

**BERING SEA AND GULF OF ALASKA
POLLOCK FISHERY
EXEMPTED FISHING PERMIT
AUTHORITY: 50 CFR 600.745(b) AND 50 CFR 679.6
MODIFIED PERMIT 2019-03**

The Administrator, Alaska Region, (Regional Administrator), National Marine Fisheries Service (NMFS), acting on behalf of the Secretary of Commerce, hereby authorizes designated pollock catcher vessels (CVs) using pelagic trawl gear and tender vessels transporting pollock catch in the Bering Sea (BS) and Gulf of Alaska (GOA) to evaluate the efficacy of electronic monitoring (EM) systems in lieu of observers for at-sea monitoring of vessels for compliance with fishery management regulations. The exempted fishing permit (EFP) describes exemptions to regulations and other requirements that are necessary to facilitate the project.

The permit holders and the owners and operators of the participating vessels and shoreside processors must comply with the EFP terms, and unless otherwise provided in this permit, the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), and 50 CFR parts 600 and 679. An authorized designated representative for each catcher vessel, tender vessel, or processor participating in experimental fishing under this EFP must complete and sign a copy of the vessel information form contained in Appendix A or processor information form contained in Appendix B, as applicable, of this EFP. The official list of vessels and processors that may participate in this EFP will be maintained separately by NMFS during the EFP.

This permit (modified permit 2019-03) is valid and effective when signed by the Regional Administrator and all participating permit holders. This permit is valid through December 31, 2022. If experimental fishing concludes before the expiration date, the permit holders may terminate the permit prior to the expiration date by notifying Josh Keaton (907) 586-7519, NMFS Alaska Regional Office. This permit may be revoked, modified, or suspended under the permit's terms, by the Regional Administrator, or by regulatory action under 50 CFR part 679, 50 CFR 600.745, or 15 CFR part 904.

GLENN MERRILL

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MERRILL
Date: 2021.01.12 11:06:41 -09'00'

James W. Balsiger, Ph.D.
Administrator,
Alaska Region, NMFS

January 12, 2021

Date Signed

BERING SEA AND GULF OF ALASKA
POLLOCK FISHERY
MODIFIED EXEMPTED FISHING PERMIT 2019-03
PERMIT HOLDER SIGNATURE PAGE

Ruth Christiansen

Permit Holder Signature

Ruth Christiansen

Permit Holder Printed Name

United Catcher Boats

Permit Holder Company/Affiliation

12-30-20

Date Signed



Permit Holder Signature

Charlotte Levy

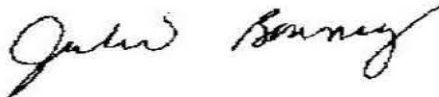
Permit Holder Printed Name

Aleutians East Borough

Permit Holder Company/Affiliation

12-30-20

Date Signed



Permit Holder Signature

Julie Bonney

Permit Holder Printed Name

Alaska Groundfish Data Bank, Inc.

Permit Holder Company/Affiliation

12-30-20

Date Signed

BERING SEA AND GULF OF ALASKA
POLLOCK FISHERY
MODIFIED EXEMPTED FISHING PERMIT 2019-03
TERMS AND CONDITIONS

AUTHORITY: 50 CFR 600.745(b) AND 50 CFR 679.6

ELECTRONIC MONITORING IN THE BERING SEA AND GULF OF ALASKA POLLOCK
FISHERIES FOR CATCHER VESSELS USING PELAGIC TRAWL GEAR

A. Permit Holders and Collaborators

1. Permit Holders – The following individuals and the companies they represent are co-applicants for this EFP and are considered co-permit holders. For purposes of this permit, the permit holders, in addition to having other responsibilities described in this permit, manage the daily operations of a vessel or group of vessels and are the main points of contact for the processing plants, vessels, and NMFS. The permit holders are also responsible for ensuring that the designated representatives (see Section B of this permit) understand and comply with the provisions of this EFP. Permit holders are authorized to receive data for EFP trips from shoreside observers and vessels, shoreside processors, and tenders (e.g. eLandings and tLandings reports) participating in this EFP for which they are a point of contact. Permit holders are also responsible for compiling and analyzing all EFP data collected according to the provisions of this permit and presenting a summary of those data to NMFS. Each permit holder must act as the main point of contact between the permit holder, the vessel and crew, the participating processors, and NMFS. The participating vessels and processors listed below constitute an initial list of vessels and processors that will participate in this EFP. The official list of vessels and processors that may participate in this EFP will be maintained separately by NMFS during the EFP.

a. Ruth Christiansen
United Catcher Boats
4005 20th Avenue West, Suite 116
Seattle, WA 98199
Office: (206) 282-2599
Cell: (206) 293-1683
rchristiansen@ucba.org

Catcher Vessels:

- Primary point of contact for: *Aldebaran, American Beauty, American Eagle, Arctic Explorer, Auriga, Aurora, Bering Rose, Bristol Explorer, Commodore, Destination, Golden Dawn, Lisa Melinda, Miss Berdie, Nordic Star, Northern Patriot, Pacific Ram, Pacific Viking, Patricia L, Pegasus, Predator, Progress, Raven, Royal American, Sea Dawn, Sea Wolf, Seeker, Sovereignty, Starlite, Starfish, Storm Petrel and Western Dawn.*
- Secondary point of contact for: *Alaska Dawn, Alaskan, Arctic Ram, Arctic Wind, Bay Islander, Cape Kiwanda, Caravelle, , Collier Brothers, Evie Grace, Excalibur II, Gold Rush, Half Moon Bay, Hickory Wind, Leslie Lee, Marathon, Michelle Renee, Miss Sarah, Pacific Star, Sea Mac, Sunset Bay, and Walter N*

Processors:

- Primary point of contact for: *Trident (Akutan), Icicle (Dutch Harbor), Peter Pan (King Cove), Alyeska (Dutch Harbor) and UniSea (Dutch Harbor)*

- Secondary point of contact for: Trident (Kodiak), North Pacific Seafoods (NPS; Kodiak), OBI (Kodiak) and International Seafoods of Alaska (ISA; Kodiak).

b. Julie Bonney
Alaska Groundfish Data Bank, Inc.
P.O. Box 788
Kodiak, AK 99615
Office: (907) 486-3033
Cell: (907)-250-4706
jbonney@gci.net

Catcher Vessels:

- Primary point of contact for: Alaska Dawn, Alaskan, Arctic Ram, Arctic Wind, Bay Islander, Cape Kiwanda, Caravelle, Collier Brothers, Evie Grace, Excalibur II, Gold Rush, Half Moon Bay, Hickory Wind, Leslie Lee, Marathon, Michelle Renee, Miss Sarah, Pacific Star, Sea Mac, Sunset Bay, and Walter N
- Secondary point of contact for: Aldebaran, American Beauty, American Eagle, Arctic Explorer, Auriga, Aurora, Bering Rose, Bristol Explorer, Commodore, Destination, Golden Dawn, Lisa Melinda, Miss Berdie, Nordic Star, Northern Patriot, Pacific Ram, Pacific Viking, Patricia L, Pegasus, Predator, Progress, Raven, Royal American, Sea Dawn, Sea Wolf, Seeker, Sovereignty, Starlite, Starfish, Storm Petrel and Western Dawn.

Processors:

- Primary point of contact for: Trident (Kodiak), North Pacific Seafoods (NPS; Kodiak), OBI (Kodiak) and International Seafoods of Alaska (ISA; Kodiak).
- Secondary point of contact for: Trident (Akutan), Icicle (Dutch Harbor), Peter Pan (King Cove), Alyeska (Dutch Harbor) and UniSea (Dutch Harbor)

c. Charlotte Levy
Aleutians East Borough
3380 C Street, Suite 205
Anchorage, AK 99503
Office: (907) 274-7566
Cell: (907) 457-7197
clevy@aeboro.org

Catcher Vessels:, Alaskan Lady, Cape St. Elias, Celtic, Courtney Noral, Decision, Equinox, Heather Margene, Just in Case, Karen Evich, Lady Joanne, Lady Lee Dawn, Marauder, Miss Courtney Kim, Ocean Storm, Primus, Shawna Rae, Temptation, Tern

Processors:

- Primary point of contact for: Trident (Sand Point) and Silver Bay (False Pass)
- Secondary point of contact for: Peter Pan (King Cove)

Tenders:

- Primary point of contact for: Bering Hunter, Cape Denbigh, Gayla Maureen, Perseverance, Entrance Point, Four Daughters, Last Frontier, Tuxedni, Bulldog, Dolphin, Royal Viking, Billikin, Southern Wind, Barbara J, Farwest Leader, Arcturus, Aldebaran, Columbia, Dominator, Golden Dawn, Gladiator, Northern Patriot, Pacific Viking, Sovereignty, Viking Explorer, Constellation, Karin Lynn, Time Bandit, Katie Lynn, SBS Provider, Westward Wind, Pacific Star, Rondy's, Titan Explorer, Handler, American Lady, Debbie Sue, Sea

Venture, Kona Kai, Polar Sea, Incentive, Kodiak, Eleinor J, Tugidak, Valiant, Sea Warrior, Seabrooke, Diligence, Pacific Sounder, Ocean Invictus, Nordic Lady, Camai, Oracle, Denali, Nushagak Spirit, Lady Helen, Mako, Sea Pride, Rogue, Stormbird, Kaia, Sea Diamond, Lady Alaska, Melanie, Icy Bay

2. Collaborators - The following individuals and the companies they represent are co-applicants for this EFP and are considered collaborators. A collaborator, in addition to having other responsibilities described in this permit, assists with communication to a vessel, or group of vessels, or processors.

- a. Kiley Thompson
Peninsula Fishermen's Coalition
Box 116
Sand Point, AK 99661
907-952-6890
thompsonsdp@aol.com

B. Requirements for Designated Representatives. Each permit holder must designate a representative for each participating vessel and processor for which the permit holder is a point of contact.

1. Designated Representatives for Catcher Vessels (CVs): CVs directed fishing for pollock using pelagic trawl gear in the Bering Sea (BS) and Gulf of Alaska (GOA), provided the vessel operator or owner has completed the following:
 - a. provided to NMFS a completed and signed Vessel Data Sheet (Appendix A)
 - b. provided their intent to fish under this EFP to the permit holders so their CV name(s) can be submitted to NMFS by October 15, 2020 to fish under this EFP in 2021 and October 15, 2021 to fish under this EFP in 2022 in the GOA. Intent to fish under this EFP can be submitted to NMFS by December 15, 2020 to fish under this EFP in 2021 and December 15, 2021 to fish under this EFP in 2022 in the BS. GOA and BS CVs participating in the EFP in 2020 include those submitted by the permit holders to NMFS as of November 6, 2019.
 - c. has signed a Vessel Monitoring Plan (VMP) specific to the vessel as defined in Section F.4 of this document.
2. Designated Representatives for Tender Vessels: Vessels that receive pollock from designated CVs west of 157 W Longitude in the GOA, provided the vessel operator/owner has completed the following:
 - a. provided to NMFS a completed and signed Vessel Data Sheet (Appendix A)
 - b. has a signed Vessel Monitoring Plan (VMP) specific to the tender vessel as defined in Section F.4 of this document.
3. Designated Representatives for Processors: Shoreside processors that receive pollock from designated CVs or designated tender vessels, provided that the plant manager has completed the following:
 - a. provided to NMFS a completed and signed Processor Data Sheet (Appendix B).

C. Timing of Fishing under the EFP. Fishing under the terms of this permit is authorized from the date of its issuance through December 31, 2022, or until exempted fishing is concluded, whichever is earlier.

D. Exempted Fishing Areas. Exempted fishing under this permit is restricted to the BS and GOA NMFS management areas.

E. Additional Requirements for the Permit Holders.

1. Reporting to Council and EM committee:

a. The permit holders will provide written and oral reports as requested by the North Pacific Fishery Management Council (NPFMC), Trawl EM Committee, or NMFS Alaska Region including but not limited to, the interim reports in February 2021 and 2022 and a final report in February 2023. These reports will address the four objectives of the EFP (EFP 2019-03 Application page 16) and will focus on evaluation of the “Metrics for Success of EM as a Compliance Monitoring Tool” (EFP 2019-03 Application pages 16-18; Table 1) with data and information from the 2019 Pilot Phase forming a foundation for comparison. These reports will be used to inform future Council analyses in consideration of implementing EM aboard pollock CVs using pelagic trawl gear in the BS and GOA as a compliance monitoring tool in these fisheries. Any EFP analysis and report writing are the responsibility of the EFP permit holders.

2. Performance Metrics:

a. The permit holders will work with NMFS to develop performance metrics to meet the intent of the current GOA pollock trip limit, BS and GOA MRA limits, and avoidance of PSC while still meeting the EFP goal of minimizing at-sea discards (maximized retention).

b. The permit holders will enforce the performance metrics against designated catcher vessels. Should a vessel operator violate the performance metric, the permit holder who is the primary point of contact for that vessel, in consultation with NMFS, will determine the appropriate remedy, which could include the vessel’s removal from EFP fishing.

c. In the event that the permit holder who is the primary point of contact for that vessel, in consultation with NMFS, chooses to remove a vessel from participation in the EFP, the permit holder will immediately notify the vessel owner/operator and NMFS.

3. Observer Coverage: Responsibilities associated with the at-sea collection of PSC catch data and biological samples normally taken by at-sea observers will be completed by observers stationed at the shoreside plant. Additional observers will be required to be stationed at processors to accomplish this work. The observer sampling protocols and priorities for shoreside observers will be identified by the Observer Program. The permit holder must ensure compliance with the following:

a. Procure certified observer services from a permitted observer provider described at 50 CFR 679.52 for deployment to shoreside processing plants under this EFP. Observers deployed under requirements of this permit are certified observers consistent with requirements at 50 CFR 679.53. Regulations at 50 CFR 679.7(g) are applicable for the protection of observers deployed under this permit.

b. Number of observers. Ensure an adequate number of observers are stationed at shoreside processing plants receiving deliveries from participating EFP vessels and tenders to complete sampling EFP duties as determined by the Observer Program. Hence, an adequate number of observers must be stationed at each participating plant such that:

- i. AFA processors taking deliveries for more than 12 consecutive hours must provide two observers¹.
 - ii. In order to complete standard data collections in GOA plants, the permit holders will work with NMFS to ensure adequate observer resources to accomplish these sampling goals².
 1. All shoreside deliveries from EFP vessels in the GOA will be randomly monitored by an observer as specified in the sample design (i.e. 30% of deliveries monitored).
 2. The time required for an observer to complete EFP duties should not regularly exceed 12 hours per day.
 3. In consultation with the permit holders, NMFS will determine if additional observers are necessary based on the workload to complete additional EFP duties.
 - iii. Due to the ongoing COVID-19 pandemic, observers assigned to plants for the purpose of this EFP will also be required to assist vessel observers monitor their offloads and collect required data when the vessel observers are not allowed access to the plant.
4. EM Provider Services:
- a. Procure EM provider services to install and maintain EM systems on participating vessels.
 - b. Vessel Monitoring Plan: Ensure that EM Service providers work with each participating vessel to create a Vessel Monitoring Plan (VMP) using the template developed in consultation with NMFS.
 - i. VMPs must include: vessel owner/operator responsibilities, documentation of the location and purpose of all installed EM camera system components, data drive handling requirements, catch handling requirements, vessel owner/operator actions for system malfunctions, and a description of discard locations.
 - ii. The VMP must be signed and dated by the vessel owner/operator and the EM provider prior to the start of EFP fishing in each calendar year.
 - iii. Each signed VMP must be submitted to the third party video reviewer and NMFS prior to the start of EFP fishing in each calendar year.
 - iv. NMFS, the third party video reviewer, and the EM Provider may request that changes be made to the VMP. Updated VMPs must be signed and resubmitted to the third party video reviewer and NMFS.
 - v. Ensure stern view camera and horizon view camera together provide complete and unobstructed views of the third wire, as applicable.
 - vi. The EM review protocols must include the methods for the video reviewers to record any potential seabird and marine mammal interactions.
 - c. Vessel Feedback: Ensure that the EM service providers communicate with the EM Video Reviewers and the vessel operator via email or phone regarding any EM equipment issues or

¹ Under existing monitoring requirements, the observer from the delivering vessel assists with data collection because each delivery requires two observers to complete standard data collections from AFA deliveries as per 50 CFR 679.51(b)(2)(i), and the observer assigned to the delivering vessel at 50 CFR 679.51(a)(1)(C). Under the EFP there are no vessel observers to complete data collection in the plants so additional (third or fourth) plant observers are required to collect additional EM EFP data.

² The observer assigned to the delivering vessel at 50 CFR 679.51(a)(1)(A) conducted sampling during the delivery (in the processing plant). Since vessel observers are not assigned under this EFP, observers must be assigned to shoreside processors to meet salmon and other monitoring objectives.

- modifications identified during video review to improve data quality.
- i. If two separate entities are being used, the EM Video Reviewers will use a Service Provider Feedback Form to communicate any system malfunctions or data anomalies that are noted during the data review to the EM service provider.
 - ii. The EM service provider will determine if the issue has already been reported by the vessel and resolved, or if it has not, the service provider will follow up directly with the vessel to ensure any previously unreported issues are resolved.
- d. Ensure EM service providers comply with all applicable provisions of this permit.
5. EM Video Review Services:
- a. Procure EM video review services and ensure EM video reviewer complies with all applicable provisions of this permit.
 - i. The Pacific States Marine Fisheries Commission (PSMFC) will serve as the EM video reviewer for EM video generated by the BS-GOA shoreside CVs (UCB/AGDB/AWTA project).
 - ii. Saltwater, Inc. will review EM video generated by the WGOA catcher and tender vessel (AEB/Peninsula Fishermen Coalition project).
 - b. Video Review Protocols:
 - i. Ensure that EM video reviewers work with NMFS to develop EM Data Handling and Review Protocols and submit documentation describing these protocols to NMFS prior to the start of video review in each calendar year.
 - ii. Work with NMFS to address any changes needed to the data handling and review protocols during the project.
 - iii. Video review protocols should include:
 1. Methods to determine the integrity and quality of the EM video
 2. Methods to identify the species and quantify the amount of all discarded catch
 3. Methods to compare logbook information to estimates of discard from video
 4. QA/QC procedures for video review and data handling to ensure high quality data and consistency among video reviewers.
 - c. Vessel Feedback: Ensure that the EM video reviews provide information to the EM Service Providers and feedback directly to the vessel operator/designated contact via email.
 - i. For those vessels delivering to shoreside processors, this feedback communication will occur after each data drive is reviewed. For those vessels delivering to tenders, this will occur after every trip.
 - ii. The data reviewer will use a Service Provider Feedback Form to communicate any system malfunctions or data anomalies that are noted during the data review to the EM service provider.
 - iii. After each data drive is reviewed, the data reviewer will email a Drive Report document to the vessel operator/designated contact as well as to the EFP applicant and permit holders based on the contact lists for vessel responsibility.
 - iv. The Drive Report provides the vessel with information on the video data quality and the vessel's adherence to the program requirements for logbook submission, species retention requirements, and malfunction reporting requirements.
 - d. Data Management:
 - i. Permit holder must ensure that the video and summary information collected under the proposed EFP will be treated akin to observer data such that video is reviewed and data are stored to maintain its confidentiality.
 - ii. Permit holder must ensure that the EM video data collected under the EFP is retained by the EM video reviewer for 18 months after the close of the pollock fishery for that

- year and be made available to NMFS upon request.
 - iii. All reviewer data reports that compare discard estimates generated by video that are reviewed from each EM trip and the logbook data for compliance monitoring purposes will be submitted directly to NMFS. EM video reviewers and the permit holders will be provided the fish ticket landings data generated from EFP deliveries to enable video reviewers to track deliveries and connect landing information with the EFP video and logbook data.
 - e. Summary Reports. In addition to this regular transmittal of trip-level discard information, summary reports will be generated by the permit holders providing information on industry self-reported data (via logbooks) and review of EM data to verify compliance with record keeping and reporting regulations, including those for salmon.
 - i. The summary reports will include EM metadata (number of drives, trips, and hauls), reports of discard from both the vessel logbook and EM discard data, and discard information (i.e., number of discard events over and under 1,000 lbs.) and summaries of any equipment issues, malfunctions or data quality issues.
 - ii. These summary reports will serve as audit reports of the catch and discard information recorded on a vessel's discard report and corresponding fish ticket. The reports will be produced twice a year and provided to the Trawl EM Committee, the Council, and NMFS as appropriate.
- F. Additional Requirements for Participating Designated Vessels.**
- 1. A copy of this EFP must be kept on board the vessel and made available to an EM technician or NMFS representative upon request.
 - 2. Fishing Gear. A vessel operator must not deploy or fish with any gear other than pelagic trawl gear at any time during an EFP trip.
 - 3. Electronic Monitoring (EM) Systems Requirements.
 - a. EM System Requirements. A vessel operator must have operational EM Systems installed on participating vessels to record species retention and discard data.
 - i. These systems are comprised of the main recording computer, cameras, and an assortment of sensors for gathering information about fishing practices.
 - ii. The data from these systems must be recorded and encrypted on hard drives in the system.
 - iii. The EM data captured must consist of trip/haul start/end date, time, location; and discard date/time/location/weight and, when possible, species (when possible).
 - iv. Upon request, and pursuant to § 679.5(a)(5), the vessel operator must make available the EM system and data to NMFS and authorized officers.
 - v. EM camera systems must be placed at key locations aboard a vessel to ensure all catch (including handling and discard) can be seen within camera view from the time the catch reaches the vessel until it is put into the vessel's hold, transported to a tender vessel, returned to the water, or offloaded to a shoreside processing facility.
 - b. Vessel operators must ensure video recording is initiated prior to deploying fishing gear on an EFP trip or prior to transfer of EFP catch onto the vessel. Video must be recorded for the remainder of the EFP trip until all catch is offloaded at a participating EFP processing plant or tender.
 - 4. Vessel Monitoring Plans.
 - a. Participating vessels will work with the EM provider to create a Vessel Monitoring Plan

- (VMP) using the template developed in consultation with NMFS.
- b. VMPs must include vessel owner/operator responsibilities, document the location and purpose of all installed EM camera system components, data drive handling requirements, catch handling requirements, vessel owner/operator actions for system malfunctions, and describe discard locations.
 - c. The VMP must be signed and dated by the vessel owner/operator and the EM provider prior to the start of EFP fishing in each calendar year.
 - d. Each signed VMP must be submitted to the third party video reviewer and NMFS prior to the start of EFP fishing in each calendar year.
 - e. NMFS, the third party video reviewer, and the EM Provider may request that changes be made to the VMP. Updated VMPs must be signed and resubmitted to the third party video reviewer and NMFS.
 - f. Vessels must comply with all provisions of their VMP when EFP fishing and a copy of the VMP must be kept aboard the vessel during all EFP trips.
5. Catcher and Tender Vessel Operators Reporting Requirements.
- a. Logbooks:
 - i. Catcher vessel operators participating in the EFP are required to complete a trawl catcher vessel daily fishing logbook or NMFS-approved electronic logbook during each EFP trip.
 - ii. The catcher vessel operator must record all required vessel logbook information as identified in § 679.5(c), in addition to the following:
 1. any EM system concerns or malfunctions,
 2. estimated amount of discards by species, the unit of measurement (pound/mt), and the reason for discard,
 3. document any marine mammals incidentally caught
 4. Cod end capacity
 - iii. Catcher vessel operators must submit a copy of the logbook with recorded at-sea discards to processing plant personnel or tender operator so that the plant personnel or tender operator can enter discard data into eLandings or tLandings.
 - iv. Tender vessel operators are required to complete the tender logbook as outlined in the VMP.
 - v. All vessel operators must submit copies of their logbooks with the corresponding hard drive to the video reviewer. If a vessel operator is using a NMFS approved electronic logbook, the vessel operator must print corresponding logbook pages for the EFP trip and submit paper copies with the hard drive.
 - b. tLandings Landing Reports: Tender vessels are required to report each EFP trip using tLandings and to transfer tLandings USB drive to the processing plant at the time of offload.
 - i. Each EFP landing report must be designated in tLandings as a Trawl EM EFP trip by reporting Management Program = OA and the Management Program Modifier = TEM
 - ii. Using the catcher vessel's logbook, record the species and amount of any at-sea discards that occurred on the catcher vessels's trip in the tLandings landing report.
6. Catch Handling for Catcher Vessels.
- a. Species Retention. All catch, including all groundfish and non-groundfish species, must be retained and delivered except:
 - i. Any incidentally caught marine mammals.

1. Procedures for incidentally caught marine mammals can be found in Section F.6.e of this document.
 2. All incidental mortality and injury of marine mammals in the course of commercial fishing operations must be reported to the NMFS Office of Protected Resources (50 CFR § 229.6).
 - ii. Small amounts of pollock or other species removed from the deck and fishing gear during cleaning or other similar vessel operations. These discards must be recorded in the vessel logbook.
 - iii. Jellyfish. Vessel operator must document that jellyfish were discarded in the vessel logbook. No weight estimate is necessary.
 - iv. Large individual marine organisms, including large individual rays or skates. Vessel operator must document the species group and estimated weight in the vessel logbook.
 - v. Sharks except for Pacific spiny dogfish (*Squalus suckleyi*). Vessel operator must document the species, estimated weight, and length in the vessel logbook; and
 - vi. Discard of catch resulting from an unforeseen and reasonably unforeseeable event that is beyond the control of the vessel operator or crew, provided that the estimated weight of all discarded species, the tow number, and reason for discarding are recorded in the logbook. Such an event may include:
 1. Emergency situation involving compromised vessel safety and stability;
 2. Opening of a blow-out panel because the catch is otherwise too large to bring up the vessel's stern ramp;
 3. Net bleeds/venting of an overfull codend; and
 4. Discards due to mechanical failure.
- b. Prohibited Species Catch. Prohibited species catch includes: salmon, halibut, crab, herring and any groundfish species NMFS prohibits retention of for management purposes. Under the EFP:
- i. All prohibited species catch must be retained by the vessel and delivered to a participating shoreside processing plant.
 - ii. The PSC species will be enumerated and reported by processing plant personnel via eLandings and by plant observer(s).
 - iii. Prohibited species may not be sold. All PSC must be donated or discarded. Discarding includes processing for meal.
 - iv. If PSC is placed back on the vessel to be discarded at sea, all PSC must be discarded prior to any fishing activity.
- c. Prohibited Species Donation (PSD) Program. Participation in the PSD Program provides an exception to the discard regulation that will allow for the maximum retention of halibut and salmon PSC without any additional permits. SeaShare is currently the only authorized participating distributor in the PSD Program.
- i. All participating catcher vessels and processors must be listed on the PSD Program (§ 679.26) permit³.
- d. Maximum Retainable Amounts (MRAs) and Pollock Trip Limits.
- i. Catch of all species must be retained by participating vessels, except as provided in Section F.6.a of this document.
 - ii. CVs must comply with provisions identified by the permit holder to establish performance metrics to meet the intent of the current pollock trip limit in the GOA and MRA limits in the BS and GOA.

³ <https://www.fisheries.noaa.gov/permit/alaska-prohibited-species-donation-program-application>

- iii. Owners and operators of vessels participating in EFP fishing must follow all performance metrics deemed necessary by the permit holders, in consultation with NMFS.
 - e. Marine Mammals.
 - i. All incidentally caught marine mammals must be discarded, provided they are documented in the vessel logbook and reported to the NMFS Office of Protected Resources.
 - ii. In addition to documenting incidental takes in the vessel logbook, the permit holders, and as necessary designated representatives, and vessel crew participating in this EFP, will work with NMFS to develop a reporting process for any incidental takes of marine mammals by participating EFP vessels.
 - f. Seabirds.
 - i. Vessels are required to complete a Threatened and Endangered Bird Species Encounter Reporting Form (USFWS) when an encounter occurs for short-tailed albatross, spectacled eider, Steller's eider or other ESA-listed species while participating in the EFP.
 - g. Owners and operators of vessels participating in EFP fishing must follow any additional catch handling protocol adjustments deemed necessary by the permit holders, in consultation with NMFS.
7. Catch Handling for Tender Vessels.
- a. Catch Handling:
 - i. All EFP catch transferred onto a tender vessel must be retained and delivered to a participating EFP shoreside processor. Designated EFP tender vessels receiving EFP catch are prohibited from discarding EFP catch.
 - ii. Designated EFP tenders that receive EFP catch *cannot* also accept non-EFP catch during the same trip, until all EFP catch has been offloaded to a shoreside processor.
 - iii. Designated EFP tenders that receive EFP catch cannot receive catch from more than one NMFS reporting area during the same EFP trip.
 - iv. Designated EFP tenders must completely offload EFP catch at a single processing plant (no partial offloads).
 - v. Owners and operators of designated tender vessels participating in EFP fishing must follow any additional catch handling protocol adjustments deemed necessary by the permit holders, in consultation with NMFS.
 - b. Prohibited Species Catch. Prohibited species catch includes: salmon, halibut, crab, herring and any groundfish NMFS prohibits retention of for management purposes.
 - i. All Prohibited Species Catch must be retained by the vessel and delivered to a participating shoreside processing plant.
 - ii. Prohibited species may not be sold. All PSC must be donated or discarded. Discarding includes processing for meal.
- G. Additional Area-specific Requirements for Participating Designated Vessels
- 1. Bering Sea
 - a. All pelagic pollock fishing under all seasons by participating vessels will be considered EFP fishing (i.e., vessels will not need to notify NMFS that they are beginning/ending an EFP trip).
 - b. Participating BS pollock CVs are exempted from the 100% requirement for at-sea observer coverage (full coverage category) (See Section N of this permit). For any non-pollock directed fishing trips (e.g., Pacific cod), these BS vessels are subject to observer coverage

requirements specified at 50 CFR 679.51(a).

2. Gulf of Alaska

- a. ODDS (Observer Deploy and Declare System):
 - i. CVs are required to log each trip in ODDS in compliance with regulations at § 679.51(a)(1) and select either: non-EFP; EFP tender delivery; or EFP non-tender delivery.
 - ii. Only federally managed pollock trips in the GOA when the vessel is using pelagic trawl gear may be logged as EFP trips.
 - iii. Once a catcher vessel begins an EFP trip in the ODDS system it must deliver to either a participating EFP shoreside processor or an EFP tender.
 - iv. Vessels are required to close each trip in ODDS and enter the fish ticket number in ODDS.
- b. EFP catch must be delivered to a participating EFP shoreside processor and completely offload at a single processing plant (no partial offloads).
- c. Participating tender vessels and CVs delivering shoreside are required to communicate with participating processors and provide timely offload schedule information for all EFP trips.
- d. EFP trips will not be selected for observer coverage and all landings are subject to the observer fee (per regulations at 679.55(f)) and observer fees will continue to be assessed the fee during EFP fishing.

H. Requirements for Participating Processors. In addition to other applicable requirements, owners and operators of a processing plant participating in the EFP must comply with the following provisions:

1. A copy of this EFP must be kept at the shoreside processing plant and made available to an EM technician, observer, or NMFS representative upon request.
2. Catch Handling.
 - a. Bering Sea: Managers of processing plants participating in the EFP must follow regulations at § 679.21(f) and any EFP catch handling protocol adjustments deemed necessary by the permit holders. Permit holders will consult with NMFS prior to changing catch handling protocols.
 - i. AFA plants with existing CMCPs should include information below (b. viii) in their CMCPs in order to address all needs of the EFP. CMCPs that do not meet these requirements should be updated accordingly.
 - b. Gulf of Alaska: Managers of processing plants participating in the EFP must:
 - i. Keep catch from a vessel participating in the EFP separate from other deliveries until all catch has been sorted and weighed from the delivery.
 - ii. Allow observers free and unobstructed access to all catch, including PSC.
 - iii. At the time of an EFP offload, PSC must be removed from the flow of fish during the delivery and made available for sampling by an observer at the processing plant.
 - iv. Retain any PSC that is sorted from an EFP offload after the initial time of delivery (i.e., afterscale). This PSC must be labeled to accurately identify the offload, and made available to observers.
 - v. Refrain from discarding or processing PSC under the PSD Program until the PSC has been enumerated and identified by the observer and the observer's collection of any scientific data or biological samples from the catch has been completed.
 - vi. Comply with any EFP catch handling protocol adjustments deemed necessary by the permit holders, in consultation with NMFS.
 - vii. Maintain a flow of fish at a rate that allows observers to identify and enumerate PSC,

- and complete other sampling duties as defined by the Observer Program.
- viii. Submit to the PIs a catch handling plan (document) that includes the following information:
1. Name and contact information of the designated EFP plant liaison(s).
 2. Description of how and when the observers should contact the designated liaison.
 3. Description of the delivery point where catch will be offloaded from the EFP vessel and a description of the flow of fish into and through the plant, including where catch and PSC are sorted and stored. Attach plant diagram(s) as appropriate.
 4. The location of the designated observation area from which the observers can see the sorting of catch from the offload. Attach diagram(s) as appropriate.
 5. Description of the area where the observers can remove unsorted catch from the flow of fish as outlined in the EFP sampling plan.
 6. A description of how PSC removed from the offload after the designated observation area (i.e., afterscale) will be provided to the observers for inclusion in their data.
 7. Emergency procedures and contact information for plant personnel in case of emergencies such as an earthquake or tsunami.
3. Prohibited Species Donation (PSD) Program. Participation in the PSD Program provides an exception to the discard regulation that will allow for the maximum retention of halibut and salmon PSC without any additional permits. SeaShare is currently the only authorized participating distributor in the PSD Program.
- a. All participating catcher vessels and shoreside processors must be listed on the Prohibited Species Donation Program (§ 679.26) permit⁴.
4. eLandings Reporting: Timeliness and accuracy of data is extremely important for the success of this EFP.
- a. All catch, including groundfish, non-groundfish, and PSC, that is delivered by a vessel participating in the EFP must be sorted, weighed and reported in eLandings within 72 hours of completion of offload.
 - b. Any discarded catch reported in the vessel logbook must be reported by processing plant as discard at sea (disposition code 98) in eLandings.
 - c. Identification of EFP trips in eLandings:
 - i. Bering Sea landings: For each EFP landing report the following must be entered into eLandings: Management Program = AFA. Management ID = AFA coop number (e.g. 105). Management Program Modifier = TEM (“Trawl EM”).
 - ii. Gulf of Alaska landings: For each EFP landing report the following must be entered into eLandings: Management Program = OA. Management Program Modifier = TEM (“Trawl EM”).
 - d. When requested, provide copies of fish tickets from eLandings and the tLandings Tender Log Report to shoreside observers.
5. Observer Conditions and Sampling, Bering Sea: A manager of a shoreside processor participating in the EFP is required to comply with the requirements specified at § 679.51(e)(2).

⁴ <https://www.fisheries.noaa.gov/permit/alaska-prohibited-species-donation-program-application>

6. Observer Conditions and Sampling, Gulf of Alaska: A manager of a shoreside processor participating in the EFP is required to comply with the following requirements:
- a. Safe conditions. Maintain safe conditions at the shoreside processing facility for the protection of observers by adhering to all applicable rules, regulations, or statutes pertaining to safe operation and maintenance of the processing facility.
 - i. Plant facilities that require observers to work in areas that are not sheltered present unique challenges during winter months. At plants where these conditions occur, observer staffing must be adequate to allow for observers to provide breaks for one another. In addition, an area inside the facilities must be provided for the observer to access during these breaks. Both the permit holders and plant personnel must be aware of these challenges and respond appropriately in order to accomplish sampling goals outlined by the AFSC sampling plan and prevent data loss.
 - b. Communication with observer and/or shoreside observer coordinator.
 - i. In cooperation with the permit holders and observer provider company, ensure each observer has communication equipment to facilitate communication of confidential catch information with plant personnel. The plant operator must ensure that observers are able to communicate easily with plant staff as needed.
 1. Confidential information including but not limited to offload schedules, observer assignments, data collections, or other observer data should not be shared with observers through their personal accounts or devices (email, phone, laptop, etc.).
 - ii. Provide observers with the daily offload schedule, and specify which deliveries are from participating EFP trips (including tender offloads). Schedules for the daily offloads should be provided to the observers for the upcoming day to allow observers to make an initial sampling plan.
 - iii. Notify observers when an EFP trip or a tender with EM catch is leaving the fishing grounds to deliver catch shoreside such that the observers can update sampling plans as necessary.
 - iv. Notify observers 1 hour prior to the start of an EFP offload and with any subsequent changes to the offload schedule (after the one hour notification).
 - c. Plant liaison. Designate a plant liaison for each processor. The plant liaison is responsible for:
 - i. Orienting new observers to the plant and providing observers with a copy of the EFP catch handling plan;
 - ii. Assisting in the resolution of observer concerns; and
 - iii. Informing NMFS if changes to EFP catch handling.
 - d. Facilitate transmission of observer data:
 - i. Observer use of equipment: Allowing observers to use the shoreside processor's communication equipment and personnel, on request, for the entry, transmission, and receipt of work-related messages, at no cost to the observers.
 - ii. Communication equipment: Make a computer available for use by the observer. This computer must be connected to a communication device that provides a point-to-point connection to the NMFS host computer.
 - iii. NMFS-supplied software: Ensure that the computer available to observers has an install of the most recent release of NMFS data entry software.
 - iv. Functional and operational equipment: Ensure that the communications equipment used by observers to enter and transmit data is functional and operational. "Functional" means that all the tasks and components of the NMFS-supplied software and any data transmissions to NMFS can be executed effectively by the communications equipment.
 - e. Access. Allow observers free and unobstructed access to the shoreside processor's holding

- bins, processing areas, freezer spaces, weight scales, warehouses, and any other space that may be used to hold, process, weigh, or store fish or fish products at any time.
- f. Observation area. Designate an observation area that is a location where an observer may monitor the flow of fish during a delivery and complete EFP sampling duties. The observation area must meet the following standards:
 - i. Access to the observation area. The observation area must be freely accessible to the observer.
 - ii. Monitoring the flow of fish. From the observation area, an individual must have an unobstructed view or otherwise be able to monitor the entire flow of fish between the delivery point and a location where all sorting has taken place and each species has been weighed.
 - iii. The observation area must allow an observer to monitor PSC sorting and PSC storage throughout the duration of the offload to ensure accurate PSC accounting.
 - g. Document access. Allow observers to inspect and copy the shoreside processor's landing reports, any other logbooks or document required by regulations; printouts or tallies of scale weights; scale calibration records; bin sensor readouts; and production records.
 - h. Assistance. Provide all other reasonable assistance to enable the observer to carry out his or her duties, including, but not limited to:
 - i. Assisting the observer in moving and weighing totes of fish.
 - ii. Providing a secure place to store sampling gear.
7. Facilitate Submission of EM Data: provide support, handling, and shipping of EM data drives as instructed by the permit holders.

I. Sale of Groundfish. EFP participants will be allowed to sell all catch retained in compliance with the EFP, regulations, and the law except:

- 1. Any prohibited species as defined in § 679.2
- 2. Forage fish (listed in Table 2c to 50 CFR Part 679)
- 3. Groundfish species that are prohibited from retention established through a fishery management action under the authority of § 679.20(d)(2).

J. Administration of the Activities under Exempted Fishing. Management of the EFP fieldwork will be the responsibility of the permit holders and their designated representatives. A permit holder or a designated representative must immediately notify the NMFS Alaska Regional Office by contacting Josh Keaton (907-586-7519) and the owner of any vessel fishing under this permit if there are indications from a vessel operator, project field managers, or other sources that the vessel is not meeting EFP requirements or if there is a departure from the EFP terms and conditions.

K. Sanctions. Failure of the permit holders, collaborators, designated representatives, vessel crew, or the owners or operators of vessels fishing under this EFP to comply with the terms and conditions of this permit, non-exempted provisions of 50 CFR parts 600 and 679, the Magnuson-Stevens Act, or any other applicable regulations, may be cause for revocation, suspension, or modification of this permit as well as civil or criminal penalties under the Magnuson-Stevens Act.

L. **Exemptions from Federal Regulations.** All participants must comply with the applicable requirements of 50 CFR part 679 regulations with the exception of the exemptions listed below. These exemptions apply only during the effective period of the EFP and while on an EFP trip.

1. Discard Requirements. Exemptions from regulations that require discard of species at-sea will enable participating CVs to maximize retention of all species caught (i.e., minimize discards to the greatest extent practicable). This EFP does not authorize additional PSC. Participants are exempted from the following:
 - The regulation at § 679.7(a)(16), which prohibit any person from exceeding the MRA amounts established under 679.20(e).
 - The regulation at § 679.7(b)(2)(i) and (ii), which prohibits a CV from retaining more than 300,000 lbs. of unprocessed pollock on board a CV during any trip and landing more than 300,000 lbs. of unprocessed pollock harvested in any GOA reporting area in any one day.
 - The regulation at § 679.20(d)(1)(iii)(B), which states a vessel may not retain incidental species in an amount that exceeds the MRA when directed fishing for that species is prohibited.
 - That part of the regulations at § 679.21(a)(2)(ii) and § 679.21(a)(3), which require a vessel operator engaged in directed fishing for groundfish, in the GOA or BSAI to discard all PSC at sea with a minimum of injury. (Note: It is important to reiterate that salmon must be retained and counted by an observer at the point of delivery and halibut must be retained in compliance with the PSD Program.)
2. At-sea Observer Coverage. An exemption from at-sea observer coverage and notification requirements for BS pollock CVs is necessary to fully test the use of EM as a compliance monitoring tool for ensuring that no salmon are discarded at sea. Participants are exempted from the following:
 - The regulations at § 679.51(a)(2)(i)(C)(1) and § 679.51(a)(2)(ii), which require a CV directed fishing for pollock in the BS to carry an observer at all times.
 - The regulation at § 679.7(k)(8)(iv)(A), which prohibits a catcher vessel operator participating in BS pollock fishing from handling, sorting or discarding catch unless an observer has been notified.

The regulations at § 679.21(f)(15)(ii)(B)(2) and § 679.21(f)(15)(ii)(B)(4), which require operators of CVs participating in the BS pollock fishery and delivering to shoreside processors to notify an observer 15 minutes prior to handling, sorting or discarding catch before delivery to a shoreside processor.

APPENDIX A—VESSEL DATA SHEET
MODIFIED EXEMPTED FISHING PERMIT: 2019-03
PERMITTED VESSEL

Name of managing company:

Vessel Name:

Federal Permit Number:

Owner Name:

Owner Address:

Phone:

Email:

Name, phone number, and email of designated representative:

Signature(s) of Designated Representative(s):

Signature

Date signed

The signature(s) above confirm this information, but do not constitute a final commitment to participate in the test operation.

APPENDIX B— PROCESSOR DATA SHEET
MODIFIED EXEMPTED FISHING PERMIT: 2019-03
PERMITTED PROCESSOR

Name of managing company:

Processor Name:

Federal Permit Number:

Plant Manager Name:

Plant Address:

Phone:

Email:

Name, phone number, and email of designated representative:

(Optional) List of EFP designated catcher vessels and tender vessels associated with the processor (Name and ADFG #)

Signature(s) of Designated Representative(s):

Signature

Date signed

The signature(s) above confirm this information, but do not constitute a final commitment to participate in the test operation.

Drive Report for Sensor and Video Review

This document summarizes EM data review for the following drive(s). This report may not be inclusive of all EM issues. This report may contain sensitive or confidential information and is intended only for the vessel owner(s), vessel operator(s), or authorized representative(s). If you are not the intended recipient, you may not access this report or share the information with any other unauthorized person, and must immediately destroy all copies. By downloading this document you acknowledge notification of any potential violations of the terms and conditions of the exempted fishing permit.

Report ID: **Date of Data Set Begin:**
Vessel Name: **Date of Data Set End:**
Date of Report: **Date Drive Received:**
Completed By: **Number of Fishing Trips on Drive:**
Trip Number: Return Date:

	Event	Present: (Y/N/P/NA)	Comments:
Reporting Issues	Hard drive submitted in the required time period		
	Hard drive submitted with a complete data set		
	Logbooks submitted in the required time period		

	Logbooks submitted complete		
	Number of trips on hard drive does not exceed maximum trips allowed under vessel's EFP		
Functionality Issues	Pre-Trip Function Test Completed		
	If a critical malfunction occurred, the vessel stopped fishing until it was resolved or downgraded (Note: they are allowed to complete the haul if gear is already deployed)		
Data Quality Issues	Sensor and Video Data Complete (No Time Gaps)		
	All catch handled inside of camera view and consistent with VMP. Camera views are unobstructed, lighting adequate, etc. Ability to identify the species of fish caught and/or discarded or the fate of the catch is uncompromised by image quality		

Catch-related Issues	All discarding occurred at VMP designated control point		
	All fish retained other than operational discards, animals larger than 6-ft, unavoidable discards		
Other Notes:			

Reviewers will report weight/count for fish discards



Saltwater Inc.
Electronic Monitoring

Trip Review Feedback

Vessel Name:		ADFG #:	
ODDS #:		SWI Trip#:	
Hard Drive #:		Date Received:	
Trip Start and End Date:		Review Date(s):	
Target Fishery:	Pollock	Port:	

Saltwater System Performance	Great	Good	Needs Work	Comments
Cameras and sensor functioning during trip	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Camera Image Quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
View of Deckspace	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
View of tank hatch(es)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Skipper and Crew Tasks	Great	Good	Needs Work	Comments
System powered on when leaving the dock	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Perform system function test	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Hard drive submitted within two weeks of the start of the first trip	<input type="checkbox"/>		<input type="checkbox"/>	
Complete logbook sent in and filled in correctly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Cameras kept clear throughout the trip and offload	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
System left on for the entire offload	<input type="checkbox"/>		<input type="checkbox"/>	

Crew Operations	Great	Good	Needs Work	Comments
Catch handling within camera frame	<input type="checkbox"/>		<input type="checkbox"/>	
Discarded using VMP control point (EFP)- Port or Starboard side, not the Stern.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
All salmon retained (EFP)- Did not see any salmon discarded.	<input type="checkbox"/>		<input type="checkbox"/>	
Additional comments:				

Screen Shots:



PSMFC

ELECTRONIC MONITORING PROGRAM PROTOCOLS:

ALASKA POLLOCK EFP

EM Program

PSMFC | 205 S.E. Spokane Street, Suite 100 • Portland, OR 97202-6487

Electronic Monitoring Protocols: Video Data Storage, Entry and Maintenance

Project Overview

Beginning in 2018, the North Pacific Fishery Management Council prioritized the development of EM as a monitoring tool for trawl vessels. Participants in the Bering Sea and Gulf of Alaska pelagic trawl catcher vessel Pollock fisheries have been evaluating the use of EM for compliance monitoring. This project will evaluate using EM compliance monitoring as an alternative to the regulatory requirement for human observers onboard Pollock vessels.

This document contains detailed instructions on how to properly store received hard drives, annotate and capture data from the drives and maintain data integrity and quality.

Data Storage

EM video and sensor data, which is stored on an external hard drive aboard the vessel, is sent by a technician, or someone from the vessel, to the headquarters of PSMFC in Portland, Oregon. Upon arrival, data (raw and non-annotated) is uploaded to a dedicated video server which is duplicated to a back-up server.

As each new hard drive is delivered, it will be prioritized by time of arrival, fishery type, and projected review time. The reviewer will take the next available drive that they are able to review.

- 1) Each reviewer will complete the following tasks with the drives that they have been assigned:
 - a. Data Review
 - i. Transfer the drive data onto the server to a Folder with the correlating file name (YY_VesselName##; Example: 20_SunnyShore01)
 - a. If the Data Set ID is labelled as ABSENT-ABSENT or is otherwise incorrect
 - i. Correct Vessel Name & VesselID fields in vessel setup file (Check VMP)
 - ii. Copy corrected vessel setup file to sensor data folder & fix sensor file names
 - iii. Re-zip Sensor Folder (send to compressed folder)
 - ii. Annotate the Sensor Data (Trip and Haul level) and catch data
 1. Fill out the Drive Report
 2. Export EM Data xml
 3. Enter Data Review completion date
 - ii. Annotate the Sensor Data (Trip and Haul level) and catch data
 1. Fill out the Drive Report
 2. Export EM Data xml
 3. Enter Data Review completion date
- 2) After each drive has been transferred onto the server and annotated, the drives should be wiped after 24 hours if no issues with the data (sensor gaps, malfunctions, etc.). If there are issues with the drive, it will be sent to AMR upon request. If after a week there is no follow-up from AMR, the drive should be wiped, erasing all the data permanently. Drive erasure should follow AMR protocols, and returned to provider, dealer, or vessel to be reused on a vessel (if undamaged). Geana Tyler is the designated individual who is managing hard drive mailing. Return the clean drives to her for inventory and mailing. See more details under General Guidelines at the end of this manual.



Data Review

EM sensor and video data are currently reviewed and annotated in the program Electronic Monitoring Interpret Pro™ (EMI) developed by AMR in Victoria, Canada for AMR video.

For EMI created annotation files, name the files using the following format:

Two-digit year of fishing activity (20), followed by an underscore (_), the name of the vessel in capital letters with no spaces or special characters (FISHINGFRIENDS), number indicating the sequence of the drives arrival (01), followed by an underscore (_) with the three letter initials of the reviewer (WBR).

20_FISHINGFRIENDS01_WBR

When loading sensor data into EMI, make sure to load the appropriate configuration:

PSMFC_AK_Trawl.15

Annotation Protocols

Annotations created in EMI fall into two categories: interval annotations (*i.e.* trip, set, and haul) are defined by a start and end point, while point annotations (pots or catch items) are specific to a point in time. Annotations are hierarchical and connected to each other, with the “Data” annotation at the top and point annotations at the bottom. This means that a lower annotation cannot be created without the annotation above it already created. So, in order to create a “video haul” annotation and annotate catch items, a “haul” annotation must be created which the “video haul” is associated with.

Incomplete annotations should be stored on the server, in the “[In Progress](#)” annotations folder of the designated reviewer.

Completed annotations should be stored on the server, and located in the “[Alaska Completed](#)” annotations folder.

- 1) If any adjustments are made to the annotation file following completion, save the adjusted annotation file as a new version (*i.e.* 20_PSMFC01_RWRv2) in the Current Versions folder.
- 2) Place the old version in the “Previous Versions” annotation folder.
- 3) After all catch annotations have been completed, export the xml file to the [server](#)

Creating Interval Annotations:

DATA:

- 1) Add a “**Data**” line that encompasses all trips and hauls, starting at the beginning of the timeline and stopping at the end of the timeline.
 - a. After this is annotated, click “edit” to enter the “**Data Name**”.
 - i. The data name should be entered as the two-digit year, vessel name in all capital letters, and the drive number (*i.e.* 20_FISHINGFRIENDS07).
 1. Do not include any spaces or periods in the vessel name, and convert any “&” symbols to “and”.
 - b. The “**Region**” will default to **Alaska** and cannot be changed
 - c. The “**Project**” will default to **AK Trawl EFP** and cannot be changed



TRIP:

- 2) "Trip" annotations should be created to mark the beginning and end of each individual fishing trip
 - a. A "Trip" is defined when the vessel first leaves port, to when the catch is offloaded. Use video to verify location of the offload, to be sure the correct return port is recorded. If the cameras are not recording up until the offload, select the first port of landing. This "Trip" may cover multiple days, and the vessel may return to port or overnight in another port. Even though these may appear to be individual trips, they should be encompassed under the same "Trip" annotation until the catch from all of these trips is offloaded. If a vessel is offloading to a tender vessel, the trip (and drive), should end when the vessel begins the offload.
 - i. The fish ticket spreadsheet can be used to assist with distinguishing whole trips from merely overnight anchoring behavior. A fish ticket may be missing however, and they should not be relied upon as the sole source of landing information.
 - b. Annotate only ocean going trips, even a transfer trip from one port to another that does not have any fishing activity.
 - i. For trips that land in port for only a short period of time, and then leave port:
 1. Check the Fish Tickets/Landing Dates spreadsheet to see if there is a fish ticket associated with the date that the vessel landed in port for the short period of time.
 - a. If yes: Break the 2 landing dates into 2 trips
 - b. If No: Combine these landings as one entire trip
- 3) Each "Trip ID" should be comprised of the two-digit year, vessel name, drive number, and the trip number. So the fourth trip of the first drive of the F/V PSMFC would be: 20_PSMFC01.04
 - i. The vessel name should be in all capital letters, consistent with the "data name" format.
 - ii. **IMPORTANT:** Do NOT change the Trip ID after XML export, even if a mistake has been made, unless instructed to do so.
- b. The **Gear Type** will default to **Midwater Trawl** and cannot be changed
- c. Add **Port** of departure and return for each trip based on the vessel's location on the map in EMI.
 - i. If a trip begins after or ends before a 'Time Gap' and does not begin/end at a port, select 'Other'.
 1. Under the 'Accuracy' drop-down menu, select 'First Point After Time Gap' for a trip beginning after the gap. Select 'Last Point Before Time Gap' for a trip ending before the gap.
- d. Record the **Fishery** type and select "**Apply All**"

Note: If a haul is fishing for a different fishery than the majority of the hauls, just change the fishery for that specific haul in the haul annotation.

 - i. **Pollock**
 - ii. **No Fishing Trip** (select for anything other than Pollock fishing, such as Rockfish or Pacific Cod)
- e. Record the **Fish Ticket** number, which will be provided with the landing date for each vessel
 - i. There will be **NO** fish ticket number associated with the trip if:
 1. No fishing activity occurred during a trip (port transfer trip, pot setting trip, etc.)
 2. Fishing activity did not result in retained catch and/or landed catch
- f. Record **Reviewer Name** in upper-case, three-part initials (ABC), and select "**Apply All**"
 - i. If a different reviewer annotates the catch for a haul, change the Reviewer Name for that specific haul



Time Gaps

- 4) In the “**Box Graphs**” Section, click only once on the “**A**” next to “**Time Gaps**”; this will auto-annotate all of the sensor gaps within each “**Trip**”
- a. Select and classify each “**Gap**”:
 - i. Event codes viewable by hovering cursor over the gap’s bar graph, or selecting View → Event Type → All VDL Events
 - ii. Refer to the [Time Gap Classification document](#) for more detail
 1. **Sleep Event:** Vessel has a sleep sensor and has entered sleep mode (matching sleep event box graph classification)
 2. **Power Button Pressed – Assume Engine Off:** Power button on the control center is pushed to turn system off. Assume the vessel turned engine off after pushing power button because vessel is in relatively the same area before and after the time gap. Gap was also sufficiently long (an amount of time similar to a sleep event).
 3. **Power Cut – Assume Engine Off:** Power to the control center is disrupted. Assume vessel cut power to the control center in part to turn off EM system. Assume the vessel also turned off the engine after disrupting power to the control center because vessel is in relatively the same area before and after the time gap. Gap was also sufficiently long (an amount of time similar to a sleep event).
 4. **Power Button Pressed – Engine Off:** Vessel turns engine off and then pushes the power button on the control center. Vessel in relatively the same area before and after the time gap. Gap was also sufficiently long (an amount of time similar to a sleep event).
 5. **Power Cut – Engine Off:** Vessel turns engine off and then power to the control center is disrupted. Assume vessel cut power to the control center in part to turn off EM system. Vessel in relatively the same area before and after the time gap. Gap was also sufficiently long (an amount of time similar to a sleep event).
 6. **Power Button Pressed – Assume Engine On:** Power button on the control center is pushed to turn system off. Assume the vessel did not turn engine off after pushing power button because vessel is in a different area before and after the time gap. Gap was also sufficiently long (comparable to sleep).
 7. **Power Cut – Assume Engine On:** Power to the control center is disrupted. Assume vessel cut power to the control center in part to turn off EM system. Assume the vessel did not turn off the engine after disrupting power to the control center because vessel is in a different area before and after the time gap. Gap was also sufficiently long (an amount of time similar to a sleep event).
 8. **Hard Drive Swap:** Vessel swaps their hard drive during a trip. Usually the vessel will run a Data Integrity Report (DIR) and the system is shutdown from there before the hard drive swap occurs. A vessel could run a DIR and shut down the system from there but not swap the hard drive (classified as a Time Gap). They also could remove the hard drive using a different method (ex: first pushing the power button on the control center/cutting power to the control center, or removing the hard drive while the system is running).
 - i. To confirm that a time gap is due to a hard drive swap:
 1. Make a note of the times at the start and end of each VM file within the sensor dataset when merging together multiple datasets from one trip. Look for the corresponding times in EMI.
 9. **Time Gap:** All other time gaps. These gaps are not a result of expected behavior of the fisher or equipment as defined by the program requirements.



HAUL:

- 5) Each haul within each individual trip on each drive should be defined with a “Haul” annotation.
 - a. If any haul begins after or ends before a “Time Gap”:
 - i. Under the “Accuracy” drop-down menu, select “First Point After Time Gap” for a haul beginning after the gap. Select “Last Point Before Time Gap” for a haul ending before the gap.
 - ii. If video is missing at either end of the haul, select “Estimate”
 - b. If there is **No Video** for a haul:
 - i. Under the “Accuracy” drop-down menu, select “Estimate” for the haul start and select “Estimate” for the haul end.
 - ii. Check the box for “**No Video for Event**”
 1. Fill out the “**No Video Reason**” section (some reasons may only be determined from an AMR technician):
 - a. **Time Gap**: There is no sensor or video data and a haul isn’t able to be created.
 - b. **Hard Drive Full**: Sensor data will be present but video data will no longer be recorded. Specific event codes will be shown as the reason for video gaps for new systems. Event code 65: Disk is full. Event code 64: Disk is getting full. Current systems without this function can have time gaps investigated by AMR.
 - c. **Installation or Software Error**: This reason will have to be investigated by AMR and filled-in later by reviewers.
 - d. **No Video Data (Sensor Data Present)**: Sensor data is present without any video recording.
 - e. **Unknown**
 - c. Check the “**Video Gaps**” box if there were any gaps in the video during the haul.
 - i. In the comment section, record how long the video gap(s) last
 - d. Check the “**Time Gaps**” box if there was a gap in the data that was not a sleep event
 - i. If this box is checked, it is most likely that the GPS Sensor, Rotation Sensor, and Hydraulic Sensor all also have gaps. Check these boxes as well.
 - e. Check the “**GPS Gaps**” box if there was a gap in the GPS/Speed sensor data
 - f. Check the “**Rotation Sensor Gaps**” box if there was a gap in the drum sensor data (only on vessels that have this sensor installed)
 - g. Check the “**Hydraulic Sensor Gaps**” box if there was a gap in the pressure sensor data
 - h. After the hauls have been annotated for a given drive, open the “**Annotation Tree Window**” under the “**Annotations**” tab
 - i. For each trip, click the “**Autonumber Fishing Activity Annotations**” button to sequentially number the hauls in each trip.
 1. This ensures that each haul is ordered properly and can be matched up later during the data analysis.

VIDEO HAUL:

- 6) In order to annotate catch data, a “**Video Haul**” must be created and associated with each “Haul” annotation that has been selected to be reviewed. The Video Haul also marks the portion of video reviewed for catch annotation from the associated haul.
 - a. Add a “**Video Haul**” to the associated “Haul”
 - b. Record the reviewers upper case three part initials (ABC) under “**Reviewer Name**” if different from the auto-populated version



- c. **Once catch annotation of the haul is complete:**
 - d. Record the **View Time** required to annotate the catch data from the haul
 - e. **Data Quality:** Data accurately reflects catch speciation and quantification throughout the haul.
 - i. **High:** All catch able to be quantified with a high degree of confidence
 - ii. **Medium:** Catch is able to be quantified, but estimates may not be as accurate as with High Data Quality due to image quality or crew behavior
 - iii. **Low:** Catch quantification estimate confidence is low due to image quality or crew behavior
 - iv. **Unusable:** Unable to quantify catch
 - f. **Data Quality Reason** (If anything other than High):
 - i. **Crew Catch Handling – Not in Camera View:** Crew sorted/took catch out of view of the cameras
 - ii. **Crew Catch Handling – In Camera View:** Crew sorted catch in view of the cameras, but blocked view in such a way that all catch could not be seen (back to camera, etc.)
 - iii. **Image Quality:** This means “See Image Quality & Image Quality Reason”
 - iv. **Discard not at control point:** Crew discarded catch at a point not specified on their VMP
 - g. **Image Quality:**
 - i. **High:** Majority of video is clear of obscuring water spots, glare, or salt. Views cover the entirety of the fishing activity necessary to complete review.
 - ii. **Medium:** Cameras may have some water spots, glare, or salt. Lighting quality might be poor due to night lighting.
 - iii. **Low:** Video is obscured, camera angles do not encompass entirety of fishing activity necessary to complete review. Night lighting too bright or too dark.
 - i. **Unusable:** Cameras obscured fully and completely for the duration of the haul. Obstructions prevent reviewer from quantifying catch.
 - h. **Image Quality Reason** (If anything other than High):
 - i. **Blank/White Screen Recorded**
 - ii. **Banding/Scrambling/False Color**
 - iii. **Video completeness**
 - iv. **Dirty Camera(s)**
 - v. **Out of Focus**
 - vi. **Poor Camera Angles**
 - vii. **Glare**
 - viii. **Night Lighting**
 - ix. **Water Spots**
 - x. **Condensation**
 - xi. **Obstruction**
 - i. **Video Complete:** Yes/No
 - i. **Yes:** There are no gaps in the video for all of the gear processing and catch handling
 - ii. **No:** Video files missing from one or more cameras during gear processing and catch handling, when video should have been recording.
 - j. **Video Completeness Reason** (If No):
 - i. **Video ends before catch handling (=sorting) ends:** If the video ends before all of the catch has been brought onboard
 - ii. **Video ends before fish stowed (catch handling complete):** If all of the catch has been viewed coming onboard and/or discarded from the net, but the video ends before retained catch is stowed (except for deck loads – these hauls are ended once crew is



finished on deck, and reviewer clicks through to the end of the trip to ensure no catch was discarded).

1. If some of the catch has not been stowed before the next haul, and there are **no** video gaps before the next haul, select Video Completeness “Yes” and comment that some of the catch was not stowed before the next haul began.
 - a. In this situation, end the Video Haul when the crew is finished sorting the catch
- iii. **Intermittent gaps in video coverage:** If there are gaps in the video and all of the catch coming onboard cannot be accounted for
- iv. **Video starts after haul start:** If the video began after gear began being brought onboard
- v. **No Data recorded on 1 or more cameras:** If one or more cameras is missing video for the entirety of a video haul, impacting ability to account for catch.
- k. **Catch Complete:** Yes/No
 - i. Catch is complete if all catch could be annotated during gear processing, even if the fate may not be known. Record any additional **Comments** about the video haul if necessary
 - a. Pollock: Codend observed being hauled and emptied onboard vessel
- 7) Annotating “Water-Hauls”
 - a. Water hauls are fishing events that resulted in no catch.
 - i. This is different than ‘net cleaning’, which is not an annotated event.
 - b. Create a Video Haul and add a comment indicating there was no catch.
 - c. If the net is set and the doors enter the water for more than two minutes but less than fifteen minutes check with the analyst to establish if fishing activity occurred.

Creating Point Annotations:

Alaska Pollock

HAUL AND VIDEO HAUL:

- 1) **Haul** begins when the doors go into the water and ends when the doors return to the vessel. A haul will appear in the sensor data as a drop in speed, with an increase in either hydraulic pressure or drum rotation or both.
 - a. If the vessel is making a turn the doors may come back up for the turn and then go back down to resume fishing. Do not end the current haul. Record the two or more segments as a single haul.
 - b. If, at the end of a haul, the vessel does not empty the codend and instead resets the net along with the contents of the codend for a subsequent haul, annotate two separate hauls with comments stating that the catch was not brought onboard, and is included with the next haul.
 - c. If you suspect that an annotated haul may not match up with logbook records (as can happen with water hauls and other unusual hauling activity), leave a comment at the haul level.
- 2) **Video Haul** begins when the doors return to the vessel at the haul annotation end.
 - a. Video haul ends when all of the catch has been removed from the net and stowed in the fish holds, and the hatches are closed. In the case that the hold is full, the video haul will end when the catch has been brought onboard completely and the crew has finished sorting everything (they may cover the catch with a net or tarp).

CATCH:

Discards other than operational and sharks/fish larger than 6 ft are not permitted for the Pollock EFP project, but could occur anyway. All Pollock EFP vessels will have ALL fish that are



discarded/utilized on-board annotated (invertebrates such as jellyfish do not have to be annotated, as estimating weights for these is difficult for this fishery).

- 1) Each vessel has its own codend(s) with a specific design, total capacity, number of straps, and number of pounds that can fill each strap. This capacity may be used to estimate discards. The total capacity of each net used for each haul will be provided along with the landing dates and fish ticket numbers for each vessel.
- 2) **Discards:**
 - a. Record **ALL** 'Fish' discard events
Note: Fish shoveled into an empty codend and then placed into the water will be retained with the next haul. Do not record any discard weight for these fish for the current haul, but comment on the situation.
 - b. Discard Types:
 - i. **Selective Discards:** Fish discards that have been deliberately separated and discarded from the rest of the catch. Usually this will be Salmon Sharks and Sleeper Sharks for the Pollock fishery.
 1. Record an **Individual Catch Item** annotation
 2. Enter the **Species** of discard to the lowest identifiable taxonomic level (if possible)
 3. Record a **Weight** estimate in pounds
 4. Record a **Piece Count** if possible
 5. Record the **Fate** of catch

Options for Fate:

- a. **Unintentional Discard:** Catch that was not deliberately removed from the gear by crew, but fell out/off of the fishing gear before entering the vessel.
- b. **Unknown:** Catch taken out of view of the camera or unsorted catch on deck when camera fails.
- c. **Discarded – General:** Catch released.
- d. **Discarded – Damaged:** Catch with scavenger predation or general damage, deeming catch unmarketable, which is released.
- e. **Retained:** Catch kept after being sorted¹, and any fish onboard after all sorting¹ is complete.
¹Sorting is the process in which the catcher actively decides which catch is kept or released.
- f. **Throwback:** Catch previously identified as retained and has now been discarded or utilized on-board.
- g. **Utilized On-board:** Catch is consumed/intended to be consumed by crew, or used as/intended to be used as bait. It might be filleted onboard. This catch may not show up on a fish ticket with retained catch. Fish with this fate are treated as discards in the database.
- ii. **Non-Selective Discards:** Discards that have not been deliberately sorted from the rest of the catch. After review, and during data analysis, these will be assumed to have the same species composition as the total landed catch
 1. Record an **Estimated Weight**
 2. Record the **Fate**
 - a. **Discarded – General:** Catch has been shoveled off deck, deliberately discarded from codend, or any other situation where mixed catch was intentionally discarded.

Commented [CD1]: We are able to enter lengths for sharks, but I haven't included that in these protocols. We will wait for further instruction on if we should enter lengths for sharks, and how to do that.



- c. **Discarded amount:** 57,000 lbs – 38,250 lbs = **18,750 lbs** of non-selective discard
- ii. Net Bleeds/Blowout Panel – Catch in the water with no net reference:
 - 1. This is a very subjective estimate
 - 2. Estimate the number of round baskets or sorting totes the fish on the surface would fill.
 - 3. Multiply total number of baskets by 80 lbs/round basket or 150 lbs/tote
- iii. Entire net spill:
 - 1. If codend is completely full, you may assume the codend is slightly overfull causing the codend failure
 - a. Take the known codend capacity of the vessel and add 10%
 - b. Example: Vessel has a codend capacity of 160K lbs, codend is spilled as it is pulled up to the vessel, record the discard as 176K lbs.
 - 2. If net is not full, count the straps and estimate fullness of the straps. Multiply those numbers by the weight-per-strap based on fullness for a discard estimate.

Marine Mammal Incidental Take

- 1. If a marine mammal is brought up in fishing gear:
 - a. Annotate the mammal as either discarded or retained
 - i. Comment on the condition of the animal (alive, dead, injured, etc.)
 - ii. Enter a piece count

Tracking and Adjustments

Periodically each reviewer may have to adjust an annotation upon request from supervisor or data analyst.

- 1) Respond to the request
 - a. If a change was required
 - i. Save the new annotation file with a new name by adding the version number to the end of the file name. For instance, 20_PSMFC03_WWH would become 20_PSMFC03_WWHv2
 - ii. Move the old annotation file into the Previous Version Folder in the Annotations folder while keeping the new version in the Current Versions folder.
 - iii. Confirm with the party requesting the adjustment that the adjustment has been made.
 - b. If a change is not required
 - i. Answer the question or concern
 - ii. Describe why a change was not needed

Troubleshooting

If EMI is requesting a vessel name before opening:

- 1) Select the appropriate vessel information in the Raw_Data folder of the server
- 2) Select the VesselSetupFile folder and copy the VesselSetup Text Document
- 3) Paste this document into the zipped folder within the SensorData file

If EMI shows an error message when previously encrypted sensor data is being loaded:



- 1) Navigate into the SensorData folder under the appropriate vessel in the Raw_Data folder
- 2) Create a new zipped file folder called SensorDataCorrected
 - a. Copy and paste all of the items from the original SensorData folder into this folder so if you make a mistake, the original data will be in the other folder
- 3) See if there are multiple Text Document files that have a "VM" in the title (Ex: 330744VM130725_185046)
- 4) Copy and paste the contents of these files (in the original order they are listed) into the original VM Text Document (the one with the shortest file name; ex: 330744VM)
- 5) Delete the other VM Text Documents

EMI Extras

In order to take a clip of video and data from an entire data set in EMI:

- 1) Right click in the timeline where you want to begin the video and sensor data clip and select "Clip dataset around point."
- 2) In the "Clip Dataset" box that appears, a start and end point that spans 10 minutes has automatically been added. Adjust this to where you would like your clip to begin and end.
 - a. In this box you may also change where you would like to send your clipped data set, but it is automatically set to be sent to your desktop.
- 3) Hit the "start" button.
- 4) After the data is finished processing, select "OK" and your files will be saved in your specified location.
 - a. The video files will be MP4 files, playable with windows media player and EMI, and the sensor data will be zipped and readable with EMI.

Place Marker Annotation:

- 1) Used by reviewers to mark where they left off during video haul review or mark events of interest/events that need to be re-visited (reviewer can make a comment in the place marker as well). These annotations do not get exported into the final data, but only appear in the data file in EMI.

General Guidelines for processing a Pollock EFP hard drive

- ✓ Review team receives drive from Geana Tyler, who keeps track of hard drive arrivals/returns
- ✓ Drives come labeled with vessel name, install date, and removal date
- ✓ The hard drive will be named, YY_VESSELNAME##, numbered in order of arrival
- ✓ The post marked date, and arrival date are hand written on the drive label and recorded in a tracking spreadsheet
- ✓ On the server, under the year of fishing activity, a new folder will be created for the raw data
- ✓ This file is also named YY_VESSELNAME##
- ✓ The drive is added to the collection of drives ready to be reviewed or assigned
- ✓ The contents of the hard drive are copied over without encryption to the folder created for it on the server



- ✓ Add initials to Data Tracking spreadsheet to let other reviewers know you are working on the drive
- ✓ Open EMI review software using the most up-to-date configuration appropriate for that vessel, ex: PSMFC_AK_Trawl (Revision 15)
- ✓ Sensor annotate the data line and trips
- ✓ Complete the fields in each window for the data line and each trip
- ✓ Add fish ticket # to trip annotations from the Fishticket spreadsheet
- ✓ Sensor annotate hauls using the video
- ✓ Use the Annotation Tree window to “Autonumber Fishing Activity Annotations” (black button at the end of each trip line). This needs to be done for each individual trip.
- ✓ Add preliminary drive information to [PSMFC Data Tracking](#)
 - Project, Provider, Vessel Name, Drive Name, First Record Date, Last Record Date, Received Date, Date Stored on Server, Storage Location hyperlink, Gear Type, ‘Yes’ for Review, # of Trips, # of Hauls, # hauls with video, # unread Hauls with video, # of hauls for review (all of them for 100% review rate), Reviewer Initials, Size of Dataset (GB), EMI configuration used, and time (mins) for sensor annotating
- ✓ Check the most recent Vessel Monitoring plan and take note of the discard control points and make sure you can see what is described for each camera view. VMPs are in the Alaska Pollock VMP folder appropriate for each year
- ✓ Once back in the EMI file, Annotate Time Gaps, and categorize using the [AMR timegap document](#)
- ✓ Start review at the first haul by adding a video haul to the appropriate time (end of haul for trawl)
- ✓ Review all video hauls using the protocols specific to that gear type
- ✓ Use the Annotation List Window to query the annotations you’ve made, and QA/QC the review data
- ✓ Double check fish ticket number, trip names, and your catch annotations
 - Among other queries/filters, you can filter by fate or species and look for mismatches
- ✓ Once you are satisfied with your data, export the data as an XML to the [XML Export](#) folder.
 - Name file YY_VESSELNAME## (no initials)
- ✓ Save completed EMI file to “[current versions](#)” folder
 - Save name as YY_VESSELNAME##_RTG (initials)
- ✓ Open the [Drive report](#) form
- ✓ Before completing any field, hit “Save As” to create a new file, save it to the [Drive Reporting](#) folder in the [Pollock Drive Reports –Reviewer](#) folder
 - Save name as YY_VESSELNAME##_RTG (initials)
- ✓ Fill in the correct header information
- ✓ Complete the trip list with landing dates
- ✓ Complete the report using the drop down boxes, add comments that someone outside the office could understand
- ✓ Return to the Pollock Data Tracking Spreadsheet and add “Yes” for review complete. Add details necessary to the Known Problems column.



- ✓ Return to the PSMFC_DataTracking spreadsheet and change the unread haul numbers, add Yes to Video reviewed column, completion date, relevant notes, and time to review (hours) [add video haul review minutes together and divide by 60 for total review hours]
- ✓ Complete [vessel feedback form for AMR](#) if necessary, camera shifts, sensor malfunctions, etc.
 - Save file name as YY_VESSELNAME##_RTG (initials)
- ✓ Email a PDF of the feedback form to EMsupport@psmfc.org and EMhelpdesk@archipelago.ca
- ✓ Upload sensor data to the file share program, FileZilla, if there is an issue with sensor data. Use YY_VESSELNAME## as the folder name. Put this sensor file in "Sensor Data" folder
- ✓ Check to make sure all files were successfully copied over to the appropriate server by comparing file size and file count to the original drive
- ✓ Add drive to the box of other reviewed drives to have it wiped of all data
- ✓ Drive is returned to Geana who recirculates it

IMAGE INDEX

Observer basket dimensions



Outside: 23.6" x 15.8" x 8.5". Inside: 19.3" x 13.4" x 8.5" (Vented long side-solid short)

Volume Capacity = 1.3 ft³ or 0.04m³

Round Fish basket dimensions



Top diameter = 19", bottom diameter = 14.5", height = 17". Volume Capacity = 1.49 ft³ or 0.0422m³

Standard Fish tote dimensions





Outside: 0.8m x 0.46m x 0.3m. Inside: 0.65m x 0.42m x 0.29m. Volume Capacity = 0.079m³

32 Gal Container



	U.S.	Metric
Diameter:	22 in	55.9 cm
Height:	27 1/4 in	69.2 cm
Volume Capacity [Nom]:	32 gal	121.1 L

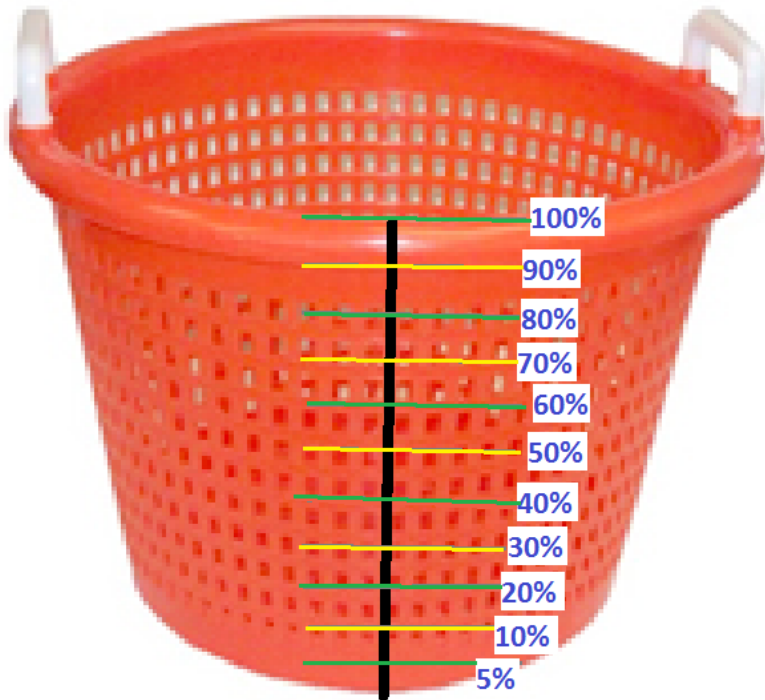
44 Gal Container



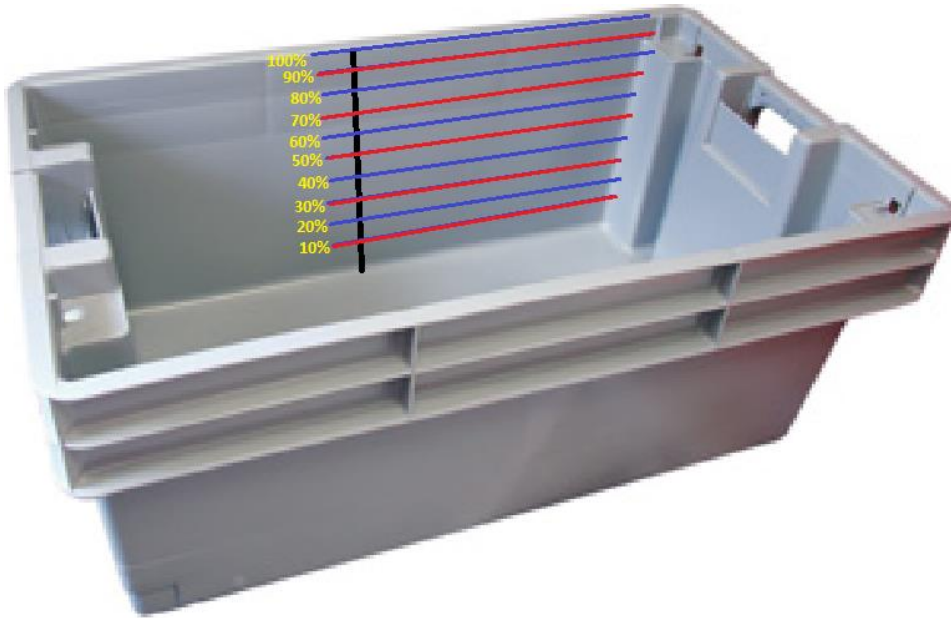
	U.S.	Metric
Diameter:	24 in	61.0 cm
Height:	31 1/2 in	80.0 cm
Volume Capacity [Nom]:	44 gal	166.6 L



Basket Fullness Guides



PSMFC | EM Program



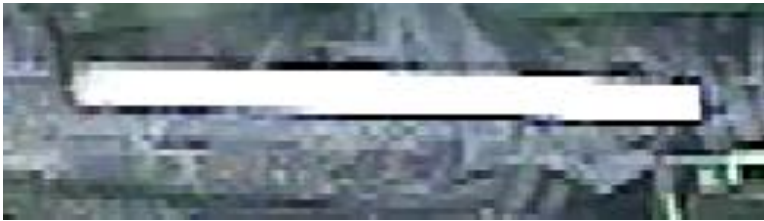
WCGOP Length board can be folded out to 3 different lengths:



47 cm



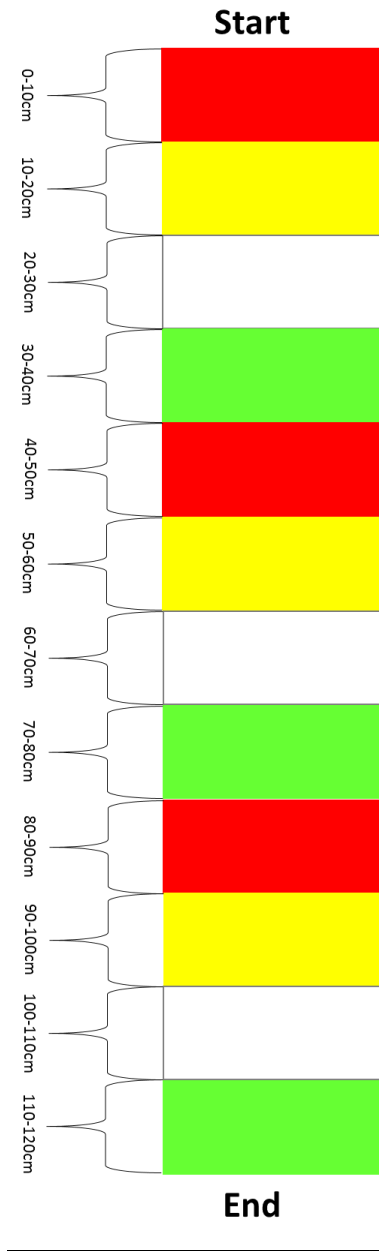
93 cm

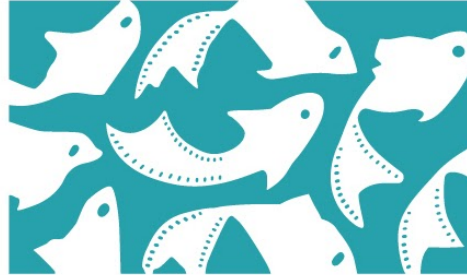


Total 136 cm



PSMFC | EM Program





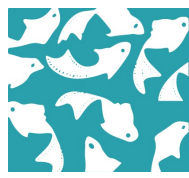
Saltwater Inc.
Electronic Monitoring

ELECTRONIC MONITORING VIDEO REVIEW PROTOCOL
ALASKA TRAWL FISHERY
C/D Season 2020



Table of Contents

Overview	2
Methods	2
Process Overview	3
EM System Details	4
Software Notes	5
Review and Creating Events	5
Trip Duration Event	6
Gear Sets - C/V's Only	9
Gear Retrievals/Hauls - C/V's Only	10
Delivery Verification - Tender Vessels only	14
Discarded Species	17
Innumerable Discard Duration Events	23
Offload	25
Marine Mammals	29
Bird Interactions or Species of Interest Sightings	33
Compliance Monitoring	36
MARPOL	38
Notes/Annotations	39
Gaps	40
Completing a Trip Review	42
Appendix A: Species ID Codes	44
Appendix B: Image Quality Code Examples	59
Appendix C: Examples of Gaps on the Timeline	66
Appendix D: Gap Flowcharts	68



This protocol is designed to guide the review of data collected by EM systems for the 2020 Western Gulf of Alaska Trawl EFP Program. The protocol is adapted from those used by onboard observers in the North Pacific Groundfish Observer Program for trawl fishing vessels with recommendations from NMFS. These protocols have been designed with observer data fields in mind.

Methods

Saltwater EM systems are installed on trawl fishing vessels and tender vessels in Alaska. Data is collected on removable Hard Drives (HDD). Hard drives will be collected from both trawl c/v's and tender vessels, and sent to Saltwater's Anchorage office for review, analysis, and archiving. Each HDD may contain up to three trips; however, improper drive procedure or project management decisions may lead to drives containing more trips. Data from each trip is reviewed and recorded separately.

The first step in the review process is to determine what data is on the HDD (# of trips, start and end date of each trip) and whether the data set for each trip is complete. The performance of the EM system will be assessed by running a System Performance Check (SPC). The SPC has a separate protocol, but System Performance Checks is a preliminary scan for hardware or system issues run on each HDD. This information is utilized to find any system related issue as quickly as possible and flag them for immediate repairs.

During review, information about the total number of gear retrievals and discard information will be collected for each trip.

SWI's in house Workflow and SPC logs will be maintained in tracking HDD processing, system issues, and data review. Summary reports of the reviewed data will be recorded to a database maintained by Saltwater; data from the database is available for upload to NMFS.



Process Overview

Process Checklist

1. Data tracking and storage.
2. System Performance Check (SPC).
3. Refer to vessel VMP for approved camera views and discard control points.
4. Mark trip start and trip end in the review program.
5. Mark all sets and gear retrievals (hauls) for the trip in the review program.
6. Mark the offload for the trip in the review program.
7. Sample entirety of hauls for discarded species/events.
8. Spot check for compliance verification and discarded species/events outside of hauls.
9. Mark image quality issues, data quality issues, and sensor gaps in the timeline.
10. Check data table entries for errors.
11. Update Workflow log and complete Feedback Form for the vessel.

Data Tracking and Storage

Saltwater's EM system collects and records video and sensor data on encrypted hard drives. The HDDs are sent by skippers to Saltwater's main office in Anchorage. Upon arrival, data (raw and non - annotated) is uploaded to a local dedicated Network Attached Server (NAS). The received hard drives comprise a "dataset" that may include one or more trips. During the reception and review process, the following information about the data must be recorded.

Hard Drive Information- As each new HDD is delivered, update the "Hard Drive Tracking" sheet of the Data Workflow Spreadsheet with the following information:

1. Dataset ID- The unique dataset identification tag for the drive(s) received. This is generated as YYMMDD_VESSELNAME_VID
2. Vessel Information- Vessel Name and ADF&G permit number
3. Drive Serial- Serial number of the HDD received
4. Reception Date- The date the drive was received
5. Processed Date - The date the drive was processed
6. Processor Initials- Initials for the personnel that processed the data
7. Location of data set on NAS.
8. Drive Data Size- Size on disk in GB
9. SWI Trip Number- based on the arrival sequence of the drives
10. ODDS Trip Number- Catcher Vessels only








EM System Details

The EM system consists of:

1. **Main EM computer** located in the wheelhouse where the vessel operator monitors cameras and can verify system operations.
2. **GPS antenna** on the mast or top of the wheelhouse.
3. **Three cameras:**
 - a. **“Processing 1”**: located on the port side of the vessel that operates 24/7 after being triggered by the vessel leaving port and reaching a speed of 3.5 knots. This view shows the hatch cover and the back deck to monitor for compliance and offload and will record at a low resolution (640x360@5fps) for the entire trip unless triggered by fishing activity.
 - b. **“Hauling 1”**: located on the starboard side of the vessel that shows the back deck and discard areas. This camera is triggered by the rotation sensor.
 - c. **“Processing 2”**: located on the mast to monitor retrieval and codend issues. This camera is triggered by the rotation sensor.
4. **Rotation sensor**, generally located on the trawl winch and activated when the trawl doors are lowered or raised.
5. **Hydraulic pressure sensor** is generally plumbed into the “power beyond” to the aft net reel.

Once a dataset is opened in the software, the reviewer may notice some colored shapes present throughout the timeline. If a shape is clicked on, the shape will become highlighted in blue and the definition will appear in the lower left corner of the timeline. These actions will be used to verify that a vessel completed a system test as well as to monitor events during the trip.

The definitions are:

-  Hard Shut down
-  System test performed
-  Trip End
-  Manual record begin
-  Manual record end



Review and Creating Events

The rest of this protocol discusses and defines the data events that are created during the review of pollock trawl trips. Not all events such as the Marine Mammal, Bird Sightings and Interactions, and MARPOL will be created for each trip. Events such as Trip Duration, Sets, Hauls, Offloads, and Discard events will be created for each trip when applicable. Follow this protocol in filling out the associated forms for all created events. Please contact the review supervisor with any questions or comments.



Trip Duration Event

The first step in the review process is to record Trip Data. This will need to be completed by the reviewer for each trip on the HDD. A “**ODDS Trip**” is defined as when the vessel first leaves port, to when the vessel arrives at a dock in port or arrives at a tender to offload. (This “**ODDS Trip**” may cover multiple days, and the vessel may return to port but not offload their catch, or overnight in another port). Even though these may appear to be individual trips, they should be encompassed under the same “**ODDS Trip**” duration event until the vessel has arrived at a port or tender to offload. Begin the trip on the timeline when the vessel leaves port and end the trip when the vessel returns to port to offload, which may be to a shoreside plant or a tender vessel. End the trip when the vessel is finally at the plant dock or tied up to the tender and will not be moving to any other docks before offloading. For example: some vessels may tie up in a slip while they wait and then move to the plant to actually offload. In this example, the trip would not end until they moved over to the plant dock. **In the instance that a vessel ties up to the final dock or tender but there is a delay in the start of the offload (pump is onboard but not actively pumping fish), mark the offload when they actually start pumping fish and extend the trip end to meet the offload start.** Complete the following data fields:

- **SWI TRIP NUMBER:** Unique numerical ID assigned to each trip sequentially at Saltwater inc. This can be found in the Workflow log under the Hard Drive Tracking tab.
- **ODDS TRIP NUMBER- For C/V's Only:** The unique trip number assigned through the ODDS application. This number is provided via the ODDS email system and is verified with the submission of the trip's data and paperwork by the vessel. The reviewer will verify the ODDS number corresponds with the trip.
*Leave blank for tender vessels.
- **VESSEL:** Use drop down menu to select the Vessel name and ID.
- **BEGIN PORT:** Select from the drop down menu. ***If not listed or if a trip begins***
Some vessels will begin their trip at a tender vessel, select “Tender” as the beginning port.
- **END PORT:** Use the drop down menu to select the port where the vessel offloaded their catch. For some vessels, the end of their trip will be delivered to a tender vessel. When this occurs, select “Tender” for the End Port. ***If the End Port***



- **TRIP STATUS-** This section is not an assessment of system performance and if
 - **1: Complete Trip:** System was turned on prior to leaving port and left on for the duration of the trip and through offload.
 - **2: Partial Trip- Monitoring Complete:** System was turned on after leaving port but prior to fishing, and remained on through the end of the offload.
 - **3: Partial Trip- Monitoring Incomplete:** System was turned on after fishing began; tender was in the process of accepting a delivery, or turned off after fishing but prior to landing and offloading.
 - **4: Unknown- USE NOTES!:** Something happened outside of the previously defined categories. Provide notes explaining the situation.

- **REVIEW PROTOCOL: Defaults to tender or CV depending on the type of trip**
 - WGOA Version 1.0- Compliance Census for CV trips
 - WGOA Version 1.0- Tender Monitoring for Tender trips

- **REVIEWER:** Use the dropdown menu to select your name.

- **REVIEW START DATE TIME:** This field auto populates when the trip is created, assuming review begins immediately. If not, date and time can be changed manually. Note that this is in UTC **(8 hours ahead of Alaska Daylight Time)**.

- **TIME LOST AT SEA:** Time lost is any time something unexpected occurs while at sea that changes the ability of the vessel to fish and it has to spend time waiting or repairing something they otherwise wouldn't have done. Time at anchor waiting to offload or to go out to fish is not time lost at sea. Time at anchor due to weather is time lost at sea, but this may be difficult to assess via EM data. Select the appropriate reason for time lost. If no time was lost while fishing, leave this field blank.
 - **Mechanical:** Broken boat or fishing gear.
 - **Weather**
 - **Crew (accident or other problem)**
 - **USCG Stoppage:** Coast guard stops vessel and/or boards vessel.
 - **Marine mammal interaction/predation**
 - **Other:** Use the notes section for a description

- **AMOUNT OF TIME LOST AT SEA:** Record to the nearest hour the amount of time the vessel lost time at sea if applicable. This field will default to 0 hrs.



- **REVIEWER NOTES:** Record any information about the fishing trip itself (e.g. Camera 2 got knocked out of focus during haul 2 and was out of focus for the rest of the trip, or the crew was consistently standing in front of the deck camera making it difficult to see fish processing on deck.)
- **REVIEW TOTAL TIME:** Record the total amount of time, in minutes, that it took to complete the trip review. This will be entered once the review is completed. **Reviewers will need to keep track of when they start and end the review of each haul. All time spent reviewing hauls, monitoring compliance, data checks..etc will be summed and included in this total time.**



Gear Sets - C/V's Only

The number of sets must be counted and marked. A set is defined as when the net goes into the water and ends when the gear cables begin winding and the crew comes on deck to bring the net on board.

Double right click on the timeline at the beginning point (when the net goes into the water; use rotation sensor data and cameras to verify) and double right click again at the end point (when the gear cables begin winding, there is rotation data indicating gear being hauled followed by an increase in the pressure data). Note that some vessels do not have rotation sensors.

- **DETECTION METHOD:** Select the appropriate box(es). The template is set up with pressure, video, and rotation as the default.
 - **Pressure**
 - **Video**
 - **Rotation**
 - **Auto-Detection-** (software marked the gear retrieval event for you).

- **Notes:** Add in any details pertinent to the setting event.



Gear Retrievals/Hauls - C/V's Only

The number of hauls or gear retrievals must be counted and marked. A gear retrieval (haul) is defined as when the gear cables begin winding and crew comes on deck to bring the net on board, and ends when all the gear is back on deck and fish are in the hold and/or the crew has finished processing/handling the catch.

Mark a Gear Retrieval

Double right click on the timeline at the begin point (when the gear cables begin winding and there is a change in rotation followed by an increase in pressure.) and double right click again at the end point (all gear is out of the water, fish are in the hold and/or the crew has finished processing the catch) to create a haul duration event. **What does finishing processing the catch mean? Crew is no longer handling the catch. It is not uncommon for vessel crews to dump the codend, stow part of the catch, reset the gear, and then finish stowing the rest of the catch from the haul. The end of the haul should be marked after the crew has finished resetting the gear, and stowing the rest of the catch.** It is possible to mark a gear retrieval or haul solely based on the sensor data; a drop in speed, a change in rotation, and an increase in hydraulic pressure for a period of time indicates a gear retrieval. The map can also be used as reference; fishing activity is indicated by an orange line on the map.

****Be aware that trawl boats will often raise and lower their net in the water column and/or raise the gear to turn the vessel while fishing. This behavior will momentarily create a change in rotation, but only last a short period of time. Be sure you are not marking those instances as a haul.**

Sampling Method

Reviewers are monitoring compliance to ensure all retained catch is delivered to the plant/tender and annotating any discards that are made during the trip or offload. You will be able to watch hauling events faster than real-time-- usually 4-8x--to watch catch handling. Complete the following fields for gear retrievals within a trip:

- **DETECTION METHOD:** Select the appropriate box(es). The template is set up with pressure, video, and rotation as the default.
 - Pressure
 - Video
 - Rotation
 - **Auto-Detection-** (software marked the gear retrieval event for you).

- **SAMPLED?**
 - No
 - Yes



- **Unsampleable - skipped:** If you cannot sample the haul for any reason, select the corresponding data quality code(s) to indicate why the haul could not be sampled and add notes if there is detail that cannot be captured with the selected code(s). An example of an unsampleable haul would be a haul without any video.

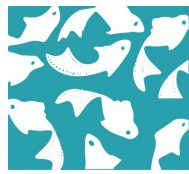
- **IMAGE QUALITY.** Select if any of the following affected image quality during the haul. **Appendix B for examples.**
 - **17-Banding/Scrambling/False Color:** Color is off, bands appear, or image is distorted.
 - **16-Blank/White Screen:** Color is lost from video.
 - **23-Condensation:** Accumulation of moisture on the inside of the lens, usually foggy.
 - **18- Dirty Cameras:** Image quality is degraded by buildup on the lens.
 - **20-Glare:** Can be caused by sunlight penetrating the lens or light reflecting off deck or gear.
 - **50-Night lighting:** Are deck lights on for some or all of the video.
 - **24-Obstruction:** An object is *temporarily* blocking the camera view. Example: crew moved the boom and it's blocking the view of the deck. *Use "poor camera angles" if this is a permanent problem.
 - **19- Out of Focus:** Image is not clear or focused on unintended spaces, not due to water or salt.
 - **14-Poor Camera Angles:** Camera angles do not cover fishing activity properly. Example: camera may be angled too far down to where the back of the deck is not encompassed in the view at all.
 - **22- Water Spots:** Water that accumulates on the outside of the lens due to rain, spray, snow, hoses, etc.

- **DATA QUALITY:** Select if any of the following affected the data quality for the haul. *If you marked that your ID was affected on any species discarded within a*
 - **13-Crew Handling:** Crew sorted catch but may have blocked the view in such a way that all catch could not be seen (back to the camera or catch taken out of view)
 - **3- Gaps in Video:** Problems with video gaps affected *marking* data. Don't use this if there is just a video gap that doesn't affect marking data elements.
 - **15- Image Quality:** Problems in image quality affect data quality.

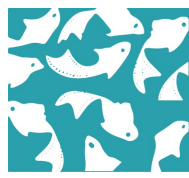
- **VIDEO GAPS:** Select if any of the following occurs during a haul.



- **3-Gap(s) in video data:** If there are gaps in the video. One or more cameras cut in and out during the gear retrieval and sorting.
- **5-Video starts after haul start:** The video starts after the winches begin rotating and the net is starting to be retrieved, *but all of the catch is viewed coming on board.*
- **6-Video ends before all catch is onboard (catch handling):** Video ends before the codend is brought onboard.
- **4-Video ends before all fish are stowed/crew are done handling the haul:** If all of the catch has been viewed coming onboard (entire codend is on deck) but the video ends before the crew is *done handling catch*. This is mainly to assess whether the system is recording for enough time post-haul. Do not mark this if:
 - Vessel is carrying a deckload into port to offload
 - Crew leaves some catch in the trawl alley and leaves the deck to go inside- they are done handling the catch at that point. Compliance monitoring will fill in the gaps between hauls.
- **VIDEO COMPLETE?**
 - **Yes:** There are no gaps in the video for all of the gear processing and catch handling events.
 - **No:** Video is not complete for the haul. If the video is not complete, select a code above explaining why.
- **CATCH COMPLETE?**
 - **Yes:** Catch is complete if all catch could be accounted for during gear processing (entire codend came up) even if the final disposition may not be known.
 - **No:** All of the catch could not be accounted for during gear processing.
- **GEAR PERFORMANCE:** “No Problems” is the default option, but any of the following events can affect fishing activity and must be documented.
 - **No problem**
 - **A crab pot was in the haul**
 - **Net hung up:** The net hung up on some obstacle and the vessel had to haul back.
 - **Trawl net or codend lost**
 - **Net Ripped**
 - **Other Problem:** Document problem in the notes section.
 - **Fishing Duration Affected:** The deployment and retrieval times do not reflect true fishing times.



- **NOTES:** Use this field for anything of note that cannot be covered in the above fields or needs explanation. Be precise in order to eliminate misinterpretation.
- **REVIEW TIME FOR HAUL:** Amount of time the reviewer spent (to the nearest minute) reviewing the video imagery and recording catch.



Delivery Verification - Tender Vessels only

The number of pollock deliveries must be counted and marked. A delivery is defined as when a vessel ties up to the tender vessel to deliver their catch, and ends when all the catch is now on the tender (in the tanks). There may be instances where the tender vessel transfers the catch it received from a catcher vessel(s) to another tender that will shuttle that catch back to a plant for offload. That transfer will be considered an offload when reviewing the data from the tender transferring catch to the shuttle vessel and will be considered a delivery when reviewing the data from the shuttle receiving the catch.

Mark a Delivery Verification

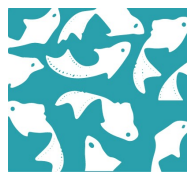
Use video data to verify deliveries. Double right click on the timeline at the beginning point (when the delivering vessel ties to the tender) and double right click again at the end point (when all of the catch has been transferred to the tender and processed) to create a delivery verification duration event.

TEMPORARY NOTE: Tender vessels should not be accepting multiple deliveries at one time. Deliveries should be occurring one at a time. In the instance of multiple boats tied up to a tender vessel to offload, mark the second offload when the pump makes it onto the boat or if already on the boat, when the pump starts moving. This is an attempt to not mark overlapping deliveries. We're working with vessels to improve the indication of completing deliveries and then starting a new one. Please note the issue on your feedback form so we can ensure vessels are improving their delivery reception.

Sampling Method

Reviewers are monitoring for compliance to ensure all retained catch is delivered to the tender and then on to the plant. Full review will be done for any deliveries made to the tender vessel and the offload of the tender. Please refer to the compliance monitoring section of this document for information on compliance sampling.

- **DETECTION METHOD:** Select the appropriate box(es). The template is set up with video as the default.
 - **Pressure**
 - **Video**
 - **Rotation**
 - **Auto-Detection**-(software marked the gear retrieval event for you)



- **SAMPLED?**
 - **No**
 - **Yes**
 - **Unsampleable-skipped:** If you cannot sample the delivery for any reason, select the corresponding data quality code(s) to indicate why the delivery could not be sampled and add notes if there is detail that cannot be captured with the selected code(s). An example of an unsampleable delivery would be a delivery verification without any video.

- **DELIVERING VESSEL:** Select the name of the vessel delivering from the drop down menu. If the vessel delivering to the tender is not listed, select “Other Vessel” and type in the name in the notes section.

- **IMAGE QUALITY:** Select if any of the following affected image quality during the delivery. **Appendix B for examples.**
 - **17-Banding/Scrambling/False Color:** Color is off, bands appear, or image is distorted.
 - **16-Blank/White Screen:** Color is lost from video.
 - **23-Condensation:** Accumulation of moisture on the inside of the lens, usually foggy.
 - **18- Dirty Cameras:** Image quality is degraded by buildup on the lens.
 - **20-Glare:** Can be caused by sunlight penetrating the lens or light reflecting off deck or gear.
 - **50-Night lighting:** Are deck lights on for some or all of the video.
 - **24-Obstruction:** An object is *temporarily* blocking the camera view. Example: crew moved the boom and it’s blocking the view of the deck. *Use “poor camera angles” if this is a permanent problem.
 - **19- Out of Focus:** Image is not clear or focused on unintended spaces, not due to water or salt.
 - **14-Poor Camera Angles:** Camera angles do not cover fishing activity properly. Example: camera may be angled too far down to where the back of the deck is not encompassed in the view at all.
 - **22- Water Spots:** Water that accumulates on the outside of the lens due to rain, spray, snow, hoses, etc.

- **DATA QUALITY:** Select if any of the following affected the data quality for the delivery.
 - **3- Gap(s) in Video:** Problems with video gaps affected data.
 - **15- Image Quality:** Problems in image quality affect data quality.



- **13-Crew Handling:** Crew sorted catch but may have blocked the view in such a way that all catch could not be seen (back to the camera or catch taken out of view).

- **VIDEO GAPS:** Select if any of the following occurs during a delivery.
 - **3-Gap(s) in video data.** If there are gaps in the video. One or more cameras cut in and out during the delivery.
 - **5-Video starts after delivery starts:** The video starts after the hose is in the tank but all of the catch is viewed coming on board.
 - **6-Video ends before delivery is complete:** Video ends before all of the catch has been offloaded onto the tender vessel.
 - **4-Video ends before all fish are stowed:** If all of the catch has been viewed coming onboard the tender vessel (delivered) but the video ends before the catch is stowed in tanks.
 - If some catch has not been stowed before the next delivery, and there are no video gaps before the next delivery, select video completeness “Yes” and comment that some of the catch was not stowed before the next delivery began.

- **VIDEO COMPLETE?**
 - **Yes:** There are no gaps in the video for all of the delivery and catch handling events.
 - **No:** Video is not complete for the delivery. If the video is not complete select a code above explaining why.

- **CATCH COMPLETE?**
 - **Yes:** Catch is complete if all catch could be accounted for during the delivery and stowage of catch even if the final disposition may not be known.
 - **No:** All of the catch could not be accounted for during the delivery.

- **NOTES:** Use this field for anything of note that cannot be covered in the above fields or needs explanation. Be precise in order to eliminate misinterpretation.

- **REVIEW TIME FOR DELIVERY:** Amount of time the reviewer spent (to the nearest minute) reviewing the video imagery and creating events.



The main purpose of this program is to verify all salmon were retained on board to offload, and that vessel operators are documenting the catch they discard. Most, if not all catch will go directly into the tanks for delivery. A discarded species annotation will be created for discarded catch. This annotation is reserved for known quantities of discarded catch such as sharks or salmon.

Large volumes of discarded catch will be recorded as a duration event. *If the crew is cleaning the net/deck or catch is falling from the gear/being knocked off during set/retrieval, use a duration event unless there is only one to three catch items. Typically these events have numerous piece counts that are difficult to count accurately and an estimated weight is more useful.* SWI recognizes this will create non-speciated discard data. ****Note: If you see a salmon being discarded, it should always have it's own discard event!!!!****

Note: Any marine mammals, parts of marine mammals, or large inorganic objects (crab pots, large boulders, large garbage, pieces of line, tree branches...etc.) should not be recorded as a discarded species event. If appropriate, mark a marine mammal interaction or a potential MARPOL violation (garbage) for these types of discards.

SPECIES: Enter the species code according to the NMFS Observer Sampling Manual and group guidelines below, and verify by checking the name following the code. **To** . Always double check this field as it will auto fill to the last species that was marked or viewed. The [NMFS Species Identification Manual](#), [Rockfish Guide](#), and [Saltwater's "Fish-ionary"](#) are good references for identifying Alaska species.

- Whenever possible, enter the species to the *lowest* identifiable taxonomic level. (**REQUIRED**). There may be occasions when the flatfish unidentified, roundfish unidentified, skate unidentified, rockfish unidentified, sculpin unidentified, and fish unidentified codes need to be used.
- Record any whole fish, fish head/lips or parts with an individual catch item annotation and the corresponding disposition. If possible, identify the partial fish to species with a comment "partial fish".

IDENTIFICATION

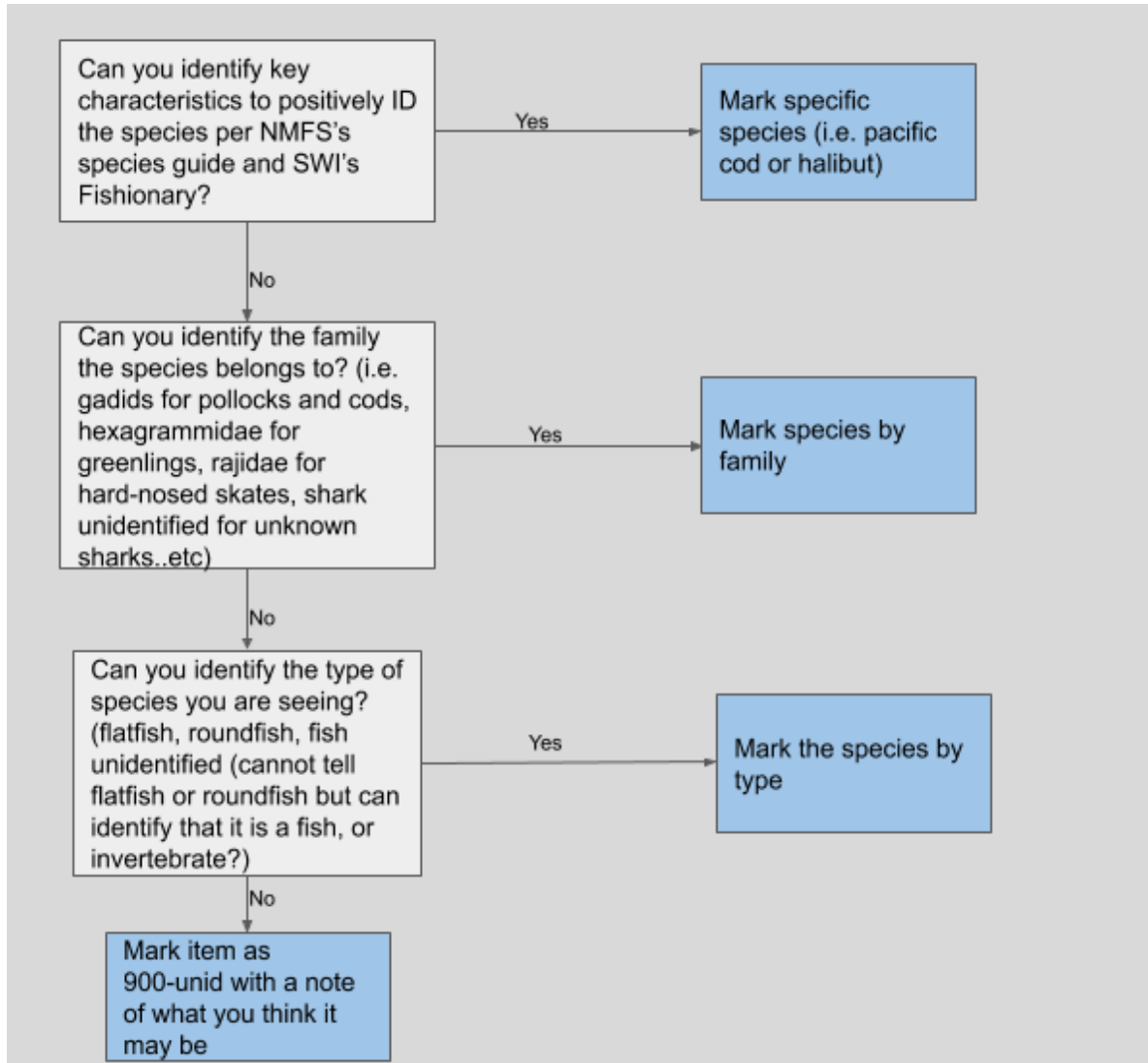
- **Skates**
 - **Raja:** The two Raja skate species that may be encountered are relatively easy to differentiate from each other and the Bathyraja group. Because of this, the Raja skates may be identified to species.
 - **95-Longnose skate**
 - **94-Big skate**
 - If unable to differentiate Big Skate and Longnose Skate, select *Raja* spp., **167- "Stiff Snout Skate"**.



- All the other skate species fall into the *Bathyraja* sp. group, **159- “Soft**
- If the *Bathyraja* skates cannot be differentiated from *Raja* skates then select **90-Skate unidentified.**
- **Sculpins:** There are two sculpin species groups and one sculpin species that can be identified.
 - **418-Irish Lord unidentified** (this group includes Yellow, Red, Brown, and Longfin Irish Lord, as well as Butterfly Sculpin).
 - **440-Myoxocephalus** unidentified (this group includes Great, Warty, and Plain Sculpin).
 - **402-Bigmouth Sculpin**
 - **400-Sculpin unidentified:** If the sculpin does not fall into one of these categories, you must select 400-sculpin unidentified.
- **Kamchatka/Arrowtooth Flounder Complex**
 - Kamchatka and Arrowtooth Flounder are too similar in appearance to be identified to species on the line. For this group, individuals are selected as **149-Kamchatka/Arrowtooth unidentified.**
- **Northern/Southern Rock Sole Complex**
 - Northern and Southern Rock Sole are too similar in appearance to be identified to species on the line. For this group, individuals are selected as **104-Rock Sole unidentified.**
- **Tanner Crab and King Crab Complex**
 - Individuals within the Tanner crab group and King crab group are too similar in appearance to be identified to species. For these two groupings, individuals are recorded by their respective group.
 - **3-Tanner Crab unidentified**
 - **2-King Crab unidentified**
- **Rockfish**
 - Rockfish should be identified to the taxonomic level of confidence. If a rockfish cannot confidently be identified to the species level, and it does not fall into an established FMA Rockfish group code (i.e. Shortraker/Rougheye or Thornyhead unidentified), it should be annotated as **300- Rockfish unidentified.**
 - **Shortraker /Rougheye Rockfish Complex:** Shortraker Rockfish and Rougheye Rockfish are too similar in appearance to be identified to species and **must** be recorded as **354-Shortraker/Rougheye unidentified.**



- **Corals**
 - All coral must be identified to **32-Coral unidentified** except sea pens/ sea whips which are recorded with
 - **58- sea pens/whips.** *Record each instance of coral on a hook as a single individual.*
- **Use this flowchart to determine what level to record a catch item as:**





- **PIECE COUNT:** Enter if the value is known, *not an estimate*. ***If you have a pile of***
 - Note: If pieces and parts of an organism are discarded, mark a piece count of 1 and in the notes section of this form, add PAP (Pieces and Parts).

- **DISPOSITION:** Record the disposition of the catch. For this project we are only focused on documenting discarded catch. ***Mark the catch when the disposition is***
 - For example, if cod is pulled from the trawl alley but left on deck for a while before used for personal consumption, mark this disposition when the discard is occurring (i.e. filleting the cod or when cod is taken out of view).

 - **18- Intentional Discard:** *Includes any operational or crew-related discard.* Examples include:
 - Catch pulled from tank or deckload at offload and thrown overboard including misc./inverts (kelp, seawhips, jellyfish).
 - A large item or organism that is too large for the tank is pulled from the trawl alley or codend (shark, marine mammal, etc.).
 - Any catch kept for personal consumption is considered an intentional discard as it is not delivered to the plant or tender.
 - Salmon pulled from the catch and discarded over the side or kicked off the stern.
 - Net/Deck cleaning
 - Catch falling from fishing gear during retrieval and sets (after fishing has occurred). This includes catch swept off by net setting or chains as well.
 - **For the first set of a trip**, do not mark catch that falls during setting since these fish were caught on another trip. Starting on the second set, mark all catch that is discarded during setting.

 - **19- Unintentional Discard:** *Includes unavoidable discards that are not related to normal operations or crew actions.* Any unavoidable discard of catch resulting from an event that is beyond the control of the vessel operator or crew provided that the estimated weight of all discarded species, the tow number, and reason for discarding are recorded in the logbook. Events beyond the control of the vessel include:
 - Safety/Stability
 - The opening of a blow-out panel because the catch is otherwise too large to bring up the vessel's stern ramp
 - Net bleeds/venting of an overfull codend
 - Discards due to mechanical failure



- Fish washing off deck or out of scuppers solely due to water/waves.
- **8- Unknown:** Reviewer is unable to determine the fate of the organism/catch.
 - Catch is taken out of view of the camera and disposition cannot be verified.
 - Any catch left on deck at the end of a trip/offload that cannot be verified as discarded such as salmon sharks or skates pulled from the tank at offload.
- **CATCH CONDITION:** Assess the condition of the catch.
 - **General:** Catch is released from the codend without any signs of predation or damage caused by the crew or gear.
 - **Damaged:** Catch is visibly damaged by crew/gear handling (smashed, torn apart, or mutilated by crew).
 - Crew cuts the caudal fin of a shark to discard from the vessel.
 - **Depredated:** Catch is visibly damaged in such a way that suggests predation.
- **ID Affected?:** Note whether or not your ID of species was affected by system issues, image quality or crew handling. If you select this, a Data Quality reason needs to be marked at the haul level! **Do not use this if you just can't tell what a**
 - **No**
 - **Yes**

is considered to be affected when the reviewer normally could speciate but is not able to ID the catch item due to image quality, crew handling, system problems...etc. An example of affected ID, is when a water spot is positioned on the camera where this fish is located and the reviewer has to ID the catch to a higher classification group. *The reviewer should not say their ID is affected if they are simply coding the catch according to NMFS ID rules (All soft-snout skates should be coded as a soft-snout skate, even if the reviewer feels confident they know the species) or if they simply are not sure what the catch item is.* This data helps us quantitatively track the amount of catch that was affected during the haul which can be tied to the data quality codes such as image quality or crew catch handling that were marked at the gear level.

- **BIRD PRESENTED?:** If a bird is brought up in the gear, annotate as usual (species, disposition). Record whether it was held to the camera for an extended presentation: (Y/N).
 - **Yes:** The wings are spread and there is a full view of the bird (front and back).



- **No:** The bird is not presented to the camera (no spreading of the wings, showing feet, or showing beak).

VesselName_ODDSNumber_HaulNumber_SpeciesID(_# for multiple birds of the same species, if only one bird is caught # is not necessary).

Ex: BoatyMcBoatFace_99999_1_GullUnid

- **NOTES:** Record anything of interest/unusual or information that might help others. Be very explicit as to not leave room for misinterpretation. Examples of discarded species notes:
 - Fish heads, partial fish
 - If the reviewer is unsure of ID, make a note for verification.



Innumerable Discard Duration Events

If mixed catch and/or the piece count is not known for what is being discarded, create a duration event from the beginning of the discard to the end of the event. If the crew is cleaning/picking the net/deck or catch is falling from the gear/being knocked off during set/retrieval, mark as an innumerable discard duration event unless there is only one to three catch items total discarded during that entire period. This excludes sharks, prohibits (salmon, halibut, etc.), and birds. **these events have numerous piece counts that are difficult to count accurately and an estimated weight is more useful.** SWI recognizes this will create non-speciated discard data. ****Note: If you see a salmon being discarded, it should always have a separate discard event, so it can be flagged in the data.**** Complete the following fields for the duration event:

- **DISCARD TYPE**

- **18- Intentional Discard:** *Includes any operational or crew-related discard.*
 - Catch pulled from tank or deckload at offload and thrown overboard including misc./inverts (kelp, seaweeds, jellyfish).
 - A large item or organism that is too large for the tank is pulled from the trawl alley or codend (shark, marine mammal, etc.).
 - Any catch kept for personal consumption is considered an intentional discard as it is not delivered to the plant or tender.
 - Salmon pulled from the catch and discarded over the side or kicked off the stern.
 - Net/Deck cleaning
 - Catch falling from fishing gear during retrieval and sets (after fishing has occurred). This includes catch swept off by net setting or chains as well.
 - **For the first set of a trip,** do not mark catch that falls during setting since these fish were caught on another trip. Starting on the second set, mark all catch that is discarded during setting.
- **19- Unintentional Discard:** Unavoidable discard of catch resulting from an event that is beyond the control of the vessel operator or crew provided that the estimated weight of all discarded species, the tow number, and reason for discarding are recorded in the logbook. Events beyond the control of the vessel include:
 - Safety/Stability
 - the opening of a blow-out panel because the catch is otherwise too large to bring up the vessel's stern ramp
 - net bleeds/venting of an overfull codend
 - discards due to mechanical failure.
 - Catch washed off the deck by waves.



- **8 - Unknown:** Reviewer is unable to determine the fate of the organism/catch.
 - Catch is taken out of view of the camera and disposition cannot be verified
 - Any catch left on deck at the end of a trip/offload that cannot be verified as discarded such as a pile of fish after emptying the holds.
- **WEIGHT (lbs):** Make a visual estimate of the amount of catch discarded (lbs). Any marine mammals, parts of marine mammals, or large inorganic objects (crab pots, large boulders, large garbage) should not be included in a discard event and their estimated weights should not be included in this field. Discard estimates should only take a few moments once you have identified and reviewed the event.

Tips on estimating innumerable discards:

1. Visual cues- how many baskets would that discard fit in? A full sampling basket of pollock weighs between 40-45 kg (~80-90 lbs).
 2. Ripped nets and Partial codend dumps
 - a. Use reference marks when possible or use your best judgment.
 - b. Information on codend capacity will be provided to you if available in the Data Workflow tab of the 1905 Data Workflow Log. It is also listed on the vessel's logbook.
- **NOTES:** Record anything of interest/unusual or information that might help others. Be very explicit as to not leave room for misinterpretation.



Offload

As well as reviewing a trip(s) within a data set, the reviewer will be monitoring offloads to verify that all catch from the tanks are delivered to the plant (C/V and Tender Trips). An offload begins when the pump is brought onto the vessel and begins pumping catch. The end of an offload is marked when the pumps have been removed from the vessel *and the delivery is complete*. The crew may begin flooding the tanks or cover the tanks with hatches. **Per the**

Double right click on the timeline at the begin point (when the vessel has returned to port from a trip and is now tied to the pump or dock) and double right click again at the end point (all fish appear to have been pumped from the tanks, pumps have been taken off the boat, and the tanks have been covered up). Reviewers will be monitoring the entire offload to verify that all catch is delivered to the plant. Complete the following fields for the offload:

- **TRIP NUMBER:** Unique numerical id assigned to each trip sequentially Saltwater inc.
- **DECKLOAD:** Indicate whether or not the vessel arrived back to port or at a tender with a deckload.
 - **No**
 - **Yes**
 - **Unknown**
- **TENDER OFFLOAD:** Did the vessel offload to a tender vessel?
 - **No**
 - **Yes**
 - **Unknown**
- **TENDER VESSEL:** If the offload happened at a tender and the reviewer is able to identify the tender vessel, select the name of the tender vessel the offload was made to. If the name of the tender cannot be identified, select “Unknown”.
- **IMAGE QUALITY:** Select if any of the following affected image quality during the haul. **Appendix B for examples.**
 - **17-Banding/Scrambling/False Color:** Color is off, bands appear, or image is distorted.
 - **16-Blank/White Screen:** Color is lost from video.
 - **23-Condensation:** Accumulation of moisture on the inside of the lens, usually foggy.
 - **18- Dirty Cameras:** Image quality is degraded by buildup on the lens.



- **20-Glare:** Can be caused by sunlight penetrating the lens or light reflecting off deck or gear.
- **50-Night lighting:** Are deck lights on for some or all of the video.
- **24-Obstruction:** An object is *temporarily* blocking the camera view. Example: crew moved the boom and it's blocking the view of the deck. *Use "poor camera angles" if this is a permanent problem.
- **19- Out of Focus:** Image is not clear or focused on unintended spaces, not due to water or salt.
- **14-Poor Camera Angles:** Camera angles do not cover fishing activity properly. Example: camera may be angled too far down to where the back of the deck is not encompassed in the view at all.
- **22- Water Spots:** Water that accumulates on the outside of the lens due to rain, spray, snow, hoses, etc.

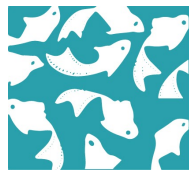
- **DATA QUALITY:** Select if any of the following affected the data quality for the haul. Data affected includes only species ID or discard estimations affected. If video is missing, that will be captured in the video gaps sections and video complete field.
 - **15- Image Quality:** Problems in image quality affect data quality.
 - **13-Crew Handling:** Crew sorted catch but may have blocked the view in such a way that all catch could not be seen (back to the camera or catch taken out of view).
 - **3- Gap(s) in Video:** Problems with video gaps affected data.

- **VIDEO GAPS:** Select if any of the following occurs during a haul.
 - **3-Gap(s) in video data:** If there are gaps in the video. One or more cameras cut out during the offload.
 - **5-Video starts after offload start:** The video starts after the pump is in the tank or deckload.
 - **6-Video ends before all catch is offloaded:** Video ends before all of the catch has been pumped from the tanks.

- **VIDEO COMPLETE?:**
 - **Yes:** There are no gaps in the video for the offload.
 - **No:** Video is not complete for the offload. If the video is not complete select a code above explaining why.

- **CATCH COMPLETE?:**
 - **Yes:** all catch could be accounted for.
 - **No:** all catch could not be accounted for.

- **NOTES:** Use this field for anything of note that cannot be covered in the above fields or needs explanation. Be precise in order to eliminate misinterpretation.



- **REVIEW TIME FOR OFFLOAD:** Amount of time the reviewer spent (to the nearest minute) reviewing the video imagery and recording catch.



Marine Mammals

Create a duration event if a marine mammal is seen feeding on catch, interacting with the vessel, entangled in gear, or there was a marine mammal mortality. A new interaction should be recorded with the species when there is evidence of a marine mammal interaction. If you believe the same dead animal was caught in the gear more than once, record it each time and indicate in the notes section why you believe it to be the same animal. Complete the appropriate fields for a marine mammal interaction. If marine mammal harassment is observed, document the incident in the MM interaction form, on the feedback form, and alert your review supervisor.

- **SPECIES:** Select the marine mammal code for the identified marine mammal. [The guide to Marine Mammals of Alaska](#) is a great resource. If the reviewer is not sure of the species, select the appropriate marine mammal group you are confident identifying it to (Otariid, Phocid, Pinniped, or Cetacean). If the reviewer cannot identify the animal to a group, select “Unidentified Mammal”.
- **NUMBER OF ANIMALS IN INTERACTION:** The number of animals involved in the interaction.
- **TYPE OF MARINE MAMMAL INTERACTION:** Select the type of interaction the marine mammal had with the vessel such as feeding on catch, deterrence, entangled in gear, etc. **If there is a marine mammal interaction that occurs while**
 - **1- Deterrence Used:** Marine mammal was deterred or a deterrence was attempted. Log this interaction using this code even if deterrence was not successful. For more information on [Steller Sea Lion deterrence](#) please refer to the link.
 - **2- Entangled in Gear (Not Trailing Gear):** A marine mammal was captured by the fishing gear and the animal was released/escaped without fishing gear attached.
 - **3- Entangled in Gear (Trailing Gear):** A marine mammal was captured by the fishing gear and the animal was released/escaped alive with some fishing gear attached.
 - **4- Killed By Gear:** A marine mammal was captured and died due to interactions with the fishing gear.
 - **5- Killed By Propeller:** A marine mammal hit the propeller and died.



- **6- Previously dead:** A marine mammal was captured by the fishing gear and was dead prior to coming into contact with the vessel or fishing gear.
 - **7- Lethal removal (Trailing Gear):** Vessel personnel killed a marine mammal entangled in fishing gear, but death was not due entirely to the entanglement. Gear was observed attached to the animal after the animal was removed from the gear.
 - **8- Lethal removal (Not Trailing Gear):** Vessel personnel killed a marine mammal entangled in fishing gear, but death was not due entirely to that entanglement. No gear was observed trailing from the animal after the animal was removed from the gear.
 - **9- Boarded Vessel:** A marine mammal boarded the vessel on its own volition. If the MM is part of another interaction at the same time (feeding on catch, deterrence used...etc), mark that code instead.
 - **10- Feeding on Catch (Not Yet Landed):** A marine mammal was observed feeding on catch not yet Landed.
 - **11- Other:** Interaction occurred that is not included in the list of interaction codes.
 - **12- Unknown:** The vessel or vessel personnel had some interaction with a marine mammal, but the observer did not directly view the interaction and/or ascertain what the interaction was.
 - **13- Feeding on Discarded Catch:** A marine mammal was observed feeding on discarded catch.
 - **14- Human intentionally feeding Marine Mammal:** Humans intentionally taking catch and feeding marine mammal(s). Please describe in the notes section.
- **DETERRENCE CODE:** Fill in this field only for interactions involving marine mammal deterrence, interaction code 1. Refer to the following list for the code that is most appropriate. If the interaction was not one of deterrence, leave this field blank.
 - **1- Seal Bombs:** Any explosive device used to frighten marine mammals away from the catch.
 - **2- Pole Gaff:** Using the long pole (typically used by crewman to gaff drop-of catch) to scare marine mammals either by direct contact or by hitting the water.
 - **3- Skiff:** Any use of a skiff to attempt to frighten a marine mammal.
 - **4- Acoustical device:** Any electronic acoustical device designed to frighten or annoy marine mammals.
 - **5- Yelling:** Crew yelling at marine mammals in order to frighten them away from the catch.
 - **6- Making noise by any other method:** Any method, other than yelling, of making noise to annoy or frighten marine mammals away from the catch.



Save a picture of the Marine Mammal to the appropriate Drive folder (1905). Name the VesselName_ODDSNumber_HaulNumber_SpeciesID(_# for multiple marine mammals of the same species, if only one mammal is involved # is not necessary). Example: BoatyMcBoatFace_99999_1_SpermWhale

Document and report any marine mammal harassment to your review supervisor if observed.



Bird Interactions or Species of Interest Sightings

Create a duration event if a bird is seen interacting with the vessel (e.g. bird storm, striking the third wire, crew maiming/killing) or if a species of interest is seen. Do not mark that fulmars, gulls..etc are feeding on discards. A new interaction should be recorded for each event of a sea bird interaction. If species of interest are seen, they are to be marked as well and note what the bird(s) were doing. These species include: short-tailed albatross, red-legged kittiwake, steller's eider, spectacled eider, marbled murrelet, and kittlitz's murrelet. Complete the appropriate fields for a sea bird interaction.

- **SPECIES:** Select the correct code from the Alaska species list. If you are unsure of the exact species involved in the interaction, select the correct grouping.
- **NUMBER OF BIRDS:** Enter the number of birds seen in the interaction. The review program will default to one, change the number if the count is higher.
- **COUNT TYPE:** Select whether it's an exact count or if the count was estimated.
 - **Exact**
 - **Estimate**
- **INTERACTION DESCRIPTION:** Select the type of interaction or sighting observed.
 - **1- Sighting:** Bird was observed on or near the vessel, but did not interact with the gear.
 - **2- Third Wire, Paravane, or Warp Cable Contact:** Bird came into contact with the third wire, paravane or warp cable.
 - **3- Rig Strike:** Bird made contact with vessel's rigging, excluding third wire, paravane, or warp cable interactions.
 - **4- Bird Storm:** A flock of birds strike the vessel, gantry or stack; then land on deck. A bird storm may include a rig strike.
 - **-** Bird interacted with the deterrent measure/device. RE is an acronym for "Regarding."
 - **6- Land on Vessel:** Bird landed on the vessel, but not part of a bird storm.
 - **7- Oiled Bird:** Bird was oiled at sea. Does not include birds that were oiled when it contacted something on the vessel.
 - **8- Gear Interaction:** The bird made some sort of contact or interacted with the gear. This does not include third wire or warp cable interactions.
 - **9- Feeding on Bait**
 - **10- Discard Feeding:** Bird was feeding on discarded fish or offal.
 - **11- Foraging, Not Bait:** Bird was foraging/feeding near the vessel, but not feeding on the bait.
 - **12- Following:** Bird was following or resting near the vessel.
 - **13- Harassment by Crew:** Bird was harassed by a crewman. Harassment includes throwing objects, or other nonlethal deterrent methods.
 - **14- Killing by Crew:** Bird was intentionally or unintentionally killed by a crewman and is not gear related.



- **15- Maimed by Crew:** Bird was wounded by a crewman and is not gear related (i.e. bird is injured when gaffed by the rollerman).

- **INTERACTION OUTCOME:** Select the outcome of the interaction/sighting.
 - **1- Hooked:** The bird was hooked and retrieved on the gear or was accidentally snagged by a loose hook. A bird does not have to be killed to be hooked.
 - **2- Injuries:** The bird was injured during the event
 - **3- Flew Off:** The bird flew off or left the immediate area of the interaction. This is a common outcome for sightings.
 - **4- Released to Water:** Any bird that was removed from the vessel or gear and returned to the water. This could be a bird that was involved in a bird storm.
 - **5- Released, Flew Off:** Any bird that was removed from the vessel or gear and released over board. Upon release, the bird flew off.
 - **6- Died**
 - **7- Carcass Salvaged:** The bird died and the whole specimen was saved. (Not common in EM)
 - **8- Ended Observing/Went out of Camera View:** The bird could no longer be seen with the EM cameras.
 - **9- Not Applicable:** None of the above outcomes apply.

- **BIRD LOCATION:** Select where the bird is at during the interaction or sighting.
 - **1- Air**
 - **2- Water**
 - **3- Boat**
 - **4- Land**
 - **5- In Gear**
 - **6- Not Applicable**
 - **7- On Debris or Object**

- **WEATHER:** Select the appropriate weather at the time of the event.
 - -
 - **2- Clouds**
 - **3- Rain**
 - **4- Fog**
 - -
 - **6- Variable**



- **VESSEL ACTIVITY:** Select the appropriate vessel activity that was happening at the time of the bird event.
 - **1- Traveling**
 - **2- Setting**
 - **3- Offloading**
 - **4- Fishing**
 - **5- Processing**
 - **6- Resting**
 - **7- Not Applicable**

- **NOTES:** Use this section to describe any part of the interaction that could not be indicated by the fields above such as identifying characteristics of the sea bird, anything unusual about the interaction , or why a screenshot(s) were not taken.

Save a picture of the Seabird interaction or species of interest sighting to the appropriate

VesselName_ODDSNumber_HaulNumber_SpeciesID(_# for multiple seabirds of the same species, if only one bird is involved # is not necessary). Example:
BoatyMcBoatFace_99999_1_Short-TailedAlbatross



Compliance Monitoring

For the C/D season, we will be processing all trips using the Human Detector (HD) tool. The detector will mark the probability of humans on deck in order to help find events between hauls. During the marking of gear for the trip the reviewer will determine whether the trip has good image quality and assess the HD performance.

The reviewer will assess the completeness of the file, check for egregious oddities (minimal flagging or oversaturation of flagging), and/or for example, when marking a haul, a known time when humans are consistently on deck, does the HD identify them? If the trip passes these initial tests, the reviewer will use the HD protocol. If the trip does not pass these initial tests, the reviewer will use the alternate protocol.

HD Protocol

1. If the HD indicates a person on deck outside of hauls, once catch is already on board, the reviewer will spot check the video at the point in time. (The HD will be calibrated to flag events when there is an 85% or greater chance of people being on deck.) The reviewer will verify the presence of a person on deck and monitor their behavior. If behavior appears to be out of compliance with program requirements (for example, playing with salmon), continue watching until action ceases.
 - a. If no human is present, move forward in compliance review.
 - b. If crew behavior is compliant with program requirements (for example, smoking a cigarette), move forward in compliance review.
2. If there are fish on deck outside of a haul and the HD **does not** indicate people on deck, the reviewer will spot checks approximately every 15 minutes.
 - a. If a reviewer notices catch has been skewed or appears to have gone missing in between checks, the reviewer will jump back in time to determine what occurred.
3. The reviewer will annotate any discards observed during these spot checks per the protocol.

***Most spot checks will be less than 1 min, unless the reviewer notices actions that**

1. If no catch is on deck or the deckload is secured, the reviewer will spot check 2 times per hour, outside of hauls. Try to space these out to ~every 30 min.
 - a. If no human is present, move forward in compliance review.
 - b. If crew behavior is compliant with program requirements (for example, smoking a cigarette), move forward in compliance review.
2. If unsecured catch is on deck outside of a haul, the reviewer will spot check every 15 minutes.

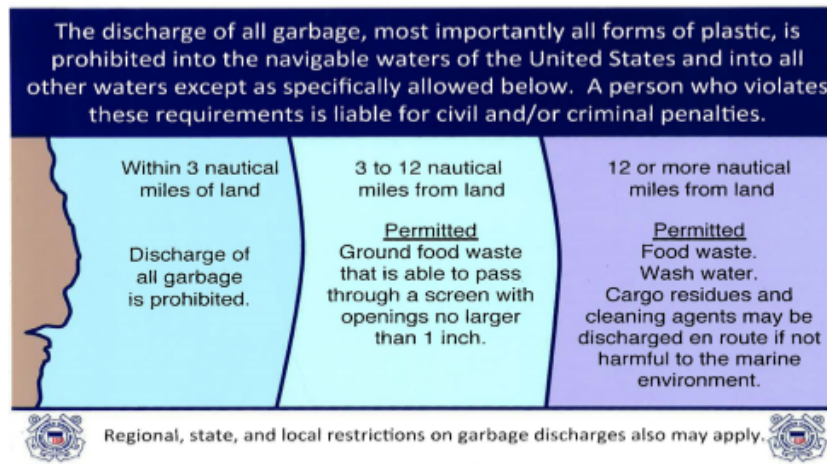


- a. If a reviewer notices catch has been skewed or appears to have gone missing in between checks, the reviewer will jump back in time to determine what occurred.
3. The reviewer will annotate any discards observed during these spot checks per the protocol.

***Most spot checks will be less than 1 min, unless the reviewer notices actions that**



MARPOL



MARPOL regulations are in place to limit pollution that originates on ships. One of the additional things you will look for during a trip is any possible violations to MARPOL. If you notice any of the following actions or observe another possible violation, use the MARPOL form within the software to document it. The form is a duration event and is created by right clicking at the beginning of the event and dragging the box to the end of the event. Within the form fill in the type of potential MARPOL violation and then include details of the event in the box.

- **EVENT TYPE**
 - **1-Oil/Petroleum Product Discharge:** sheen in the water, crew dumping petroleum products...etc
 - **2-Garbage Discharge:** any garbage being thrown overboard. Refer to the placard above for specific allowances but for the most part, no garbage (besides some food waste) should be thrown overboard.
 - **3-HAZMAT:** any hazardous material being discarded such as ammonia. This will be difficult if not impossible to identify through EM but if you notice a discard within this category, mark the event.
 - **4-Gear:** Any fishing gear discarded.
 - **5-Other:** Use the notes field to describe.
- **Details of MARPOL Event:** Include all pertinent details. What was discarded or what did you notice? This box will need to be filled in for every MARPOL event you mark.



Notes/Annotations

Reviewers can create a duration event to note anything that is not categorized within “Gap” parameters or other data forms, but this should be used as *rarely* because it is **unstructured**

Double right-click to mark the start of the duration and double right-click at the end of the event duration. Enter any information about the event in the Notes field. As this is only a Notes field, so be as detailed as possible. If you find there is an event that cannot be captured through other forms, please inform your review supervisor.



Gaps

The Review Software marks a time gap in the data using a red box/outline (the absence of sensor data-power loss). To verify that the gap is correctly marked, the reviewer will need to double-right click the mouse at a time during the “gap” and verify there is no video.

Create a gap duration event when the review software has flagged a time gap in the data with a red box and if you notice a particular sensor (GPS, pressure, rotation, and/or video) is missing or is erroneous. Select one or more of the gap codes listed below to best describe the data gap. Use the notes field to indicate what data might be missing, how it affected your sampling scheme, etc. Placement of start and end of gaps should precisely encapsulate the problem, which requires special attention to the type of problem. See Appendix C for Examples.

- **GAP TYPE**

- **7- No data from 1 or more cameras:** Video data is missing, but sensor data is present. (Ex. deck camera drop out). Please refer to the video gap flowchart for a special instance about the stern camera and data affected.
- **26- GPS Issue:** GPS is missing, inaccurate or is not continuous (GPS data may be spotty or cut in and out for minutes at a time). ***If there is more than one GPS issue (inaccurate peak, missing GPS, cutting in and out, etc.) within 10 minutes of a previous GPS issue, encompass all GPS issues into one gap marking.***
- **51- Hydraulic Sensor Data Problems:** Hydraulic pressure sensor is missing or irregular.
- **54- Rotation Sensor Data Problems:** Sensor data is missing or present but data is irregular.
 - The rotation sensor data may appear backwards in the timeline, if this happens, a gap does not need to be created if there are no issues with the sensor or data; however, a jira ticket will need to be created to alert technicians so the sensor can be adjusted allowing the data to no longer appear backwards in the timeline.
- **52- Power Loss:** Power loss/cut to the EM system.
- **28- Installation or Software Error:** Diagnosis will have to be determined by EM Technicians (Ex. Video does not continue after rotation triggers the cameras) ***Confirm with technician or supervisor.*
- **39- Hard drive swap:** Vessel swaps their hard drive during a trip, which shuts down the system. Vessel should cease fishing activity while swapping hard drives. ***Confirm with technician or supervisor.*



- **40- Hard drive full:** Hard drive storage is at capacity, and the dataset may end abruptly. ****Confirm with technician or supervisor.**

- **NOTES:** Add comments for the gap event if necessary to help explain the issue.

- **DATA AFFECTED?** Select from below whether your data was affected by the gap marked. ***Depending on the type, length and location in the trip of the gap, it may or may not affect your data. Use the provided flow charts (Appendix D) to determine if this is yes or no.***
 - **Yes:** **Refer to flowcharts ([Appendix D](#))
 - **No:** **Refer to flowcharts ([Appendix D](#))



Completing a Trip Review

Upon completion of a trip the reviewer should take the following steps to finalize their review.

1. **Data Check.** Verify data has been entered correctly by opening the Data Tables (Data -> View Data Tables) and checking them against the information submitted in the timeline. Look for misentered species codes, or a disposition with the wrong species.
2. **Total Review Time.** Once checked the reviewer should open the Trip form and add their Total Review Time (see Trip section).
3. **Data Export.** After completing the checks and adding the review time the data will be exported by clicking the Data menu and clicking Data Export. This will be saved in the working directory. If storing Exports from remote reviewers, create a new folder with the following naming scheme: “**MMDD Export**”.
4. **Backup data.** Create a copy of the review_data_event.sqlite3 within the trip folder. Create a new folder in the trip file, name it “backup sqlite,” paste the backup file and add “_bak” to the end of the file name. Ex: review_event_data_bak.sqlite3. If a remote reviewer, this will be done in the Anchorage office.
5. **Workflow log Update.** The information in the Data Workflow log must be updated. Refer to the [Workflow Log Instructions](#) for detailed information.
6. **Upload all relevant screenshots to the 1905 Drive folder.** This includes screenshots of:
 - a. Marine Mammals
 - b. Birds
7. **Locate the Trip Logbook.** For each logbook, assess the following and include feedback on the feedback form to the vessel:
 - a. Are all the fields filled out/ circled?
 - b. Do the fishing times seem to match? ***Remember that the timeline is UTC vs AKST on the logbooks!!***
 - c. Did they list all of the discards? Did we see those discards in review? For example, did EM see a shark but it wasn't logged? Did EM see a net bleed but no discards were reported? ***Do not compare or change your estimates!!***
8. **Complete Feedback Form:** Go to [Feedback Forms](#). Make a copy of “2020-Feedback Form-Trawl”. Double click the copy and rename it “**Vessel_ODDS number_SWI**”. Complete the trip fields at the top using the SPC and Workflow Logs and fill in the feedback form using the “Key” sheet located within the file.
 - a. For each criterion, rate the performance and add comments if needed.
 - b. For any criteria listed as “Good” or “Needs Work” add suggestions for improvement or explain why current practices impede the review process. Note relevant images.



- c. This is also an opportunity to provide positive feedback; let them know if they excel in a particular area.
 - d. Provide screenshots and number them or provide a comment with the screenshot at the end of the review form. Pictures will help them understand those “Needs Work” criteria in addition to the comments.
 - i. We have received feedback from multiple vessels that they like receiving screenshots with their feedback form. Whether it is illustrating issues or an entertaining photo of their crew. Make sure you take some for them! Thank you!!!!
 - e. Move completed form into the “Finished” folder and notify the supervisor in charge of vessel correspondence.
9. **Jira tickets:** Go to [Jira](#) and create a ticket for system issues during the trip. You’ll want to create a ticket for any system gaps that affected your data as well as any other issues you may notice such as:
 - a. Rotation sensor reading backwards (sets read as hauls and vice versa)
 - b. Camera consistently overexposing the deck (not caused by sun glare)
 - c. Hydraulic issues throughout the trip.
 - d. If you are unsure if what you observed is an issue, contact your supervisor for further instructions. Before filling out any ticket, verify that a ticket has not already been made for the same issue on the vessel. **See the “[Creating a Ticket in Jira](#)” document for a step-by-step guide on how to create and submit the ticket:
10. **Verify that the vessel has updated review pictures saved in the 1905 folder.** File pathway is: 1905-Storage & Review → Bird, MM, Shark, & Vessel Camera View Photos → [Catcher Vessel Camera Views During Fishing Activity for VMPs](#). For TENDER vessels: 1905-Storage & Review → Bird, MM, Shark, & Vessel Camera View Photos → [Tender Vessel Camera Views During Deliveries](#). There should be a screenshot of each camera view *during fishing operations*. If there is NOT an updated set of pictures for the year, then take screenshots and add them in. Camera view screenshots should be named as: Vessel Name_hauling or processing_1 or 2
11. Trips will then enter into the QA/QC pool and be queried, audited. When uploading your data export folder to the appropriate weekly QA/QC folder, name the folder using the two digit month/day received with the vessel name: **MMDD_Vessel Name**. *If there is more than one drive with the same received date*, use **MMDD_Vessel Name_Last4ofdriveserial#**. EX: 0908_Cape St. Elias_MEPD & 0908_Cape St. Elias_MEV6. See [QA/QC Process](#) for details.

Conceptional Framework for Monitoring Pollock Trip and MRA Overages to Control Vessel Behavior: 2020 Mid-water Pollock Trawl EM EFP

Objective: This framework is intended to formulate flexible enforcement steps over the course of the EFP to curtail potential abuse of exemptions to the GOA pollock trip limit and BSAI-GOA MRAs. The goal is to control behavior so that vessels continue to mostly stay under the limits over the long term, yet provide added flexibility that is needed due to the full retention requirement of the EFP.

Overage Monetary Surrender: All participating EM EFP vessels will be required to surrender the ex-vessel value above the prescribed limits (GOA 300,000 pollock trip limit and GOA-BSAI maximum retainable amounts as published in Table 10 and Table 11). Processors will be allowed to process the overages and sell the product – they would be responsible for remitting any overage proceeds to the North Pacific Fisheries Research Foundation on behalf of the project administrators to help fund continuation of the EM project into the future.

GOA POLLOCK TRIP LIMIT OVERAGES

Vessels will be allowed up to three (3) offenses (pollock trip overages). Upon a fourth overage offense, the vessel will be removed from the EFP participating vessel list. They may also be prohibited from participating in any future EM Pollock EFP.

Definitions and actions:

Any egregious trip overage (> 345,000 pounds) will constitute an offense regardless of circumstances.

Other offenses will be determined by averaging every 4 pollock trips over the course of the year (excluding any trip >345,000 lbs). The trip average restarts after every 4 consecutive pollock trips: if the average catch over four consecutive trips is above 300,000 pounds, the vessel will be charged with an offense.

Actions for offenses:

- 1) *First Offense:* average of a 4 trip set (excluding any trips >345,000 lbs.) >300,000 lbs: Contact vessel and count this as the first overage offense.
- 2) *Second Offense:* Notice the vessel that they have again exceeded the trip limit standard and count this as the second overage offense.
- 3) *Third Offense:* Notice the vessel that they have again exceeded the trip limit standard and count this as the third overage offense. Vessel pays a monetary penalty of \$1,000 to the North Pacific Fisheries Research Foundation.
- 4) *Fourth Offense:* Notice the vessel that they have again exceeded the trip limit standard; vessel is no longer allowed to participate in the EFP and must comply with all regulations (observer coverage, pollock trip limit, MRA's, PSC discards).

Note: The egregious trip overages and average trip overages are additive with a maximum of four offenses allowed under the EFP before expulsion. Vessel operators/owners are encouraged to

contact project management if they believe an overage was due to unusual circumstances beyond the operator's control.

BSAI-GOA MRA OVERAGES

Vessels will be allowed up to three (3) offenses (MRA overages). Upon a fourth overage, the vessel will be removed from the EFP participating vessel list. They may also be prohibited from participating in any future EM Pollock EFP.

MRA overages can be due to fishing conditions (e.g. excess of MRA species such as sablefish in the system so therefore difficult to avoid) or due to a vessel's fishing behavior.

Overage definition: Compare incidental catches to the pelagic pollock fleet overall (BS, Western GOA and Central GOA fleets independently) to determine if incidental catches (both discarded catch and retained catch) are problematic for all or most fishery participants in that area. If problematic overall, then continue to monitor EM vessel overages but take no further action. If an individual vessel overage stands out in comparison to other vessels then these incidents will be considered overages if valued at >\$250. Overages will be monitored on a trip by trip basis.

Actions for offenses:

- 1) *First Offense:* Contact vessel and issue an MRA overage when two overages have occurred.
- 2) *Second Offense:* Notice the vessel that they have again exceeded two MRA overages and issue another MRA overage.
- 3) *Third Offense:* Notice the vessel that they have again exceeded an MRA and issue a third MRA overage offense. Vessel pays a monetary penalty of \$1,000 to the North Pacific Fisheries Research Foundation.
- 4) *Fourth Offense:* Vessel is no longer allowed to participate in the EFP and must comply with all regulations (observer coverage, pollock trip limit, MRA's, PSC discards).

Note: Vessel operators/owners are encouraged to contact project management if they believe an overage was due to unusual circumstances beyond the operator's control.

DRAFT 2021 Sample Design Worksheet

Project Title: EM in the pollock trawl CV fishery

Prepared By: Jen Cahalan, Glenn Campbell, Matt Kemp, Brian Mason, Sarah Neumeayer

Date Completed: Working Document – to be updated as appropriate

Revision Date: 14 January 2021

This is a working document that will be updated as appropriate. As outlined in the EM EFP Permit, the Alaska Fishery Science Center, Fisheries Monitoring and Analysis (AFSC FMA) will establish the observer sampling goals and protocols (EFP Permit Section H, Part 6, a, i). This document is the AFSC EM EFP Sampling Plan.

Direction

Project Goal: Design a shoreside sampling program to monitor 30% of deliveries from trawl CVs fishing in the GOA, 30% of GOA tender deliveries, and 100% of deliveries from trawl CVs fishing in the BS for vessels participating in the EM EFP. Primary goals of this shoreside monitoring will be to determine the total number of salmon present in the delivery, total number and weight of halibut present in the delivery, and to obtain a sample of fish from which biological data will be collected (per EFP Application <https://docs.google.com/document/d/1yrLaRDcFULesVQmxwilzocnp7L4W8-4V2ZPHjGDBIBo/edit>).

Objectives and Measurable Outcomes:

- Data collections from shoreside monitoring, replacing at-sea data collections, which maintain data quality and are consistent with standard Observer Program methods.
- Data sufficient to evaluate whether collected data meet Observer Program standards.
- Written sample design that all parties agree is feasible to implement, inclusive of specified data collections, summary of associated assumptions, summary of data elements that will not be captured. Sampling design will have sufficient detail to allow development of training materials, instructions to observers, and preparation of any necessary data forms.

Data Need / Benefit

In the pollock CV fisheries there is a need for increased accuracy of bycatch estimates for limiting species (PSC) and decreased monitoring costs for participants without loss of data needed for management of fisheries.

Current Knowledge

This project will apply to participating trawl catcher vessels (CVs; Appendix A), processing plants receiving EFP deliveries (Appendix B), and the tender vessels accepting catch from participating vessels (Appendix C). Observers on participating vessels will be replaced by EM systems consisting of several cameras and gear sensors.

Currently all observer data collections for non-salmon species occur at-sea on a haul-specific basis. Collected data includes haul locations (latitude, longitude to the nearest second), haul duration and retrieval times, catch and biological data, and other fishing and catch related data elements. Data

collections follow a multi-stage cluster design and observers are tasked with determining the best methods to use at each stage of sampling.

Salmon data collections follow a separate sample design where all salmon are sorted from the catch by industry (vessel crew and plant employees) and set aside until the observer team can verify the species-specific count. These salmon are set aside in a lockbox until the observer team is available to verify the species and count. Tissues are collected for genetic analysis and subsequent river-of-origin determination. Tissue samples are collected from every 30th chum salmon and every 10th Chinook salmon systematically throughout the catch.

Additional biological data are collected depending on the dominant species in the haul and the fishing location (see Observer Sampling Manual Chapter 12, Chapter 13). Specifically, when pollock is the dominant species in the catch, the observer team collects sex and length data for pollock, squid, and rougheye rockfish; pollock and rougheye rockfish otoliths, pollock maturity data, and halibut post-capture condition data. The frequency of data collections varies (see tables below).

Length and Specimen Priority List for Predominant Species in the Bering Sea/Aleutian Islands for at-sea data collections (Observer Sampling Manual pg. 13-23)

Predominant Species	Sex/Length Data	Biological Data (All specimen fish must have an associated s/l/w specimen)	Halibut Condition
Aleutian Islands (Fed Areas 541, 542, 543) Pollock	Every Sampled Haul ~ 75 pollock	Every Sampled Haul 10 pollock otolith pairs with maturity scan for all female otolith fish	CV: Every Sampled Haul CP: Every 2nd Sampled Haul ~10 Viability Assessments
Bering Sea Pollock	Every Sampled Haul ~ 20 pollock and ~ 20 squid (unsexed) and ~ 5 Rougheye and ~ 5 Sablefish	Every 5th Sampled Haul 2 pollock otolith pairs with maturity scan for all female otolith fish	CV: Every Sampled Haul CP: Every 2nd Sampled Haul ~10 Viability Assessments
		and ~ 8 pollock sex/length/weight specimens (must not be from an otolith fish)	
		Every Sampled Haul	
		5 Rougheye otolith pairs	

Length and Specimen Priority List for Predominant Species in the Gulf of Alaska for at-sea data collections (Observer Sampling Manual pg. 13-26)

Predominant Species	Sex/Length Data	Biological Data (All specimen fish must have an associated s/l/w specimen)	Halibut Condition
Gulf of Alaska Pollock	Every Sampled Haul ~ 50 Pollock and ~ 10 Pacific Cod	Every Sampled Haul 8 Pollock otolith pairs with maturity scan for all female otolith fish and 1 Pacific Cod otolith pair with maturity scan for all female otolith fish	CV: Every Sampled Haul CP: Every 2nd Sampled Haul ~10 Viability Assessments

Length and age data for pollock feed into three stock assessments: Bering Sea (BS), Aleutian Islands (AI), and Gulf of Alaska (GOA). In addition, the BS squid stock assessment uses length data collected by observers and the BS roughey rockfish assessment uses both length and age data from observers.

Note that in 2020, the GOA Pacific cod stock assessor requested biological collections from P. cod caught as bycatch in the directed pollock fishery. This collection will be incorporated into the sampling methods.

Monitoring in the plant

Observer sampling priorities have been reprioritized for this EFP to ensure collection of biological data and to meet other EFP sampling objectives while maintaining standard data collections. Note there are no vessel observers available to conduct shoreside sampling in the GOA or under COVID-19 protocols, hence salmon retention other standard observer duties from all EM EFP deliveries will be conducted by the plant observer team (all assigned observers).

Proposed Study and Data Collection:

Under the EFP, we are adding to the plant observer's sampling duties the collection of biological data and verification of fish tickets (species composition), hence additional staffing are needed to meet the EFP objectives. The expectation is that the observer team will have eyes-on-catch for the duration of the offload in order to meet salmon monitoring objectives (complete enumeration of salmon). As a result, a second observer is needed per delivery, at a minimum, to collect additional data elements (e.g., biological data).

The observer team monitoring priorities for selected deliveries are below; salmon data collections and PSC monitoring are the highest priority while verification of fish tickets is the lowest. Although verification of fish tickets is an objective of this EFP, in some situations these data may not be collected, for example in deliveries where only a single observer is available to monitor the offload or where the species diversity is higher than anticipated.

Monitoring Priorities (selected deliveries)

1. Record delivery information on the Plant/Vessel Offload Form
2. Salmon counts; complete enumeration (census)
3. Tissue collections for salmon stock of origin analysis (genetics); wand all salmon for the presence of CWTs and collect snouts of tagged salmon (consistent with current protocols)
4. Halibut, complete enumeration (census) plus length measurements and viability assessments of all halibut in delivery
5. Collect sample(s) of (unsorted) catch (most efficient method to obtain biological data) including enumeration of all species in the sample. Herring and crab composition will only originate from the species composition sample.
 - a. obtain biological data (lengths and otoliths as specified; see pgs. 13-23 through 13-26 of the 2021 Observer Sampling Manual)
 - b. determination of species composition/fish ticket verification
 - c. PSC crab and herring will be recorded as part of the composition sample
6. Transmit data to NMFS daily.
7. Verify delivery weight.

Proposed Methods:

Throughout this study, there will be extensive collaboration and coordination between the project (EFP) PIs, the NMFS Observer Program staff, and the Observer Providers. While many of these data collections have been conducted by at-sea observers using methods detailed in the Observer Manual, many aspects are novel and may need special accommodation. For example, access to catch and accommodations at the processing plant are critical to successful completion of data collections. Similarly, project field coordinators, FMA staff, processing plant staff, and observers will need to consistently coordinate in order to ensure all EFP deliveries are monitored or a randomized selection of EFP deliveries are monitored.

Deployment / Randomization of offloads to monitor

There are four groups of deliveries of interest: EM EFP CV deliveries, Non-EFP CV deliveries, EFP Tender deliveries, and non-EFP tender deliveries. In some plants, deliveries may be taken from all four groups, however only EFP deliveries will be sampled under these sample methods. For non-EFP deliveries, standard Observer Program methods apply.

Tracking EM EFP offloads and the selection of EM offloads for monitoring will differ between BSAI catch and catch from the Gulf of Alaska. Where randomization is applied (GOA and tender deliveries), randomizing directly on deliveries within each processing plant will be the most efficient method (lowest variance per effort). This will necessitate constant communication between observers and plant staff, potentially working from a maintained list of expected deliveries that includes the time of the delivery, expected total offload weight, and number of hauls fished.

Bering Sea AFA Deliveries

In the Bering Sea, all EFP deliveries will be monitored by the observer team and it is expected that all data collection goals will be accomplished. There are 29 BSAI CVs and an additional 13 CVs that fish in both the BS and GOA participating in the project (Appendix A). For a specific processing plant, the list of expected deliveries will need to identify EFP and non-EFP deliveries, including expected time the offload will begin and anticipated duration (or weight).

Gulf of Alaska Catch

There are 28 GOA pollock CVs in addition to the 13 CVs that fish in both the BS and GOA that are participating in the EFP (see Appendix A). A 30% random selection of EFP deliveries will be monitored by two observers. If EFP deliveries are expected to occur only during certain portions of the day, the observers will adjust their schedules accordingly. Since only a portion of the fleet is participating, and of those only 30% of deliveries need to be monitored, it is expected that this will meet the project needs.

From the expected delivery schedule for EFP deliveries, the observer team will coordinate among themselves and implement a systematic random selection of 33% (1 in 3 deliveries monitored). This randomization will depend on the observers being fully updated on the delivery schedule and that the schedule is as accurate as possible. Since vessels will be hailing their deliveries in advance, this should be reasonable. Two observers will monitor selected deliveries, however, there will be occasions where only a single observer will be available. Sampling considerations under both these scenarios are outlined below in the next section.

Note that any GOA catch from EFP vessels that is delivered to Akutan (or other Bering Sea plants) will be monitored at 30%.

Tender Deliveries (CVs delivering to tenders)

Similar to the methods described above for monitoring of GOA EFP catch, a 30% random selection of deliveries from tender vessels participating in the EFP (Appendix C) will be monitored by the observer team.

Although this is the second year that tender deliveries will be monitored under the EFP, for this study they will be monitored using the sampling methods identical to those used to monitor CV deliveries. These deliveries are expected to be larger however, hence the duration of the offload and time required to monitor will be longer.

Additional Considerations

These are relating to these deployment and randomization methods as outlined below.

Sample unit – individual deliveries

- Vessels will hail their deliveries in advance since adequate notification is key to maintaining sample frames (lists) and having observers in the right place to monitor EFP deliveries.
- For deliveries of GOA catch, observers will coordinate to best achieve proposed randomization
 - Note that data collection duties will be shared by all observers (the observer team) will coordinate both data entry/accountability and sampling activities.

- There will be no split deliveries (per the EFP) - however, vessels are allowed to come off the dock for a time, then return to deliver the remainder. Coordination with observers to ensure complete monitoring of the delivery will be essential.
- Vessels delivering deck-loads of catch will be monitored using the current methods; again coordination will be essential and in this situation there may need to be pre-delivery meetings with the observer team.
- If a vessel delivers EFP catch to a non-EFP plant, the delivery will not be sampled (see Appendix B for list of participating processing plants). This may result in a loss of salmon retention and other EFP data collections outlined in the EFP permit. Since the plant is not part of the EFP, EFP plant protocols would not be in place and data collection resources would not be available. However, these deliveries will be tracked and included in in-season reporting on data collections by NMFS FMA staff.

Sample Frames

- Sample frames based on coordination with plants -
 - Frames will be developed and maintained for each participating processing plant
 - Frames need to include anticipated offload (observer sampling) weight and offload duration, in addition to the time the offload is expected to begin
 - Vessels will notify plant in advance of landing; plant will need to notify observer and/or coordinator
- Note: The sampling frame will not always be known in advance, but list of anticipated deliveries will be maintained in-real-time by processing plant personnel (see EFP Permit, Section H, 6, b, ii) so that observers are able to randomize deliveries and coordinate such that observers are available to monitor and the selection of appropriate (randomized) deliveries can be determined in advance.

Sample Unit Selection

- Randomizing directly on deliveries will be the most efficient method (lowest variance per effort).
- Observer is responsible for randomization
- Coordination will be tricky since within each processing plant, the observer team will maintain a single sample frame (EFP CVs and EFP tenders, combined)
 - Aim for monitoring one in three, systematic samples.
 - Allows for missed deliveries – no observer available or offload cannot be sampled for other reasons: sample next offload and then revert to previous sample schedule
 - Will tend to over sample (33% not 30%)

Monitoring Selected Deliveries

Once a delivery is selected to be monitored, observer responsibilities will follow the monitoring priorities (above): salmon enumeration, salmon tissue collections, halibut enumeration, halibut length and viability assessments (all halibut), sample collections for biological data, and fish ticket verification (species composition samples, including herring and PSC crab). Note that salmon data will be recorded by the observer team, through ATLAS, in the NORPAC salmon tables while for halibut, individual

length measurements will be entered for each halibut and totaled for the haul. In both cases, the total number and weight of each species for the delivery will be presented in ObsInt.

The observer team will monitor the offloaded catch as it comes into the processing plant from the vessel, referring to the processing plant's Catch Handling Plan for information about the plant layout and flow of fish through the plant. All salmon will be removed from the catch by either the observer team or by plant personnel under the supervision of the observer team and set aside. At the completion of the delivery, the observer team will enumerate the salmon by species and will collect salmon tissue samples per usual observer sampling methods. Halibut will also be removed from the offloaded catch by the observer team, enumerated, and biological data will be collected (weight, length, viability, etc.). See Appendix D for additional processing plant information.

Offloaded catch will be sampled and the number and weight of all species within the sample will be recorded (similar to species composition samples collected using standard observer sampling methods). From these samples, individual fish of specified species will be randomly selected for collection of other biological data (e.g., length, weight, etc.) and specimens (otoliths).

If insufficient numbers of observers are available, their highest priority will be to monitor the offload for salmon and halibut bycatch (complete enumeration of salmon (by species) and halibut, and crab, and collection of tissues and specimen data) using standard observer methods. If possible given constraints (storage space, plant operations), the observer team will collect a single sample of fish from which they will obtain biological specimens and species composition of the catch. Collection of the sample of catch will follow standard observer methods (randomize, collect multiple samples (if reasonable), collect large samples) within the constraints imposed by the specific sampling situation (e.g., number of observers, speed and depth of the flow of fish, storage space, availability of plant staff assistance, and/or other factors). The observer team member monitoring the delivery cannot stop monitoring the catch for salmon and halibut bycatch to collect these samples but may be able to divert a sample to fish to be processed once monitoring bycatch has been completed. If a single observer is available and storage space is limited, collection of species composition and biological specimens may not be logistically possible.

In all cases, the observer team will monitor delivered catch between vessel and tank or between vessel and start of processing to minimize the potential to lose track of fish. The specific location will depend on the flow of fish and processing plant layout; as needed NMFS will work with the EFP PIs to ensure the observer team has adequate space and tools to achieve monitoring objectives.

The collection of species composition samples will be similar to standard sample collections on trawl vessels. The observer team will use time-as-proxy methods to systematically collect samples throughout the offload. The individual samples will (likely) be small samples (one or two baskets of fish). All species in the selected sample will be recorded and these data will be used for fish ticket verification.

From within one or more of the species composition samples, individual fish will be randomly selected and biological data collected. Biological data collections will be from a subset of species as outlined in the Observer Manual and will aim for collecting the same approximate number that would be expected based on at-sea sampling (i.e. numbers of otoliths or fish lengths). In the BSAI, biological data are collected for salmon, pollock, halibut (lengths), squid, rougheye rockfish, and Sablefish while in the GOA data are only collected for salmon, pollock, halibut, and P. cod.

The length and specimen priority list for this EFP is based on feedback from stock assessors, understanding of observer workflow, and an intent to maintain current specimen collection rates. This table is similar to the one used by observers during standard deployments, pages 13-23 through 13-28 in the 2021 Observer Sampling Manual.

2021 Pollock EM EFP Length Specimen Priority List

Predominant Species	Sex/Length Data	Biological Data (All specimen fish must have an associated s/l/w specimen)	Halibut Condition
Bering Sea Pollock	Every Sampled Offload ~100 pollock and ~100 squid (unsexed) and ~25 Rougheye and ~25 Sablefish	Every Sampled Offload	Every Sampled Offload Measure and Assess the Viability of ALL Halibut
		2 pollock otolith pairs with maturity scan for all female otolith fish and ~ 8 pollock sex/length/weight specimens (must not be from an otolith fish)	
		Every Sampled Offload	
		25 Rougheye otolith pairs	
Gulf of Alaska Pollock	Every Sampled Offload ~ 150 Pollock and ~ 30 Pacific Cod	Every Sampled Offload 25 Pollock otolith pairs with maturity scan for all female otolith fish and 5 Pacific Cod otoliths	Every Sampled Offload Measure and Assess the Viability of ALL Halibut

Data elements that will no longer be available

Haul specific data, including

- location,
- gear retrieval time,
- fishing depth,
- haul durations,
- haul size (t),
- predominant species in the haul,
- between haul variability in species composition

Workload Considerations

Sampling Area and Equipment Considerations:

Processing plant personnel will need to work with NMFS field office staff and the EFP PIs to ensure that adequate sampling conditions are provided, including,

- Access to the flow of fish
- Ability to monitor sorting of catch
 - pace and depth of fish on belts must allow for data collections
- Adequate space to store samples (totes or baskets of fish)!
- Ability to remove fish from belt; this will be specific to the plant
- Location for Observer Scale and sampling tools (totes/baskets/containers, smaller scales, forms)
- Will need an estimate of offload time, size, and if possible duration in addition to the tender log (if applicable)

Prior to the start of monitoring, the observer teams will meet with plant staff to determine best practices for monitoring; FMA staff and PIs will participate as available.

Observer Workload Considerations:

Under current staffing (observers), additional data collection duties have been assigned. This EFP may incur an addition to the workload for observers that may need to be adjusted in future years.

As in past years, during this EFP NMFS and the PIs will need to be able to evaluate the feasibility and effectiveness of sampling and identify areas that need to be fixed/improved. In 2020 we were able to

- Evaluate sampling against sample frame - did we randomize? Did we meet sample goal?
- Shift randomization methods if these are not practicable
- Document where and how many additional observers are needed.
 - If observers often exceed 12hrs or exceed 12hrs by a lot, adjustments to sampling will be evaluated or additional observers will be brought into the project
 - There is an exemption from the 12-hour rule for this EFP
 - Similar to last year, one of the primary goals for this year is to learn enough that future years will be adequately staffed

During the 2021 EFP, we will continue to evaluate these same areas for potential improvements and to assess whether the project goals are being met.

Training Considerations:

For this EFP to be successful, observers will need to be trained before deploying into processing plants participating in the EFP. This briefing will focus on randomization of deliveries to be monitored in the GOA and from tender vessels, prioritization of monitoring duties, and communication between observers, plants, and EFP coordinators. A short briefing will be included in all training sessions (annual and 3 week initial).

Specific tasks include:

- Development of observer packet
 - Monitoring instructions
 - EFP background information to give observers sufficient context to understand EFP goals and objectives
- Development of training curricula and materials
- Development of additional forms that may be needed
 - Offload tracking forms - both anticipated (sampling frame) and actual offloads

- Provision of gear and additional forms

Data Quality/Observer Debriefing Considerations:

Several aspects of this EFP will result in increased workload for debriefing and QA/QC staff including:

- Exit surveys and potentially exit interviews for observers moving out of the EFP (see Appendix E)
- In-season advising will be provided for deployed observers
- Updating/adding/relaxing error scripts in NORPAC, if needed during the 2021 season (this was completed in 2020)

Appendix A: List of participating EFP vessels. Vessels that are new to the EFP in 2021 are designated with a *. The Alaska Beauty (2046), Perseverance (2837), and Chellissa (6222) participated for all or part of 2020 and are not participating in 2021. EM systems are provided by Saltwater Inc. and Archipelago Marine Research (AMR).

Fed. Permit	Vessel Name*
901	Aldebaran *
1688	American Beauty*
434	American Eagle*
3388	Arctic Explorer
2889	Auriga*
2888	Aurora*
516	Bering Rose*
3007	Bristol Explorer
2657	Commodore*
3988	Destination*
1292	Golden Dawn*
3679	Miss Berdie*
428	Nordic Star
2769	Northern Patriot
422	Pacific Viking*
1164	Patricia L
1265	Pegasus
1275	Predator*
512	Progress*
1236	Raven
543	Royal American*
1652	Sea Wolf*
2059	Seadawn

2849	Seeker
2770	Sovereignty*
1167	Starfish*
1998	Starlite*
1641	Storm Petrel*
134	Western Dawn*
523	Arctic Ram
5137	Arctic Wind*
1235	Cape Kiwanda
2791	Collier Brothers
410	Excalibur II
1868	Gold Rush
249	Half Moon Bay*
993	Hickory Wind
1234	Leslie Lee
4506	Lisa Melinda
4305	Pacific Ram
251	Sunset Bay
825	Walter N
6097	Alaska Dawn
2010	Alaskan
1889	Alaskan Lady
1193	Bay Islander
10562	Cape St Elias
3402	Caravelle
3474	Celtic
4579	Courtney Noral
4614	Decision

4208	Equinox
34939	Evie Grace*
4141	Heather Margene
4212	Just in Case
3713	Karen Evich
4657	Lady Joanne*
3734	Lady Lee Dawn
1191	Marathon
4521	Marauder
4131	Michelle Renee*
25218	Miss Courtney Kim
4989	Miss Sarah*
5000	Ocean Storm*
2781	Pacific Star*
4226	Primus
1043	Sea Mac
4144	Shawna Rae
4187	Temptation
1846	Tern

Appendix B: Bering Sea and Gulf of Alaska shoreside processors.

Fed. Permit	Shoreside Plant	Plant Liaison
5306	Trident (Akutan)	
5358	Peter Pan (King Cove)	
4078	Icicle (Dutch - Northern Victor)	
5310	UniSea (Dutch)	
5320	Alyeska (Dutch)	
27990	Trident (Kodiak)	
5342	APS (Kodiak)	
35011	Silver Bay (False Pass)	
30883	OBSI (Kodiak)	
5305	Trident (Sand Point)	
5392	ISA/Silver Bay (Kodiak)	

Appendix C: List of Participating Tender Vessels

Vessel Name	Delivery Processing Plant
Cape Denbigh	Peter Pan
Gayla Maureen	Peter Pan
Bering Hunter	Peter Pan
Polestar	Peter Pan
Perseverance	Trident
Entrance Point	Trident
Four Daughters	Trident
Last Frontier	Trident
Tuxedni	Trident
Bulldog	Trident
Dolphin	Trident
Royal Viking	Trident
Billikin	Trident
Southern Wind	Trident
Barbara J	Trident
Farwest Leader	Trident
Arcturus	Trident
Aldebaran	Trident
Columbia	Trident
Dominator	Trident
Golden Dawn	Trident
Gladiator	Trident
Northern Patriot	Trident
Pacific Viking	Trident
Sovereignty	Trident
Viking Explorer	Trident
Constellation	Trident

Karin Lynn	Trident
Time Bandit	Trident
Katie Lynn	Trident
SBS Provider	Silver Bay
Westward Wind	Silver Bay
Pacific Star	Silver Bay
Rondy's	Silver Bay
Titan Explorer	Silver Bay
Handler	Silver Bay
American Lady	Silver Bay
Debbie Sue	Silver Bay
Sea Venture	Silver Bay
Kona Kai	Silver Bay
Polar Sea	Silver Bay
Incentive	Silver Bay
Kodiak	Silver Bay
Eleinor J	Silver Bay
Tugidak	Silver Bay
Valiant	Silver Bay
Sea Warrior	Silver Bay
Seabrooke	Silver Bay
Diligence	Silver Bay
Pacific Sounder	Silver Bay
Ocean Invictus	Silver Bay
Nordic Lady	Silver Bay
Camai	Silver Bay
Oracle	Silver Bay
Denali	Silver Bay
Nushagak Spirit	Silver Bay
Pacific Star	Silver Bay

Lady Helen	Silver Bay
Mako	Silver Bay
Sea Pride	Silver Bay
Rogue	Silver Bay
Stormbird	Silver Bay
Kaia	Silver Bay
Sea Diamond	Silver Bay
Lady Alaska	Silver Bay
Melanie	Silver Bay
Icy Bay	Silver Bay

Appendix D: Shoreside Processing Plant Layout and Flow of Fish

This Appendix contains descriptions of the processing plant layouts and flow of fish based on FMA knowledge and observations. Actual conditions may differ from what is presented here. These descriptions are provided as a guide to observers and to set initial expectations. These descriptions are not intended to replace processors' Catch Handling Plans.

Bering Sea Plants

Akutan

- Observers monitor sorting from the point at which fish enters the plant
- Fish exits hopper and divides into two sorting lines
- Each conveyor's flow is sorted onto one of two belts nested directly below primary sorting belts
- Bycatch is sorted onto first lower belt and sent to fish meal following being sorted, counted and weighed
- Cod and jellyfish are sorted onto second lower belt and sent to outside totes to be counted and weighed
- Salmon is sorted off primary sorting belts and placed directly into lockable bins
- Hopper scale directly following converging sorting belts. Primary duty is to sort Pollock.
- Observer has sampling station directly adjacent to sorting area equipped with MCP scale and table
- Observer conducts salmon retention count near sample station, collecting sample at sampling station

Unisea (Dutch Harbor)

- Observers monitor sorting from the point at which fish enters the plant
- Fish exits hopper and divides into two sorting lines. Belt nearest observer sampling station is primary sorting belt, furthest belt used infrequently
- Sorters remove misc. bycatch into chutes that lead to totes and salmon bins directly below sorting level
- Salmon is placed in salmon bin and bycatch is sorted into totes to be counted and weighed
- Cod is sorted into individual tote, Skates and other misc. species are sorted into another
- Observer has sampling station directly adjacent to sorting area equipped with MCP scale and table
- Observer conducts salmon retention count on the level below the point where sorting occurs

Icicle – Northern Victor (Dutch Harbor)

- Flow of fish: Fish exits the delivering vessels and enters mid-ship of the Northern Victor where it travels via conveyor belt to an initial incline. From this point fish travels onto the flowscale where it is weighed before landing on the main sorting conveyor belt.
- This belt serves as the main point of sorting where plant crew are stationed along the belt and either allow Pollock to pass through the point of sorting to the next point of processing/sorting OR sort all other species into either the Salmon storage bin, or onto a lower belt which transfer fish to a secondary belt outside to sorting totes. At this point fish

species or species groups are sorted into bins to be accounted for individually and are compiled on the fish ticket.

- Pollock passing the point of sorting travel up an incline and drop onto a size-sorting device that grades the fish by size and directs particular sizes towards different areas for further processing.
- Salmon is accounted for via observer retention count following the running of the offload. Sample fish are worked up at the observer team's designated sample station that is directly adjacent to the sorting belt, near the salmon bin.

Peter Pan Seafoods – King Cove (Place holder, additional information will be provided as it becomes available)

Alyeska Seafoods - Dutch Harbor (Place holder, additional information will be provided as it becomes available)

Gulf of Alaska

Trident Star of Kodiak (SOK) Plant (North Dock)

- Flow of fish: The fish are pumped out of the vessel's RSW tank/s onto an upper sorting area and then up an incline belt into a dual hopper for weighing (they typically do not use this weight to generate the fish ticket but it is a legal certified scale and can be used), and into one of the 10 RSW holding tanks.
- The fish may be stored in the RSWs for anywhere from 1-36 hours, average is around 5 hours. After storage, the fish are pumped out of the RSW tanks and into the ALKOD factory (where pollock is processed). The fish are weighed again through a set of hopper scales in that factory then run over a size sorter before feeding the factory. Occasionally there are a few salmon and halibut that are missed on the initial sort from the belts feeding the RSW tanks. Those salmon and halibut are pulled out at the size sorter or by the machine operators in the ALKOD plant then sent to the sorting line in the SOK factory to be weighed and recorded with the other waste and bycatch from the offload.
- The EFP observer can monitor the entire offload for salmon and halibut bycatch on the upper sorting belts prior to the fish entering the RSW tanks. Species composition sampling and collection of biological data can also be accomplished at this station. If the fish are run too fast and deep, there is some likelihood that an observer could miss a salmon or halibut, particularly if they have no monitoring assistance by another observer or plant personnel. Per the observer's request, if a delivery has more bycatch than we typically see, the plant could place personnel at the upper sorting area to assist observers in sorting salmon/halibut before the catch goes into the hoppers and then into the RSW tanks.
- On occasion, Trident will pump the fish from the vessel directly to the factory, and bypass the RSW system. When this happens, a member of the observer team will need to be in the factory. The best place for them to stand is adjacent on the main dewatering belt prior to the set of hopper scales in the ALKOD factory. This is not ideal as they will likely miss fish and

need to reconcile with the production manager after the vessel is processed to get the accurate salmon/halibut census information.

- On rare occasions, there will be a delivery with a very high percentage of bycatch mixed with pollock. If this situation were to occur, the fish would be pumped out of the vessel's RSW tank/s onto an upper sorting area and then up an incline belt into a dual hopper for weighing and into RSW tanks 9 & 10. Salmon and halibut would still be pulled off on the upper sorting belt before going in to the RSW tanks, and this would still be the ideal position for an EFP observer. After being offloaded to the plant RSW tanks, the fish are pumped out of the RSW tanks and into a sorting area on the second level of the facility. The sorting area is upstairs in the southwest corner with an adjacent platform scale. This is where the remainder of the sorting will take place. If there are any salmon or halibut that are missed on the initial sort on the dock, they will be pulled out here and recorded with the other waste and bycatch from the offload.

Trident Kodiak Near Island (KNI) Plant (South Dock)

- Flow of fish: The fish are pumped out of the vessel's RSW tank/s to a dewatering box from which they exit onto one of two sorting belts which are staffed with 2-10 sorters depending on the diversity of the delivery. Bycatch is sorted by species and size into one of 12 batch hoppers with the predominant species moving over the flow scales into the plant for processing. Weights from the flow scales are submitted electronically to the office.
- The batch hoppers containing non-predominant species (i.e. non-pollock) are emptied into species-specific totes and weighed.
- The EFP observer would have to monitor the entire offload for salmon and other PSC from the Observer work station adjacent to the sorting area.

Ocean Beauty Kodiak

- Flow of fish: Fish are pumped out of the vessel's RSW tank(s) to a dewatering box from which they exit onto a dewatering belt then onto a sorting belt which is staffed with sorters who separate out bycatch into totes. This sorting area has an observer station for monitoring of the offload and sampling. The predominant species (pollock) flows from this sorting area into any of 9 outdoor RSW holding tanks. The pollock may be held in the tanks from 2-24 hours depending on scheduling or other variables. From the RSW tanks, the fish empty from the RSW tanks onto another dewatering belt into hopper scales for weighing before moving into the plant for processing.
- Salmon, halibut and other incidental species are sorted prior to entering the plant's RSW tanks. As always, there is a chance that a salmon or halibut could pass through the sorting process and into the production area undetected. If this occurs, it would be returned to the appropriated plant personnel for accounting.

North Pacific Seafoods (NPS) Kodiak

- Flow of fish: Fish are pumped from the vessel RSW upstairs to a dewatering tank, onto a sorting belt where all but the main species are sorted off of the belt, and the main species flows onto a dual hopper system (that keeps a weight tally on a computer) and into one or

more of 8 Refrigerated Saltwater (RSW) tanks. This computer is adjacent to the sorting belt area.

- The fish that are sorted before the dual hopper system are then dumped into a hopper below, that weighs those bycatch fish and then dumps them into totes on the ground level. Fish too large to weigh in these hoppers are dumped down chutes into totes at ground level, and are weighed on a platform scale there.
- Salmon are sorted from the main catch from the sorting belt and set aside at the weigh table for an observer to process. After the tanks are emptied into the factory for processing, some small additional sorting or grading may occur in the production room, which contains two platform scales, and those weights are then subtracted from the hopper weight. The fish in the RSW tanks may sit from approximately one to approximately 20 hours before processing, with an average of 4-8 hours. It is possible that salmon or halibut could make it past the initial sort and into these tanks. If that happens, they are separated out in the production room, weighed, and then brought to a plant manager where they are subtracted from the ticker weight of the predominant catch and ascribed to that vessel's delivery.

Trident Sand Point (Place holder, additional information will be provided as it becomes available)

Appendix E: EFP Observer Exit Survey

EM EFP Shoreside Observer Survey

1. Did the pre-deployment NMFS briefing adequately prepare you for your specific EM-EFP shoreside observer duties and sampling protocols?

Yes No

What should be added to better prepare future observers?

Comments:

2. Was there an on-site pre-fishery meeting with Observer program staff and/or EFP Observer port coordinator and plant personnel? Yes No

If so, did it adequately address your concerns/questions? If not, why not? Yes No

Comments:

3. Were you given EFP background information prior to deployment to adequately inform you of the project?

Yes No

Comments:

4. Was there adequate coordination and communication with your AFA (Bering Sea) observer, if applicable, to facilitate your specific duties?

Yes No N/A

Comments:

5. Was there adequate coordination and communication with other EFP observers, if applicable, to facilitate your specific duties?

Yes No N/A

Comments:

6. Was there adequate coordination and communication with plant staff to facilitate successful completion of your observer sampling/monitoring duties?

Yes No

Comments:

7. Was there adequate coordination and communication with the EFP port observer coordinator, if applicable, to facilitate your specific duties?

Yes No N/A

Comments:

8. Was there adequate communication with your in-season advisor to facilitate successful completion of your observer sampling/monitoring duties?

Yes No N/A

Comments:

9. Communications with plants is vital to the success of the project.

a. Were you informed of your plant liaison name, position, phone number? Yes No

b. Were you informed of the offload start at least one hour before an offload began for those EM deliveries selected for sampling? Yes No

c. Were you informed of offload size estimates and estimated time to complete offload?
Yes No

d. Were you ever unable to organize and maintain/update the delivery list due to communication issues?
If not, what tools could be provided to help with maintaining the delivery list?
Yes No

Comments:

e. If so, were you able to resolve the issue?
Yes No

Comments:

10. Is there any information you think would be useful to add and/or change to the catch handling plan/layout and description? Yes No

Comments:

11. In selecting EM deliveries for sampling, did you have any issues with the delivery list being accurate and/or up-to-date (in order to randomly select deliveries for monitoring)?

- Never/rarely
- Sometimes
- Frequently

Comments:

12. Did you have any issues organizing and/or maintaining separate sample frames?

Yes No

13. Were you able to get the fish ticket information from office staff in a timely manner?

Yes No

14. Was your sampling station adequate to effectively facilitate your specific duties? Yes No

If not, please provide details in Q15.

15. Was there adequate space/convenient location for your scales, sampling gear? Yes No

16. Did you have adequate space to store samples? Yes No

17. Are there any improvements you would recommend for modifying your station?

18. Were you able to monitor the belt and sort out all the salmon and halibut?

Yes No

If not, did plant staff work with you to adjust the belt speed and/or depth or provide other assistance as needed? Yes No

Comments:

19. Were you able to account for after-scale salmon and halibut (fish that were missed during main offload)?

Yes No

Comments:

20. If after-scale fish were encountered, how often did this occur?

- a. Never
- b. Occasionally
- c. Most offloads
- d. Every offload

21. Were you able to complete your length and biological data collections for pollock?

Yes No

22. Were you able to complete biological data collections for other BS/GOA species?

Yes No

23. Were you able to conduct species composition sampling?

Yes No

24. What were the main challenges encountered in conducting your sorting and sampling duties?

25. Was your observer workload:

- a. Manageable?
- b. About normal?
- c. Heavier than usual?
- d. Lighter than usual?

Comments:

26. How often did you work more than 12 hours in a day?

- a. Never
- b. Rarely
- c. Often

27. Would you request or accept this EFP assignment again? Yes No

28. Other Comments/recommendations?

For observers who worked with tenders:

1. Roughly how long did it take you to complete your tasks for a selected tender delivery?
 - a. 0-2 hours
 - b. 2-4 hours
 - c. 4+ hours
 - d. All of the above

2. Did you ever experience logistical constraints that impacted your ability to complete your tasks due to larger and/or fewer offloads?
 - a. Not enough storage space
 - b. Depth and flow of fish
 - c. Availability of plant staff assistance
 - d. Back to back offloads/staffing issues
 - e. Other (explain)

3. If you were able to do biological and composition sampling, did you have the resources (time, space, support, etc.) you needed to randomize and maximize the number/size of samples?