



March 2, 2016

MEMORANDUM FOR: Dr. Kathryn D. Sullivan
Under Secretary of Commerce for Oceans and Atmosphere
and NOAA Administrator

FROM: Richard Bachman
Assistant Inspector General for Financial
and Intellectual Property Audits

SUBJECT: *NOAA Fisheries Needs to Improve Management and Oversight
of Electronic Monitoring Programs*
Final Report No. OIG-16-022-1

For our final report on the sufficiency of the National Marine Fisheries Service's (NOAA Fisheries') research and progress toward implementation of electronic monitoring (EM) programs, we focused our scope on NOAA Fisheries' operations and considered the adequacy of automated and manual systems and processes to collect information needed to make decisions when developing EM programs.

Background

In 1972, NOAA Fisheries began deploying human observers on fishing vessels in U.S. waters to collect data and monitor fishing activity. In 1999, the National Observer Program was established to coordinate regional and national observer activities. Over the years, the use of observers has grown into a nationwide program that, in 2012, cost more than \$74 million, monitored 47 fisheries, and employed 974 observers who collectively spent more than 83,000 days at sea.

The National Observer Program is composed of 11 regional observer programs that use a combination of trained biologists and at-sea monitors to collect catch data, take biological samples, record interactions with marine mammals and protected species, document fishing gear characteristics, conduct safety inspections, monitor fishing actions and efforts, and aid in supplemental research projects. The data collected through the observer programs aids fishery managers in conducting stock assessments, evaluating human impacts on protected species, reducing bycatch, measuring catch, studying gear types, initiating enforcement actions, and obtaining necessary information for many other decisions.

Figure I. Overview of U.S. Observer Program Funding^a (Not Adjusted for Inflation)



Source: NOAA

^a Federal funds do not include catch share funds or other sources of federal funding.

Since the establishment of the National Observer Program, the cost to collect fishery-dependent data has risen dramatically. The total cost of each observer program is shared between NOAA Fisheries and the fishing industry, though the portion paid by each varies widely. In 1999, the total cost of the National Observer Program was about \$20 million; in 2012, the total cost more than tripled to approximately \$74 million. During this same time, the number of fisheries observed increased from 19 to 47.

Disproportionate growth between cost and the number of fisheries observed has led some stakeholders to call for alternatives to the traditional observer program model. NOAA Fisheries states: “The search for options to reduce the cost of observer coverage has taken on new urgency, and alternatives such as EM (electronic monitoring) and cost-sharing with industry are key areas actively under development. . . . Finding the right balance of cost-effectiveness, cost-sharing with industry and using all necessary and available tools to meet monitoring and observing requirements will be a high priority for the future.”¹

Over the past 12 years, increasing reliance on fishery-dependent data, the rising cost of observers, interest in alternative monitoring methods, and emerging technologies have led to the study, and fragmented use, of EM in the United States. EM systems can vary considerably due to specific data needs, vessel constraints, crew activity, and the fishery monitored—but they typically consist of video cameras, sensors, a GPS receiver, and a control center/user interface that allow for data collection and monitoring of fishing activity. In the United States, there are five active EM programs—four in the Alaska groundfish fisheries that are funded by the fishing industry and one for the Atlantic Highly Migratory Species that is funded by NOAA Fisheries.

¹ National Oceanic and Atmospheric Administration National Marine Fisheries Service, March 2013. *National Observer Program FY 2012 Annual Report*. NOAA Technical Memorandum NMFS-F/SPO-127, Washington, DC: NOAA NMFS, 28.

In February 2013, NOAA Fisheries released its *Electronic Monitoring White Papers* to provide an overview of existing electronic reporting (ER) and EM technology and its applications for U.S. fisheries. This was followed by NOAA Fisheries' May 2013 release of its *Policy on Electronic Technologies and Fishery-Dependent Data Collection (EM Policy)*, which "encourage(s) the consideration of electronic technologies to complement and/or improve existing fishery-dependent data collection programs to achieve the most cost-effective and sustainable approach that ensures alignment of management goals, data needs, funding sources and regulations." This policy lays out the objectives for the use and implementation of electronic technologies, as well as Regional Office implementation responsibility; it also creates milestones to measure each region's progress towards policy implementation.

These two documents aided NOAA Fisheries in producing its August 2013 *Discussion Draft Electronic Monitoring and Electronic Reporting: Guidance & Best Practices for Federally-Managed Fisheries*, which intended to "help managers and stakeholders consider the questions of how EM/ER tools can help contribute to a more cost-effective and sustainable collection of fishery dependent data in our federally-managed fisheries." Together, these three documents describe the majority of NOAA Fisheries' national direction, expectations, and measures of effectiveness in its study and work toward implementation of EM.

Objectives

The objectives of this review were to evaluate NOAA Fisheries' study, oversight, progress, implementation, and incorporation of EM into its National Observer Program and determine how NOAA Fisheries is executing its EM policy. See appendix A for further details on the objectives, scope, and methodology of the review.

Findings and Recommendations

We found that the regional offices have made progress by finalizing their regional EM plans and conducting several EM studies. However NOAA Fisheries lacks a centralized, coordinated, and consistent approach to effectively and efficiently evaluating technology implementation in the National Observer Program (see finding I).

Although EM has proven benefits for fisheries monitoring, these benefits have not been realized—due, in part, to the differing perspectives NOAA Fisheries and its stakeholders have on the capabilities and expected outcomes of a future EM program. The next step is to implement EM in the regions; however, this process may be hindered due to financial constraints, the lack of oversight, and cost data (see finding II).

NOAA Fisheries will need to take action to ensure that it overcomes these challenges so that the EM process moves forward.

I. NOAA Fisheries Lacks an Organized National Approach in Evaluating EM Technology

In March 2013, NOAA Fisheries issued its National Observer Program FY 2012 Annual Report. NOAA Fisheries included in the report's goals and priorities for FY 2013 its intent to engage in strategic planning for EM and ER. More specifically, NOAA Fisheries' May 2013

EM Policy set a goal of scheduling where and how to adopt appropriate electronic technologies, if any, in all Fishery Management Plans (FMP) by the end of 2014.²

A national strategic plan was not developed; instead, each region created a separate implementation plan. With no national vision for planning and implementing EM, NOAA Fisheries lacks a centralized, coordinated, and consistent approach to effectively evaluating technology implementation in the National Observer Program.

For example, the EM information NOAA maintained on a national level was disorganized, incomplete, and inaccurate. We found conflicting and incorrect information regarding regional observer programs, EM projects, EM web pages, the National EM Workshop, organization charts, and EM cost studies. In addition, NOAA's count of observer programs was disorganized: we were directed to three different sources, each with a different count. Also, the list of EM projects was incomplete, as shown in NOAA summary papers.

Without a national EM approach—and a uniform process for gathering, analyzing, and storing EM information—the direction and priorities of EM have lacked clarity, which has contributed to the delay of EM implementation.

II. NOAA's Current EM Deployment Provides Limited Fleet Coverage

In FY 2012, funding for the National Observer Program was \$74 million, including industry funding and program infrastructure. Congress, the fishing industry, and other stakeholders have criticized NOAA Fisheries regarding the high price of monitoring and the inconvenience of placing observers on fishing vessels. Flat or declining budgets have increased the incentive to evaluate the cost effectiveness of fishery-dependent data collection.

The current program relies primarily on observers assigned to selected vessels that monitor the fishing activity on a real-time basis. However, since the existing program relies on human observers—which generally covers a limited percentage of an entire commercial fishing fleet, and results in space and safety concerns on fishing vessels—industry members have stated that the use of EM would mitigate a significant portion of these limitations with the traditional approach by leveraging the use of existing technologies. EM stakeholders listed cost, coverage, and convenience as the primary reasons to consider EM deployment.

NOAA officials stated that they have not placed EM in more widespread use due to several reasons. EM is still an emerging technology and all participants, including those from NOAA management and industry, are still working out details associated with further deployment, including catch handling practices. Also, there is a lack of concrete cost information that make planning and budgeting for EM difficult. We agree with NOAA's need to continue EM cost and benefit analysis; however, NOAA should consider working cooperatively with the

² Fishery Management Plans contain the conservation and management measures applicable to foreign fishing and fishing by vessels of the United States. See Magnuson-Stevens Fishery Conservation and Management Act, P.L. 94-265, as amended by P.L. 109-479, § 303, codified at 16 U.S.C. §1853.

fishing industry and the Fishery Management Councils on more options for cost-effective EM use.

Recommendations

We recommend that the Assistant Administrator for NOAA Fisheries

1. Develop and coordinate a central repository for EM documentation and information sharing to facilitate regional access to complete, organized, and accurate information.
2. Develop an EM cost estimation template, to include all necessary cost components, which is shared with regions and Fishery Management Councils and used in a determination on further deployment of EM technologies.

On February 17, 2016, we received NOAA's response to our draft report's findings and recommendations, which we include here as appendix B. NOAA has concurred with our recommendations. The final report will be posted on OIG's website pursuant to section 8M of the Inspector General Act of 1978 (5 U.S.C. app3, § 8M), as amended.

In accordance with Departmental Administrative Order 213-5, please submit to us—within 60 calendar days of the date of this memorandum—an action plan that responds to the recommendations of this report.

Please direct any inquiries regarding this report to me at (202) 482-2877, or Ken Stagner, Denver Regional Inspector General for Audits, at (303) 312-7650.

cc: VADM Michael S. Devany, Under Secretary for Operations, NOAA
Eileen Sobeck, NOAA Fisheries Assistant Administrator
Mack Cato, Director, Office of Audit and Information Management, NOAA
Lisa Lim, GAO/OIG Audit Liaison, NOAA

Appendix A. Objectives, Scope, and Methodology

Our objectives were to evaluate NOAA Fisheries' study, oversight, progress, implementation, and incorporation of EM into its National Observer Program and determine how NOAA Fisheries is executing its EM policy. For this review, we considered the adequacy of automated and manual systems and processes to collect information needed to make decisions when evaluating EM technologies. To accomplish our objectives, we

- assessed NOAA Fisheries' plans for EM implementation in relation to the current fisheries monitoring environment;
- reviewed relevant laws, regulations, reports, and policies for observation programs in general—including the Magnuson-Stevens Fishery Conservation and Management Act, NOAA Fisheries' observer provider agreements, EM white papers and discussion draft, NOAA Fisheries' EM policy, and other policies and summaries specific to EM;
- interviewed NOAA Fisheries' personnel, stakeholders, representatives from the commercial fishing industry, EM provider personnel, and academia knowledgeable in EM; and
- evaluated NOAA Fisheries' pilot studies, management processes, workshops, planning activities, and key benefits in relation to EM.

We began our evaluation of internal control by documenting controls in place for NOAA Fisheries' existing regional observation programs. However, our work focused on NOAA Fisheries' consideration of an unimplemented technology. Because NOAA had received no dedicated funding and had put in place no programs, there were no significant controls in place within the scope of our objectives.

During the course of this review, OIG staff did not rely on information or data from NOAA Fisheries in electronic format that had been entered into a computer system or that resulted from computer processing. Therefore, we did not test the reliability of NOAA Fisheries' computer-processed data or directly test NOAA Fisheries' IT system.

We conducted fieldwork from June through December 2014 at the OIG office in Denver, Colorado, as well as the NOAA Fisheries science centers and regional offices in Gloucester and Woods Hole, Massachusetts, and Seattle, Washington. We performed this review under the authority of the Inspector General Act of 1978, as amended, and Department Organization Order 10-13, April 26, 2013. The review was conducted in accordance with the Quality Standards for Inspection and Evaluation (January 2012) issued by the Council of the Inspectors General on Integrity and Efficiency.

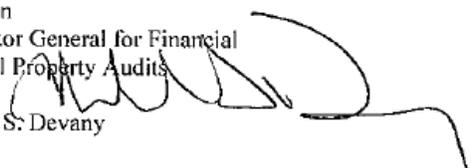
Appendix B. Agency Response



UNITED STATES DEPARTMENT OF COMMERCE
The Deputy Under Secretary for Operations
Washington, D.C. 20230

FEB 17 2016

MEMORANDUM FOR: Richard Bachman
Assistant Inspector General for Financial
and Intellectual Property Audits

FROM: VADM Michael S. Devany 

SUBJECT: *NOAA Fisheries Needs to Improve Management and
Oversight of Electronic Monitoring Programs*
Revised Discussion Draft Memorandum

Thank you for the opportunity to comment on the Office of the Inspector General's revised discussion draft memorandum on the sufficiency of the National Marine Fisheries Service's (NOAA Fisheries') research and progress toward implementation of electronic monitoring programs for the National Observer Program. Our specific comments on the findings and recommendations are attached.

If you have any questions, please contact Mack Cato, Director, Audit, Internal Control and Information Management Office at (301) 628-0949.

Attachment



Department of Commerce
National Oceanic and Atmospheric Administration
Comments to OIG Revised Discussion Draft Memorandum Entitled
*NOAA Fisheries Needs to Improve Management and
Oversight of Electronic Monitoring Programs*

General Comments

The Department of Commerce's National Oceanic and Atmospheric Administration (NOAA) appreciates the opportunity to review the Office of Inspector General's (OIG) revised discussion draft memorandum on electronic monitoring (EM) programs. Please see our comments below, specifically prepared by NOAA's National Marine Fisheries Service (NMFS or NOAA Fisheries).

Finding 1. NOAA Fisheries Lacks an Organized National Approach in Evaluating EM Technology

NOAA Fisheries believes we have a well-organized and functioning approach to evaluate and implement EM and other electronic technologies. Similar to our regionally based organizational structure, our EM program is strategically designed to be regionally based with strong national oversight.

Our regional approach to EM implementation is based on the existing structure and partnerships between our regional offices and science centers, and their respective Regional Fishery Management Councils (Councils). This structure is dictated by our primary legislative mandate, the Magnuson-Stevens Fishery Conservation and Management Act (MSA). Our Councils and fishery stakeholder partners expect regional service, and we designed our EM implementation strategy to be led out of the regions, with appropriate national oversight and guidance. This strategy and these partnerships facilitate a cooperative approach with our fishing industry partners, which is important for successful EM implementation in any fishery.

In 2013, NOAA Fisheries developed a series of national-level guidance documents to inform thoughtful solutions to the variety of cross-cutting issues and fishery-specific challenges related to EM. This included a *Policy on Electronic Technologies and Fishery-Dependent Data Collection (Electronic Technologies Policy)*, which lays out the national objectives for the use and implementation of electronic technologies as well as regional office implementation responsibility. It also creates milestones to measure each region's progress toward policy implementation. NOAA Fisheries also produced five white papers on this topic as well as a *Discussion Draft on Electronic Monitoring and Electronic Reporting: Guidance and Best Practices for Federally Managed Fisheries*. This significant set of documents presents NOAA Fisheries' national direction, expectations, and measures of effectiveness for EM. We believe they represent a centralized, coordinated, and consistent approach for effectively and efficiently evaluating technology implementation at the national level.

As called for in the *Electronic Technologies Policy*, in 2015, these national-level guidance documents were followed by Regional Electronic Technologies Implementation Plans. Developed at the regional level (and in cooperation with Councils, Interstate Marine Fisheries

Commissions, members of the fishing industry, and other stakeholders), these documents identify, evaluate, and map how and where we plan to move forward with EM around the country. While the agency does not have a formal strategic plan, the Regional Implementation Plans and national-level guidance documents, together with effective oversight and coordination by headquarters offices and agency leadership, form a strategic framework for developing, evaluating and implementing EM nationally.

Finding 2. NOAA's Current EM Deployment Provides Limited Fleet Coverage

NOAA Fisheries has consistently demonstrated its commitment to advance EM in appropriate fisheries. We have provided approximately \$20 million since 2006 to develop and implement EM. We have supported more than 30 pilot projects that experiment with new technologies, implemented EM in five fisheries, and planned for implementation in six more, which could bring total EM programs to as many as 11 fisheries by 2018.

Because the main message in finding 2 is that NOAA Fisheries should do more to implement EM, the agency feels it is important to highlight the role of the Councils in fisheries management decisions, including implementation of EM. The MSA created eight Regional Fishery Management Councils responsible for conservation and management of fisheries within specified geographic areas. 16 U.S.C. § 1852(a). The Councils are responsible for developing fishery management plans and amendments, as well as for submitting to NOAA Fisheries the proposed regulations that it deems necessary or appropriate to implement a plan or amendment. *Id.* § 1852(h), 1853(c). NOAA Fisheries may only approve, disapprove, or partially approve a proposed measure recommended by the Council, and the sole basis for disapproval of any such recommendation is that it is not consistent with applicable law. *Id.* § 1854(a)-(b). It is through the Council process, which includes significant involvement and input from NOAA Fisheries, when recommendations for EM implementation arise. NOAA Fisheries has no authority to require Councils to adopt EM and the agency has never disapproved an EM measure that has been recommended by a Council. NOAA Fisheries' role is a collaborative one: to assist the Councils and stakeholders in developing thoughtful solutions to the cross-cutting issues and numerous fishery-specific challenges inherent in EM.

Recommended Changes for Factual/Technical Information

Page 2, third paragraph, lines 6-7:

There were four EM programs in Alaska in 2014; a fifth EM program was implemented in June 2015. NOAA Fisheries recommends the following revision: "In the United States, there are ~~3~~⁵ active EM programs, ~~all 4~~ in the Alaska groundfish fisheries and that are conducted funded for by the fishing industry and 1 for Atlantic Highly Migratory Species that is funded by NOAA Fisheries."

The active programs are the following:

- 1) Alaska Amendment 80 groundfish,
 - 2) Alaska Central Gulf of Alaska Rockfish Program,
 - 3) Alaska Bering Sea/Aleutian Island Freezer Longline Flowscale Monitoring,
 - 4) Alaska American Fisheries Act Catcher/Processor Chinook Salmon Bycatch Monitoring,
- and

5) Atlantic Highly Migratory Species Bluefin Tuna Individual Bycatch Monitoring Program

Page 4, sixth paragraph, lines 5-7:

NOAA Fisheries has no authority to require Councils to adopt EM, and the agency has never disapproved an EM measure that has been recommended by a Council. Therefore, we believe the current sentence in the draft memorandum sets up unrealistic expectations for the agency to unilaterally implement EM.

NOAA Fisheries recommends the following revision: “We agree with NOAA’s need to continue EM cost and benefit analysis; however, NOAA should consider working cooperatively with the fishing industry and Councils on more options for cost-effective EM use.”

NOAA Response to OIG Recommendations

The OIG proposed the following two recommendations to the Assistant Administrator for NOAA Fisheries:

Recommendation 1: “Develop and coordinate a central repository for EM documentation and information sharing to facilitate regional access to complete, organized, and accurate information.”

NOAA Response: We concur. The agency’s website content on electronic technologies is being updated across programs to allow better information access and coordination.

Recommendation 2: “Develop an EM cost estimation template, to include all necessary cost components, which is shared with regions and Fishery Management Councils (FMCs) and used in a determination on further deployment of EM technologies.”

NOAA Response: We concur. The Electronic Technologies Working Group, composed of representatives from all the regional and headquarters offices and science centers, developed a cost estimation template for accounting of regional EM costs in March 2015 and will use the information gathered to inform discussions on costs in 2016.