

# Preliminary Initial Review Draft

FOR COUNCIL REVIEW

## Extended VMS Coverage in the Alaska Region

Results of analysis since October 2006

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Lead Agencies: Alaska Regional Office  
National Marine Fisheries Service  
Juneau, Alaska

North Pacific Fishery Management Council  
Anchorage, Alaska

Responsible Official: Robert D. Mecum  
Acting Regional Administrator  
Alaska Regional Office  
National Marine Fisheries Service

For information contact: Ben Muse  
National Marine Fisheries Service  
Juneau, Alaska  
(907) 586-7228

Abstract: In June 2005, the North Pacific Fishery Management Council requested an analysis of proposals to extend VMS requirements in Federal fisheries off of Alaska. In October 2006 the Council received a presentation on this analysis. At that time, the Council requested an evaluation of additional options. This paper provides a progress report on the additional analysis.

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## Executive summary

In June 2005, the North Pacific Fishery Management Council (Council) requested an analysis of an extension of existing VMS requirements to additional vessels. The Council received an initial review draft of an analysis of its alternatives and options at its meeting in October 2006.

At that time the Council requested analysis of four additional options in a revised initial review draft. The Council requested that the analysis be provided at its February 2007 meeting. If the Council had approved the release of the draft document for public review and comment in February, it would have been able to take final action at a subsequent Council meeting.

It has not been possible to complete the evaluation requested by the Council in the time available. This document, a preliminary initial review draft, has been prepared to summarize the results of the analysis that have been completed at this time (mid-January 2007), in order to brief the Council, its Enforcement Committee, Scientific and Statistical Committee, and its Advisory Panel.

Analysis of the alternatives and options is ongoing, and a complete revised initial review draft should be available for the Council's April 2007 meeting.

This document does not provide a complete analysis of this action. It summarizes key results of analytical work since October. It does not summarize all the changes that will be made to the final document, but provides information on selected topics on which substantial progress has been made.

The Council has adopted the following problem statement, and statement of purpose and need:

The National Marine Fisheries Service (NMFS) required implementation of Vessel Monitoring Systems (VMS) to ensure compliance with Steller sea lion area closures, fisheries rationalization programs, and Essential Fish Habitat (EFH) designations. Current VMS regulations have been implemented in a piecemeal manner to address these specific requirements.

Rationalization programs have spread fishing activity spatially and temporally, allocated resources into smaller and smaller quantities, often allow for transfers, and tend to be complex. Furthermore, the conservation and management of listed species; habitat areas of concern; and fishery resources, including prohibited species, has required a proliferation of time and area specific restrictions and closures.

In June 2005, the Council directed a broader more comprehensive analysis be conducted of the potential application of VMS for federally permitted vessels and non-permitted vessels in the EEZ with authorized gear on board. Compliance with regulations is necessary to achieve conservation, economic, and social objectives of these management programs and VMS is a tool which could greatly benefit those charged with monitoring and enforcing these programs, as well as provide the data upon which these programs may be assessed. VMS has also been found to enhance Coast Guard search and rescue efforts, thereby contributing to fishing safety. However, broad application of VMS coverage to all other federal fishery participants may be problematic owing to the diverse nature of Alaska's commercial fishing fleet.

To determine the appropriate monitoring technology requirements onboard vessels, the Council will balance, to the extent practicable, the benefits of VMS coverage versus the

cost of system installation, operation, and maintenance. While determining VMS requirements, the Council will also consider the availability of other enforcement tools, the cost and reliability of the technology, and characteristics of participating vessels. The need is:

The broader application of VMS to meet the increasing management, enforcement, monitoring, scientific, and safety issues caused by the development of additional spatial/temporal fishing boundaries, rationalization programs, and other evolving management and enforcement requirements.

The purposes are:

1. To ensure/maximize the viability of the management, monitoring, and enforcement of additional spatial/temporal fishing boundaries and rationalization programs in the most cost-effective and efficient manner possible.
2. To enhance the scientific understanding of the impact of fishing activity on the marine environment in the most cost-effective and efficient manner possible.
3. To permit more cost-effective and productive use of observers.
4. To increase the safety of fishing operations.

The Council has requested an analysis of the following alternatives and options:

1. No action alternative.
2. Require a transmitting VMS on any federally permitted vessel, and on any vessel with IFQ and/or CDQ halibut or sablefish on board, when it is operating in the EEZ or adjacent state waters. A federally permitted vessel would include vessels named on a Federal fisheries permit or on a Federal crab vessel permit (50 CFR 679.4(b) and 680.4(k)). A transmitting VMS would also be required on any other commercial fishing vessel that operates in the EEZ with authorized fishing gear (except hand troll gear, power troll gear, and troll gear, but not excepting dingle bar gear) as defined in 50 CFR 679.2).<sup>1</sup>
3. Vessels are subject to the requirements of Alternative 2, except that they are not required to have a transmitting VMS when operating in a State-managed fishery in State waters, unless a transmitting VMS is required under another federal program. For the purpose of this alternative, a State-managed fishery means a fishery in which the landings are not counted against a Federal total allowable catch (TAC).
4. Vessels are subject to the requirements of Alternative 3, except for vessels which are subject to the VMS requirement because they have IFQ and/or CDQ halibut and/or sablefish on board, and that fish only in State waters.

The following options may apply to the alternatives:

- Smaller operation exemptions:

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<sup>1</sup>The text of Alternative 2 has been modified from the Council language for clarity. The original text, as adopted by the Council in April 2006, is “Require a transmitting VMS on any vessel with any Federal fishing permit, including vessels with IFQ and/or CDQ halibut and/or sablefish on board, when it is operating. A transmitting VMS would also be required on any other commercial fishing vessel that operates in the EEZ with authorized fishing gear (other than hand troll gear, power troll gear, and troll gear, but including dingle bar gear) as defined in 50 CFR 679.2.”

- Vessels less than a certain length (LOA) would be exempted from VMS requirements. Options include (1) less than 25 feet (2) less than 30 feet, and (3) less than 32 feet LOA.
- Allows for phased implementation where vessels over 32 feet LOA would be required to have VMS in 2007 and vessels equal to or less than 32 feet LOA by 2008.
- Vessels with minimal annual landings of halibut IFQ below the thresholds of 1,000, 5,000, and 10,000 pounds.
- Vessels with minimal annual landings of sablefish IFQ below the thresholds of 1,000, 5,000, and 10,000 pounds.
- Vessels deploying dinglebar gear are exempt.
- Troll fishermen operating in federal waters who keep legal IFQ halibut as bycatch in their fishery are exempt.
- Transit exemptions
  - Vessels with an FFP, operating in the EEZ, without authorized gear on board (other than hand troll gear, power troll gear, and troll gear, but including dingle bar gear) are exempt.
  - Fishing vessels not required to have an FFP would not be required to have a transmitting VMS on board if the vessel operator (a) transits the EEZ with their fishing gear stowed; and, (b) notifies the USCG and NOAA OLE of their intent to simply transit the EEZ (a new check-in/checkout requirement).

This preliminary initial Council review draft provides a preliminary and partial analysis of the three options the Council adopted in October 2006. Section 4.1 of this report contains key elements of the executive summary from the October 2006 initial review draft.

Section 4.2 examines the impact of the options that exempt vessels with IFQ and CDQ halibut under 1,000, 5,000, and 10,000 pounds, and the options that exempt vessels with IFQ and CDQ sablefish under 1,000, 5,000, and 10,000 pounds. In addition to the thresholds requested by the Council, additional thresholds have been provided for illustrative purposes. Data is provided for all vessels with halibut and sablefish, even if they are required to carry VMS under the status quo. In addition, data is provided only for vessels that would have to acquire VMS under Alternative 2. The latter data is provided for all vessels together, and separately for vessels that only fish in the BSAI, vessels that only fish in the GOA, and vessels that fish in both areas.

For halibut vessels that would have to acquire VMS under Alternative 2, the ratio of mean acquisition costs to mean revenues from all sources ranges from about 16 percent for vessels with 0 to 1,000 pounds of halibut, down to about a half percent for vessels with more than 25,000 pounds of halibut. Mean annual costs as percent of mean revenues from all sources ranged from about 2 percent to about a tenth of a percent, over the same range of categories.

The tables also provide these ratios of mean costs to mean revenues from IFQ and CDQ halibut only. The ratios for acquisition costs for halibut vessels that acquire VMS under the status quo ranged from 253 percent to 7/10ths of a percent for the same range of halibut landings categories. The ratios for mean annual costs to IFQ and CDQ revenues ranged from 32 percent down to about 1/10<sup>th</sup> of a percent.

Similar estimates are provided for sablefish.

In addition to providing information on the ratio of mean costs to mean revenues, the tables also provide an alternative view of the data, by providing estimates of the mean ratio of cost to revenue for the individual operations. These percents are higher than the ratios of mean costs to mean revenues, because the percents for individual operations can often be quite high (for example, if acquisition cost is \$2,174 and revenues are \$74, costs are 2,938 percent of revenues). These high percentages can dominate the

percents associated with costs for higher grossing operations (the same \$2,174 cost is 1.5 percent of \$145,000), and lead to large mean percents.

Section 4.3 provides information about a Council proposal to exempt vessels with FFPs fishing with dinglebar gear in the EEZ from the VMS requirement. Dinglebar gear is used in the EEZ in a State managed fishery to harvest lingcod. These vessels are currently required to carry VMS under the status quo. Nine vessels with FFPs were estimated to use this fishing gear under the status quo. Mean gross revenues for these vessels from all sources were \$118,713. Mean gross revenues from dinglebar gear were \$12,132. The mean cost for purchasing and installing VMS was estimated to be \$2,174, and the mean annual operating costs for these vessels were estimated to be \$188.

Section 4.4 provides information about a Council proposal to exempt trollers with IFQ halibut on board from the VMS requirement. Trollers were exempted from the VMS requirement in the alternatives, if they had no other reason to carry a VMS unit. The other reasons in this case were that they might carry a FFP or FCVP, or if they might have IFQ halibut or sablefish on board. Normally a troller is required to discard incidental halibut catches. However, if a troller carries an IFQ permit holder, or the permit holder's designated hired skipper, it is required to treat any incidental halibut catch as IFQ halibut and retain it. This option is meant to provide an exemption for trollers with IFQ halibut on board. Seven salmon trollers appear to have retained incidental halibut catches. Mean gross revenues for these trollers were \$34,900 from all sources (almost entirely salmon and halibut revenues). Mean gross revenues from troll caught halibut were \$745. Mean acquisition costs were estimated to be \$2,174, and mean annual operating costs were estimated to be \$246.

Section 4.5 provides an analysis of the fiscal costs of implementing additional VMS coverage. Under Alternative 2, the most comprehensive alternative, the additional costs for VMS technical support may come to about \$300,000 a year. However, it is also reasonable to expect the extension of VMS to provide economies in NMFS OLE and USCG enforcement efforts, flowing from more effective targeting of enforcement agent time, more effective use of Coast Guard vessels and aircraft in at-sea monitoring and boardings, and from other sources.

## 1.0 Introduction

In June 2005, the North Pacific Fishery Management Council (Council) requested an analysis of an extension of existing VMS requirements to additional vessels. The Council received an initial review draft of an analysis of its alternatives and options at its meeting in October 2006.

At that time the Council requested analysis of four additional options in a revised initial review draft. The Council requested that the analysis be provided at its February 2007 meeting. If the Council approves the release of the draft document for public review and comment in February, it would be able to take final action at a subsequent Council meeting.

It has not been possible to complete the evaluation requested by the Council in the time available. This document, a preliminary initial review draft, has been prepared to summarize the results of the analysis that have been completed at this time (mid-January 2007), in order to brief the Council, its Enforcement Committee, its Scientific and Statistical Committee, and its Advisory Panel.

Analysis of the alternatives and options is ongoing, and a complete revised initial review draft should be available for the Council's April 2007 meeting.

This document does not provide a complete analysis of this action. It summarizes key results of analytical work since October. It does not summarize all the changes that will be made to the final document, but provides information on selected topics on which substantial progress has been made.

The most important additions include:

- An update of the history of this action, and the addition of the problem statement adopted by the Council in October, 2006. (Chapter 2)
- An update of the description of the alternatives that adds descriptions of the new options adopted by the Council in October 2006, and provides a more in-depth discussion of the alternatives and options the Council had adopted before that time. (Chapter 3)
- Analysis of an option to exempt vessels with halibut and/or sablefish IFQ and/or CDQ on-board if the amounts fell below certain threshold levels. (Section 4.2)
- Analysis of an option to exempt vessels using dinglebar gear from status quo VMS requirements (Section 4.3)
- Analysis of an option to exempt salmon trollers with halibut on-board. (Section 4.4)
- An analysis of the fiscal costs of expanding the VMS program. (Section 4.5)

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## 2.0 Purpose and need

### 2.1 What is this action?

This action would increase the number of commercial fishing vessels operating in the EEZ off of Alaska, and in state waters adjacent to the EEZ, that are subject to requirements to operate a vessel monitoring system (VMS).<sup>2</sup>

A VMS combines a global positioning system (GPS) unit and a radio, and sends periodic signals to overhead satellites so the location of the vessel carrying it can be tracked. VMS systems are described in more detail in Chapter 3 of this RIR/IRFA.

The term “VMS” may mean different things. In some parts of the United States, VMS requirements include more elaborate requirements for two-way communication than are required in the Alaska Region. VMS also may refer to a VMS unit transmitting information from on-board vessel sensors in addition to a GPS. For example, sensors might collect information from vessel hydraulics, indicating whether or not the vessel was operating fishing gear. These types of information might be useful for many purposes.

In this RIR/IRFA, the alternatives are interpreted as referring to the carrying of a VMS unit with the features currently approved for use in the Alaska Region by the NOAA Office of Law Enforcement (NOAA OLE), and capable of reporting the vessel’s location at periodic intervals.

### 2.2 What is this document?

As noted in Chapter 1, NMFS is preparing a preliminary revised initial review draft on this action to brief the Council on the progress of this analysis.

The analysis in this document, and the results of additional analysis will be summarized in a revised initial review draft of Regulatory Impact Review/Initial Regulatory Flexibility Analysis (RIR/IRFA). An RIR/IRFA provides assessments of the benefits and costs of the alternative ways of taking an action (the RIR), and the impacts of the alternatives on small entities (the IRFA).

The RIR/IRFA will meet the statutory requirements of Presidential Executive Order 12866, and the Regulatory Flexibility Act (RFA). An RIR/IRFA is a standard document produced by the Council and the Alaska Region to provide the analytical background for decision-making.

Because this action would not have significant impacts on the human environment, NMFS is preparing a categorical exclusion (CE) to satisfy the requirements of the National Environmental Policy Act.

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<sup>2</sup> While the thrust of the alternatives and options is to increase coverage, one option would reduce coverage somewhat below status quo levels in the GOA.

## 2.3 What is the background to this action?

Since 2000, the North Pacific Fishery Management Council (Council) has been extending requirements for VMS coverage to new categories of commercial fishing vessels, as necessary to help enforce new regulations. VMS coverage of commercial fishing vessels in the EEZ remains incomplete. The proposed action would require comprehensive coverage for commercial fishing vessels permitted to participate in Federal fisheries off of Alaska.

Since the 1980s, National Oceanic and Atmospheric Administration (NOAA) Fisheries Office of Law Enforcement (OLE) special agents have been using VMS to monitor fishing vessels, starting with the high seas driftnet fleets in the North Pacific Ocean. Over 1,000 driftnet vessels from three foreign countries were monitored continuously and successfully until the termination of legal large-scale high seas driftnet fishing. Based upon those years of experience, OLE continued to expand the technological parameters of VMS for use in monitoring domestic fishing fleets.

Since 2000, the Secretary of Commerce has introduced VMS requirements or options in connection with six management actions in the Alaska Region: (1) measures in the Atka mackerel fishery meant to provide protection to Steller sea lions (SSL); (2) the extension of Steller sea lion protection measures in 2003; (3) Area 4 halibut exemption from check-in requirements; (4) the crab rationalization program, effective in 2005; (5) protection measures for essential fish habitat (EFH) and habitat areas of particular concern (HAPC) effective July 28, 2006 (71 *FR* 36694; June 28, 2006); the five year Central GOA rockfish pilot project effective December 20, 2006 (the five year time period is mandated in the 2006 reauthorization of the Magnuson-Stevens Act.). Together, these regulations have created VMS requirements for large parts of the groundfish and crab fleets.

In the near future, the Secretary may allow the use of VMS as an alternative to new clearance requirements for sablefish vessels participating in the BSAI sablefish fisheries. A proposed rule covering this action was published in 2006 (71 *FR* 64218; Nov 1, 2006).

### *Council June 2005*

In June 2005, the Council discussed the issue of broader VMS coverage, in connection with EFH/HAPC related proposals to implement VMS for the GOA. The Council's newsletter reported:

“In discussion potential VMS requirements for GOA vessels relative to the proposed EFH/HAPC closure areas, the Council recommended that NMFS not require VMS for fixed gear vessels, with the clarification that this recommendation not affect existing requirements promulgated as part of the Steller sea lion protection measures. The Council instead recommended that NMFS develop an analysis and alternatives to address the issue of broader VMS application in the GOA and BSAI in a manner that meets enforcement, monitoring, and safety issues.” (Council newsletter, June 2005, page 6)

At this time the Council did recommend the use of VMS for vessels using mobile bottom contact gear in the GOA. Mobile bottom contact gear is defined as dredge, non-pelagic trawl, and dingle bar gear. These mobile bottom contact gear requirements were incorporated into the EFH/HAPC program adopted by the Secretary.

*Enforcement committee, October 2005*

In October 2005, the Council's Enforcement Committee discussed the VMS issue. The Committee's minutes reported:

"The Committee encourages NOAA Fisheries to proceed with a process to initiate an analysis for VMS requirements. NOAA Fisheries reported their intent to provide the Council with a draft analysis on this issue by April, 2006. Commander Cerne and Ken Hansen from NMFS enforcement committed time and staff to participate in the development of the analysis.

"The Committee endorses the concept to add an additional requirement to the analysis which would provide for the updates of new technology or enhancements to the current capabilities of VMS. The discussion would be framed around benefits this enhanced VMS could provide the fishery as well as efficiency in enforcement.

"The Committee expressed interest in discussing the status of the analysis in December."  
(Minutes of the October Enforcement Committee meeting)

*Preparation of discussion paper in November 2005*

In response to the Council's request in June 2005, in November, staff from the NMFS Alaska Region, in cooperation with staff from the NOAA OLE Alaska Region and staff from the U. S. Coast Guard's (USCG) 17<sup>th</sup> District, prepared a discussion paper with a "strawman" statement of purpose and need for a VMS action, and a set of "strawman" alternatives for VMS implementation. The statement of purpose and need reflected enforcement, management, and scientific uses for VMS. The alternatives included a comprehensive implementation alternative, and alternatives that would reduce the burden of VMS requirements on the operators of smaller vessels, and of commercial fishing vessels that only entered Federal waters with the intent to transit between fishing areas within state waters.

*December 2005 Council meeting*

The Council's Enforcement Committee reviewed the November discussion paper. The committee recommended proceeding with the analysis after clarifying two alternatives. The committee minutes on this topic further reported:

"The Committee also recommends that the analysis include discussion of enhanced VMS application; i.e., its ability to provide not only location information, but other information important to enforcement and management such as vessel speed, gear deployment, etc., which could also be useful for scientific applications."

The Council's Advisory Panel (AP) also reviewed a report on the discussion paper resulting in passage of the following motion by a vote of 16 to zero:

"The AP feels the definition of "operating" is overly broad in the strawman VMS alternatives. We would suggest that the analysis be limited to vessels with an FFP or IFA permit. The focus should be on enforcing federal fishing regulations for vessels which participate in those fisheries.

"In addition, the analysis should include an analysis of options for finding [funding] such a mandate." (AP December 2005 minutes)

The Council adopted a statement of purpose and need, and a list of alternatives. The Council directed staff to organize the set of alternatives and options for analysis. The Council's statement of purpose and need is in Section 1.4. As noted below, the Council modified its alternatives in April and October 2006, and provided an explicit problem statement in October 2006. The modified alternatives are described in Chapter 2.

#### *February 2006 Council meeting*

Preliminary analysis indicated that under Alternative 2, vessels using seine, gillnet, power troll, and hand troll gear to fish for salmon and herring might be required to carry VMS. In some instances, vessels using these gears fished in State managed fisheries in the EEZ.

For example, vessels gillnetting for Copper River salmon can operate 15 miles off shore (Savikko, pers. comm.). In other instances, vessels with these gears transit Federal waters as they move between fishing opportunities in State waters. Under Alternative 2, vessels in transit would have been required to carry a transmitting VMS. Vessels frequently transit Federal waters at Dixon Entrance, as they move between home ports or vessel maintenance activities in Washington and other states to Alaska. Vessels might make transits as they move between different regions of Southeast Alaska, for example between roe herring seine fisheries in Southeast Alaska and those further west. Vessels may often transit Federal waters as they move between different fishing districts in the same State fishery, for example in the Bristol Bay drift gill net fishery. (Savikko, pers. comm.).

However, NOAA OLE and the Coast Guard saw little need to monitor movements of these vessels, as long as they didn't have an FFP or operate in Federal waters with other gears. These gears are not used to harvest federally-managed species, and they are not gears that may potentially damage bottom habitat in the EEZ (Passer, pers. comm.).

At the February meeting, the Enforcement Committee recommended that Alternative 2 be revised to exempt vessels with seine, gillnet, and troll gears (although not dinglebar gear) from the VMS alternatives.<sup>3</sup> However, the Council determined that the public had not received adequate notice to comment on this proposed modification, and decided to defer action on it until its April 2006 meeting.

#### *April 2006 Council meeting*

At the April meeting the Enforcement Committee received a report on the state of the analysis, and the problems that had been identified with the December 2005 Alternatives language. The Enforcement committee supported revised language for Alternative 2, as suggested by staff, relating to vessels with IFQ and/or CDQ halibut and/or sablefish on board. Enforcement also suggested deletion of trollers, seiners and gillnetters from the program because those types of vessels do not have a reasonable capacity to fish in the EEZ. During staff tasking, the Council adopted the Enforcement Committee's recommendation with one amendment. The alternatives, as adopted by the Council in April and modified in October 2006, are described in detail in Chapter 2 of this RIR/IRFA.

Initial review of the analysis was scheduled for the Council's October 2006 meeting.

#### *October 2006 Council meeting*

A draft RIR/IRFA for Council review was distributed in September 2006. NMFS concluded that, while VMS would have beneficial impacts on the environment, it would not have significant impacts. NMFS

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<sup>3</sup> Regulations at 50 CFR 679.2 define dinglebar gear as a type of troll gear.

therefore chose to meet its NEPA obligations with a categorical exclusion (CE), rather than an environmental assessment (EA).

In October, the AP, SSC, Enforcement Committee, and the Council, were briefed on the contents of this draft, and each made comments on the draft in minutes, or in a special report. At this time, the Council (a) adopted a problem statement to accompany the statement of purpose and need, (b) requested the evaluation of new options, and (c) rescheduled the analysis for initial review at its February 2007 meeting. The problem statement is described in Section 1.4, below. The new alternatives were exemptions from the VMS requirement for:

- vessels deploying dinglebar gear,
- troll fishermen operating in federal waters who keep legal halibut as bycatch in their fishery,
- vessels with minimal annual landings of halibut IFQ below the thresholds of 1,000, 5,000, and 10,000 pounds, and
- vessels with minimal annual landings of sablefish IFQ below the thresholds of 1,000, 5,000, and 10,000 pounds.

## 2.4 Problem Statement, and purpose and need for the action

In December 2005, the Council adopted a statement of purpose and need for this action. In October 2006, the Council added a problem statement.

In the past, the Council has adopted VMS requirements in response to specific regulatory needs. For example, the need to monitor compliance with fishing restrictions associated with protecting Steller sea lions. The problem statement, and statement of purpose and need for this action recognizes the more general applicability of VMS for a wide range of purposes including enforcement, management, scientific research, and safety.

The problem is (adopted in October 2006):

The National Marine Fisheries Service (NMFS) required implementation of Vessel Monitoring Systems (VMS) to ensure compliance with Steller sea lion area closures, fisheries rationalization programs, and Essential Fish Habitat (EFH) designations. Current VMS regulations have been implemented in a piecemeal manner to address these specific requirements.

Rationalization programs have spread fishing activity spatially and temporally, allocated resources into smaller and smaller quantities, often allow for transfers, and tend to be complex. Furthermore, the conservation and management of listed species; habitat areas of concern; and fishery resources, including prohibited species, has required a proliferation of time and area specific restrictions and closures.

In June 2005, the Council directed a broader more comprehensive analysis be conducted of the potential application of VMS for federally permitted vessels and non-permitted vessels in the EEZ with authorized gear on board. Compliance with regulations is necessary to achieve conservation, economic, and social objectives of these management programs and VMS is a tool which could greatly benefit those charged with monitoring and enforcing these programs, as well as provide the data upon which these programs may be assessed. VMS has also been found to enhance Coast Guard search and rescue

efforts, thereby contributing to fishing safety. However, broad application of VMS coverage to all other federal fishery participants may be problematic owing to the diverse nature of Alaska's commercial fishing fleet.

To determine the appropriate monitoring technology requirements onboard vessels, the Council will balance, to the extent practicable, the benefits of VMS coverage versus the cost of system installation, operation, and maintenance. While determining VMS requirements, the Council will also consider the availability of other enforcement tools, the cost and reliability of the technology, and characteristics of participating vessels.

The purpose and need (adopted in December 2005) are:

The need is:

The broader application of VMS to meet the increasing management, enforcement, monitoring, scientific, and safety issues caused by the development of additional spatial/temporal fishing boundaries, rationalization programs, and other evolving management and enforcement requirements.

The purposes are:

1. To ensure/maximize the viability of the management, monitoring, and enforcement of additional spatial/temporal fishing boundaries and rationalization programs in the most cost-effective and efficient manner possible.
2. To enhance the scientific understanding of the impact of fishing activity on the marine environment in the most cost-effective and efficient manner possible.
3. To permit more cost-effective and productive use of observers.
4. To increase the safety of fishing operations.

## 2.5 Statutory authority for the action

NMFS manages the U.S. fisheries in the EEZ off of Alaska under the Fishery Management Plans (FMPs) it has adopted. There are five FMPs covering the following fisheries:

- Groundfish of the Bering Sea and Aleutian Islands Management Area
- Groundfish of the Gulf of Alaska
- Bering Sea/Aleutian Islands King and Tanner Crabs
- Salmon Fisheries in the EEZ of the Coast of Alaska
- Scallop Fishery Off Alaska

Copies of these are on the Council's web site: <http://www.fakr.noaa.gov/npfmc/default.htm>

The Council prepared and the Secretary approved the FMPs under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801, et seq.).

## 2.6 Action area and time period

The area covered by this action includes the waters of the EEZ off of Alaska in the BSAI, and the GOA, as well as the marine waters of the State of Alaska adjacent to the EEZ. The alternatives under consideration in this analysis would result in permanent changes to the regulations.

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## 3.0 Alternatives

In December 2005, the Council adopted a set of alternatives and options for evaluation. During the winter and early spring of 2006, analysts identified issues with the language of the existing alternatives. A key issue was that the language appeared to require vessels that only fished salmon and herring to carry VMS when they were in Federal waters. In April 2006, the Council modified the language of the alternatives to address this, and other issues. In October 2006, the Council further modified its set of options, so as to look at additional ways to relieve VMS burdens on smaller entities.

The following summary includes all modifications through October 2006. The alternatives themselves are in a bold font. Commentary on each alternative, that is not a part of the alternatives themselves, is in a regular font.<sup>4</sup>

### 1 **No action alternative.**

Under the “no action” alternative, VMS would continue to be required in accordance with the Steller sea lion (SSL) protection measures, the crab rationalization program, the Essential Fish Habitat/Habitat Areas of Particular Concern (EFH/HAPC) programs, and the Central GOA rockfish pilot project. The “no action” alternative does not preclude future VMS programs.

The “no action” alternative does not guarantee that VMS units will remain in use for the special purposes for which they have been adopted in the past. For example, if the western distinct population segment of SSL recovered sufficiently, the protection measures might be lifted and the VMS regulations adopted to facilitate enforcement of those SSL measures might also be repealed.

### 2 **Require a transmitting VMS on any federally permitted vessel, and on any vessel with IFQ and/or CDQ halibut or sablefish on board, when it is operating in the EEZ or adjacent state waters. A federally permitted vessel would include vessels named on a Federal fisheries permit or on a Federal crab vessel permit (50 CFR 679.4(b) and 680.4(k)). A transmitting VMS would also be required on any other commercial fishing vessel that operates in the EEZ with authorized fishing gear (except hand troll gear, power troll gear, and troll gear, but not excepting dingle bar gear)<sup>5</sup> as defined in 50 CFR 679.2.<sup>6</sup>**

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<sup>4</sup> This discussion does not specifically address the existing VMS requirements created by the SSL, EFH/HAPC, crab rationalization, and Central GOA rockfish pilot project. However, nothing in these alternatives is meant to repeal any of these existing VMS requirements. Details of these requirements are at 50 CFR 679.7 and 679.28.

<sup>5</sup> Although dinglebar gear is defined as a type of troll gear at 50 CFR 679.2, it was the intent of the Council that it not be exempted along with other troll gears.

<sup>6</sup> The text of Alternative 2 has been modified from the Council language for clarity. The original text, as adopted by the Council in April 2006, is “Require a transmitting VMS on any vessel with any Federal fishing permit, including vessels with IFQ and/or CDQ halibut and/or sablefish on board, when it is operating. A transmitting VMS would also be required on any other commercial fishing vessel that operates in the EEZ with authorized fishing gear (other than hand troll gear, power troll gear, and troll gear, but including dingle bar gear) as defined in 50 CFR 679.2.”

This alternative creates VMS requirements for three classes of vessels:

1. Any federally permitted vessel, when it is operating in Federal waters of the EEZ, or in adjacent State waters
2. Vessels while operating with IFQ and/or CDQ halibut and/or sablefish on board in Federal or adjacent state waters
3. Any commercial fishing vessel that operates in the EEZ with authorized gear (except for troll gear).

To some extent, these classes overlap so that a vessel may fall in more than one of them.

The phrase “when it is operating” (in the first sentence) is comprehensive, and can include operations inside marine waters of the State of Alaska adjacent to the EEZ. A definition of operating has been added to 50 CFR 679.2 by the new EFH/HAPC rule. This definition is “Operate a vessel means for purposes of VMS that the fishing vessel is: (1) Offloading or processing fish; (2) in transit to, from, or between the fishing areas; or (3) Fishing or conducting operations in support of fishing.”

The definition of operation extends to commercial fishing vessels transiting the EEZ with no intent to fish there. This could happen, for example, if a vessel without an FFP, and that fished only in State-managed groundfish fisheries in State waters, moved between Kodiak and Prince William Sound, transiting Federal waters in the process.<sup>7</sup>

Operating includes any activity that involves transit to, from, or between fishing areas. A reasonable interpretation of “fishing areas” includes the areas described as “reporting areas” in 50 CFR 679.2 (and Figures 1 and 3 to 50 CFR 679). The Federal waters off of Alaska, and the State waters adjacent to Federal waters, are fishing areas according to this definition. Thus, a fishing vessel in transit to, from, or between these areas is subject to the VMS requirement. This requirement applies, even if the vessel operator does not intend to use the vessel for fishing activity. This may involve other commercial activity by the vessel, or it may involve non-commercial activity by the vessel. Many fishermen use their fishing vessels for non-fishing activity, including transport of family or goods between Alaskan towns, and recreational fishing or hunting trips. The proposal appears to require a transmitting VMS when the vessel is used for these purposes.

#### *Vessels with FFPs and FCVPs*

The Council used the term “Federal fishing permit” in its recommendations for this alternative. A reasonable interpretation of “any Federal fishing permit” follows regulations at 50 CFR 679.2, which define a federally permitted vessel as a vessel that is named on either a Federal fisheries permit issued pursuant to §679.4(b) or on a Federal crab vessel permit issued pursuant to §680.4(k). To ensure clarity in analyzing the alternative and the application of the regulations, the term “Federal fishing permit” has been changed to “federally permitted vessel” as defined in 50 CFR 679.2.

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<sup>7</sup> Options, described later in this report, have been introduced to exempt vessels in transit under certain conditions.

This first class of vessels, those with an FFP or FCVP, must have a transmitting VMS on board whenever they are operating. The VMS requirements for this class of vessels are the most comprehensive, requiring a transmitting VMS whenever the vessel is operating in Federal or State waters off of Alaska, whether it is being used for fishing, or for some other activity.

Currently, the owner of a vessel with an FFP may surrender the FFP if fishing operations requiring it are completed, and the owner expects that subsequent fishing will take place in State waters only. This would allow the vessel to avoid VMS requirements when it was operating in State waters. Creation of a VMS requirement tied to the presence of a Federal fisheries permit will increase incentives to do this.

The NOAA Office of General Counsel for Enforcement has serious concerns about their ability to enforce VMS requirements in State waters adjacent to the EEZ, if the requirement depends on the vessel being named on an FFP. An FFP can be surrendered by the permit holder at little cost once the permit holder has completed planned fishing in the EEZ. If plans change, a new FFP can be acquired at no charge from NMFS at any time. Thus, a fisherman who has finished planned operations in the EEZ could surrender the FFP, and fish without operating a VMS in State waters. If the operator plans to return to the EEZ, it is possible to get a new FFP easily. This can effectively reduce prosecution of a fisherman with an FFP for failing to operate the VMS while in State waters due to a failure to properly submit paper work to relinquish the FFP.

*Vessels with IFQ or CDQ halibut or sablefish on board*

The second class of vessels are those with halibut and/or sablefish IFQ and/or CDQ aboard. These vessels must carry a transmitting VMS unit. The requirement only applies when the vessels have halibut and/or sablefish on board, and does not explicitly refer to the presence of a QS or IFQ holder on board. This specification of the requirement reflects difficulties created by the fact that the QS and IFQs under this program adhere to individuals and not to vessels. In order to avoid creating VMS obligations for vessels carrying QS holders, perhaps as crew, but not otherwise involved in a Federal fishery (for example, a gillnet vessel fishing salmon in State waters with a QS holder on board as crew), the requirement was specified in terms of retained catch. If it has the designated fish on board, it must have a transmitting VMS. If it does not, and other conditions requiring a VMS do not apply, it does not have to have a transmitting VMS. Thus, a vessel with no Federal permit may leave Petersburg to fish for halibut in State waters of Southeast Alaska. This vessel would not need to have a transmitting VMS until it began to retrieve its fishing gear and had halibut on board.

Vessels fishing for halibut and sablefish in Federal waters must carry FFPs. Vessels fishing for sablefish are fishing for one of the groundfish species covered by the Council's BSAI and GOA Groundfish FMPs. Vessels fishing for groundfish are required to have an FFP under regulations at 50 CFR 679.4(b)(1). Halibut are not considered to be groundfish for regulatory purposes. However, vessels fishing for halibut in Federal waters of the BSAI and GOA are required to retain incidental catches of Pacific cod and rockfish under regulations at 50 CFR 679.7(f). Regulations at 50 CFR 679.4(b)(2) require vessels fishing for non-groundfish species to carry an FFP if they retain any incidental catch of groundfish.

Thus, any vessels catching halibut or sablefish in Federal waters off of Alaska would be required to carry an FFP. Even if they were not, they would be required to carry a transmitting VMS when they had IFQ or CDQ halibut and sablefish on board, under this provision.<sup>8</sup>

Halibut and sablefish vessels that fished entirely in the waters of the State adjacent to the Federal waters would not be required to carry an FFP. Federal authority to require a VMS unit on a halibut vessel extends into State waters, even if the halibut vessel is not carrying an FFP. Thus this provision extends the Alternative 2 VMS requirement to halibut vessels operating in State waters.

If sablefish are taken by a vessel carrying a sablefish IFQ permit holder, in State waters within a sablefish IFQ regulatory area, that sablefish is debited against the account of the IFQ permit holder. If the IFQ permit holder has unused IFQ, the amount of unused IFQ is reduced by the amount of the harvest; if the IFQ permit holder has fished all his IFQ for the year, the harvest is an overage debited against the IFQ holdings for the following year. The sablefish IFQ regulatory areas in State waters are those State waters other than the waters in Prince William Sound and state waters included in State limited entry fisheries. Most of the sablefish in IFQ regulatory areas for sablefish in State waters comes from the Aleutian Islands. A significant amount comes from Cook Inlet. Small amounts come from other areas. Sablefish taken by a vessel with a sablefish IFQ permit holder on board are IFQ sablefish, and the Federal government would have the authority to require a vessel in State waters falling within a sablefish IFQ regulatory area, having IFQ sablefish on board, to carry a transmitting VMS unit.

#### *Vessels in the EEZ*

The third class of vessels are those not federally permitted, operating in the EEZ with authorized gear. These vessels are subject to Federal jurisdiction while they are in the EEZ, but not when they leave the EEZ and enter adjacent State waters. These vessels are required to carry VMS when they are operating in the EEZ, but not when they are operating in adjacent State waters.

“Authorized” gears are those described in 50 CFR 679.2, except that troll gear, which is listed there, is not considered authorized gear for the purposes of this alternative. The limitation to “authorized” gear was introduced into this language in order to exempt vessels fishing gears used to harvest salmon and herring. Gillnet and seine gears are not described as authorized gears in 50 CFR 679.2. However, troll gears are listed there as authorized gears. Therefore, since troll gear was meant to be excluded along with gillnet and seine gears, the exemption for troll gear was explicitly introduced. Dinglebar was meant to be considered authorized gear, and is described as authorized gear in 50 CFR 679.2. The explicit reference to dinglebar gear was introduced because dinglebar gear is included in the definition of troll gear in regulations (50 CFR 679.2). While troll gear is exempted from the requirement, dinglebar gear is not. The reference was meant to make this clear.<sup>9</sup>

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<sup>8</sup> Note that for CDQ halibut and sablefish, the CDQ group is the permit holder.

<sup>9</sup> Note that in October 2006 the Council requested an analysis of an option to exempt dinglebar gear from the requirement. This is discussed later in this chapter.

An example of a vessel falling into this class is a vessel using dinglebar gear to fish for lingcod in the GOA. The Council's GOA groundfish management plan does not cover lingcod. In the absence of a federal management plan for it, the State of Alaska exercises management authority. These vessels could conceivably operate without a Federal fisheries permit (if they did not retain federally-managed species). This provision was meant to impose a VMS requirement on vessels operating in this type of fishery. This alternative would also require scallop dredging vessels operating in the EEZ to operate a VMS. These vessels are not required to have an FFP, but use an authorized gear (dredge).

Salmon troll vessels that fish in the EEZ are not required to carry Federal fisheries permits (unless they retain groundfish incidental catches). However, they are excluded from the VMS requirement applied to these "class three" vessels because, as noted above, troll gear is not a gear that creates a VMS requirement for the purposes of these alternatives. However, trollers sometimes take halibut as incidental catch on troll gear. When they do this, and when a halibut QS holder is on board with unused IFQ, the troll vessel is required to retain the halibut, in accordance with regulations at 50 CFR 679.7(f)(11) and 679.2. At this point, a troller, is required to carry a transmitting VMS unit. This requirement would apply in the EEZ, and in State waters adjacent to the EEZ, because Federal authority to manage halibut extends into State waters adjacent to the EEZ.<sup>10</sup>

#### *General note on Alternative 2*

The language in this alternative is not interpreted to require transmitting VMS units on vessels operating in international waters, in Federal waters off other states, or in the waters of other states.

#### *Examples of Alternative 2*

Under Alternative 2:

- A gillnet vessel that only fishes for salmon in Bristol Bay or Cook Inlet and transits Federal waters to move between fishing districts would not be required to carry a transmitting VMS. *The vessel has no FFP, does not have halibut or sablefish on board, and does not fish in the EEZ. Gillnet gear is not an authorized gear in the EEZ, therefore this vessel does not have to have a transmitting VMS when it is in transit across the EEZ.*
- A gillnet vessel is only used in the Prince William Sound gillnet fishery. The vessel is brought to the fishery from Southeast Alaska, transiting Federal waters. The vessel uses its gillnet gear in Federal waters off of Copper River. This vessel is not required to carry a VMS. *This vessel does not have an FFP, does not fish for halibut or sablefish, and does not fish with authorized gear in the EEZ (gillnet gear is one of the gears exempted from*

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<sup>10</sup> As noted below, in October 2006, the Council requested an analysis of an option that would exempt trollers when they caught halibut and were forced to retain them. In addition, and as discussed below also, the Council has requested an evaluation of options that would exempt vessels catching amounts of halibut falling below certain thresholds. This option, should it prove legally viable, may exempt many troll vessels taking halibut from VMS requirements.

*the VMS requirement when it operates in the EEZ). Under the Salmon FMP, gillnet gear may be used in Federal waters off of Copper River.*

- *A herring seiner fishing for roe herring in different regions of Alaska during the spring, and not active in other fisheries, would be exempt from the VMS requirement. The vessel does not have an FFP, does not have halibut or sablefish on board, and does not operate in Federal waters with a gear that requires VMS.*
- *A vessel fishes for lingcod with dinglebar gear in Federal waters in the GOA without an FFP. The vessel then continues longlining and trolling, but only in State waters of Southeast Alaska. The vessel would be required to carry a transmitting VMS while it was in Federal waters, but not while it was operating in State waters. The vessel is using a gear in Federal waters that requires a transmitting VMS. However, it doesn't have a Federal fishing permit and there is no Federal authority to require VMS in State waters.*
- *A vessel used to fish for halibut and sablefish in the EEZ would be required to carry a transmitting VMS if it continued fishing in State waters, or if the owner used the vessel to go hunting with some friends. A vessel used to fish for sablefish and halibut in Federal waters must have an FFP. NMFS has the authority to require a vessel with an FFP to carry VMS wherever it is operating. NMFS has authority to require a vessel involved in the halibut fishery to carry a VMS whether it is in State or Federal waters. As noted above, the definition of operating is comprehensive, and includes activity other than supporting commercial fishing operations.*
- *A vessel that fished with longline gear only in State waters would be required to carry a transmitting VMS if it transited Federal waters while moving between different regions of the State. Longline gear is an authorized gear in Federal waters. Transit is an operation in Federal waters. Therefore, the vessel would be required to carry VMS while it was in transit across the EEZ. However, if the vessel did not have a Federal fishing permit, the VMS requirement would not apply in State waters. The Council is considering an option that would exempt this vessel from the VMS requirement in Federal waters if it made the transit with the longline gear stowed.*

**3 Vessels are subject to the requirements of Alternative 2, except that they are not required to have a transmitting VMS when operating in a State-managed fishery in State waters, unless a transmitting VMS is required under another federal program. For the purpose of this alternative, a State-managed fishery means a fishery in which the landings are not counted against a Federal total allowable catch (TAC).**

Other Federal programs which currently require VMS units include the SSL protection measures, the BSAI crab rationalization program, the EFH/HAPC protection measures, and the Central Gulf rockfish demonstration project.

This alternative would exempt vessels operating in a State-managed fishery in State waters from the VMS requirements. A State-managed fishery is defined as a fishery whose landings are not counted against a Federal TAC. A fishery in State waters in which the catch is counted against a Federal TAC is a “parallel fishery.” Parallel fisheries are conducted by the state when Federal fisheries in adjacent Federal waters are open, under regulations adopted by the State to parallel the regulations in Federal

waters. This alternative does not exempt vessels operating in the parallel fisheries in State waters. By State definition, parallel groundfish fisheries are those conducted for pollock, Atka mackerel, and Pacific cod, within the same area restrictions, gear restrictions, seasons, and harvest limits as the Federal fisheries (5 AAC 28.087).

State managed fisheries in State waters include a variety of salmon, herring, shellfish, and other fisheries. State-managed groundfish fisheries (such as the Pacific cod fisheries) are also prosecuted in State waters when fishing for the species is closed in Federal waters.

Vessels operating in State managed fisheries in State waters are not required to have a Federal fisheries permit. A vessel that fished only in State managed fisheries in State waters would not need to carry a transmitting VMS unit. Some vessels may fish in the EEZ and/or State waters parallel fisheries, and in State managed fisheries in State waters. These vessels would be exempted from the transmission requirement when they only fished in State managed fisheries in State waters.

Sablefish fisheries in state waters are state managed fisheries in state waters, fished subject to guideline harvest levels set by the State (sometimes with reference to Federal sablefish TACs). They could be construed to be exempted from the VMS requirements under this alternative, unless the vessel carried a sablefish IFQ permit holder, required to debit the vessel sablefish catch against his IFQ account, as noted above.

For example, under Alternative 3:

- A vessel that uses fixed gear for sablefish in the EEZ with an FFP, also fishes in the Prince William Sound sablefish fishery. *This vessel would have to have a VMS in order to fish in Federal waters, but it may save transmission costs by turning the VMS off while it is operating in the State-managed sablefish fishery. The vessel would still need to operate its VMS during any State parallel Pacific cod fishery.*
- A vessel, that uses fixed gear for Pacific cod in the EEZ with an FFP endorsed for Pacific cod, also fishes in a State managed Pacific cod fishery in State waters after the Federal Pacific cod fishery is closed. *This vessel could turn its VMS off in the State managed Pacific cod fishery in State waters, because a transmitting VMS is required under the SSL protection measures when the vessel is operating while a Pacific cod fishery is open. If the Federal fishery were open while the State managed fishery in State waters was open, the vessel would have to continue transmitting with its VMS. Nothing in this action would override that existing requirement in those circumstances.*

**4 Vessels are subject to the requirements of Alternative 3, except for vessels which are subject to the VMS requirement because they have IFQ and/or CDQ halibut and/or sablefish on board, and that fish only in State waters.**

This alternative would exempt vessels that would otherwise only be subject to the VMS requirements because they operate in IFQ and/or CDQ halibut and/or sablefish fisheries only within State waters.

This requirement builds on, and is not an alternative to, the exemption provided in Alternative 3. Alternative 4 expands the exemption provided under Alternative 3 to include a larger number of vessels. Vessels are exempted under Alternative 4 if they fish for halibut and sablefish only in State waters. Vessels fishing for these species in Federal waters are not exempted while they are in State waters. To some extent, this limitation on the exemption helps to offset the enforcement problems created when vessels that may fish in State and Federal waters are exempted from the requirement on one side of the line dividing Federal from State waters.

For example, under Alternative 4:

- A halibut fisherman fishes only in State waters of Cook Inlet. This fisherman does not need to carry a transmitting VMS. *This exemption applies to fishermen who only fish for halibut or sablefish inside State waters.*
- A vessel fishes for halibut in the EEZ and in State waters of Cook Inlet. This vessel must carry a transmitting VMS in Federal and State waters. *This exemption only applies to vessels that fish only in State waters.*

## Options

The following options may apply to the alternatives:

- **Smaller operation exemptions:**
  - **Vessels less than a certain length overall (LOA) would be exempted from VMS requirements. Options include (1) less than 25 feet (2) less than 30 feet, and (3) less than 32 feet LOA.**
  - **Allows for phased implementation where vessels over 32 feet LOA would be required to have VMS in 2007 and vessels equal to or less than 32 feet LOA by 2008.**
  - **Vessels with minimal annual landings of halibut IFQ and CDQ<sup>11</sup> below the thresholds of 1,000, 5,000, and 10,000 pounds.**
  - **Vessels with minimal annual landings of sablefish IFQ and CDQ below the thresholds of 1,000, 5,000, and 10,000 pounds.**
  - **Vessels deploying dinglebar gear are exempt.**
  - **Troll fishermen operating in Federal waters who keep legal IFQ halibut as bycatch in their fishery are exempt.**
- **Transit exemptions**
  - **Vessels with an FFP, operating in the EEZ, without authorized gear on board (other than hand troll gear, power troll gear, and troll gear, but including dingle bar gear) are exempt from the VMS requirement.**
  - **Fishing vessels not required to have an FFP would not be required to have a transmitting VMS on board if the vessel operator (a) transits the EEZ with their fishing gear stowed; and, (b) notifies the USCG and NOAA OLE of their intent to simply transit the EEZ (a new check-in/checkout requirement).**

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<sup>11</sup> As noted below, the original Council motion did not mention CDQ. However the motion has been interpreted as including it to comply with Federal statutes.

Six of these options provide exemptions from the alternatives for smaller fishing operations. Two use vessel length as an indicator of operational size, two use the volume of halibut or sablefish harvested from the vessel as an indicator of operational size, and two identify particular types of operations generally believed to be small.

*Exemptions for smaller vessels*

One of the two options that provides exemptions from the VMS requirement for small vessels has three sub-options totally exempting vessels that are 25 feet and under, 30 feet and under, and 32 feet and under. The other option gives vessels less than or equal to 32 feet an extra year to comply with the VMS requirements.<sup>12</sup>

*Exemptions for vessels with lower halibut and sablefish landings*

In discussions at the October 2006 Council meeting, some indicated that they felt that vessel length would be a relatively poor indicator of an operation's ability to pay the costs of acquiring and operating a VMS unit. In order to provide an alternative method of exempting small operations, alternatives that would exempt vessels below certain annual halibut or sablefish thresholds were proposed. The thresholds identified for analysis were 1,000 pounds, 5,000 pounds, and 10,000 pounds. These thresholds are applied either to halibut or sablefish, but not to "halibut plus sablefish." These exemptions are interpreted as exempting vessels that would carry VMS only because they caught IFQ and/or CDQ halibut and/or sablefish.<sup>13</sup>

Halibut IFQ and CDQ are taken in Federal and State waters. Sablefish IFQ and CDQ are taken in Federal waters, and in certain State waters, principally in the Aleutian Islands and Cook Inlet. All halibut landings are made using IFQs or CDQs. Some sablefish landings are made using trawl gear, and are not made with IFQs or CDQs. Thus the halibut limits are interpreted as applying to all of a vessel's halibut landings, while the sablefish threshold is interpreted as applying to the vessel's sablefish landings with fixed gear (longlines in the GOA and longlines and pots in the BSAI) from Federal waters and from vessels operating with a sablefish IFQ permit holder aboard in State waters falling into a sablefish IFQ regulatory area.

To identify vessels that exceeded any poundage requirement and were therefore required to carrying an operating VMS unit, NOAA OLE staff would need to compare a vessel's overall halibut landings obtained from the NMFS RAM Division, or its sablefish landings obtained from the NMFS Sustainable Fisheries Division,

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<sup>12</sup> The delay for small vessels is phrased in terms of the years 2007 and 2008. In this analysis, these dates are treated as examples, and the option is assumed to be a simple one year delay from the effective date of the rule.

<sup>13</sup> Although the alternatives were originally phrased in terms of IFQ halibut and sablefish, they are interpreted here as applying to IFQ and/or CDQ halibut and/or sablefish. This is a response to amendments made to the CDQ program through the Coast Guard and Maritime Transportation Act of 2006. Section 305(i)(1)(B)(iv) of the MSA now requires that "The harvest of allocations under the program for fisheries with individual quotas or fishing cooperatives shall be regulated by the Secretary in a manner no more restrictive than for other participants in the applicable sector, including with respect to the harvest of nontarget species."

with the vessel's VMS transmissions.<sup>14</sup> To ensure that all IFQ and CDQ harvests on a particular vessel are included in the comparison, it is likely that this comparison would take place at the end of the fishing year, although such comparison could also occur at any time during the fishing year. If a vessel had IFQ and CDQ harvests/landings during the year that exceeded the threshold, say landings in excess of 10,000 pounds, and it did not show VMS transmissions during all IFQ and CDQ halibut/sablefish fishing trips, it appears that the Agency would be expected to impose penalties on the vessel owner and operator.

However, there are significant legal and practical problems with this approach. Taken together, these create serious doubts about whether this approach to the thresholds can be enforced. For one thing, problems arise for NOAA OLE when it tries to compare VMS data with fishing information. If VMS is required to be operating during the fishing trip, then an audit after the fact by enforcement would rely on knowing two things: (1) which days the VMS was operating on each vessel, and (2) which days the vessel was required to be operating VMS. VMS records will indicate when VMS was operating, but, aside from landing dates, there will be no information on the days the vessel was operating with IFQ species on board and was thus required to carry a transmitting VMS. There will, thus, be insufficient data available to do the comparison. Moreover, any comparison would depend on the accuracy of the landings records. It would be possible for a vessel operator to avoid crossing any given threshold by smuggling IFQ fish past normal enforcement checkpoints. This becomes harder to track in the absence of VMS.

Another problem is that the proposed requirement establishes a VMS obligation on the vessel owner/operator that relies upon – but is not congruent with – the structure of the IFQ program. Specifically, an IFQ permit is held by a person and a CDQ permit is held by the CDQ group, whereas the VMS requirement, as proposed, would be an obligation of the vessel owner/operator. Given the nature of the IFQ fishery and permit structure, the vessel owner may have little control over how much IFQ is actually harvested and landed by the vessel. For instance, the vessel owner may charter or sell the vessel in mid-year. Who would be responsible for the vessel's failure to carry a VMS unit if the vessel was used to fish for halibut both by the owner and by the charter party but neither alone exceeded the poundage limit? Or what if the vessels were used by multiple IFQ permit holders to harvest their QS? If a threshold is exceeded under these conditions, it is not clear who should be held responsible. Potential respondents under these various scenarios include the first QS holder, subsequent QS holders, and the vessel owner, vessel charterers and operators. The responsibility for ensuring that there is VMS on a vessel used to fish for IFQ should be carefully crafted to be congruent with the IFQ program.

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<sup>14</sup> Halibut CDQ is managed by RAM under the IFQ Program regulations. Sablefish CDQ is managed under the multispecies groundfish CDQ regulations by SF Division. Prior to 2007, the CDQ groups received allocations of a portion of both the fixed gear and trawl allocations of the sablefish TAC. Starting in 2007, as required by amendments to the Magnuson-Stevens Act, a portion of the trawl allocation of sablefish will no longer be allocated to the CDQ Program. The harvest of sablefish with trawl gear in the CDQ fisheries will accrue against the trawl allocation of sablefish under the same fishery regulations that apply to the non-CDQ trawl fisheries.

A third, and perhaps even more important problem is that enforcement of the regulation would hinge upon an end-of-year determination that would then apply a requirement back to the beginning of the year. Such an approach is highly problematic. Aside from the potential for multiple persons being responsible for some portion of an exceedance, the proposed scheme could also give rise to the person owning or operating the vessel at the beginning of the year – and who didn't exceed the poundage threshold – nonetheless being expected to bear some financial responsibility for the vessel's failure to carry VMS once it was determined that the vessel exceeded the poundage threshold towards the end of the year. In other words, vessel owner/operators will be taking actions early in the season (fishing for IFQ without a transmitting VMS) whose legality will depend on contingencies occurring later in the year (fishing above or below the threshold) over which the operator may have imperfect control. It is highly unlikely that the Agency would be successful in imposing significant penalties in such situations.

#### *Exemptions for vessels fishing dinglebar and troll gear*

The final two small entity exemption options provide exemptions for (1) vessel operators who would only have incurred a VMS obligation for fishing dinglebar gear in the EEZ, and (2) for operators who would only have incurred a VMS obligation for keeping legal (IFQ) halibut taken as bycatch in a troll fishery. The dinglebar exemption is assumed to apply to Alternative 1, the status quo, and would involve a repeal of part of the VMS requirement adopted in 2006 as part of the EFH/HAPC protection measures. The troll exemption is assumed to apply to vessels trolling in State waters as well as the EEZ. The exemption affects trollers with halibut QS holders on board who have unfished IFQ. These trollers are required to retain halibut in the troll fishery pursuant to 50 CFR 679.7(f)(11) and 679.2. Troll fishermen without QS would be required to discard any halibut taken incidentally.

#### *Transit exemptions*

In addition to the six small entity exemption options, two options provide exemptions from the VMS requirement for vessels in transit through the EEZ, under certain conditions. These two options each refer back to different parts of Alternative 2.

The first sentence of Alternative 2 requires a transmitting VMS on any federally permitted vessel, including vessels with IFQ and/or CDQ halibut and/or sablefish on board, when it is operating. These vessels are subject to the VMS requirement whenever they are operating in the EEZ off of Alaska, or in waters of the State of Alaska adjacent to the EEZ.

This language would require salmon and herring vessels with FFPs to carry transmitting VMS units when they are transiting the EEZ, even without gear authorized for use in the EEZ on board.

This option would exempt a federally permitted vessel, operating in the EEZ, from the VMS requirement, when it does not have authorized gear on board. Troll gear is authorized gear in the EEZ, but the language of the option is meant to extend the exemption to it. This option is meant to provide a transit exemption to vessels fishing salmon gear including troll, seine, and gillnet gear. Dingle bar gear is explicitly

mentioned, to indicate that the exemption does not apply to it, even though it is included in the troll gear definition at 50 CFR 679.2.

The second sentence in Alternative 2 requires a transmitting VMS on any commercial fishing vessel that operates in the EEZ with authorized fishing gear (exempting troll gear, but including dingle bar gear).

The reference to “authorized gear” is meant to exclude salmon and herring vessels in transit, or operating in the EEZ, from the requirement. However, other vessels, operating in the EEZ in a state managed fishery, or carrying authorized gear, are subject to the requirement while they are in the EEZ, or in transit through the EEZ. This requirement does not follow these vessels into state waters, because they lack a federal permit that could be regulated by this action.

Some vessels, carrying authorized gears, may transit the EEZ between state managed fisheries in state waters. An option has been introduced that would exempt these vessels from the VMS requirement under certain circumstances.

The transit option above allows vessels without FFPs an exemption from the VMS requirement if they are simply in transit through the EEZ with their fishing gear stowed and have notified the Coast Guard and NOAA OLE of their intention. However, as discussed later in this analysis, NOAA OLE believes the notification requirement would create a costly and labor intensive process which would have little enforcement benefit. Because of this, in the analysis the conditions are treated as two options: notification and/or stowage. Stowage is a requirement under both options, while notification is not a requirement in one of them.

### *A Note on Gear Stowage*

Council options exempt some vessels in transit if authorized fishing gear is stowed. Gear stowage is not currently (February 2006) defined in Alaska fishery regulations. If this option is adopted, regulation would have to be adopted defining when gear would be considered stowed. Stowage regulations have been adopted in other jurisdictions.

The Pacific Council adopted the following regulation to govern stowage of groundfish gear:

§ 660.322 Gear restrictions.

\* \* \* \* \*

(b) \* \* \*

(7) Trawl vessels may transit through the trawl RCA, with or without groundfish on board, provided all groundfish trawl gear is stowed either:

(i) Below deck; or

(ii) If the gear cannot readily be moved, in a secured and covered manner, detached from all towing lines, so that it is rendered unusable for fishing; or

(iii) Remaining on deck uncovered if the trawl doors are hung from their stanchions and the net is disconnected from the doors. (68 FR 213; November 4, 2003)

The New England Council adopted the following regulations:

**Trawl gear stowage requirements –**

Vessels must stow nets so that they are not available for immediate use according to one of the following specifications:

< A net stowed below deck, provided: It is located below the main working deck from which the net is deployed and retrieved; the towing wires, including the leg wires, are detached from the net; and it is fan-folded (flaked) and bound around its circumference;

or

< A net stowed and lashed down on deck, provided: it is fan-folded (flaked) and bound around its circumference; it is securely fastened to the deck or rail of the vessel; and the towing wires, including the leg wires, are detached from the net;

or

< For vessels transiting the GOM Rolling Closure Areas and the GB Seasonal Closure Area: If net that is on a reel and is covered and secured, provided: The entire surface of the net is covered with canvas or other similar opaque material that is securely bound; the towing wires are detached from the doors; and no containment rope, codend tripping device, or other mechanism to close off the codend is attached to the codend;

or

< Nets that are secured in a manner authorized in writing by the Regional Administrator.

**Scallop dredge vessels –**

Scallop dredge vessels must detach the towing wire from the scallop dredge, reel the wire up onto the winch, and secure and cover the dredge so that it is rendered unusable for fishing.

**Hook gear vessels –**

Hook gear vessels using gear other than pelagic hook gear must secure all anchors and buoys, and have all hook gear, including jigging machines, covered.

**Sink gillnet vessels –**

Sink gillnet vessels must cover all nets with canvas or other similar material and lash or otherwise securely fasten the nets to the deck or rail, and must have all buoys larger than 6 inches in diameter, high flyers and anchors disconnected.

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## 4.0 New Analyses

An initial review draft of the analysis of the alternatives and options proposed by the Council in April 2006 was presented to the Council in October 2006. This included an evaluation of Alternatives 1 through 4, the vessel size exemption options, and the transit options. In October, the Council requested an evaluation of additional options. These are addressed in this chapter. In addition, this chapter includes a section that provides information on the potential fiscal costs of this action. Analysis is ongoing, and additional material will be included in the initial review draft under preparation.

This chapter opens with a slightly modified version of the executive summary from the October 2006 initial review draft. This provides background on the contents of that document.

### 4.1 Executive Summary of the October 2006 analysis<sup>15</sup>

A set of five indices was used to describe the levels of VMS coverage under the alternatives and options. Two of the indices were input oriented: (1) number of vessels covered, and (2) number of vessel-months covered. Three of the indices were output oriented: (1) volume of EEZ retained groundfish covered, (2) volume of EEZ longline sablefish covered, and (3) volume of halibut covered. The following table shows the levels of these indices associated with the four different alternatives.

**Table 1. Vessels and “vessel-months” covered under each alternative (excluding options to exempt small vessels)**

	Alt 1	Alt 2	Alt 3	Alt 4
Number of vessels	685	2,187	2,019	1,471
Number of vessel-months	4,017	10,220	7,571	6,044
Tons of EEZ groundfish (including longline sablefish)	1,945,974	1,954,574	1,954,574	1,954,574
Tons of EEZ Longline sablefish	6,690	14,594	14,594	14,594
Tons of halibut	12,489	26,693	26,693	24,428
Average gross revenues	\$2,006,560	\$730,988	\$787,738	\$1,060,543

Notes: vessel-months are the estimated number of months in which an individual vessel had retained catch in conditions requiring VMS under the alternative.

Options to Alternatives 2, 3, and 4 exempt vessels 25 feet and under, 30 feet and under, and 35 feet and under, from the VMS regulations. These options can significantly reduce the VMS coverage in terms of numbers of vessels, although they have relatively little impact in terms of

<sup>15</sup> Modifications have been made to this executive summary for readability, and to avoid repetition.

the production of EEZ groundfish, EEZ longline sablefish, or halibut, taken by vessels carrying a transmitting VMS unit.

Benefits of VMS coverage fell into five categories: (1) enforcement benefits, (2) in-season management benefits, (3) safety benefits, (4) scientific benefits, and (5) other benefits.

VMS can make it possible to leverage existing enforcement efforts. Knowledge about the location of the fleet can make it easier for the Coast Guard to enforce a wide range of safety and fishery regulations. VMS can play an important role in monitoring compliance with no-transit zones and no-fishing zones. VMS can help deter smuggling and misreporting of the type of QS harvested in rationalized fisheries. The three action alternatives under consideration all increase vessel and vessel-month coverage above status quo levels. Alternative 2 provides the largest level of coverage. Status quo coverage of vessels harvesting EEZ groundfish is already quite high, but Alternatives 2, 3, and 4 all lead to increases in coverage of EEZ longline sablefish and halibut.

VMS is used intensively by in-season managers to determine when to open and close fisheries. VMS provides in-season managers with useful information about the levels of effort active in particular areas at particular times. This has become very useful for gauging how much longer a given TAC will last, and therefore, how much longer a given fishery may be kept open without either exceeding the TAC, or leaving fish unharvested. Managers can also use VMS information to help determine locations of high by-catch, and to implement spatial closures to reduce bycatch. Bycatch rate reduction can make it possible to harvest larger proportions of available TACs. In-season management is strongly dependent on the output-oriented measures, and particularly, on the measure for EEZ retained groundfish. This measure is already very high under the status quo, and does not increase much under any of the three action alternatives. Alternatives 2, 3, and 4 do provide significant additional VMS coverage in EEZ longline sablefish fisheries, and in the halibut fishery. While additional VMS coverage in the halibut fishery may not provide large additional in-season management benefits, it may provide some benefits with respect to control of bycatch.

The Coast Guard is using VMS in search and rescue efforts (SAR). VMS can provide a useful additional source of location information when distress calls come in. VMS information is often received much more quickly than location information from EPIRBs. Moreover, VMS information can help improve Coast Guard situational awareness in an emergency, by providing information on the locations of nearby vessels that may be able to respond with assistance more quickly than the Coast Guard can in a particular situation. The value of VMS for this purpose depends heavily on the input-oriented indices, number of vessels, and number of vessel months. All three alternatives provide increases in these over the status quo. Alternative 2 provides the largest increases, Alternative 3 provides the next largest, and Alternative 4 provides the smallest increases.

Spatial data on fishing and the environment is very important for scientific research into the fishery and environmental, and social and economic impacts of fishing and changes in fishery regulations. Fish stocks, habitat, ecosystem impacts, and social and economic patterns of fishing activity have important spatial dimensions. VMS information is a useful supplement to self-reported spatial information, and to observer reports. Much of the extension of VMS coverage will be on smaller vessels with limited, or no current observer coverage. Alternatives 2, 3, and 4 are associated with increases in input-oriented indices of coverage above status quo levels. These increases, and the associated benefits, are greatest for Alternative 2, lesser for Alternative 3, and least for Alternative 4. None of the alternatives are associated with large increases in EEZ

retained groundfish coverage, but all three are associated with similar increases in EEZ longline sablefish, and halibut, coverage.

Other benefits include the benefits vessel operators would receive from their private use of VMS systems. If these benefits were large enough, vessel operators would acquire VMS themselves without a regulatory requirement. However, if they must acquire a VMS unit to meet the regulatory requirements, they may find that additional features may justify the additional expense. Potential private applications include monitoring of moored vessels, improved communications between the vessel and vessel owner, family or friends. Widespread use of VMS may also make it possible for NMFS to end other types of reporting requirements, such as check-in/check-out requirements. The benefits from this source appear to be closely associated with the input-oriented indices of coverage (numbers of vessels and vessel months).

It is difficult to estimate the average costs of installing and operating VMS. The fleet is diverse, and there are a variety of VMS packages available. There is no statistical information about the extent to which fishermen are paying list, or a negotiated or sales price, about the time requirements for installation, about the nature of the transmission packages they are buying, or the average number of days or months they are transmitting.

Under these circumstances, the individual vessel costs used here must be considered rough approximations to plausible average values. Operations believed to acquire a VMS unit are projected to incur \$1,600 in purchase and freight, \$239 for installation, \$60 for brackets, \$150 for initiation fees, \$114 for sales taxes, and \$11 for a notice to NOAA. Annual operation costs assume \$155 for a month of operation by vessels that already have VMS, \$56 for a month of operation by a vessel acquiring VMS, \$5 for drydock fees per month for months when a vessel acquiring VMS does not operate its VMS, and \$77 in annual maintenance and repairs.<sup>16</sup>

Lost fishing time due to unexpected breakdown of VMS units may be another cost. Anecdotal information so far indicates that the number of breakdowns necessitating NOAA OLE involvement is relatively small. Moreover, NOAA OLE does not normally require a vessel to interrupt a fishing trip and return to port (although each case is handled individually). However, a vessel with a defective VMS will have to get it repaired before it leaves port. The potential for delays in leaving port, and disruption of fishing schedules, creates the potential for costs to fishermen.

The RIR presents detailed cost estimates, and compares them to 2004 gross revenues, for each Alternative, and for each of the small vessel exemptions under each alternative. Estimates are presented for all vessels, for those that already have VMS and will see the number of months of transmissions per year increased, and for those that will have to acquire VMS and begin to transmit each year.

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<sup>16</sup> The model used to estimate annual costs approximates transmission costs on a monthly basis. Units purchased for the early VMS requirements billed for transmissions at the rate of \$5/day. This has been converted to a monthly basis assuming continual transmissions over a 31 day month, leading to an estimate of \$155/month. More recently authorized units often bill on a monthly basis. The \$56/month estimate reflects the price schedule for one such unit.

**Table 2. Costs and revenues from the alternatives for vessels that must acquire VMS under the alternatives (excluding options to exempt small vessels)**

	Alt 2	Alt 3	Alt 4
Number of vessels	1,502	1,334	786
Average number of new vessel-month transmissions	4.0	2.6	2.4
Average gross revenues	\$149,253	\$161,881	\$236,089
Average installation costs	2,174	2,174	2,174
Average annual costs	\$343	\$267	\$259
Ratio of average installation costs to average gross revenues <sup>17</sup>	1.5%	1.0%	0.9%
Ratio of average annual costs to average gross revenues	0.2%	0.0%	0.1%

Ratios of average installation and average annual costs to average gross revenues can be considerably higher for smaller vessel classes under these alternatives.

An Initial Regulatory Flexibility Analysis (IRFA) was performed, pursuant to the Regulatory Flexibility Act. An IRFA examines the potential adverse economic impacts of an action on small entities.

The entities potentially regulated by this action are those (1) with Federal permits to fish in the EEZ off of Alaska, or (2) that have IFQ and/or CDQ halibut and/or sablefish on board, or (3) that do not have a federal permit, but that do operate in the EEZ (either fishing in a State managed fishery, or in transit through the EEZ). The number of small entities that may be affected by this action include (1) 2,046 vessels that fish in the EEZ, (2) 19 support vessels, and (3) potentially 526 vessels that fish in State managed fisheries other than salmon and herring, and that may desire to transit the EEZ.

The IRFA presents detailed cost estimates, and compares them to 2004 gross revenues, for each Alternative, and for each of the small vessel exemptions under each alternative. Estimates are presented for all vessels, for those that already have VMS and will see the number of months of transmissions per year increased, and for those that will have to acquire VMS and begin to transmit each year. This analysis parallels the analysis provided for all vessels in the RIR.

All the vessels that would acquire VMS for the first time under this alternative are small entities. A table summarizing the costs and revenues for these vessels under the alternatives without the small vessel exemptions, would look like the preceding table.

<sup>17</sup> Ratios in this table were calculated by dividing the mean costs for the relevant vessels, by their mean revenue. In general, as described in more detail in Section 4.2, this ratio will differ from the number obtained by calculating the ratio of cost to revenue for each individual operation, and taking the mean of those ratios. This latter approach is used in later sections of this chapter.

## 4.2 Sablefish and halibut thresholds

As noted in Section 3.1, it appears that the greatest extension of coverage to new vessels will occur in the halibut and sablefish IFQ and CDQ fisheries. Vessels with VMS appear to account for close to 99 percent of the EEZ groundfish harvests. These vessels may not be required to have their VMS units transmitting during the entire harvest, but it seems likely that they have them on for most of it. Similarly, vessels with transmitting VMS units appear to account for all or almost all of the BSAI crab and scallops in the EEZ. However, vessels with VMS units on board account for much smaller proportions of the halibut and sablefish harvests.

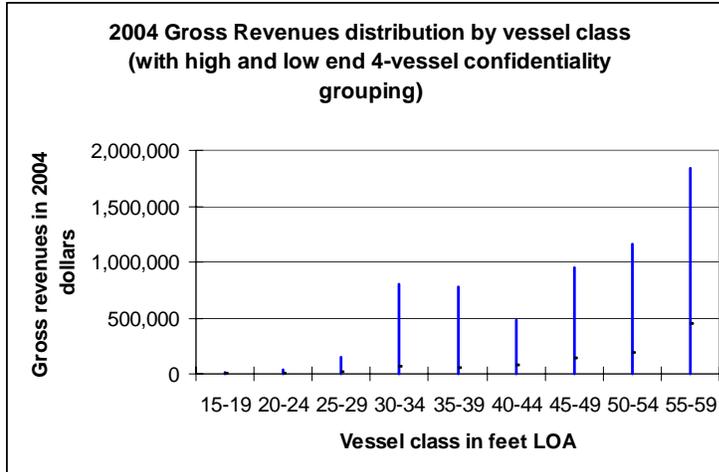
Under Alternative 2, vessels are required to carry a transmitting VMS unit if they have IFQ and/or CDQ halibut and/or sablefish on board. Unless some other requirement, such as the presence of an FFP, or operations in the EEZ, require it, the vessel would only be required to have the VMS on when the fishing gear had been recovered and the halibut or sablefish were physically on board the vessel. As noted in Chapter 2, vessels fishing for halibut or sablefish in the EEZ are required to carry an FFP, and are clearly operating in the EEZ.

In December 2005 and April 2006, the Council requested an evaluation of alternatives that would exempt smaller vessels from the VMS requirement. These provisions were meant to provide cost relief for vessels that were likely to have relatively lower revenues. The Council requested an analysis of exemptions for vessels less than or equal to 25 feet, 30 feet, and 32 feet.

However, some have felt that vessel length is not a good proxy for fishing revenue. The relationship between fishing revenue and vessel length for the vessels less than 60 feet in this halibut and sablefish analysis are shown in Figure 1. Vertical bars in Figure 1 show the range of revenue estimates for vessels in different five-foot length classes.<sup>18</sup> The “tick” mark on the right hand side of each bar shows estimated mean revenues for the vessels in the size class. The upper ends and means of the ranges tend to rise. However, many of the ranges are quite wide; the lower ends do not increase by much, and there is a leveling off of the upper ends and averages over a part of the range not included in the size exemptions, and even a decline in the upper end for one class.

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<sup>18</sup> The bars have been calculated after averaging the top and bottom four observations, to preserve data confidentiality. The averages were used in place of the top and bottom four observations. This leads to some truncation of the range covered by the bars.



**Figure 1. Range of gross revenues by vessel class (ticks show average gross revenues)**

As an alternative to exemptions based on vessel length, in October 2006 the Council requested an evaluation of options that would exempt halibut and sablefish vessels from the requirement to have a transmitting VMS unit on while halibut were on board if they landed volumes of fish that fell below a specified threshold during the year. The Council requested an examination of thresholds set at 1,000, 5,000, and 10,000 pounds per year.

To identify vessels that exceeded any poundage requirement and were therefore required to carrying an operating VMS unit, NOAA OLE staff would need to compare a vessel's overall halibut or sablefish landings, obtained from the NMFS RAM Division, with the vessel's VMS transmissions. To ensure that all IFQ harvests on a particular vessel are included in the comparison, it is likely that this comparison would take place at the end of the fishing year, although such comparison could also occur at any time during the fishing year. If a vessel had IFQ harvests/landings during the year that exceeded the threshold, say landings in excess of 10,000 pounds, and it did not show VMS transmissions during all IFQ halibut/sablefish fishing trips, it appears that the Agency would be expected to impose penalties on the vessel owner and operator.

As discussed in Chapter 3, there are significant legal and practical problems with this approach. Taken together, these create serious doubts about whether this approach to the thresholds can be enforced. There are problems with trying to compare VMS data with fishing information, because limited information is available on the start of fishing trips. Another problem is caused because the VMS obligation on the vessel owner/operator relies on, but is not congruent with the structure of the IFQ program. The IFQ permit is held by a person, while the VMS requirement is a vessel owner/operator obligation. The owner himself may have little control over how much IFQ is actually harvested and landed by a vessel. Finally, and perhaps most important, vessel owner/operators will be taking actions early in the season whose legality will depend on contingencies occurring later in the year.

An alternative approach may be to make VMS coverage for a vessel depend on the vessel's landings in the previous year. This would provide an objective, vessel specific, standard from the start of the year that would not depend on contingencies occurring later in the year. However,

this approach could divorce the VMS coverage requirement from vessel production levels in any given year, if a vessel under the threshold in one year increases its level of activity in the following year. This could be a problem if the vessel takes advantage of the lack of VMS coverage to smuggle IFQ or CDQ past normal reporting points. In this case, enforcement would be unaware of the increase in production, and may be unaware that the vessel crossed a threshold in one year that would require it to carry VMS in the following year.

The objective of the analysis in this section is to show the impact of the Alternative 2 proposal on sablefish and halibut vessels. The analysis is conducted using the threshold variables corresponding to the Council's October request.

Ideally, a model of vessel behavior and production would be available, projecting fishing patterns in future years on the basis of exogenous variables. Different VMS requirements could be imposed in the model, and the vessels acquiring VMS under these rules could then be predicted. An ideal model could predict how vessel behavior would change in response to different VMS requirements.

However, a model like this is not available. As an alternative, the fishing behavior and production in a recent year, 2004, has been adopted as the best information representative of fishing behavior in the future. A data set showing key information on individual vessels has been created based on 2004 activity. Hypothetical VMS rules have been imposed on the vessels in this data set, to see which ones would carry VMS under the different sets of requirements.

While this is a practical approach to this analysis, its drawbacks must be kept in mind. In particular, the fisheries in the EEZ off of Alaska are changing, and have changed in important ways already since 2004. A key change has been the rationalization of the BSAI crab fisheries in 2005. This has led to a large reduction in the numbers of vessels fishing for BSAI crab. The approach also assumes the vessel behavior seen in 2004 would not have been different if a VMS requirement had been imposed. This may not be the case. For example, if an FFP is associated with a relatively expensive VMS requirement, vessel operators may withdraw from fisheries requiring a VMS, or may surrender the FFP if they only operate in State waters.

This analysis was carried out using a data set prepared by Camille Kohler of the consulting firm Resource Data, Inc., under contract to the Alaska Fisheries Information Network (AKFIN). The data set contains one observation for each vessel meeting the criteria described below. Vessels fishing in 2004 were identified from State of Alaska fish ticket records, and from NMFS Catch Accounting System (CAS) records. Vessels were selected if they met the following criteria:

- 2004/2005 FFP Vessels – Vessels with a 2004 or 2005 federal fisheries permit, based on the list downloaded from the RAM web site.
- 2005 FCVP Vessels - Vessels with a 2005 federal crab vessel permit, based on the list downloaded from the RAM web site.
- 2004 IFQ/CDQ Halibut Vessels – Vessels that landed IFQ or CDQ halibut, found in the RAM IFQ database.
- 2004 CFEC Vessels in State Managed Fisheries – Vessels that harvested species under state management in the EEZ, i.e., lingcod, GOA black or blue rockfish.

Each observation contains a large number of variables with information on the vessel, its owner, the volumes of fish of different species harvested in the EEZ and in state waters adjacent to the EEZ, a flag variable to show if the vessel would be required to carry VMS under the status quo, a

variable indicating the number of months it would be required to carry a transmitting VMS under the status quo, and a variable indicating the number of months it would be required to carry VMS under Alternative 2. A complete description of the data set as it stood in September 2006 may be found in the appendix to the draft prepared for Council review at the October 2006 meeting (NMFS, 2006). A revised description of the data set, incorporating changes made through February 2007 will be provided as an appendix in the next draft prepared for Council review.

For the analysis of the halibut and sablefish thresholds, the subset of vessels showing landings of IFQ and/or CDQ halibut and/or sablefish was selected from the data set. These observations were reported in an Excel spreadsheet. The cost and revenue variables described below were calculated for each vessel-observation in the spreadsheet. Excel's pivot table feature was then used to prepare summary statistics for vessels falling into the different halibut and sablefish threshold categories. Statistics were estimated for the three categories requested by the Council in October 2007, and other categories were provided for illustrative purposes.

The following cost and revenue variables were calculated within the spreadsheet:

- **Acquisition cost of the VMS:** If the vessel would have been required to carry a VMS under the status quo (Alternative 1), the cost of acquiring a VMS unit under Alternative 2 was set to zero. If the vessel would have had to acquire a VMS unit under Alternative 2, the cost was assumed to be equal to \$2,174. This cost is assumed to cover the costs of buying the unit, installing it, and initializing it with the service provider and with NOAA OLE.
- **Annual cost of the VMS unit:** If the vessel would have been required to carry a VMS under the status quo, it may or may not be required to operate the VMS on more days under Alternative 2. Time spent on transmissions has been measured in months with landings in this analysis. If a vessel made landings in a month, it was assumed to pay for transmissions in every day of that month. Vessels that carried a VMS under the status quo were assumed to carry a unit that cost \$5/day for transmission. This reflects daily charges in effect for units adopted in the early 2000s. If this was on for a whole 31 day month, total transmission costs would be \$155 for that month. Annual costs for vessels that were required to carry a transmitting VMS under the status quo were estimated to be equal to the product of \$155 and the difference between the months the vessel would be required to transmit under Alternative 2 and under the status quo. Vessels that were assumed to acquire VMS for the first time under Alternative 2 were assumed to be charged \$56/month for a month with transmissions, and \$5/month for a month without transmissions (these estimates were based on review of one of the packages often acquired in recent years). These vessels were also assumed to incur a new annual maintenance expense (time and cost for maintenance and repairs) of \$77/year. Months with transmissions for these vessels were equal to total Alternative 2 transmission months.
- **Ratio of acquisition costs to total revenues from all sources:** For each vessel, the estimate of acquisition costs was divided by an estimate of the vessels total revenues from all Alaskan sources. This estimate included revenues from state fisheries such as salmon and herring, as well as from fisheries conducted under Federal management in the EEZ.
- **Ratio of annual costs to total revenues from all sources:** For each vessel, the estimate of annual operating costs was divided by an estimate of the vessel's total revenue from all Alaskan sources.
- **Total revenues from IFQ and CDQ halibut and sablefish:** This is an estimate of total vessel revenue from harvests of IFQ and CDQ longline and pot sablefish and from

halibut. This variable, and the ratios based on it, were calculated to provide a measure of the ratio of “focused” revenues from the operations fisheries that create its primary need for VMS.

- **Ratio of acquisition costs to IFQ and CDQ halibut and sablefish revenue:** ratio of acquisition costs to IFQ and CDQ halibut and sablefish revenue.
- **Ratio of annual costs to IFQ and CDQ halibut and sablefish revenue:** ratio of annual costs to IFQ and CDQ halibut and sablefish revenue.

Separate estimates were prepared for (a) all vessels with halibut and/or sablefish IFQ and/or CDQ landings; (b) all vessels with these landings that would be required to begin to carry a transmitting VMS under Alternative 2 (that is, vessels not already required to carry VMS under the status quo); (c) vessels newly required to carry VMS that fish halibut and/or sablefish IFQ and/or CDQ only in the BSAI, (d) vessels newly required to carry VMS that fish halibut and/or sablefish IFQ and/or CDQ only in the GOA; (e) vessels newly required to carry VMS that fish in halibut and/or sablefish IFQ and/or CDQ in **both** the BSAI and GOA.

An examination of the data set showed that 1,512 vessels made landings of halibut and/or sablefish in 2004. Two hundred and nineteen (219) of these vessels fished only in the BSAI, 1,190 fished only in the GOA, and 103 fished in both regions.

Two hundred and ninety-five (295) of the 1,512 vessels already appear to carry VMS units under the status quo rules. The vessels that carry VMS under the status quo account for 46 percent of the sablefish caught with longline gear in the EEZ, 100 percent of the sablefish taken with pots in the EEZ, and 100 percent of the sablefish taken with other gear in the EEZ, and 47 percent of the halibut. These vessels already have VMS units, and would not have to buy units under this alternative. They may be required to keep their units on more days each year if Alternative 2 is adopted, and could thus face increased operating expenses.

Potentially, 1,217 vessels could be required to acquire VMS under Alternative 2. These vessels would face acquisition costs, and annual operating expenses. One hundred and eighty-nine (189) of them fished only in the BSAI, 998 of them fished only in the GOA, and 30 of them fished in both regions.

Tables 3 to 12, below, summarize the information from the analysis.

Each column provides results for the number of vessels falling into a poundage category. To determine the number of vessels that would fall into one of the Council’s gross revenue threshold categories, the reader must sum the information for each of the columns with poundage ranges that fall into the category. For example, the number of vessels that would be eligible for an exemption if the halibut threshold was  $\leq 5,000$  pounds, could be determined by adding the number of vessels falling into the poundage ranges “ $0 < \text{lbs} \leq 1,000$ ” and “ $1,000 < \text{lbs} \leq 5,000$ .” Vessels that appear in the column showing no poundage for a species such as halibut, are in the data set because they harvested the other IFQ/CDQ species (if the table is a halibut table, the other species would be sablefish, and vice versa).

In instances where no observations fell into one of the categories, a “0” has been placed in the cell for the “Number vessels” and the rest of the column has been left blank. Confidentiality rules prevent the reporting of information that can be used to calculate gross revenues when four or fewer observations are available. When this was the case, the number of vessels, average vessel length, average acquisition costs, and average annual costs, have been reported, but gross revenue and ratio estimates have not been.

Various measures of the relationship of costs to revenues are reported. Two categories of costs are examined: the initial acquisition costs for the VMS unit, and the annual operating costs for the VMS unit. Both cost estimates are related to two different measures of revenues. Both are related to average fishing revenues from all Alaskan sources. All Alaskan sources includes revenues from fishing in State waters for species such as salmon and herring, as well as revenues from fishing for Federally managed species. This relationship provides an indication of the relation of costs to an operation's overall capacity to pay. Both costs are also related to average gross revenues for the operations from fishing for halibut and sablefish IFQ and CDQ only. This relationship provides an indication of the cost of the VMS to the operations revenues from its activity in the fisheries that create its VMS requirements.

Finally, two different measures of the relationship of costs to revenues are reported. The ratios of mean costs of acquisition, and mean annual costs, compared to the means of both revenue measures, are reported. In addition, the mean of the individual vessel cost-to-revenue ratios are also reported.

These measures can have very different implications. The difference is best shown with a simple example. Assume the cost of acquisition of the VMS unit is \$2,174. Assume we are considering the requirement that five vessels buy and use the VMS. Vessel A has \$74 of revenue, B has \$500, C has \$20,000, D has \$45,000, and E has \$145,000.

The average revenue for all vessels is \$42,115, and average cost is equal to \$2,174. The ratio of average cost to average revenue is 5 percent. However, the ratios of cost to revenue for each of the operations are: (A) 2,938 percent [ $2174/74 \times 100$ ]; (B) 435 percent; (C) 11 percent; (D) 5 percent; (E) 1.5 percent. The average percentage for the five vessels is 678 percent. This occurs because the two smaller operations have very large percent ratios, which dwarf the ratios for the larger vessels. If there were one of the (A) vessels with a 2,938 percent, and 99 of the (E) vessels each with a 1.5 percent, the ratio would be about 31%, because the (A) percentage is so large compared to the (E) percentages.

**Table 3. Halibut vessels organized by numbers of pounds of halibut IFQ and CDQ landed; includes vessels with VMS under the status quo, and vessels acquiring VMS.**

The categories corresponding to the threshold options in the Council’s motion are shaded. Other categories are provided for illustrative purposes.

Halibut harvest categories									
Halibut	Variable	Lbs = 0	0 < lbs <= 1,000	1,000 < lbs <= 5000	5,000 < lbs <= 10,000	10,000 < lbs <= 15,000	15,000 < lbs <= 20,000	20,000 < lbs <= 25,000	25,000 < lbs
	Number vessels	34	237	264	175	105	111	55	531
	Mean length	130	27	32	38	40	43	43	55
	Mean Total gross	6,445,579	14,110	32,135	91,511	131,201	160,559	163,341	561,326
	Mean IFQ/CDQ gross	216,891	868	8,505	33,117	51,438	65,572	79,686	393,868
	Mean acquisition costs	575	2,146	2,083	2,013	1,843	1,841	1,779	1,355
	Mean annual costs	151	276	307	336	327	343	323	295
	Ratio of mean acquisition costs to mean total revenues	0.01%	15.21%	6.48%	2.20%	1.40%	1.15%	1.09%	0.24%
	Ratio of mean annual costs to mean total revenues	0.00%	1.96%	0.96%	0.37%	0.25%	0.21%	0.20%	0.05%
	Ratio of mean acquisition costs to mean IFQ/CDQ revenues	0.27%	247.24%	24.49%	6.08%	3.58%	2.81%	2.23%	0.34%
	Ratio of mean annual costs to mean IFQ/CDQ revenues	0.07%	31.80%	3.61%	1.01%	0.64%	0.52%	0.41%	0.07%
	Mean Ratio of acquisition costs to total gross revenue	0.54%	921.86%	22.50%	6.14%	2.90%	2.02%	1.74%	0.59%
	Mean Ratio of annual costs to total gross revenue	0.11%	84.31%	2.77%	0.87%	0.47%	0.35%	0.31%	0.11%
	Mean Ratio of acquisition costs to IFQ/CDQ revenues	1.58%	1276.58%	37.86%	9.90%	4.83%	3.31%	2.45%	0.79%
	Mean ratio of annual costs to IFQ/CDQ gross revenue	0.31%	135.55%	5.44%	1.58%	0.85%	0.61%	0.45%	0.16%

**Table 4. Sablefish vessels organized by numbers of pounds of halibut or sablefish IFQ and/or CDQ landed; includes vessels with VMS under the status quo, and vessels acquiring VMS.**

The categories corresponding to the threshold options in the Council’s motion are shaded. Other categories are provided for illustrative purposes.

Sablefish harvest categories									
Sablefish	Variable	Lbs = 0	0 < lbs <= 1,000	1,000 < lbs <=5000	5,000 < lbs <= 10,000	10,000 < lbs <= 15,000	15,000 < lbs <= 20,000	20,000 < lbs <= 25,000	25,000 < lbs
	Number vessels	1,116	24	39	36	27	20	25	225
	Mean length	38	45	53	53	56	56	54	65
	Mean Total gross	268,419	253,478	333,993	380,331	625,716	446,134	343,533	972,780
	Mean IFQ/CDQ gross	57,954	162,339	189,388	168,533	185,688	132,277	212,930	652,528
	Mean acquisition costs	1,893	1,178	1,059	1,510	1,610	1,631	1,478	1,314
	Mean annual costs	303	219	212	331	326	281	339	316
	Ratio of mean acquisition costs to mean total revenues	0.71%	0.46%	0.32%	0.40%	0.26%	0.37%	0.43%	0.14%
	Ratio of mean annual costs to mean total revenues	0.11%	0.09%	0.06%	0.09%	0.05%	0.06%	0.10%	0.03%
	Ratio of mean acquisition costs to mean IFQ/CDQ revenues	3.27%	0.73%	0.56%	0.90%	0.87%	1.23%	0.69%	0.20%
	Ratio of mean annual costs to mean IFQ/CDQ revenues	0.52%	0.13%	0.11%	0.20%	0.18%	0.21%	0.16%	0.05%
	Mean Ratio of acquisition costs to total gross revenue	202.60%	4.85%	0.94%	0.98%	1.28%	1.46%	0.69%	0.33%
	Mean Ratio of annual costs to total gross revenue	18.80%	0.50%	0.16%	0.20%	0.25%	0.24%	0.15%	0.07%
	Mean Ratio of acquisition costs to IFQ/CDQ revenues	282.44%	5.50%	2.57%	2.02%	2.69%	2.35%	1.09%	0.44%
	Mean ratio of annual costs to IFQ/CDQ gross revenue	30.48%	0.61%	0.56%	0.39%	0.55%	0.42%	0.27%	0.09%

**Table 5. Halibut vessels organized by numbers of pounds of halibut IFQ and CDQ landed; includes only vessels acquiring VMS under Alternative 2.**

The categories corresponding to the threshold options in the Council’s motion are shaded. Other categories are provided for illustrative purposes.

Halibut	Halibut harvest categories								
	Variable	Lbs = 0	0 < lbs <= 1,000	1,000 < lbs <=5000	5,000 < lbs <= 10,000	10,000 < lbs <= 15,000	15,000 < lbs <= 20,000	20,000 < lbs <= 25,000	25,000 < lbs
	Number vessels	9	234	253	162	89	94	45	331
	Mean length	49	27	32	37	39	41	41	50
	Mean Total gross	131,940	13,872	28,979	65,621	90,276	119,082	128,695	412,178
	Mean IFQ/CDQ gross	62,277	859	8,407	27,394	43,017	59,393	81,532	325,052
	Mean acquisition costs	2,174	2,174	2,174	2,174	2,174	2,174	2,174	2,174
	Mean annual costs	432	273	318	352	381	400	381	412
	Ratio of mean acquisition costs to mean total revenues	1.65%	15.67%	7.50%	3.31%	2.41%	1.83%	1.69%	0.53%
	Ratio of mean annual costs to mean total revenues	0.33%	1.97%	1.10%	0.54%	0.42%	0.34%	0.30%	0.10%
	Ratio of mean acquisition costs to mean IFQ/CDQ revenues	3.49%	253.08%	25.86%	7.94%	5.05%	3.66%	2.67%	0.67%
	Ratio of mean annual costs to mean IFQ/CDQ revenues	0.69%	31.78%	3.78%	1.28%	0.89%	0.67%	0.47%	0.13%
	Mean Ratio of acquisition costs to total gross revenue	2.03%	933.68%	23.48%	6.63%	3.42%	2.38%	2.12%	0.94%
	Mean Ratio of annual costs to total gross revenue	0.37%	85.37%	2.86%	0.94%	0.54%	0.41%	0.36%	0.16%
	Mean Ratio of acquisition costs to IFQ/CDQ revenues	5.96%	1292.94%	39.50%	10.69%	5.70%	3.91%	3.00%	1.27%
	Mean ratio of annual costs to IFQ/CDQ gross revenue	1.13%	136.39%	5.63%	1.67%	0.98%	0.72%	0.54%	0.23%

**Table 6. Sablefish vessels organized by numbers of pounds of sablefish IFQ and CDQ landed; includes only vessels acquiring VMS under Alternative 2.**

The categories corresponding to the threshold options in the Council’s motion are shaded. Other categories are provided for illustrative purposes.

Sablefish harvest categories									
Sablefish	Variable	Lbs = 0	0 < lbs <= 1,000	1,000 < lbs <=5000	5,000 < lbs <= 10,000	10,000 < lbs <= 15,000	15,000 < lbs <= 20,000	20,000 < lbs <= 25,000	25,000 < lbs
	Number vessels	972	13	19	25	20	15	17	136
	Mean length	34	44	49	48	46	48	52	58
	Mean Total gross	75,428	175,064	225,852	220,339	182,992	136,100	301,604	644,311
	Mean IFQ/CDQ gross	42,868	101,084	114,395	122,283	118,728	81,887	180,487	537,616
	Mean acquisition costs	2,174	2,174	2,174	2,174	2,174	2,174	2,174	2,174
	Mean annual costs	336	404	435	433	440	375	434	424
	Ratio of mean acquisition costs to mean total revenues	2.88%	1.24%	0.96%	0.99%	1.19%	1.60%	0.72%	0.34%
	Ratio of mean annual costs to mean total revenues	0.45%	0.23%	0.19%	0.20%	0.24%	0.28%	0.14%	0.07%
	Ratio of mean acquisition costs to mean IFQ/CDQ revenues	5.07%	2.15%	1.90%	1.78%	1.83%	2.65%	1.20%	0.40%
	Ratio of mean annual costs to mean IFQ/CDQ revenues	0.78%	0.40%	0.38%	0.35%	0.37%	0.46%	0.24%	0.08%
	Mean Ratio of acquisition costs to total gross revenue	232.62%	8.95%	1.93%	1.41%	1.73%	1.95%	1.01%	0.55%
	Mean Ratio of annual costs to total gross revenue	21.56%	0.92%	0.32%	0.26%	0.34%	0.32%	0.19%	0.10%
	Mean Ratio of acquisition costs to IFQ/CDQ revenues	324.29%	10.16%	5.27%	2.91%	3.64%	3.13%	1.61%	0.73%
	Mean ratio of annual costs to IFQ/CDQ gross revenue	34.75%	1.12%	1.14%	0.52%	0.74%	0.55%	0.31%	0.14%

**Table 7. BSAI only Halibut vessels organized by numbers of pounds of halibut IFQ and CDQ landed; includes only vessels acquiring VMS under Alternative 2.**

The categories corresponding to the threshold options in the Council’s motion are shaded. Other categories are provided for illustrative purposes.

Halibut harvest categories									
Halibut	Variable	Lbs = 0	0 < lbs <= 1,000	1,000 < lbs <=5000	5,000 < lbs <= 10,000	10,000 < lbs <= 15,000	15,000 < lbs <= 20,000	20,000 < lbs <= 25,000	25,000 < lbs
	Number vessels	0	106	48	20	3	2	2	8
	Mean length		23	26	28	30	34	34	30
	Mean Total gross		5,288	18,690	31,332				123,468
	Mean IFQ/CDQ gross		460	4,803	14,236				126,057
	Mean acquisition costs		2,174	2,174	2,174	2,174	2,174	2,174	2,174
	Mean annual costs		234	277	308	273	316	367	316
	Ratio of mean acquisition costs to mean total revenues		41.11%	11.63%	6.94%				1.76%
	Ratio of mean annual costs to mean total revenues		4.43%	1.48%	0.98%				0.26%
	Ratio of mean acquisition costs to mean IFQ/CDQ revenues		472.61%	45.26%	15.27%				1.72%
	Ratio of mean annual costs to mean IFQ/CDQ revenues		50.87%	5.77%	2.16%				0.25%
	Mean Ratio of acquisition costs to total gross revenue		1895.28%	42.66%	14.31%				2.25%
	Mean Ratio of annual costs to total gross revenue		172.49%	5.10%	1.92%				0.32%
	Mean Ratio of acquisition costs to IFQ/CDQ revenues		2374.84%	63.99%	18.49%				2.20%
	Mean ratio of annual costs to IFQ/CDQ gross revenue		228.67%	8.03%	2.55%				0.31%

**Table 8. BSAI only sablefish vessels organized by numbers of pounds of sablefish IFQ and CDQ landed; includes only vessels acquiring VMS under Alternative 2.**

The categories corresponding to the threshold options in the Council’s motion are shaded. Other categories are provided for illustrative purposes.

		Sablefish harvest categories							
Sablefish	Variable	Lbs = 0	0 < lbs <= 1,000	1,000 < lbs <=5000	5,000 < lbs <= 10,000	10,000 < lbs <= 15,000	15,000 < lbs <= 20,000	20,000 < lbs <= 25,000	25,000 < lbs
	Number vessels	189	0	0	0	0	0	0	0
	Mean length	25							
	Mean Total gross	18,379							
	Mean IFQ/CDQ gross	9,840							
	Mean acquisition costs	2,174							
	Mean annual costs	259							
	Ratio of mean acquisition costs to mean total revenues	11.83%							
	Ratio of mean annual costs to mean total revenues	1.41%							
	Ratio of mean acquisition costs to mean IFQ/CDQ revenues	22.09%							
	Ratio of mean annual costs to mean IFQ/CDQ revenues	2.63%							
	Mean Ratio of acquisition costs to total gross revenue	1075.65%							
	Mean Ratio of annual costs to total gross revenue	98.28%							
	Mean Ratio of acquisition costs to IFQ/CDQ revenues	1350.49%							
	Mean ratio of annual costs to IFQ/CDQ gross revenue	130.61%							

**Table 9. GOA only Halibut vessels organized by numbers of pounds of halibut IFQ and CDQ landed; includes only vessels acquiring VMS under Alternative 2.**

The categories corresponding to the threshold options in the Council’s motion are shaded. Other categories are provided for illustrative purposes.

Halibut harvest categories									
Halibut	Variable	Lbs = 0	0 < lbs <= 1,000	1,000 < lbs <=5000	5,000 < lbs <= 10,000	10,000 < lbs <= 15,000	15,000 < lbs <= 20,000	20,000 < lbs <= 25,000	25,000 < lbs
	Number vessels	9	128	205	139	84	90	43	300
	Mean length	49	29	33	38	39	41	42	51
	Mean Total gross	131,940	20,981	31,388	70,350	93,932	120,463	130,623	403,547
	Mean IFQ/CDQ gross	62,277	1,190	9,251	29,323	43,918	59,868	82,414	309,591
	Mean acquisition costs	2,174	2,174	2,174	2,174	2,174	2,174	2,174	2,174
	Mean annual costs	432	306	327	358	384	402	381	416
	Ratio of mean acquisition costs to mean total revenues	1.65%	10.36%	6.93%	3.09%	2.31%	1.80%	1.66%	0.54%
	Ratio of mean annual costs to mean total revenues	0.33%	1.46%	1.04%	0.51%	0.41%	0.33%	0.29%	0.10%
	Ratio of mean acquisition costs to mean IFQ/CDQ revenues	3.49%	182.69%	23.50%	7.41%	4.95%	3.63%	2.64%	0.70%
	Ratio of mean annual costs to mean IFQ/CDQ revenues	0.69%	25.71%	3.53%	1.22%	0.87%	0.67%	0.46%	0.13%
	Mean Ratio of acquisition costs to total gross revenue	2.03%	137.34%	18.99%	5.58%	3.08%	2.35%	2.08%	0.93%
	Mean Ratio of annual costs to total gross revenue	0.37%	13.23%	2.33%	0.80%	0.50%	0.41%	0.35%	0.16%
	Mean Ratio of acquisition costs to IFQ/CDQ revenues	5.96%	397.00%	33.77%	9.62%	5.49%	3.88%	2.97%	1.27%
	Mean ratio of annual costs to IFQ/CDQ gross revenue	1.13%	59.98%	5.07%	1.55%	0.96%	0.71%	0.53%	0.24%

**Table 10. GOA only sablefish vessels organized by numbers of pounds of sablefish IFQ and CDQ landed; includes only vessels acquiring VMS under Alternative 2.**

The categories corresponding to the threshold options in the Council’s motion are shaded. Other categories are provided for illustrative purposes.

Sablefish harvest categories									
Sablefish	Variable	Lbs = 0	0 < lbs <= 1,000	1,000 < lbs <=5000	5,000 < lbs <= 10,000	10,000 < lbs <= 15,000	15,000 < lbs <= 20,000	20,000 < lbs <= 25,000	25,000 < lbs
	Number vessels	766	13	18	25	20	15	16	125
	Mean length	36	44	48	48	46	48	51	58
	Mean Total gross	86,919	175,064	225,189	220,339	182,992	136,100	304,694	612,039
	Mean IFQ/CDQ gross	48,565	101,084	107,527	122,283	118,728	81,887	175,986	498,060
	Mean acquisition costs	2,174	2,174	2,174	2,174	2,174	2,174	2,174	2,174
	Mean annual costs	354	404	446	433	440	375	427	424
	Ratio of mean acquisition costs to mean total revenues	2.50%	1.24%	0.97%	0.99%	1.19%	1.60%	0.71%	0.36%
	Ratio of mean annual costs to mean total revenues	0.41%	0.23%	0.20%	0.20%	0.24%	0.28%	0.14%	0.07%
	Ratio of mean acquisition costs to mean IFQ/CDQ revenues	4.48%	2.15%	2.02%	1.78%	1.83%	2.65%	1.24%	0.44%
	Ratio of mean annual costs to mean IFQ/CDQ revenues	0.73%	0.40%	0.41%	0.35%	0.37%	0.46%	0.24%	0.09%
	Mean Ratio of acquisition costs to total gross revenue	29.72%	8.95%	1.99%	1.41%	1.73%	1.95%	1.02%	0.57%
	Mean Ratio of annual costs to total gross revenue	3.10%	0.92%	0.33%	0.26%	0.34%	0.32%	0.19%	0.10%
	Mean Ratio of acquisition costs to IFQ/CDQ revenues	78.20%	10.16%	5.51%	2.91%	3.64%	3.13%	1.65%	0.78%
	Mean ratio of annual costs to IFQ/CDQ gross revenue	11.86%	1.12%	1.20%	0.52%	0.74%	0.55%	0.32%	0.15%

**Table 11. Halibut vessels in both the BSAI and GOA, organized by numbers of pounds of halibut IFQ and CDQ landed; includes only vessels acquiring VMS under Alternative 2.**

The categories corresponding to the threshold options in the Council’s motion are shaded. Other categories are provided for illustrative purposes.

Halibut harvest categories									
Halibut	Variable	Lbs = 0	0 < lbs <= 1,000	1,000 < lbs <=5000	5,000 < lbs <= 10,000	10,000 < lbs <= 15,000	15,000 < lbs <= 20,000	20,000 < lbs <= 25,000	25,000 < lbs
	Number vessels	0	0	0	3	2	2	0	23
	Mean length				36	28	32		49
	Mean Total gross								625,178
	Mean IFQ/CDQ gross								595,938
	Mean acquisition costs				2,174	2,174	2,174		2,174
	Mean annual costs				358	418	392		403
	Ratio of mean acquisition costs to mean total revenues								0.35%
	Ratio of mean annual costs to mean total revenues								0.06%
	Ratio of mean acquisition costs to mean IFQ/CDQ revenues								0.36%
	Ratio of mean annual costs to mean IFQ/CDQ revenues								0.07%
	Mean Ratio of acquisition costs to total gross revenue								0.67%
	Mean Ratio of annual costs to total gross revenue								0.12%
	Mean Ratio of acquisition costs to IFQ/CDQ revenues								0.82%
	Mean ratio of annual costs to IFQ/CDQ gross revenue								0.15%

**Table 12. Sablefish vessels in both the BSAI and GOA, organized by numbers of pounds of sablefish IFQ and CDQ landed; includes only vessels acquiring VMS under Alternative 2.**

The categories corresponding to the threshold options in the Council’s motion are shaded. Other categories are provided for illustrative purposes.

Sablefish harvest categories									
Sablefish	Variable	Lbs = 0	0 < lbs <= 1,000	1,000 < lbs <=5000	5,000 < lbs <= 10,000	10,000 < lbs <= 15,000	15,000 < lbs <= 20,000	20,000 < lbs <= 25,000	25,000 < lbs
	Number vessels	17	0	1	0	0	0	1	11
	Mean length	35		54				68	58
	Mean Total gross	191,883							1,011,048
	Mean IFQ/CDQ gross	153,349							987,117
	Mean acquisition costs	2,174		2,174				2,174	2,174
	Mean annual costs	383		239				545	424
	Ratio of mean acquisition costs to mean total revenues	1.13%							0.22%
	Ratio of mean annual costs to mean total revenues	0.20%							0.04%
	Ratio of mean acquisition costs to mean IFQ/CDQ revenues	1.42%							0.22%
	Ratio of mean annual costs to mean IFQ/CDQ revenues	0.25%							0.04%
	Mean Ratio of acquisition costs to total gross revenue	2.38%							0.26%
	Mean Ratio of annual costs to total gross revenue	0.37%							0.05%
	Mean Ratio of acquisition costs to IFQ/CDQ revenues	3.56%							0.27%
	Mean ratio of annual costs to IFQ/CDQ gross revenue	0.62%							0.05%

The interaction of this alternative with the vessel length exemptions has not been evaluated. These vessel length exemption and the threshold exemptions appear to be under consideration as alternatives to, or substitutes for, each other. Therefore an analysis of their interaction may not be necessary. However, the Council is considering one vessel length option to provide cost relief for smaller entities that might be applied in combination with this one: a one year delay in the effective date of the action for vessels 32 feet or under. This option could be adopted in combination with a threshold based option, and may reduce the costs faced by an operation for acquiring a VMS system.

The impact of the threshold based exemptions under Alternative 3 and 4 has not been addressed in this preliminary initial review draft. This topic is left to the initial review draft itself.

This analysis has assumed that all vessels with IFQ and/or CDQ halibut and/or sablefish would have been required to obtain a VMS for that reason. In many cases, a vessel shows no fishing activity, other than IFQ and or CDQ halibut and/or sablefish activity that would have triggered a VMS requirement. Seven hundred and fifty-three (753) vessels appear to fall into this category. However, 464 vessels did show evidence of other activity that would have been associated with a VMS requirement.<sup>19</sup> In many cases, this activity was minimal, and as first approximation, the halibut or sablefish activity could be assumed to be the key to the vessel's VMS requirement. If the halibut or sablefish activity did not trigger a VMS requirement under a threshold alternative, it is possible the vessel could avoid the requirement completely by withdrawing from the other fishing activity.

In some instances, the other activity was more significant. "Other crab" (EEZ and state crab, other than the rationalized BSAI crab fisheries) only accounts for about 2 percent of overall gross revenues for these vessels. However, crab landings are concentrated on a small number of vessels, and are important for these vessels. Twenty-three (23) vessels fished for crab, other than BSAI crab, in the EEZ. Twenty-one (21) of these vessels earned more than \$5,000 from this activity. The average revenues for the 23 operations was \$31,213. For many of these vessels, the crab fishing revenues from the EEZ may have been a significant inducement to obtain a VMS, even in the absence of a halibut/sablefish on board requirement.

"Other EEZ groundfish" (aside from pollock, Pacific cod, Atka mackerel, and sablefish) accounts for less than a percent of the revenues of these vessels. However, there are some vessels for which it appears to account for significant revenues. There are 51 vessels with other EEZ groundfish revenues that are greater than \$5,000. For 24 of these vessels these revenues are greater than \$10,000. In some instances, these revenues account for tens of thousands of dollars. However, for 40 of these vessels, halibut and EEZ longline sablefish revenues account for over 90 percent of vessel groundfish and halibut revenues. In only five cases does this percentage fall below 80 percent.

### 4.3 Dinglebar exemption

Dinglebar gear is used in the GOA to harvest lingcod. The Alaska Department of Fish and Game (ADF&G) describes dinglebar gear as salmon power troll gear modified with a heavy metal bar to fish for groundfish. As it bounces along the ocean bottom, the bar provides the weight necessary

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<sup>19</sup> Note that 295 vessels would have had VMS under the status quo. These, plus the 753 without other activity that may have triggered the requirement, and the 464 that may have had other triggering activity, sum to the 1,512 vessels under consideration.

to keep the hooks near the bottom. Additionally, the ADF&G notes that lingcod are taken as incidental catch with longline gear in demersal shelf rockfish and halibut fisheries, and by mechanical jigging gear in Cook Inlet.

(<http://www.cf.adfg.state.ak.us/geninfo/finfish/grndfish/home.php>)

The fishery occurs in the EEZ and in state waters adjacent to the EEZ, and lasts for about a month in May and June. Lingcod are not covered in the GOA groundfish FMPs, but are actively managed by the State of Alaska in the EEZ as well as in its own waters. A federal permit is not required to fish for lingcod, unless the fisherman intends to retain incidental harvests of groundfish. In the absence of a federal permit, the federal government can require VMS on dinglebar vessels when they are operating in the EEZ, but not when they are operating in state waters.

In 2004, 18 vessels landed lingcod caught with dinglebar gear. Six of these only appear to have operated within the waters of the State of Alaska. Thus, modification of this requirement potentially affects 12 vessels. The vessel owners for eight of these 12 vessels report that they live in Sitka; the remaining four owners live in Southeast Alaska. The average length of the 12 vessels is 45 feet LOA, and they range from 32 to 63 feet. Salmon accounts for about 62 percent of the vessel harvest by volume, and about 59 percent by value. Halibut accounts for about eight percent by volume, but about 17 percent by value. Dinglebar production, which is primarily lingcod, accounts for about 18 percent by volume, but about 9 percent by value.

In June 2005, the Council recommended that VMS be required on mobile bottom-contact gear operating in the GOA. Mobile bottom contact gear included bottom trawls and dredges, as well as dinglebar gear. This regulation was meant to improve NMFS OLE and USCG ability to enforce essential fish habitat and habitat area of particular concern (EFH/HAPC) measures that were adopted in the GOA at that time. NMFS adopted a final rule requiring vessels with FFPs, using mobile bottom-contact gear in the GOA, to use VMS in the EEZ in the GOA, effective July 28, 2006 (71FR 36694). The effective date was after the dinglebar fishery for lingcod had taken place in the EEZ in 2006. Thus operators of vessels named on an FFP, who would be required to carry VMS only because they use dinglebar gear in the EEZ would not be required to meet this requirement until the fishery opened in 2007. In October 2006, the Council requested that a dinglebar exemption from the VMS requirement be considered as an option to the VMS alternatives under consideration in this RIR/IRFA.

#### *Status quo Alternative 1*

The status quo alternative, Alternative 1, requires federally permitted vessels to carry VMS if they are using mobile bottom contact gear, which includes dinglebar gear, in the GOA (50 CFR 679.7(a)(21) and (22)). If dinglebar gear is exempted from the status quo requirement, vessels that would only carry VMS units because they used dinglebar gear in the GOA would no longer have to carry the units. However, vessels that use dinglebar gear, but that carry VMS to meet other regulatory requirements, for example, rules requiring VMS on vessels that fish for pollock, Pacific cod, and Atka mackerel, would still be required to carry VMS and comply with the regulations implemented in connection with those programs.

An estimated nine dinglebar vessels will be required to carry a VMS unit under the status quo (Alternative 1). All of these vessels carried an FFP and used dinglebar gear in the GOA EEZ in 2004. These nine vessels would be exempted under the status quo (Alternative 1) if the option were adopted and the requirement that dinglebar vessels carry VMS was repealed.

These nine vessels had average gross revenues from all sources of \$118,713. They averaged \$12,132 from the dinglebar fishery, mostly from lingcod. Median gross revenues from the dinglebar fishery were \$7,054. As described above, other important revenue sources for these vessels included salmon, and sablefish (for two vessels), and halibut (for three vessels).

The average cost of purchasing VMS units would be \$2,174. The average annual operating costs would be \$188. This average annual cost reflects one month of fishing per boat at \$56, 11 months of dry docking the VMS at \$5/month (\$55), and \$77 annual maintenance and repair costs. Data from ADF&G show that each boat made landings in only one calendar month. Landings occurred in late May or early June.

The mean acquisition cost is 2 percent of estimated mean annual revenues from all fishing sources. The mean acquisition cost is 18% of mean annual dinglebar revenues. The ratio of mean annual operating costs to mean annual revenue from all fishing sources is less than one percent. The ratio of mean annual operating costs to mean annual dinglebar revenue is about 1.6 percent.

In the absence of their dinglebar fishing activity, most of these nine vessels do not appear to have had other reasons for VMS under the status quo. Although two vessels had Pacific cod endorsements, none had landings of Pacific cod, pollock, or Atka mackerel from the EEZ. None had FCVPs. None had used bottom trawl or dredge gear. None had been active in the AI. Thus, it does not appear that these vessels would not have had VMS in the absence of their dinglebar fishing activity.

#### *Alternative 2*

Under Alternative 2, vessels with an FFP, vessels with IFQ and/or CDQ halibut and/or sablefish on board, and vessels fishing in the EEZ, would have to carry transmitting VMS units. Under these criteria, the nine vessels discussed under the status quo, and an additional three vessels, that fish with dinglebar gear, would have to operate with transmitting VMS units. Because Alternative 2 involves the addition of only three vessels, confidentiality rules prevent disclosure of estimated revenues for these operations.

If this option were adopted, vessels using dinglebar gear would be exempt from the requirement, so long as they did nothing else that triggered the requirement. To be exempt, a vessel would have to be included under Alternative 2, only because it operated in the EEZ with dinglebar gear. An FFP is not required for dinglebar use in the EEZ, therefore, if a vessel carried an FFP, it would be for some purpose other than using the dinglebar gear.

Three of these vessels fished for IFQ and/or halibut and/or sablefish, and would have been required to carry a VMS unit under Alternative 2 for that reason.

#### *Alternatives 3 and 4*

Alternative 3 exempts vessels which only fished in state managed fisheries in state waters. Since the requirement that vessels carry VMS if they use dinglebar gear in the EEZ, this exemption does not appear to interact with Alternative 3. Similarly, Alternative 4 exempts vessels that fish for halibut in state waters. The dinglebar exemption does not appear to interact with that alternative either.

### *Vessel length exemptions*

Options provide exemptions for small vessels (less than or equal to 25, 30 and 32 feet). Two of these vessels are 32 feet LOA, and would be exempted by the options that exempt vessels 32 feet and under. None of the vessels would be affected by the exemptions for smaller vessels.

One option provides an extra year for vessels less than 32 feet LOA to comply with the VMS requirements. These two vessels would be eligible to take advantage of this provision if it were adopted.

### *Halibut and sablefish harvest exemptions*

One vessel qualifies for an Alternative 2 exemption if the thresholds are as high as 10,000 pounds for both halibut and sablefish. That is, one vessel has production less than 10,000 pounds for both species.

## 4.4 Exemption for trollers with incidental halibut catches

The Council's Alternative 2 excludes vessels that only harvest salmon and herring from its VMS requirements. This includes vessels fishing seine and gillnet gears, neither of which is authorized gear in the EEZ. The Council has also explicitly excluded salmon trolling operations from its requirements for carrying VMS. There are no alternatives or options under which vessels that are just trolling for salmon, and not carrying an FFP or carrying IFQ and/or CDQ fish on board, are required to carry a transmitting VMS unit. This is true even if they fish in the EEZ.

However, halibut can be taken as an incidental catch during salmon trolling. A salmon troller is normally required to discard any incidental catches of halibut. An exception to this occurs when a halibut IFQ permit holder, or a designated hired skipper, is on board the troller, whether as a skipper or as a crew member. In this case, the operation is required to treat the halibut incidental catch as IFQ halibut, and debit it against the permit holder's halibut IFQ account.

If this occurs, the troller has IFQ halibut on board, and is required to carry a transmitting VMS while it does. This can create additional transmission costs for trollers that carry a VMS for some other reason, and can create a requirement to acquire a VMS unit, if the vessel would not otherwise carry one.

A review of the CFEC fish ticket data shows that in 2004, 1,094 vessels made landings with troll gears "05" (hand troll) and "15," (power troll). Only 404 of these appeared to be required to carry a VMS under the Council's Alternative 2. That is, only 404 vessels appeared to be named on an FFP, to have IFQ and/or CDQ halibut and/or sablefish on board at some time, or to operate in the EEZ. The other 690 vessels would not have been required to carry a transmitting VMS.

Only 58 of the trollers that would be required to carry VMS had retained halibut in 2004. An examination of the data indicated that many of these vessels appeared to be targeting halibut rather than salmon. Forty-seven of the vessels had no salmon catch at all, but appeared to have all, or almost all of their halibut recorded on troll gear. Another three had some salmon taken with other gears, and had taken all their halibut with troll gear. Only eight vessels appeared to be salmon trollers taking and retaining halibut as an incidental catch. One of these was named on an FFP, and was thus required to carry a transmitting VMS whenever it was operating. Thus, seven

vessels would have been subject to the VMS requirement because they retained IFQ halibut while trolling.

The average vessel length was about 38 feet. Vessels ranged in length from 24 to 47 feet. The vessel owners lived in four separate communities in Southeast Alaska. Halibut catches for these boats were about a metric ton, in total.

These boats earned about 98% of their revenues from salmon, and the remaining 2% from retained halibut. Average revenues for these vessels were about \$34,900 from all sources, and about \$745 from their troll halibut incidental catches.

Mean acquisition costs were estimated to be \$2,174, and mean annual operating costs were estimated to be \$246. The ratio of mean acquisition costs to mean total revenues from all sources was 6 percent, and the ratio of mean acquisition costs to mean halibut revenues was 292 percent. The ratio of mean annual operating costs to mean total revenues was about 7/10<sup>th</sup> percent, the ratio of mean annual operating costs to mean halibut revenues was about 33 percent. The mean ratio of acquisition costs to total revenues was about 13.5% and the mean ratio of annual operating costs to total revenues from all sources was 1.5 percent. The mean ratio of acquisition costs to halibut revenues was 1,066 percent, and the mean ratio of annual operating costs to halibut revenues was about 99 percent.

One of these vessels was 24 feet long, and would have been exempted under all three of the vessel length exemption options. This vessel would also receive an additional year for compliance with the VMS requirements, if the option allowing a vessel to wait for a year if it was under 32 feet was adopted.

None of these vessels appear to have sablefish harvests. All of them appear to have less than 1,000 pounds of halibut incidental catches. Thus these vessels would all be exempted from VMS coverage under any of the halibut threshold exemption options, if those were adopted.

Alternative 3 incorporates all the elements of Alternative 2, except that it exempts vessels when they are fishing in state managed fisheries in state waters. However, these vessels face a VMS requirement because they carry IFQ halibut on board. Thus, alternative 2 would not provide exemptions for any of these vessels.

Alternative 4 incorporates all the elements of Alternative 3, except that it exempts vessels which do all of their IFQ/CDQ sablefish and/or halibut fishing in state waters from the requirement when they only trigger the requirement because they are fishing IFQ and/or CDQ halibut or sablefish in state waters. Six of the seven vessels considered here appear to have done all of their fishing in state waters, and thus would be exempted under this alternative. One vessel might not be exempted under this alternative.

## 4.5 Fiscal costs

Extension of VMS coverage will have fiscal impacts on government agencies. Collection and monitoring of VMS information will use NOAA OLE resources. However, the availability of the data will permit more cost-effective delivery of existing enforcement levels, and enhanced enforcement at existing costs. Additional VMS benefits should come from scientific,

management, and safety activities. Increased costs from these activities would take place if VMS increased the productivity from those activities enough to justify additional work in those areas.

The extension of VMS coverage, and the monitoring of VMS reports, would create administrative costs for NOAA OLE. During the transition period when fishing operations are taking steps to install VMS units in order to comply with new regulations, NOAA OLE staff would have to answer questions, provide other support services, and record the initialization of new VMS units during the process of adding VMS units to the vessels. Subsequently, NOAA OLE would have to add VMS technicians to monitor the additional VMS reports. The number and type of persons depends on the type of regulations being monitored, the number of vessels that are being monitored, and the length of the fishing season.

Experience from VMS programs in other regions suggests that it takes about one enforcement technician for every 350 vessels monitored. The actual cost of creating the infrastructure for acquiring and storing the new VMS information has already been incurred for existing VMS coverage. These costs would be expected to change by a small amount. The principal cost would be the salary, benefits, equipment and office space for the new VMS technicians. These are estimated to be about \$75,000 per year per technician. If the number of vessels covered rose from about 700 under the status quo, to about 2,200 under the most comprehensive alternative (Alt 2), the annual cost of the VMS technical support would be about \$300,000 for four additional VMS technicians. (Passer, pers. comm.)

NMFS expects enforcement economies to flow from more effective targeting of enforcement agent time, more effective use of Coast Guard vessels and aircraft in at-sea monitoring and boardings, additional evidence leading to better cases and more effective prosecutions by NOAA GC, the ability to cost-effectively gather evidence and prosecute offenses that could not have been prosecuted before, and the increased deterrent effect of existing NOAA OLE and Coast Guard resources. The potential benefits for enforcement, as well as for science, management and safety, were discussed in Section 4.3.3.

As noted in Section 4.3.3, the options provided to exempt certain fishing vessels in transit across the EEZ from VMS requirements attempt to mitigate the enforcement problems they create, by requiring vessels taking advantage of the option to transit with their gear stowed and to notify NOAA OLE of their intent to transit. As described in that section, NOAA OLE believes a notification requirement would create a costly and labor intensive process which would have little enforcement benefit. NOAA OLE would have to create mechanisms to receive and record notifications and administrative mechanisms to distribute the notifications to NOAA OLE agents, and the Coast Guard. The Coast Guard would have to distribute these to on-shore staff monitoring VMS tracks, and to vessels and aircraft on patrol. A mechanism would also have to be created to determine when a vessel had completed its notified transit and was no longer eligible for the exemption. This information would also have to be distributed NOAA OLE agents and Coast Guard personnel.

## Principal Contributors

Camille, Kohler. Programmer/Analyst. Resource Data, Inc. Anchorage, Alaska.

Ben Muse, Industry Economist. Sustainable Fisheries Division, National Marine Fisheries Service. Alaska Region. 709 W. 9th St., Juneau, Alaska. 99802-1668.

## Contributors and persons consulted

Susan Auer. Attorney. NOAA Office of General Counsel. Alaska Region. 709 W. 9th St., Juneau, Alaska. 99802-1668.

Sally Bibb. CDQ Coordinator. Sustainable Fisheries Division, National Marine Fisheries Service. Alaska Region. 709 W. 9th St., Juneau, Alaska. 99802-1668.

Melanie Brown. Sustainable Fisheries Division, National Marine Fisheries Service. Alaska Region. 709 W. 9th St., Juneau, Alaska. 99802-1668.

Tracy Buck. Restricted Access Management Division, National Marine Fisheries Service, Alaska Region. Alaska Region. 709 W. 9th St., Juneau, Alaska. 99802-1668.

Jason Gasper. Sustainable Fisheries Division, National Marine Fisheries Service. Alaska Region. 709 W. 9th St., Juneau, Alaska. 99802-1668.

Dave Gaudet. Power troller, former Alaska Department of Fish and Game troll biologist.

Jeff Hartman. Sustainable Fisheries Division, National Marine Fisheries Service. Alaska Region. 709 W. 9th St., Juneau, Alaska. 99802-1668.

Steve Lewis. Analytical Team, National Marine Fisheries Service, Alaska Region. 709 W. 9th St., Juneau, Alaska. 99802-1668.

Tom Meyer. Attorney. NOAA Office of General Counsel. Alaska Region. 709 W. 9th St., Juneau, Alaska. 99802-1668.

Jeff Passer. Special Agent in Charge. NMFS Office of Law Enforcement. Alaska Region. 709 W. 9th St., Juneau, Alaska. 99802-1668.

Lisa Ragone. Lt. Cmdr. Chief, Fisheries Enforcement Branch (dre-2). USCG, 17th Coast Guard District. 709 W. 9th St., Juneau, Alaska.

Andy Smoker. Sustainable Fisheries Division, National Marine Fisheries Service. Alaska Region. 709 W. 9th St., Juneau, Alaska. 99802-1668.

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