

Electronic Monitoring Workgroup - Minutes

November 28-29, 2016, Sea Tac Airport Conference Center, WA

Workgroup: Bill Tweit (chair)

Appointed: Dan Falvey (ALFA), Howard McElderry (AMR), Malcolm Milne (NPFA), Nancy Munro (Saltwater, Inc.), David Polushkin (KBFA), Jeff Stephan (UFMA)

Agency: Council – Diana Evans, Sam Cunningham; NMFS Observer Program – Chris Rilling, Farron Wallace, Liz Chilton; NMFS Alaska Region – Jennifer Mondragon, Jennifer Watson (phone); NMFS Alaska Fisheries Science Center – Shannon Fitzgerald (phone); NMFS National Observer Program – Jane DiCosimo, George LaPointe (NOAA contractor); NOAA Office of Law Enforcement – Brent Pristas; NOAA General Counsel – Tom Meyer, Alisha Falberg (Enforcement - phone); Pacific States Marine Fisheries Commission – Dave Colpo, Courtney Donovan (phone); IPHC – Claude Dykstra (phone)

Others attending included: Abigail Turner (NPFA), Ernie Weiss (AEB), Mike Orcutt (AMR), Nicole Rossi (NEFSC), Carrie Nordeen (NER)

The Chair opened the meeting with introductions and a discussion of the agenda.

EM integration analysis

Diana Evans, Jennifer Mondragon, and Jennifer Watson described the Council action in October, including the Council's selection of a preferred alternative, and substantive changes to the analysis since initial review, which are identified on the inside cover of the November draft of the analysis.

The EM Workgroup supports the Council's preferred alternative, and recommends that the Council also include in the preferred alternative the option to allow EM as a monitoring tool when fishing IFQ in multiple areas, so that vessel operators may retain IFQ or halibut CDQ exceeding the amount available in the individual area being fished if they are either carrying an observer or EM. The analysis describes the NMFS Enforcement recommendation that because these trips would be using EM in a compliance function instead of solely for catch estimation, there may need to be more stringent operational requirements for the vessel, including 24-hour power to the EM system. The Workgroup discussed the purpose of this requirement, and questioned whether it would apply only to the control center and sensors, or whether cameras would need to be recording 24 hours a day. Brent Pristas clarified that the intent is to know whether fish came from the area from which they were reported, and that the EM system or, in case of equipment failure, a redundant positional system (VMS, for example) should be available to ensure that the EM system was able to capture all fishing activity, so that Enforcement knows where and when the vessel has been fishing. Members of the Workgroup commented that industry would be reluctant to have cameras operating 24 hours a day. Keeping the power to the EM system (e.g., by having the generator on continuously) during these compliance trips may, however, be reasonable. Another alternative could be for the vessel to have oil pressure sensors, so that the EM system automatically powers up and down when the engine is on or off; some vessels in the EM pool have already installed as part of their EM system. The group was not supportive of vessel operators having to buy additional equipment (such as VMS) to do such trips, although some vessels may already have positional tracking software (such as Nobeltec) that could be brought to bear. Brent was intending to meet with the video reviewers at PSMFC later in the week, to help clarify what data is available to Enforcement from the EM system, and equipment component failure rates during pre-implementation. Follow-up was also suggested to get more information about the oil pressure sensors and their ability to trigger a system sleep mode. **The Workgroup acknowledged that Enforcement is still fine-tuning the implementation of this option, and with the guidance provided at this meeting, agreed to defer further comment until the next EMWG meeting when the group can review the proposed rule.** If

the workgroup is to comment during rule development, the Council should task the Workgroup with participating in rule development.

The analysis also includes further clarification about how the regulations and NMFS Enforcement would address EM system failures. Generally, vessels that experience equipment failures would be subject to the same requirements as under pre-implementation, that as long as they did a successful function test before leaving, they may complete their trip but must get the problem fixed on their return to port. If fishing IFQ in multiple areas, the vessel must look for instructions from Enforcement, but may first retrieve any set gear if they do not have at-sea communication. As a backstop for a vessel operator that exhibits a chronic failure to maintain a working EM system, according to the requirements of the Vessel Monitoring Plan, the vessel would be prohibited from fishing. The Workgroup discussed, but did not resolve, whether the vessel should be given the option to return to the human observer pool mid-year, perhaps with an inherited observed trip, while acknowledging that it would bias the partial coverage sampling plan. For subsequent years, such a vessel could be required to return to the observer pool.

The Workgroup also discussed the input that needs to be provided to NMFS to develop an EM service provider contract. Chris Rilling will meet with the NOAA Acquisition and Grants Office in March 2017 to begin developing a timeline for a single, multi-party, multi-year contract for renewing human observer service and providing EM service for the partial coverage sector. He will update the Workgroup at their next meeting about opportunities for Council and public input, which will likely be needed by fall 2017.

Jennifer Mondragon noted that so far, the agency is on track to meet the aggressive implementation timeline for the EM analysis, which would allow implementation by 2018. She noted, however, that the presidential transition sometimes affects the timely approval of regulations, so there may be delays that are outside of the region's control. She also noted that, as required by the Magnuson-Stevens Act for Observer Program changes, public hearings will be required in Alaska, Washington, and Oregon during the public comment period on the proposed rule. Jennifer asked for feedback on proposed locations for holding these hearings in Seattle, Newport, and Anchorage (during the April Council meeting). The Workgroup agreed with Seattle and thought that it might make sense to offer a telephonic hearing for Oregon, if possible, but otherwise Newport was reasonable. For the hearing in Alaska, while the Anchorage Council meeting would work, NMFS might get broader participation perhaps by trying for a hearing at ComFish in Kodiak. Also, to the extent possible, it could be useful to combine these hearings with a public outreach opportunity.

Integrating EM in Partial Coverage with the Human Observer Pools

The analysis also identifies a timeline for integrating the EM selection pool into the Annual Report and Annual Deployment Plan process. Under this timeframe, the Council will see a draft analysis to support splitting the observer fee between the human observer and EM pools in October 2017, and can provide feedback to NMFS before the first time the split actually needs to be made in October 2018 (due to the request for Federal bridge funding to support EM in 2018). The Council's October motion directed staff to work on developing this annual analysis, and Sam Cunningham, working with Dan Falvey and Howard McElderry, presented some considerations for the Workgroup. The Workgroup discussed what its role is in evaluating EM program costs and developing future deployment designs and cost estimates, and when that role should transition to Observer Program staff; how to develop the appropriate metrics to compare the EM selection pool costs and data quality with that of the human observer program; and what policy decisions that affect costs should be identified and determined before an EM service provider contract is put out to bid. One of the differences between the human observer program and the EM program is that there are a lot more variables that determine costs in the EM program, which makes it more difficult to estimate. Also, the focus during pre-implementation has been on research more than cost effectiveness, and the program parameters have changed for 2017, which means that 2016 costs are not necessarily the best predictor of future costs. As a starting point, the Workgroup discussed six metrics that are important to consider in evaluating the EM program costs: 1) number of vessels in the EM fleet; 2) total cost of the

program; 3) replacement cost of equipment; 4) sea day cost; 5) how does it affect the human observer program; and 6) net change in sea days monitored.

The Workgroup recommends that it continue the task of tracking EM program costs and cost optimization over the next two to three years, working closely with the Observer Program, until the program has transitioned through implementation, an appropriate evaluation has been developed to compare the EM selection pool and the human observer pool for purposes of allocating the observer fee and designing EM deployment in the Annual Deployment Plan, and the EM service provider contract has been awarded. The Workgroup recommends that the Council discuss the priority this activity should occupy, relative to the priority for further EM development in other fleets, such as the under 40 fleet discussed later.

The Workgroup proposed the following workplan for moving forward, in priority order:

- Standardize cost categories, particularly as there will be two EM service providers in 2017; consider in the context of national EM cost categories. Include time element – is this a one-time cost, recurrent, or amortized? Chris Rilling to coordinate, for 2017 invoicing.
- Finalize 2016 cost evaluation, using methodology in EM Integration analysis, to eventually become part of 2016 Annual Report in June 2017. Review draft at next EMWG meeting.
- Refine first draft of EM cost elements, identifying how easy or difficult each element is to change annually based on how its implemented (regulations, contract, etc.), and evaluating each to see how much a driver each element is of the ultimate EM budget. Discuss at next EMWG meeting.
- Develop a 2017 predictive cost model to consider ways to optimize the EM program and to design the 2018 EM deployment plan. Use Dan Falvey's Excel spreadsheet as a starting point. Develop high-medium-low projections, based on how many vessels opted in, how many fished, how much selected vessels fished, and different selection curves. Revisit at the end of 2017 for accuracy. Potentially high workload; discuss staff availability at next EMWG meeting.
- Craft a cost-limited budget (using budget targets based on proportion of observer fee, perhaps from EM analysis) that involves policy tradeoffs, as a way to illustrate policy decisions for the Council as input to the EM service provider contract. Discuss at next EMWG meeting.
- Identify EM data quality performance metrics for the Observer Science Committee to consider for comparing with the human observer partial coverage program. Discuss at next EMWG meeting, ongoing discussion with Observer Science Committee.

EM Pre-implementation

2016 update

Chris Rilling provided an update on the budget, and noted that at this point, the 2016 pre-implementation program appears to be below budget for deployment. Twenty-three vessels were selected for the third period (July-October), and all vessels fished; no vessels were selected for EM deployment during the fourth selection period (November-December), so EM monitoring is complete for 2016. Service providers have begun work on pre-installation of EM systems for the 2017 EM program, in which all vessels will be at least pre-wired for their EM system. Some of the 2016 funding is supporting this pre-installation work. There is also an opportunity to roll over some of the unused 2016 funds, which may be needed to support the EM program implementation in 2018. The Workgroup emphasized the need to be able to distinguish easily between 2016 EM monitoring and pre-installations for 2017, in order to track annual costs. Chris will organize a teleconference of those involved in the budget, and report back.

2017 Pre-implementation

Chris Rilling and Liz Chilton reported that 73 vessels have opted in for the longline EM program, 18 vessels for pot, and 5 vessels will carry stereo cameras, so there will be a total of 96 vessels in the EM pool in 2017. The Workgroup agreed to December 1st as a firm cutoff date for vessels opting in. Two

additional vessels may participate in the EM program on a voluntary basis¹ while remaining in the human observer coverage pool. While the number of vessels opting-in to the EM pool has not hit the Pre-implementation Plan targets of 90 for longline and 30 for longline, it nonetheless represents a substantial total increase over participation in 2016. The service providers noted that they have begun system installs for the 2017 EM selection pool. About 27 longline boats to date have full systems installed, and 4 or 5 vessels have been pre-wired. There are about 10 longline vessels intending to fish on January 1st that still need to have systems installed.

With the awarding of the NMFS funds, administered through PSMFC, to Archipelago Marine Research (AMR), and the NFWF grant to Saltwater, Inc. (SWI), there will be two EM service providers operating in the pot fleet in 2017. SWI will service 10 vessels, and AMR 8. SWI has installed systems on 9 vessels to date, and AMR is intending to install on the 5 vessels that intend to begin fishing on January 1st. The Workgroup discussed how to handle vessels that do both longline and pot, especially given that there are multiple contractors. By agreement of the providers and the Workgroup, the SWI pot vessels that also fish longline will not be required to carry a separate system for their longline activity, but will continue to be monitored by their SWI EM system. It is the intention of the EM Workgroup that a vessel that opts into the EM selection pool will use EM for all their monitoring activity within partial coverage, so that if a vessel opted in to the pot EM pool but also does longline then they would be monitored with EM for that activity also.

As part of the NFWF grant, SWI will be doing local data review of the pot EM data, to better develop their video review software, build local infrastructure, and test an alternative model for EM cost effectiveness. In order to maintain parity with the rest of the Alaska EM program, SWI will also send a copy of the hard drives to PSMFC, where video will be reviewed and incorporated into the PSMFC database. In that way, the longline and pot data from SWI vessels will enter into the data stream so that information can be sent to the AFSC and then to the NMFS Alaska Region to be incorporated into catch estimation. AMR is also investigating alternate ways of getting the data to PSMFC rather than mailing the hard drive, in order to improve timeliness, and will report back on any solutions.

SWI is working with NMFS and PSMFC to develop the appropriate data review sampling protocol for pot vessels. Their initial plan is to review 30% of all pots on a trip, which is on par with observer sampling protocols on pot vessels. It was noted that as two entities are doing review, if there is a desire to compare the results, it will be important to ensure that they are both reviewing the same pot hauls.

The Workgroup discussed whether all video from a trip should be kept, for compliance or other purposes, even if it is not reviewed for catch estimation. For example, the video that is collected for compliance monitoring of IFQ fishing in multiple areas might not be used for catch estimation. The current understanding from NMFS staff is that EM data that is submitted to the is considered a federal record and is required to be maintained according to the prescribed federal records schedule. Right now, however, there isn't clear direction on how long the data have to be maintained and stored. It was noted that this broader topic of EM data storage is one that is being considered nationally, and the upcoming National EM Workshop might shed light on the question. NMFS will report back to the Workgroup as the national discussion proceeds.

The Workgroup discussed the need to review the longline and pot Vessel Monitoring Plan cover sheet and template for 2017, and delegated that task to a subgroup to be convened by Jennifer Mondragon. It was

¹ Two vessels that originally opted in to the EM program fish most of the year with trawl gear. Under the constraints of ODDS, they must either be in the EM selection pool or the human observer pool for the duration of the fishing year, and cannot be in the human pool for the trawl portion only. As at least one of the vessels has already had the EM system installed, they will be offered the opportunity to participate in the EM selection pool on a voluntary basis, however whenever they are selected for observer coverage, they must take an observer.

also noted that in general, there is a need to separately track the boats that do just pot or longline, that do both, and also to separate pot sablefish from pot cod, as these different scenarios result in different camera placements, potentially different Vessel Monitoring Plans and field technician needs.

Catch estimation plans in 2017

In 2017, NMFS plans to finish developing the infrastructure for transferring EM data from PSMFC to the observer program database at NMFS, so that it is available for catch accounting. While it is not anticipated that NMFS will be using the EM data directly for catch accounting in 2017, there may be practice of the real-time data transmission in a test environment to ensure all the mechanisms are working, so that beginning on January 1st, 2018, the EM data can be used directly. One of NMFS' activities during 2017 will be to determine how to do catch estimation from EM for pot gear vessels (and there is a description of two possible approaches in appendix 3 of the EM analysis). The estimation approach will inform the question of which data needs to be collected.

Future EM deployment plans

The Workgroup had a brief discussion about the 2018 EM deployment plan, partially in the context of whether it would be designed by the EM Workgroup or by NMFS. There was a discussion about not expanding the EM selection pool in 2018, given that there is still some room for growth within the Pre-implementation plan targets of 90 longline and 30 pot vessels, and there is also uncertainty about funding for 2018, as Federal funds have not yet been appropriated. The Workgroup will discuss whether and how to plan for 2018 at the next Workgroup meeting.

Jennifer Mondragon also raised an issue to consider for the future with respect to the trip selection model. There have been concerns raised about cost efficiency with the trip selection model, given that it requires the investment of the equipment and installation, but doesn't guarantee that the equipment will get much use; these questions can be evaluated based on performance in 2017. But another issue is the potential for an "EM effect" (altered fishing behavior due to having an EM system operating), as vessels may engage in different behavior when they are selected compared to when they are not. With EM, there is a possibility to avoid the EM effect by having the EM system operational on every trip, but doing the trip selection on the vessel's return to port, to determine whether the trip has been selected and the EM hard drive needs to be submitted to NMFS. If the trip is not selected, the data would be overwritten with the next trip. The Workgroup will discuss this issue in the future.

Research and Development

Stereo camera research

Farron Wallace provided a presentation on the EM research and development work at the AFSC with stereo cameras, chute cameras, multi-spectral cameras, and EM lite. He also described the ongoing work with machine vision camera applications for automated species identification. The applications have a high degree of accuracy when used with the camera chute (which creates a controlled environment), although they require a large training dataset of species images. EM lite uses the control box developed for stereo cameras, and connects sensors to monitor the location and duration of fishing activity for longline or pot. This information potentially could be used, in future, to get effort on boats that have EM wiring but are not selected for camera coverage. The Workgroup suggested that it would be timely to start identifying the fisheries or partnerships for eventual use of the technology, so that it can be developed to meet specific needs. Farron requested help from the Workgroup contacting vessels interested in testing the technology or identifying needs. The rail-mounted stereo cameras will be tested on 5 vessels in 2017; four vessels that longline, and one that uses pot gear.

Transmission of EM status data

The Workgroup discussed NMFS Enforcement's request to test real-time transmission of EM systems status data during 2017, to evaluate the cost of this option and inform the design of regulations. The Workgroup supports adding satellite modems to three high activity longline vessels, ideally ones that begin fishing in the early part of the year. The purpose will be to test the capability of the equipment, and get a sense of the costs compared to the conferred benefit.

Under 40 ft research plan

Jennifer Mondragon reminded the group of the demographic data presented in July. The vast majority of vessels under 40 feet are longline. The Workgroup discussed how to incentivize field research in the fleet, given that they are not currently required to take observers. The group also considered what are the key management issues that we are trying to resolve through monitoring in this group, and how to distinguish among them. For example, the group is not currently interested in field testing the EM systems that would be required for operating in a <26 foot open skiff, and would require batteries. As such, the focus at this stage is not so much on field testing EM systems, but rather on designing the appropriate sampling plan that would get good data particularly from the high activity vessels in this size category, and also that would help to answer whether data from larger vessels is representative of the <40 foot fleet. There may be other technology, such as EM lite, or VMS for vessels that also participate in Pacific cod that could be used for monitoring. The information needs would likely vary by target fishery, area, and also for each information user (NMFS, IPHC, etc.) As such, **the Workgroup recommends that what is needed first for the <40 ft fleet is not a field program, but a discussion paper to identify the key questions for designing monitoring for this fleet. As this is largely work for agency staff, it should be added to the existing Observer Analytical Priorities list**, so that it can be appropriately prioritized and completed when time allows.

Halibut release mortality research

Claude Dykstra reported that IPHC is submitting research proposals to revisit some of the older IPHC studies on discard mortality rates within the directed halibut fishery. The study will look at injuries during the hooking and releasing process, by release method, and evaluate survivability using motion-sensing tags. The intent is to include an EM system similar to that used in Alaska, so that the study can both verify the ability to establish release technique from video with high confidence, and potentially establish a fingerprint of survivability by release technique. The Workgroup clarified some aspects of the proposal, which Claude noted may be the first of a multi-phase research project on discard mortality rates (e.g., the study may need to be replicated on vessels that use snap gear), and supports this research proposal.

Other business

Scheduling

Budget discussion – December 2016 – Chris Rilling to convene by teleconference. To address: how much spent in 2016, recommendations on where to roll over unspent money; standardization of cost categories.

Vessel monitoring plan subgroup – Jennifer Mondragon to convene – December 2016 by teleconference. To include both providers, also Anne Marie Eich to see whether seabird presentation changes needed. Review VMP template and cover sheet for longline and pot vessels, and consider whether other individualizations needed to VMP a la west coast – for example, critical failure conditions.

Next EMWG meeting in March/April 2017 –

- Budget – follow up on rolling over, planning for 2018
- Review proposed rule for EM implementation (to help resolve enforcement and data storage issues in particular)
- Timeline/preparation for input into 2019 contract, AGO timing
- Discussion of whether EMWG should design the 2018 EMDP or leave to NMFS
- Draft 2016 cost report
- Discuss cost factors, predictive model, cost simulation
 - include Craig in discussions about parameters (maybe better in July)
 - if we can do advance work to bring to meeting, great

Reflection on the Alaska EM program

As several of the Workgroup members were also participating in a panel on the Alaska EM program at the Second National EM Workshop later in the week, a short discussion was added to the agenda, to identify successes and ongoing challenges with the Alaska EM program. A short summary of these are captured below.

What are the successes?

- EM Workgroup
 - Collaboration, cooperation
 - Restored trust (especially after the Observer Program implementation experience)
 - Hard work by industry members
 - Having workgroup meant that agency committed to this as high priority, including Enforcement and General Counsel
 - NFWF funding for industry participation
- We are doing EM for catch estimation!
- Pot vessels volunteered for EM selection, even with a 3% human observer pool
- NMFS cooperates with the Council and industry more here than in any other region
- Using a familiar legal framework
- MSA fee authority

What are ongoing challenges?

- Looking ahead to balancing a single budget between EM and human observers (“appetite for monitoring larger than available funds”)
- How to lower EM costs
- Avoiding another cost “surprise” as with the restructured observer program
- Challenges of bringing new technology online
- No 100% coverage hammer, as in other regions
- Setting expectations and not changing the bar
- Getting results!
- Getting mentally adjusted to this as a new data collection paradigm