Draft Regulatory Impact Review /
Initial Regulatory Flexibility Analysis

for

A Proposed Rule to Amend Regulations for
Observer At-Sea Electronic Communication Equipment Requirements for Vessels and Shoreside Processors in the North Pacific Groundfish Fisheries

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Introduction

Observers on fishing vessels and at shoreside plants play an important role in the in-season management of Bering Sea and Aleutian Island (BSAI) and Gulf of Alaska (GOA) groundfish fisheries. The data they provide is particularly important for monitoring prohibited species catches (PSC) in order to manage PSC closures. Timely and accurate data are important to in-season fisheries managers seeking to manage openings and closures so as to meet the management objectives of the North Pacific Fisheries Management Council and to optimize the value of the fishery resources.

The Observer Communication System (OCS, formerly referred to as the "ATLAS" system) is comprised of computers and communications equipment supplied by vessel and processing plant operators, and custom computer software supplied by NMFS. It allows observers to rapidly process and report the data that they collect. Its use by observers on catcher/processors, motherships and shoreside processors has led to more timely and more accurate fisheries data. In this action, NMFS proposes to require operations already subject to OCS requirements to adopt hardware upgrades to meet current technology standards necessary to support the OCS software and to require hardware installed in vessels to be maintained in a functional mode. In addition, under its preferred alternative, NMFS proposes to require all catcher-only vessels obligated to carry observers during 100% of their fishing days to install the hardware and communications equipment necessary to support the OCS system and maintain it in a functional mode.

This RIR/IRFA provides an analysis of five OCS regulatory alternatives under consideration. These include a status quo alternative and four alternatives, including the preferred alternative (Alternative C), meant to speed up the movement of fisheries data (particularly PSC data) from observers on the fishing vessels to in-season managers in NMFS Alaska Region Office of Sustainable Fisheries and to improve its quality.

RIR

A Regulatory Impact Review (RIR), prepared in accordance with Presidential Executive Order 12866, provides a comparative analysis of the costs and benefits of the five alternatives. The analysis also compares the alternatives against significance criteria found in the executive order. The five alternatives and their impacts are summarized below:

A *No change from the status quo.* Under this alternative, older computing and communications hardware remains on catcher-processors, motherships, and shoreside processors. There is no extension of the requirements to catcher vessels. This alternative serves as a baseline alternative against which the impacts of the other alternatives are measured.

B *Catcher-processors, motherships, and shoreside processors would be required to upgrade their computing and communications hardware and to maintain this equipment in a functional state.* This alternative excludes catcher vessels from the requirements to upgrade computing and communications hardware. This alternative provides some improvements in data, particularly for BSAI yellow fin sole and rock sole trawl fisheries and Pacific cod and turbot hook and line fisheries. This should help improve management of two important PSC species, halibut and red king crab. In the GOA this approach could complement vessels with 30% coverage in the deep and shallow water trawl complexes. This should help improve management of halibut PSC in the flatfish and Pacific cod fisheries. Over a five year period, this alternative is expected to generate a present value of $85,000 in total costs to NMFS and industry compared to Alternative A (baseline).

C *In addition to the requirements in Alternative B, this alternative would extend the OCS requirements to catcher vessels carrying observers on 100% of their trips.* This is the preferred alternative. This approach provides the benefits of Alternative B, plus improvements in data from vessels with 100% observer coverage, particularly in the BSAI pollock trawl and Pacific cod trawl fisheries. This should help improve management of salmon, herring, halibut, and red king crab PSC. This approach will provide relatively limited direct benefits in the GOA. In addition, reduction in number of faxed reports that must be corrected and entered into a data base will permit reallocation of some observer data processing resources to improve turnaround time for 30% vessel data. Data from vessels with 100% observer coverage and from vessels with 30% coverage will be more timely. There will be data quality improvements for data from vessels with 100% coverage, but not from those with 30% coverage. Over a five year period, this alternative is expected to generate a present value of $262,000 in total costs to NMFS and industry compared to Alternative A (baseline).

D *In addition to the requirements in Alternative C, this alternative would extend the OCS computing and software requirements to catcher vessels carrying observers on 30% of their fishing days. This alternative would not extend the at-sea communications requirements to these vessels.* The addition of the vessels with 30% at-sea observer coverage to Alternative "C" provides the improvements of Alternative "C" plus additional improvements in PSC data in the GOA deep and shallow water trawl complexes (particularly in the targeted fisheries for flatfish and Pacific cod) and in the Pacific cod hook and line fishery. This should help improve management of halibut. There are concerns about whether it is practical to maintain OCS software on vessels with 30% observer coverage. If this alternative could be implemented it would provide the best combination of data speed and quality among the alternatives considered. Over a five year period, this alternative is expected to generate a present value of $483,000 in total costs to NMFS and industry compared to Alternative A (baseline).

E *This alternative incorporates the upgrades in Alternative B and adds enough staff to the observer program to allow it to process incoming observer data and to send it to the NMFS in-season managers within 24 hours of receipt.* This alternative provides the advantages of alternative B. In addition, increased data processing resources within NMFS would improve the timeliness of data received by in-season managers. However, data will still be faxed from catcher vessel observers following trips, so data will not be as timely as under Alternative D, and quality will remain a problem. NMFS cannot commit to providing the resources required of it under this alternative. Over a five year period, this alternative is expected to generate a present value of $435,000 in total costs to NMFS and industry compared to Alternative A (baseline).

There are several sources of uncertainty about the cost estimates. Chief among these: (1) there are potential overestimates of the costs of adopting hardware if large numbers of operations already have the equipment; (2) the average costs of upgrading individual computers may be overestimated, further biasing the cost estimates upward; (3) estimates of failure rates are rough, operations are assumed to replace rather than repair failed computers and communications hardware, and the impact of lost fishing time if equipment failure makes transmission of observer reports impossible cannot be quantified; (4) there are concerns that software function failure may be higher than estimated for 30% vessels under Alternative D (since many trips would be made without observers to monitor software use).

These alternatives do not appear to be "significant regulatory actions" within the meaning of E.O. 12866. They do not (a) have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, local or tribal governments or communities, (b) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; (c) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or (d) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the executive order.

IRFA

This document also contains an Initial Regulatory Flexibility Analysis (IRFA) conducted in accordance with the Regulatory Flexibility Act of 1980 and the Small Business Regulatory Enforcement Fairness Act of 1996. The Regulatory Flexibility Act was designed to place the burden on government to review all regulations to ensure that, while accomplishing their intended purposes, they do not unduly inhibit the ability of small entities to compete.

In the IRFA it is estimated that the proposed alternatives could affect the following numbers of small, directly regulated, entities: 38 small catcher/processors, no motherships, 5 processing plants, 31 catcher vessels with 100% observer coverage, 389 catcher vessels with 30% observer coverage, and 6 CDQ groups. The preferred alternative, Alternative C, would affect the following numbers of directly regulated entities: 38 small catcher/processors, no motherships, 5 processing plants, 31 catcher vessels with 100% observer coverage, and no catcher vessels with 30% observer coverage.

Unfortunately, while it is possible to make estimates of operation gross revenue using state and federal data routinely collected from fishing operations and fish processing operations, there is almost no information available on the operating costs of these operations. It has therefore been necessary to conduct this analysis by relating the costs of the proposals to the average gross revenues of the different classes of operations, rather than to their cash flow or profit.

The preferred alternative (Alt. C) would impose costs on the following classes of directly regulated small entities:

- *Catcher/processors* These small entities were estimated to gross $1.1 million each in 2000. The firms that would have to adopt new equipment were estimated to spend an average of $2,600. It was estimated that they would not incur positive annual operating expenses. Upgrade and investment costs thus came to about 0.2% of one year's gross revenues for a small entity; the annual expenditure came to about 0% of a year's gross revenues.
- *Catcher vessels*. The small catcher vessel entities directly regulated by Alternative C were estimated to gross an average of $0.9 million in 2000. These catcher vessels were the vessels subject to the requirement that they carry observers on 100% of their trips. The operations affected were estimated to incur an upgrade and investment cost of $3,100. Annual expenses were expected to be $1,000. The upgrade and investment cost thus came to about 0.3% of one year's gross revenues for a small entity; the annual expenditure came to about 0.1% of a year's gross revenues.
- *Shoreside processors*. The shoreside processors directly regulated by Alternative C were estimated to gross an average of $3.1 million in 2000. They were expected to incur an upgrade and investment cost of $2,800 and no positive annual operating expenses. The upgrade and investment cost thus came to about 0.1% of one year's gross revenues for a small entity; the annual expenditure was about 0% of a year's gross revenues.
- *CDQ groups* 6 CDQ would be directly regulated by Alternative C through their relationships with fishing and fish processing operations. These CDQ groups grossed about $63 million in 2000, or an average of $10.5 million. The proportionate impact of these proposals on gross revenues for catcher/processors, catcher vessels, and shoreside processors were described above.

1.0 Regulatory Impact Review

1.1 Introduction

This Regulatory Impact Review (RIR) evaluates regulatory alternatives that would require upgrades to, and improved maintenance of, certain data processing and communications technology carried by groundfish catcher/processors, motherships, and on-shore processors. Some alternatives require the extension of the requirements to classes of groundfish catcher vessels.

1.1.1 Statutory authority

The National Marine Fisheries Service manages the U.S. groundfish fisheries of the Gulf of Alaska and the Bering Sea and Aleutian Islands management areas in the Exclusive Economic Zone under the Fishery Management Plans (FMPs) for those areas. The North Pacific Fishery Management Council prepared the FMPs under the authority of the Magnuson-Stevens Fishery Conservation and Management Act.

Regulations implement the FMPs at §50 CFR part 679. General regulations that also pertain to U.S. fisheries appear at subpart H of §50 CFR part 600. Regulations implementing the interim Groundfish Observer Program were published November 1, 1996 (61 CFR 56425) and amended December 30, 1997 (62 CFR 67755). The Groundfish Observer Program provides observer data necessary to manage Alaska groundfish fisheries. These data include information on total catch, discards, PSC and biological samples that are used for stock assessment purposes. The observers also provide information related to compliance with regulatory requirements.

1.1.2 Regulatory Impact Review (RIR)

This RIR is required under Presidential Executive Order (E.O.) 12866 (58 *FR* 51735, October 4, 1993). The requirements for all regulatory actions specified in E.O. 12866 are summarized in the following statement from the order:

> In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory alternatives, including the alternative of not regulating. Costs and benefits shall be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify, but nonetheless essential to consider. Further, in choosing among alternative regulatory approaches agencies should select those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach.

Executive Order 12866 requires that the Office of Management and Budget review proposed regulatory programs that are considered to be “significant”. A “significant regulatory action” is one that is likely to:

3. Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, local or tribal governments or communities;

4. Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

5. Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

6. Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order.

A regulatory program is "economically significant" if it is likely to result in the effects described above. In part, the Regulatory Impact Review (RIR) is designed to provide information to determine whether the proposed regulation is likely to be "economically significant"

1.1.3 Purpose and need for the action

Observer Program communications

The regulations implementing the Observer Program at §679.50 require observer coverage aboard fishing vessels and shoreside processors that participate in the Alaska groundfish fisheries. Timely communication between the fishing industry and NMFS through catch reports submitted to NMFS by both industry and observers are crucial to effective in-season monitoring of the groundfish quotas and prohibited species catch (PSC) allowances. For details on the important role of observer reports in in-season groundfish management, refer to Section 1.2.3, "In-season management."

Regulations requiring electronic submission of observer reports from catcher/processors, motherships and shoreside processors through the at-sea Observer Communications System (OCS)[1] were implemented in 1995 at 679.50(f). The OCS system is comprised of electronic hardware that meets NMFS specifications and is supplied by the vessel or shoreside processor, and dedicated software provided by NMFS. Together the hardware and software allow observers to communicate and transmit data daily with NMFS. This permits real-time data processing, improves the timeliness of data provided to managers, and allows managers to assess the daily activities of the fishing fleet. Industry, and the nation as a whole, benefit through fishery closures that more accurately reflect actual catch levels and which facilitate the conservation and optimal management of this valuable living marine resource.

Under its preferred alternative (Alternative C), NMFS proposes to require operations already subject to the OCS requirement (and, thus largely already incurred costs for basic hardware and supporting equipment, and operational adjustments, etc., to comply with the original management requirements) to invest in needed hardware upgrades to support the OCS software and to require hardware installed in vessels to be maintained in a functional mode. In addition, under its preferred alternative NMFS proposes to require all catcher-only vessels obligated to carry observers during 100% of their fishing days to install the hardware and communications equipment necessary to support the OCS system and maintain it in a functional mode. The upgrade, functionality, and catcher vessel issues are discussed in the following sub-sections.

Hardware upgrades

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[1]The OCS has been referred to as the "ATLAS" system in earlier documents.

Current regulations stipulate that any vessel required to carry one or more observers must facilitate transmission of observer data to NMFS by providing equipment consisting of a computer and communications equipment which meet certain specifications. Hardware requirements specified in these regulations to support OCS were considered state of the art at the time they were implemented in 1995. Computer technology has advanced at a rapid rate since then. As a result, the minimum hardware requirements currently prescribed in the OCS regulations are technologically out of date and are difficult to maintain. The OCS software application developed by NMFS to effect at-sea communication with observers has recently been updated to be more effective and now requires more powerful computers on which to run. It is therefore necessary to require the hardware needed to support the at-sea communication system for observers to be updated to meet current technology standards.

Included in this hardware update is a requirement that allowable communications equipment provide point-to-point communications, a necessary function to support all the operations that OCS requires. A point-to-point communications system allows the computer with OCS software to connect directly to the NMFS host computer and modem. Point-to-point communication connections would allow direct confidential communication between NMFS and observers, which has been shown to be necessary for effective problem solving in various at sea situations. Examples of communication systems which provide point-to-point communications are INMARSAT Standard-A, Standard-B, Mini-M and Iridium. Vessels using INMARSAT Standard C terminals and associated software to transmit data, which are allowed under current regulations, do not provide point-to-point communication connections. The inability of INMARSAT Standard C to allow observers and NMFS to maintain secure communications without interfacing with vessel personnel is of particular concern.

Functionality

Current regulations requiring the communications equipment aboard vessels to support OCS do not require that the hardware be functional. The equipment would be considered functional when a specified system aboard a vessel can initiate a data transmission to a device, such as a satellite, that provides point-to-point communication connection in accordance with specifications outlined in the regulations. The vessel would not be responsible for ensuring the actual reception of the data by the satellite or other device. Regulations for shoreside processor communication equipment do require the equipment to be maintained in a functional mode. The inadvertent omission of an equipment functionality requirement for vessels has resulted in NMFS' lack of ability to receive electronic observer data from up to nine catcher/processors which have not properly installed or maintained the communications equipment. Additionally, other vessels have taken up to seven months to repair or complete initial installation of functional equipment. This has resulted in or contributed to events leading to quotas being exceeded.

Catcher vessel requirements

Current regulations stipulate that any vessel required to carry one or more observers must facilitate transmission of observer data to NMFS by providing equipment meeting specifications outlined by regulations cited above. The original intent of the regulations was to apply these requirements to all catcher/processors, motherships, and shoreside processors subject to observer coverage requirements. Catcher-only vessels were not intended to be included in these requirements. The proposed rule for implementing these regulations (60 *FR* 45393, August 31, 1995) and the preamble to the final rule (61 *FR* 63759, December 2, 1996) correctly reflect the original intent to restrict the requirements to catcher/processor vessels, motherships, and shoreside processors. However, the regulatory language in the final rule incorrectly extends the regulations to all vessels subject to observer coverage, including all catcher vessels. The preferred alternative would correct that error by amending the requirement so that it does not include all catcher vessels indiscriminately, but would require all catcher vessels that are required to maintain 100% observer coverage as specified in regulations at §679.50(c)(iv) to install and maintain hardware and software supporting the OCS communications system as amended in this proposed rule.

Prior to 2000, all shoreside harvest data from processors was faxed to NMFS in a weekly production report. Weekly submission of these reports roughly matched the availability of observer data. In 2000, an electronic reporting system (distinct from OCS) was implemented to replace the weekly production report. Daily electronic reports of shoreside deliveries provide NMFS with landings information within one day of a delivery. This allows for partial real-time management of the groundfish species such as pollock, that are specifically allocated to the inshore sector or of harvest restrictions specific to catcher vessels under the American Fisheries Act sideboard provisions. However, availability to NMFS of observer PSC and discard data for a given delivery does not match the timeliness of the landings data.

Installation of OCS software, in combination with point-to-point modem communication capability, aboard shoreside catcher vessels would allow daily electronic transmission of observer data. This would provide NMFS with observer data from catcher vessels within 24 hours of receiving a vessel's delivery reports from the shoreside processor. At-sea discards and PSC could then be accounted for together with the landings data in real-time for each OCS-equipped vessel. Such real-time in-season management would be expected to result in fisheries closures that better approximate actual quotas.

This type of timely monitoring for in-season management is not possible under the reporting system currently used by catcher vessels delivering to inshore processors. Shoreside catcher vessel observers transmit data via fax to NMFS opportunistically from a shoreside processor. Delays often occur if an observer must return to sea immediately upon completion of the delivery, leaving no time for compilation of data into a format appropriate for fax transmission to NMFS (usually several hours worth of work). Once received at NMFS, the faxed data must be hand entered into an electronic database, further delaying the availability to in-season managers. Even if a catcher vessel observer had time available for data compilation and transmission from the shoreside processor, logistical problems remain. Shoreside processors do support OCS communication systems for transmission of observer data; however, OCS software on these systems is designed specifically for shoreside processor applications and does not support observer data collected at sea. While the shoreside system could be adapted to support data collected by vessel observers, other logistical problems prevent reliable use of these systems by catcher vessel observers. These difficulties include vessel observers having to return to sea prior to data input and transmission via the OCS communications system, as well as the lack of reliance on access to shoreside computers and communications equipment that support the OCS system. Offices that house this equipment at the shoreside processors generally are not open 24 hours a day, while deliveries may be completed at any time during the day.

Additional need for more timely harvest data from catcher vessels comes from anticipated management measures currently being developed to temporally and spatially disperse some groundfish fisheries in some near shore areas of the EEZ off Alaska. These measures are being developed in response to a Biological Opinion initiated as part of a formal consultation under Section 7 of the Endangered Species Act on the impact of Federally-managed groundfish fisheries on endangered Steller sea lions in Alaska. The measures are expected to involve some time-area restrictions for the pollock, cod and Atka mackerel fisheries. To ensure compliance with these anticipated measures, levels of groundfish and associated bycatch removals must be monitored on a real-time basis.

Catcher vessels delivering to C/Ps and motherships deliver unsorted codends with no fish retained aboard. They, therefore, require no observer coverage. These catcher vessels would not be considered in the requirements to install and maintain the OCS communications system on board.

Market failure rationale

U.S. OMB guidelines for analyses under E.O. 12866 state that:

> In order to establish the need for the proposed action, the analysis should discuss whether the problem constitutes a significant market failure. If the problem does not constitute a market failure, the analysis should provide an alternative demonstration of compelling public need, such as improving governmental processes or addressing distributional concerns. If the proposed action is a result of a statutory or judicial directive, that should be so stated. (OMB, Section 1.)

This proposed action is designed to improve the data used by NMFS in-season fisheries managers to manage the groundfish fisheries in the Gulf of Alaska (GOA) and the Bering Sea and Aleutian Islands (BSAI). NMFS in-season management is required in these fisheries because of the market failures associated with their common property nature.

1.1.4 Description of the Alternatives

This analysis considers five alternatives.

- Alternative A is the **no action** alternative and would not change current requirements. This no action alternative is used as the **baseline** against which the other alternatives are compared.
- Alternative B requires upgrades and improved functionality for catcher-processors, motherships, and shoreside processors.
- Alternative C includes the provisions of Alternative B, and in addition, extends the upgrade and functionality requirements to those catcher vessels requiring 100% observer coverage and delivering to shoreside processors. It requires resources released by lower keypunching requirements to be devoted to decreasing the turnaround time for observer data from 30% observed vessels.
- Alternative D includes the provisions of Alternative C, and in addition, extends the computer and OCS software requirement to catcher vessels requiring 30% coverage as well as those requiring 100% coverage. The 30% vessels are not required to adopt the communications upgrade however.
- Alternative E requires upgrades and improved functionality for catcher-processors, motherships and shoreside processors, and in addition, requires sufficient additional data processing capacity in the observer program to reduce the time required to provide in-season managers with observer data within a day, once the data has been received in the observer headquarters.

Alternative A (No action)

The status quo alternative would maintain current hardware specifications and continue to require that communication equipment installation and connection requirements apply to all vessels required to carry one or more observers, including all catcher vessels. Computer hardware and software equipment installed and connected to communication equipment would not be required to be functional in such a way that the system is capable of initiation of observer data transmission to a communications device that provides point-to-point modem connection with specifications outlined in the regulations. All catcher vessels would continue to be required to install hardware that supports the OCS system.

Alternative B (Basic upgrade)

This alternative would amend the regulations to upgrade the hardware requirements which support the OCS at-sea communications software, and apply those requirements and existing requirements of installation and connection of that equipment to all catcher/processors, motherships, and shoreside processors required to carry one or more observers. The hardware and software that supports the at-sea OCS communications system would be required to be maintained in a functional mode where functional means that the system is capable of initiation of observer data transmission to a device that provides point-to-point modem connection with specifications outlined in the regulations. Catcher vessels that deliver to offshore C/Ps or motherships would be exempt from these requirements, since they deliver unsorted codends and are not required to carry observers.

Updated hardware and software specifications include requirements for a computer that contains a full Pentium 120Mhz or greater capacity processing chip, at least 32 megabytes of RAM, at least 75 megabytes of free hard disk storage, a Windows 9x or NT compatible operating system, an operating mouse, and a 3.5-inch floppy disk drive. The associated computer monitor must have a viewable screen size of at least 14.1 inches and minimum display settings of 600x800 pixels. This computer equipment must be connected to a communication device that provides a point-to-point modem connection to the NMFS host computer and supports one or more of the following protocols: ITU V.22, ITU V.22bis, ITU V.32, ITU V.32bis, or ITU V.34. Processors utilizing a modem must have at least a 28.8kbs Hayes-compatible modem. The above-specified hardware and software requirements do not apply to vessels that do not catch or process groundfish.

Alternative C (Extend to 100% catcher vessels)

This alternative is similar to Alternative B, except that it extends the upgrade and functionality requirements to groundfish vessels required to have 100% observer coverage and delivering to shoreside processors. Observers would report daily. This includes vessels over 125 feet, with the exception of vessels fishing with pot gear. Observer keypunching resources freed by the substitution of OCS downloads for faxes will be used to speed up the analysis of observer data from catcher vessels with 30% observer coverage.

Alternative D (Extend to 30% catcher vessels)

This alternative is similar to Alternative C, except that it extends the upgrade and functionality requirement to require vessels with 30% observer coverage to carry computers with the OCS software installed. The vessels with 30% observer coverage would not be required to install the communications software. Observers would transmit OCS data when vessels delivered their fish. The computers and OCS software would be used by the observers to compile their data and the observers would then electronically download their information on arrival in port. This alternative should speed up and increase the accuracy of the delivery of observer data to the observer program offices in Seattle.

Alternative E (More data processing)

This alternative is similar to Alternative B, in that it extends the upgrade and functionality requirements to catcher/processors, motherships, and shoreside processors. However, in addition, it would increase the data processing resources available to the NMFS observer program to make it possible to deliver observer data to the NMFS in-season management staff within 24 hours of receipt in the observer office. While the costs and benefits of this alternative have been evaluated in this analysis, this is not a viable alternative since NMFS cannot commit to supply the resources necessary to implement it.

1.2 Description of fishery

1.2.1 Descriptions of affected entities

The different classes of operations that might be affected by these regulations are described in detail in Section 3.10 (Social and Economic Conditions) of the Alaska Groundfish Fisheries Draft Programmatic Supplemental Environmental Impact Statement (PSEIS). (NMFS, 2001). Sub-section 3.10.2 provides extremely detailed fishing and processing sector profiles. Considerable additional detail is contained in Appendix I of the PSEIS, "Sector and Regional Profiles of the North Pacific Groundfish Fisheries." This section provides brief descriptions of the relevant fleet sectors; readers interested in additional detail are referred to the PSEIS.

Catcher/Processors

Catcher/processors carry the equipment and personnel they need to process the fish that they themselves catch. In some cases catcher/processors will also process fish harvested for them by catcher vessels and transferred to them at sea. There are many types of catcher/processors. They are distinguished by target species, gear, products, and vessel size.

- *Pollock catcher/processors in the BSAI.* These trawlers are referred to as the "AFA catcher/processors" because of the role played by the American Fisheries Act (AFA) of 1998 in structuring the fishing sector. The AFA recognized pollock trawl catcher/processors as a distinct industry segment, limited access to the fleet, modified the historical allocation of the overall pollock TAC that the fleet had received, and created a legal structure that facilitated the formation of a catcher/processor cooperative.[2] The pollock at-sea processing fleet has two fairly distinct components - the fillet fleet, which concentrates on fillet product, and the surimi fleet, which produces a combination of surimi products and fillets. Both of these sectors also produce pollock roe, mince, and to varying degrees fish meal.
- *Trawl Head And Gut (H&G) catcher/processors*. These factory trawlers do not process more than incidental amount of fillets. Generally they are limited to headed and gutted products or kirimi. In general, they focus their efforts on flatfish, Pacific cod, and Atka mackerel. Trawl H&G catcher/processors are generally smaller than AFA catcher/processors and operate for longer periods than the surimi and fillet catcher/processor vessels that focus on pollock.. The target fisheries of this sector are usually limited by bycatch regulations or by market constraints and only rarely are these operations able to catch the entire TAC of the target fisheries available to them.

[2] There are non-pollock factory trawlers in the BSAI, about 25 'head and gut', or H&G factory trawlers, which target species other than pollock. Those vessels are not covered in this description.

- *Pot catcher/processors*. These vessels have been used primarily in the crab fisheries of the North Pacific, but increasingly are participating in the Pacific cod fisheries. They generally use pot gear, but may also use longline gear. They produce whole or headed and gutted groundfish products, some of which may be frozen in brine rather than blast frozen. Vessels in the pot catcher/processor sector predominantly use pot gear to harvest Bering Sea and GOA groundfish resources. The crab fisheries in the Bering Sea are the primary fisheries for vessels in the sector. Groundfish harvest and production are typically secondary activities. Vessels average about 135 feet LOA and are equipped with deck cranes for moving crab pots. Most pot vessel owners use their pot gear for harvesting groundfish. However, some owners change gear and participate in longline fisheries. Pot catcher/processors over 125 feet are subject to somewhat different observer requirements than other large catcher/processors; these pot vessels are only required to have coverage on 30% of their fishing days as opposed to the 100% coverage required on other vessels over 125 feet.
- *Longline catcher/processor*. These vessels, also known as freezer longliners, use longline gear to harvest groundfish. Most longline catcher/processors are limited to headed and gutted products, and in general are smaller than trawl H&G catcher/processors. The longline catcher/processor sector evolved because regulations applying to this gear type provide more fishing days than are available to other gear types. Longline catcher/processor vessels are able to produce relatively high-value products that compensate for the relatively low catch volumes associated with longline gear. These vessels average just over 130 feet LOA. In 1999, there were 40 vessels operating in this sector. These vessels target Pacific cod, with sablefish and certain species of flatfish (especially Greenland turbot) as important secondary target species. Many vessels reported harvesting all four groundfish species groups each year from 1991 through 1999. Most harvesting activity has occurred in the Bering Sea, but longline catcher/processor vessels operate both the BSAI and GOA.

Motherships

Motherships are defined as vessels that process, but do not harvest, fish. The three motherships currently eligible to participate in the BSAI pollock fishery range in length from 305 feet to 688 feet LOA. Motherships contract with a fleet of catcher vessels that deliver raw fish to them. As of June 2000, 20 catcher vessels were permitted to make BSAI pollock deliveries to these motherships. Substantial harvesting and processing power exists in this sector, but is not as great as either the inshore or catcher/processor sectors.

Motherships are dependent on BSAI pollock for most of their income, though small amounts of income are also derived from the Pacific cod and flatfish fisheries in Alaska. In 1999, over 99 percent of the total groundfish delivered to motherships was pollock. These vessels may also generate additional income from the whiting fishery off the Oregon and Washington coasts in the summer. In 1996, whiting accounted for about 12 percent of the mothership's total revenue. Only one of the three motherships participated in the GOA during 1999, and GOA participation in previous years was also spotty. This is likely due to the Inshore/Offshore restriction that prohibits pollock from being delivered to at-sea processors in the GOA.

Catcher vessels

Catcher vessels harvest fish, but are not themselves equipped to process it. They will deliver their product at sea to a mothership or catcher/processor, or to an inshore processor. There are a wide variety of catcher vessels, distinguished by product and gear type. Catcher vessels from 60 to 125 feet in length are required to have observer coverage on 30% of their fishing days, while catcher vessels over 125 feet are required to carry observer coverage on 100% of their fishing days. Catcher vessels under 60 feet are not required to carry observers.

- *AFA-qualified trawl catcher vessels* Vessels harvesting BSAI pollock deliver their catch to shore plants in western Alaska, large floating (mothership) processors, and to the offshore catcher/processor fleet. Referred to as catcher vessels, these vessels comprise a relatively homogenous group, most of which are long-time, consistent participants in a variety of BSAI fisheries, including pollock, Pacific cod, and crab, as well as GOA fisheries for pollock and cod. There are 107 eligible trawl vessels in this sector, and they range from under 60 feet to 193 feet, though most of the vessels fishing BSAI pollock are from 70-130 feet. Ninety AFA catcher vessels are equal to or greater than 60 ft, requiring either 30% or 100% observer coverage. The AFA established, through minimum recent landings criteria, the list of trawl catcher vessels eligible to participate in the BSAI pollock fisheries. There is significant, and recently increasing, ownership of this fleet (about a third) by onshore processing plants.
- *Non-AFA trawl catcher vessel* Includes all catcher vessels that used trawl gear for the majority of their catch but are not qualified to fish for pollock under the AFA. Many of these vessels under 58 feet participate in Alaska commercial salmon fisheries with seine gear.
- *Pot catcher vessel* These vessels rely on pot gear and often participate in both crab and groundfish fisheries. Some of these vessels use longline gear in groundfish fisheries. Historically, the pot fishery in Alaska waters produced crab. Several factors, including diminished king and Tanner crab stocks, led crabbers to begin to harvest Pacific cod with pots in the 1990s. The feasibility of fishing Pacific cod with pots was also greatly enhanced with the implementation of Amendment 24 to the BSAI FMP, which allocated the target fishery between trawl and fixed gear vessels.
- *Longline catcher vessel* A large majority of the longliner catcher vessels in this class operate solely with longline fixed gear, focusing on halibut and relatively high-value groundfish such as sablefish and rockfish. Both fisheries generate high value per ton, and these vessels often enter other high-value fisheries such as the albacore fisheries on the high seas. The reliance of these vessels on groundfish fisheries sets them apart from smaller fixed gear catcher vessels permitted to operate in Alaska salmon fisheries with multiple gear types. Overall, this fleet is quite diverse. Most vessels are between 60 and 80 feet long with an average length of about 70 feet. The larger vessels in this class can operate in the Bering Sea during most weather conditions, while smaller vessels can have trouble operating during adverse weather.

Shoreside Processors

AFA inshore processors There are six shoreside and two floating processors eligible to participate in the inshore sector of the BSAI pollock fishery. Three AFA shoreside processors are located in Dutch Harbor/Unalaska. The communities of Akutan, Sand Point, and King Cove are each home to one AFA shoreside processor. The shoreside processors produce primarily surimi, fillets, roe, meal, and a minced product from pollock. Other products such as oil are also produced by these plants but accounted for relatively minor amounts of the overall production and revenue. These plants process a variety of species including other groundfish, halibut, and crab, but have historically processed very little salmon. In total, the inshore processors can take BSAI pollock deliveries from a maximum of 97 catcher vessels, as of June 2000, according the regulations implemented by the AFA. The two floating processors in the inshore sector are required to operate, within State waters, in a single BSAI location each year, and they usually anchor in Beaver Inlet in Unalaska. However, one floating processor has relocated to Akutan. The two floating inshore processors have historically produced primarily fillets, roe, meal, and minced products.

Non-AFA inshore processors Inshore plants include shore-based plants that process Alaska groundfish and several floating processors that moor nearshore in protected bays and harbors. These operations differ from those cited above in that they were not included in the provisions of AFA which apportioned the BSAI pollock TAC. For the most part, these operators traditionally focused on non-pollock groundfish fisheries, as they continue to do at present. This group includes plants engaged in primary processing of groundfish and does not include plants engaged in secondary manufacturing, such as converting surimi into analog products (imitation crab), or further processing of other groundfish products into ready-to-cook products. Four groups of non-AFA inshore processors are described below. The groupings are primarily based on the regional location of the facilities: (1) Alaska Peninsula and Aleutian Islands, (2) Kodiak Island, (3) Southcentral Alaska, and (4) Southeast Alaska. Information provided includes all inshore processors for each area and does not include a break down for only those inshore processors required to have 100% and 30% observer coverage, respectively.

Alaska Peninsula and Aleutian Islands Inshore Plants. In 1999, ten Alaska Peninsula and Aleutian Islands plants participated in the groundfish fishery. Between 1991 and 1999, almost all of the facilities reported receiving fish every year from the BSAI. In 1999, these facilities processed 66,635 round weight tons, of which 43,646 tons (66 percent) was pollock and 19,402 tons (30 percent) was Pacific cod. Also in 1999, 36,652 tons (55 percent of the total) came from the Western Gulf and 21,643 tons (32 percent) came from the BSAI.

Kodiak Island inshore plants In 1999, all of the facilities processed Pacific cod and Atka mackerel, rockfish, sablefish, and other flatfish and 9 of the 10 processed pollock and flatfish. The facilities processed a total of 101,354 round weight tons of groundfish in 1999, 51 percent of which was pollock and 30 percent of which was Pacific cod. All of the plants receive fish from the Central Gulf subarea every year. Most of the plants also receive fish from the Western Gulf and Eastern Gulf subareas.

Southcentral Alaska inshore plants. This group includes plants that border the marine waters of the GOA (east of Kodiak Island), Cook Inlet, and Prince William Sound. There have been 16 to 22 southcentral Alaska inshore processors participating in the BSAI and GOA groundfish fishery every year since 1991. In 1999, there were 18 plants in southcentral Alaska processing groundfish. All 18 plants reported processing Pacific cod, flatfish, and other species in 1999. In addition, 16 of the 18 reported processing pollock. The facilities processed a total of 10,846 round weight tons of groundfish, 42 percent of which was other species and 31 percent of which was Pacific cod. Virtually all of the plants receive fish from the Central Gulf subarea every year. Many also receive fish from the Eeastern Gulf subarea, and some receive fish from the Western Gulf subarea. In 1998 and 1999, fewer than four processors took deliveries from catcher vessels operating in the BSAI.

Southeast Alaska inshore plants. This group includes plants that border the GOA east of Prince William Sound, and which operate in the inside waters of Southeast Alaska. The Southeast Alaska area has accounted for relatively small amounts of groundfish production, and these have come almost entirely from Petersburg, Sitka, and Yakutat. The main groundfish fisheries are rockfish and sablefish.

Regulations at §679.5(d) require that shoreside groundfish processors have observers present whenever they receive or process groundfish, if they process more than 1,000 metric tons round-weight during a calendar month. The regulations require observer coverage on 30% of the days they receive or process if they only process 500 to 1,000 metric tons during a calendar month. Other regulations provide special coverage requirements for CDQ and AFA fish. Tables 1a and 1b show the firms that had 100% and 30% observer coverage in 1996-1998.

Table 1a Shoreside plants with 100% observer coverage requirements.

100% Observer Coverage Plants	Area	Primary Products - 1998
Alaska Pacific Seafoods	Kodiak	Pollock: surimi,fillet; Pcod: fillet
Alyeska Seafoods	Dutch Harbor	Pollock: surimi,fishmeal,fish oil
Arctic Enterprise		Pollock: fillet,fishmeal
Cook Inlet*	Kenai	Pollock: h&g,fillet
Cook Inlet	Kodiak	Pollock: h&g,fillet
Cook Inlet	Seward	Pollock: whole, fillet
Int'l Seafoods	Shelikof	Pollock: fillet,surimi; Pcod:fillet
King Crab, Inc		Pollock: fillet; Pcod: fillet***
N Pacific Processors**	Cordova	Pollock: fillet,roe
Northern Victor		Pollock: fishmeal,fillet
Ocean Beauty	Kodiak	Pollock: fillet; Pcod:fillet
Peter Pan	King Cove	Pcod: fillet,salted; Pollock:fillet
Star of Kodiak	Kodiak	Pollock: fillet,surimi
Trident Seafoods	Akutan	Pollock: surimi,fishmeal,fillet
Trident Seafoods	Sand Point	Pollock:surimi,meal,fillet;Codfillet
Unisea	Dutch Harbor	Pollock: surimi,fishmeal,fish oil
Western Alaska	Kodiak	Pollock: surimi,fillet
Westward Seafoods	Dutch Harbor	Pollock: surimi,fishmeal,fish oil

* 1996, 1998; **1997-98; ***1997

Table 1b Shoreside plants with 30% observer coverage.

30% Observer Coverage Plants	Area	Primary Products - 1998
Deep Creek Custom Pack	Homer	Pcod: whole
Great Pacific	Anchorage	Pcod: h&g, fillet
Icicle Seafoods	Seward	Sablefish:h&g;
Int'l Seafoods*	Kodiak	
North Pacific Processors*	Cordova	
Resurrection Bay	Seward	Sablefish:h&g; Pcod:h&g
Sahalee of AK	Anchorage	Sablefish:h&g; Pcod:h&g
Seward Fisheries	Seward	Sablefish:h&g;
Wards Cove	Seward	Pcod:h&g; Sablefish:h&g
* 1996		

CDQ groups

The Western Alaska Community Development Quota (CDQ) Program was created by the North Pacific Fishery Management Council in 1992 to help western Alaska communities diversify their local economies and to provide new opportunities for stable, long-term employment. Currently 65 communities are eligible to participate in the CDQ Program. The CDQ communities are located within 50 nautical miles of the Bering Sea coast or on an island in the Bering Sea. About 27,000 people live in the CDQ communties, which are small communities populated predominately by Alaska Native people. These 65 communities have formed six non-profit corporations, called "CDQ groups", to manage and administer their CDQ allocations, investments, and economic development projects.

Through the CDQ program, part of the Bering Sea and Aleutian Islands area TACs for crab, halibut, groundfish and PSC are allocated to eligible Western Alaska communities and the CDQ groups. The primary source of income for the CDQ groups is royalties from leasing their CDQ allocations. Since 1982, the six CDQ groups have accumulated assets worth about $187 million, including ownership of small local processing plants, catcher vessels, and catcher/processors. The CDQ groups lease quota both to vessels they own and to independent vessels. If CDQ is leased to vessels owned by the CDQ group, they receive royalties from lease of the quota, as well as a share of any profits (or loss) made by the vessel. If CDQ is leased to independent vessels, the CDQ group receives just the royalties. The CDQ groups have used their CDQ allocations to develop local fisheries, invest in a wide range of fishing businesses outside the communities, and provide residents with education, training, and job opportunities in the fishing industry.

1.2.2 Numbers of affected entities

Table 2 summarizes information about the numbers of fishing operations affected by the alternatives.

Table 2 Numbers of operations by processor status and observer coverage

Vessel Type	Observer Coverage Category	Gear	Number	Year
Motherships	100%	N/A	3	2000
Catcher/processors	100%	Longline Pot Trawl (non-AFA) Trawl (AFA)	43 9 24 16	1998
Catcher vessels delivering to shoreside processors	> 125 (except for pot): 100%	HAL Trawl (non-AFA) Trawl (AFA)	1 2 28	2000
	60-125 and pot: 30%	HAL Pot Trawl (non-AFA) Trawl (AFA)	125 152 50 62	2000
Shoreside processors:	100%	N/A	18	1998
	30%	N/A	9	1998

Notes: Vessels: 100% coverage required for vessels >=125 ft; 30% coverage required for vessels >=60ft and <125 ft Shoreside processors: 100% coverage required for processors that process >= 1000 mt/month of groundfish; 30% coverage required for processors that process >= 500 mt and < 1000 mt/month of groundfish. HAL includes longline, jig and troll gear

1.2.3 In-season management[3]

TACs, allocations, and closures

Annual groundfish total allowable catch (TAC) amounts and PSC limits are either established in regulations or through the annual groundfish specification process.[4] These area-specific TACs may be further apportioned by harvesting or processing sector, season, gear, or vessel size class.

Amounts Available for Directed Fishing: NMFS initially estimates how much of each groundfish species will be caught as incidental catch in other directed groundfish fisheries throughout the year. The amount available as a directed fishing allowance is determined by subtracting the estimated incidental catch needs from the total amount available for the species or species group. For some species, such as rockfish, NMFS usually determines that the entire TAC will be needed as incidental catch and no directed fishery will be allowed. These species are placed on bycatch status at the beginning of the year through a notice in the *Federal Register*. For other species, including pollock, Pacific cod, and Atka mackerel, sufficient

[3]Section 1.2.3 is largely a quotation of text from NMFS, 2001b, with minor revisions.

[4]The annual specifications process refers generally to the process of the Council developing recommendations for annual groundfish quotas and allocations of PSC limits at its December meeting, and NMFS implementing these recommendations through notice in the *Federal Register*.

TAC exists to authorize directed fisheries in most management areas.[5]

NMFS must conduct real-time monitoring of the catch of groundfish to predict when a catch limit will be reached and close the directed fishery before the directed fishing allowance is exceeded. Closure notices must be published in the *Federal Register*, which requires NMFS to decide on a closure date from one to five days before the closure must be effective. The Office of the Federal Register is closed on weekends and Federal holidays. The requirement to publish closures in the *Federal Register* is an important reason why NMFS is limited in how quickly it can assess catch data and close a fishery. In-season closure notices are not required for individual quota programs such as the halibut and sablefish Individual Fishing Quota (IFQ) Program or the Community Development Quota (CDQ) fisheries, because IFQ holders and CDQ holders are responsible for maintaining catch within assigned quota limits.

Types of closures: In general three types of closures are triggered by in-season actions. The first is a target species quota closure issued when a TAC, or apportionment of a TAC, is harvested. The second is a PSC closure in which vessels participating in a fishery approach a PSC allowance before harvesting all of the groundfish species available to them. The third is closure of a target species fishery when the catch of an incidentally caught species approaches its overfishing limit.

Under the current inseason management system, a species is either open, or on bycatch or prohibited status at any given point in time. When a species is open, vessels are allowed to target and retain it with no restrictions on the amount harvested. Once a particular species TAC or PSC bycatch allowance specified for a fishery has been reached, NMFS closes the directed fishery for that species and it goes on bycatch status. Vessel operators are then limited in the amount of the species closed to directed fishing that they may retain. If the harvest of a given species goes high enough, NMFS will put the fishery on prohibited species status, which prohibits the retention of any fish of that species for the remainder of the year. Operators will be required to discard bycatch, but bycatch mortality will continue since many fish will not survive the process.

Information Used for In-Season Quota Management

NMFS uses information from a variety of sources to determine how much groundfish and PSC are caught in the groundfish fisheries. This information is used to determine when to close a directed fishery so that the groundfish or PSC limit will not be exceeded. In general, data submitted by both NMFS-certified observers and by at-sea and shoreside processors are used to accrue catch against a quota. The non-CDQ fisheries generally are managed through a data set called the “blend,” which combines information from observers on vessels and information submitted by processors in a weekly production report (WPR) to determine the best estimate of catch for each processor and week. In some cases, NMFS requires more timely submission of catch data. For example, AFA shoreside processors are required to submit pollock landings data daily through the electronic shoreside logbook. For fisheries with small quotas or those rapidly approaching a catch limit, NMFS in-season managers also rely on daily catch data and anecdotal information from the industry to decide when closures should occur.

Observer data: Observers are required on all vessels equal to or greater than 60 feet length overall (LOA) fishing for groundfish in the BSAI or GOA. An observer is required to be aboard vessels equal to or greater than 125' LOA (except vessels this size using pot gear, which have 30% observer coverage

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[5] Exceptions in 2001 include: directed fishing is prohibited for Atka mackerel in the GOA, and pollock in Bogoslof, the Aleutian Islands, and area 620 of the Central GOA in the A and B seasons.

requirements) at all times, while such a vessel is fishing for groundfish in the BSAI or GOA. For vessels equal to or greater than 60' LOA but less than 125' LOA, an observer is required for 30% of the fishing days in each target fishery in a calendar quarter. Observer coverage requirements may be increased in fisheries NMFS believes require more timely or comprehensive catch data. For example, two observers are required for catcher/processors participating in pollock AFA fisheries. The CDQ fisheries require increased observer coverage for both vessels and processors because observer data are used almost exclusively to manage individual quotas of all species (except squid) and prohibited species (except herring) for six CDQ groups.

Observers provide NMFS with information on a haul or set basis that includes location gear was set and retrieved (latitude and longitude to the nearest minute) and an estimate of the total catch of each species. NMFS also makes these data available to vessel owners. If a vessel has the appropriate computer and communications equipment, in-season observer data are transmitted to NMFS once a day and is available to authorized persons on the Observer Program's website within 30 minutes of receipt by NMFS. Validated observer data are available to the Alaska Regional Office by the day following receipt by the Observer Program (the Regional Office runs observer data extraction programs one time per day, at night, to minimize the impact of the resource-intensive computer programs on other regional computer systems). Delays of up to several days to a week can occur in sending observer data from a vessel if the computer is not working, if communication problems occur, or if the observer's workload prevents data entry duties. However, data are not finalized until debriefing of the observer is completed,, which may occur up to three months after data are collected. Errors found in debriefing would be corrected at this time.

If the vessel or shoreside processor does not have a computer or reliable communications, observer data are faxed to NMFS. Data from approximately 1/4 of the hauls and sets sampled by observers are faxed in, the remaining data for 3/4 of the hauls and sets are transmitted electronically. Faxes are sent by observers at the first location with a fax machine available, which may be up to three weeks after the catch occurs. All data from catcher vessels delivering to shoreside plants currently are faxed to NMFS. With faxed data, NMFS staff must enter the data before it can be made available to inseason managers.

Weekly Production Reports: All processors are required to submit a WPR to NMFS by the Tuesday following the end of the weekly reporting period at midnight Saturday, unless the processor is submitting an electronic logbook. The WPR provides information about the species, product form, and product weight of all processed product. NMFS converts the processed product weight information into estimates of round weight using standard product recovery rates. The processor also is required to report an estimate of the species and weight (or numbers) of all discarded catch, including all allocated species and prohibited species. The sum of the round weight equivalent of processed product and estimated weight of discards from the WPR is the processor's report of total catch for that week. If the catcher/processor or mothership did not have an observer onboard the vessel during that week, the WPR is the only source of data available about catch for this processor, and this report is used in the blend estimates for quota monitoring. WPRs or shoreside electronic logbooks are the only data used for quota accounting of groundfish delivered by catcher vessels to shoreplants.

WPRs report catch by NMFS reporting area (3-digit area) and whether catch occurred inside the C. opilio bycatch limitation zone (COBLZ) or the Red King Crab Savings Area (RKCSA). However, WPRs currently do not report the location of catch inside the Sea Lion Conservation Area (SCA) in the Bering Sea, inside the critical habitat areas in the Aleutian Islands, or inside Shelikof Strait in the GOA. These are three areas that have separate catch limits for pollock or Atka mackerel, but WPR data currently cannot be used to estimate catch in these areas. In these cases, observer data, electronic logbooks, or fish tickets are options for catch accounting.

Catcher vessel logbooks: Catcher vessels equal to and greater than 60 ft LOA with federal groundfish permits are required to maintain a daily fishing logbook that records information on the location of fishing, the target fishery, amount of gear set, estimated total catch per haul or set, and other information about their fishing activity. Catcher vessel logbooks are examined by enforcement officers if a vessel is boarded. However, these logbooks currently are not used for in-season quota monitoring because they are not submitted to NMFS until several months after the fishing activities occur.

Processor logbooks: Federally permitted catcher/processor vessels, motherships, shoreside processors and buying stations must maintain daily cumulative production logbooks (DCPLs) that record information on fishing activity (catcher/processors) and catch receipt, product and discard information. At-sea processing vessels also are required to submit begin and cease messages when they move between reporting areas, and to submit a WPR to NMFS that summarizes DCPL information. Shoreside processors (including Floating Processors) are required to submit WPRs that summarize their DCPL or to use the Shoreside Processor Electronic Logbook Report (SPELR) system. The SPELR contains reported catch locations, species and amounts by State of Alaska statistical area. It replaces both the paper DCPL and the shoreside WPR with detailed landing and production data that is transmitted to NMFS daily. Copies of the DCPL are mailed to NMFS on a quarterly basis. The weekly production reports are submitted to NMFS each week and are used (in conjunction with observer data) by fisheries managers to monitor fisheries in real time.

Following is a summary of the primary catch data sources by vessel type:

Observed catcher/processors or motherships: Observers submit estimates of total catch for each haul or set made and estimates of species composition for each sampled haul or set. Information about species composition is used to estimate the weight or numbers of each species in the sampled haul or set and also can be extrapolated to the unsampled hauls or sets on the same vessel. Processors also submit WPRs providing estimates of retained catch and discards by species. NMFS compares these estimates through the blend and selects estimates of catch by species from either the observer data or the WPR to account for catch against quotas. For some fisheries (CDQ, AFA) NMFS uses only observer data and does not use the blend to account for catch.

Unobserved catcher/processors: No observer data are available for these processors. Therefore, NMFS uses the WPR to estimate catch by species.

Catcher vessels delivering unsorted catch to motherships: Catch data are obtained from the mothership using the method described above for "observed catcher/processors and motherships." All motherships taking deliveries of unsorted catch have at least one observer onboard at all times and, if the mothership is participating in the AFA or CDQ pollock fisheries, it is required to have two observers and all deliveries (hauls) are sampled for species composition.

Catcher vessels delivering to shoreside processors or floating processors: The same method is used to estimate groundfish and PSC for all catcher vessels delivering to shoreside or floating processors, regardless of whether the vessel carries an observer or not. The processor's report of landed catch weight as reported on the WPR or SPELR is used to account for the total retained catch by vessels delivering to a processor. Estimates of the weight or numbers of groundfish or prohibited species discarded at sea by catcher vessels are based on rates developed from observer data collected on catcher vessels of the same gear, area, and target fishery. This means that NMFS currently does not have one catch record that documents both the retained and discarded catch from individual catcher vessels.

1.3 Analysis of the Alternatives

Alternatives B through E should improve NMFS in-season management capabilities compared to Alternative A. However, these alternatives will require upgrades and investments on the part of industry, may impose costs for maintenance and data transmission on industry, and may impose costs on the public sector. The costs and benefits are summarized below under the following headings:

- Benefits from the alternatives (Section 1.3.1)
- Changes in industry costs (Section 1.3.2)
- Changes in public management expenses (Section 1.3.3)
- Summary of costs and benefits (Section 1.3.4)

The proposed rule involves upgrades and investments in computers and communications equipment, and ongoing expenses to maintain the functionality of the equipment and transmit the data to NMFS. The proposed action will provide ongoing annual benefits to the industry, and to the nation, by assuring enhanced management of this valuable resource base (e.g., avoiding premature fishery closures which impose losses on the industry or overages, which may diminish future productivity, etc.)." Costs and benefits that are incurred over a sequence of years are made commensurable through the calculation of present values.

This raises two issues: (1) the choice of the time period over which to calculate benefits and costs, and (2) the choice of the appropriate discount rate. Costs and benefits are examined over a five year period. This was believed to be a reasonable period from the point of view of the lifetime of the initial upgrade and investment cost for computers and communications equipment. It was also chosen due to the belief that the proposed equipment might very likely become obsolete and new standards might be introduced over a longer period. The present values have been calculated using a real discount rate of 3.14% for private sector costs, and 3.2% for public sector costs.[6]

1.3.1 Benefits from the alternatives

Effective in-season management of all of the valuable fisheries resources of the BSAI and GOA is highly dependent on timely, accurate, and reliable catch, discard, and production data. While it is presently not possible to empirically estimate the monetary value of the gross benefits attributable to the suite of alternatives under consideration here, any action which enhances the timeliness and accuracy of catch,

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[6]The private sector rate was calculated using an estimate of the risky nominal rate appropriate to fishing and an estimate of the projected inflation rate. As a result of an empirical analysis of Alaska limited entry permit markets, Karpoff estimated a risk premium for fisheries loans of 5.05% over the rate on U.S. government three month T-bills (an almost riskless rate). (Karpoff, page 1165). In November 2001, the three month rate on T-bills was 1.91%. The combination of the riskless interest rate and the risk premium gives a nominal interest rate of 6.96%. CPI data suggests that the inflation rate from October 2000 to October 2001 was 3.7%. This rate was used as an estimate of the inflation rate over the next five years. The nominal rate was adjusted appropriately to calculate the real rate of 3.14%. The Discount rate for public sector costs was that recommended by the US OMB in its January 2001 update of its Circular A-94 ("Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs, Appendix C.").

bycatch, and production information can reasonably be assumed to yield real economic 'benefits'.

There are three categories of benefits from the proposed alternatives:

1. More accurate fisheries closures
2. Benefits to fishing operations from private use of equipment
3. Reduced data transmission and processing costs

The first two of these categories of program benefits are discussed in this section. The discussion of the possible impact on data transmission and processing costs is deferred to the section on management costs and benefits.

More accurate fisheries closures

As noted in Section 1.2.3, three types of closures are triggered by in-season management actions. There are target species closures implemented when a TAC, or apportionment of a TAC is harvested. There are PSC closures in which vessels participating in a fishery approach a PSC allowance before harvesting all the groundfish available to them. Finally, there is a target species fishery closure when the catch of an incidentally caught species (but not a PSC species) approaches its overfishing limit. While NMFS does not use the observer data to manage target species closures, it does use the data for incidentally caught (bycatch) and PSC closures. These uses are discussed below.

Observer data are currently the primary source of information on at-sea discards of bycatch in the catcher vessel fisheries. Poor quality observer data may lead to situations in which incidental bycatch amounts approach overfishing levels for the non-target species, with the risk of longer term adverse impacts on resource productivity, should data constraints cause managers to fail to close the offending fishery(ies) in a timely manner. Diminished future productivity may impose uncompensated costs on operators who target, and therefore have an economic interest, in these species. Implementation of OCS in catcher vessel fisheries should reduce the likelihood of these problems occurring.

In addition, data improvement anticipated from the proposed action will improve information used for PSC closure decisions. PSC catch rates are highly variable from year to year, and even from week to week. In-season managers cannot predict far in advance which PSC quotas may affect a particular fishery. The observer data obtained in-season are critical to accounting for PSC. Observer data on PSC catch rates are used to determine fleet-wide average rates that are applied to all catch, including catch from unobserved vessels.

Access to these critical data currently are associated with time lags that limit their usefulness for projecting PSC harvests and for making appropriate closures. This forces in-season managers to be more conservative than they would otherwise be. As with other closure decisions, the potential exists for premature PSC closures, triggered by inadequate data and consequent conservative management, to impose significant economic losses on directed groundfish fisheries. Even if managers subsequently receive additional data which allow them to reopen the fishery and permit further harvest of the targeted species, the disruption is likely to increase the operating costs and inconvenience for fishermen and processors, and may lead to *de facto* reallocation of the actual harvest among gear types or operational modes. Problems like these can prevent NMFS from managing the fisheries so as to fully realize the economic, socioeconomic, and conservation potential of the marine resource base in the BSAI and GOA.

In-season managers now receive a significant amount of fisheries data with a lag. If a vessel has the necessary computer and communications equipment, observers transmit their data once a day, and the validated data are available to in-season managers in the NMFS Alaska Region office by the next day. Observers on catcher/processors and motherships without the electronic at-sea communications capability fax their data in once a week, and observers on catcher vessels fax their data after each trip. The faxed data must then be input, before it can be used by in-season managers. Under these circumstances, observer data on harvests may be ten days old before it becomes available to in-season managers.

Prior to 2000, all shoreside harvest data from processors came to NMFS weekly. This roughly matched the availability of observer data. The NMFS shoreside electronic reporting system has increased the timeliness of harvest data reporting - reports are submitted within one day of a delivery. Availability of observer data needs to be improved to match the timeliness of harvest data for the full value of this crucial management information to be realized.

Beyond considerations of timeliness, problems with the quality of observer data can have a significant impact on fishery closure projections. The Observer Program At-Sea applications (OCS) which allows observers to enter and transmit their data and messages to NMFS provides several advantages for data quality. These advantages include:

- The OCS application allows for consistent and secure communications with Observer Program staff. These communications allow NMFS to assign an in-season advisor to these observers. The in-season advisor screens data for errors and advises observers throughout their deployment resulting in improved observer performance and a reduction in errors.
- Data recorded in the OCS application allows for a faster, more efficient, and higher quality debriefing. The application screens out many potential data errors at the point of entry; these data are further screened by the in-season advisor and computer programs, and then corrected at the point of debriefing. These processes eliminate hand checking of paper data forms. Thus, the debriefing time is reduced because the need for hand checking is gone.
- This data checking process reduces the overall frequency of errors and catches existing errors at an early point in the observer’s deployment. This means post cruise corrections to the database are much reduced and the quality of information used for in-season decisions much improved.
- OCS improves the efficiency of the data recording process and allows the observer more time for sampling by eliminating paperwork. Previously, observers recorded field data on plastic deck sheets, the data were then transcribed to paper, the deck form erased and reused, and the data sent to NMFS via FAX for keypunching. Using OCS, observers record data on write-in-the-rain deck forms which are then entered directly into the vessel's computer and sent to NMFS electronically. The OCS process is less time consuming for observers. Data quality can be improved because the time saved by observers can be used for more sampling (larger sample sizes or more hauls sampled).

The use of OCS on vessels thus offers NMFS several systematic improvements to overall data quality and more efficient use of staff and observer resources.

As noted, the proposed action is designed (among other things) to improve data collection for PSC closures. Table 3 summarizes the key PSC issues for managers in the BSAI and GOA groundfish fisheries. The table identifies fisheries by management area, target species and gear type. For each fishery the PSC species that pose most concern for potential fishery closures are identified. For each fishery the fleet components that take a significant share of the target species are also identified. It is especially important to improve data collection from these fleet components.

Table 3. Key PSC In-season Management Issues in the BSAI and GOA Groundfish Fisheries

Management area, target species, and gear type	PSC species that pose most concern for potential fishery closures	Fleet component from which improved PSC data would be particularly valuable
BSAI Yellowfin sole trawl	halibut	almost all CP
BSAI Rock sole trawl	halibut; red king crab	almost all CP
BSAI Pacific cod hook and line	halibut	almost all CP
BSAI pollock trawl	chinook and other salmon, herring	CP, 100% CV, 30% CV
BSAI Pacific cod trawl	halibut; red king crab	CP, 100% CV, 30% CV
BSAI turbot hook and line	halibut	almost all CP
GOA deep trawl complex (particularly flatfish)	halibut	mostly 30% CVs, CPs
GOA shallow trawl complex (particularly flatfish and Pacific cod)	halibut	mostly 30% CVs, CPs
GOA Pacific cod hook and line	halibut	mostly 30% CVs
Note: Based on conversations with NMFS in-season managers. PSC species have been listed if they have required in-season closures in recent years.		

Table 3 suggests important considerations for determining the benefits (benefits in comparison with the "no action" Alternative A which is used as a baseline) associated with the alternatives. The considerations, by alternative:

- Alternative B will require all catcher/processors, motherships, and shoreside processors to upgrade from Alternative A capabilities. This will directly address the issues raised by the fisheries conducted in the BSAI, since the disproportionate share of the listed species are taken with catcher/processor vessels. However, catcher/processors are used to a more limited extent in the GOA. Extension to the catcher/processors there could only complement an approach that improved observer data recovery from the vessels with 30% observer coverage. Alternative B does not extend the coverage to catcher vessels and thus does not provide improvements in in-season bycatch closure timing.

- Alternative C adds OCS coverage for 100% observed catcher vessels. This provides some improvement in the BSAI pollock and Pacific cod trawl fisheries. This alternative would also eliminate 1,100 fax reports a year (and associated data processing) for this fleet. The Alternative reallocates the resources released by this reduction in faxes, to improving processing of the 5,800 faxes which would continue to come in from the 30% observed catcher vessels. The NMFS Observer Program estimates that this change would free up about 16% of a keypuncher's time for work on the 30% vessels. Therefore this alternative could contribute indirectly to speedier data processing for the 30% observed vessels. This would improve management in the Gulf.

Moreover, this alternative would improve the quality of data received from the catcher vessels with 100% observer coverage by substituting OCS transmissions for faxes. Since Alternative C extends the coverage to some catcher vessels, it is expected to provide some improvements to in-season bycatch closure timing.

- Alternative D extends modified OCS coverage to the 30% observed catcher vessels. These vessels would be required to carry computers with installed OCS software. Observers would enter the data during a trip and transmit it electronically to the Observer headquarters on arrival in port. The need for faxes would be eliminated. This alternative extends the benefits of the program to the groundfish fleets operating in the GOA. Since this alternative does away with the catcher vessel faxes, it will speed up data delivery to in-season managers and improve the accuracy of all the catcher vessel observer data. This alternative probably produces the greatest *gross* benefits. Since Alternative D extends the coverage to catcher vessels over 60 feet, it is expected to provide some improvements to in-season bycatch closure timing.

- Alternative E is also meant to speed data processing. However, under Alternative E, the speed would be provided by adding enough new staffing resources to the NMFS Observer program to allow it to deliver processed observer data to the NMFS Alaska Region Sustainable Fisheries staff within 24 hours of its receipt by the Observer program office in Seattle. However, under Alternative E, observer data from all catcher vessels will still be delivered by fax. Thus, this approach will have less timeliness and accuracy than Alternative D. Alternative E should provide better information from catcher vessels, and thus should improve bycatch closure timing.

Although it is impossible to estimate the monetary value of the net benefits for the different alternatives, it is possible to partially rank them. The apparent rank ordering, from highest to lowest gross benefits) based on this discussion appears to be:

1. D (best overall speed and accuracy)
2. C (speed and accuracy improvements) or E (some speed improvements) (*Not clear which is superior. C brings benefits from additional data quality from OCS coverage of 100% catcher vessels; this is missing in E, but E provides for faster throughput of 30% catcher vessel data).*
3. B (no advantages in GOA)
4. A (baseline against which others are compared)

Note that although Alternative E may rank with alternative C based on the gross revenues criterion, it is not a viable alternative since NMFS cannot commit to providing the resources necessary to implement it. A complete ranking of the alternatives also requires information on the costs and practicality of implementing them.

Benefits to industry from private use of improved data

Private industry also finds the OCS data useful and would directly benefit from improvements in data timeliness and accuracy associated with the proposed upgrading of OCS capabilities. Industry associations and cooperatives use the data, which is posted on web sites by NMFS, to coordinate the activity of their fleets to avoid by-catch hot spots. For example, Fisheries Information Services of Juneau analyzes observer data and provides in-season reports on bird by-catches to BSAI longliners. This service is provided by a private company to private operators using observer data. Fleets that can reduce by-catches this way may avoid costly by-catch or PSC closures. Higher quality data and more rapid data flows might provide modest benefits to industry from this source. (Smoker, pers. comm.). In addition, as noted below, in some instances operations would have lower transmission costs if they adopt the new technology.

1.3.2 Changes in industry costs

Upgrades and Investments

Alternatives B through E would require fishing and processing operations to invest in computer and communications systems upgrades. Estimated upgrades and costs for (1) catcher/processors and motherships, (2) shoreside processors, and (3) catcher vessels with 100% observer requirements, and (4) catcher vessels with 30% observer requirements, are as follows (estimates are based on upgrade requirements and prices supplied by the NMFS observer program):

1. *Catcher/processors and motherships:* An estimated five to ten vessels would be required to upgrade to Pentium speed computers based on the computer they currently have to support the OCS system. Current market prices for a reliable computer at this level are no more than $800.[7] An estimated 22 vessels would be required to upgrade their communications systems from INMARSAT Standard C communications hardware and would have to choose between Standard B hardware at about $20,000 per unit, Mini-M hardware at about $4,500, Iridium at $2,200. Standard A is older technology that is no longer sold (installed new), so this would not be an option for a communications equipment upgrade. Since Iridium hardware is the least expensive option that would meet all the requirements, it is assumed that firms would adopt this technology.

2. *Shoreside processors:* Of the 27 shoreside processors listed in Tables 1a and 1b, 15 are estimated to already be capable of using the new system. Eleven of the remainder need to install both the computer and the communications system; one only needs to upgrade its computer.

3. *100% Catcher vessels:* It is assumed that none of the catcher vessels with 100% observer coverage have installed the necessary communications equipment. The requirement in regulations was in error and has not been enforced. An unknown number of the operations in this fleet have, nonetheless, voluntarily adopted the technologies so this may overestimate this cost component. The numbers of these operations currently carrying computers compatible with the OCS specifications is unknown. A rough estimate obtained from the observer program suggests that the number may be 30% or higher. It is assumed here that 30% of these vessels already have the computers they would need for the OCS software.

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[7] Many operations could probably now add computers or upgrade for less than the assumed $800 cost. Given rapid reductions in the prices of computers, this is even more likely to be true in the future. While this cost estimate may be biased upward, it is also a conservative assumption with respect to the significance determination required of this RIR.

4. *30% Catcher vessels:* The numbers of these operations currently carrying computers compatible with the OCS specifications is unknown. It is assumed here that they will all need to install the necessary computers. It is assumed that these vessels will be sending in their reports using shoreside equipment when they make deliveries and will not upgrade or investment in communications equipment. Thus, under alternatives requiring OCS capability on vessels with observer coverage, 389 vessels are assumed to install computers, but none are assumed to install communications equipment. This group of vessels includes vessels from 60 to 125 feet, and pot vessels over 125 feet. Since it is likely that many vessels in this segment of the fleet already have on-board computers, the assumption that they will all need new computers may lead to a large upward bias in this cost estimate.

Table 4 Aggregate costs of upgrading computers and communications systems

Industry segment	Number requiring computer upgrade (at $800)	Number requiring communications upgrade (At $2,200)	Total cost for industry segment	Average cost per operation
Catcher/processors, motherships	10	22	$56,400	$2,564
Shoreside processors	12	11	$33,800	$2,817
Catcher vessels (100% observer coverage)	22	31	$85,560	$2,760
Catcher vessels (30% observer coverage)	389	0	$311,200*	$800
*This assumes all 30% catcher vessels will need to acquire computers. Many may already have computers on board. Moreover, many operations could probably now add computers or upgrade for less than the assumed $800 cost. Given rapid reductions in the prices of computers, this is even more likely to be true in the future. For both of these reasons, this total is almost certainly an overestimate.				

Examination of Table 4 shows that the upper-bound, aggregate costs for computer and communications equipment associated with the respective alternatives, are:

- $0 for Alternative A
- $90,200 for Alternative B
- $175,760 for Alternative C
- $486,960 for Alternative D
- $90,200 for Alternative E

Maintenance of functionality

On occasion, a vessel's computer or communications equipment may fail. For example, computer hard drives may fail (the observer program estimates that almost all computer failures are due to hard drive failures). Communications hardware may also fail. Equipment failure results in NMFS missing necessary data from that vessel while the computer or communications are broken.

Observer program experience suggests a computer failure rate of 2% to 4% per year, and a communications system failure rate of about 2% per year. Table 5 projects repair costs on the assumptions: (1) that the rates hold for the additional equipment required under the alternatives; (2) that failures do not interfere with fishing activity; and (3) that operators replace, rather than repair defective equipment. Thus, repairs are assumed to cost $800 for a computer and $2,200 for the communications equipment. If failure rates are higher these costs would be increased; to the extent that operators repair, rather than completely replace their equipment, these costs would be reduced. The alternatives require that equipment be maintained in a working state. In some instances operations may not be able to fish if equipment is not working. In these instances the operations may be required to cease all fishing activities until OCS computer and communications capabilities are fully restored. To the extent that equipment failures cause an operation to lose fishing time, these OCS compliance requirements maintenance would increased costs and reduce revenues for the effected operator.

Even though the frequency of failure is assumed to be relatively low, confronted with this potentially costly eventuality, some operations may choose to reduce these "down time" risks by maintaining redundant computer and/or communications equipment. These additional capital costs have not been included in the estimates presented above, however. The decision to acquire redundant capabilities would be a private operational decision, involving weighing the capital costs against the likelihood of lost fishing time. The more risk averse the operator, the more likely the investment in redundant systems, all else
equal.

Table 5 Annual aggregate costs of maintaining computer and communications system functionality (Average costs per operation in parentheses)

	Cost Alternatives B and E *(Catcher/processors, motherships, shoreside processors)*	Cost Alternative C *(Catcher/processors, motherships, shoreside processors, 100% observed catcher vessels)*	Cost Alternative D *(Catcher/processors, motherships, shoreside processors, 100% and 30% observed catcher vessels)*
Catcher/processors, motherships	$1,208 ($55)	$1,208 ($55)	$1,208 ($55)
Shoreside processors	$772 ($65)	$772 ($65)	$772 ($65)
Catcher vessels (100% coverage)	0	$1,892 ($61)	$1,892 ($61)
Catcher vessels (30% coverage)	0	0	$9,336 ($24)
Column totals	$1,980	$3,872	$13,208
Present value (over five years at 3.14%)	$9,315	$18,215	$62,135
Note: Each cost is the product of the number of new units listed in Table 4, a failure rate of 3%/year for computers and 2% for communications equipment, and the cost of completely replacing the computer or communications equipment.			

Data transmissions

There are costs involved with the transmission of data from the vessel or plant to NMFS. Upgrading of communications systems, requirements for increased functionality, and extension of the program to the larger catcher vessels will increase the numbers of transmissions and the costs from this source.

The change in transmission expenditures will depend on the change in the cost of transmissions and on the number of transmissions. Standard C would be supplanted by the proposed rule. Charges for data transmission via Standard C are based on the size of the file containing the data and are around $0.25 per 32 bytes. A file containing a day's observer data is approximately 1,000 to 1,100 bytes in size. It would cost about $7.80 to $8.60 to send a file containing a day's worth of observer data via Standard C .

As discussed earlier, it is assumed that fishing and fish processing operations will adopt the Iridium system. Iridium charges per minute of phone time. Normal Iridium charges run about $1.50 a minute and a typical data transmission call would take two to three minutes. It would cost about $4.50 to send a daily report using the Iridium system..

The impacts of the proposals on the data transmission costs for each fleet segment are:

Catcher/processors and motherships: The observer program estimates that the catcher/processors and motherships that will have to upgrade from Standard C to Iridium under Alternatives B through E submitted about 552 transmissions in 2000 under Standard C. Standard C transmissions could cost about $8.60, while the Iridium charges would be about $4.50, per transmission. Because of this, this analysis assumes that the costs of transmissions is about $4.10/transmission less with adoption of the Iridium system.

Shoreside processors: Similarly, the shoreside processors that would upgrade from Standard C to Iridium under Alternatives B through E submit an estimated 200 transmissions per year. For the reasons discussed above, the cost of each transmission should also drop by about $4.10 each.

100% Catcher vessels: Catcher vessels with 100% observer coverage aren't currently using the OCS system. Their observer reports are currently faxed into observer headquarters from processors or from NMFS offices at the time of landings. The observer program estimates that they received 1,100 fax pages in 2000 from this class of vessels. At $0.90 per fax-page, this comes to $990 per year.[8] Catcher vessels using OCS would be required to transmit observer reports on each day of their trip. Observers spent an estimated 4,127 days on these vessels in 2000 and would have submitted reports on each day. Thus, at a cost of $4.50 per transmission, the OCS transmissions for these operations would have cost $18,572 per year. The cost difference between current levels of faxes and the new OCS daily transmissions is $17,582.

30% Catcher vessels: Catcher vessels with 30% observer coverage aren't currently using the OCS system. They would only be required to install computers and OCS software under Alternative D. Data transmissions under Alternative D would be made over phone lines following trips. There should be no change in the number of transmissions. Data calls would not take longer than the fax transmissions. For these reasons, Alternative D is projected to involve no additional transmission costs for this sector.

Transmission cost estimates are summarized in Table 6.

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[8] This is based on an estimated $0.90 cost for sending a page of fax material from Dutch Harbor to Seattle in a one-minute transmission.

Table 6 Annual change in aggregate data transmission costs by alternative (Average costs per operation in parentheses)

Industry segment	Alternatives B and E *(Catcher/processors, motherships, shoreside processors)*	Alternative C *(Catcher/processors, motherships, shoreside processors, 100% observed catcher vessels)*	Alternative D *(Catcher/processors, motherships, shoreside processors, 100% and 30% observed catcher vessels)*
Catcher/processors, motherships	-$2,263 (-$103)	-$2,263 (-$103)	-$2,263 (-$103)
Shoreside processors	-$820 (-$68)	-$820 (-$68)	-$820 (-$68)
Catcher vessels (100% observed)	$0	$17,582 ($587)	$17,582 ($587)
Catcher vessels (30% observed)	$0	$0	$0
Column totals	-$3,083	$14,498	$14,498
Present value (over five years at 3.14%)	-$14,504	$68,205	$68,205

1.3.3 Changes in public management expenses

Data input cost changes under Alternatives B to E

Several alternatives will affect the cost of data processing for the NMFS Observer program. Much of the cost impact will flow from measures that reduce the amounts of data submitted in faxes. Currently these must be keypunched into the data base as they are received by the observer program. Elements in the program that facilitate electronic submission of the data will reduce the costs (and increase the accuracy) of this process.

- Alternative B does not extend the OCS system to the catcher vessels or affect the numbers of faxes received from these vessels. It would have no impact on these costs.

- Alternative C reduces the numbers of faxes received from the 100% observer covered catcher vessels by about 1,100. This does not affect overall budget costs, however, since it is assumed that these resources would be redeployed to improve turnaround time for the 30% observer vessels. The benefit from the improved turnaround time has been discussed in Section 1.3.1.

- Alternative D eliminates the 1,100 faxes from the 100% vessels, as well as an additional 5,800 faxes from the 30% vessels. The NMFS Observer program estimates that it currently takes one full time GS-5 to keypunch the data on these faxes. Based on the salary for a GS-5 in Seattle and GSA space charges discussed below, this alternative is assumed to reduce data processing costs by $40,008 per year.

- Alternative E input cost changes are assumed to be fully reflected in the annual net cost increase of $75,601 for 24 hour turnaround. The source of this estimate is discussed below under the heading "*Cost of additional keypunching resources under Alternative E*."

Cost of technical support for installing electronics and software

The observer program does not expect to devote significant additional technical resources to upgrades for the catcher/processors, motherships, shoreside plants, or catcher vessels with 100% observer coverage. Additional support costs for these efforts have been estimated as zero under all alternatives.

Alternative D places an increased burden on NMFS staff to provide technical support to vessel operators for the installation and maintenance of the computers and software on the catcher vessels subject to 30% coverage. To some extent the burden on technical support would be alleviated by a shift from the relatively complex Standard C technology. However, there would be a large increase in the number of operations requiring support. Many of the new operations requiring support would be catcher vessels. These vessels would be less likely to enter ports such as Dutch Harbor or Seattle. Technical support outreach would have to be extended to places like Sand Point and King Cove. Thus the average costs of technical support for the new operations would be higher than the cost for the operations already using the equipment. The observer program estimates that there would be a net increase in time spent on technical support.

The observer program expects that extending the coverage to the 30% catcher vessels will require 70% of the time of a GS-11 and two additional trips between Seattle and Dutch Harbor. The estimated one-time support cost for extension of the requirement to the catcher vessels with 30% observer coverage is $47,900 for the GS-11, $1,400 for office space, and $5,000 for travel. The total is $54,340.

Observer Program staff have serious reservations about the practicality of Alternative D. Vessels in the 30% group that would be covered under this alternative would only have observers on board for 30% of their fishing days each year. Staff are concerned that normal computer use on unobserved trips could inadvertently interfere with the installed OCS software and that returning observers could often find the software unusable. It is difficult to estimate how serious this problem will be. This may, however, mean that this cost component has been underestimated.

Cost of additional keypunching resources under Alternative E

Alternatives A through D do not require additional resources for keypunching or the handling of data by the NMFS observer program. Alternative E requires new resources for the NMFS Observer program to allow it to reduce the time required to keypunch and edit observer data and to transmit it to the NMFS Alaska Region SF in-season management staff within 24 hours of receipt. The Observer program estimates that this would require a new GS-5 level keypuncher full time equivalent (FTE), and an addition of ½ FTE GS-11 to supervise the work. At rates appropriate for federal staff in the Seattle area, the cost of these two positions, including overhead, and benefits is an estimated $71,551 per year. Although these positions would be located at the NOAA Sand Point facility, it is still appropriate to include an opportunity cost for space. Assuming 100 square feet of space per FTE at $20 per square foot (the estimated cost for office space in the area of Sand Point) adds $3,000. The total associated costs for additional keypunching resources under Alternative E is estimated to be approximately $74,551 per year.

Summary of impacts on management expenses

Table 7 summarizes the information on the impacts of the different alternatives on management costs.

Management costs are only directly affected for Alternatives D and E. Alternative D produces a net savings in management costs because the keypunching of faxes would be eliminated. Alternative E involves an increase in management costs because of large additional resources used to speed up keypunching of faxes.

Table 7 Annual change in public management expenses

Industry segment	Alternatives B and E *(Catcher/processors, motherships, shoreside processors)*	Alternative C *(Catcher/processors, motherships, shoreside processors, 100% observed catcher vessels)*	Alternative D *(Catcher/processors, motherships, shoreside processors, 100% and 30% observed catcher vessels)*
First year technical support for upgrade	$0	$0	$54,340
Annual reduction in Observer program keypunching costs	$0	$0	-$40,008 (a savings)
Annual expense to achieve 24 hour turnaround (Alt E only)	$74,551 for Alt E only	$0	$0
Present value (over five years at 3.2%)	$350,345 for Alt E only	$0	-$133,673 (a net savings)

1.3.4 Summary of benefits and costs

Summary of costs and benefits

A benefit-cost analysis is principally focused on questions of aggregate net benefits to the nation. However, a program which has positive net benefits for the nation, as a whole, may nonetheless leave some persons or groups worse off than before. For equity reasons, it is common to accompany a benefit-cost analysis with a distributive analysis, that looks at the impacts of a proposal on significant groups. The Initial Regulatory Flexibility Analysis (IRFA) that accompanies this report reviews the impacts of the proposals on small entities.

Table 8, which follows, provides a comparative summary of the benefits and costs of the different alternatives. Due to the difficulties with estimation, the benefit estimates are qualitative. Costs have been monetized to a greater degree. Costs are provided annually, and present values are calculated over a five year period.

Sources of Analytical Uncertainty

There are two important sources of uncertainty with respect to the information in Table 8. First, it was impossible to quantify or monetize the benefits of the alternatives, therefore it was impossible to calculate and compare net benefits. Rankings of these alternatives must be subjective, and these have been left to the reader. Second, while it was possible to make estimates of most of the potential costs, these are subject to potential biases. While these uncertainties limit the ability of this analysis to rank the alternatives without making subjective judgements, as noted in the following section (Section 1.4) they are not large enough to prevent a “significance” determination in accordance with E.O. 12866.

It is difficult to rank these alternatives with respect to net benefits using available information. Earlier it was noted that qualitative factors could be used to give the alternatives a likely ranking with respect to gross benefits as follows (in descending order of gross benefits): 1 - D, 2 - C or E, 3 - B, and 4 - A. However quantitative estimates of benefits were not available, so it is difficult to integrate this ranking with the quantitative information on costs (from Table 8) to rank the alternatives with respect to net benefits. For example, while Alternative B has relatively low gross benefits, it also involves relatively lower costs. Alternative D appears to have the largest benefits, but it may also involve the highest costs.

Moreover, as noted in the section on costs, there are several sources of uncertainty about the cost estimates. Chief among these: (1) there are potential overestimates of the costs of adopting hardware if large numbers of operations already have the equipment; (2) the average costs of upgrading individual computers may be overestimated, further biasing the cost estimates upward; (3) estimates of failure rates are rough, operations are assumed to replace rather than repair failed computers and communications hardware, and the impact of lost fishing time if equipment failure makes transmission of observer reports impossible cannot be quantified; (4) there are concerns that software function failure may be higher than estimated for 30% vessels under Alternative D (since many trips would be made without observers who could monitor software use).

Table 8 Summary of the Benefits and Costs of the Alternatives

Cost / Benefit Category	Alternative A *(Status quo)*	Alternative B *(Catcher/processors, motherships, shoreside processors)*	Alternative C *All categories covered by Alt. B and 100% observed catcher vessels)*	Alternative D *All categories covered by Alt. C and 30% observed catcher vessels)*	Alternative E *All categories covered by Alt. B and additional data processing resources)*
Summary of Benefits (monetized estimates rounded to nearest thousand)					
Value of more precise closures flowing from improved data acquisition and use	This is the baseline. All comparisons for other alternatives are described as changes from this alternative.	Provides some upgrade in PSC data for BSAI yellow fin sole and rockfin sole trawl fisheries and Pacific cod and turbot HAL fisheries. Halibut is the principle PSC species of concern; red king crab is an issue in the rock sole trawl fishery. In the GOA this approach could complement increased 30% coverage in the deep and shallow water trawl complexes. This is a halibut issue for flatfish and Pacific cod.	The 100% vessels added by this approach bring some benefits in BSAI pollock trawl and Pacific cod trawl fisheries. Key PSC species are salmon, herring, halibut, and red king crab. In addition, fewer faxes allows use of some observer data processing resources improving turnaround time for 30% vessel data. Coverage of some catcher vessels, brings benefits in bycatch management as well as PSC management. 100% vessel data will move faster, 30% vessel data will move somewhat faster. Data quality improvements for 100% data, but not for 30% data.	The addition of the 30% boats to alternative "B" improves PSC data in the GOA deep and shallow water trawl complexes (particularly in the targeted fisheries for flatfish and Pacific cod) and in the Pacific cod HAL fishery. The PSC species of concern is halibut. Because of coverage of some catcher vessels, there are benefits in bycatch management as well as PSC management. May not be practical to maintain OCS software on 30% vessels. If this alternative could be implemented it would provide the best combination of data speed and quality.	This provides the advantages of alternative B. In addition, increased data processing resources within NMFS would provide increased data processing speed once data reaches the observer program office. While this alternative is expected to provide speed benefits, data will still be faxed from catcher vessel observers so quality will remain a problem. Agency cannot commit to providing the resources contemplated under this alternative. Because it addresses catcher vessels, it may provide bycatch as well as PSC management benefits.

Table 8 Summary of the Benefits and Costs of the Alternatives (continued)

Cost / Benefit Category	Alternative A *(Status quo)*	Alternative B *(Catcher/processors, motherships, shoreside processors)*	Alternative C *(Catcher/processors, motherships, shoreside processors, 100% observed catcher vessels)*	Alternative D *(Catcher/processors, motherships, shoreside processors, 100% and 30% observed catcher vessels)*	Alternative E *(Catcher/processors, motherships, shoreside processors, and additional data processing resources)*
Summary of Benefits (continued) (monetized estimates rounded to nearest thousand)					
Annual NMFS cost of data handling	$0	$0	$0	-$40,000	$0
Private sector benefits	$0	As noted in Section 1.3.1, improvements in PSC data would be of benefit to private sector associations and cooperatives. This analysis has not quantified or monetized these benefits.			
Upgrade and investment costs and annual costs (estimates rounded to nearest thousand)					
Initial industry upgrade and investment	$0	$90,000	$176,000	$487,000*	$90,000
Public technical support expenses	$0	$0	$0	$54,000	$0
Annual industry maintenance	$0	$2,000	$4,000	$13,000	$2,000
Annual value of industry data transmission expenses	$0	-$3,000	$14,000	$14,000	-$3,000
Annual cost of addition to observer staff for 24 hour turnaround	$0	$0	$0	$0	$75,000
Sum of annual costs (does not include upgrade and investment costs)	$0	-$1,000	$18,000	$27,000	$74,000

Table 8 Summary of the Benefits and Costs of the Alternatives (continued)

Cost / Benefit Category	Alternative A *(Status quo)*	Alternative B *(Catcher/processors, motherships, shoreside processors)*	Alternative C *(Catcher/processors, motherships, shoreside processors, 100% observed catcher vessels)*	Alternative D *(Catcher/processors, motherships, shoreside processors, 100% and 30% observed catcher vessels)*	Alternative E *(Catcher/processors, motherships, shoreside processors, and additional data processing resources)*
Present value of upgrade and investment costs and annual costs over five years (estimates rounded to nearest thousand)					
Column sum of cost categories (total present value of costs)	$0	$85,000	$262,000	$483,000* **	$435,000
Notes: As noted in the text at the start of Section 1.3, present values have been calculated for a five year period. Private sector costs have been discounted at a real rate of 3.14% while public sector costs have been discounted at a real rate of 3.2%. In two instances in the monetized cost summary monetized savings have been deducted from costs. *As noted in the text, this is high if significant numbers of catcher vessels between 60-125 feet carry computers capable of handling the OCS software. **This estimate incorporates the present value of the annual savings "Annual NMFS cost of data handling" which is $188,013.					

1.4 Summary of significance criteria

A "significant regulatory action" under E.O. 12866 means any action that is likely to result in a rule that may:

- Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;
- Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
- Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the executive order.

It was not possible to quantify the benefits from these proposals, however, given that the total gross ex-vessel value of the groundfish catch off of Alaska in 1999 was estimated to be about $483 million (Hiatt and Terry, page 2) we can conclude that the gross benefits to the US economy would not increase by $100 million annually from any of these alternatives. It was possible to make estimates of the costs involved in the different alternatives. None of these alternatives had total costs that approached $100 million. Thus we can also conclude that none of the proposals would impose costs of $100 million on the U.S. economy. These alternatives do not appear to "adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities..."

NMFS has not identified any factors that would (a) "Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency"; (b) "Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof"; or (c) "Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the executive order."

2.0 Initial Regulatory Flexibility Analysis (IRFA)

The Regulatory Flexibility Act (RFA), first enacted in 1980, was designed to place the burden on the government to review all regulations to ensure that, while accomplishing their intended purposes, they do not unduly inhibit the ability of small entities to compete. The RFA recognizes that the size of a business, unit of government, or nonprofit organization frequently has a bearing on its ability to comply with a federal regulation. Major goals of the RFA are: (1) to increase agency awareness and understanding of the impact of their regulations on small business, (2) to require that agencies communicate and explain their findings to the public, and (3) to encourage agencies to use flexibility and to provide regulatory relief to small entities. The RFA emphasizes predicting impacts on small entities as a group distinct from other entities and on the consideration of alternatives that may minimize the impacts while still achieving the stated objective of the action.

On March 29, 1996, President Clinton signed the Small Business Regulatory Enforcement Fairness Act. Among other things, the new law amended the RFA to allow judicial review of an agency's compliance with the RFA. The 1996 amendments also updated the requirements for a final regulatory flexibility analysis, including a description of the steps an agency must take to minimize the significant economic impact on small entities. Finally, the 1996 amendments expanded the authority of the Chief Counsel for Advocacy of the Small Business Administration (SBA) to file *amicus* briefs in court proceedings involving an agency's violation of the RFA.

In determining the scope, or 'universe', of the entities to be considered in an IRFA, NMFS generally includes only those entities, both large and small, that can reasonably be expected to be directly regulated by the proposed action. If the effects of the rule fall primarily on a distinct segment, or portion thereof, of the industry (e.g., user group, gear type, geographic area), that segment would be considered the universe for the purpose of this analysis. NMFS interprets the intent of the RFA to address negative economic impacts, not beneficial impacts, and thus such a focus exists in analyses that are designed to address RFA compliance.

Data on cost structure, affiliation, and operational procedures and strategies in the fishing sectors subject to the proposed regulatory action are insufficient, at present, to permit preparation of a "factual basis" upon which to certify that the preferred alternative does not have the potential to result in a "significant adverse impacts on a substantial number of small entities" (as those terms are defined under RFA). Because, based on all available information, it is not possible to 'certify' this outcome, should the proposed action be adopted, a formal IRFA, focusing on the complete range of available alternatives (including the designated "preferred" alternative), has been prepared and is included in this package for Secretarial review.

2.1 IRFA Requirement

Under 5 U.S.C., Section 603(b) of the RFA, each IRFA is required to contain:

- A description of the reasons why action by the agency is being considered;
- A succinct statement of the objectives of, and the legal basis for, the proposed rule;
- A description of and, where feasible, an estimate of the number of small entities to which the proposed rule will apply (including a profile of the industry divided into industry segments, if appropriate);
- A description of the projected reporting, record keeping and other compliance requirements of the proposed rule, including an estimate of the classes of small entities that will be subject to the requirement and the type of professional skills necessary for preparation of the report or record;
- An identification, to the extent practicable, of all relevant Federal rules that may duplicate, overlap or conflict with the proposed rule;
- A description of any significant alternatives to the proposed rule that accomplish the stated objectives of the proposed action, consistent with applicable statutes, and that would minimize any significant economic impact of the proposed rule on small entities. Consistent with the stated objectives of applicable statutes, the analysis shall discuss significant alternatives, such as:

    1. The establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities;

    2. The clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities;

3. The use of performance rather than design standards;

4. An exemption from coverage of the rule, or any part thereof, for such small entities.

2.2 What is a Small Entity?

The RFA recognizes and defines three kinds of small entities: (1) small businesses, (2) small non-profit organizations, and (3) and small government jurisdictions.

<u>Small businesses</u>. Section 601(3) of the RFA defines a 'small business' as having the same meaning as 'small business concern' which is defined under Section 3 of the Small Business Act. 'Small business' or 'small business concern' includes any firm that is independently owned and operated and not dominant in its field of operation. The SBA has further defined a "small business concern" as one "organized for profit, with a place of business located in the United States, and which operates primarily within the United States or which makes a significant contribution to the U.S. economy through payment of taxes or use of American products, materials or labor...A small business concern may be in the legal form of an individual proprietorship, partnership, limited liability company, corporation, joint venture, association, trust or cooperative, except that where the firm is a joint venture there can be no more than 49 percent participation by foreign business entities in the joint venture."

The SBA has established size criteria for all major industry sectors in the US including fish harvesting and fish processing businesses. A business involved in fish harvesting is a small business if it is independently owned and operated and not dominant in its field of operation (including its affiliates) and if it has combined annual receipts not in excess of $3 million for all its affiliated operations worldwide. This $3 million threshold will change to $3.5 million on February 22, 2002. (67 *FR* 3041, January 23, 2002) A seafood processor is a small business if it is independently owned and operated, not dominant in its field of operation, and employs 500 or fewer persons on a full-time, part-time, temporary, or other basis, at all its affiliated operations worldwide. A business involved in both the harvesting and processing of seafood products is a small business if it meets the $3 million criterion for fish harvesting operations. Finally a wholesale business servicing the fishing industry is a small businesses if it employs 100 or fewer persons on a full-time, part-time, temporary, or other basis, at all its affiliated operations worldwide.

The SBA has established "principles of affiliation" to determine whether a business concern is "independently owned and operated." In general, business concerns are affiliates of each other when one concern controls or has the power to control the other, or a third party controls or has the power to control both. The SBA considers factors such as ownership, management, previous relationships with or ties to another concern, and contractual relationships, in determining whether affiliation exists. Individuals or firms that have identical or substantially identical business or economic interests, such as family members, persons with common investments, or firms that are economically dependent through contractual or other relationships, are treated as one party with such interests aggregated when measuring the size of the concern in question. The SBA counts the receipts or employees of the concern whose size is at issue and those of all its domestic and foreign affiliates, regardless of whether the affiliates are organized for profit, in determining the concern's size. However, business concerns owned and controlled by Indian Tribes, Alaska Regional or Village Corporations organized pursuant to the Alaska Native Claims Settlement Act (43 U.S.C. 1601), Native Hawaiian Organizations, or Community Development Corporations authorized by 42 U.S.C. 9805 are not considered affiliates of such entities, or with other concerns owned by these entities solely because of their common ownership.

Affiliation may be based on stock ownership when (1) A person is an affiliate of a concern if the person owns or controls, or has the power to control 50% or more of its voting stock, or a block of stock which affords control because it is large compared to other outstanding blocks of stock, or (2) If two or more persons each owns, controls or has the power to control less than 50% of the voting stock of a concern, with minority holdings that are equal or approximately equal in size, but the aggregate of these minority holdings is large as compared with any other stock holding, each such person is presumed to be an affiliate of the concern.

Affiliation may be based on common management or joint venture arrangements. Affiliation arises where one or more officers, directors or general partners controls the board of directors and/or the management of another concern. Parties to a joint venture also may be affiliates. A contractor and subcontractor are treated as joint venturers if the ostensible subcontractor will perform primary and vital requirements of a contract or if the prime contractor is unusually reliant upon the ostensible subcontractor. All requirements of the contract are considered in reviewing such relationship, including contract management, technical responsibilities, and the percentage of subcontracted work.

Small organizations The RFA defines "small organizations" as any not-for-profit enterprise that is independently owned and operated and is not dominant in its field.

Small governmental jurisdictions The RFA defines small governmental jurisdictions as governments of cities, counties, towns, townships, villages, school districts, or special districts with populations of fewer than 50,000.

2.3 Reason for Considering the Proposed Action

Timely and accurate data from observers on fishing vessels plays an important role in in-season management of fisheries. This action is being considered to improve the timeliness and accuracy of data received from observers on fishing vessels and in fish processing plants. A more complete discussion of the purpose of this proposed action can be found in Section 1.1.3 of the RIR.

2.4 Objectives of, and legal basis for, the proposed action

Under the statutory authority of the Magnuson-Stevens Act, NMFS, Alaska Region proposes to amend regulations that require electronic communications equipment for use by observers deployed aboard vessels fishing for groundfish in the BSAI or GOA or deployed at shoreside processors that receive such groundfish. The proposed alternatives are intended to require hardware upgrades to keep pace with current technology and support NMFS-supplied software advances. The proposed alternatives also may impose requirements that such equipment be maintained in a functional mode and that all such requirements be stipulated for the AFA catcher vessels participating in AFA inshore cooperatives. Additional details on the objectives of, and legal basis of the proposed action may be found in Section 1.1.2 of the RIR.

2.5 Number and description of small entities directly regulated by the proposed action

Number of small entities

As noted (in Section 2.2) fishing operations grossing $3 million or less are considered to be small entities for the purposes of the RFA. Data available for 1999 indicate that 43% of the 110 catcher/processors active that year, and that all of the catcher vessels active that year, grossed less than $3 million (Terry, pers. comm.). These proportions were applied to the estimates for the numbers of vessels of these types active in 2000 (in Section 1.2.2 of the accompanying RIR) to estimate the numbers of small vessels of these types in 2000. These estimates are shown in Table 9.[9] All of the motherships were assumed to be large entities. Information that would allow the categorization of shoreside processors as large and small is not as readily available, partly because of the very complicated network of relationships among firms. The numbers of large and small shoreside processors were estimated on the basis of information from phone calls to selected plants, data from State of Alaska Department of Employment reports on employment in large Alaska business firms, and information from NMFS staff familiar with the industry. CDQ groups are non-profits and are therefore small by definition.

Table 9 Estimated numbers of small entities

Fleet segment	Number small	Number large	Total
Catcher/processors	38	51	89
Motherships	0	3	3
Processing plants	5	22	27
Catcher vessels (100%)	31	0	31
Catcher vessels (30%)	389	0	389
CDQ groups	6	0	6

Description of small entities

Detailed descriptions of the different classes of operations that may be directly regulated by these regulations can be found in Section 3.10 (Social and Economic Conditions) of the Alaska Groundfish Fisheries Draft Programmatic Supplemental Environmental Impact Statement (PSEIS). (NMFS, 2001). Sub-section 3.10.2 provides extremely detailed fishing and processing sector profiles. Considerable additional detail is contained in Appendix I of the PSEIS, "Sector and Regional Profiles of the North Pacific Groundfish Fisheries." Section 1.2.1 of the accompanying RIR summarizes some of this information.

2.6 Adverse Economic Impacts on Small Entities

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[9] These estimates probably overstate the numbers of small entities. They are based on gross revenues from groundfish fishing off of Alaska only. Revenues from fishing for other species inside of Alaska, or fishing outside of Alaska, or from non-fishing activity are not included. Moreover, the estimates do not take account of affiliations among vessels or between fishing vessels and shore based processing plants.

This section summarizes what is known about the potential impacts of the proposal on small entity profitability and cash flow. Unfortunately, while it is possible to make estimates of operation gross revenue using state and federal data routinely collected from fishing operations and fish processing operations, there is almost no information available on the operating costs of these operations. It has therefore been necessary to conduct this analysis by relating the costs of the proposals to the average gross revenues of the different classes of operations, rather than to their cash flow or profit.

Catcher-processors

Thirty-eight of the catcher/processors were assumed to be small entities. Estimated first wholesale gross revenues for the catcher/processors in 2000 were obtained from the NMFS Alaska Fisheries Science Center (Hiatt, Terry, personal communication). Average gross revenues for the small entities (those with less than $3 million in gross revenues) were about $1.1 million in 2000. This contrasts with average gross revenues of about $10.3 million for the large catcher/processor entities. These numbers can be compared to the upgrade and investment costs and annual expenses the OCS program would impose on this class of vessels. All alternatives except the status quo (Alt. A) would involve additional costs for this group. The average upgrade and investment cost for operations requiring investment (estimated to be only 22 of all the catcher/processors) was about $2,600. A small savings in annual transmission costs was expected to outweigh a slight increase in annual maintenance costs for this class of fishing operation. Thus the program was expected to generate a very small savings in operating costs for this class of operation. The upgrade and investment costs thus came to about 0.2% of one year's gross revenues for a small entity; there was no negative impact from annual expenditures.

Catcher-vessels

All catcher vessels were assumed to be small entities. The most recent published data on catcher vessel gross revenues is contained in the annual Groundfish Economics SAFE report produced by NMFS in the Fall of 2000. This contained data on vessel counts and gross revenues for 1999. (Hiatt and Terry).

Catcher vessels over 125 feet (except for pot vessels) require 100% observer coverage and would be required to have OCS capability under Alternatives C and D. Fifty-nine catcher vessels over 125 feet (and therefore requiring 100% observer coverage) participated in the groundfish fishery in 1999, and these grossed $51.3 million. (Hiatt and Terry, Pages 47, 56). Thus, the average gross from groundfish fishing for these vessels was about $0.9 million dollars.[10] The gross revenues can be compared to the upgrade and investment costs and annual expenses the OCS program would impose on this class of vessels. The average upgrade and investment cost for operations requiring investment (estimated to be only 31 vessels) was about $3,100. Annual maintenance and transmission expenses averaged about $1,000. The upgrade and investment cost thus came to about 0.3% of one year's gross revenues for a small entity; the annual expenditure came to about 0.1% of a year's gross revenues.

Catcher vessels from 60 to 125 feet, and pot vessels greater than 125 feet, were required to have 30% observer coverage and would be required to be able to use OCS software under Alternative D. There were 329 catcher vessels from 60 to 125 feet participating in the fishery in 1999, and these grossed $96.4 million. (Hiatt and Terry, Pages 47, 56). Thus, the average gross from groundfish fishing for these

[10]These vessels include 23 pot vessels over 125 feet. These are not required to have 100% observer coverage but the presentation of the gross revenue estimates in the Groundfish Economics SAFE report does not allow them to be broken out. It is not known if their inclusion in the calculation of this average introduces a bias.

vessels was about $0.3 million dollars.[11] The gross revenues can be compared to the upgrade and investment cost and annual expenses the OCS program would impose on this class of vessels. The average upgrade and investment cost for operations requiring investment was estimated to be $800 for a computer. Many operations may already carry computers capable of running the OCS software. These operations would not be required to adopt the Iridium communications equipment. Average annual maintenance costs for these operations were less than $50, and there were no expected changes in data transmission expenses. OCS requirements were only extended to this class of vessels under Alternative D. The upgrade and investment cost thus came to about 0.3% of one year's gross revenues for a small entity; the annual expenditure came to about 0.01% of a years gross revenues.

Shoreside processors

Lists of the shoreside processors with 100% and with 30% observer coverage requirements may be found in Tables 1a and 1b in Section 1.2.1 of the RIR. As noted above, five of the shoreside processors were characterized as small operations. All alternatives except for the status quo (Alt. A) would increase the costs for this group of small entities.

The gross revenues from these were estimated using average 2000 product prices generated from State of Alaska Commercial Operators Annual Reports (COAR reports) and information on metric tonnages of the different products produced by the plants in 2000 obtained from Weekly Processor Reports (WPRs). Although prices were not available for all species and product combinations, 97% or more of the product tonnage of each firm operating in 2000 were priced.[12] Failure to completely price all products may provide a slight downward bias to the gross revenue estimates. Average gross revenues for the firms operating in 2000 were $3.1 million. All of the alternatives require the same level of upgrade for shoreside processing plants. Not all of the processing firms were expected to need to invest in the equipment upgrades. However, assuming that the small firms were more likely to need the new equipment, the cost was expected to be $2,800 for a new computer and Iridium communications equipment. The increase in annual maintenance costs would have been approximately offset by reductions in communications costs. The upgrade and investment cost thus came to about 0.1% of one year's gross revenues for a small entity; the annual expenditure was about zero.

CDQ groups

All 6 CDQ groups are small under the SBA definitions used in connection with the RFA. In 2000, approximately 180,000 metric tons of groundfish, 3 million pounds of halibut, and 3 million pounds of crab were allocated to the CDQ program. The primary source of income for the CDQ groups is royalties from leasing their CDQ allocations. In 2000, the six CDQ groups earned $63 million in total revenues, of which about $40 million (63%) was from royalties. Thus, each CDQ group averaged $10.5 million in total revenues. The remaining 37% of revenues was from income from partnerships, interest income, sale of property, leases, loan repayment, and other income. Pollock is the most valuable species to the CDQ

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[11]These vessels should, but do not, include the 23 pot vessels that were included with the vessels over 125 feet. As noted, those pot vessels were only required to have 30% observer coverage. However the data breakouts in the Groundfish Economics SAFE report do not permit an estimate of the gross revenues for these vessels. These are larger vessels than the others in this category, and their exclusion from the category may lead to a downward bias in the estimate of the average gross revenues.

[12]One firm, operating in 1998, when the observer list was compiled, had no gross revenues in 2000.

groups, contributing about $33 million in royalties in 2000 (83% of royalties). All of the six groups own shares in groundfish catcher/processors and therefore all could be affected by Alternatives B, C, D, and E.

Management measures that impact the cost of harvesting groundfish will affect the CDQ groups through reduced royalties, reduced profit-sharing, or increased costs. Based upon the size and distribution of impacts of the proposed OCS rules on the gross revenues of catcher/processors, catcher vessels, and shoreside processors, as described earlier in this section, the attributable economic burden on CDQ groups (which, as noted, grossed over $63 million in 2000) would not be expected to be significant. The proportionate impacts of these proposals on the gross revenues for catcher/processors, catcher vessels, and shoreside processors are described earlier in this section.

Can small entities pass on costs?

It is not clear whether the small entities that are subject to this regulation will be able to pass on significant parts of the costs associated with this rule. Their ability to pass the costs on will increase, the less responsive quantity demanded is to price, and the more responsive quantity supplied is to price.[13] Because their markets are presumed to be relatively responsive to price (given the availability of substitutes, including supplies of groundfish from vessels not covered by the program), it doesn't seem likely that they will be able to pass a significant part of their costs to their buyers. Without better information on the groundfish markets, however, it is impossible to make a firm statement on this issue.

It is also possible that some costs may be borne by parties supplying inputs to the fishing businesses. Crew are often paid a share of operation gross revenues net of variable operating costs (such as food, fuel, gear repairs). Observer coverage, which varies with time at sea, may be treated as a variable cost and be shared, at least in part, with crew members. The information to test these conjectures and estimate potential "pass-ons" is not, however, available to analysts at this time.

2.7 Recordkeeping and reporting requirements

Although the proposed changes in the OCS communications requirements require some new expenditures by small entities, they contain no new or revised record keeping or reporting requirements for those entities. The OCS requirements will not affect private sector record keeping requirements; they will facilitate communication of reports that are already required from observers.

2.8 Relevant Federal rules that may duplicate, overlap, or conflict with proposed action

This analysis did not reveal any federal rules that duplicate, overlap or conflict with the proposed action.

2.9 Description of significant alternatives

A description of any significant alternatives to the proposed rule that accomplish the stated objectives of the proposed action, consistent with applicable statutes, and that would minimize any significant

[13] In technical terms, their ability to pass on costs will depend on the elasticities of product supply and demand.

economic impact of the proposed rule on small entities.

Detailed descriptions of the alternatives may be found in Section 1.1.4 of the RIR, and analyses may be found in Section 1.3. These descriptions and analyses are included here by reference.

These alternatives reflect decisions, already incorporated into the observer program, to minimize the burden on small entities. Catcher vessels under 60 feet LOA, which include the greatest numbers of small entities as defined by SBA criteria, are exempted from the observer program itself. There were 966 of these vessels fishing hook and line, pot and trawl gear in 1999 (Hiatt and Terry, Table 28, page 56). The exclusion of this large fleet of fishing vessels from the observer program has meant the sacrifice of information that would have been useful for fisheries management. The exclusion has been motivated in large part by a recognition that there are unique difficulties associated with placing observers on these small vessels and that requiring these small entities to participate in this program would have placed an unreasonable and disproportional economic and operational burden on them.

The preferred alternative, Alternative C, requires upgraded hardware and functionality from catcher/processors and motherships and shoreside processors, and only extends the OCS requirement to the larger catcher vessels) those over 125 feet that are already required to carry observers on 100% of their fishing days). It does not extend the requirements to the 389 smaller catcher vessels subject to the 30% observer requirement.

Three of the alternatives considered would have involved smaller impacts on small entities than those associated with the "preferred alternative." Alternatives A, B and E do not extend the requirements of OCS to any catcher vessels. These alternatives would have exempted the 100% catcher vessels as well as the 30% catcher vessels. The 100% catcher vessels accounted for 31 small entities, while the 30% catcher vessels accounted for 389 small entities. Alternative A does not impose additional requirements on catcher/processor vessels. As noted in Table 9, 38 catcher/processors were small entities. These alternatives to the "preferred alternative", while imposing a somewhat lesser burden on small entities failed to adequately achieve the objectives of the proposed action, when compared to Alternative C. Under Alternative A there is no upgrade in computing or communications capabilities, no functionality requirement and no catcher vessel coverage. Alternative B does not provide any catcher vessel coverage. Alternative E was deliberately introduced as an alternative that would reduce burdens on small entities. However, it only produces modest improvements in timeliness and data quality for catcher vessels, it is relatively expensive, and NMFS cannot commit to supplying the resources necessary for its implementation.

One of the alternatives considered would have had a greater impact on small entities than does the preferred alternative. Alternative D extended part of the OCS equipment requirements to smaller catcher vessels, those between 60 and 125 feet. This alternative would have affected an estimated 389 additional small entities. The imposition of this burden on small catcher vessels was deemed to be excessive and unjustified at this time, when compared to the expected gains in catch, bycatch, and discard data and, thus, Alternative D was rejected in favor of the preferred alternative.

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