Several U.S. commercial fisheries are considering implementing electronic monitoring (EM) systems as an alternative to human observers for at-sea catch and compliance monitoring. One of the remaining questions that fishery managers, scientists, fishermen, and other partners are trying to address is how to set standards for an EM program that would ensure it achieves its goals and yet is flexible enough to allow for incorporating advances in technology. The National Marine Fisheries Service (NMFS) recently had an opportunity to try developing performance standards for an EM program for an experimental fishery in the Pacific Coast Groundfish Fishery in 2015. The Council, industry, and NMFS are using the experimental fishery to test out the protocols and standards for an EM program for multiple sectors in the groundfish fishery before fixing them permanently in regulation in 2016 and 2017. This talk discusses the approach that NMFS took to setting standards for this experimental fishery and how we can translate them into regulations in the coming years.

One of the issues hampering development of standards for an EM program is understanding what we mean when we say “setting standards.” According to Merriam-Webster.com, a standard is “a level of quality, achievement, etc. that is considered acceptable or desirable.” In the context of an EM program, we can think of setting standards as simply specifying a level of [data] quality and [participant] achievement that is considered acceptable [to meet monitoring goals]. In the case of the West Coast experimental fishery, the goal was to ensure accountability for catch of Individual Fishing Quota species, so the standards that NMFS had to develop would be the levels of data quality and behavior that the technology and participants had to meet in order to accomplish this goal.

There are different approaches to setting standards – they can be very specific or very general. There have only been examples of limited standards for EM in U.S. fisheries, mainly for straightforward purposes such as surveillance of scales and below deck areas. However, there are standards for other types of technologies and programs that offer examples of different approaches. NMFS sets very specific standards for vessel monitoring system (VMS) units in regulation and approves only specific units from specific companies, which have been determined meet these standards, for use in the fishery. This approach assures NMFS of the quality of the equipment used, but is slow to incorporate new technologies. The Environmental Protection Agency (EPA) uses an opposite approach to setting emissions standards for power plants. The EPA specifies a performance standard – a set amount of allowable emissions – and the plants may choose what technologies to use to meet that standard in the most cost effective manner.

For the EM program, NMFS wanted to take a performance standard approach, like the EPA, to allow advances in technology to be quickly incorporated, but with enough specificity to ensure adequate data quality. Rather than set only general performance standards, we took a tiered approach to approving equipment and participants for the program. In this approach, we defined general performance standards for the desired level of quality for participants and equipment in the program as well as the data coming out of it; this was the first tier. For the second tier, we issued individual permits with more detailed instructions, including reporting requirements, basic
standards for EM systems, and vessel responsibilities. The permit also delegated to and incorporated by reference an individual vessel monitoring plan, the third tier, which specified the unique equipment configuration and catch handling practices for each vessel. The plan was drafted by the vessel’s service provider and approved by NMFS. Each tier delegated specifying certain requirements to the tier below it, allowing some flexibility to tailor requirements to individual vessels or gear types, but NMFS ultimately approved the vessel plans to ensure that unique ideas still met the overarching performance standards.

For example, NMFS needed to ensure that the EM systems were functioning for the entire trip. In the VMS approach, NMFS could specify that EM systems must be powered by a specific type or brand of battery to ensure that they have adequate power. In the tiered approach, NMFS would simply require that the vessel must supply continuous power to the EM system throughout the fishing trip. NMFS could recommend certain types of power sources that would meet this requirement through guidance documents, but the vessels would propose the method they choose to use in their own individual monitoring plan. NMFS would review the vessel plan and determine whether the proposed method would supply continuous power throughout the trip. If not, NMFS could ask the vessel to propose an alternate method. If it does, NMFS approves the plan and the plan becomes the operating agreement for that vessel. This gives the vessel the flexibility to propose methods that work best for them, and gives NMFS the discretion to consider new technologies and ideas, while still ensuring that all standards are met.

The tiered approach has several benefits, but also has its challenges. Having overarching performance standards, rather than all details fixed, provided the flexibility for NMFS and participants to modify specific rules or equipment configurations over the course of the program. NMFS could entertain any changes as long as the modifications fell within the scope of the performance standards. The flexibility of this approach reduced barriers to entry for some fishermen, who felt more comfortable knowing that requirements could be modified if they became impractical. On the other hand, developing and reviewing the individual vessel plans required significant time and effort from NMFS and the industry. In addition, there were still challenges in getting vessel captains and crew familiar with the program requirements, because they had not been engaged in writing the plans or permits.

Overall, the tiered approach has been successful and NMFS would like to use it in writing the regulations for these fisheries. We are looking at other areas of fisheries management where a similar approach has been used to delegate inseason management to cooperatives through the use of cooperative agreements. Alaska and West Coast fisheries also use a performance standard approach for catch monitoring plans, in which processors describe how they intend to meet standards for monitoring the flow of fish through their plant. For an EM program, the regulations could specify umbrella performance standards for data quality, equipment functionality, and participant behavior, and direct participants to submit a vessel monitoring plan that describes how they propose to achieve those standards using EM. NMFS could also issue guidance for vessel plans with best practices that could be updated more quickly than regulations to incorporate new technologies and best practices.

Although it takes substantial effort, the tiered approach may be the most promising way to meet the needs of both industry and managers to: 1) allow NMFS to hold participants and providers accountable; 2) be flexible to adapt to advances in technologies, and 3) engage fishermen to ensure desired results are achieved.
Turning Fishery Information Needs into Performance Standards for an EM Program

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AFS Annual Meeting 2015
Portland, OR
West Coast Groundfish EM

100% observer coverage

- 2011: EM Regulatory Amendment
- 2014: EFP testing
- 2015: EM for whiting
- 2016: EM for others
- 2017:
What is a standard?

A “standard” is...

“...a level of quality, achievement, etc., that is considered acceptable or desirable.”

(Merriam-Webster.com)
Standards in an EM Program

“Standards” for an EM program are...

“...a level of data quality, participant achievement, etc., that is considered acceptable or desirable to meet monitoring goals.”
What are our goals?

The goal of at-sea monitoring in the groundfish fishery is fundamentally to ensure accountability for IFQ catch.
EFP Standards

- “Performance standards” for participants and equipment
- “Eligibility standards” for participants
- “Technical standards” for equipment
- “Data quality standards” for logbooks and EM data
EFP Standards

• Benefits
  – Flexibility
  – Industry buy-in
  – So far, it’s working

• Challenges
  – More complicated (not a bad thing)
  – Was not grass-roots enough
  – Haven’t tried technical standards yet
Regulatory Standards

Us
Regulatory Standards

- Regulations
- Guidance
- Vessel Monitoring Plan
Example: Ensuring adequate power

Regulations could specify exactly what kind of power sources must be used.

Type approval approach might specify a specific unit or battery type that must be used.
Example: Ensuring adequate power

- Provide suitable power supply
- Generator, back-up battery
- Battery charged by generator
Regulatory Standards

To be successful, EM standards need to...

• Allow NMFS to hold participants and providers accountable
• Be flexible and agile
• Be developed in a public process
• Engage captains and crew
Other Examples

• West Coast Catch Monitoring Plans
• Alaska Catch Monitoring Plans
• Cooperative agreements
• Greater Atlantic electronic logbooks
Results
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Observer (slide 2) - *NE Observer Program, NEFSC / NOAA*
Trawler (slide 2) – Simon, Victor. Chartered Fishing Vessel Excalibur underway while conducting research for West Coast Groundfish bottom trawl survey. 2001. photolib.noaa.gov
Camera (slide 2) - *NE Observer Program, NEFSC / NOAA*
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