

Briefing

NMFS proposal to revise regulations concerning the use and approval of scales for weighing catch at-sea.

OVERVIEW

The use of at-sea scales can provide very precise and potentially accurate estimates of catch. These estimates are especially useful in catch share fisheries where catch accounting methods must be verifiable. At-sea scales have proven to be reliable and are now used to account for the vast majority of catch by catcher-processors fishing off Alaska. However, recent concerns about fraud and tampering with the flow scale call into question the overall accuracy of the approach and indicates that catch estimates based on scale weights could systematically underestimate harvest in those fisheries dependent on scale weights for catch accounting unless these concerns are addressed. Further, since NMFS first implemented weighing requirements for some catcher processors in 1998, the program has grown dramatically; scale technologies have evolved; and NMFS has developed greater expertise with at-sea scales. We believe that a suite of modifications to the at-sea scales program will reduce the potential for fraud, improve catch accounting accuracy, and bring regulations up to date with recent changes in technology.

COUNCIL ACTION

NMFS plans to consult with the Council during the development of the analysis for this action. Council members and the public can identify questions or other areas of concern with the action. It is not necessary for the Council to take action, unless the Council wishes to review the analysis and draft regulations more thoroughly at a future Council meeting. Unless otherwise recommended by the Council, NMFS intends to promulgate these regulations under section 305(d) of the Magnuson-Stevens Act, which authorizes the Secretary of Commerce to develop regulations necessary to implement fishery management plans (FMPs). Specifically, this action is necessary to implement the Management Objectives (Section 2.2.1) of the FMP for Groundfish of the Bering Sea and Aleutian Islands Subarea, to “Increase the quality of monitoring and enforcement data through improved technology” (objective 42) and “Promote enhanced enforceability” (Objective 45). This action is also consistent with Management Objectives in Section 2.2.1.9 of the FMP for groundfish of the Gulf of Alaska to “Increase the quality of monitoring and enforcement data through improved technology” (Objective 41) and “Promote enhanced enforceability” (Objective 44).

PROGRAM HISTORY

The at-sea scales program was developed in response to a need for catch accounting methodologies that were more precise and verifiable at the level of the individual haul and less dependent on estimates of total catch generated by at-sea observers. This was necessary as a result of the implementation of large-scale quota programs that required NMFS to provide verifiable and defensible estimates of quota harvest. The requirements for weighing catch at-sea were first implemented in 1998 (February 4, 1998, 63 FR 5836) and initially affected only trawl catcher/processers participating in the Multispecies Western Alaska Community Development Quota Program (CDQ Program). The at-sea

scales program was expanded significantly in 2000 as a result of statutory requirements of the American Fisheries Act that required all at-sea catch by specified vessels in the BSAI pollock fishery to be weighed (January 28, 2000, 65 FR 4520). Further expansion occurred in 2007 to include trawl catcher/processors participating in the GOA rockfish pilot program (November 20, 2006, 71 FR 67210) and non-American Fisheries Act catcher/processors participating in BSAI trawl fisheries -- commonly known as the Amendment 80 sector (September 14, 2007, 72 FR 52668). Finally, the at-sea scales program was expanded in 2013 to include freezer longliners that participate in BSAI Pacific cod fisheries (September 30, 2012, 79 FR 59053). A summary of the growth of the at-sea scales program is shown in Table 1.

Table 1. Growth of the At-Sea Scales Program between inception and today

Year	# of vessels weighing catch ¹	Total weighed (mt) ³	% BSAI TAC
1999	20	121,000	6%
2004	23	836,000	42%
2008	42	944,000	47%
2012	39	1,100,000	55%
2013 ²	58	N/A	N/A

1. BSAI groundfish only, does not include crab.
2. Estimated based on number of vessels with NMFS approved scales on 3/1/2013. Does not include crab catcher/processors.
3. Does not include catch weighed in the GOA, crab catch, or catch weighed in the Pacific whiting fishery off the West coast.

When the at-sea scales program was developed, NMFS understood that a rigorous scale approval and monitoring program would be necessary, and the program that was developed incorporated three levels of oversight. First, each model of scale approved for use at-sea must have been tested by an independent laboratory and found to meet specified standards of accuracy and reliability. Second, each scale must be inspected annually by NMFS inspectors in order to ensure that it remains accurate and has been adequately maintained and properly installed. Finally, each scale must be tested daily when in use. The first two components of the scale monitoring program are similar to the standards in place for the approval of land scales used in trade applications throughout the United States. The third component, daily testing, is not required for land scales but is necessary because of the demanding environment where these scales are used, and because motion-compensated scales are more likely to lose accuracy than are land scales.

NMFS researched the best available technology before developing regulatory standards. However, since the first at-sea scales rules were implemented, there have been several significant changes. First, catcher processors and motherships are able to communicate more quickly and easily with NMFS. When scales were first required, the electronic logbook (ELB) was in early development stages and its use was not required. Now, all vessels that are required to weigh catch at-sea are also required to report catch daily using an ELB. Second, scale technology and onboard computer technology have advanced significantly. When the at-sea scales regulations were implemented, the internal capacity of the scales to store data was very limited. NMFS determined that the most important information to retain was the weight of the prior ten hauls and an audit trail that described recent meteorologically significant changes to the scale. However, the new generation of scales is significantly easier to program and offer a great deal more on board storage capacity.

When the program began, NMFS-approved flow scales (scales used to weigh total catch) manufactured by Marel hf and Skanvaegt; and platform scales (used by observers to weigh samples or individual fish) manufactured by Marel, Skanvaegt and Pols. While technologically advanced at the time of approval, these scales were comparatively primitive by today's standards. They used LED lighting for the displays; were unable to communicate or integrate with other on-board equipment; had minimal on-board data storage capabilities; and could not be quickly and easily reprogrammed as vessel or NMFS needs changed. The first generation scale electronics are reaching the end of their functional lives and are being replaced by considerably more sophisticated electronics. At this time, only 8 out of 62 vessels with NMFS-approved flow scales continue to use first generation scales and, based on communications with scale manufacturers, we anticipate that most or all of these first-generation electronics will be replaced by the time this proposed action would be implemented.

POTENTIAL FOR SCALE FRAUD

At-sea scales can potentially provide highly accurate estimates of catch. However, in the event that these scales are misused, those estimates may be biased and could potentially result in significant underestimation of catch. As with any other piece of equipment, it is possible to deliberately tamper with flow scales in a way that results in consistent underestimation of catch in spite of the requirement for daily scale testing.

NMFS Office of Law Enforcement (OLE) has investigated several cases of potential scale tampering and fraud that may have resulted in large underestimations of catch in the BSAI pollock fishery. Recent investigations have resulted in the issuance of Notices of Violation (NOVAs) to three vessels owned by the American Seafoods Company; the American Dynasty, the Northern Eagle, and the Ocean Rover. Based on the allegations contained in these NOVAs, catch was frequently under-reported by over 10% compared to independent tests conducted by NMFS-certified observers using NMFS-tested and approved motion compensated platform scales.

Unfortunately, scale fraud, such as that alleged in the NOVAs recently announced by OLE can be difficult to detect and older scale electronics lacked the ability to be

programmed in more sophisticated ways that could either prevent, or facilitate detection, of these activities. Thus it is difficult to determine the precise scope of the scale fraud problem. However, as time goes on, and the techniques for defrauding catch-weighting systems become better known, it is reasonable to expect that the frequency of this activity may increase.

PROPOSED REGULATORY CHANGES

NMFS believes that the potential for scale fraud can be reduced significantly through a combination of enhanced monitoring of crew activities taking place in the vicinity of the scale coupled with software changes that will allow NMFS staff to better track when scale faults occur, as well as to determine the time and magnitude of changes that could affect the accuracy of the scale. NMFS also believes that proposed regulations may be necessary to define accuracy standards and testing requirements for scales. The exact suite of potential proposed changes and an appropriate range of alternatives to be examined have not been developed. However, at this time NMFS is considering the following changes.

Require electronic reporting of daily tests. NMFS is only aware of the results of daily scale testing at the time they are specifically requested. In general they are only requested once per year at the time of the annual scale inspection. Because all vessels that are required to weigh catch at-sea are also required to use electronic logbooks for daily catch reporting; requiring daily electronic reporting of scale test results would be reasonably simple and cost-free for vessels. Daily reporting would allow NMFS staff to track the accuracy of scales in near real time and identify potential issues during the season.

Change the maximum allowable error for daily flow scale tests. Current regulations allow the flow scale weight of test material to be as much as 3% different from the platform scale weight of the same material. Based on a preliminary analysis of daily test data from 2010, it appears that scales were considerably more likely to be underestimating the weight of catch than overestimating it. NMFS will analyze options for encouraging vessels to maintain scales such that the errors are closer to zero. This could involve reducing the allowable error from $\pm 3\%$, or developing a more complex algorithm for assessing whether a scale can continue to be used.

Require video monitoring of areas where catch is weighed. Beginning in 2010, AFA catcher/processors and motherships were required to provide video-monitoring of all areas where salmon are sorted (August 30, 2010, 75 FR 53026). In most cases the sorting area is very close to the flow scale and the operation of the scale is often visible. Expanding the use of video monitoring capacity already on board vessels would help to ensure that all required catch passes across the scale; that the scale is operating at all times when catch is passing over it; and that many types of fraudulent activity are made difficult or impossible. Upgrading the systems to include clear views of the scale itself would not be difficult. Some additional video monitoring may be required on vessels that do not currently deploy video technology near flow scales (e.g., Amendment 80 vessels).

Enhance auditing of scale adjustments. Current regulations require that adjustments to the scale be recorded in the form of an audit trail that can only be cleared by NMFS or other authorized personnel. Scales are not required to record when they are in a fault state, or not running, nor are they required to record the time and magnitude of routine marine calibrations. NMFS believes that an enhanced audit trail will assist in preventing scale fraud as well as increase the amount of useful diagnostic information available to scale technicians and NMFS staff.

The regulatory changes to the audit trail requirements would be made in consultation with scale manufacturers, including manufacturers that have expressed past interest in the NMFS scale approval process. Depending on feasibility, NMFS hopes to require logs of the start/stop time of the scale; all marine calibrations and their magnitude; and a record of the type and duration of all fault states.

Establish standards for at-sea calibrations. Depending on conditions, at-sea scales must be frequently recalibrated, but this recalibration provides an opportunity for vessel crew to make the scale weigh improperly. In these cases, the scale is properly calibrated so that it can pass daily testing. NMFS will examine requiring that scales only be calibrated when an observer is present or at specified times.

Miscellaneous changes to be analyzed.

Require sand bags be used for daily tests. Scales can currently be tested using sand bags or fish. NMFS has found that testing with fish is less reliable and easier to manipulate. NMFS will consider eliminating the option of using fish to test scales. At this time, all freezer longliners and approximately half of trawl catcher processors use sand bags instead of fish.

More clearly define what a scale is and what is a spare part. Vessels often need to make repairs to scales when at-sea. One of the most common repairs is to replace the entire scale head (which contains the scale electronics, stored data, and display) with a spare head. NMFS interprets current regulations to require that the spare head be tested and approved by NMFS; however current regulations are not explicit that this is the case.

Restrict the times and/or locations where scale inspections can take place. NMFS staff will currently inspect scales in the Puget sound area, Dutch Harbor or Kodiak. Industry may request inspections with at least ten working days notice. NMFS staff are not required to, and may not be able to, inspect all scales on-demand or within a specific time frame due to budgetary constraints or weather conditions. As the program has grown, the number of inspection trips required has grown as well. NMFS staff have worked with fleets to consolidate inspections, but additional consolidation could occur by providing standardized times and locations for testing. NMFS and industry participants subject to cost recovery fees could realize cost savings and greater certainty in their operations if scale inspections take place only during specified periods unless otherwise approved by NMFS. NMFS would work with potentially affected industry participants in the development of any alternative approaches.