6i		49	59.42878	-146,167	59.1	HStats	
309	Sat 28 Apr 2018 00:26:57	20180428 0026 001	CTD911	recover	MID	MID6i		69	59 42215	-146 167	65	HStats	
310	Sat 28 Apr 2018 01:05:21	20180428 0105 001	Calvet Net	deploy	MID	MID7		50	59 38277	-146.3	63	RRH	
311	Sat 28 Apr 2018 01:10:02	20180428 0109 001	Calvet Net	recover	MID	MID7		50	59 38208	-146 303	63	RRH	58m wire out
312	Sat 28 Apr 2018 01:33:48	20180428 0133 001		denlov	MID	MID7		50	59 38205	-146 304	50	HState	Som wie out
312	Sat 28 Apr 2018 01:30:40	20100420.0130.001		recover	MID			50	50 38111	-146 305	57	HState	
31/	Sat 28 Apr 2018 03:01:01	20100420.0133.001		denlov	MID	MID7		51	50 30/18	-140.303	123	e Danielson	
215	Sat 20 Apr 2010 03:01:01	20100420.0300.001	CTD911	receiver	MID	MID7		51	50 20071	146.255	420		
216	Sat 20 Apr 2010 03.03.40	20100420.0303.001	Cill911 Colvet Not	deploy	MID			51	50 22670	-140.203	41Z 611	Kon	
217	Sat 20 Apr 2010 03.52.50	20100420.0352.001	Calvet Net	uepioy				52	59.22070	-140.201	611	Ken	
317	Sat 20 Apr 2010 03.59.51	20100420.0309.001		recover				52	59.22591	-140.202	011	Nen LiStata	
318	Sat 28 Apr 2018 04:05:10	20180428.0405.001		deploy	MID	MID8		52	59.22591	-146.202	010	HStats	
319	Sat 28 Apr 2018 04:52:15	20180428.0452.001	C1D911	recover	MID	MID8	N1 - N1	52	59.22433	-146.208	617	HStats	0
320	Sat 28 Apr 2018 06:08:15	20180428.0608.001	UCSW	otner	NaN	Nan	Nan		59.06919	-146.101	0000	Bern	Swapped filters
321	Sat 28 Apr 2018 06:10:00	20180428.0609.001	Calvet Net	deploy	DIM	DIM9		53	59.06918	-146.101	2920	Ken	
322	Sat 28 Apr 2018 06:17:06	20180428.0617.001	Calvet Net	recover	DIM	DIM9		53	59.06908	-146.101	2888	Ken	
323	Sat 28 Apr 2018 06:31:57	20180428.0631.001	CTD911	deploy	MID	MID9		53	59.06905	-146.103	2919	HStats	
324	Sat 28 Apr 2018 07:43:00	20180428.0742.001	CTD911	recover	MID	MID9		53	59.07502	-146.104	2681	HStats	
325	Sat 28 Apr 2018 09:06:24	20180428.0906.001	Calvet Net	deploy	MID	MID10		54	58.90961	-146	4444	Ken	
326	Sat 28 Apr 2018 09:15:09	20180428.0915.001	Calvet Net	recover	MID	MID10		54	58.91025	-146.001	4444	Ken	
327	Sat 28 Apr 2018 09:35:13	20180428.0935.001	CTD911	deploy	MID	MID10		54	58.90951	-146	4443	HStats	
328	Sat 28 Apr 2018 10:42:03	20180428.1042.001	CTD911	recover	MID	MID10		54	58.91351	-146.002	4445	HStats	
329	Sat 28 Apr 2018 10:49:15	20180428.1049.001	PCO2	other	NaN	NaN	NaN		58.912	-145.998		Bern	Computer crashed, rebooted.
330	Sat 28 Apr 2018 18:38:25	20180428.1838.001	CTD911	deploy	CS	CS2I		55	59.68868	-143.89	135	sDanielson	
331	Sat 28 Apr 2018 18:49:54	20180428.1849.001	CTD911	recover	CS	CS2I		55	59.68841	-143.888	134	sDanielson	
332	Sat 28 Apr 2018 20:05:18	20180428.2005.001	CTD911	deploy	CS	CS2		56	59.77268	-143.892	122	sDanielson	
333	Sat 28 Apr 2018 20:05:36	20180428.2005.002	CTD911	recover	CS	CS2		56	59.77268	-143.892	122	sDanielson	
334	Sat 28 Apr 2018 20:12:17	20180428.2012.001	Calvet Net	deploy	CS	CS2		57	59.77268	-143.892	122	RRH	
335	Sat 28 Apr 2018 20:19:57	20180428.2019.001	Calvet Net	recover	CS	CS2		57	59.77268	-143.892	122	RRH	
336	Sat 28 Apr 2018 20:33:55	20180428.2033.001	CTD911	deploy	CS	CS2		57	59.77268	-143.892	122	sDanielson	
337	Sat 28 Apr 2018 20:55:34	20180428.2055.001	CTD911	recover	CS	CS2		57	59.77268	-143.892	122	sDanielson	
338	Sat 28 Apr 2018 21:09:02	20180428.2108.001	TM CTD	deploy	CS	CS2		10	59.77268	-143.892	122	AnaA	
339	Sat 28 Apr 2018 21:25:03	20180428.2125.001	TM CTD	recover	CS	CS2		10	59.77268	-143.892	122	AnaA	slightly late
340	Sat 28 Apr 2018 21:31:30	20180428.2131.001	Calvet Net	deploy	CS	CS2		57	59.77224	-143.894	122	RRH	live net
341	Sat 28 Apr 2018 21:40:24	20180428.2140.001	Calvet Net	recover	CS	CS2		57	59.77219	-143.895	122	RRH	
342	Sat 28 Apr 2018 22:22:53	20180428.2222.001	Iron Fish	deploy	CS	CS1.75			59.8144	-143.892	116	AnaA	
343	Sat 28 Apr 2018 22:34:35	20180428.2234.001	Iron Fish	recover	CS	CS2	NaN		59.81451	-143.893		AnaA	
344	Sat 28 Apr 2018 22:34:40	20180428.2234.002	Iron Fish	recover	CS	CS2	NaN		59.81451	-143,893		AnaA	
345	Sat 28 Apr 2018 22:35:29	20180428 2235 001	MBARI ISUS	startSample	NaN	NaN	NaN		59 80645	-143 893		eRoth	swapped with spare ISUS unit s/n 248
346	Sat 28 Apr 2018 22:37:26	20180428 2237 001	CTD911	deploy	CS	CS1 75		58	59 81451	-143 893	116	sDanielson	
347	Sat 28 Apr 2018 22:47:13	20180428 2247 001	CTD911	recover	CS	CS1 75		58	59 81457	-143 893	116	sDanielson	
348	Sat 28 Apr 2018 23:27:57	20180428 2327 001	CTD911	deploy	ČS	CS1I		59	59 85628	-143 893	104	sDanielson	
349	Sat 28 Apr 2018 23:36:43	20180428 2336 001	CTD911	recover	CS	CS1		59	59 8561	-143 894	104	sDanielson	
350	Sun 29 Apr 2018 00:07:38	20180429 0007 001	Calvet Net	denlov	CS CS	CS1 25		60	59 89821	-143 80	87	RRH	82m wire out
351	Sun 29 Apr 2018 00:14:08	20180429 0014 001	Calvet Net	recover	CS CS	CS1 25		60	59 89806	-143 891	87	RRH	
001	Sun 20 Api 2010 00.14.00	20100720.0017.001	Galverner	1000101	00	001.20		00	00.00000	1-0.001	01	T M M T	

352	Sun 29 Apr 2018 00:27:21	20180429.0027.001	CTD911	deploy	CS	CS1.25		60	59.89783	-143.892	85	sDanielson	
353	Sun 29 Apr 2018 00:35:38	20180429.0035.001	CTD911	recover	CS	CS1.25		60	59.89753	-143.894	85	sDanielson	
354	Sun 29 Apr 2018 01:07:32	20180429.0107.001	Calvet Net	deploy	CS	CS1		61	59.93905	-143.889	64	RRH	59m wire out
355	Sun 29 Apr 2018 01:15:30	20180429.0115.001	Calvet Net	recover	CS	CS1		61	59.93901	-143.89	64	RRH	
356	Sun 29 Apr 2018 01:27:16	20180429.0127.001	CTD911	deploy	CS	CS1		61	59,93914	-143,889	64	sDanielson	
357	Sun 29 Apr 2018 01:43:26	20180429 0143 001	CTD911	recover	CS	CS1		61	59 93924	-143 889	63.3	HStats	
358	Sun 29 Apr 2018 02:09:03	20180429 0209 001	Acrobat CTD	other	CS	CS1		61	59 93857	-143 888	63.3	HStats	
359	Sun 29 Apr 2018 03:03:54	20180429 0303 001	0\$150	service	NaN	NaN	NaN	•	59 87077	-143 886	0010	eRoth	changed calibration in proc. cfg py, new datase
360	Sun 29 Apr 2018 06:05:37	20180429 0605 001	Bongo Net	denlov	CS	CS1	nun	20	59 93785	-143 89	65	Ken	
361	Sun 29 Apr 2018 06:10:03	20180420.0000.001	Bongo Net	mayDenth	CS	CS1		20	50 03622	-1/3 887	65	Kon	
362	Sun 20 Apr 2018 06:15:36	20100423.0010.001	Bongo Not	rocovor	CS	CS1		20	50 03/15	1/3 882	65	Kon	
262	Sun 20 Apr 2010 00:13:30	20100429.0013.001		othor	NoN	NoN	NoN	20	50 96265	-143.002	05	Born	Swannad filtara
303	Sull 29 Apr 2010 00.51.14	20100429.0001.001		other	NaN	Nan	NaN		59.00303	-143.004		Dem	Swapped filters
304	Sull 29 Apr 2010 00.51.17	20100429.0001.002	DUSW	other	INAIN	INAIN	inain	04	59.00353	-143.004	404	Ben	Swapped inters
365	Sun 29 Apr 2018 07:32:54	20180429.0732.001	Bongo Net	recover	CS	052		21	59.77267	-143.89	124	Ken	
366	Sun 29 Apr 2018 07:42:01	20180429.0741.001	Bongo Net	maxDepth	CS	CS2		21	59.76719	-143.883	124	Ken	
367	Sun 29 Apr 2018 07:51:50	20180429.0751.001	Bongo Net	recover	CS	CS2		21	59.7612	-143.876	124	Ken	
368	Sun 29 Apr 2018 08:58:12	20180429.0858.001	Bongo Net	deploy	CS	CS3		22	59.61147	-143.899	192	Ken	
369	Sun 29 Apr 2018 09:07:26	20180429.0907.001	Bongo Net	maxDepth	CS	CS3		22	59.6059	-143.894	192	Ken	
370	Sun 29 Apr 2018 09:16:57	20180429.0916.001	Bongo Net	recover	CS	CS3		22	59.60032	-143.889	226	Ken	
371	Sun 29 Apr 2018 10:21:06	20180429.1021.001	EM302	stop	NaN	NaN	NaN		59.44653	-143.896		Bern	secured 302 during Off shelf +2000 meters dep
372	Sun 29 Apr 2018 10:21:27	20180429.1021.002	Bongo Net	deploy	CS	CS4		23	59.60026	-143.889	226	Ken	
373	Sun 29 Apr 2018 10:32:34	20180429.1032.001	Bongo Net	maxDepth	CS	CS4		23	59.43837	-143.892	2000	Ken	
374	Sun 29 Apr 2018 10:43:42	20180429.1043.001	Bongo Net	recover	CS	CS4		23	59.43107	-143.889	2000	Ken	
375	Sun 29 Apr 2018 11:49:06	20180429.1149.001	Bongo Net	recover	CS	CS5		24	59.28063	-143.895	2500	Ken	
376	Sun 29 Apr 2018 11:52:25	20180429.1152.001	Bongo Net	deploy	CS	CS5		24	59.28066	-143.895	2500	Ken	Redoployed
377	Sun 29 Apr 2018 12:03:51	20180429.1203.001	Bongo Net	maxDepth	CS	CS5		24	59.27083	-143.892	2500	Ken	
378	Sun 29 Apr 2018 12:16:07	20180429.1216.001	Bongo Net	recover	CS	CS5		24	59,26267	-143.89	2500	Ken	
379	Sun 29 Apr 2018 13:09:21	20180429 1309 001	Methot Trawl	recover	CS	CS5-4		24	59 35363	-143 896	2500	Ken	Between CS5 and CS4
380	Sun 29 Apr 2018 13:09:26	20180429 1309 002	Methot Trawl	recover	CS	CS5-4		24	59 35357	-143 896	2500	Ken	Between CS5 and CS4
381	Sun 29 Apr 2018 13:29:42	20180429 1329 001	Methot Trawl	recover	CS	0.85-4		24	59 33909	-143 899	2500	Ken	
382	Sun 29 Apr 2018 14:08:08	20180429 1408 001	EM302	start	NaN	NaN	NaN	2.	59 41797	-143 912	2000	Rem	Night net tows complete EM302 active recordi
383	Sun 20 Apr 2018 15:22:21	20100420.1400.001	Calvet Net	denlov	00	C 63	INCIN	62	50 6065	-1/3 80	103	Caitlin	calvet 36
384	Sun 20 Apr 2018 15:20:27	20100423.1522.001	Calvet Net	rocovor	CS	C63		62	50 60724	1/3 201	103	Caitlin	carrer 50
385	Sun 20 Apr 2018 15:53:16	20100423.1523.001		doploy	CS	C63		62	50 606/1	1/3 201	106	cDaniolcon	
200	Sun 20 Apr 2010 15.55.10	20100429.1000.001		depidy	03	000		62	50.00041	-143.091	100	sDanielson	
200	Sull 29 Apr 2010 10:20.21	20100429.1020.001		recover	00	000		02	59.00032	-143.091	190	SDanielson	
387	Sun 29 Apr 2018 17:12:19	20180429.1712.001		deploy		0031		03	59.52215	-143.893	1310	sDanielson	
388	Sun 29 Apr 2018 18:03:15	20180429.1803.001		recover		004		63	59.52248	-143.893	1310	sDanielson	
389	Sun 29 Apr 2018 18:59:53	20180429.1859.001	Calvet Net	deploy	CS	054		65	59.44077	-143.893	2010	RKH	
390	Sun 29 Apr 2018 19:06:46	20180429.1906.001	Calvet Net	recover	CS	CS4		65	59.44081	-143.894	2010	RKH	
391	Sun 29 Apr 2018 19:22:36	20180429.1922.001	CTD911	deploy	CS	CS4		64	59.44103	-143.892	2045	sDanielson	PROD CAST
392	Sun 29 Apr 2018 19:46:44	20180429.1946.001	CTD911	recover	CS	CS4		64	59.44434	-143.897	2045	sDanielson	
393	Sun 29 Apr 2018 20:26:15	20180429.2026.001	Calvet Net	deploy	CS	CS4		65	59.43657	-143.893	2033	RRH	LIVE
394	Sun 29 Apr 2018 20:36:33	20180429.2036.001	Calvet Net	recover	CS	CS4		65	59.4365	-143.894	2033	RRH	
395	Sun 29 Apr 2018 20:40:11	20180429.2040.001	TM CTD	deploy	CS	CS4		11	59.43626	-143.895		AnaA	
396	Sun 29 Apr 2018 21:33:19	20180429.2133.001	TM CTD	recover	CS	CS4		11	59.43548	-143.907		AnaA	
397	Sun 29 Apr 2018 21:56:59	20180429.2156.001	CTD911	deploy	CS	CS4		65	59.43822	-143.893	2033	sDanielson	
398	Sun 29 Apr 2018 23:24:58	20180429.2324.001	CTD911	recover	CS	CS4		65	59.43853	-143.899	2033	sDanielson	
399	Sun 29 Apr 2018 23:46:58	20180429.2346.001	Iron Fish	deploy	CS	CS4	NaN		59.42356	-143.911		AnaA	
400	Mon 30 Apr 2018 00:05:17	20180430.0005.001	EK60	stop	NaN	NaN	NaN		59.38587	-143.908		eRoth	multibeam and adcp's are priority in deep wate
401	Mon 30 Apr 2018 00:06:11	20180430.0006.001	OS150	service	NaN	NaN	NaN		59.38403	-143.907		eRoth	off k-sync
	•												-

403 Mon 30 Apr 2016 91:11:3 20180430 0114.001 Caher Net equation CS CS 66 69.27333 -143.893 2810 RH+ 405 Mon 30 Apr 2016 91:21:3 20180430 0110.001 CTD depton CS CS 66 69.27327 -143.893 2805 Bolmeison 406 Mon 30 Apr 2018 01:2:0 10100430 01 UNCSW service NaN NaN NaN 59.27767 -143.895 abs/2 abs/2 Assista abs/2 abs/2 Assista abs/2 Assista abs/2 Assista abs/2 Assista As	402	Mon 30 Apr 2018 00:06:39	20180430.0006.002	OS75	service	NaN	NaN	NaN		59.38307	-143.907		eRoth	off k-sync
44b Mon 30 Apr 2016 01:31 20180K40 01:21:01 Call Mark Net Net ecourt CS CS CS 65 92/732 -143.893 2810 RH+ 46b Mon 30 Apr 2016 02:12 12100K430 01:32:01 UNCSW sarrivac Nan Nan <td< td=""><td>403</td><td>Mon 30 Apr 2018 01:14:16</td><td>20180430.0114.001</td><td>Calvet Net</td><td>deploy</td><td>CS</td><td>CS5</td><td></td><td>66</td><td>59.27303</td><td>-143.893</td><td>2810</td><td>RRH</td><td></td></td<>	403	Mon 30 Apr 2018 01:14:16	20180430.0114.001	Calvet Net	deploy	CS	CS5		66	59.27303	-143.893	2810	RRH	
db/s Mon 30 Apr 2018 02:35:1 2018 02:00 1013:00 CTD111 deploy CS CSS 66 59:27:37 -143.893 2050 amped filter 00 00 30 Apr 2018 02:50:0 100 100 100 100 100 100 100 100 100 100	404	Mon 30 Apr 2018 01:21:31	20180430.0121.001	Calvet Net	recover	CS	CS5		66	59.27332	-143.893	2810	RRH	
406 Mon 30 Arg 2018 02:10:03 20180430.22:20 UNX SW service NaN NaN NaN S92.7709 -143.885 eRoth swapped filter 406 Mon 30 Arg 2018 02:10:03 20180430.02:20 10111 necover CS CS No 592.7783 -143.896 288 HStats 410 Mon 30 Arg 2018 10:10.2 20180430.101:00.0 Calvet Met deploy GAK GAK15 68 57.7171 -147.488 4501 RRH 411 Mon 30 Arg 2018 10:10.2 20180430.101:00.0 Calvet Met deploy GAK GAK15 68 57.71718 -147.448 4501 RRH 413 Mon 30 Arg 2018 10:40.2 20180430.101:00.0 Calvet Met deploy SEWARD GAK15 68 57.71818 -147.490 450 RRH 414 Mon 30 Arg 2018 10:40.2 20180430.101:00.0 Calvet Met deploy SEWARD GAK15 68 57.71818 -147.490 A61 RRH 414 Mon 30 Arg 218 20:10.2 <td< td=""><td>405</td><td>Mon 30 Apr 2018 01:33:51</td><td>20180430.0133.001</td><td>CTD911</td><td>deploy</td><td>CS</td><td>CS5</td><td></td><td>66</td><td>59.27357</td><td>-143.893</td><td>2805</td><td>sDanielson</td><td></td></td<>	405	Mon 30 Apr 2018 01:33:51	20180430.0133.001	CTD911	deploy	CS	CS5		66	59.27357	-143.893	2805	sDanielson	
407 Mon 30 Apr 2018 02:32:17 20180330 030: 02:001 Inon Fish recover CS CSS 65 95:2732 143.805 AnaA 408 Mon 30 Apr 2018 01:149 20180330 030: 01:100 Inon Fish deploy GAK GAK15 NeB 57:9555 147:224 AnaA 411 Mon 30 Apr 2018 16:133 20180330 180:00 Calve Net recover GAK GAK15 68 57:9159 147:489 4561 RFH 411 Mon 30 Apr 2018 18:33 2018030 188:00 CTD9111 recover SEWARD GAK15 68 57:7158 147:489 4561 RFH 412 Mon 30 Apr 2018 18:43 2018030 188:00 CTD9111 recover SEWARD GAK15 68 57:7188 147:499 4561 RFH 416 Mon 30 Apr 2018 18:43 2018030 188:000 CTD911 recover SEWARD GAK15 68 57:7188 147:494 4541 4561 RFH 417 Mon 30 Apr 2018 20:127 CTD9111 recover SEWARD GAK15 NaN 57:7188 147:494 4510 RFH	406	Mon 30 Apr 2018 02:19:03	20180430.0219.001	UNCSW	service	NaN	NaN	NaN		59.27709	-143.895		eRoth	swapped filter
40/bit Mon 30 Apr 2016 306:09 2018/431 0006:00 CD1011 rencover CSS CSSS CSS CSS CSS </td <td>407</td> <td>Mon 30 Apr 2018 02:32:17</td> <td>20180430.0232.001</td> <td>Iron Fish</td> <td>recover</td> <td>CS</td> <td>CS5</td> <td>NaN</td> <td></td> <td>59.27732</td> <td>-143.895</td> <td></td> <td>AnaA</td> <td></td>	407	Mon 30 Apr 2018 02:32:17	20180430.0232.001	Iron Fish	recover	CS	CS5	NaN		59.27732	-143.895		AnaA	
4/20 Mon 30 Apr 2016 16:13:39 20180433.1811.001 Tor Fish deploy GAK GAK15 6.8 57.7315 1-17.224 AnaA 11 Mon 30 Apr 2016 16:233 20180433.180.001 Calvet Net recover GAK GAK15 6.8 57.7315 1-17.498 4551 RRH 12 Mon 30 Apr 2016 18:033 20180430.180.001 CTD911 deploy SEWARD GAK15 6.7 57.73168 1-17.498 4531 Bamelson 141 Mon 30 Apr 2018 18:043 20180430.184.001 Calvet Nut deploy SEWARD GAK15 6.8 57.73168 1-17.498 4531 Bamelson 141 Mon 30 Apr 2018 18:02.7 20180430.185.001 Calvet Nut recover SEWARD GAK15 6.8 57.73168 1-17.498 4531 RRH 141 Mon 30 Apr 2018 18:02.7 20180430.185.001 Calvet Nut recover SEWARD GAK15 NaN 57.73168 1-17.498 451 RNH DEEP 147 Mon 30 Apr 2018 20137 <td>408</td> <td>Mon 30 Apr 2018 03:06:09</td> <td>20180430.0306.001</td> <td>CTD911</td> <td>recover</td> <td>CS</td> <td>CS5</td> <td></td> <td>66</td> <td>59.27983</td> <td>-143.896</td> <td>2688</td> <td>HStats</td> <td></td>	408	Mon 30 Apr 2018 03:06:09	20180430.0306.001	CTD911	recover	CS	CS5		66	59.27983	-143.896	2688	HStats	
410 Mon 30 Apr 2018 (30.33) 2018/30.1802.001 Calvet Net deploy GAK 15 68 57.7915 -147.498 4561 RRH 411 Mon 30 Apr 2018 (30.33) 2018/30.1802.001 CTDD11 deploy SEWARD GAK15 67 57.79169 -147.499 4531 SDamielson PRIM PROD CAST 414 Mon 30 Apr 2018 (34.34) 2018/30.182.001 CTDD11 regloy SEWARD GAK15 67 57.79168 -147.499 4531 SDamielson PRIM PROD CAST 414 Mon 30 Apr 2018 (34.34) 2018/30.184.001 Calvet Net regover SEWARD GAK15 68 57.79168 -147.499 4561 RRH 416 Mon 30 Apr 2018 (32.616) 2018/30.1960.001 CTDB11 regover SEWARD GAK15 88 57.79168 -147.499 4501 RRH DEEP 418 Mon 30 Apr 2018 (32.612) 2018/30.1201.001 Colvet MultiNet regover SEWARD GAK15 Na 57.79168 -147.499 4501 RRH DEEP ECDVER 418 Mon 30 Apr 2018 (21.217) 2018/30.2101.001	409	Mon 30 Apr 2018 16:11:49	20180430.1611.001	Iron Fish	deploy	GAK	GAK15	NaN		57.90535	-147.224		AnaA	
111 Mon 30 Ac 2018 12:042 20184330 1810.001 Carbot Net recover SEWARD GAK15 67 57.79169 -147.499 454 sDamelson 113 Mon 30 Ac 2018 12:33464 20184330 1850.001 CT0911 recover SEWARD GAK15 67 57.79168 -147.499 451 sDamelson 114 Mon 30 Ac 2018 12:334 20184330 1850.001 Carbot Net 62018 SEWARD GAK15 68 57.79168 -147.499 451 RRH 116 Mon 30 Ac 2018 12:0521 20184330 1905.001 Carbot Net FEWARD GAK15 68 57.79168 -147.499 451 HS1 116 Mon 30 Ac 2018 12:0521 20184330 2103.001 Choria Multible recover SEWARD GAK15 68 57.79168 -147.499 451 HS1	410	Mon 30 Apr 2018 18:03:33	20180430.1803.001	Calvet Net	deploy	GAK	GAK15		68	57.79173	-147.498	4561	RRH	
1/12 Mon 30 Arg 2018 128.2039 20168430 1820.001 CTD911 regover SEWARD GAX15 67 67.7186 -147.499 45.4 sDamelson PRIM PROD CAST 141 Mon 30 Arg 2018 183.45 20168430 184.3001 Convert Net deptoy SEWARD GAX15 68 57.79168 -147.499 45.6 RRAT 146 Mon 30 Arg 2018 184.006 Clowel Net recover SEWARD GAX15 68 57.79168 -147.499 AsaA 147 Mon 30 Arg 2018 19.06.400 Clowel Net recover SEWARD GAX15 68 57.79168 -147.499 AsaA 147 Mon 30 Arg 2018 20.272.6 20168430 207.001 CTD911 recover SEWARD GAX15 Na1 57.79168 -147.499 AsiA HSIA 149 Mon 30 Arg 2018 20.251.4 20168430 201.001 TM CTD9 SEWARD GAX15 Na1 57.79168 -147.693 451.0 RRAT PEEP 210 Mon 30 Arg 2018 20.251.5 20168430 201.001 TM CTD9 SEWARD GAX15 Na1 57.79103 -147.503 451.0 RR	411	Mon 30 Apr 2018 18:10:42	20180430.1810.001	Calvet Net	recover	GAK	GAK15		68	57.79159	-147,499	4561	RRH	
413 Mon 30 Apr 2016 13:8:46 201803:0:183:46 201803:0:183:46 201803:0:184:00 Carryin recover SEWARD GAX15 67 57.79168 -147.499 453 Sebalanes 415 Mon 30 Apr 2016 18:43:0 2018030:184:00 Carryin February SEWARD GAX15 Nat 57.79168 -147.499 Acia Acia 416 Mon 30 Apr 2016 19:0:2:1 2018030:1906:00 Carryin depicy SEWARD GAX15 Nat 57.79168 -147.499 Acia Hat 417 Mon 30 Apr 2016 21:0:2:1 2018030:210:00 Vertical MultiNet depicy SEWARD GAX15 Nat 57.79168 -147.499 Acia HAt Hat </td <td>412</td> <td>Mon 30 Apr 2018 18:20:39</td> <td>20180430.1820.001</td> <td>CTD911</td> <td>deploy</td> <td>SEWARD</td> <td>GAK15</td> <td></td> <td>67</td> <td>57.79169</td> <td>-147.499</td> <td>4543</td> <td>sDanielson</td> <td>PRIM PROD CAST</td>	412	Mon 30 Apr 2018 18:20:39	20180430.1820.001	CTD911	deploy	SEWARD	GAK15		67	57.79169	-147.499	4543	sDanielson	PRIM PROD CAST
141 Mon 30 Apr 2016 18:43:4 2018030:143:340 Calvet Net deploy SEWARD GAKIS Na8 57.79168 -147.499 A561 RRH 145 Mon 30 Apr 2016 18:0:07 2018030:1650.001 Calvet Net recover SEWARD GAKIS Na8 -147.499 4561 RRH 147 Mon 30 Apr 2016 20:27.58 2018030:0202.001 CTD011 deploy SEWARD GAKIS Na8 -147.499 4541 NRH 148 Mon 30 Apr 2016 20:27.58 2018030:202.001 Vertical MultiNet recover SEWARD GAKIS Na8 -147.499 4510 RRH DEEP 149 Mon 30 Apr 2016 20:12.2 2018030:201.001 Vertical MultiNet recover SEWARD GAKIS Na8 57.79168 -147.499 4510 RRH DEEP DEP	413	Mon 30 Apr 2018 18:36:45	20180430.1836.001	CTD911	recover	SEWARD	GAK15		67	57.79168	-147,499	4543	sDanielson	
415 Mon 30 Apr 2018 18:44:06 2010430.18:44:001 Toro Fish recover SEWARD GAK15 NaN 57.79168 -147.499 AnaA 417 Mon 30 Apr 2018 19:06:40 2010430.1906.001 CTD911 deploy SEWARD GAK15 68 57.79168 -147.499 4541 State 418 Mon 30 Apr 2018 21:03:21 2010430.200701 CTD911 deploy SEWARD GAK15 NaN 57.79168 -147.499 4511 Nstate 419 Mon 30 Apr 2018 21:03:1 2010430.201001 Verticeal MultiNet deploy SEWARD GAK15 NaN 57.79168 -147.503 4510 RRH DEEP RECOVER 421 Mon 30 Apr 2018 23:01:72 2010430.2317.001 Verticeal MultiNet deploy SEWARD GAK15 NaN 57.7903 -147.503 4510 RRH RECOVER SHALLOW 423 Mon 30 Apr 2018 23:01:27 20104930.2317.001 Verticeal MultiNet deploy SEWARD GAK14 69 57.9013 -147.503 4510 RRH 423 Mon 20 Apr 2018 23:01:22 20189001.024.001 CDBH14 deploy	414	Mon 30 Apr 2018 18:43:34	20180430.1843.001	Calvet Net	deploy	SEWARD	GAK15		68	57.79168	-147.499	4561	RRH	
416 Mon 30 Apr 2018 18:027 20190430.18:00.01 Calvet Net recover SEWARD GAK15 68 57.79168 -147.499 4549 SDanielson 418 Mon 30 Apr 2018 20:7.98 20190430.027.001 TOTD311 recover SEWARD GAK15 68 57.79168 -147.499 4549 SDanielson 419 Mon 30 Apr 2018 21:03:1 20190430.227.001 TDTD11 requiry SEWARD GAK15 68 57.79168 -147.499 4541 HStats 420 Mon 30 Apr 2018 21:03:1 20190430.227.001 Vartical MultiNet recover SEWARD GAK15 NaN 57.7912 -147.502 4510 RRH DEEP 421 Mon 30 Apr 2018 23:01:23 20190430.237.001 Vertical MultiNet recover SEWARD GAK14 68 57.9913 -147.502 4510 RRH RECOVER 423 Tue 01 May 2018 03:04:626 20190501:00:00.00 Cabvet Net Gelloy SEWARD GAK14 68 57.9913 -147.63 3095 HStats 425 Tue 01 May 2018 03:04:26 20190501:042.001 Cabvet Net	415	Mon 30 Apr 2018 18:44:06	20180430.1844.001	Iron Fish	recover	SEWARD	GAK15	NaN		57.79168	-147,499		AnaA	
417 Mon: 30 Apr 2018 19/06:40 20180430 1006.001 CT0911 deploy SEWARD GAK15 68 57.79168 -147.499 4541 HStats 418 Mon: 30 Apr 2018 21/35:21 20180430 2103.001 Ventical MultiNet deploy SEWARD GAK15 Nav 57.79168 -147.499 4510 RRH DEEP 419 Mon: 30 Apr 2018 21/55:15 11550.01 Ventical MultiNet deploy SEWARD GAK15 Nav 57.79163 -147.499 4510 RRH DEEP 421 Mon: 30 Apr 2018 23/17.28 20180430 201.001 Ventical MultiNet deploy SEWARD GAK15 Nav 57.79003 -147.65 3518 RRH RECOVER SHALLOW 473 Mon: 30 Apr 2018 23/17.28 2018030 2317.001 Ventical MultiNet deploy SEWARD GAK14 69 57.9013 -147.65 3518 RRH 474 Tuo 01 May 2018 00240:28 20180501 0045.001 CT0911 deploy SEWARD GAK14 69 57.94013 -147.65 3518 RRH 427 Tuo 01 May 2018 032.41 20180501 024.001 <	416	Mon 30 Apr 2018 18:50:27	20180430.1850.001	Calvet Net	recover	SEWARD	GAK15		68	57.79168	-147,499	4561	RRH	
418 Mon: 30 Apr 2018 2027:58 20180430 2027:00 CTD911 recover (eploy SEWARD GAK15 68 57.79168 -147.499 451 HStats 420 Mon: 30 Apr 2018 21:55:1 20180430 2155.00 Vertical MultiNet recover SEWARD GAK15 Nan 57.78168 -147.498 4510 RRH DEEP RECOVER 421 Mon: 30 Apr 2018 2301:55 20180430 2301:001 Vertical MultiNet deploy SEWARD GAK15 Nan 57.7812 -147.502 4510 RRH DEEP RECOVER 422 Mon: 30 Apr 2018 2301:55 20180430 2301:001 Vertical MultiNet recover SEWARD GAK15 Nan 57.7913 -147.563 3518 RH 423 Tuo 01 May 2018 00:463.00 20180501:0030.00 CTD911 deploy SEWARD GAK14 69 57.34191 -147.65 3518 RH 425 Tuo 01 May 2018 00:42.02 20180501:0024.001 CTD911 recover SEWARD GAK13 70 58.09673 -147.755 2058 RRH 427 Tuo 01 May 2018 00:21.041 CTD911 recover	417	Mon 30 Apr 2018 19:06:40	20180430.1906.001	CTD911	deploy	SEWARD	GAK15		68	57.79169	-147,499	4549	sDanielson	
419 Mon 30 År 2018 21:03:21 20180430.2103.001 Vertical MultiNet deploy SEWARD GAK15 NaN 57.7818 -147.499 4510 RRH DEEP 420 Mon 30 Apr 2018 25:01:5 20180430.2201.001 TM CTD deploy SEWARD GAK15 NaN 57.7812 -147.503 4510 RRH DEEP RECOVER 421 Mon 30 Apr 2018 25:01:5 20180430.2301.001 Vertical MultNet deploy SEWARD GAK15 NaN 57.79103 -147.503 4510 RRH SHALOW 423 Mon 30 Apr 2018 22:01:27 20180430.2301.001 Calvel Net deploy SEWARD GAK14 69 57.94113 -147.653 3518 RRH RECOVER SHALLOW 424 Tue 01 May 2018 00:42:01 20180501.1008.001 CTD911 deploy SEWARD GAK14 69 57.9413 -147.653 3518 RRH 425 Tue 01 May 2018 00:24:28 20180501.1016.001 CTD911 deploy SEWARD GAK13 70 50.98673 -147.755 2658 RRH 430 Tue 01 May 2018 03:24:42 20180501.033.00	418	Mon 30 Apr 2018 20:27:58	20180430.2027.001	CTD911	recover	SEWARD	GAK15		68	57.79168	-147,499	4541	HStats	
420 Mon. 30 Apr 2018 22:15:14 20180430.2215.001 Vertical MultiNet recover SEWARD GAK15 NaN 57.78825 -147.500 4510 RRH DEEP RECOVER 421 Mon. 30 Apr 2018 22:01:27 20180430.2301.01 Yertical MultiNet recover SEWARD GAK15 NaN 57.7925 -147.502 4510 RRH BECOVER 423 Mon. 30 Apr 2018 23:01:55 20180430.2301.01 Vertical MultiNet recover SEWARD GAK15 NaN 57.7912 -147.503 4510 RRH RECOVER 424 Tue 01 May 2018 00:46.35 2018050 1.0048.001 Calvet Net recover SEWARD GAK14 69 57.9416 -147.653 3518 RRH 427 Tue 01 May 2018 00:42.02 2018050 1.024.001 COMENT recover SEWARD GAK13 70 58.0873 -147.653 3518 RRH 429 Tue 01 May 2018 02:24.25 2018050 1.024.001 COMENT recover SEWARD GAK13 70 58.0873 -147.755	419	Mon 30 Apr 2018 21:03:21	20180430,2103,001	Vertical MulitNet	deploy	SEWARD	GAK15	NaN		57,79168	-147,499	4510	RRH	DEEP
421 Mon 30 Apr 2018 22:01:27 20180x30 2201:001 TM CTD deploy SEWARD GAK15 Na1 57.790:3 -147.501 AnaA 422 Mon 30 Apr 2018 22:01:27 20180x30 2201:001 Vertical MultiNet deploy SEWARD GAK15 Na1 57.790:3 -147.503 4510 RRH RECOVER SHALLOW 424 Tue 01 May 2018 00:45:01 20180x01 00:46:001 Calvet Net deploy SEWARD GAK14 69 57.94191 -147.653 3518 RRH 425 Tue 01 May 2018 00:45:09 20180x01 00:40:001 CTD911 deploy SEWARD GAK14 69 57.94191 -147.663 3995 HStats 428 Tue 01 May 2018 02:14:22 20180x01 00:21:001 CDVNCW service NaN NaN NaN 57.94621 -147.663 service Swaped filter 429 Tue 01 May 2018 03:24:32 20180x01 00:22:001 Calvet Net recover SEWARD GAK13 70 58.09873 -147.795 2058 RRH 420	420	Mon 30 Apr 2018 21:55:14	20180430.2155.001	Vertical MulitNet	recover	SEWARD	GAK15	NaN		57.78852	-147.505	4510	RRH	DEEP RECOVER
422 Mon 30 Apr 2018 23:01:55 2018/0430.2301 00:1 Vertical MultiNet deploy SEWARD GAK15 NaN 57.7912 -147.502 4510 RRH RECOVER SHALLOW 423 Mon 30 Apr 2018 23:01:55 2018/030.2317.001 Vertical MultiNet recover SEWARD GAK14 69 57.79103 -147.503 4510 RRH RECOVER SHALLOW 425 Tue 01 May 2018 00:46:36 2018/050.10046.001 Calvet Net recover SEWARD GAK14 69 57.94113 -147.65 3518 RRH 427 Tue 01 May 2018 02:04:25 2018/050.1024.001 CTD911 recover SEWARD GAK14 69 57.94113 -147.65 3039 HStats 429 Tue 01 May 2018 03:21:41 2018/050.1024.001 CTD911 recover SEWARD GAK13 70 58.09873 -147.795 2058 RRH 431 Tue 01 May 2018 03:342 2018/050.1033.001 CTD911 recover SEWARD GAK13 70 58.09873 -147.795 2058 RR	421	Mon 30 Apr 2018 22:01:27	20180430.2201.001	TM CTD	deploy	SEWARD	GAK15		12	57.79259	-147.501		AnaA	
423 Mon 30 Apr 2018 2317.28 20180430.2317.001 Vertical MultiNet recover SEWARD GAK15 Nan 57.79003 -147.503 4510 RRH RCOVER SHALLOW 424 Tue 01 May 2018 00:46:36 20180501.0038.001 Calvet Net deploy SEWARD GAK14 69 57.94191 -147.65 3518 RRH 425 Tue 01 May 2018 00:46:36 20180501.0046.001 CTD911 deploy SEWARD GAK14 69 57.94161 -147.65 3518 RRH 426 Tue 01 May 2018 02:45:2 20180501.024.001 CTD911 recover SEWARD GAK14 69 57.93462 -147.650 3095 HStats 428 Tue 01 May 2018 02:45:2 20180501.024.001 Calvet Net recover SEWARD GAK13 70 58.09873 -147.795 2058 RRH 430 Tue 01 May 2018 03:24:33 20180501.034.001 CTD911 recover SEWARD GAK13 70 58.09873 -147.795 2058 RRH 431 Tue 01 May 2018 04:31:30 20180501.0431.001 CTD911 recover SEWARD	422	Mon 30 Apr 2018 23:01:55	20180430.2301.001	Vertical MulitNet	deploy	SEWARD	GAK15	NaN		57,7912	-147.502	4510	RRH	sHALLOW
424 Tue 01 May 2018 00:39:01 20180501.0038.001 Calvet Net deploy SEWARD GAK14 69 57.94101 -147.65 3518 RRH 425 Tue 01 May 2018 00:46:36 20180501.0046.001 Calvet Net recover SEWARD GAK14 69 57.94101 -147.65 3518 RRH 427 Tue 01 May 2018 02:04:25 20180501.024.001 CTD9111 deploy SEWARD GAK14 69 57.9476 -147.653 3005 HStats 428 Tue 01 May 2018 02:04:25 20180501.024.001 CTD9111 deploy SEWARD GAK13 70 58.09873 -147.795 2058 RRH 429 Tue 01 May 2018 03:24:41 20180501.0321.001 Calvet Net deploy SEWARD GAK13 70 58.09873 -147.795 2058 RRH 434 Tue 01 May 2018 03:43:42 20180501.0330.001 CTD9111 deploy SEWARD GAK13 70 58.09873 -147.795 2059 HStats 431 Tue 01 May 2018 04:36:10 20180501.0430.001 CTD9111 deploy SEWARD GAK13 70 5	423	Mon 30 Apr 2018 23:17:28	20180430.2317.001	Vertical MulitNet	recover	SEWARD	GAK15	NaN		57,79003	-147.503	4510	RRH	RECOVER SHALLOW
425 Tue 01 May 2018 00.46.36 20180501 00.46.001 Catvet Net recover SEWARD GAK14 69 57.94013 -147.65 3018 RRH 426 Tue 01 May 2018 02.04.25 20180501.0240.001 CTD911 deploy SEWARD GAK14 69 57.94176 -147.649 3005 HStats 428 Tue 01 May 2018 02.04.25 20180501.0241.001 UNCSW service NaN NaN NaN NaN 57.94621 -147.653 3085 RRH 429 Tue 01 May 2018 02.26.32 20180501.0234.001 Calvet Net recover SEWARD GAK13 70 58.09873 -147.795 2068 RRH 431 Tue 01 May 2018 03.50.33 20180501.0330.001 CTD911 deploy SEWARD GAK13 70 58.09872 -147.795 2062 sDanielson 433 Tue 01 May 2018 04.016 20180501.0430.001 CTD911 recover SEWARD GAK13 71 58.09872 -147.795 2062 HStats 433 Tue 01 May 2018 04.31.07 20180501.0431.001 OS150 service NaN NaN </td <td>424</td> <td>Tue 01 May 2018 00:39:01</td> <td>20180501.0038.001</td> <td>Calvet Net</td> <td>deploy</td> <td>SEWARD</td> <td>GAK14</td> <td></td> <td>69</td> <td>57.94191</td> <td>-147.65</td> <td>3518</td> <td>RRH</td> <td></td>	424	Tue 01 May 2018 00:39:01	20180501.0038.001	Calvet Net	deploy	SEWARD	GAK14		69	57.94191	-147.65	3518	RRH	
426 Tue 01 May 2018 01:05:09 20180501:0105:00 CTD911 deploy SEWARD GAK14 69 57.94176 -147.649 3095 HStats 427 Tue 01 May 2018 02:04:25 20180501 028.00 UCD101 UNCSW service NaN NaN NaN 57.94521 -147.653 3095 HStats 429 Tue 01 May 2018 02:21:41 20180501 028.00 Calvet Net recover SEWARD GAK13 70 58.09873 -147.795 2058 RRH 431 Tue 01 May 2018 03:23:3 20180501 0343.001 CTD911 deploy SEWARD GAK13 70 58.09873 -147.795 2052 sDanielson 432 Tue 01 May 2018 04:03:13 20180501 0430.001 CTD911 deploy SEWARD GAK13 70 58.09873 -147.795 2052 sDanielson 433 Tue 01 May 2018 04:01:07 20180501 0430.001 CTD911 deploy SEWARD GAK13 70 58.09873 -147.795 2052 sDanielson 434	425	Tue 01 May 2018 00:46:36	20180501.0046.001	Calvet Net	recover	SEWARD	GAK14		69	57,94013	-147.65	3518	RRH	
427 Tue 01 May 2018 02:04:25 20180501.0204.001 CTD911 recover SEWARD GAK14 69 57.39546 -147.653 3095 HStats 428 Tue 01 May 2018 02:16:28 20180501.0214.001 Calvet Net deploy SEWARD GAK13 70 58.09873 -147.795 2058 RRH 430 Tue 01 May 2018 03:63:3 20180501.0324.001 CTD911 deploy SEWARD GAK13 70 58.09873 -147.795 2058 RRH 431 Tue 01 May 2018 03:03:3 20180501.0330.001 CTD911 deploy SEWARD GAK13 70 58.09873 -147.795 2059 HStats 433 Tue 01 May 2018 04:03:13 20180501.0403.001 CTD911 deploy SEWARD GAK13 71 58.09873 -147.795 eRoth trigger from k-sync 435 Tue 01 May 2018 04:31:07 20180501.0431.001 OS150 service NaN NaN NaN 58.09872 -147.795 eRoth trigger from k-sync 436 Tue 01 May 2018 04:31:49 20180501.0521.001 CTD911 recover SEWARD <td< td=""><td>426</td><td>Tue 01 May 2018 01:05:09</td><td>20180501.0105.001</td><td>CTD911</td><td>deploy</td><td>SEWARD</td><td>GAK14</td><td></td><td>69</td><td>57.94176</td><td>-147.649</td><td>3095</td><td>HStats</td><td></td></td<>	426	Tue 01 May 2018 01:05:09	20180501.0105.001	CTD911	deploy	SEWARD	GAK14		69	57.94176	-147.649	3095	HStats	
428 Tue 01 May 2018 02:18:28 20180501 0218.001 UNCSW service NaN NaN NaN 57.94621 -147.769 2058 RRH 429 Tue 01 May 2018 03:21:41 20180501.0328.001 Calvet Net deploy SEWARD GAK13 70 58.09873 -147.795 2058 RRH 431 Tue 01 May 2018 03:43:42 20180501.0328.001 CTD911 deploy SEWARD GAK13 70 58.09873 -147.795 2058 RRH 433 Tue 01 May 2018 03:33 20180501.0403.001 CTD911 deploy SEWARD GAK13 70 58.09873 -147.795 2062 HStats 434 Tue 01 May 2018 04:03:13 20180501.0430.001 CTD911 deploy SEWARD GAK13 71 58.09873 -147.795 eRoth trigger from k-sync 435 Tue 01 May 2018 04:31.49 20180501.0431.002 OS75 service NaN NaN NaN S8.09873 -147.795 eRoth <td>427</td> <td>Tue 01 May 2018 02:04:25</td> <td>20180501.0204.001</td> <td>CTD911</td> <td>recover</td> <td>SEWARD</td> <td>GAK14</td> <td></td> <td>69</td> <td>57.93546</td> <td>-147.653</td> <td>3095</td> <td>HStats</td> <td></td>	427	Tue 01 May 2018 02:04:25	20180501.0204.001	CTD911	recover	SEWARD	GAK14		69	57.93546	-147.653	3095	HStats	
429 Tue 01 May 2018 03:21:41 20180501.0321.001 Calvet Net deploy SEWARD GAK13 70 58.09873 -147.795 2058 RRH 430 Tue 01 May 2018 03:24:53 20180501.0328.001 Calvet Net recover SEWARD GAK13 70 58.09873 -147.795 2058 RRH 431 Tue 01 May 2018 03:50:33 20180501.0330.001 CTD911 deploy SEWARD GAK13 70 58.09873 -147.795 2058 RRH 433 Tue 01 May 2018 04:03:13 20180501.0403.001 CTD911 deploy SEWARD GAK13 70 58.09873 -147.795 2062 HStats 434 Tue 01 May 2018 04:03:13 20180501.0403.001 CTD911 deploy SEWARD GAK13 71 58.09873 -147.795 eRoth trigger from k-sync 435 Tue 01 May 2018 04:31:07 20180501.0431.001 OS150 service NaN NaN NaN S8.09873 -147.795 eRoth trigger from k-sync 436 Tue 01 May 2018 06:321:07 20180501.0431.001 COS150 service NaN <t< td=""><td>428</td><td>Tue 01 May 2018 02:18:28</td><td>20180501.0218.001</td><td>UNCSW</td><td>service</td><td>NaN</td><td>NaN</td><td>NaN</td><td></td><td>57.94621</td><td>-147.669</td><td></td><td>eRoth</td><td>swapped filter</td></t<>	428	Tue 01 May 2018 02:18:28	20180501.0218.001	UNCSW	service	NaN	NaN	NaN		57.94621	-147.669		eRoth	swapped filter
430 Tue 01 May 2018 03:28:53 20180501.0328.001 Calvet Net recover SEWARD GAK13 70 58.09873 -147.795 2058 RRH 431 Tue 01 May 2018 03:43:42 20180501.0343.001 CTD911 deploy SEWARD GAK13 70 58.09873 -147.795 2058 RRH 433 Tue 01 May 2018 05:0:33 20180501.0343.001 CTD911 deploy SEWARD GAK13 70 58.09873 -147.795 2062 HStats 433 Tue 01 May 2018 04:03:13 20180501.0403.001 CTD911 deploy SEWARD GAK13 71 58.09873 -147.795 2062 HStats 434 Tue 01 May 2018 04:03:16 20180501.0403.001 CTD911 deploy SEWARD GAK13 71 58.09873 -147.795 eRoth trigger from k-sync 435 Tue 01 May 2018 04:31:49 20180501.0431.002 OS75 service NaN NaN NaN S8.09872 -147.795 eRoth trigger from k-sync 436 Tue 01 May 2018 05:54:18 20180501.0554.001 Bongo Net recover SEWARD	429	Tue 01 May 2018 03:21:41	20180501.0321.001	Calvet Net	deploy	SEWARD	GAK13		70	58.09873	-147,795	2058	RRH	
431 Tue 01 May 2018 03:43:42 20180501.0343.001 CTD911 deploy SEWARD GAK13 70 58.09872 -147.795 2062 sDanielson 432 Tue 01 May 2018 03:60:33 20180501.0350.001 CTD911 recorver SEWARD GAK13 71 58.09872 -147.795 2062 HStats 434 Tue 01 May 2018 04:06:16 20180501.0406.001 EM302 stop NaN NaN NaN S8.09873 -147.795 eRoth 435 Tue 01 May 2018 04:03:142 20180501.0431.002 OS75 service NaN NaN NaN S8.09872 -147.795 eRoth trigger from k-sync 437 Tue 01 May 2018 04:32:42 20180501.0431.002 OS75 service NaN NaN NaN S8.09873 -147.795 eRoth trigger from k-sync 438 Tue 01 May 2018 05:21:07 20180501.0521.001 CTD911 recover SEWARD GAK13 25 58.09873 -147.795 eRoth trigger from k-sync 439 Tue 01 May 2018 06:21:07 20180501.0521.001 CTD911 recover SEWARD GAK13 <td>430</td> <td>Tue 01 May 2018 03:28:53</td> <td>20180501.0328.001</td> <td>Calvet Net</td> <td>recover</td> <td>SEWARD</td> <td>GAK13</td> <td></td> <td>70</td> <td>58.09873</td> <td>-147,795</td> <td>2058</td> <td>RRH</td> <td></td>	430	Tue 01 May 2018 03:28:53	20180501.0328.001	Calvet Net	recover	SEWARD	GAK13		70	58.09873	-147,795	2058	RRH	
432 Tue 01 May 2018 03:50:33 20180501.0350.001 CTD911 recover SEWARD GAK13 70 58.09872 -147.795 2059 HStats 433 Tue 01 May 2018 04:03:13 20180501.0430.001 CTD9111 deploy SEWARD GAK13 71 58.09873 -147.795 2062 HStats 435 Tue 01 May 2018 04:03:16 20180501.0431.001 OS150 service NaN NaN NaN S8.09872 -147.795 eRoth trigger from k-sync 436 Tue 01 May 2018 04:31:49 20180501.0431.001 OS150 service NaN NaN NaN S8.09872 -147.795 eRoth trigger from k-sync 437 Tue 01 May 2018 04:31:49 20180501.0431.001 OS150 service NaN NaN NaN S8.09873 -147.795 eRoth trigger from k-sync 438 Tue 01 May 2018 05:4:18 20180501.0554.001 Bongo Net recover SEWARD GAK13 25 58.09274 -147.795 2056 Ken 440 Tue 01 May 2018 06:4:17 20180501.0554.001 Bongo Net recover SEWARD </td <td>431</td> <td>Tue 01 May 2018 03:43:42</td> <td>20180501.0343.001</td> <td>CTD911</td> <td>deploy</td> <td>SEWARD</td> <td>GAK13</td> <td></td> <td>70</td> <td>58.09873</td> <td>-147.795</td> <td>2062</td> <td>sDanielson</td> <td></td>	431	Tue 01 May 2018 03:43:42	20180501.0343.001	CTD911	deploy	SEWARD	GAK13		70	58.09873	-147.795	2062	sDanielson	
433 Tue 01 May 2018 04:03:13 20180501.0403.001 CTD911 deploy SEWARD GAK13 71 58.09873 -147.795 2062 HStats 434 Tue 01 May 2018 04:00:16 20180501.0406.001 EM302 stop NaN NaN <td< td=""><td>432</td><td>Tue 01 May 2018 03:50:33</td><td>20180501.0350.001</td><td>CTD911</td><td>recover</td><td>SEWARD</td><td>GAK13</td><td></td><td>70</td><td>58.09872</td><td>-147,795</td><td>2059</td><td>HStats</td><td></td></td<>	432	Tue 01 May 2018 03:50:33	20180501.0350.001	CTD911	recover	SEWARD	GAK13		70	58.09872	-147,795	2059	HStats	
434 Tue 01 May 2018 04:06:16 20180501.0406.001 EM302 stop NaN NaN NaN NaN NaN NaN NaN Stop Partial Control Partial Contrel Partial Control	433	Tue 01 May 2018 04:03:13	20180501.0403.001	CTD911	deplov	SEWARD	GAK13		71	58.09873	-147,795	2062	HStats	
435 Tue 01 May 2018 04:31:07 20180501.0431.001 OS150 service NaN NaN NaN S8.09872 -147.795 eRoth trigger from k-sync 436 Tue 01 May 2018 04:31:49 20180501.0431.002 OS75 service NaN NaN NaN NaN S8.09872 -147.795 eRoth trigger from k-sync 437 Tue 01 May 2018 04:32:28 20180501.0521.001 CTD911 recover SEWARD GAK13 71 58.09873 -147.795 2056 HStats 439 Tue 01 May 2018 05:21:07 20180501.0554.001 Bongo Net recover SEWARD GAK13 25 58.09716 -147.797 2056 Ken 440 Tue 01 May 2018 06:14:23 20180501.064.001 Bongo Net recover SEWARD GAK13 25 58.09716 -147.797 2056 Ken 441 Tue 01 May 2018 06:14:23 20180501.0650.001 Towed Multinet maxDepth SEWARD GAK13 25 58.09716 -147.797 2056 Ken 443 Tue 01 M	434	Tue 01 May 2018 04:06:16	20180501.0406.001	EM302	stop	NaN	NaN	NaN		58.09873	-147.795		eRoth	
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437 Tue 01 May 2018 04:32:28 20180501.0432.001 EK60 start NaN NaN NaN 58.09873 -147.795 eRoth 438 Tue 01 May 2018 05:21:07 20180501.0521.001 CTD911 recover SEWARD GAK13 71 58.09873 -147.795 2056 HStats 439 Tue 01 May 2018 05:24:18 20180501.0524.001 Bongo Net recover SEWARD GAK13 25 58.10224 -147.79 2056 Ken 440 Tue 01 May 2018 06:04:17 20180501.0634.001 Bongo Net recover SEWARD GAK13 25 58.09716 -147.797 2056 Ken 441 Tue 01 May 2018 06:39:46 20180501.0639.001 Towed Multinet other SEWARD GAK13 25 58.09715 -147.797 2056 Ken 442 Tue 01 May 2018 06:39:46 20180501.0650.001 Towed Multinet maxDepth SEWARD GAK13 25 58.09751 -147.804 2056 Ken 443 Tue 01 May 2018 08:2:06 20180501.075.001 Towed Multinet maxDepth SEWARD GAK14 9	436	Tue 01 May 2018 04:31:49	20180501.0431.002	OS75	service	NaN	NaN	NaN		58.09872	-147.795		eRoth	trigger from k-sync
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441 Tue 01 May 2018 06:14:23 20180501.0614.001 Bongo Net recover SEWARD GAK13 25 58.0931 -147.802 2056 Ken 442 Tue 01 May 2018 06:39:46 20180501.0639.001 Towed Multinet other SEWARD GAK13 25 58.0931 -147.802 2056 Ken 443 Tue 01 May 2018 06:50:29 20180501.0650.001 Towed Multinet maxDepth SEWARD GAK13 25 58.0931 -147.804 2056 Ken 444 Tue 01 May 2018 06:50:29 20180501.0650.001 Towed Multinet recover SEWARD GAK13 25 58.0773 -147.819 2056 Ken 444 Tue 01 May 2018 08:24:06 20180501.0824.001 Towed Multinet meaDepth SEWARD GAK14 9 57.94844 -147.645 3052 Ken 445 Tue 01 May 2018 08:37:02 20180501.0836.001 Towed Multinet meaDepth SEWARD GAK14 9 57.93942 -147.655 3052 Ken 447 Tue 01 May 2018 09:07:23 20180501.001.007.001 Towed Multinet recover SEWAR	440	Tue 01 May 2018 06:04:17	20180501.0604.001	Bongo Net	maxDepth	SEWARD	GAK13		25	58.09716	-147.797	2056	Ken	
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445 Tue 01 May 2018 08:24:06 20180501.0824.001 Towed Multinet deploy SEWARD GAK14 9 57.94844 -147.645 3052 Ken 446 Tue 01 May 2018 08:37:02 20180501.0836.001 Towed Multinet maxDepth SEWARD GAK14 9 57.94844 -147.645 3052 Ken 447 Tue 01 May 2018 09:07:23 20180501.0907.001 Towed Multinet recover SEWARD GAK14 9 57.91763 -147.675 3052 Ken 448 Tue 01 May 2018 10:13:56 20180501.1013.001 Towed Multinet deploy SEWARD GAK15 10 57.79757 -147.489 4548 Ken 449 Tue 01 May 2018 10:23:32 20180501.1023.001 Towed Multinet maxDepth SEWARD GAK15 10 57.79212 -147.498 4548 Ken 450 Tue 01 May 2018 10:51:28 20180501.1051.001 Towed Multinet recover SEWARD GAK15 10 57.77643 -147.524 4548 Ken<	444	Tue 01 May 2018 07:15:47	20180501.0715.001	Towed Multinet	recover	SEWARD	GAK13		25	58.0773	-147.819	2056	Ken	
446 Tue 01 May 2018 08:37:02 20180501.0836.001 Towed Multinet maxDepth SEWARD GAK14 9 57.93942 -147.655 3052 Ken 447 Tue 01 May 2018 09:07:23 20180501.0907.001 Towed Multinet recover SEWARD GAK14 9 57.93942 -147.655 3052 Ken 448 Tue 01 May 2018 10:13:56 20180501.1013.001 Towed Multinet deploy SEWARD GAK15 10 57.79757 -147.489 4548 Ken 449 Tue 01 May 2018 10:23:32 20180501.1023.001 Towed Multinet maxDepth SEWARD GAK15 10 57.79757 -147.498 4548 Ken 450 Tue 01 May 2018 10:51:28 20180501.1051.001 Towed Multinet recover SEWARD GAK15 10 57.77643 -147.524 4548 Ken 451 Tue 01 May 2018 11:15:32 20180501.1115.001 Bongo Net deploy SEWARD GAK15 10 57.77307 -147.53 4548 Ken <td>445</td> <td>Tue 01 May 2018 08:24:06</td> <td>20180501.0824.001</td> <td>Towed Multinet</td> <td>deploy</td> <td>SEWARD</td> <td>GAK14</td> <td></td> <td>9</td> <td>57.94844</td> <td>-147.645</td> <td>3052</td> <td>Ken</td> <td></td>	445	Tue 01 May 2018 08:24:06	20180501.0824.001	Towed Multinet	deploy	SEWARD	GAK14		9	57.94844	-147.645	3052	Ken	
447 Tue 01 May 2018 09:07:23 20180501.0907.001 Towed Multinet recover SEWARD GAK14 9 57.91763 -147.675 3052 Ken 448 Tue 01 May 2018 10:13:56 20180501.1013.001 Towed Multinet deploy SEWARD GAK15 10 57.79757 -147.489 4548 Ken 449 Tue 01 May 2018 10:23:32 20180501.1023.001 Towed Multinet maxDepth SEWARD GAK15 10 57.79212 -147.498 4548 Ken 450 Tue 01 May 2018 10:51:28 20180501.1051.001 Towed Multinet recover SEWARD GAK15 10 57.77643 -147.524 4548 Ken 451 Tue 01 May 2018 11:15:32 20180501.1115.001 Towed Multinet recover SEWARD GAK15 10 57.77643 -147.524 4548 Ken 451 Tue 01 May 2018 11:15:32 20180501.1115.001 Bongo Net deploy SEWARD GAK15 10 57.77307 -147.53 4548 Ken <td>446</td> <td>Tue 01 May 2018 08:37:02</td> <td>20180501.0836.001</td> <td>Towed Multinet</td> <td>maxDepth</td> <td>SEWARD</td> <td>GAK14</td> <td></td> <td>9</td> <td>57.93942</td> <td>-147.655</td> <td>3052</td> <td>Ken</td> <td></td>	446	Tue 01 May 2018 08:37:02	20180501.0836.001	Towed Multinet	maxDepth	SEWARD	GAK14		9	57.93942	-147.655	3052	Ken	
448 Tue 01 May 2018 10:13:56 20180501.1013:001 Towed Multinet deploy SEWARD GAK15 10 57.79757 -147.489 4548 Ken 449 Tue 01 May 2018 10:23:32 20180501.1023:001 Towed Multinet maxDepth SEWARD GAK15 10 57.79757 -147.489 4548 Ken 450 Tue 01 May 2018 10:51:28 20180501.1051.001 Towed Multinet recover SEWARD GAK15 10 57.77643 -147.498 4548 Ken 451 Tue 01 May 2018 11:15:32 20180501.1115.001 Towed Multinet recover SEWARD GAK15 10 57.77643 -147.524 4548 Ken 451 Tue 01 May 2018 11:15:32 20180501.1115.001 Bongo Net deploy SEWARD GAK15 10 57.77307 -147.53 4548 Ken	447	Tue 01 May 2018 09:07:23	20180501.0907.001	Towed Multinet	recover	SEWARD	GAK14		9	57.91763	-147.675	3052	Ken	
449 Tue 01 May 2018 10:23:32 20180501.1023.001 Towed Multinet maxDepth SEWARD GAK15 10 57.79212 -147.498 4548 Ken 450 Tue 01 May 2018 10:51:28 20180501.1051.001 Towed Multinet recover SEWARD GAK15 10 57.77643 -147.524 4548 Ken 451 Tue 01 May 2018 11:15:32 20180501.1115.001 Bongo Net deploy SEWARD GAK15 10 57.77307 -147.53 4548 Ken	448	Tue 01 May 2018 10:13:56	20180501.1013.001	Towed Multinet	deploy	SEWARD	GAK15		10	57.79757	-147.489	4548	Ken	
450 Tue 01 May 2018 10:51:28 20180501.1051.001 Towed Multinet recover SEWARD GAK15 10 57.77643 -147.524 4548 Ken 451 Tue 01 May 2018 11:15:32 20180501.1115.001 Bongo Net deploy SEWARD GAK15 10 57.77307 -147.53 4548 Ken	449	Tue 01 May 2018 10:23:32	20180501.1023.001	Towed Multinet	maxDepth	SEWARD	GAK15		10	57.79212	-147.498	4548	Ken	
451 Tue 01 May 2018 11:15:32 20180501.1115.001 Bongo Net deploy SEWARD GAK15 10 57.77307 -147.53 4548 Ken	450	Tue 01 May 2018 10:51:28	20180501.1051.001	Towed Multinet	recover	SEWARD	GAK15		10	57.77643	-147.524	4548	Ken	
	451	Tue 01 May 2018 11:15:32	20180501.1115.001	Bongo Net	deploy	SEWARD	GAK15		10	57.77307	-147.53	4548	Ken	

452 453 454	Tue 01 May 2018 11:20:38 Tue 01 May 2018 11:29:02 Tue 01 May 2018 11:38:30	20180501.1120.001 20180501.1128.001 20180501.1138.001	Bongo Net Bongo Net Bongo Net	deploy maxDepth recover	SEWARD SEWARD SEWARD	GAK15 GAK15 GAK15		26 26 26	57.77307 57.76742 57.76304	-147.53 -147.544 -147.553	4548 4548 4548	Ken Ken Ken	TOW ABORTED, THIS IS SECOND START
455	Tue 01 May 2018 12:11:44	20180501.1211.001	EK60	stop	NaN	NaN	NaN		57.78141	-147.582		Bern	finished net tows, secured EK60
456	Tue 01 May 2018 12:12:24	20180501.1212.001	EM302	start	NaN	NaN	NaN		57.7826	-147.583		Bern	Logging while towing acrobat
457	Tue 01 May 2018 17:23:42	20180501.1723.001	Calvet Net	deploy	SEWARD	GAK12		72	58.242	-147.933	2134	RRH	
458	Tue 01 May 2018 17:28:27	20180501.1728.001	Calvet Net	recover	SEWARD	GAK12		72	58.24237	-147.932	2134	RRH	
459	Tue 01 May 2018 17:40:56	20180501.1740.001	CTD911	deploy	SEWARD	GAK12		72	58.2427	-147.932	2141	sDanielson	
460	Tue 01 May 2018 18:52:27	20180501.1852.001	CTD911	recover	SEWARD	GAK12		72	58.24303	-147.93	2141	sDanielson	
461	Tue 01 May 2018 19:58:32	20180501.1958.001	Calvet Net	deploy	SEWARD	GAK11		73	58.38708	-148.071	1412	RRH	
462	Tue 01 May 2018 20:06:12	20180501.2006.001	Calvet Net	recover	SEWARD	GAK11		73	58.38575	-148.072	1412	RRH	
463	Tue 01 May 2018 20:22:31	20180501.2022.001	CTD911	deploy	SEWARD	73	GAK1	1	58.38773	-148.072	1409	sDanielson	
464	Tue 01 May 2018 20:31:00	20180501.2030.001	CTD911	recover	SEWARD	GAK11		73	58.38602	-148.072	1409	sDanielson	
465	Tue 01 May 2018 20:45:01	20180501.2044.001	CTD911	deploy	SEWARD	GAK11		74	58.38322	-148.072	1411	sDanielson	
466	Tue 01 May 2018 21:55:16	20180501.2155.001	CTD911	recover	SEWARD	GAK11		74	58.38387	-148.071	1411	sDanielson	
467	Tue 01 May 2018 23:26:36	20180501.2326.001	Calvet Net	deploy	SEWARD	GAK10		/5	58.54263	-148.212	1459	RRH	
468	Tue 01 May 2018 23:34:37	20180501.2334.001	Calvet Net	recover	SEWARD	GAK10		/5	58.54238	-148.217	1459	RKH	
469	Wed 02 May 2018 00:44:00	20180502.0043.001	CID911	deploy	SEWARD	GAK10		/5	58.54214	-148.209	1456	sDanielson	
470	Wed 02 May 2018 01:37:26	20180502.0137.001		recover	SEWARD	GAK10		75	58.54046	-148.211	1456	sDanielson	
4/1	Wed 02 May 2018 02:08:16	20180502.0208.001	Acrobat CTD	other	SEWARD	GAK10	NaN		58.51883	-148.235		HStats	
472	Wed 02 May 2018 02:25:32	20180502.0225.001	EM302	stop	NaN	NaN	NaN		50.40/53	-148.2		eRoth	triager from k owne
4/3	Wed 02 May 2018 02:33:42	20180502.0233.001	05150	service	Nan	NaN	NaN		58.47411	-148.179		eRoth	trigger from k-sync
474	Wed 02 May 2010 02.34.07	20100302.0234.001	05/5	service	Nan	NaN	NaN		50.47393	-140.179		eRolli	lingger from k-sync
475	Wed 02 May 2010 02.37.19	20100302.0237.001	ENOU Towed Multipot	Start			INAIN	11	30.400 I	-140.17	2120	Kon	
470	Wed 02 May 2018 05:57:55	20100502.0540.001	Towed Multinet	uepioy maxDonth		GAN12 GAK12		11	58 24512	-147.92	2129	Kon	
477	Wed 02 May 2010 05.57.55	20100502.0557.001	Towed Multinet	recover	SEWARD SEWARD	GAR12 GAR12		11	58 2/086	-147.935	2129	Ken	
470	Wed 02 May 2018 07:41:37	20180502.0024.001	Towed Multinet	deploy	SEWARD	CAK11		12	58 38808	-147.30	1/17	Ken	
480	Wed 02 May 2010 07:41.37	20180502.0741.001	Towed Multinet	mayDenth	SEWARD	GAK11		12	58 38568	-148.064	1417	Ken	
481	Wed 02 May 2010 07:00:00 Wed 02 May 2018 08:20:53	20180502.0735.001	Towed Multinet	recover	SEWARD	GAK11		12	58 38104	-148 102	1417	Ken	
482	Wed 02 May 2018 08:35:46	20180502 0835 001	CTD911	deploy	SEWARD	GAK11		76	58 3798	-148 103	1636	HStats	MIDNIGHT REDO
483	Wed 02 May 2018 09:33:59	20180502 0933 001	CTD911	recover	SEWARD	GAK11		76	58 38023	-148 103	1410	HStats	
484	Wed 02 May 2018 09:45:29	20180502.0945.001	Bongo Net	deploy	SEWARD	GAK11		27	58.38283	-148.102	1410	Ken	
485	Wed 02 May 2018 09:59:26	20180502.0959.001	Bongo Net	maxDepth	SEWARD	GAK11		27	58.38546	-148.087	1410	Ken	
486	Wed 02 May 2018 10:11:33	20180502.1011.001	Bongo Net	recover	SEWARD	GAK11		27	58.38789	-148.073	1410	Ken	
487	Wed 02 May 2018 11:29:38	20180502.1129.001	Towed Multinet	other	SEWARD	GAK10		13	58.54139	-148.218	1426	Ken	
488	Wed 02 May 2018 11:43:05	20180502.1143.001	Towed Multinet	maxDepth	SEWARD	GAK10		13	58.54089	-148.24	1426	Ken	
489	Wed 02 May 2018 12:09:27	20180502.1209.001	Towed Multinet	recover	SEWARD	GAK10		13	58.54038	-148.279	1426	Ken	
490	Wed 02 May 2018 13:11:30	20180502.1311.001	Towed Multinet	deploy	SEWARD	GAK9		14	58.68049	-148.33	284	Ken	
491	Wed 02 May 2018 13:22:41	20180502.1322.001	Towed Multinet	maxDepth	SEWARD	GAK9		14	58.67898	-148.343	284	Ken	
492	Wed 02 May 2018 13:49:49	20180502.1349.001	Towed Multinet	recover	SEWARD	GAK9		14	58.67503	-148.373	284	Ken	
493	Wed 02 May 2018 14:06:24	20180502.1406.001	Bongo Net	deploy	SEWARD	GAK9		28	58.67625	-148.363	284	Ken	
494	Wed 02 May 2018 14:19:36	20180502.1419.001	Bongo Net	maxDepth	SEWARD	GAK9		28	58.67354	-148.378	284	Ken	
495	Wed 02 May 2018 14:21:58	20180502.1421.001	EM302	start	NaN	NaN	NaN		58.67307	-148.38		Bern	Logging bathymetry once back on the shelf.
496	Wed 02 May 2018 14:31:33	20180502.1431.001	Bongo Net	recover	SEWARD	GAK9		28	58.67112	-148.391	284	Ken	
497	Wed 02 May 2018 15:08:32	20180502.1508.001	Calvet Net	deploy	SEWARD	GAK9		77	58.67987	-148.348	284	Ken	
498	Wed 02 May 2018 15:16:08	20180502.1516.001	Calvet Net	recover	SEWARD	GAK9		77	58.67872	-148.347	284	Ken	
499	Wed 02 May 2018 15:31:51	20180502.1531.001	CTD911	deploy	SEWARD	GAK9		77	58.67792	-148.345	277	sDanielson	
500	Wed 02 May 2018 16:00:55	20180502.1600.001	EK60	other	NaN	NaN	NaN		58.67795	-148.345		eRoth	control with EAL
501	Wed 02 May 2018 16:08:02	20180502.1607.001	CTD911	recover	SEWARD	GAK9		77	58.67505	-148.34	277	sDanielson	

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502	Wed 02 May 2018 16:26:38	20180502.1626.001	Calvet Net	deploy	SEWARD	GAK9		77	58.68333	-148.355	276	RRH	LIVE
503	Wed 02 May 2018 16:33:58	20180502.1633.001	Calvet Net	recover	SEWARD	GAK9		77	58.68241	-148.353	276	RRH	
504	Wed 02 May 2018 17:19:02	20180502.1718.001	CTD911	deploy	SEWARD	GAK9		78	58.6768	-148.347	277	sDanielson	PRIM PROD CAST
505	Wed 02 May 2018 17:31:02	20180502.1730.001	TM CTD	deploy	SEWARD	GAK9		12	58.68277	-148.354		AnaA	
506	Wed 02 May 2018 17:32:05	20180502.1732.001	TM CTD	recover	SEWARD	GAK9		12	58.67911	-148.349		AnaA	
507	Wed 02 May 2018 17:35:10	20180502.1735.001	CTD911	recover	SEWARD	GAK9		78	58.67503	-148.345	277	sDanielson	
508	Wed 02 May 2018 17:52:15	20180502.1752.001	Vertical MulitNet	deploy	SEWARD	GAK9		77	58.6744	-148.344	274	RRH	
509	Wed 02 May 2018 18:07:39	20180502.1807.001	Vertical MulitNet	recover	SEWARD	GAK9		77	58.67233	-148.343	274	RRH	
510	Wed 02 May 2018 18:27:06	20180502.1827.001	Iron Fish	deploy	SEWARD	GAK9	NaN		58.67513	-148.351		AnaA	
511	Wed 02 May 2018 19:45:24	20180502.1945.001	Calvet Net	deploy	SEWARD	GAK8		79	58.80826	-148.493	288	RRH	
512	Wed 02 May 2018 19:53:19	20180502.1953.001	Calvet Net	recover	SEWARD	GAK8		79	58.80728	-148.496	288	RRH	
513	Wed 02 May 2018 20:16:23	20180502.2016.001	CTD911	deploy	SEWARD	GAK8		79	58.80594	-148.491	289	sDanielson	
514	Wed 02 May 2018 20:43:44	20180502.2043.001	CTD911	recover	SEWARD	GAK8		79	58.80595	-148.491	289	sDanielson	
515	Wed 02 May 2018 21:47:36	20180502.2147.001	Acrobat CTD	other	NaN	NaN	NaN		58.9621	-148.621		sDanielson	Flooded motor ass'y. Leads burned off 2 capacity
516	Wed 02 May 2018 21:58:40	20180502.2158.001	Calvet Net	deploy	SEWARD	GAK7		80	58.97272	-148.632	243	RRH	,
517	Wed 02 May 2018 22:06:00	20180502.2205.001	Calvet Net	recover	SEWARD	GAK7		80	58.97248	-148.633	243	RRH	
518	Wed 02 May 2018 22:18:54	20180502.2218.001	CTD911	deploy	SEWARD	GAK7		80	58.97195	-148.631	241	sDanielson	
519	Wed 02 May 2018 22:38:29	20180502.2238.001	Iron Fish	recover	SEWARD	GAK9	NaN		58,74882	-148.435		AnaA	
520	Wed 02 May 2018 22:39:42	20180502.2239.001	Iron Fish	deploy	SEWARD	GAK7	NaN		58.97173	-148.633		AnaA	
521	Wed 02 May 2018 22:47:37	20180502.2247.001	CTD911	recover	SEWARD	GAK7		80	58.97201	-148.633	241	sDanielson	
522	Wed 02 May 2018 23:14:09	20180502.2314.001	Acrobat CTD	other	SEWARD	GAK7	NaN		58.97182	-148.636	242	HStats	
523	Thu 03 May 2018 06:45:33	20180503 0645 001	Towed Multinet	deploy	SEWARD	GAK8		15	58 80678	-148 492	290	Ken	
524	Thu 03 May 2018 06:57:55	20180503 0657 001	Towed Multinet	maxDepth	SEWARD	GAK8		15	58 79768	-148 489	290	Ken	
525	Thu 0.3 May 2018 07:24:27	20180503 0724 001	Towed Multinet	recover	SEWARD	GAK8		15	58 77641	-148 486	290	Ken	
526	Thu 03 May 2018 09:04:11	20180503 0904 001	Towed Multinet	deploy	SEWARD	GAK7		16	58 99109	-148 629	242	Ken	
527	Thu 03 May 2018 09:17:10	20180503 0917 001	Towed Multinet	maxDepth	SEWARD	GAK7		16	58 98212	-148 631	240	Ken	
528	Thu 03 May 2018 09:41:27	20180503 0941 001	Towed Multinet	recover	SEWARD	GAK7		16	58 96479	-148 634	240	Ken	
529	Thu 03 May 2018 10:02:00	20180503 1001 001	Bongo Net	denlov	SEWARD	GAK7		29	58 96597	-148 637	240	Ken	
530	Thu 03 May 2018 10:12:00	20180503 1014 001	Bongo Net	maxDenth	SEWARD	GAK7		29	58 95837	-148 635	240	Ken	
531	Thu 03 May 2018 10:26:05	20180503 1026 001	Bongo Net	recover	SEWARD	GAK7		29	58 95129	-148 632	240	Ken	
532	Thu 03 May 2018 11:31:45	20180503 1131 001	Towed Multinet	denlov	SEWARD	GAK6		17	58 9513	-148 632	156	Ken	
533	Thu 03 May 2010 11:01:40	20100503.1131.001	Towed Multinet	maxDenth	SEWARD	CAK6		17	50 11/78	-148 767	156	Kon	
53/	Thu 03 May 2010 11.42.01 Thu 03 May 2018 12:00:11	20100503.1141.001	Towed Multinet	recover	SEWARD	CAK6		17	50 13/87	-140.707	156	Kon	
535	Thu 03 May 2010 12:03:44	20100503.1203.001	Towed Multinet	deploy	SEWARD	CAK5		18	50 27030	-1/8 028	150	Kon	
536	Thu 03 May 2010 13:10:04	20100503.1310.001	Towed Multinet	maxDonth	SEWARD	CAKE		10	50 27302	1/12 02		Kon	
537	Thu 03 May 2010 13:20:10	20100505.1520.001	Towed Multinet	rocover	SEWARD	CAKE		10	50 26171	-140.92		Kon	
538	Thu 03 May 2010 13.51.13	20100303.1331.001	Pongo Not	doploy	SEWARD	GARS		30	50 25821	-140.904	167	Kon	
530	Thu 03 May 2010 14.13.30	20100303.1413.001	Bongo Not	uepioy maxDonth	SEWARD	GARS		30	50 25202 1	-140.9	107	Kon	
539	Thu 03 May 2010 14.23.10	20100303.1423.001	Bongo Net	maxDepth	SEWARD	CAKE		20	50 24025	-140.092	107	Ken	
040	Thu 03 May 2010 14:31:53	20100303.1431.001	Bongo Net	recover	SEWARD	GANO	NaN	30	59.24625	-140.000	107	Ren	
04 I	Thu 03 May 2010 15.05.57	20100303.1303.001	Coluct Not	Service			INGIN	01	00.7044	-140.40	151	Belli	SWAPPED FILTERS
542	Thu 03 May 2018 15:37:08	20180503.1537.001	Calvet Net	deploy	SEWARD	GAKO		01	59.11053	-148.77	151	KKH	
543	Thu 03 May 2018 15:44:16	20180503.1544.001		recover	SEWARD	GAKO		01	59.11559	-148.768	151	KKH •Denieleen	
544	Thu U3 May 2018 15:58:28	20180503.1558.001		deploy	SEWARD	GAKO		01	59.11699	-148.769	SLD	sDanielson	
545	Thu 03 May 2018 16:18:16	20180503.1618.001	CTD911	recover	SEWARD	GAK6		81	59.11695	-148.769	SLD	sDanielson	
546	Thu 03 May 2018 17:27:38	20180503.1727.001	Calvet Net	deploy	SEWARD	GAK5		82	59.26181	-148.908	167	RRH	
547	Thu 03 May 2018 17:34:59	20180503.1734.001	Calvet Net	recover	SEWARD	GAK5		82	59.26177	-148.908	167	KKH .	
548	Thu 03 May 2018 17:45:08	20180503.1745.001	CID911	deploy	SEWARD	GAK5		82	59.26187	-148.908	167	sDanielson	PRIM PROD CAST
549	Thu 03 May 2018 18:05:25	20180503.1805.001	CTD911	recover	SEWARD	GAK5		82	59.26218	-148.908	167	sDanielson	PRIM PROD CAST
550	Thu 03 May 2018 18:11:52	20180503.1811.001	Calvet Net	deploy	SEWARD	GAK5		82	59.26232	-148.908	167	RRH	LIVE
551	Thu 03 May 2018 18:19:16	20180503.1819.001	Calvet Net	recover	SEWARD	GAK5		82	59.26208	-148.908	167	RRH	

552 553	Thu 03 May 2018 18:59:54 Thu 03 May 2018 19:26:00	20180503.1859.001 20180503.1925.001	CTD911 CTD911	deploy recover	SEWARD SEWARD	GAK5 GAK5		83 83	59.26271 59.26133	-148.908 -148.909	166 166	sDanielson sDanielson	
554	Thu 03 May 2018 19:37:11	20180503.1937.001	Vertical MulitNet	deploy	SEWARD	GAK5		83	59.26048	-148.909	166	RRH	
555	Thu 03 May 2018 19:49:59	20180503,1949,001	Vertical MulitNet	recover	SEWARD	GAK5		83	59,25944	-148.91	166	RRH	
556	Fri 04 May 2018 00:05:25	20180504.0005.001	Calvet Net	deploy	SEWARD	GAK4		84	59,40973	-149.048	201	RRH	
557	Fri 04 May 2018 00:12:53	20180504.0012.001	Calvet Net	recover	SEWARD	GAK4		84	59,40997	-149.048	201	RRH	
558	Fri 04 May 2018 00:28:14	20180504.0028.001	CTD911	deploy	SEWARD	GAK4		84	59,40935	-149.049	201	sDanielson	
559	Fri 04 May 2018 00:56:01	20180504.0055.001	CTD911	recover	SEWARD	GAK4		84	59,40958	-149.049	201	HStats	
560	Fri 04 May 2018 02:04:51	20180504.0204.001	Calvet Net	deploy	SEWARD	GAK3		85	59.55438	-149,188	213	RRH	
561	Fri 04 May 2018 02:12:49	20180504 0212 001	Calvet Net	recover	SEWARD	GAK3		85	59 55422	-149 188	213	RRH	
562	Fri 04 May 2018 02:17:36	20180504.0217.001	CTD911	deploy	SEWARD	GAK3		85	59.55434	-149.188	213	HStats	
563	Fri 04 May 2018 02:32:43	20180504 0232 001	UNCSW	service	NaN	NaN	NaN		59 55495	-149 188		eRoth	swapped filter
564	Fri 04 May 2018 02:55:59	20180504 0255 001	CTD911	recover	SEWARD	GAK3		85	59 55484	-149 188	213	HStats	
565	Fri 04 May 2018 04:12:13	20180504 0412 001	Calvet Net	recover	SEWARD	GAK2		86	59 69257	-149 328	228	RRH	
566	Fri 04 May 2018 04:20:12	20180504 0420 001	Calvet Net	recover	SEWARD	GAK2		86	59 69241	-149 328	228	RRH	
567	Fri 04 May 2018 04:40:40	20180504 0440 001	CTD911	deploy	SEWARD	GAK2		86	59 69186	-149.328	227	sDanielson	
568	Fri 04 May 2018 04:58:09	20180504 0458 001	CTD911	recover	SEWARD	GAK2		86	59 68988	-149.328	226	HStats	
569	Fri 04 May 2018 07:19:19	20180504 0719 001	Towed Multinet	deploy	SEWARD	GAK4		19	59 41137	-149 051	202	Ken	
570	Fri 04 May 2018 07:38:30	20180504 0738 001	Towed Multinet	maxDenth	SEWARD	GAK4		19	59 39608	-149.036	202	Ken	
571	Fri 04 May 2018 08:03:42	20180504 0803 001	Towed Multinet	recover	SEWARD	GAK4		19	59 37653	-149.000	202	Ken	
572	Fri 04 May 2018 09:17:34	20180504.0003.001	Towed Multinet	deploy	SEWARD	GAK3		20	59 52949	-149 172	202	Ken	
573	Fri 04 May 2018 09:52:45	20180504 0952 001	Towed Multinet	mayDenth	SEWARD	GAK3		20	59 54748	_140.183	217	Ken	Nets failed to trin. Camshaft does not turn will
574	Fri 04 May 2018 10:03:54	20180504 1003 001	Rongo Net	denlov	SEWARD	GAK3		20	59 54747	-140.103	217	Ken	To 100 m to compare with samples from previo
575	Fri 04 May 2018 10:00:56	20180504 1009 001	Bongo Net	mayDenth	SEWARD	GAK3		31	50 53081	-149.100	217	Ken	To too in to compare with campies norm provid
576	Fri 04 May 2018 10:16:05	20180504 1016 001	Bongo Net	recover	SEWARD	GAK3		31	59 53623	-140.170	217	Ken	
577	Fri 04 May 2018 11:41:22	20180504 1141 001	Towed Multinet	denlov	SEWARD	GAK2		20	59 53624	-140 172	217	Ken	Old multinet is now on line
578	Fri 04 May 2018 12:20:10	20180504 1220 001	Towed Multinet	recover	SEWARD	GAK2		20	59 6819	-140 312	241	Ken	Old multillet is now off line
570	Fri 04 May 2010 12:20:10	20180504.1220.001	Towed Multinet	recover	SEWARD	CAK1		20	50 85/2/	-149.512	241	Ken	
580	Fri 04 May 2018 13:57:01	20180504 1356 001	Towed Multinet	mayDenth	SEWARD	GAK1		21	59.00424	-149.400	272	Ken	
581	Fri 04 May 2018 14:21:30	20180504 1421 001	Towed Multinet	recover	SEWARD	GAK1		21	59 84178	-149.445	270	Ken	
582	Fri 04 May 2018 14:42:30	20180504 14/2 001	Bongo Net	deploy		GAK1		32	50 83782	-140.444	270	Kon	
583	Fri 04 May 2018 14:53:21	20180504 1453 001	Bongo Net	mayDenth		GAK1		32	50 83382	-140.433	270	Kon	
58/	Fri 04 May 2010 14:00.21	20100504.1455.001	Bongo Net	recover		GAK1		32	50 83011	-149.400	270	Kon	
585	Fri 04 May 2010 15:04:00	20180504.1505.001	Calvet Net	deploy		GAK1		87	50 8/68/	-149.422	270	DDH	
586	Eri 04 May 2010 15:55:12	20100504.1555.001	Calvet Net	recover		CAK1		87	50 84703	140.465	270		
587	Eri 04 May 2018 16:16:41	20100504.1002.001		doplov		GAR1		07 87	50 84688	-149.405	270	s Danielson	
507	Fil 04 May 2016 10.10.41	20100504.1010.001		recover		GAK1		0/ 97	50 84000	-149.400	209	sDanielson	
580	Fil 04 May 2010 10.44.00	20100504.1044.001	Cill911 Colvet Net	doplov		GAK1		0/ 97	50 84503	-149.400	209		
509	Fil 04 May 2010 10.30.13	20100304.1030.001	Calvet Net	depidy	SEWARD	GAK1		01 07	59.04505	-149.400	209		
590	Fil 04 May 2010 17.07.20	20100304.1707.001		deploy		GAK1		07 16	59.04505	-149.400	209		
591	FII 04 May 2010 17.24.30	20100304.1724.001		deploy	SEWARD	GAKI		10	59.04000 50.94665	-149.400	200	AnaA	
59Z	FII 04 May 2010 17.44.31	20100304.1744.001		recover	SEWARD	GAKI		10	59.04000	-149.400	200	AnaA	
593	FII 04 May 2010 10.02.39	20100304.1002.001	CTD911	deploy	SEWARD	GAKI		0/	59.04/0/	-149.409	207	sDanielson	
594 FOF	FII 04 May 2010 10.17.10	20100304.1017.001	CID9II Vertical MultiNat	recover	SEWARD	GAKI		0/	59.04094	-149.400	200	sDanielson	PRIM PROD CAST
595	Fri 04 May 2018 18:48:24	20180504.1848.001	Vertical Mulitivet	deploy	SEWARD	GAKI		8/ 07	59.84763	-149.400	208	sDanielson	
596	Fri 04 May 2018 19:03:52	20180504.1903.001		recover	SEWARD	GAKT	N1 - N1	87	59.84749	-149.466	268	sDanielson	and a second filling
29/ 500	Sat US May 2018 U3:10:57	20100000.0310.001		service			INAIN		59.01405	-140.04		ekotn	
290	Sat US May 2018 07:17:32		ACTODAT CTD	otner	SEWARD	GAK/	inain	00	20.90907	-148.599	000	HSIBIS	DEPLUY
599	Sat U5 May 2018 14:25:26	20180505.1425.001		aepioy	Nan	RES2.5		89	60.02528	-149.36	298	suanielson	
600	Sat U5 May 2018 15:07:15	20180505.1507.001	Calvet Net	deploy	NaN	RES2.5		89	60.02594	-149.358	298	KKH	
601	Sat US May 2018 15:14:12	20180505.1514.001	Calvet Net	recover	NaN	RES2.5		89	60.02651	-149.358	298	KKH	

602	Sat 05 May 2018 15:38:21	20180505.1538.001	CTD911	recover	NaN	RES2.5		89	60.02594	-149.358	298	sDanielson	
603	Sat 05 May 2018 15:48:49	20180505.1548.001	CTD911	recover	KOD	KOD5		3	57.78215	-150.761	87	SStrom	
604	Sat 05 May 2018 15:50:31	20180505.1550.001	CTD911	recover	KOD	KOD8		11	57.43329	-150.138	707	sDanielson	
605	Sat 05 May 2018 17:12:51	20180505.1712.001	EK60	stop	NaN	NaN	NaN		59.92617	-149.405		eRoth	
606	Sat 05 May 2018 17:32:04	20180505.1732.001	centerBoard	other	NaN	NaN	NaN		59.9327	-149.4		eRoth	flush position
607	Sat 05 May 2018 17:48:09	20180505.1748.001	PCO2	stop	NaN	NaN	NaN		59.95821	-149.372		Bern	stopped PCO2
608	Sat 05 May 2018 20:50:21	20180505.2050.001	TM CTD	recover	GAK	GAK15		12	57.78982	-147.503		AnaA	GUESS ON RECOVERY TIME
609	Sat 05 May 2018 20:57:14	20180505.2057.001	Iron Fish	recover	SEWARD	GAK9	NaN		58.53092	-148.172		AnaA	
610	Sat 05 May 2018 21:11:08	20180505.2111.001	Acrobat CTD	other	MS				59.92078	-147.845	119	sDanielson	
611	Sat 05 May 2018 21:12:45	20180505.2112.001	Iron Fish	deploy	SEWARD	GAK5	NaN		59.25933	-148.91		AnaA	
612	Sat 05 May 2018 21:16:26	20180505.2116.001	Iron Fish	recover	SEWARD	GAK5	NaN		59.32157	-148.953		AnaA	GUESS ON RECOVERY TIME
613	Sat 05 May 2018 21:30:51	20180505.2130.001	Acrobat CTD	other	MDI	MDI1		38	60.23502	-145.517	35	sDanielson	Acrobat transect on MDI Line
614	Sat 05 May 2018 21:38:32	20180505.2138.001	Acrobat CTD	other	NaN	GAK15	NaN		57.78243	-147.583		sDanielson	ACROBAT FROM GAK15