# REGULATORY IMPACT REVIEW/
# FINAL REGULATORY FLEXIBILITY ANALYSIS

for a regulatory amendment to the
Fishery Management Plan for Groundfish
of the Bering Sea and Aleutian Islands
Management Area

# Chinook Salmon 'PSC'
# Data Collection Program

**North Pacific Fishery Management Council**

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## 1.0 INTRODUCTION

The groundfish fisheries in the Exclusive Economic Zone (EEZ) off Alaska are managed by the National Marine Fisheries Service (NMFS) under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (MSA). Under the authority of the MSA, the North Pacific Fishery Management Council (NPFMC) developed Fishery Management Plans for the groundfish fisheries of the Gulf of Alaska management area (GOA) and Bering Sea and Aleutian Islands management area (BSAI).

This Regulatory Impact Review (RIR) evaluates the costs and benefits of the proposed Federal regulatory amendment that would implement a data collection program to evaluate the effectiveness of the BSAI Amendment 91 Chinook salmon PSC reduction measures. Specifically, the data collection program is to evaluate the conclusions drawn by industry in the Incentive Plan Agreement (IPA) annual reports. In addition, the data collection program would be used to (1) evaluate the effectiveness of the measures adopted under Amendment 91, including the incentives arising under any IPA, and the effects on Chinook avoidance of the structure of created by the hard cap, IPAs, and the performance standard established under Amendment 91, and (2) evaluate how the Council's action affects where, when, and how pollock fishing and Chinook PSC avoidance occur.[1]

Presidential Executive Order 12866 and the Regulatory Flexibility Act (RFA) mandate that certain issues be examined before a final decision is made. The RIR is provided in Chapter 2, and Chapter 3 provides an Initial Regulatory Flexibility Analysis as required under the RFA. Chapter 4 includes a description of how the proposed action is consistent with the Magnuson-Stevens Act. References and lists of preparers and persons consulted are provided in Chapters 5, 6, and 7.

At its June 2009 meeting, the Council received a report from the Comprehensive Data Collection committee, which met in May 2009 to discuss a potential data collection program that would assess whether the newly adopted Chinook salmon PSC program is achieving its intended effects. Based on the committee's recommendations, the Council advanced for analysis four potential data collection programs to supplement existing data sources. The alternatives proposed collection of some or all of the following elements: price and quantity of salmon and pollock quota transactions, surveys of vessel master[2]s indicating the rationale for inseason choices of pollock fishing grounds, surveys of the cost of inseason movements, surveys of roe production and sales, and surveys of daily vessel operating costs (such as labor and observer costs). During the summer, a public stakeholder workshop was held to develop survey instruments and to discuss the timing of surveys and the information to be collected. The Council reviewed a draft analysis of those alternatives at its October 2009 meeting. Based on that review, the Council adopted a purpose and need statement and revised the alternatives to exclude the collection of roe production and sales and certain daily operating costs. The Council also directed staff to revise the analysis in response to these changes and release that analysis for public review and action at its December 2009 meeting.

At the December 2009 meeting, the Council established the Chinook salmon PSC data collection program, to collect information to discern the effectiveness of measures included in Amendment 91 for

[1] The environmental impacts of the pollock fishery, particularly those impacts relative to Chinook PSC are fully described in the Environmental Impact Statement for Amendment 91 to the BSAI groundfish fishery FMP (URL: http://www.fakr.noaa.gov/sustainablefisheries/bycatch/default.htm). This action defines a data collection program for assessing the effects of the management measures adopted under Amendment 91. This action therefore has no effect individually or cumulatively on the human environment (as defined in NAO 216-6). As such, it is categorically excluded from the need to prepare an Environmental Assessment.

[2] The term "vessel master" used throughout this document describes the person operating a vessel, sometimes referred to as a vessel skipper.

reducing Chinook salmon prohibited species catch (PSC). The Council recommended revisions to annual reports for Incentive Plan Agreements (IPA)s and cooperatives, as well as collection of new data on Chinook PSC transactions and transaction prices, AFA vessel movements primarily to avoid Chinook salmon, fuel use and fuel prices during fishing and transiting, and vessel master impressions of how pollock fishing had changed after implementation of Amendment 91.

As part of this recommendation, the Council requested that NMFS transmit draft implementing regulations, any surveys used to collect information under the action, and the Paperwork Reduction Act (PRA) supporting statements for Council review. This review was to occur prior to submitting the Proposed Rule to the Regional Administrator for signature.

To prepare final data forms for the Council, NMFS hosted an industry workshop (75 FR 109, June 8, 2010), on June 21, 2010, to solicit input from the AFA pollock industry on the design of the draft data forms for the Chinook salmon PSC data collection. Data elements on the three data forms described in the preferred alternative under 1.2 were revised based on industry input.

In October 2010, the Council reviewed the drafts of regulations and the accompanying PRA supporting statements (including draft forms) that would implement the data collection program for assessing the effects of Chinook salmon prohibited species catch reduction under Amendment 91. The Council approved the package, proposing only minor, clarifying revisions to the data collection forms that were suggested by the Advisory Panel.

## 1.1 Purpose and Need for the Action

At its October 2009 meeting, the Council adopted the following purpose and need statement for this action:

> In April 2009 the Council approved Amendment 91 to the BSAI groundfish fishery FMP to reduce Chinook salmon PSC in the Bering Sea pollock fleet. Under Amendment 91, the pollock fishery has the option of participating in a NMFS-approved Incentive Plan Agreement (IPA) to access a higher hard cap than is available in the absence of an IPA. The IPAs provide a new and innovative method of PSC management. A data collection program is needed in conjunction with Amendment 91 to understand the effects and impact of the IPAs. The data collection program will focus on: (1) evaluating the effectiveness of the IPA incentives in times of high and low levels of salmon abundance, the hard cap, and the performance standard in terms of reducing salmon PSC, and (2) evaluating how the Council's action affects where, when, and how pollock fishing and salmon PSC occur. The data collection program will also provide data for the agency to study and verify conclusions drawn by industry in the IPA annual reports. To ensure that a full assessment of the program is possible, the data collection program should be implemented at the time Amendment 91 is implemented or as soon as practicable.
>
> To ensure that a full assessment of the program is possible from the start of the program, the data collection program should be separated into two phases, with a suite of data collection measures implemented at the time Amendment 91 goes into effect and sent to the Comprehensive Economic Data Collection Committee after IPAs have been fully developed and submitted to NMFS. The objective of this collection is to provide an improvement in the amount of data available to evaluate the effectiveness of incentives to minimize Chinook salmon PSC under Amendment 91.

The Council's purpose and need statement recognizes the challenges associated with evaluating the effectiveness of the Chinook PSC avoidance incentive program with data collected on trip based information and stated preferences for transiting and fishing practices aimed at avoiding Chinook salmon

PSC. Statistical analyses generated from this type of data is novel and involves some trial and error in designing collection methods, specifying variables to collect, and verifying accuracy of data. The draft forms in this analysis reflect that NMFS and the Council analysts have worked with industry to focus this collection to address the key imports of Amendment 91. This collection is intended to provide additional information to status quo data, but may not provide a unequivocal answers to all of the Council's policy questions.

## 1.2 Alternatives

The Council has adopted the following alternatives for analysis and consideration:

**Alternative 1**
Status quo (existing data sources)

**Alternative 2A**
In addition to the status quo data sources:

(1) Transaction data for salmon – quantity and price of transfers (survey will be used to determine whether these are arm's length transactions). As defined by:

**Option 1** – Transfer Ledger: All entities holding Chinook PSC credits will track all transfers from the beginning of each year, in an official ledger that must be submitted to NMFS at the end of the year.

**Option 2** – Compensated Transfer Form: Require that IPAs and AFA Cooperatives summarize initial holdings of Chinook PSC allowance units by vessels or other entities, and that they summarize all transfers regardless of whether the transfers were "compensated" transfers. For all "compensated" transfers, each party (transferor and recipient) must complete and submit to NMFS a Compensated Transfer Form. A transfer is "compensated," if there is an exchange of dollars (or any currency) for PSC credits from one party to another.[3]

(2) Information regarding change in fishing grounds:
Defined by the collection of estimated gallons of fuel burned in moving to the next fishing location when moving to avoid salmon PSC
[To be used with existing information allowing examination of:
   a. For both the original and new fishing grounds, the date, time, PSC rate, location, and CPUE of tow.
   b. Remaining pollock quota, and Chinook PSC allowance remaining at time of event.
   c. Time, distance, and use of fuel in searching for cleaner fishing grounds.]

**Alternative 2B** [expands Options 1 and 2 from Alternative 2A to include pollock quota.]
In addition to the status quo data sources:

(1) Transaction data for salmon PSC units and pollock – quantity and price of transfers (survey will be used to determine whether these are arm's length transactions).

(2) Information regarding change in fishing grounds (as defined under Alternative 2B)

[3] It should be noted that "Chinook credits" and "holdings of Chinook units" both refer to Chinook PSC allowance units.

**Alternative 3**
In addition to the status quo data sources:

(1) Transaction data for salmon PSC units and pollock– quantity and price of transfers (survey will be used to determine whether these are arm's length transactions). (as defined under Alternative 2)
(2) Average annual hourly fuel burned fishing and transiting and annual fuel purchases in cost and gallons to be used to:
    estimate costs of moving vessels to avoid Chinook salmon PSC (vessel fuel use, transit time, and lost fishing time).
(3) Post-season surveys of skippers (vessel masters) to determine rationale for decision making during the pollock season (fishing location choices and salmon PSC reduction measures).

**Preferred Alternative**
Based on this analysis, public comment, and a recommendation from the Advisory Panel, the Council selected the following as its preferred alternative:

In addition to the status quo data sources:

(1) Transaction data for salmon PSC units and pollock – quantity and price of Chinook salmon PSC allowance transfers (survey will be used to determine whether these are arm's length transactions) and quantity of pollock transfers.
    Require that IPAs and AFA Cooperatives summarize the assignment of Chinook PSC allowances and pollock to each participating vessel at the start of each fishing season, and that they summarize all in-season transfers of Chinook PSC units and pollock, regardless of whether the transfers were "compensated" transfers.
    For all "compensated" salmon PSC transfers, each party (transferor and recipient) must complete and submit to NMFS a Compensated Transfer Form. A transfer is "compensated" if there is an exchange of dollars (or any currency) for PSC allowance credits from one party to another.
    For all compensated transfers, the transfer form will indicate the amount of any monetary compensation for Chinook salmon PSC units and whether any other assets were included in the transaction (e.g., pollock quota or non-monetary compensation).

(2) Information regarding change in fishing grounds defined via identification of any tow prior to a move that is due primarily to salmon PSC avoidance (implemented through a logbook check box).
(3) NMFS will administer annual reporting to collect:
    Average annual hourly fuel burned fishing and transiting and annual fuel purchases in cost and gallons for each to be used to estimate costs of moving vessels to avoid Chinook salmon PSC (vessel fuel use, transit time, and lost fishing time).

(4) Post-season surveys of each skipper (vessel master) for each vessel to determine rationale for decision making during the pollock season (fishing location choices and salmon PSC reduction measures).

The regulations will be developed to provide some flexibility in the information collected on survey forms to respond to data quality and evolving IPA formation and design. The Council will review draft regulations and the initial form structure and any subsequent changes to the form prior to submission to either the Secretary of Commerce or OMB for implementation.

### 1.2.1 Alternatives considered but not advanced for analysis

The Council also considered alternatives that would collect more detailed revenue and cost data (including roe production and revenue data and daily operating cost data). Collection of these data would be intended to facilitate improved study of the effectiveness of salmon PSC avoidance measures (including IPAs) across various segments of the fleets and an improved understanding of the effects of those measures on participants in the fisheries. Specifically, these data could be used to examine revenue and cost tradeoffs of vessels in avoiding Chinook salmon PSC.

While acknowledging that these additional data could improve the information concerning the fishery and Chinook salmon PSC avoidance, the Council elected to remove alternatives collecting these data from consideration at this time. The removed alternatives were believed by the Council to contain too many aspects that would require additional time to fully develop and implement, which could result in a delay in analysis and implementation of this action. In its purpose and need statement, the Council expressed its intent to have collection of these additional data considered by its comprehensive data collection committee after IPAs have been developed by industry. This later consideration could allow this data collection to be limited in focus, which might allow for earlier implementation of this action. In addition, by incorporating the more expansive data collection into a later action, the Council hopes to allow for additional development of a more considered broad data collection program.

## 1.3 Development of data collection regulations

In developing data collection initiatives, the Council considered how much detail about the data collection it wished to incorporate into its action, and how much detail it recommended including in regulations implementing the data collection program. The Council reviewed two options:

1. **More general regulations** that list the categories or types of data that could be collected, but did not include details about the data elements. The detailed data elements would be included on a form associated with the data collection. In addition, the form with its detailed data elements was to be included in the analysis prepared by Alaska Region staff for the request to the President's Office of Management and Budget (OMB) for approval of the information collection under the Paperwork Reduction Act (PRA). This PRA analysis and OMB approval process is described below.

2. **Detailed regulations** that list each data element that must be submitted and that specifically list any information required to be submitted on a form. The PRA analysis would include the same level of detail as the regulations.

Mandatory data collections require two elements for NMFS to implement: (1) regulations requiring submission of the data, and (2) approval from OMB for the information collection under the PRA. Proposed regulations are submitted to the Department of Commerce for review and ultimately published in the *Federal Register*. Requests for approval of information collections and the associated "PRA analyses" are submitted for approval through NOAA to OMB.

The regulations may be structured in one of two ways. First, the regulations could list the general categories of data that must be submitted and provide the list of detailed elements of the data collection in associated forms and instructions. Alternatively, the regulations could list each data element that must be submitted. If forms are used, each piece of information requested on the form must be specifically listed in regulation. Regardless of which approach is used, the request to OMB for approval of the information must describe the regulations, include a copy of the forms and instructions, and provide information required in the "PRA analyses". If data are submitted voluntarily, regulations are not required, but OMB approval is required for the collection of that data.

OMB requires an explanation in the PRA analysis of what data are requested, why the data are needed, what the data will be used for, and an estimate of the cost, in terms of time and money, of the data collection to the industry and the Federal government. OMB approval for a data collection is indicated by an OMB "control number" and expiration date. When forms are involved in a collection, the OMB control number and expiration date must be displayed on the form.

Requests for OMB approval pertaining to information collections under the PRA may take one of five forms:

1. new collection-of-information (usually associated with a proposed/final rule);
2. renewal of an existing collection every three years (with or without revisions to the requirements through a proposed/final rule),
3. revision of an existing collection (usually associated with a proposed/final rule),
4. change request of an existing collection, or
5. removal of an existing collection.

The first three formats are formal and require submittal of a PRA analyses and public comment on the proposed information collection. A change request is less formal and is used for what NMFS determines are minor changes to an existing collection, with or without a proposed/final rule. Removal of a collection-of-information consists of submitting a specific form to OMB.

NMFS Alaska Region submits a PRA analysis through NOAA and DOC for OMB review and approval when the draft proposed rule is submitted to NMFS Headquarters for review. NMFS may not require the submission of the information until OMB approval is obtained. Public comments are sought by OMB for each information collection. When the information collection is associated with a proposed/final rule, comments are solicited through the proposed rule published in the *Federal Register*. When the information collection is not associated with a proposed rule, a notice is published in the *Federal Register* soliciting comments on the proposed information collection. Public comments are not solicited on change requests for revisions NMFS determines are minor or non-substantive and are not associated with a proposed rule.

Generally, revisions to NMFS regulations governing the fisheries off Alaska are approved by the Council. Council review occurs either because a regulatory amendment was developed and approved by the Council or because NMFS requested review of the proposed regulatory amendment by the Council. In recent years, and by agreement of the Council, most revisions to recordkeeping and reporting (R&R) regulations have been done by NMFS without review and approval by the Council. NMFS reports to the Council about the status of the proposed R&R regulatory amendment in its management report, but the Council does not agenda these proposed regulatory amendments for review, public comment, or Council action. This procedure is followed primarily to save the Council the time of reviewing routine or non-controversial revisions to regulations. The PRA analyses associated with requests for OMB approval of information collections have never been reviewed and approved by the Council. However, this procedure could be changed for information collections that are not associated with a proposed rule developed by the Council or for specific information collections of concern to the Council.

More general regulations for a data collection program could allow a more flexible, adaptable program because revisions to the elements of the data collection that are not specified in regulation would require only OMB approval, which could be less time consuming than a rulemaking process. However, the Council could sacrifice its involvement in substantive program changes if the Council was not aware of proposed revisions to the data collection being initiated by NMFS or if NMFS determined that a revision

to a data collection was non-substantive, when the Council or the industry would consider the revision substantive. These circumstances have occurred with the crab EDR data collection, and this has caused considerable concern by the crab industry.

With the Chinook salmon PSC data collection, the Council could have taken action to collect operating costs from Bering Sea pollock vessels, by approving regulations that require submission of a few categories of operating costs, such as crew costs, fuel costs, and other costs aggregated. If the Council did not specify any further recommendations about the detailed data elements that should be collected, NMFS would have discretion to determine the specific data elements needed to collect information consistent with the Council's intent. For example, NMFS may include in the forms developed to implement the data collection the requirement to submit insurance costs, gear costs, or other expenses. Council review of the general regulations would occur when NMFS submitted the draft proposed rule to the Council chair and Executive Director for review and approval prior to the proposed rule being submitted to NMFS Headquarters for review. However, if only general categories of data elements were in the regulations, the forms that would include the detailed data elements also would need to be reviewed by the Council when it reviewed the proposed rule. The forms and PRA analysis have not, to date, been submitted to the Council for review prior to publishing a proposed rule. In addition, if only general categories are included in the regulations and, if NMFS determined after implementation of the final rule that revisions to the detailed data elements were necessary, NMFS could submit a request to OMB for approval of a revision to the form without further input or review from the Council until the public comment period on the proposed information collection.

The Council could avoid this circumstance with the Chinook salmon PSC data collection in two ways:

1. Require the inclusion of each data element in the regulations; develop the forms and instructions that list the specific data elements that the Council wants collected prior to Council final action; and request that NMFS not amend these regulations without review and approval by the Council; or

2. Allow the inclusion of general categories of data in the regulations; develop the forms and instructions that list the specific data elements that the Council wants collected prior to Council final action; and request that NMFS not revise the forms or data elements without Council review and approval of the PRA analyses prepared for OMB approval.

Under either of these scenarios, the Council would be provided an opportunity for review and approval before any changes were made to the data collection program, even if these changes were minor. In some cases, modifications to reporting requirements could result in a substantial change in the nature of the information collected and the burden of that reporting. For example, a regulation could state that annual fuel costs should be reported. It is possible the requirement could be interpreted in a few different ways. For example, a vessel owner could be required to report all fuel purchases in a year, by simply consolidating fuel invoices from the year. Alternatively, an owner could be required to report the cost of all fuel used in a year, requiring the vessel owner to monitor fuel consumption, particularly at year end. Modification of the reporting requirement between these two questions would change both the burden associated with reporting and the nature and uses of the data reported.

Substantial changes to the data collection can be costly to industry and, if undertaken in a piecemeal fashion over time could confuse both those submitting data reports and data users. In addition, the Council analysis of the data collection program is likely predicated on the data reporting taking on a certain form and level of detail. Modification to reporting requirements that substantially change the reporting requirements may substantially change the effects of the data collection described in a Council

analysis. Whether a particular modification to data reporting requirements is within the scope intended by the Council could be debated under such circumstances.

Detailed regulations or Council review of PRA analyses also could ensure that the Council is the arbiter of disputes over the scope of data collection that might otherwise be decided through a public comment process employed by NOAA Fisheries and the Office of Management and Budget. Council involvement may not only ensure Council intent is followed, but might also provide a forum that achieves greater stakeholder acceptance. To some extent, review and approval by the Council under either of the two options above would provide a more deliberative forum that minimizes unnecessary contention. With this active authority comes considerable more responsibility, time, staff involvement and cost.

In summary, review of proposed revisions to detailed regulations or review of the PRA analysis would provide the Council with assurances that no changes would be made to the data collection without Council and industry review. However, both of these approaches would take longer than implementing regulations with general categories of required data and allowing NMFS to make revisions to the detailed data elements through approval by OMB of the revised information collection.

**Preferred Alternative**
Under its preferred alternative, the Council has chosen to allow for general regulations identifying the data to be collected under its preferred alternative. The Council chose to review the regulatory text, draft forms, and draft PRA supporting statement prior to their submission to the Secretary and Office of Management and Budget. In addition, the Council would like to review any subsequent modification of the data collection forms. This process is intended to allow regulatory flexibility to adapt the forms to ensure they are effective, but retain Council oversight of those modifications.

## 2.0 REGULATORY IMPACT REVIEW

An 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."*

E.O. 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:

- 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;
- 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 this Executive Order.

## 2.1 Background

The section contains a brief history of the BSAI pollock fishery and Chinook PSC management. The following subsections are included:

- Regulatory History of Chinook PSC Management
- Amendment 91 to the Bering Sea Aleutian Islands Groundfish Fishery Management Plan
- Proposed IPAs from April 2009
- Overview of the BSAI Pollock Fishery
- Chinook PSC History in the BSAI Pollock Fishery

## 2.2 Regulatory History of Chinook PSC Management

Historically, the purpose of Chinook salmon PSC management in the Bering Sea pollock fishery has been to minimize Chinook salmon removals to the extent practicable, while achieving optimum yield. Minimizing Chinook salmon PSC, while achieving optimum yield is necessary to maintain a healthy marine ecosystem, ensure long-term conservation and abundance of Chinook salmon, provide maximum benefit to fishermen and communities that depend on Chinook salmon and pollock resources, and comply with the Magnuson-Stevens Act and other applicable federal law. National Standard 9 of the Magnuson-Stevens Act requires that conservation and management measures shall, to the extent practicable, minimize Chinook salmon PSC. National Standard 1 of the Magnuson-Stevens Act requires that conservation and management measures prevent overfishing, while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.

Several management measures have been used to reduce Chinook salmon PSC in the Bering Sea pollock fishery. Chinook salmon taken incidentally in groundfish fisheries are classified as prohibited species and, as such, must be either discarded or donated through the Pacific Salmon Donation Program. In the mid-1990s, NMFS implemented regulations recommended by the Council to control Chinook salmon PSC taken in the Bering Sea pollock fishery. These regulations established the Chinook Salmon Savings Areas and mandated year-round accounting of Chinook salmon PSC in the pollock fishery. Once Chinook salmon PSC levels reached a maximum limit in a Chinook Salmon Savings Area, the area would be closed to any further pollock fishing. These areas were adopted based on historic observed salmon PSC rates and were designed to avoid high spatial and temporal concentration of salmon PSC.

The Council started considering revisions to salmon PSC management in 2004, when information from the fishing fleet indicated that it was experiencing increases in salmon PSC following the regulatory closure of the Chinook Salmon Savings Area. Vessels that were not fishing for pollock associated with the Western Alaska Community Development Quota Program (CDQ) could no longer fish inside the Chinook Salmon Savings Area. Vessels fishing on behalf of the CDQ groups were still able to fish inside the area because the CDQ groups had not yet reached their Chinook salmon prohibited species catch limit. Much higher salmon PSC rates were reportedly encountered outside of the closure areas by the non-CDQ fleet than experienced by the CDQ vessels fishing inside. Further, the closure areas increased costs to the pollock fleet and processors.

To address this problem, the Council examined other means that were more flexible and adaptive to minimize Chinook salmon PSC. Since 2006, the pollock fleet has used an Inter-Cooperative Agreement

(ICA)[4] to establish a Voluntary Rolling Hot Spot System (VRHS). The VRHS is intended to increase the ability of pollock fishery participants to minimize Chinook salmon PSC by giving them more flexibility to move fishing operations to avoid areas where they experience high rates of salmon PSC. The VRHS was first implemented voluntarily in 2002 and through an exempted fishing permit in 2006, and subsequently, in 2007, through Amendment 84 to the BSAI FMP.

While the ICA reports on Chinook salmon PSC suggest that the VRHS has reduced Chinook salmon PSC rates compared with what they would have been without the measures, concerns remain because of escalating Chinook salmon PSC through 2007. From 1990 through 2001, the Bering Sea Chinook salmon PSC average was 37,819 salmon annually. Since 2002, Chinook salmon PSC numbers have increased substantially. The average from 2002 to 2007 was 82,311 Chinook salmon, with a PSC peak of 122,000 Chinook salmon in 2007.

In light of the high Chinook salmon loss in recent years, the Council and NMFS, during deliberations on Amendment 91 in 2008 and early 2009, considered several alternative measures to more effectively reduce Chinook salmon PSC to the extent practicable, while achieving optimum yield. The Council and NMFS decided to limit the scope of Amendment 91 to Chinook salmon, leaving in place the existing non-Chinook salmon PSC reduction measures, because of the need for immediate action to reduce Chinook salmon PSC. Chinook salmon is separated from non-Chinook salmon, because Chinook salmon is a highly valued species and a species of concern that warrants specific protection measures. Additionally, the Council will address non-Chinook salmon PSC in the Bering Sea pollock trawl fishery with a subsequent action.

### 2.2.1 Amendment 91 to the Bering Sea Aleutian Islands Groundfish Fishery Management Plan

The Council's April 2009 motion on Chinook salmon PSC is summarized below. A full version of the motion as passed by the Council is reproduced Appendix A. The final rule for Amendment 91 (75 FR 53026, August 30, 2010) became effective on September 29, 2010. Amendment 91 established a Chinook salmon PSC cap for each pollock fishery season which, when reached, would require all directed pollock fishing to cease for that season.

The Chinook salmon PSC caps are 47,591 Chinook salmon and 60,000 Chinook salmon. The caps will be divided 70/30 between the A and B seasons. NMFS would allocate each seasonal cap to each sector as shown below:

A Season: CDQ 9.3%; inshore CV fleet 49.8%; mothership fleet 8.0%; offshore CP fleet 32.9%
B Season: CDQ 5.5%; inshore CV fleet 69.3%; mothership fleet 7.3%; offshore CP fleet 17.9%

Chinook salmon PSC allocations for the inshore sector and CDQ Program will be further allocated to each inshore cooperative and CDQ groups. Transfers of PSC allocations (including post-delivery transfers) are allowed within and among CDQ groups, sectors, and cooperatives. Any recipient of a post delivery transfer during a season may not fish for the remainder of that season. Additionally, NMFS will rollover any remaining A season allocation to the B season.

If a NMFS-approved Incentive Plan Agreement (IPA) is in place that provides explicit incentives for each participant to avoid Chinook salmon PSC in all years, even in years of low abundance, then each sector with members that participate in the IPA will be allocated its proportional share of the cap of 60,000

[4] Readers should note that NMFS-Alaska Region uses the ICA acronym for incidental catch allowances, which is subtracted from the Total Allowable Catch (TAC) to yield the amount of a species that can be harvested in directed fishing. In this document the term ICA is defined exclusively as an inter-cooperative agreement.

salmon. If no IPA is approved, NMFS will allocate each sector its proportional share of 47,591 Chinook salmon.

Each sector receiving an allocation of 60,000 Chinook salmon will be annually evaluated against a Performance Standard. If a sector's annual Chinook salmon PSC exceeds the sector's portion of the 47,591 Chinook salmon in any 3 years within a consecutive 7-year period, then all vessels within that sector will be limited to that sector's portion of the 47,591 Cap in all subsequent years.

For those vessels or CDQ groups that opt out of an IPA, a maximum backstop cap of 28,496 will be established. Each year, NMFS would calculate the backstop cap based on the number of vessels that opt-out of an IPA. The backstop cap would not be allocated to opt-out participants but would be managed by NMFS as a cap. Any vessel or CDQ group that fishes under the backstop cap will not be evaluated or included in annual calculations of a sector's performance standard.

IPAs must be submitted to and approved by NMFS. In order to be approved they must meet the following requirements:

- The IPA must represent not less than 9% of the pollock quota and at least two non-affiliated companies.
- An IPA must describe incentive(s) for each vessel to avoid Chinook salmon PSC under any condition of pollock and Chinook salmon abundance in all years.
- Incentive measures must describe rewards for Chinook salmon PSC avoidance, penalties for failure to avoid Chinook salmon PSC at the vessel level, or both.
- The IPA must specify how those incentives are expected to promote reductions in actual individual vessel PSC rates relative to what would have occurred in absence of the incentive program. Incentive measures must promote Chinook salmon savings in any condition of pollock and Chinook salmon abundance, such that they are expected to influence operational decisions to avoid Chinook salmon PSC.
- The IPA must describe how it will ensure that each vessel will manage its PSC to keep total PSC below the sector level regulatory Performance Standard.

The IPA Representative must submit an annual report for Council and public review by April 1 the following year. The annual report must include:

1. A comprehensive explanation of incentive measures in effect in the previous year;
2. How incentive measures affected individual vessels; and
3. An evaluation of whether the incentive measures were effective in achieving salmon savings beyond levels that would have been achieved in absence of the measures.

Observer coverage of AFA catcher vessels will increase to 100 percent regardless of vessel length. This increase in observer coverage does not apply to catcher vessels delivering unsorted codends (the detachable end of the trawl net where catch accumulates) to the 3 AFA motherships. NMFS may develop modifications to regulations for catch monitoring at shoreside processors to ensure accurate accounting for Chinook salmon. NMFS will adjust, as appropriate, any other regulations governing Chinook salmon PSC management in the Bering Sea, so they are compatible with the Amendment.[5]

[5] Although the regulatory establishment of the VRHS ICA is removed by Amendment 91, participants in the fisheries can develop Rolling Hot Spot Closures (RHS), as a part of an IPA.

### 2.2.2 Summary of Proposed IPAs

This section contains an overview of the draft Incentive Plan Agreements (IPA) submitted to NMFS in October 20010 by AFA pollock harvesters. Three plans were submitted: 1) the Chinook salmon PSC Reduction Incentive Plan and Agreement (CPIPA), submitted by the At-sea Processors Association, 2) the Salmon Savings Incentive Plan (SSIP), submitted by United Catcher Boats, and 3) the Mothership Salmon Incentive Plan (MSSIP), submitted by AFA motherships. Initial versions of the CPIPA and the SSIP provided context to the Council during its action in April on Amendment 91, and in June 2009 when the Council directed its staff to initiate this data collection analysis.

The primary purpose of this analysis is to examine how existing data sources, or data that are proposed for collection, can be used to measure the effectiveness of the IPAs described in each of these plans in reducing Chinook salmon PSC above and beyond a program that does not include IPAs. In other words, the data collection alternatives should work toward differentiating between a program that does not include the High Abundance Cap or the Performance Standard and a program that does include these elements. The IPAs are summarized below, and each of the plans is available at: http://www.fakr.noaa.gov/.

#### 2.2.2.1 Overview of the Catcher/Processor Financial Incentive Plan and CPIPA

In March 2009, a draft incentive plan called the Financial Incentive Plan (FIP) was developed by the At-sea Processors Association. The At-sea Processors Association represents 19 of the 20 AFA qualified CPs. The FIP was developed to assist in the development of the Council's action on Amendment 91, and was used as a guide to assess current industry data and proposed data for evaluating the effectiveness of the Amendment 91. The CPIPA, is the final version of this IPA, and was submitted to NMFS by the At-sea Processors Association in October 2010.

The CPIPA creates incentives to avoid Chinook salmon PSC by restricting the pollock fishing opportunities of vessels with poor Chinook salmon PSC performance while allowing vessels with good Chinook salmon PSC performance less restricted access to pollock fishing grounds. Losing access to good pollock fishing grounds increases vessel operating costs and reduces product values while avoiding these costs and producing more high-value products increases vessel profits. The plan is designed to work in concert with a set of annual Chinook PSC limits specified in Amendment 91. The CPIPA will be implemented in the context of a lower annual limit allocation established in the CPIPA. The primary plan components include:
1) data gathering, monitoring, reporting, and information sharing;
2) identification of Chinook salmon PSC avoidance areas;
3) area and time pollock fishing closures and fishing prohibitions and penalties for vessels with poor PSC performance, and in some cases for all, members of the At-sea Processors Association; and
4) penalties for exceeding Chinook salmon PSC limits set by the CPIPA.

The CPIPA requires a Technical Representative, appointed by the parties to the IPA, to gather, compile, analyze, and evaluate pollock catch and Chinook salmon PSC records from all pollock fishery participants for each week during which a plan vessel harvests pollock. Within the plan, areas of relatively higher Chinook salmon PSC are called PSC avoidance areas [the adopted acronym for which is "BAA," stemming from use of the less accurate term "bycatch," in place of PSC].

The CPIPA will limit removals of Chinook salmon in areas of low abundance of Chinook salmon by establishing a lower Chinook salmon PSC base rate of 0.035 Chinook per metric ton of pollock catch. This lower Chinook salmon PSC base rate is expected to occur only for trawling grounds with relatively uniform and low abundance of salmon, and this should improve the overall effectiveness of Chinook salmon PSC reduction efforts.

Pollock fishing opportunities will also be limited in areas where Chinook salmon PSC rates are high. Vessels exceeding a threshold PSC rate established by the technical representative for the CPIPA, will lose access to pollock fishing grounds experiencing higher rates of Chinook encounters.

Certain areas with historically high amounts of Chinook salmon PSC will be closed to all vessels operating the CPIPA. Many of these areas are well known to pollock fishermen as areas with high concentrations of pollock, but accompanying excessive Chinook salmon encounters. However, the precise times during which pollock and Chinook may be concentrated in any local area depends on a host of environmental and physical-oceanographic conditions that change with the seasons and the weather, such that it is not generally possible to know precisely the locations of concentrations of pollock and Chinook, before going fishing for pollock. Analysis of catch records over a decade or more has revealed the existence of one area along the outer continental shelf within which it seems that high concentrations of Chinook salmon are found almost every year. These areas will be identified by the technical representatives of the CPIPA, and fishing prohibitions will be applied to all member vessels.

The plan also includes financial penalties for:
1) violations of Chinook salmon PSC avoidance area fishing prohibitions;
2) fishing in a Chinook Salmon Conservation Area; and
3) failing to meet plan requirements for VMS operation.

For example, the penalty for violation of a fishing prohibition and for fishing in a conservation area, is $10,000 for the first annual violation, $15,000 for the second annual violation, and $20,000 for the third and subsequent annual violations. In the plan, each tow is considered a separate violation for the purpose of penalty calculation. The penalty for violating the VMS requirements is generally $1,000 per day.

#### 2.2.2.2 Overview of the April 2009 and October 2010 Salmon Savings Incentive Plan

The SSIP was proposed by United Catcher Boats, an organization that represents the majority of the AFA qualified catcher vessels. The SSIP was developed in March 2009, prior to the Council's action on Amendment 91. A final IPA proposal was submitted to NMFS in October 2010 called the Inshore Chinook Salmon Savings Incentive Plan Agreement (SSIP). The original SSIP prepared in March 2009 is similar to the description provided in October 2010. The SSIP as proposed consists of three basic components:

1) Base cap credit allocations of Chinook PSC and Chinook PSC savings credits;
2) Salmon Insurance Pool; and
3) Rolling Hot Spot Closure Program (RHS)

The vessels participating in this IPA receive an annual allocation of Chinook salmon PSC units, which limits their Chinook salmon PSC to their pro-rata share of the 47,591 Chinook salmon PSC performance standard, less insurance pool deductions for Inshore Cooperative Vessels. This allocation may be further sub-allocated by season according to the rules of the SSIP. Initial base amounts of Chinook PSC sub-allocations and Chinook salmon PSC units are transferrable under specific restrictions established in the SSIP. A vessel can earn additional Chinook PSC allowance units, called "savings credits," by catching fewer Chinook salmon as PSC than the amount of its annual allocation, at a rate of one additional unit for every three allocated units that are not used.

The insurance pool is a Chinook PSC unit reserve, which is available to inshore sector cooperative Vessels whose catch of Chinook salmon PSC exceeds the number of salmon PSC units they hold. Inshore Sector Cooperative Vessels using insurance pool Chinook salmon PSC units are required to repay

the insurance pool, and to pay an additional insurance pool usage penalty. If the inshore sector's Chinook salmon PSC exceeds its performance standard for two years in a six consecutive year period, each cooperative is required to take all actions necessary to insure that the Chinook salmon PSC of its vessels does not exceed an annual threshold amount for a third year in a seven consecutive year period.

A rolling hot spot closure program, operated by the SSIP may close areas of relatively high Chinook salmon PSC to vessels that have relatively high rates of Chinook salmon PSC during periods when the vessels participating in this IPA are experiencing relatively low levels of Chinook salmon encounters. The rolling hot spot closure program included in the SSIP is modeled after the VHRS ICA used by both CPs and CVs in 2008. The two rolling hot spot programs will be administered separately with two exclusive sets of data, and with closed areas and excluded boats based on PSC rates within each particular program.

It is assumed that the independent monitor of the rolling hot spot closure program [6] will track Chinook PSC rates on a real time basis in discrete geographic areas and will report Chinook PSC rates in each area to all SSIP participants. The rolling hot spot closure program will also define closed areas in locations where Chinook PSC rates have been particularly high. Vessels with Chinook PSC rates exceeding an “exclusion rate” will be prohibited from operating in the closed area.

#### 2.2.2.3 Overview of the October 2010 Mothership Salmon Savings Incentive Plan Agreement (MSSIP)

The Mothership Salmon Savings Incentive Plan (MSSIP) consists of two basic elements that are intended to result in Chinook avoidance at all levels of encounters. First, the MSSIP requires that mothership processor fleets "earn" savings credits, which in future years may provide the ability to exceed their share of the annual threshold, by keeping Chinook salmon PSC considerably below the threshold in most years. Second, a rolling hotspot closure program insures that MSSIP participants avoid areas with relatively higher Chinook salmon PSC rates, even when actual PSC encounters are low on the whole and when the Annual Threshold is not likely to be an influence on behavior.

1) Incentives - Each operator of a vessel participating in the MSSIP is encouraged to avoid salmon as a means to establish "insurance" against years when encounter rates are particularly high and Chinook salmon PSC amounts, even after best efforts of avoidance of PSC, are large. It is that "insurance", the ability to exceed the annual threshold in years of high encounters, which is intended to motivate Chinook salmon PSC avoidance in periods of low encounter rates.
2) The rolling hot spot program establishes the incentive to maintain low PSC rates in order to have access to all productive fishing grounds. Fleets achieving relatively low Chinook salmon PSC rates are not constrained by hotspot closures, while Fleets with average or higher rates are. The rolling hot spot closure program creates the incentive to find ways and means to harvest pollock while avoiding catch of Chinook PSC. Additionally, the rolling hot spot closure program insures that fleets failing to meet that standard will be excluded from the fishing area with the highest Chinook salmon PSC rates.

3) Rewards and Penalties - The MSSIP is designed to create rewards and penalties for Chinook salmon PSC performance relative to the annual threshold. If the vessels in a fleet are successful in keeping their Chinook salmon PSC considerably below the annual threshold in most years; those vessels will be rewarded with Chinook salmon savings credits that allow them to exceed

their annual threshold in years of high Chinook salmon encounters. On the other hand, fleets of vessels which are unable to maintain Chinook salmon PSC levels significantly below their annual threshold will be penalized by not receiving salmon savings credits, therefore making it unlikely that those vessels will have a sufficient available cap in years of high Chinook PSC encounters. It is important to note that in the Mothership Sector, these rewards and penalties are in play at both the individual vessel and at the fleet level. Each fleet will start the fishing season with the aggregated available cap of its vessels. While this pooling is necessary to insure that the fleet is able to work cooperatively throughout the year, each vessel has a responsibility to the Fleet to avoid Chinook PSC, and each vessel has a stake in the performance of all of the other vessels in the fleet because the rewards (and penalties) of each fleet's performance are "disaggregated" back to the individual vessels at the end of the season. The process of" disaggregating" available cap in the MSSIP is designed to insure that the rewards and penalties are distributed back to vessels in proportion to their initial contribution of available cap.

The rolling hot spot closure program, which is also administered at the fleet-level in the Mothership Sector, provides parties to the IPA with the reward of fishing without constraint of Chinook salmon PSC avoidance area closures when they achieve lower than average Chinook salmon PSC rates.

### 2.2.3 Overview of the BSAI Pollock Fishery

The BSAI pollock fishery was rationalized by the American Fisheries Act (AFA), which was approved by the US Congress in October of 1998. Fishing under the AFA began in 1999 with full participation by all sectors beginning in 2000. In general, rationalization of the pollock fishery was accomplished by three sets of provisions:

1) AFA allocated the BSAI pollock TAC available for directed fishing to four sectors as follows:
    - CDQs: 10% off the top
    - Inshore: 50% of the remaining 90%
    - Catcher/Processors: 40% of the remaining 90%
    - Motherships: 10% of the remaining 90%

2) AFA created an exclusive set of vessels that are allowed to target BSAI pollock, including 111 catcher vessels and 20 catcher processors.

3) AFA established a process by which harvesting vessels within specific sectors may form cooperatives.

#### 2.2.3.1 History of the BSAI Pollock Fishery Prior to AFA

From 1954 to 1963, pollock were harvested at low levels in the Eastern Bering Sea and directed foreign fisheries began in 1964. Catches increased rapidly during the late 1960s and reached a peak in 1970 to 1975, when they ranged from 1.3 million to 1.9 million tons, annually. Following a peak catch of 1.9 million tons in 1972, catches were reduced through bilateral agreements with Japan and the USSR. Figure 1 shows total BSAI harvests from 1964 through 2007.

Since 1977, when the U.S. EEZ was established, the average annual Eastern Bering Sea pollock catch has been 1.2 million tons, and has ranged from 0.9 million tons in 1987 to nearly 1.5 million tons in recent years. Stock biomass has ranged from a low of 4 million to 5 million tons to highs of 10 million to 12 million tons (Figure 1). United States vessels began fishing for pollock in 1980, and by 1987 harvested 99% of the quota. Since 1988, only U.S. vessels have been operating in this fishery. By 1991, the current NMFS observer program for North Pacific groundfish fisheries was in place.

Foreign vessels began fishing in the mid-1980s in the international zone of the Bering Sea (commonly referred to as the "Donut Hole"). The Donut Hole is entirely contained in the deep water of the Aleutian Basin and is distinct from the customary areas of pollock fisheries, namely the continental shelves and slopes. Japanese scientists began reporting the presence of large quantities of pollock in the Aleutian Basin in the mid-to-late 1970s, but large-scale fisheries did not occur until the mid-1980s. In 1984, the Donut Hole catch was only 181 thousand tons. The catch grew rapidly and by 1987, the high seas pollock catch exceeded the catch within the U.S. Bering Sea EEZ. The extra-EEZ catch peaked in 1989 at 1.45million tons and has declined sharply since then. By 1991 the Donut Hole catch was 80% less than the peak catch, and data for 1992 and 1993 indicate very low catches. A fishing moratorium was enacted in 1993 and only trace amounts of pollock have been harvested from the Aleutian Basin by resource assessment fisheries.

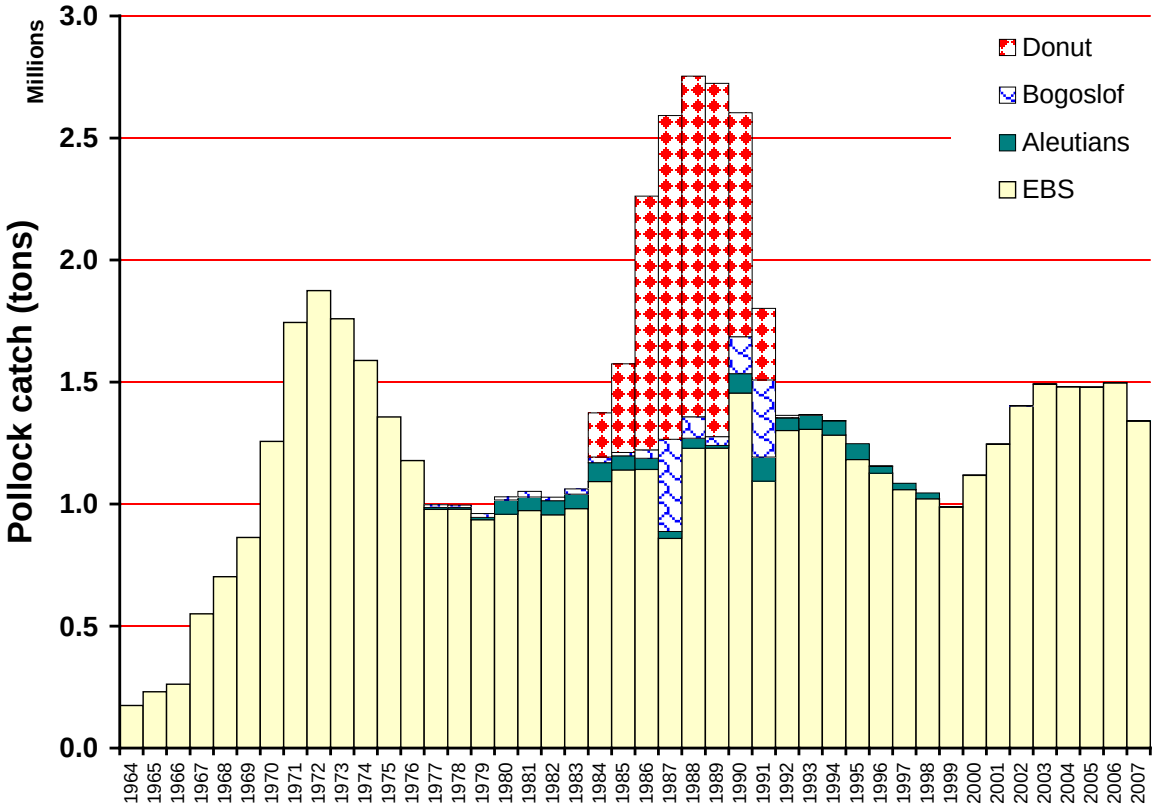



**Figure 1. Alaska pollock catch estimates from the Eastern Bering Sea, Aleutian Islands, Bogoslof Island, and Donut Hole regions, 1964-2007**

### 2.2.3.2 The Pollock Fishery since AFA

This section provides an overview of the pollock fishery from 2003 forward. The majority of the information is taken from tables and figures provided in the Final Regulatory Impact Review (RIR) for Amendment 91 (NMFS 2009). In addition, some of the figures are taken from the "Alaska Groundfish Market Profiles" (Northern Economics 2008), which is included in the "Economic Status of the Groundfish Fishery off Alaska, 2007" (Hiatt, 2008). The overview is divided into three sub-sections that describe: (1) participation, harvests, and value; (2) pollock products and production amounts; and (3) seasonality in the pollock fishery.

**Participation, Harvests, and Value in the BS Pollock Fishery**

Table 1 summarizes participation and harvests in the Bering Sea (BS) pollock fishery from 2003 to 2007. The number of harvesting vessels (CVs or CPs) participating in the fishery has declined since implementation of AFA from 131 vessels to 109 vessels in 2007—four authorized CPs and seventeen authorized CVs are no longer participating in directed pollock fisheries in the BS. Over the five years shown, harvests have averaged over 1.4 million mt. In 2008 and 2009, both allocations and harvests were lower—the total directed fishing allocation of BS pollock for 2008 fell to 968,500 mt, and in 2009 it fell again to 785,700 mt. Ex-vessel value is the amount of revenues that CVs receive from processors (shore plants or motherships). From 2003 through 2007, total ex-vessel value averaged $197 million. Wholesale value is the amount that processors receive for processed products. Estimates shown for CVs represent the wholesale product value for shore plants that processed BSAI pollock. The average of total annual wholesale value from 2003 to 2007 was $1.21 billion. Industry sources indicate that in 2008 both ex-vessel and wholesale prices were significantly higher than they had been in 2007. In 2009 ex-vessel and wholesale price have declined from 2008 levels.

**Table 1. Summary of Bering Sea Pollock Harvesting Vessels, Allocations, Harvests and Value 2003 - 2007**

| Year | Sector | Vessels No. | Pollock Allocation 1,000 MT | Pollock Catch 1,000 MT | Ex-Vessel Value $ Millions | Wholesale Value $ Millions |
|---|---|---|---|---|---|---|
| 2003 | CV (86) | 86 | 653 | 652 | 152 | 403 |
| | CP (16) | 16 | 522 | 522 | NA | 378 |
| | M (10) | 10 | 131 | 131 | 31 | 69 |
| | CDQ | * | 149 | 149 | NA | 108 |
| | **Total** | **112** | **1,455** | **1,454** | **183** | **957** |
| 2004 | CV (86) | 86 | 650 | 638 | 148 | 430 |
| | CP (17) | 17 | 520 | 520 | NA | 420 |
| | M (10) | 10 | 130 | 129 | 30 | 76 |
| | CDQ | * | 149 | 149 | NA | 121 |
| | **Total** | **113** | **1,448** | **1,436** | **177** | **1,046** |
| 2005 | CV (84) | 84 | 654 | 648 | 177 | 523 |
| | CP (16) | 16 | 523 | 518 | NA | 493 |
| | M (9) | 9 | 131 | 131 | 36 | 57 |
| | CDQ | * | 150 | 150 | NA | 142 |
| | **Total** | **109** | **1,457** | **1,446** | **212** | **1,215** |
| 2006 | CV (81) | 81 | 660 | 646 | 180 | 510 |
| | CP (16) | 16 | 528 | 527 | NA | 478 |
| | M (9) | 9 | 132 | 131 | 37 | 92 |
| | CDQ | * | 150 | 150 | NA | 136 |
| | **Total** | **106** | **1,471** | **1,455** | **217** | **1,217** |
| 2007 | CV (82) | 82 | 611 | 573 | 161 | 449 |
| | CP (16) | 16 | 489 | 489 | NA | 487 |
| | M (11) | 11 | 122 | 122 | 34 | 93 |
| | CDQ | * | 139 | 139 | NA | 139 |
| | **Total** | **109** | **1,361** | **1,322** | **195** | **1,168** |

Sources: Vessel counts, allocations and harvests from Table 10-3 in Council, 2009, ex-vessel and wholesale value estimated from Hiatt, 2008.

Notes:

(1) The table does not include information from the AI pollock fishery.

(2) There are 19 CVs that are members of the Mothership Fishing Cooperative (MFC), many of which fish in other shorebased coops. The tables list only MFC CVs that were not already counted among the shorebased CVs.

(3) Ex-vessel values are not estimated for pollock harvest CPs of CDQs because CPs process their own fish and no ex-vessel transaction occurs. Similarly CDQ harvests of pollock are nearly always made by CPs and therefore of ex-vessel value from the CDQ fishery are not calculated.

Figure 2 shows the relative stability of pollock harvests by sector from 2003 to 2007 and the slight decline seen in 2007. The 2007 season was a harbinger for further declines that took place in 2008 and 2009. Figure 3 shows increasing total wholesale values, which were driven by significantly higher prices per ton.

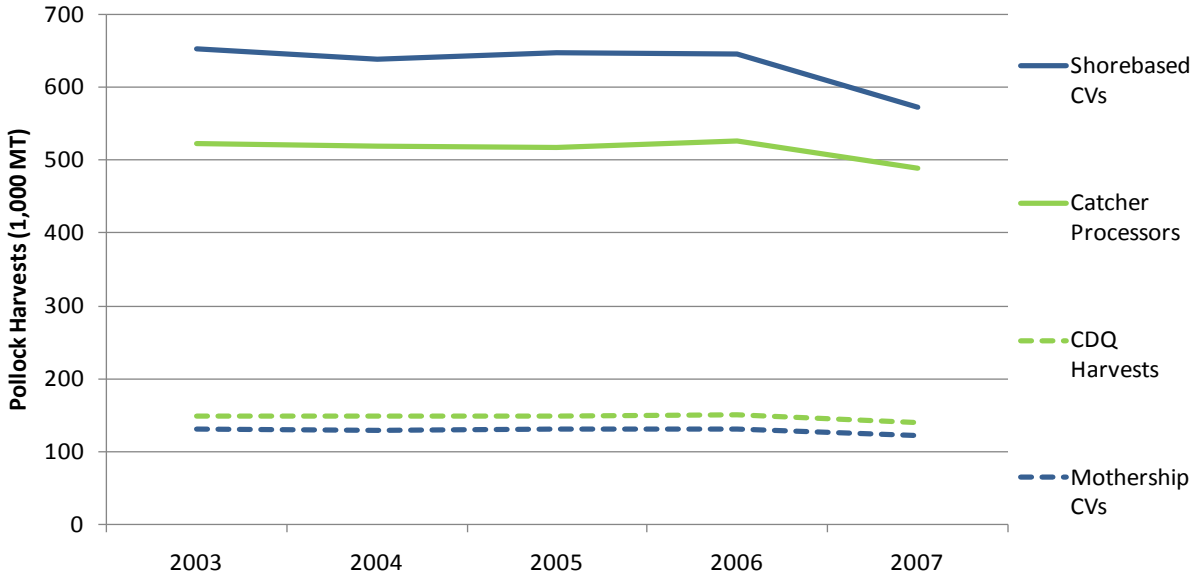



**Figure 2. Pollock Harvests by Sector in the Bering Sea, 2003 – 2007**
Source: Developed by Northern Economics from data in Table 10-3 of NFPMC 2009.

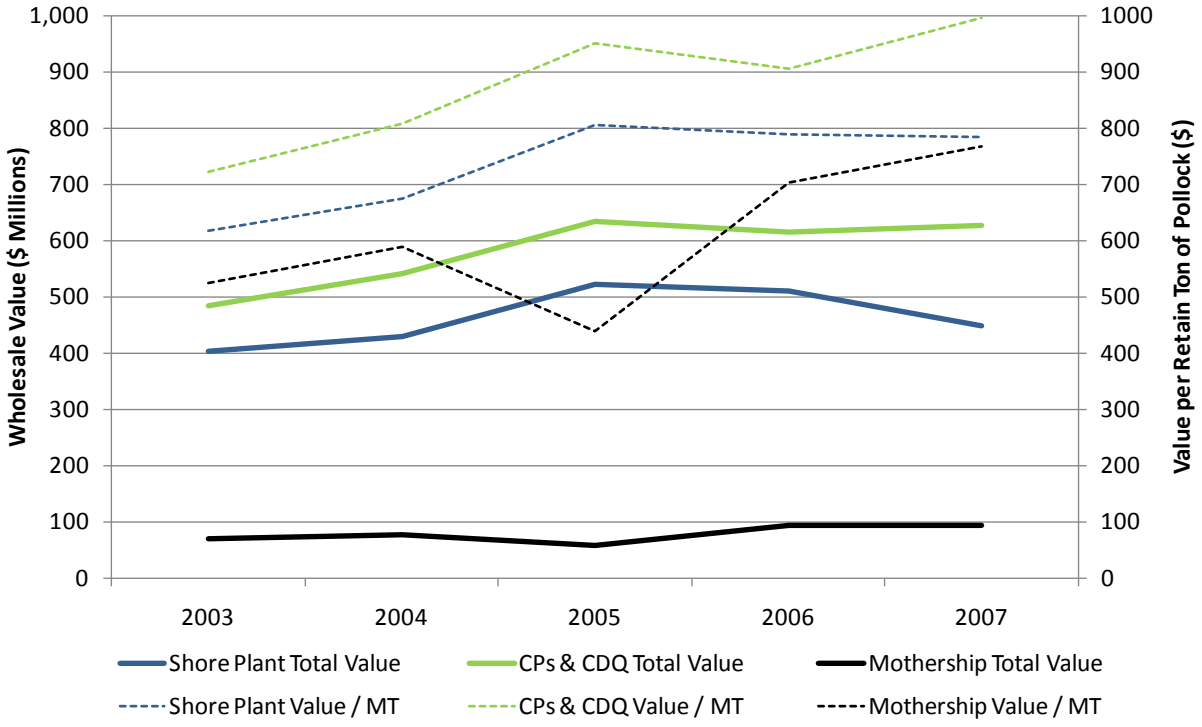



**Figure 3. Total Wholesale Value of Pollock and Wholesale Value per Ton by Sector, 2003 – 2007**
Source: Developed by Northern Economics from data in Table 10-3 of NFPMC 2009 and Hiatt, 2008.

**Pollock Products and Production Amounts**

The pollock fishery in waters off Alaska is the largest U.S. fishery by volume, and the economic character of that fishery is based on a varied range of products produced from pollock. In the U.S., Alaska pollock catches are processed mainly for roe, surimi, and several varieties of fillet products. Fillet production has increased particularly rapidly due to more efficient harvest rates, increased recovery rates, and the shift by processors from surimi to fillet production, all made possible, at least in part, by the AFA. The information in this section summarizes the more extensive information presented in "Alaska Groundfish Market Profiles" (Northern Economics, 2008) which is included in the "Economic Status of the Groundfish Fishery off Alaska, 2007" (Hiatt, 2008). Both of these reports are incorporated by reference and are referred to the documents for more detailed discussions.

Prior to the implementation of the AFA, U.S. pollock catches were processed mainly into surimi. The Bering Sea pollock fishery was then prosecuted as a "managed open-access" fishery, in which qualifying vessels sought to harvest as large a share of the TAC as possible, before the TAC or established PSC limits were reached and the fishery closed. Because surimi production allows more raw material (i.e., pollock flesh) to be processed in a shorter period of time than fillet and fillet block production, committing catches for surimi production was to a vessel's operational advantage. With the operational and economic efficiencies gained through rationalization of the fishery under the AFA, the industry was able to abandon practices compelled by the economics of open access and began developing more deliberate production strategies according to market demands.

This shift in production practices led, as noted, primarily to a particularly rapid increase in fillet production during the early 2000s to meet greater world demand for whitefish products created by several factors, including declining harvests in the Russian pollock fishery and a sharp decrease in the supply of fillets from Atlantic cod. The result has been increased fillet production and growth in wholesale gross revenues from U.S. pollock fillet production.

Figure 4 shows the production of pollock fisheries off Alaska by product from 1996 to 2007. Figure 5 shows the estimated wholesale value of these products over the same period. These figures show the dramatic increase in production and wholesale value of fillets from 2000 to the present, as well as the importance of roe particularly given roe product value compared to roe production.

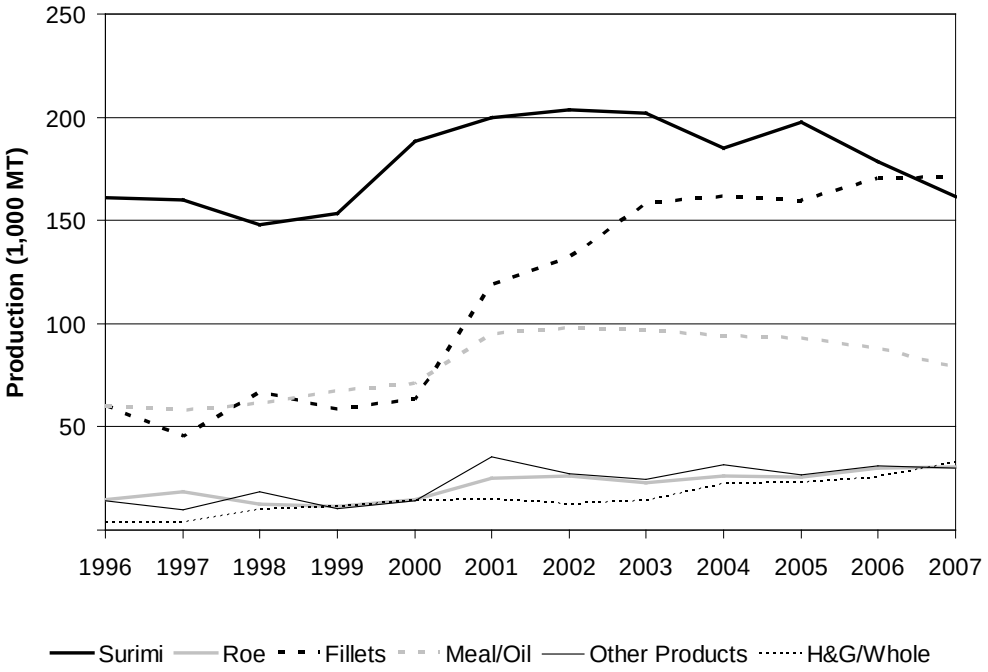



**Figure 4. Primary Production of Alaska Pollock by Product Type, 1996-2005**
Source: Northern Economics, 2008
Note: Product types may include several more specific products.

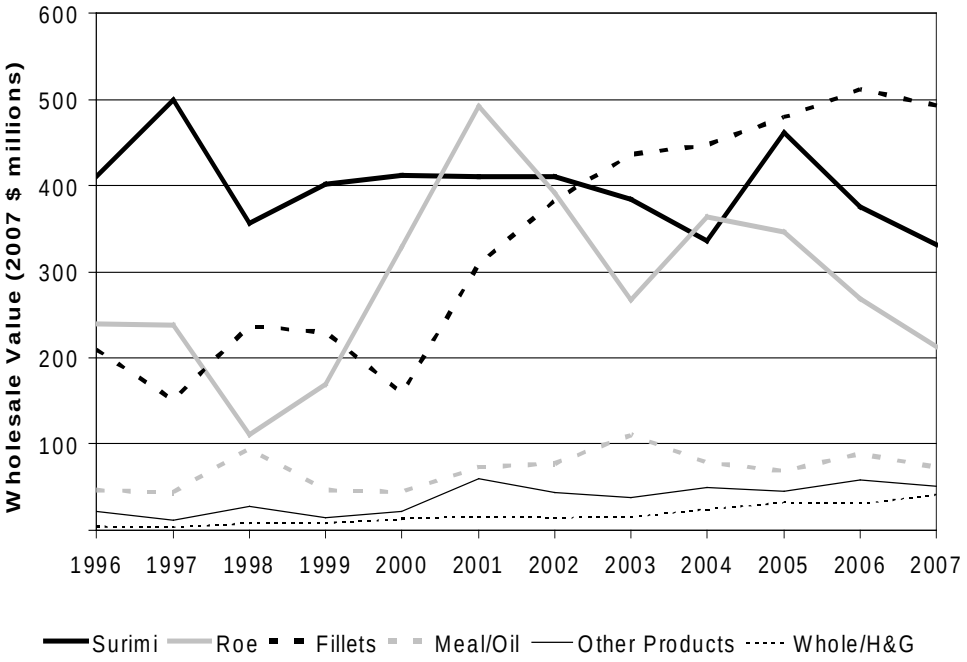



**Figure 5. Wholesale Value of Alaska Primary Alaska Pollock Production by Product Type, 1996 – 2007**
Source: Northern Economics 2008
Note: Product types may include several more specific products.

**Seasonality in the BS Pollock Fishery**

The BS pollock fishery is divided into two seasons: 40% of the total directed fishing allowance (DFA) is apportioned to the A Season, which is open from January 20 through June 10, and 60% of the DFA is apportioned to the B Season, which is open from June 10 through November 1. Typically, fishing in the A Season ends in April, while fishing in the B Season usually begins in July and runs through the end of October. The A Season fishery has historically focused on roe-bearing females, and is concentrated north and west of Unimak Island and along the 100-meter contour between Unimak and the Pribilof Islands. A Season pollock also provide other primary products such as surimi and fillet blocks, but yields on these products are slightly lower than during later periods of the B Season. The B Season fishery generally takes place west of 170°W. During the early months of the B Season (June in particular), flesh quality of pollock may still be compromised because the fish have not fully recovered from spawning.

**Table 2. Pollock Harvest by Season, 2000 - 2007**

| Year | A Season | B Season | Full year |
|---|---|---|---|
| 2000 | 418,285 | 631,755 | 1,050,039 |
| 2001 | 538,107 | 813,022 | 1,351,130 |
| 2002 | 570,464 | 866,034 | 1,436,498 |
| 2003 | 576,868 | 876,784 | 1,453,651 |
| 2004 | 579,816 | 858,799 | 1,438,615 |
| 2005 | 573,887 | 878,618 | 1,452,505 |
| 2006 | 579,112 | 874,435 | 1,453,547 |
| 2007 | 544,273 | 775,261 | 1,319,534 |

Source: Table 10 – 5 of Council, 2009

Table 3 illustrates the importance of the A Season and the additional value that pollock roe brings to the fishery. Notwithstanding the fact that A Season harvests are only 2/3rds that of the B Season, total value produced in the A Season has exceeded total value in the B Season for both the catcher processors and motherships. This is not the case for shore plants, where total value in the A Season has been less than total value in the B Season.

**Table 3. Wholesale Value of Pollock by Sector and Season, 2004 - 2006**

| | | 2003 | 2004 | 2005 | 2006 | 2003 | 2004 | 2005 | 2006 |
|---|---|---|---|---|---|---|---|---|---|
| **Sector** | **Season** | **$ per MT of Retained Pollock** | | | | **Total Wholesale Value ($Millions)** | | | |
| **CP** | A | 971 | 1141 | 1246 | 1170 | 261.7 | 312.1 | 339.7 | 321.8 |
| | B | 567 | 591 | 767 | 748 | 228.3 | 234.2 | 306.5 | 301.5 |
| | **Total** | **729** | **816** | **962** | **919** | **490.0** | **546.2** | **646.3** | **623.3** |
| **M** | A | 708 | 844 | 612 | 980 | 42.6 | 50.8 | 35.3 | 56.9 |
| | B | 414 | 425 | 333 | 546 | 37.8 | 38.2 | 29.6 | 48.8 |
| | **Total** | **531** | **593** | **443** | **717** | **80.4** | **89.0** | **64.9** | **105.8** |
| **S** | A | 797 | 849 | 1018 | 947 | 206.3 | 220.9 | 262.4 | 249.2 |
| | B | 633 | 596 | 700 | 700 | 249.3 | 225.4 | 273.6 | 268.6 |
| | **Total** | **698** | **699** | **827** | **526** | **455.6** | **446.3** | **535.9** | **340.5** |
| **All** | A | 867 | 983 | 1084 | 1053 | 510.6 | 583.8 | 637.4 | 627.9 |
| | B | 581 | 576 | 694 | 706 | 515.4 | 497.8 | 609.7 | 619.0 |
| | **Total** | **695** | **742** | **850** | **726** | **1026.0** | **1081.6** | **1247.2** | **1246.9** |

Source: Adapted by Northern Economics from Table 10-80 and 10-82 of Council, 2009.

The lower overall wholesale values received by pollock shore plants in the A Season (shown in Table 3) can be largely explained by the differences among processing modes in the value received for roe. Table 4 shows that on average, roe values per product pound of shoreside processors are 28% less than the roe values received by at-sea processors. For the other products listed, the average differentials between shoreside values and at-sea values range from 12% for surimi and fishmeal to 0% for other fillets. According to industry sources, at-sea processors receive higher values for roe in part because they are able to process it much sooner after pollock are harvested, and because they have somewhat greater flexibility in the areas in which they can fish.

**Table 4. Wholesale Value per Product Pound for Pollock by Processing Mode, 2003 - 2007**

| | 2003 | | 2004 | | 2005 | | 2006 | | 2007 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | At-sea | Shore-side | At-sea | Shore-side | At-sea | Shore-side | At-sea | Shore-side | At-sea | Shore-side |
| **Product** | **$ per Product Pound** | | | | | | | | | |
| Roe | 6.12 | 4.31 | 6.68 | 4.91 | 6.77 | 5.42 | 5.09 | 3.62 | 4.61 | 3.07 |
| Deep-skin Fillets | 1.15 | 1.11 | 1.21 | 1.04 | 1.25 | - | 1.35 | 1.22 | 1.46 | 1.25 |
| Other Fillets | 0.85 | 0.94 | 0.97 | 0.94 | 1.12 | 1.12 | 1.25 | 1.22 | 1.25 | 1.23 |
| Surimi | 0.71 | 0.70 | 0.75 | 0.66 | 1.03 | 0.90 | 1.01 | 0.84 | 1.08 | 0.88 |
| Fish Meal | 0.35 | 0.34 | 0.37 | 0.33 | 0.38 | 0.32 | 0.52 | 0.46 | 0.53 | 0.44 |
| **Weighted Average** | **1.03** | **0.86** | **1.16** | **0.87** | **1.28** | **1.00** | **1.28** | **1.00** | **1.29** | **1.06** |

Source: Adapted by Northern Economics from Table 26 in Hiatt, 2008.

### 2.2.4 Summary of Historical Chinook Salmon PSC in the BS Pollock Fishery

This section provides a summary of historic levels of Chinook salmon PSC in the BS pollock fishery. Chinook salmon PSC has varied across years, seasons, sectors, and areas. The section describes these differences very briefly—additional detail can be found in the Final EIS (NMFS 2009).

Table 5 provides a summary of Chinook salmon PSC by season in the BS pollock fishery from 2000 through 2007. In general, Chinook salmon PSC increased during this period. Chinook salmon PSC rates in the A Season were higher in most years than in the B Season. However, there were exceptions—in 2004 and 2005 Chinook salmon PSC in the B Season exceeded Chinook salmon PSC in the A Season. Chinook salmon PSC rates, as measured by Chinook per mt of pollock, were also lower in the B Season—rates in 2005 are an exception.

**Table 5. Pollock Harvests and Chinook Salmon PSC by Season, 2000 - 2007**

| | Pollock Harvests | | | Chinook Salmon PSC | | | Chinook Salmon PSC Rates | | |
|---|---|---|---|---|---|---|---|---|---|
| | A Season | B Season | Full year | A Season | B Season | Full year | A Season | B Season | Full year |
| **Year** | **(1,000 MT)** | | | **(1,000 Chinook)** | | | **(Chinook / Pollock MT)** | | |
| 2000 | 418.3 | 631.8 | 1,050.0 | 3 | 2 | 5 | 0.008 | 0.003 | 0.005 |
| 2001 | 538.1 | 813.0 | 1,351.1 | 16 | 14 | 30 | 0.031 | 0.017 | 0.022 |
| 2002 | 570.5 | 866.0 | 1,436.5 | 22 | 13 | 35 | 0.039 | 0.015 | 0.025 |
| 2003 | 576.9 | 876.8 | 1,453.7 | 31 | 13 | 44 | 0.054 | 0.015 | 0.031 |
| 2004 | 579.8 | 858.8 | 1,438.6 | 22 | 29 | 51 | 0.038 | 0.034 | 0.036 |
| 2005 | 573.9 | 878.6 | 1,452.5 | 27 | 41 | 68 | 0.046 | 0.047 | 0.047 |
| 2006 | 579.1 | 874.4 | 1,453.5 | 58 | 24 | 82 | 0.100 | 0.027 | 0.056 |
| 2007 | 544.3 | 775.3 | 1,319.5 | 71 | 49 | 120 | 0.130 | 0.063 | 0.091 |

Source: Adapted by Northern Economics from Haflinger, 2008.

Figure 6 summarizes the data from Table 5. In the figure, pollock harvests (shown with solid lines), are indicated on the left axis, and Chinook salmon PSC levels (shown with dashed lines) are indicated on

right axis. Both pollock harvests and Chinook salmon PSC increased from 2000 to 2002. Pollock harvests were flat from 2002 to 2006, but Chinook salmon PSC continued to increase. In 2007, Chinook salmon PSC rose sharply while pollock harvests declined. Figure 6 also shows seasonal differences in Chinook salmon PSC levels. In all years, B Season salmon PSC levels were lower than A Season levels, with the exception of 2004 and 2005.

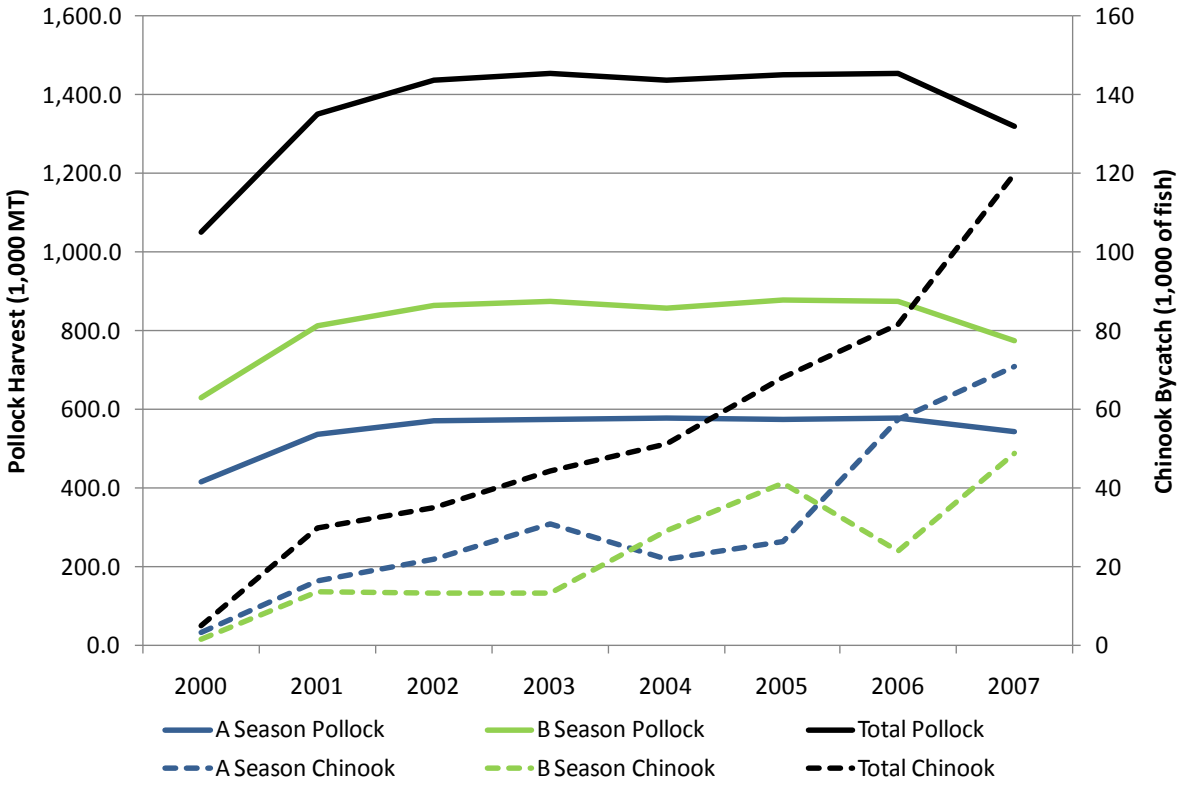



**Figure 6. Comparison of Pollock Harvests with Chinook salmon PSC by Season, 2000 – 2007.**
Source: Figure developed by Northern Economics from data in Haflinger, 2008.

Explaining the variation in Chinook salmon PSC levels in the BS pollock fishery is complicated, because it depends on the time period that is analyzed. For example, it might appear from Figure 6 that Chinook PSC increased from very low levels prior to 2001, to the relatively high levels seen in 2007. In fact, as seen in Figure 7, Chinook PSC numbers were highly variable from 1991 to 1999, ranging from 63,000 in 1996, to 14,000 in 1999. The figures also show Chinook salmon PSC in 2008 and in 2009 through August 6. In 2008, Chinook salmon PSC in the BS pollock fishery dropped to 20,000 fish, and through August 6, 2009, Chinook salmon PSC was 10,000.

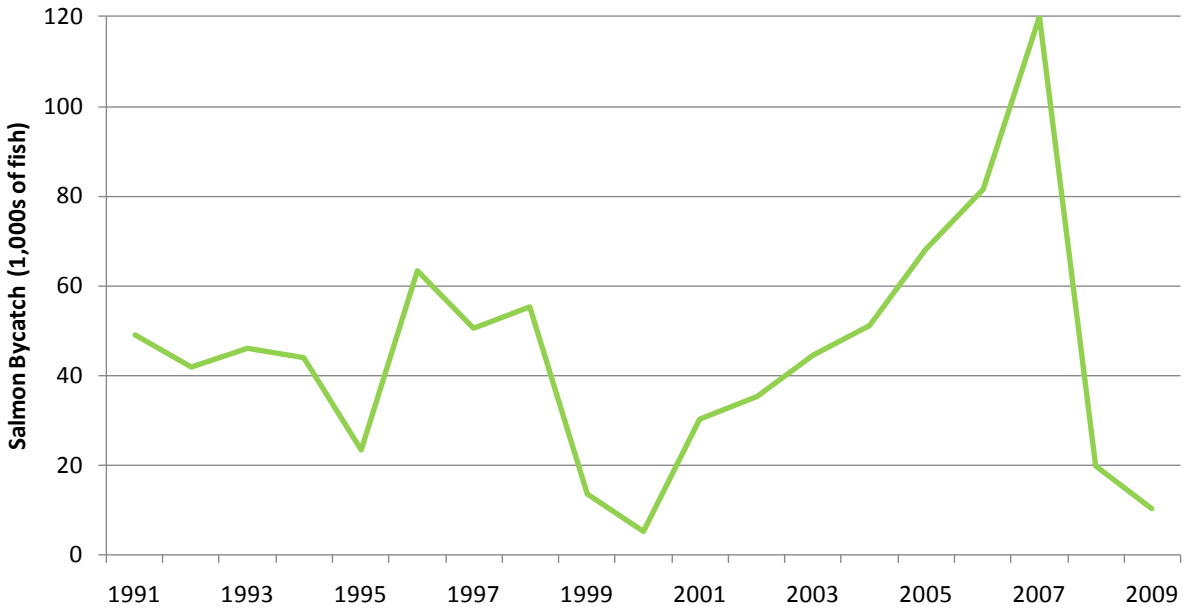



**Figure 7. Chinook Salmon PSC in the BS Pollock Fishery, 1991 – 2007.**
Source: Developed by Northern Economics from data in Haflinger, 2008, and NMFS-AKR, 2009.
Note: PSC for 2009 is incomplete but current through August 6, 2009.

Chinook salmon PSC in the BS pollock fishery also varies by sector. As shown in Figure 8, Chinook salmon PSC rates by the offshore sectors (motherships and catcher processors) have been generally lower than Chinook salmon PSC rates by the inshore sector. This is particularly true in the B season when the offshore fishery tends to fish much farther to north and west than the inshore fleet.

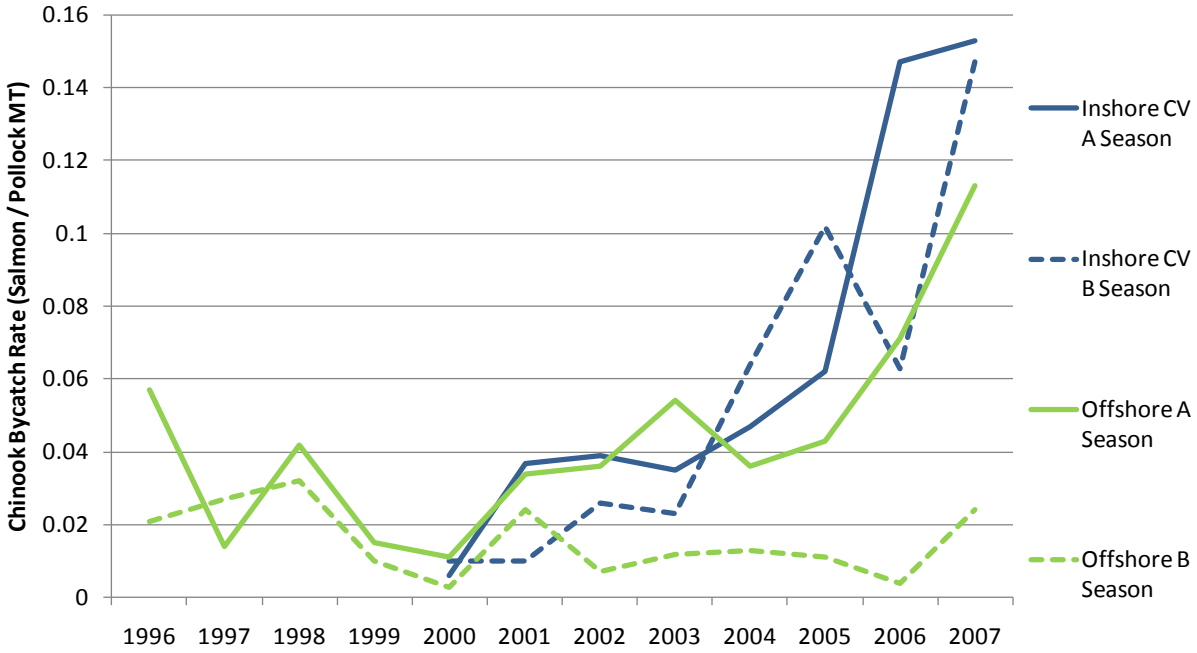



**Figure 8. PSC Rates of Chinook Salmon in the BS Pollock Fishery by Sector, 1996 – 2007.**
Source: Developed by Northern Economics from data in Haflinger, 2008.

Chinook salmon PSC in the BS pollock fishery has been highly variable by month. As shown in Figure 9 and Figure 10, Chinook salmon PSC has been highest in January, February and October and lowest during June through August. PSC rates are much higher in October than in January or February, but total harvest in the pollock fishery during February is twice the total harvest in October.

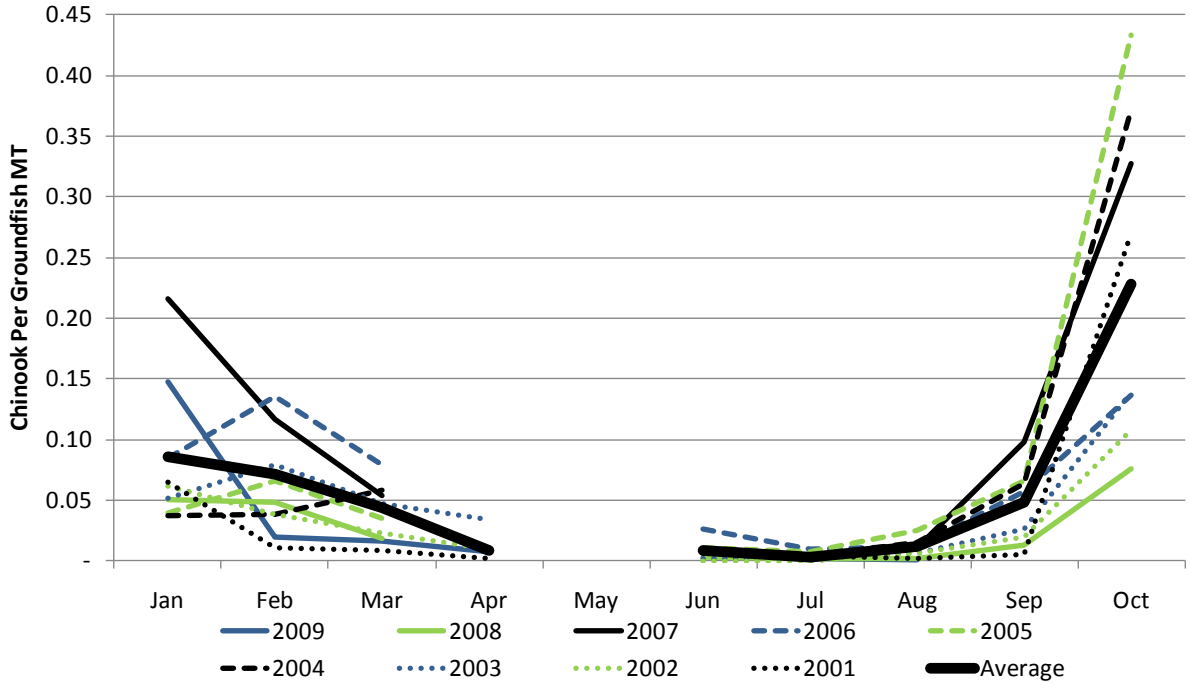



**Figure 9. PSC Rates of Chinook Salmon in the BS Pollock Fishery by Month, 2001 – 2007**
Source: Developed by Northern Economics from NMFS-AKR, 2009.

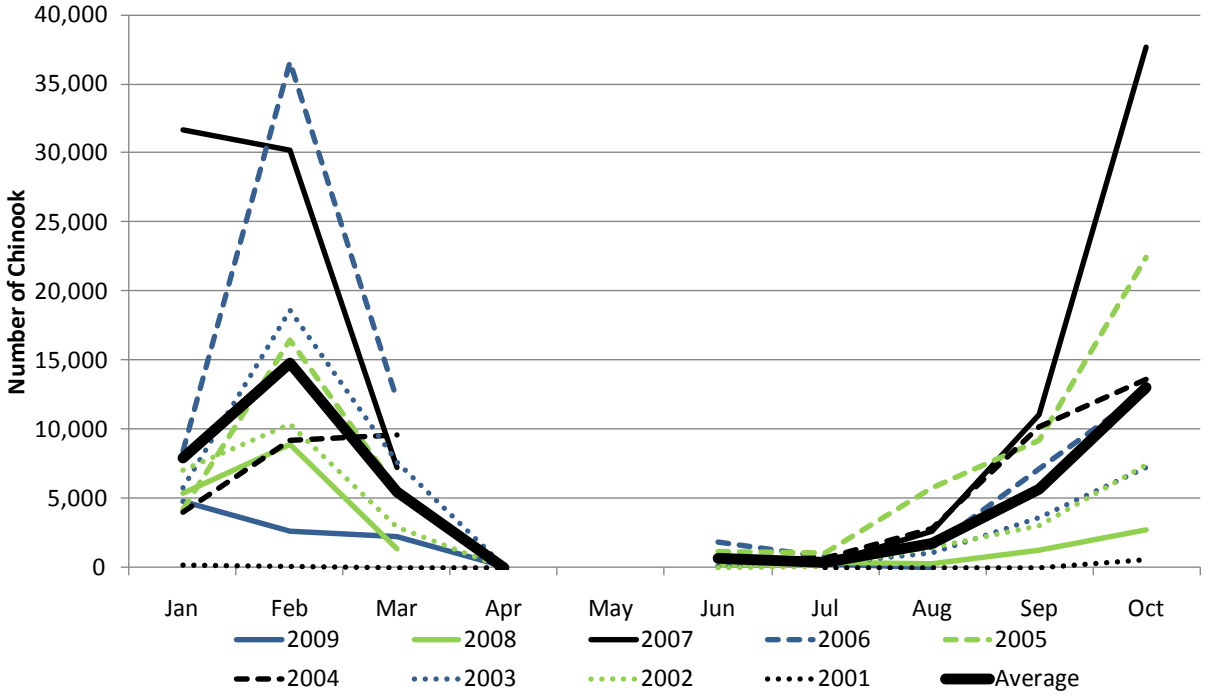



**Figure 10. Total PSC of Chinook Salmon in the BS Pollock Fishery by Month, 2001 – 2009**
Source: Developed by Northern Economics from NMFS-AKR, 2009.

Chinook salmon PSC rates also vary by location of fishing effort. During the A Season, PSC rates have been highest in areas west of 165˚W and south of 55˚N in a 15 × 45 nm area known in the industry as the "east-west tow of the horseshoe." In Figure 11, the areas with highest average historical PSC rates (0.4 or more salmon per mt of pollock) are shown in darkly shaded squares (dark blue if viewing in color). Areas farther to the north generally have lower PSC rates.

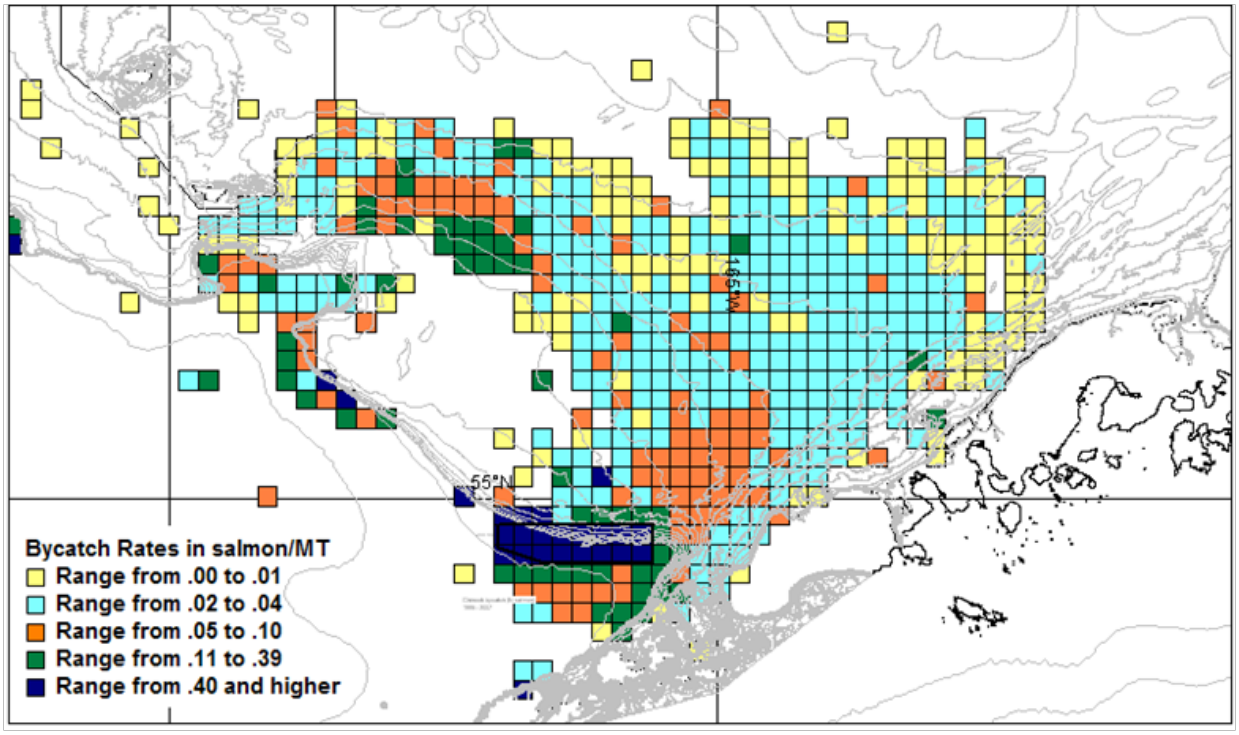



**Figure 11.PSC Rates of Chinook Salmon in the BS Pollock Fishery A Season by Area, 1995 – 2007.**
Source: Figure adapted by Northern Economics from Haflinger, 2008.

As shown in Figure 11, Chinook salmon PSC rates during the A season from 1995 through 2007 were highly variable across areas. PSC rates are also highly variable across hauls. Table 6 shows summary statistics calculated from vessel-specific PSC rates in the 2008 BSAI pollock fishery, in which nearly 12,000 hauls were sampled. These sampled hauls accounted for 16,151 Chinook. The estimate of total Chinook salmon PSC in the 2008 BS pollock fishery was 20,499. The distribution of Chinook salmon PSC is highly skewed—a total of 4,732 or 40% of the sampled hauls had zero PSC. The average over all sampled hauls was 1.35 Chinook per haul, and as further evidence of the skewed nature the distribution, the mean corresponds to the 81st percentile of hauls. The standard deviation is 5.6 Chinook per haul, which is more than four times the observed salmon PSC rate.

**Table 6. Chinook Salmon PSC Statistics from Observer Sampled Hauls in 2008**

| Total Chinook Estimated from Sample Hauls | Total No. of Hauls Sampled | Sampled Hauls with Zero Chinook | Mean Chinook per Haul | Percentile of Mean | Max | 95th Percentile | Standard Deviation |
|---|---|---|---|---|---|---|---|
| 16,151 | 11,928 | 4,732 | 1.354 | 81st | 232.0 | 6.333 | 5.638 |

Source: Developed by Northern Economics from Vessel Specific PSC Rates for 2008 in NMFS-AKR 2009.
Note: Actual data show sampled hauls per week by vessel. Estimates are calculated by weighting the PSC rate per sampled hauls for the week by the number of sampled hauls in the week.

Figure 12 shows the cumulative distribution of Chinook salmon PSC in sampled hauls during 2008. The figure shows that 60% of the Chinook salmon PSC for the year was taken in only 6% of the hauls and 80% of the PSC is from 15% of the hauls.

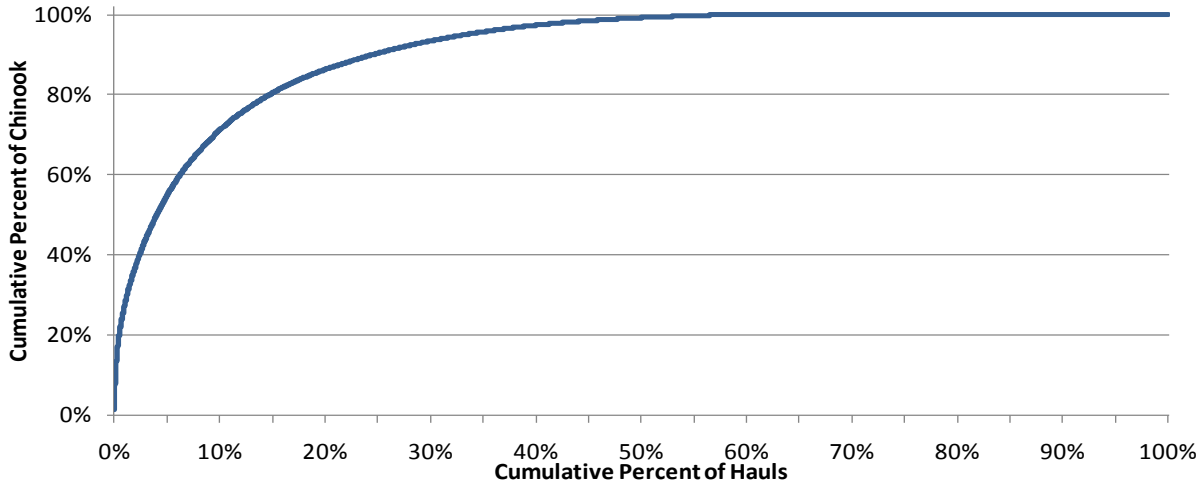



**Figure 12. Cumulative Distribution of Chinook Salmon PSC in the BS Pollock by Haul, 2008**
Source: Developed by Northern Economics from NMFS-AKR 2009.

Vessel-specific Chinook salmon PSC data for the BSAI pollock fishery are reported by NMFS-AKR on the internet (NMFS-AKR, 2009) for 2008 and 2009 only. However, vessel-specific PSC rates for other PSC species in the BSAI pollock fishery have been reported since 2003. These data are summarized in Figure 13 to show counts of sampled hauls by year and the average groundfish harvest per sampled haul in the BS pollock fishery. The number of sampled hauls was relatively stable from 2003 to 2007, but dropped sharply with the BSAI pollock TAC reduction in 2008. Average groundfish catch per haul has remained between 75 and 85 mt/haul throughout the period.

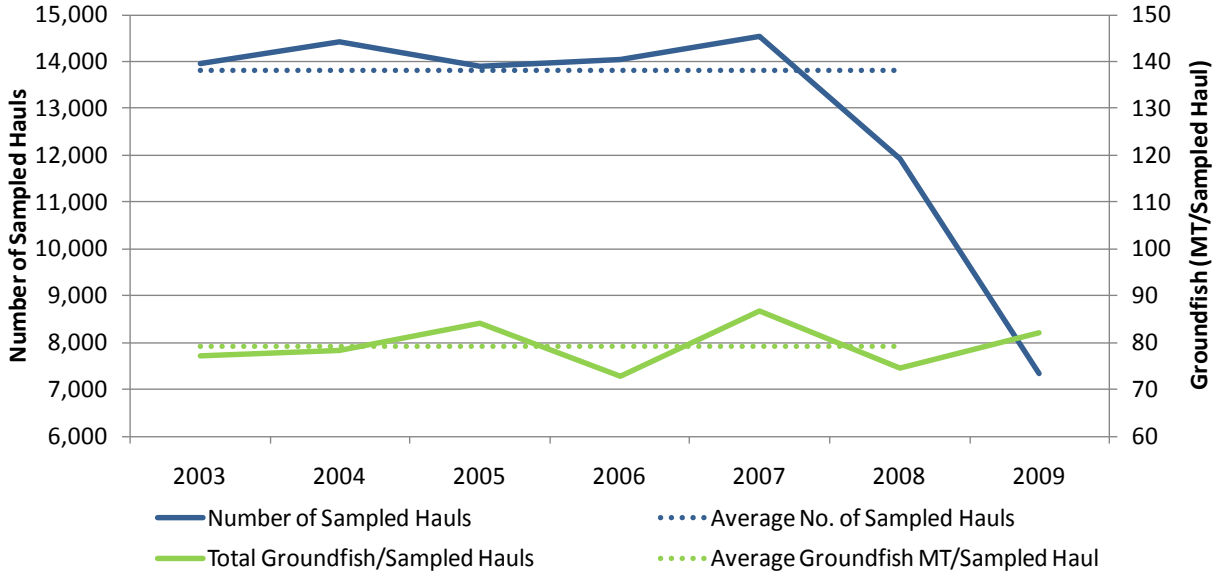



**Figure 13. Number of Sampled Hauls and Groundfish per Haul in the BSAI Pollock Fishery, 2003 – 2009**
Source: Developed by Northern Economics from NMFS-AKR 2009.
Note: Data for 2009 are current through August 8, 2009.

### 2.2.5 Potential Changes in Fishing Behavior under Amendment 91

The primary goal of the Chinook PSC Data Collection Program as proposed by the Council will be to measure the effectiveness of Amendment 91 at reducing Chinook salmon PSC, and to assess the effectiveness of the IPAs at reducing Chinook salmon PSC even in years when the abundance of Chinook salmon on the pollock fishing grounds is low.

While measuring the effectiveness of the program may seem straightforward, when one delves deeper into the issue the complexity of the problem becomes apparent. For example, a major issue is the baseline against which the program is compared. If the effectiveness of Amendment 91 is compared to Chinook salmon PSC levels in 2007—the year with the highest Chinook salmon PSC on record—it is very likely the program will appear to be effective regardless of what actions are taken by industry. On the other hand, comparing to the program to 2008—the year with the third lowest level of Chinook salmon PSC since 1991—the program may not appear to be very effective, if Chinook salmon PSC increases to 30,000 or 40,000, but still remains below the long-term average.

A comparison of Chinook salmon PSC under Amendment 91 to Chinook PSC in any particular year in the past will suffer from intrinsic differences in the exogenous conditions that contributed to Chinook salmon PSC in that year. These exogenous factors include the abundance of salmon on the pollock grounds and the locations in which pollock are aggregated, among other factors. It is possible to make comparisons against averages over several recent years, but this may also prove to be impractical, particularly in the near term, when there is only one year, or just a few years, of experience operating under IPAs.

It has also been suggested that the effectiveness of the program could be determined by comparing Chinook salmon PSC of participants in the IPAs to operations that are not participating in an IPA. This comparison requires that there are a sufficient number of parties in IPAs and a sufficient number that have opted out of IPAs. Given that there is significant Chinook salmon PSC allowance penalty for operations that opt out of IPAs,[7] industry has indicated that it is unlikely that individual operations will choose to opt out of IPAs. Thus, comparisons between IPA participants and non-participants may not be possible.

Measuring the effectiveness of Amendment 91 will not be straightforward. The effectiveness of the program may need to be measured against itself or against a combination of recent years. In the first year of the program, analysts could compile data about fishing behavior and Chinook salmon PSC levels, and industry could document any changes in fishing behavior or performance that have occurred since implementation (or approval[8] of the program. This information could then form a baseline against which subsequent years are compared. Amendment 91 may result in a number of systematic behavioral changes among participants in the BS pollock fishery. It may be possible to measure and quantify many of these behavioral changes using data that are currently collected or that are proposed for collection under the alternatives in this action.

During the preparation of this analysis, there have been numerous discussions among members of the pollock industry and analysts about the question of how industry might alter its behavior in an effort to reduce Chinook salmon PSC. Similar discussions were also conducted during preparation of the RIR for Amendment 91 (NMFS 2009). A list of the potential behavioral changes specifically mentioned or

[7] Amendment 91 penalizes operations that opt-out of IPAs by providing them with smaller PSC limits. Vessels that opt-out, fish under a reduced cap that is the sum of each opt-out vessel's pollock-based-share of 28,496 Chinook salmon (rather than 60,000 Chinook salmon).

[8] It is possible that as a result of the Council deliberations over the past few years, the industry has already made behavioral changes with respect to Chinook salmon PSC. These behavioral changes could be considered in evaluating the effects of Amendment 91.

inferred from these discussions is included in Table 7. The changes are categorized by the primary impetus for the change. Discussions of each of the behavioral changes are included in the sections that follow the table. The behavioral changes are discussed without regard to whether data to evaluate these changes are actually available. The availability of data will be discussed in the assessment of the alternatives. This same set of behavioral changes is used to frame the discussion of the status quo alternative.

**Table 7. Behavioral changes suggesting salmon PSC avoidance**

| Item | Source of Change | Change |
|---|---|---|
| 1 | IPA driven changes | Creation of individual accountability and incentives |
| 2 | | Changes in rolling hot spot definitions and requirements |
| 3 | | Increased communication and planning within cooperatives |
| 4 | | Additional research investigating ways to avoid Chinook salmon PSC |
| 5 | Co-op driven changes | Slower starts to fishing season |
| 6 | | Systematic temporal shifts in effort |
| 7 | | Relax limits on acceptable age of fish in holds at delivery by shore plants |
| 8 | Vessel behavioral changes | Purchase and use of new technologies that reduce Chinook salmon PSC |
| 9 | | Increased amount of time searching |
| 10 | | Shorter and smaller tows |
| 11 | | Increased monitoring of salmon caught within each tow |
| 12 | | Increased number of successive tows over the same grounds |
| 13 | | Increased numbers of movements to avoid Chinook |
| 14 | | Individual behavioral changes related to hot spot areas |
| 15 | Unintended consequences | Reductions in average pounds of pollock landed per trip |
| 16 | | Changes in the distribution of Chinook salmon PSC rates |
| 17 | | Increases in unharvested pollock left “on the table” at the end of the year |
| 18 | | Systematic spatial shifting of effort |
| 19 | | Higher overall costs of fishing |
| 20 | | Lower overall levels of product quality and lower overall levels of revenue |
| 21 | | Additional consolidation of the AFA fleets |
| 23 | Desired Results | Transfers of Chinook allowances and pollock allocations |
| 23 | | Create an incentive to reduce Chinook salmon PSC in years of low encounters |
| 24 | | Use of additional performance-based penalties or payments |
| 25 | | Lower Chinook salmon PSC rates and totals |

#### 2.2.5.1 IPA Driven Changes

The IPAs could drive behavioral changes through the creation of systems of individual accountability, and additional incentives such as salmon savings plans and performance based penalties and rewards. The IPAs could also establish rules for the RHS programs. In addition, IPAs could facilitate increased levels of communication among cooperatives and across sectors. Finally, IPAs could collaborate to fund research to develop technologies or information that may lead to reduced Chinook salmon PSC.

**Creation of Individual Accountability and Incentives**

The hard cap is intended to create an incentive for reducing Chinook salmon PSC within the sectors, because NMFS would apportion the Chinook salmon PSC cap to the sectors, inshore cooperatives, and CDQ groups. Within each sector, the cooperatives could further apportion Chinook PSC to individual vessels. Such apportionments would internalize incentives for reducing Chinook salmon PSC at the

individual vessel level. Each vessel operator will be constrained by his or her individual PSC allowance. If they use their allowance, they will have to stop fishing or obtain additional PSC allowance units.

The extent and the means by which cooperatives create individual accountability is a critical behavioral change that will be an indicator of the effectiveness of Amendment 91. Individual accountability may also induce other behavioral changes at the vessel, company, and cooperative levels—these other behavioral changes are discussed below.

**Changes in Rolling Hot Spot Definitions and Requirements**
Given the increased internalization of the costs of Chinook salmon PSC, it may be that systematic changes are made to the RHS program. For example, the threshold number of salmon used to define a hot spot may be reduced, or the eligibility standards for vessels that are allowed to continue fishing in the closed areas could be tightened. Development of more restrictive rules governing the RHS program would suggest that additional efforts are being made to avoid salmon PSC.

**Increased Communication and Planning Within and Between Cooperatives**
Companies and cooperatives may exhibit increased levels of communication with respect to Chinook salmon PSC.

Increased levels of communications may include information on:

- where Chinook have been found and where they have not been found;
- the locations of aggregations of pollock;
- the locations of roe-bearing pollock;
- Chinook salmon PSC avoidance (which may include PSC avoidance guidelines and rules)

The imposition of the Performance Standard at the sector level may also lead to increased communication across cooperatives. Since failure to meet the performance standard results in a decrease of the hard cap, all cooperatives participating in an IPA may be harmed, if information regarding Chinook salmon PSC is not shared across cooperatives.

**Additional Research Investigating Ways to Avoid Chinook salmon PSC**
Industry may fund and conduct additional research into ways to avoid Chinook salmon. Industry may find that spending money on research may be cost effective in the long run. Industry sources indicate that there is ongoing research on the development of trawl nets that allow Chinook to escape, while maintaining the CPUE of pollock. However, other research may also be funded by industry. Potential examples include:

- Methods to track schools of Chinook, once they are encountered
- Improved fish finding equipment that is able to differentiate between Chinook and pollock
- Improvements in ways to count numbers of Chinook in each tow (e.g., video monitoring of fish as they dumped from codends into vessel holds, or deck sorting systems that separate pollock from Chinook) to facilitate better fishing location choices.
- Genetic studies to track natal rivers of Chinook encountered while fishing for pollock

#### 2.2.5.2 Co-op Driven Changes
Individual cooperatives, or in the case of the CP and Mothership cooperatives, individual companies, are also expected to be drivers of change that will lead to reductions in Chinook salmon PSC. Cooperatives

could organize slower starts to the A season, and increase effort in the early part of the B season. Shore-based processors around which cooperatives are organized may become more flexible with regard to how long fish may be stored in the hold prior to processing.

**Slower Starts to Fishing Season**
Since some of the highest Chinook salmon PSC rates of the year occur at the very beginning of the fishing year, cooperatives may make a concerted effort to reduce Chinook salmon PSC at the start of the A season. This will likely reduce the rate of pollock harvests at the start of the season. A slower start may allow vessels to find schools of pollock where there are few Chinook, and may manifest itself in various ways:

- fewer vessels on the grounds in the initial weeks of the A Season;
- vessels on the grounds conducting searches, but not actively fishing;
- broader patterns of small amounts of activity

**Systematic Temporal Shifting of Effort**
We expect an industry-wide shift in timing of fishing activities from periods that have historically had higher Chinook salmon PSC, to periods that have had lower Chinook salmon PSC. One potential change is likely to be a slower start to the A Season—not until areas of low Chinook salmon PSC have been found will pollock fishing begin in earnest. A slower start to the A season may result in a decrease in the percentage of the A Season pollock quota that is harvested during the first few weeks of the year. Once pollock fishing begins in earnest, because of the hypothesized increases in searching, shorter tows, and smaller shore-based deliveries, the harvest rate of A Season quota could be lower than in previous years. This may result in a longer A season, with landings continuing into April and possibly May.

The months of June and July have typically been periods of relatively low Chinook salmon PSC, and PSC in the B Season tends to increase later in the year. While product quality of pollock may be lower early in the B Season, the tradeoff between lower quality and lower PSC may result in the shift of B Season effort into June and July. Finally, as part of efforts to avoid PSC at the end of the year, cooperatives may in some years choose to stop fishing for pollock earlier in the year, rather than risk exceeding the cooperative's PSC allowance, and possibly causing the sector to exceed its share of the PSC cap.

**Greater Flexibility by Shore Plants Regarding Acceptable Age of Fish in Hold**
Shore-based cooperatives may find that CV efforts to reduce PSC may increase the time it take CVs to fill their holds. Rather than requiring CVs to make smaller deliveries, shore-based processors may relax their delivery timing constraints to allow these salmon avoidance efforts.

#### 2.2.5.3 Vessel Behavioral Changes

Vessel owners and operators may make efforts to reduce PSC. For example, some operators may purchase and be early adopters of new technologies that may lead to reduced Chinook salmon PSC. Operators may increase the amount of time they search for fish and reduce the length of tows. Operators may alter the way that fish enter the hold to enhance their information on the number of Chinook in each tow. If the number of Chinook is low, then vessels may be more likely to make a second or third pass over the same grounds. If number of Chinook is relatively high in a particular tow, vessels may be more likely to move to new grounds. Finally, fewer "low PSC vessels" may take the risk of fishing in an RHS area that is closed to "high PSC vessels."

**Purchase and Use of New Technologies that Reduce Chinook PSC**
The development of new technologies, such as more precise fish finding equipment and specialized nets, may reduce Chinook salmon PSC in the future. Development and testing of specialized nets is ongoing,

according to industry sources. One of the problems with developing nets is the amount of Chinook salmon PSC reduction relative to the reductions in pollock CPUE. A net that reduces Chinook salmon PSC by 25 percent, but also reduces the pollock CPUE by the same amount is of no benefit. The ratio of Chinook reductions to pollock catch rate reductions must be sufficiently high for the costs of the trawls and potentially higher fuel use incurred by additional towing to offset the perceived benefits of a reduction in Chinook salmon PSC. Once acceptable nets are developed, vessel operators may begin to use them, even if these nets result in lower pollock CPUEs. Continued use of specialized nets, even when salmon abundance is low may provide evidence of the effectiveness of the IPAs in reducing Chinook salmon PSC under all conditions.

**Increased Amount of Time Searching**

The amount of time spent searching for pollock aggregations upon which to fish may increase, as operators search for aggregations with acceptably low numbers of Chinook salmon present. For shore-based CVs, the increased time searching will likely occur primarily before first tows of each trip to limit the time from putting fish in the hold until delivery.

**Shorter and Smaller Tows**

The length (both time and distance) of tows may decrease. Short tows through a single school will allow an operator to determine with greater certainty the species composition of that particular school. For the same reason, operators may reduce the use of very long tows to move through multiple aggregations fish. The size of the average tow may decrease and the number of overall tows may increase. It is also possible that shorter tows may impact CPUEs, but it is not clear whether CPUEs will go up or down.

**Increased Monitoring of the Number of Salmon Caught within Each Tow**

Vessel operators may increase efforts to determine the catch composition of each tow before they reset on a particular school. If a particular tow has high Chinook salmon PSC numbers, then it will be important not to tow again at the same location. Increased levels of Chinook salmon PSC monitoring are expected to be particularly evident within the catcher vessel fleet, which in many cases in the past—particularly when unobserved—may not have had reliable estimates of amount of salmon captured until after the delivery. These monitoring efforts may result in modifications to the vessel or to vessel operating procedures. Vessel operators may conduct their own sampling to estimate PSC numbers on each tow.

**Increased Number of Successive Tows over the Same Grounds**

When vessel operators find an aggregation of pollock that is relatively clean with respect to salmon, they may tow back over the same area in successive tows. With shorter tows and the need to fish in clean areas, the number of successive tows over the same area may increase relative to fishing patterns prior to implementation of Amendment 91.

**Increased Numbers of Movements to Avoid Salmon**

Vessels that have caught high numbers of Chinook in a particular tow may move, rather than re-tow over the same grounds. The fact that observers will be onboard CVs for 100 percent of trips means that onboard observer sample information will be available to small harvesters for a much larger percentage of tows. All vessels, even those that have previously had 100 percent observer coverage, may increase their own internal monitoring of Chinook salmon PSC and may use this information to move to avoid additional PSC. Finally, given that all vessels will be subject to PSC constraints, we expect more moves to avoid salmon, even among vessels that previously had high levels of PSC monitoring and awareness.

**Individual Behavioral Changes Related to Hot Spot Areas**

Vessels with low PSC that are eligible to continue fishing in an area that is closed through the RHS program, may change their behaviors (i.e., they may be less likely to remain in the closed area than in the past).

#### 2.2.5.4 Unintended Consequences

There are several changes in the fishery that are not necessarily desirable outcomes, but are considered unintended consequences of Amendment 91. These changes could suggest that incentives are effective in creating salmon avoidance behavior, particularly, if observed in years of low Chinook encounters. Possible unintended consequences are:

- Reductions in average pounds of pollock landed per trip
- Changes in the Distribution of PSC rates
- Increases in un-harvested pollock, "left on the table," at the end of the year
- Systematic spatial shifting of effort
- Higher overall costs of fishing
- Lower overall levels of product quality and lower overall levels of revenue
- Additional consolidation of the AFA fleets

**Reductions in Average Pounds of Pollock Landed Per Trip by CVs**

Because of previously discussed expectations regarding increased time spent searching for clean fishing grounds, shorter tow lengths, increased numbers of movements to avoid salmon, and use of gear modifications, it may be more difficult for CVs to fill their holds within the time constraints imposed by processors. Unless shore plants relax those time constraints, there may be a reduction in the average CV trip size (measured in pounds of pollock).

**Changes in the Distribution of Chinook PSC Rates**

In the absence of sound estimates of Chinook abundance on the fishing grounds, changes in the distribution of Chinook salmon PSC rates across the fishery may be indicative of increased efforts to reduce Chinook salmon PSC. Greater concentration of Chinook salmon PSC rates at the lowest PSC levels could indicate that vessels are concentrating efforts in areas of known low PSC, thereby reducing the overall amount of Chinook salmon PSC. While some tows will be used to assess Chinook abundance in areas, the number of these exploratory tows and the number of tows taken in areas above the lowest observed Chinook salmon PSC rates, could suggest that Chinook salmon PSC measures are effective. This behavioral change could be considered unintended, because efforts to reduce Chinook salmon PSC may not always result in changes in the distribution of PSC rates across vessels and tows.

**Increases in Unharvested Pollock Left At the End of the Year**

Although Chinook salmon PSC measures are not intended to reduce pollock catches, it is possible that some portion of the allocated pollock could be left unharvested, to avoid Chinook salmon PSC. Because Chinook salmon PSC rates have been highest toward the end of the B Season, it may be risky for vessels in a sector to go after the last pollock. Even if vessels are not participating in IPAs, the hard cap on Chinook salmon PSC may, in some years, place constraints on pollock harvests.

**Systematic Spatial Shifting of Effort**

We expect an industry-wide shift into areas that have tended to have lower Chinook salmon PSC levels. As seen in Figure 11 on page 26, the "east-west tow of the horseshoe" has had particularly high PSC in previous A Seasons. We expect that areas that have had high PSC will see much less fishing effort by the fleet as a whole. Areas that have had less PSC with acceptable pollock CPUEs will see increases in effort.

**Higher Overall Costs of Fishing**
Operating costs may increase due to increased search times, an increased number of moves, shorter tows, an increased number of tows, and smaller landings per trip. Spatial and temporal shifts in effort are also likely to increase the cost of fishing. Higher costs do not by themselves reveal how behaviors have changed, but because operating costs are measured in dollars it is a convenient way to summarize the effects of behavioral changes. In other words, we may note that the fleet is making shorter tows and moving more often, but we can't add "seven additional moves" to "an average one hour decrease in towing times" and "15 more tows" to yield a meaningful indicator. It may be possible, however, to calculate the cost in terms of dollars of shorter but more frequent tows and the costs of the additional numbers of moves, and sum those estimates to yield a combined estimate of the net change in the cost of fishing under Amendment 91. While operating costs may increase, higher costs alone should not be viewed as an indicator of the effectiveness of Amendment 91 or of the IPAs. It is certainly possible that the fleet could reduce PSC through innovations or the discovery of new fishing grounds that do not also increase costs.

**Lower Product Quality and Revenues**
Shifts in fishing effort to different areas and time periods may reduce product quality and overall revenues. Shifts in effort from October to June could result in significantly lower flesh quality, which could result in shifts away from high value fillets to lower quality products. Changes in quality could affect all of the major pollock products, and could result in an increase in the production of mince and meal. Lower quality products will reduce overall levels of revenue. While product quality and revenues per harvested ton of pollock could decline, the absence of reductions in product quality or revenues should not be viewed as a failure of Amendment 91 or of the IPAs.

**Additional Consolidation of the AFA Fleets**
Higher operating costs under Amendment 91 may result in a reduction in the number of active AFA vessels. Vessels that are most likely to be removed from the fishery are those that continue to have high levels of Chinook salmon PSC, or those that are only marginally profitable.

#### 2.2.5.5 Desired Results
The primary purpose of Amendment 91 is to reduce Chinook PSC in the BS pollock fishery. Amendment 91 may also result in transfers of Chinook salmon PSC allowances and transfers of pollock allocations from high PSC vessels to low PSC vessels. IPAs may create additional incentives to keep PSC low even when the abundance of Chinook on the grounds is low. For example, IPAs may create programs with incentives to reduce PSC below a vessel's allowance in a year of low interactions, by awarding that vessel a greater share of the sector's apportionment in the following year.

**Transfers of Chinook PSC Allowances and Allocation of Pollock**
Chinook PSC allowances may be implemented, by sectors and cooperatives as part of Amendment 91. Transfers of these allowances may provide direct evidence that individuals are responding to incentives to avoid Chinook salmon PSC. The acquisition of additional PSC allowances will not be free of cost, and may in fact become very expensive. If a vessel with high PSC finds it does not have enough Chinook allowance to harvest its pollock, the cost of acquiring additional Chinook from vessels with lower PSC will become part of that vessel's profit and loss calculus. At some point, the cost of acquiring additional PSC allowances may be greater than the additional net revenue the vessel will receive for its pollock. If that occurs, the vessel is likely to quit fishing for pollock and transfer any unused pollock allocations to vessels with lower PSC.

Transfers of PSC allowances paired with pollock allocations may also occur. These paired transfers are expected to flow most often from high PSC vessels to low PSC vessels. It is also likely that paired transfers will flow from vessels with relatively high operating costs to vessels with relatively low

operating costs (i.e., from relatively inefficient vessels to relatively efficient vessels). Vessels that are relatively efficient harvesters of pollock are more likely to remain profitable, even after accounting for the higher costs of fishing due to behavioral changes to reduce Chinook salmon PSC.

The market value of PSC allowances may be a useful indicator of the additional revenue that the purchasing vessel expects to earn if it were able to catch the additional pollock that one additional Chinook would allow. Since the seller was also a willing participant in the transaction, the market price may also be used as an indicator of the net operating revenue for the seller. In this case, the calculus is somewhat more complex because we must presume that the seller would not need the allowances in question unless additional pollock were acquired. Any such computation will also require that the consequences of use of the allowances be considered. In some IPA development discussions, it has been suggested that the use of allowances could reduce a vessel's future allocation of allowances. If this occurs, a vessel's willingness to sell an allowance could decrease notably.

**Create an Incentive to Reduce Chinook Salmon PSC in Years of Low Encounters**
It is uncertain whether CVs will come forward with a program similar to the SSIP that was proposed in March. However, if an IPA is developed that includes an incentive to reduce Chinook salmon PSC in years of low Chinook encounters to receive a greater portion of the sector's apportionment in future years (when interactions could be higher) participating vessels may avail themselves of those opportunities.

**Use of Additional Performance-Based Penalties or Payments**
The At-Sea Processors Association proposed the CPIPA program in October 2010, as a key element of its proposed IPA. If performance measures, such as the PSC competition suggested in the CPIPA, are a part of the IPAs proposed under Amendment 91, then we would expect that participating members would work toward minimizing penalties or maximizing payments that could accrue through such additional incentives. Evidence that an IPA is providing effective incentives to reduce Chinook salmon PSC in low PSC years may be the imposition or distribution of penalties or rewards. A performance-based vessel rating system would likely take into consideration several key measures of PSC performance, with each measure receiving a weighting factor based on its relative importance. If a performance-based rating system is to provide additional incentives, vessels with the best ratings might receive a bonus, and vessels with the lowest ratings might be penalized. The rating system specifications, as well as bonus and penalty terms, would be specified by the IPA.

**Lower Chinook PSC Rates and Totals**
Effective individual accountability and incentives developed within the IPAs should reduce Chinook salmon PSC and PSC rates for a given level of abundance of salmon on the grounds. If a reliable independent estimator of Chinook abundance on the pollock fishing grounds is developed, these PSC rates and PSC totals at different abundance levels could be compared across the fleet and across years to assess the effectiveness of IPAs.

## 2.3 Alternative 1 – Status Quo

This section describes the status quo data collection program and examines ways to measure the effectiveness of Amendment 91 and the IPAs if no additional data are collected. The status quo data collection program includes changes to the observer program that will be implemented under Amendment 91. The assessment of Alternative 1 is divided into 3 sections:

- A description of the data collection program under the Status Quo (including all data collected under Amendment 91)
- An assessment of the ability of data available under Alternative 1 to measure expected behavioral changes.

- A summary of findings and conclusions for Alternative 1.

### 2.3.1 Description of Data Collection under the Status Quo

Several collection initiatives provide data that could support analyses of performance of salmon PSC measures under the status quo. These include observer data, catch accounting data, vessel monitoring system data, Commercial Operators Annual Reports (COAR), annual cooperative reports, and annual IPA reports.

#### 2.3.1.1 Observer Data in the BS Pollock Fishery

**Monitoring CPs and Motherships**

Prior to implementation of Amendment 91, methods for estimating Chinook PSC of catcher/processors and catcher vessels delivering to motherships relied on requirements for two observers on each AFA catcher/vessel. Amendment 91 requires that a census of all salmon in each haul be used for determining Chinook PSC amounts. A census of the Chinook PSC would remove the variability associated with expanding the species composition data.

To ensure accurate counts of Chinook PSC, the following requirements apply to the catcher/processors and motherships:

- All Chinook PSC of any species must be retained until it is counted by an observer;
- Vessel crew must transport all Chinook PSC from each haul to an approved storage location adjacent to the observer sampling station so that the observer has free and unobstructed access to the salmon, and the salmon must remain within view of the observer from the observer sampling station at all times;
- The observer must be given the opportunity to count the Chinook and take biological samples, even if this requires the vessel crew to stop sorting or processing catch until the counting and sampling is complete; and
- The vessel owner must install a video system with a monitor in the observer sample station that provides views of all areas where salmon could be sorted from the catch and the secure location where salmon are stored.

**Monitoring CVs Delivering to Shoreside Processors**

Under Amendment 91, NMFS requires an observer to be onboard during all days that a catcher vessel, regardless of size, delivering to an inshore processor is directed fishing for pollock in the Bering Sea (100% coverage) to ensure that salmon are not discarded at sea. Amendment 91 requires that all salmon of any species are retained onboard the catcher vessel and delivered to a processing plant where it would be counted and potentially included in biological samples. Salmon will continue to be included in at-sea species composition samples for groundfish. Note that for uncommon species such as salmon, a large sample size is required to produce statistically robust estimates. In addition, Chinook salmon are difficult to differentiate from other species of salmon unless an observer can examine each fish.

**Monitoring Shoreside Processors**

Prior to Amendment 91, each inshore processor that received AFA pollock was required to develop and operate under a NMFS-approved catch monitoring and control plan (CMCP). Each processor was required to annually submit a CMCP to NMFS. Plant layouts and operations vary widely among processors; therefore, the CMCP regulations were developed as a series of performance-based standards that each processor must meet. Each CMCP describes how a particular processor will meet each standard.

Amendment 91 implements additional measures to existing CMCP performance standards in order to ensure that fisheries observers have the means to count all Chinook salmon in each delivery. These measures include the following additions to requirements for the inshore processors to ensure that observers have access to all salmon PSC prior to the fish being conveyed into the processing area of the plant.

- Processors are prohibited from allowing salmon to pass from the area where catch is sorted and into the factory area of the processing plant;
- No salmon of any species are allowed to pass the observer's sampling area;
- The observer work station currently described in regulations at 679.28(g) must be located within the observation area;
- A location must be designated within the observation area for the storage of salmon, and;
- All salmon of any species must be stored in the observation area and within view of the observer at all times during the offload.

#### 2.3.1.2 NMFS Catch Accounting System

NMFS determines the number of Chinook salmon caught as salmon PSC in the BS pollock fishery using the CAS. The CAS was developed to receive catch reports from multiple sources, evaluate data for duplication or errors, estimate the total catch by species or species category, and to attribute catch to the appropriate catch category. Amendment 91 requires observers to census salmon for CPs, motherships, and catcher processors. The census information collected by observers will be imported into CAS and will be the agency record for salmon PSC from the shoreside and the at-sea sectors. The census information in CAS will be available down to the vessel level. For CPs and motherships, the CAS information will be available down to the haul level. For CVs, salmon catch information will be available at the trip level.

**Other Data Included in the CAS**

The CAS comprises not only observer data used to estimate Chinook salmon PSC, but also several other sets of data, including Landing Reports and Production Reports, both of which are collected daily for the BS pollock fishery through the eLandings System.

Landing Reports are the equivalent of ADF&G Fish Tickets and include the same set of data fields as Fish Tickets. Landing Reports are issued by the processing plants and motherships for each delivery of fish. Fields in the Landing Report include identifiers for both the harvester and processor, dates for the beginning of fishing and for the landing date, area fished (6-digit stat areas indicating ½˚ of latitude × 1˚ longitude), weights, and condition codes of all species landed.

Production Reports, formerly known as Weekly Production Reports, are submitted daily by all processors. Shoreside Production Reports (SPR) summarize product weight by species and product types by FMP Area (BSAI or GOA). Since shoreside processors typically work with many harvesting vessels that may use different types of gear, the SPR does not break out production by gear. At-Sea Production Reports (APRs) not only report product weights by species and product type, but also provide harvesting locations[9] and gears used.

[9] Beginning in 2009, CPs and Motherships are required to report 6-digit statistical areas, along with the 3-digit FMP zone information that was reported in the past.

Amendment 91 also implements electronic logbook reporting requirements for catcher processors. NMFS will require vessel operators to report the Chinook salmon PSC counts by species for each haul. This information will be transmitted to NMFS using eLandings.

#### 2.3.1.3 Vessel Monitoring System Data

All vessels participating in the BS pollock fishery are required have an operating satellite transmitter (VMS unit) that relays the position and bearing of the vessel to NMFS every 15 minutes. VMS data are used primarily for enforcement purposes. Data in the VMS database can be used to plot the path and speed the vessel is travelling at any time they are operating. Because a vessel that is dragging a trawl through the water travels slower than when transiting between fishing areas, the use of algorithms to calculate speeds and distances. These algorithms assign fishing or transiting activity to a vessel. However, these assignments are somewhat speculative, as vessels may slow to search for fish, the VMS reporting interval may not accurately allow the calculation of vessel speed, and transiting characteristics between vessels may be different. These sources of variability may result in a false fishing designation.

VMS data can also be plotted using geographic information systems (GIS). Plotting VMS data using GIS allows analysts to visually assess activities of fishing and processing vessels. Figure 14 and Figure 15 below show hypothetical VMS plots of a single CP trip and three CV trips, respectively. Because VMS plots represent the activities of a single vessel, NMFS deems them to be confidential and does not release actual plots to the public. Therefore, the data shown in these figures are hypothetical and have been constructed using GoogleEarth™ to simulate actual VMS plots.

Figure 14 has been constructed to represent the activity of a single trip of a pollock catcher processor. In this hypothetical trip, the processor is up near the Pribilof Islands. The hypothetical VMS track indicates that the vessel fished in three different areas during the trip—each area successively farther west. A careful examination of the shorter zig-zagging lines that constitute the fishing activity in each area indicates that the vessel may have made as many as 46 tows. However, the VMS reporting interval may be too large to accurately calculate speed because it fails to incorporate the zig-zag behavior or the interval includes a mix of fishing and transiting speeds between locations. In this case, the vessel speed may be faster than what really occurred; further complicating inferences about whether the vessel was fishing or transiting during each segment. We are also unable to determine from these data the reason the vessel master chose to move the vessel to the different areas.

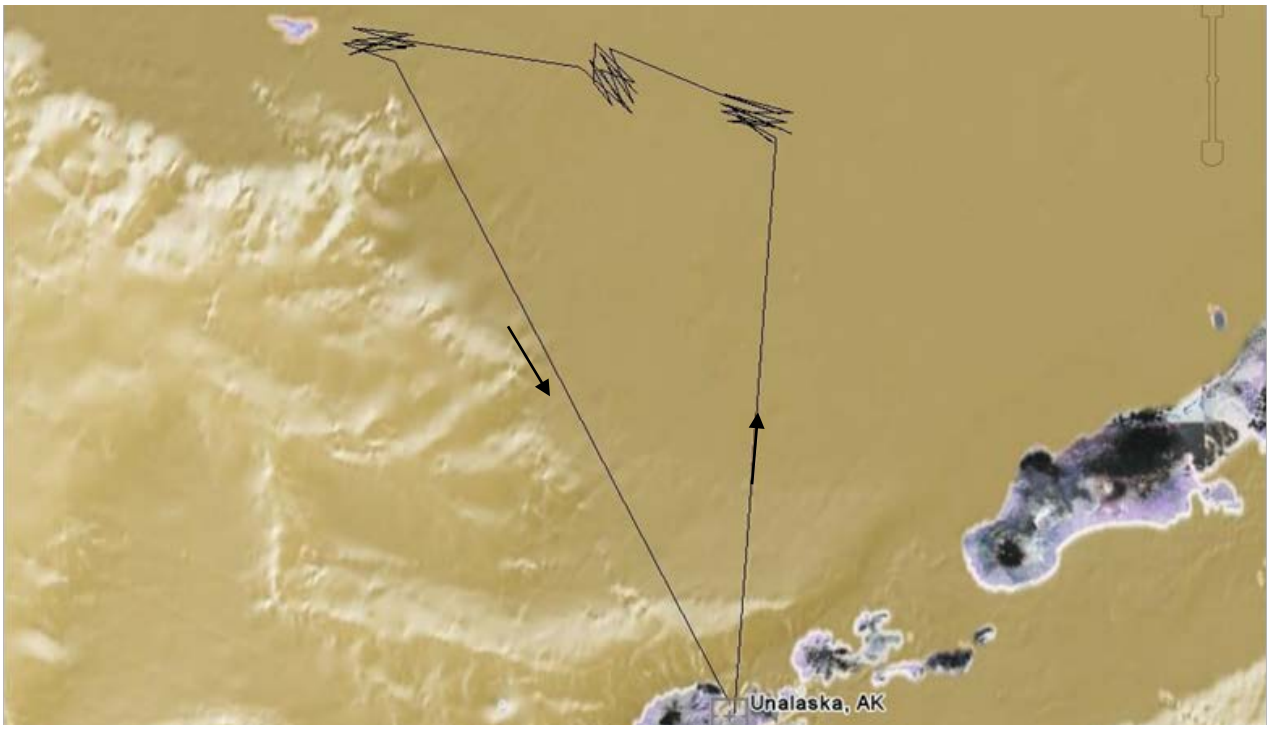



**Figure 14. Hypothetical VMS Track of a Pollock Catcher Processor Trip**
Source: Created using Google Earth™ without actual data. Actual VMS data of individual vessels are confidential and cannot be released.

Figure 15 shows hypothetical VMS tracks of three CV trips. We will discuss each of these trips starting from the most westerly of the three. In this trip, it appears that the vessel fishes in two different locations during the trip. If actual VMS data were available, inferences based on assumptions about speed are clearer than in Figure 14, given the distinct clustering of slower versus higher transiting speed; however, the VMS reporting interval may still result in an inaccurate assessment of fishing activity.

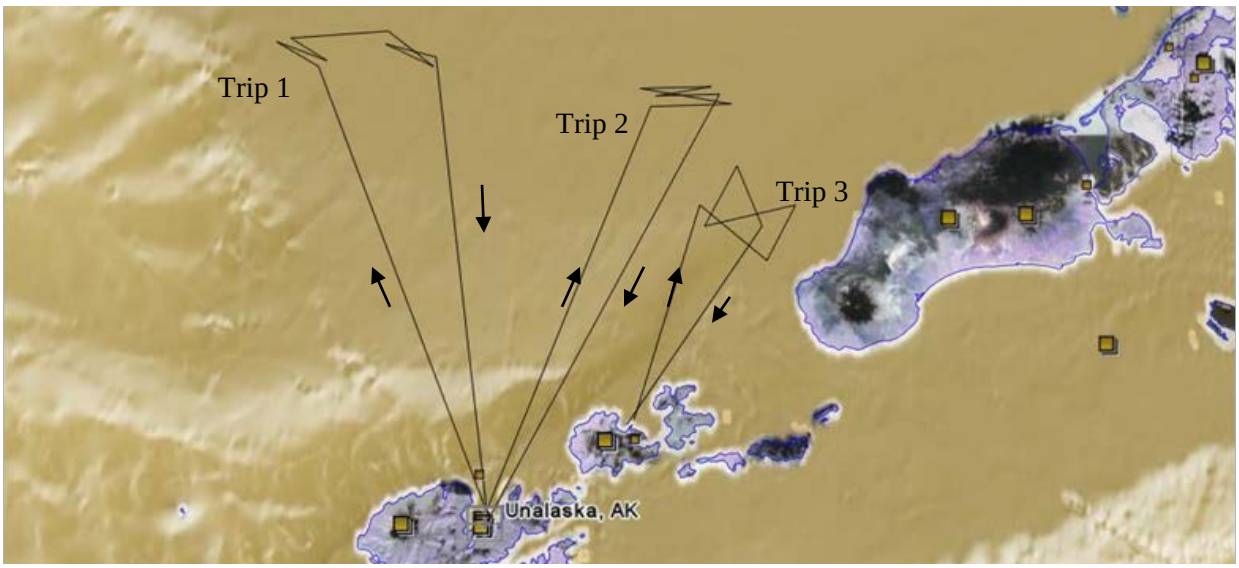



**Figure 15. Hypothetical VMS Tracks of a Three Pollock Catcher Vessel Trips**
Source: Created using Google Earth™ without actual data. Actual VMS data of individual vessels are confidential and cannot be released.

The second trip shown in Figure 15 is a relatively straightforward trip. It appears the vessel made as many as five tows in a single location before returning home. Each of the shorter segments represents between 5 and 10 miles. It should be noted that even in this trip, where the tows are relatively close together, the vessel may have been fishing on more than one aggregation of pollock. It is possible that the vessel master may have considered his first tow a bust and moved to a new area in the northwesterly jag following the first tow.

The hypothetical CV trip listed as Trip 3 is much more difficult to interpret. Without additional information, we are likely to infer that fishing was spotty and that the vessel fished in five different locations. Fortunately, VMS data can be linked directly to observer data using the date, time, and geographic coordinates. In this hypothetical case (assuming the VMS data and observer data have been linked) we found that in fact, the vessel's tow was relatively long. It then towed in a northeasterly direction and then, without pulling the trawl from the water, turned back in a southwesterly direction and continued to trawl. From there it made a tow back to the northeast and then a last tow down to the Southeast before heading back to port. In this case we conclude that the vessel fished in five different areas, including two areas on its second tow.

#### 2.3.1.4 Commercial Operator Annual Reports

Commercial Operator Annual Report (COAR) data are completed by all processors, annually. COAR data report the total annual production of all products, as well as the first wholesale value of the products. COAR data also show production and values by some additional sub-categories that are not reported in daily (or weekly) production reports. Fillets, for example, are not only categorized by the type of fillet, but information on the form in which fillets are sold is also reported (i.e., IQF, block or shatter pack). While COAR data are quite useful with respect to fillets and products for which there are no significant product quality differences, COAR data are less useful for products where the quality grades are an important factor in the prices paid.

One such product is pollock surimi, which can be produced in many different quality grades. Surimi that is produced as ancillary product from the trimmings of fillets is a relatively low grade product. Surimi that is produced as primary product with the best portions of pollock flesh will be a much higher grade product that commands significantly higher market prices. Because the COAR data do not differentiate between surimi grades, an intentional shift by processors to a different grade of surimi (e.g., from high-grade primary-product surimi to a low-grade ancillary surimi) may appear in the data as a significant change in market price, when in fact it is simply reflective of a lower grade of product.

Pollock roe is another product for which grades and quality are important. Pollock roe is reported in COAR data as a single product and the reported prices are a weighted average of all prices for all grades received during the year. The COAR data as they are currently collected do not allow analysts to distinguish between product grades or changes in product quality.

Another issue with COAR data that is a concern to analysts is the fact that due to reporting differences, the production amounts shown in the COAR typically do not correspond exactly to product amounts shown in the daily (weekly) production reports. Notwithstanding the inconsistencies with production reports in the COAR data, they are generally regarded as an invaluable resource that provides Alaska resource managers a higher level of data on wholesale and ex-vessel values than is found anywhere in the United States.

#### 2.3.1.5 Annual Cooperative Reports Submitted as a Requirement of AFA

At the beginning of each year, each of the AFA cooperatives must submit a report to the Council detailing the activities of the cooperative for the previous year. The cooperative reports indicate allocations of pollock and other groundfish to each member of the cooperative, and include some information regarding

transfers of pollock and other species among members. The cooperative reports also summarize harvests of all groundfish species by all member vessels in both the BSAI and the GOA. Estimates of total prohibited species catches for all species including salmon are also reported for each vessel.

While cooperative reports do not represent official NMFS data on groundfish harvests and PSC, they are one of the only sources of disaggregated catch data that are available to the general public, and that can be used by analysts to report comprehensive data on individual AFA vessel harvests without violating NMFS and ADF&G rules on data confidentiality.

#### 2.3.1.6 Annual IPA Reports Submitted as a Requirement of Amendment 91

Amendment 91 requires the managers of each IPA to submit an annual report to the Council. The Council's April 2009 motion on Amendment 91 listed the following elements that must be included in the IPA annual reports to the Council:

1) A comprehensive explanation of incentive measures in effect in the previous year.
2) An assessment of how incentive measures affected individual vessels.
3) An evaluation of whether incentive measures were effective in achieving salmon savings beyond levels that would have been achieved in absence of the measures.

The annual IPA reports could be one of the industry's best tools to demonstrate efforts to minimize Chinook PSC. AFA members have conveyed in public testimony that they have a strong incentive to provide detailed information that can be used to examine the effectiveness of the incentives for vessels to reduce Chinook PSC, even in years of relatively low Chinook PSC.

Although some uncertainty arises from the lack of specificity in reporting requirements, the generality also provides IPA participants the flexibility to adapt their reports to their IPA structures and performance. The IPA reports should provide detailed information on how the additional incentives created by the IPA have affected Chinook PSC. Depending on the IPA structure these incentives might differ and could require different information to adequately communicate the incentives. In addition, the IPAs could use the annual reports as a platform to report on other optional measures that members have undertaken to reduce Chinook PSC. These optional measures may include a summary of temporal and spatial shifts in effort undertaken by the fleets, as well as an overview of the use of new gear, technologies, or research to reduce Chinook PSC in order to make this information available to managers, analysts, and decision makers. Analysts have assumed for purposes of this analysis that certain elements will be described in the IPA reports, which it is believed that industry will provide. The scope of these reports could be clarified to remove any ambiguity and ensure reports fully meet the Council's expectations in a future action.

Verification of information in IPA reports may be difficult. It may be in the interest of IPAs to report certain practices or results, especially if IPAs are not as effective at reducing Chinook PSC as hoped. On the other hand, since false reporting in an IPA could be subject to an enforcement action, participants expose themselves to some risk if they choose to report inaccurately. Notwithstanding these uncertainties, IPA reports are likely to be key sources of information on several aspects of their operation and effectiveness in reducing Chinook salmon PSC.

### 2.3.2 Discussion of analytical uses of the data

In this section we examine the ability of Alternative 1 to reliably measure and quantify the behavioral changes that are expected to result from Amendment 91. Expected behavioral changes are categorized based on the mechanism driving the change: (1) IPAs, (2) Cooperatives, (3) Vessels, (4) Unintended Consequences, and (5) Desired Results. For each behavioral change, we summarize the existing data

sources that are available to measure and assess the behavioral change. We also address the accuracy, reliability and usefulness of the data, with a particular emphasis on: (1) evaluating the effectiveness of Amendment 91 in ensuring that PSC levels remain below the performance standard and, (2) evaluating the effectiveness of the IPAs in minimizing PSC even in years of low abundance on the grounds.

#### 2.3.2.1 Ability of Alternative 1 Data to Measure IPA Driven Behavior Changes

A management structure that supports IPAs could provide effective incentives for behavioral changes to avoid salmon PSC. Certain aspects of these behavioral changes should be revealed through data collected under the status quo.

**Creation of Individual Accountability**

Creation of individual accountability is one of the cornerstones of the PSC reduction measures in Amendment 91. However, the specific methods for creating individual accountability are left to the sectors, cooperatives, CDQ groups and IPAs. Annual IPA reports are required to include a comprehensive explanation of incentive measures in effect in the previous year, an assessment of how incentive measures affected individual vessels, and an evaluation of whether incentive measures were effective in achieving salmon savings beyond levels that would have been achieved in absence of the measures. In general, these requirements result in descriptions of the IPA and the individual accountability that arises under the IPA structure. While it is presumed that each vessel will be allocated a share of the Chinook salmon PSC allocation in proportion to its share of BS pollock,[10] the responsibility for the actual allocations will be made by cooperatives and IPAs. Therefore, NMFS may not have data on individual vessel salmon PSC allowances unless the sectors, cooperatives, and IPAs provide this data to the agency. This information could be documented in the annual IPA reports, including the formulas used to distribute the Chinook salmon PSC allocations and the allocation assigned to each vessel. In the event that IPAs are not formed in all sectors, the annual AFA cooperative reports could document the distribution of Chinook PSC allowances among vessels in the cooperative.

The IPA reports on the distribution of individual PSC allowances will be the basis for measuring performance of individual vessels. From this perspective, the IPA reports will be useful in determining the effectiveness of Amendment 91, assuming that the distribution of allowances is transparent.

**Changes in Rolling Hot Spot Definitions and Requirements**

Any changes to the RHS program should be identified in the IPA applications provided to NMFS. The effects of the RHS could be documented in detail in the annual IPA reports. Estimates of reductions in Chinook salmon PSC resulting from the closures may be calculated in the same manner as they have been calculated in the past by both industry and agency analysts, based on observer data, closure dates, and closure areas.

It should be noted that agency staff have expressed concerns about the methodologies used in the past by administrators of the RHS program to estimate Chinook savings. However, the Council has requested that RHS administrators provide these PSC savings estimates. A summary of the methodology used to calculate Chinook savings resulting from the RHS is excerpted below as it appeared in Haflinger (2008).

[10] Amendment 91 assigns a greater proportion of the overall bycatch cap to shore-based catcher vessels than their share of the overall TAC of pollock.

1. Extract all observer data for haul locations falling inside a closure area, for a 5 day period preceding the closure. For shoreside catcher vessels, aggregate the hauls that have the same "start fishing date" so that hauls with the same PSC rate are not artificially repeated. As an example, if 2 hauls from the same catcher vessel trip show up in the closed area, they will have the same PSC rate, because observers pro-rate PSC evenly across all hauls. Consider them a single observation with a value equal to the sum of the two hauls' pollock and salmon.

2. Consider all of independent offshore sector (C/P and mothership) hauls, and combined "trip-level" hauls to be estimates of the PSC ratio $Ri = \sum yi / \sum xi$, where y are counts of Chinook or chum salmon, and x is the pollock catch from individual hauls (offshore sector) or grouped, same-trip hauls (shoreside), and indicates a separate closure.

3. Extract the same haul or "grouped" haul information, for the same vessels, for the next 5 days. Their associated PSC is available from either observer or plant delivery information. Compute their expected PSC had they been able to stay and fish inside the now-closed area, by summing the pollock catch of all vessels in this category, and multiplying this summed pollock catch by the matching PSC ration, Ri above.

4. Compute the standard error of this estimated Y (overall salmon PSC if vessels had stayed in the area and fished with PSC rate R) treating R as a ratio estimator (Snedecor and Cochran, Statistical Methods, 8th Edition, p 452).

Given the nature of a closed area, it is difficult to estimate salmon savings. A major criticism of the methodology is the assumption that PSC in the closed area would have continued at the same rate after the closure as prior to the closure. While this assumption may be questioned, additional study is likely necessary to determine whether alternative assumptions can produce better estimates. As studies are undertaken estimates might be improved.

Notwithstanding shortcomings in estimates, the IPA reports should provide useful and accurate information concerning: (1) the RHS pre-season rules; (2) the areas that were closed along with the closure dates; (3) the "low PSC vessels" that were allowed to continue fishing in an area after it was closed, as information should be available for assessing the veracity of these aspects of the reports. Despite the difficulties in producing accurate estimates of Chinook PSC savings routinely estimating those savings with a consistent methodology could provide useful information concerning the effects of the closures.

**Increased Communication and Planning Within and Among Cooperatives**

Evidence of increased communication and planning within and among cooperatives with the aim of reducing Chinook PSC may be included in the annual IPA reports, but only to the extent that members deem it necessary or in their interest to report. While this behavioral change may occur, it may not be one that can readily be measured.

Although unlikely to be quantifiable or verifiable, IPA reports are likely to be key sources of information on the efforts to improve communication and planning and the impact of those efforts on the effectiveness of IPAs in reducing Chinook PSC, particularly in years with few Chinook encounters.

**Additional Research Investigating Ways to Avoid Chinook PSC**

If the pollock industry funds additional research on Chinook PSC reduction, the IPA reports could document this research. Depending on the research, independent verification of funding and results may

be possible. For example, if industry funded a study to track Chinook movement patterns, they would most likely utilize research scientists who would publish their results in peer-reviewed publications. Although the results of such studies may be regarded as confidential until a viable product is developed, given the industry benefits from revealing successes, it is likely that reports will be produced in a manner that maintains acceptable levels of confidentiality. IPA reports documenting research activities are likely to be accurate, because over time independent verification of these reports will generally be possible. Industry expenditures on research may prove to be an effective tool in PSC reduction and may be an indicator of the effectiveness of salmon PSC management measures.

#### 2.3.2.2 Ability of Alternative 1 Data to Measure Cooperative Driven Behavior Changes

Some salmon avoidance efforts undertaken at the cooperative level should be revealed by data collected under the status quo.

**Slower Starts to Fishing Season**

Decisions to start the fishing year more slowly in order to locate areas with few Chinook before fishing begins in earnest are likely to be made at the cooperative level, although the IPA may also encourage such actions. If the decisions to start slowly are left up to each cooperative (or possibly company, in the case of the CP and mothership cooperatives), then we would expect the annual AFA cooperative reports to document these efforts. Observer and VMS data, coupled with the CAS, can also be used to track fishing effort at the beginning of the year. These data can be compared with fishing effort during the same period in previous years. It is also possible that IPA reports will indicate whether the IPA may have affected these choices. It is likely that the cooperative or IPA reports will be accurate in this respect, because it is in the best interest of the cooperatives and IPAs to document their efforts to start the fishing season slowly and the timing and level of effort in the fishery can be independently verified using observer, VMS, and landings report data. Estimation of the effectiveness of these efforts will be hampered by the lack of an independent estimate of Chinook abundance. However, if one cooperative or company chooses to utilize a slower start and another does not, it may be possible to compare the PSC performance of the two entities and make inferences about the relative effectiveness of each strategy. In any case, a decision to make a slow start to the A season would be an indicator of the effectiveness of the IPAs in creating additional incentives to modify fishing behavior in order to reduce PSC.

**Systematic Temporal Shifting of Effort**

In addition to deciding whether to start fishing more slowly in the A season, individual cooperatives will determine whether they will shift effort from high Chinook salmon PSC months (January, February, September and October) to lower Chinook salmon PSC months (March, April, June, July, and August). This decision may involve a tradeoff between higher revenue and lower Chinook PSC. If a cooperative or company makes an overt decision to shift effort to low Chinook salmon PSC months, it will be in their own interest to report that decision in their annual AFA cooperative and IPA reports. Data from Landings Reports and observer data can be used to conduct a statistical analysis of the temporal distribution of fishing effort.

**Greater Flexibility by Shore Plants Regarding Acceptable Age of Fish in Hold**

Evidence of changes in the acceptable maximum length of time in the hold of fish for shore based deliveries may be provided in the AFA cooperative reports or in IPA reports. The elapsed time between the end of the first tow and the time the fish are delivered may be an indicator that shore based CVs are taking extra time to fill their holds as a result of efforts to reduce Chinook PSC. Increased flexibility on the part of shore plants regarding the age of delivered fish may also be inferred by using a combination of observer data and landings reports for vessels delivering to the processor. If shore-based processors do, in fact, increase their flexibility with respect to the acceptable age of delivered fish, it may show a willingness to compromise quality standards (and potentially sales revenues) to reduce Chinook salmon PSC.

#### 2.3.2.3 Ability of Alternative 1 Data to Measure Vessel Behavioral Changes

Vessel owners and operators are likely to be the drivers of many of the behavioral changes expected under Amendment 91. This section assesses the ability of the data that will be available under Alternative 1 to allow analysts to estimate these vessel driven changes.

**Use of Specialized Nets that Reduce Chinook PSC**

It is presumed that any documentation of the development of specialized nets to reduce Chinook salmon PSC will be anecdotal in nature, unless researchers utilize experimental fishing permits during the development process. In any case, it is likely that annual IPA reports will discuss these activities. There are two issues regarding data on specialized nets. First, since the use of specialized nets will be voluntary and operators are likely to have the flexibility of using them or not using them, obtaining accurate and independent data regarding the particular tows in which the net was used will be important. For example, if the use of a specialized net is deemed to be an indicator that the vessel is incentivized to reduce Chinook salmon PSC, but there is no reliable way to determine if the net was used, as opposed to simply having one on board, then the operator may be tempted to misreport the frequency with which the specialized net is actually used. This issue might be resolved if it is possible to document that the specialized nets are the only nets on board. Assuming that reliable documentation is available of the use of specialized nets on individual vessels, it may be possible to assess the effectiveness of the nets in reducing Chinook salmon PSC, by comparison with vessels not using those nets. The documented use of a specialized trawl, in and of itself, may be viewed as evidence that the IPAs are generating additional incentives to reduce Chinook salmon PSC. Actual estimation of the effectiveness of these trawls in reducing Chinook salmon PSC will also be useful, but may be difficult to generate in the near term.

**Increased Amount of Time Searching**

Increased time spent searching for areas of high pollock catch and low Chinook salmon PSC at the beginning of each trip, following tows, and following a move within the trip to new fishing grounds could suggest that Chinook salmon PSC measures and IPAs are effective. For catcher processors and motherships, VMS data coupled with observer data will be the primary source of evidence that time spent searching has increased. A major factor affecting the accuracy of estimates of the time spent searching is being able to discern when searching is taking place and when a vessel is transiting. This may be particularly true at the beginning a trip or if a vessel is making a pre-determined move to new fishing grounds. It may be tempting to assume that if a vessel is between tows and is not undertaking a significant move to new grounds, then it must be searching—but this may not be true. For example, assume a vessel makes a tow due north for ten miles; then runs due south for ten miles, followed by 30 minutes of circling about before it drops its net and begins towing due north once again. In this case, it is likely that only 30 minutes was spent searching between tows. While we believe it is likely that vessels will increase the time they spend searching for fish, accurate estimates of the time spent searching may be difficult to obtain. VMS information coupled with observer data will allow a measure of the amount of time that a vessel spends between tows, regardless of whether they are actually searching for fish or running to a known starting location. The total amount of time between tows is likely to be an indicator of search time, but will be subject to the constraints of the VMS reporting interval and assumptions about searching behavior.[11] Attributing this searching time to Chinook PSC avoidance (or to locating pollock) will require some conjecture. For catcher processors and motherships, examining catch rates and PSC rates may reveal the motivation for searches in some instances.

**Shorter and Smaller Tows**

It is expected that vessels will make shorter and smaller tows, if they are trying to keep Chinook salmon PSC to a minimum. Shorter and smaller tows will allow greater certainty of catch composition for the

[11] It is possible that through collaboration with observers, fisheries analysts would be able to refine their algorithms to differentiate between short transits between tows and time spent searching.

operator. Observer data provides accurate and reliable information on towing times and distances traveled while towing. Observer data also provides accurate and reliable information on the size of each tow. A statistical analysis can be used to assess the distribution of tow lengths and tow sizes, and whether the distribution changes after implementation of Amendment 91. Whether or not shorter/smaller tows are accurate and reliable indicators of efforts to reduce Chinook salmon PSC remains an open question, but one that could be tested empirically using historical data, and qualitatively through further discussions with members of industry. If vessels do in fact utilize shorter/smaller tows when there are a lot of Chinook on the grounds, then their continued use of shorter/smaller tows when there are few Chinook on the grounds may be an indication that the IPAs are effective in providing incentives for vessels to reduce PSC.

**Increased Monitoring of the Number of Salmon Caught within Each Tow**

Developing accurate estimates of the number of Chinook in a tow appears to be a critical issue for CVs trying to reduce Chinook salmon PSC. CVs unable to accurately estimate Chinook salmon PSC are much more likely to repeat a "salmon-heavy" tow and incur even more Chinook salmon PSC. Unfortunately, information regarding increased levels of monitoring of Chinook salmon PSC by vessel operators will be anecdotal in nature. It is possible that AFA co-op reports will include summaries of improved monitoring steps that have been taken, and examples will likely be reported in the annual IPA reports. It is also possible that information may be provided by observers when they document the fish handling systems of vessels. For example, if a vessel uses a video camera to monitor for Chinook as catch flows from the codend to the hold, it is likely it will be reported in the observer's log. However, even if monitoring efforts are reported in logbook notes, these data are not generally entered into an electronic database and may not be accessible to researchers. Currently, there does not appear to be a way to accurately and reliably report on salmon PSC monitoring systems employed by vessels. Increased salmon PSC monitoring by vessels may be one of the more important changes employed to reduce PSC. Information documenting these efforts and their relative success will provide an indication of the effectiveness of the IPAs. Further information on what approaches have been effective may be used by other vessels in enhancing their own monitoring systems.

**Increased Number of Successive Tows over the Same Grounds**

If a vessel operator finds an area with few Chinook, it is likely they will continue to tow over the area as long as pollock CPUEs are acceptable. Combined with short tows and increased monitoring, this appears to be an operating mode that could result in lower Chinook PSC. It is likely that VMS and Observer data could be used to estimate increases in the frequency of successive tows over the same grounds. It should be noted that to the analysts' knowledge no studies have been undertaken to determine whether shorter tows over the same grounds is correlated with lower Chinook PSC compared with longer tows over new grounds. In any case, it is likely that analysts will have to specify parameters that define whether successive tows are in fact over the same grounds.

**Increased Numbers of Movements to Avoid Salmon**

VMS and Observer data may be used to infer the number and distance of non-fishing vessel movements within a trip. Analysts will need to establish parameters that define whether or not a vessel has moved, but once those parameters are set, generating statistical inferences on vessel movements is possible.

The question of whether a vessel has moved to avoid salmon, or for some other reason, may also be difficult to ascertain, unless such moves were mandated by a RHS. It is possible that statistical relationships can be established between observer data on the estimated number of salmon within a tow and vessel movements that have been inferred from VMS/observer data. Statistical relationships between high (observed or estimated) Chinook PSC tows and vessel movements can lead to inferences about whether the move was made to avoid Chinook salmon PSC. For catcher processors and motherships, the combination of defining movements using a set of consistent (if somewhat arbitrary) criteria, and

observer data on PSC in tows prior to the move may prove to be reasonably accurate and reliable. For catcher vessels, estimates will be less precise, as catcher vessel PSC can only be estimated at sea; however, observer samples together with VMS data may provide some insight into these moves made to avoid Chinook.

**Individual Behavioral Changes Related to Hot Spot Areas**

The current RHS program gives vessels that have very low levels of Chinook salmon PSC the choice to continue fishing in the closed areas. If IPAs continue to allow "exempt vessels" to participate in closed areas under Amendment 91, then observer data coupled with the IPA reports will most likely provide sufficient information to determine which vessels have the option to continue fishing in the closed areas, and the level of catches and PSC within the closed areas. These estimates can be compared with the catches and PSC of similarly situated vessels prior to the implementation of Amendment 91. In addition in post-Amendment 91 years, closed-area activities of "exempt vessels" in high-abundance years can be compared to closed-area activities of "exempt vessels" in low-abundance years. Differences between "exempt vessel" catch and Chinook salmon PSC may be an indicator of the effectiveness of the IPAs in providing additional incentives to keep Chinook salmon PSC low even in low Chinook encounter years. The catches and Chinook salmon PSC of exempt vessels in closed areas is likely a useful indication that the IPAs are generating additional incentives for low Chinook salmon PSC vessels to continue to reduce Chinook salmon PSC. In considering these data, analysts can assess both the willingness of these vessels to avoid areas of known high Chinook salmon PSC, as well as the ability of low Chinook salmon PSC vessels to continue to fish in closed areas using their own Chinook salmon PSC avoidance measures to maintain low levels of Chinook salmon PSC.

#### 2.3.2.4 Ability of Alternative 1 Data to Measure Unintended Consequences

This section assesses the ability of the status quo data sources that will be available under Amendment 91 to measure unintended consequences of the Chinook salmon PSC reduction measures.

**Systematic Spatial Shifting of Effort**

The expected geographic shift in effort is seen as an unintended consequence of efforts to reduce Chinook salmon PSC. While it is expected that over the long run there will be a systematic spatial shifts in effort, it is less clear which areas will see increases in effort. Areas of increased effort are likely to be determined only after vessels have sampled the grounds to determine that low Chinook salmon PSC levels will be found. It is somewhat more likely that we can predict areas that will have less activity. As shown in Figure 11, the area known as the "east-west tow of the horseshoe" has been an area of particularly high Chinook salmon PSC in the past that will likely see effort reductions. Using available data on the geographic location of catch, analysts should be able to identify systematic spatial shifts in effort.

**Reductions in Average Pounds of Pollock Landed Per Trip by CVs**

Shorter tows, more time searching, and greater distances from port may result in a reduction in the average pounds of pollock per trip by shore based CVs. This is more likely to occur if processors do not provide greater flexibility in the amount of elapsed time between the first tow and the time of delivery, but could occur even with changes in processor delivery standards.

Landings Report data in the CAS can be used to assess whether there have been systematic differences in the average size of landings. However, it is possible that other factors may contribute to changes in average size of landings. These other factors (such as TACs, seasons, and CPUEs) would need to be included in any statistical analysis. Systematic analyses of trip sizes, by vessels, since the implementation of the AFA would likely provide a useful baseline against which trip sizes that occur after Amendment 91 is implemented may be compared. Differences in trip sizes could be analyzed by season or month in which the fishery took place, vessel length, and cooperative, for example. Changes in trip sizes after

Amendment 91 is implemented may suggest that salmon PSC measures (including IPAs) are creating effective incentives for Chinook salmon avoidance.

**Changes in the Distribution of Chinook Salmon PSC Rates**

The Council's motion requests that analysts examine potential changes in the distribution of Chinook salmon PSC rates. It is implied that less variability in the distribution of Chinook salmon PSC rates and concentration of rates at the low end of the spectrum will be a useful indicator of Chinook salmon PSC avoidance efforts, particularly in the absence of an independent estimator of Chinook abundance on the fishing grounds. Changes in the distribution of Chinook salmon PSC rates on the tow basis for catcher processor and mothership sectors and the trip basis for shore-based catcher vessels may be assessed using currently available data. Provided other factors that could affect the distribution of Chinook salmon PSC (such as changes in the distributions of Chinook and pollock) are considered, examining the distribution of Chinook salmon PSC rates could be indicative of increased efforts to avoid Chinook salmon PSC. Concentration of Chinook salmon PSC rates at the lower end of the distribution may suggest that the fleet is focusing efforts in areas of known low Chinook salmon PSC, rather than finding higher (or midlevel) Chinook salmon PSC rates acceptable. Depending on the specific distribution, this concentration may also suggest that vessels are less willing to experiment in areas that are known to exhibit periodic higher Chinook salmon PSC rates, if an area with low rates is known.

**Increases in Unharvested Pollock Remaining At the End of the Year**

An increased willingness of pollock fishery participants to leave a portion of the fishery unharvested may also suggest that Chinook salmon PSC measures (including the IPAs) are effective. Observer data combined with landings reports provide reliable estimates of pollock harvests. While it may be more difficult to ascertain whether unharvested pollock amounts are significantly greater from a statistical perspective after implementation of Amendment 91—this will likely require several years of data.[12] The amount of unharvested pollock may be a useful indicator of the overall effectiveness of Amendment 91 in limiting Chinook salmon PSC.

**Higher Overall Costs of Fishing**

Many of the behavioral changes described above are likely to result in higher overall costs of fishing. In that sense, it may be inferred that costs have increased, but we do not have the tools to measure or reliably estimate the magnitude of such cost increases. Cost data for the AFA fisheries are not currently collected, and therefore estimates of cost increases under the status quo would be based either on cost models that may have already been developed or from new models that would most likely rely on key informant data.[13] The analysts are not aware of any comprehensive cost reporting of the BS pollock fishery more recent than the 1990 survey, conducted for the initial analysis of inshore-offshore. It is possible that the IPA reports will provide some indication of any higher costs that have accrued to the AFA sectors as a result of Amendment 91.[14]

[12] A statistical comparison of means requires at least two data points in each category, although inferences made using a very small number of data points are not very robust—one more data point added to the sample could easily change the inference. Thus, while it is possible to test whether the mean percentage of unharvested pollock after two years under Amendment 91 is significantly different from the mean percentage of unharvested pollock under AFA, it is very possible that the findings will differ if another year is added. In addition, it may be difficult to discern the cause of any such change and the extent to which it might be attributable to factors other than Amendment 91.

[13] If the number of key informants is kept to 9 or fewer (the level allowed by the US Office of Management and Budget—OMB) and the key informants are voluntarily participating, collection of key informant data can be undertaken without a formal analysis of the burden placed on informants by government agencies.

[14] It is also possible that some of the more significant factors in increased costs could be assessed under the status quo, without a formal regulatory change in data collection. For example, increases in fuel use are expected to be the key factor leading to higher costs for harvesting vessels. It may be possible to develop reasonably accurate

**Lower Overall Levels of Product Quality and Lower Overall Levels of Revenue**
Anecdotal evidence of lower overall levels of product quality and lower overall revenue per ton of pollock harvested could be provided in the annual IPA reports. Production Reports combined with wholesale prices from the COAR will provide more concrete data. These data can provide various levels of certainty depending on the shifts that occur. For example, if there is greater effort in June than there has been in the past, there may be a shift away from fillet production, and increases in surimi production and possibly in meal production because of generally low levels of flesh quality. Similarly, delaying fishing in the A season or harvesting of a portion of the A season TAC early in the B season might reduce roe production. These shifts may be discernible from Production Reports. However, a shift from high quality surimi to low quality surimi or from high quality roe to lower quality roe will not be discernible with existing data. Furthermore, because of the large number of factors that contribute to production decisions it may be difficult to attribute differences in product mixes or differences in revenues to Amendment 91.

Despite the concerns listed above, analysts should generate estimates of production and wholesale revenues and compare estimates from years prior to and years following implementation of Amendment 91. It may be possible, particularly after several years, to link changes in product mix and overall level of revenue to behavioral changes that occurred as a result of Amendment 91. While the quality of production data are generally good, there are several products for which the quality grade of the product is critically important in determining its value, and the current set of data forms do not include reports on quality grades. Surimi, fillets, and roe, in particular, are problematic—different levels of product quality yield significantly different values. Yet, some of these gaps may be filled through careful use of the data and close communication with participants.[15] Product and value data, as available under the status quo, provide useful information for assessing changes in quality and revenues, but are not without gaps. As indicated above, data on production by grade for surimi, fillets, and roe are not available from AFA processors. It is expected that the quality and amount of roe collected from the A season fishery may decline, due to the potential need to leave areas where high quality roe is being produced, in order to reduce salmon PSC. While existing data sources may be used to estimate changes in roe production amounts, the data does not distinguish roe by quality. Therefore, the usefulness of estimates of roe product value before and after Amendment 91 is implemented will not be as useful as they could have been if better information on quality had been collected.

**Additional Consolidation of the AFA Fleets**
Both the AFA and IPA reports will indicate whether additional vessels have dropped out of the BS pollock fishery. If a vessel dropped out of the fishery as a result of Amendment 91, it is presumed that

estimates of fuel use for AFA vessels, using engineering-based or key-informant based studies. Northern Economics and NMFS-AFSC economists are currently collaborating on a similar project focused on the freezer longline fleet. The goal of that project is to obtain working estimates of fuel use rates that can be applied to VMS and observer data to generate an estimate of total fuel use.

[15] In 2007 NEI conducted a study of the surimi market for NMFS-AFSC (NEI, 2007). That project found that global prices for all grades of surimi were increasing, but that in some cases the average value per ton of surimi from AK production was declining. Through interviews with processors it was found that Alaska producers had been shifting from surimi to fillets and that much of the surimi production was now a much lower grade of surimi than it had been in the past. In addition, product recovery technology improvements have made it possible to extract greater amount of flesh from skin and carcasses—which also increase the amount of lower grade surimi. Therefore, while global prices of surimi increased, AK production mix of surimi was shifting from generally higher grades to a much larger proportion of lower grade. While casually examining data might have suggested that AK producers were unable to take advantage of the price increases for surimi, a more complete examination suggests that producers were, instead, achieving greater benefits by focusing production efforts on the even higher valued fillet market.

the IPA reports will provide some indication of the cause. Landings reports will also show the lack of activity, but will not provide any explanation as to why the vessel did not fish.

Our *a priori* assumption is that vessels that have repeatedly been among the vessels with the highest PSC in the past are more likely to exit the fishery than vessels that have usually been able to avoid Chinook salmon, as the former vessels will need to incur greater costs to reduce their Chinook salmon PSC. Data available under Alternative 1 will not provide an indication of the additional costs incurred, but it will provide an indication of whether the vessel had been a high Chinook PSC vessel in the past. Information on consolidation of the fleet, particularly if it appears to be related to salmon PSC, should be useful to decision makers in measuring the effectiveness of Amendment 91.

#### 2.3.2.5 Ability of Alternative 1 to Measure the Desired Results of Amendment 91

The Council took final action on Amendment 91 with the stated goal of reducing and limiting Chinook PSC in the BS pollock fishery. Any IPAs that might be developed under Amendment 91 should generate incentives that will be effective in reducing Chinook removals even when the abundance of Chinook on the pollock grounds is low. This section examines the ability of data available under Alternative 1 to measure changes that are a direct reflection of these desired results.

**Transfers of Chinook PSC Allowances and Allocations of Pollock**

The annual IPA reports could report transfers of Chinook PSC allowances. They could also report paired transfers of Chinook PSC allowances and pollock allocations. This information could be summarized at the vessel level, or could include details on individual transfers, including transfer prices. Currently, overall transfers of pollock allocations are reported in AFA cooperative reports, but each transfer of pollock is not independently reported.

It will also be possible, using observer data and landings reports, along with NMFS data on the exact allocation of pollock to each vessel, to infer that transfers of Chinook and/or pollock have occurred. It can be inferred that vessels that have used more Chinook than they were allocated or more pollock than they were allocated, must have been the recipients of transfers. Inferences beyond this level may be difficult. No data source under Alternative 1 will provide information on market prices of Chinook PSC allowances, other than the possibility that IPA reports may provide some information. While existing data will provide some information on the distribution of salmon and pollock among vessels, it is unlikely that they will provide detailed information, including prices of transfers of either Chinook allowances or pollock apportionments.

**Create an Incentive to reduce Chinook PSC in Years of Low Encounters**

If an IPA includes the concept of a SSIP as part of its additional incentives to avoid Chinook, then it is presumed that the IPA report will provide a full accounting of the vessel-by-vessel details of its utilization, both in terms of Chinook PSC used in the current year, and in terms of availability of Chinook PSC allotments based on prior years' Chinook PSC usage. In the IPA application to NFMS, the IPA should fully specify the rules for distribution of allowances of Chinook PSC. It also appears that it will be in the best interest of the IPA, if the rules concerning the distribution of Chinook PSC allowances and the use of Chinook PSC are transparent so that an independent analysis of the program can be undertaken without the need to acquire additional data from the IPA.

A SSIP-like program will create real opportunity costs when low Chinook PSC vessels are faced with a decision to transfer their unused Chinook PSC. If there is no benefit from unused Chinook PSC and the vessel has already utilized its pollock for the year, it may be willing to accept a relatively low price for its remaining Chinook PSC allowance. If the same situation were to occur, but the low Chinook PSC vessel had the opportunity to benefit from saving a portion of the unused Chinook PSC by receiving a relatively larger allowance in a future year, then the low Chinook PSC vessel will likely require a higher price to

induce a sale. From this perspective, the amount of Chinook PSC that is saved under such a program in a year in which there is real demand for Chinook PSC allowances (i.e., high encounter year) will be a useful indicator that the IPA is providing effective incentives to reduce encounters.

In low encounter years, it is unlikely that high Chinook PSC vessels will need to acquire additional PSC allowances—they will be able to use their own. However, the more allowances that are saved in a low encounter year, the more that will be available in the following year. From this perspective, an SSIP-like program will impose an opportunity cost for all Chinook PSC, but especially so for vessels with high PSC. Rather than harvest pollock without regard for Chinook PSC, the opportunity to benefit from a larger Chinook PSC allowance in the next year should bring about additional caution. Assuming the SSIP program is fully specified and that an independent assessment of the program will not require additional data from the IPA, it is probable the existing data can produce accurate and reliable estimates of its use. The avoidance of Chinook PSC under an SSIP-like program in years of high Chinook encounters may be a useful indicator of the effectiveness of the IPA at further incentivizing the reduction of Chinook PSC. Although less certain, in low encounter years the effectiveness of the IPA may be assessed by saving Chinook PSC allowances, since saving are likely important to ensuring future harvest opportunities.

**Use of Additional Performance Based Penalties or Payments**

If an IPA includes additional performance based penalties or payments such as those included in the CPIPA, SSIP and MSSIP, it is presumed that the IPA will provide a full accounting of the vessel-by-vessel details, both in terms of the ways in which the performance was measured and in the penalties incurred or bonuses awarded.[16] Since the IPA has to petition NMFS for approval to operate, the details of the IPA's performance index will be known to the agency. It is also likely (although not certain) that using a combination of observer data and landings reports, analysts will be able to duplicate the vessel-by-vessel calculations used by the IPA. It is less likely however, that data will be available to independently verify whether penalties were actually paid by vessels or whether bonuses were actually awarded. It is presumed that measures that will be used in any performance index will utilize data that are generated in the status quo data collection system, and that they therefore can be independently assessed and analyzed. From this perspective the data going into the performance index are likely to be accurate and reliable. However, the question of whether the performance index that is developed will accurately and reliably reflect the goals of the IPA and ultimately the Council in terms of Chinook PSC avoidance will depend on the actual index developed. In any case, a report showing vessel ranking in terms of the performance index is likely to provide useful information for assessing the effectiveness of the IPA in creating additional incentives for salmon avoidance.

**Lower Chinook PSC Rates and Totals**

Chinook PSC totals and rates can be measured and assessed using observer and CAS data. It is presumed that the annual IPA reports will also provide summary data and other information that may not be available through the existing data collection program. Assessing the extent to which salmon PSC changes are caused by Amendment 91 or the IPAs is more challenging, since estimates of the abundance and distribution of Chinook on the pollock fishing grounds are limited. Observer data and Landings Reports will be the primary tools in measuring Chinook PSC rates and totals. With these data it may be possible to accurately assess Chinook PSC rates and totals, by a number categorical variables (such as vessel size, season, distance from port, and pollock harvest). Reports documenting Chinook PSC and such categorical variables would undoubtedly be useful for documenting changes in Chinook PSC rates and totals and would provide indications of the effectiveness of the IPAs.

[16] In the remainder of this section, this type of performance based system is referred to as a performance index.

### 2.3.3 Evaluation of the Overall Quality of Alternative 1 Data

In general, the data that will be available under Alternative 1 is of very high quality and will provide analysts with the ability to accurately and reliably assess changes in Chinook PSC, changes in pollock CPUEs, temporal and spatial changes in effort, and many other behavioral changes that influence Chinook PSC. Key data sources available under Alternative 1 include Observer data, VMS data, Landings Reports, Production Reports, and COAR data. In general, these data may be combined and analyzed to provide accurate and reliable information that can be used to assess changes in fishing behavior following implementation of Amendment 91.

Two important components of the data that will be collected under Alternative 1 are the IPA applications that will be submitted prior to the fishing year, and the IPA reports that will be submitted after the fishing year. While these reports will be submitted by industry without independent verification, since IPAs must be authorized annually, it is presumed that they will be accurate and reliable to the extent that information is provided.[17] Reports could indicate pollock allocations and harvests of each vessel, the number of Chinook apportioned to and caught by each vessel, as well as a summary of transfers of Chinook PSC allowances. It is presumed that information on transfers will be aggregated on a vessel level—i.e. individual transfers will not be reported—but industry could provide disaggregated data. In addition, we expect that IPA reports will include information that is descriptive (and less quantifiable), but nonetheless important indicators of actions that have been taken to avoid Chinook salmon.

### 2.3.4 Costs to industry

Alternative 1 does not impose any additional costs on industry for data collection.

### 2.3.5 Costs to NMFS

Alternative 1 does not impose any additional costs or administrative burden on NMFS for data collection.

### 2.3.6 Summary and Conclusions

The data sources available under the status quo alternative provide analysts with the ability to answer a wide range of questions regarding Chinook PSC avoidance and the effectiveness of the incentives in Amendment 91. As noted earlier, the IPA reporting requirements could be clarified to ensure that the information needed to evaluate the programs is provided in the annual reports. In its June 2009 Chinook PSC data collection motion, the Council specifically requested that the status quo alternative be evaluated with respect to its ability to provide analysts with information to accurately and reliably answer seven key questions about Chinook PSC. In general, observer data, combined with landings reports, will allow analysts to address these seven specific questions to varying degrees. The status quo data sources available to answer each of the questions are discussed below.

**(1) Comparisons of Chinook salmon PSC rates of vessels fishing simultaneously in different areas**

For CPs, and for CVs delivering to motherships, observer data combined with landings reports may be used to make reliable comparisons of Chinook PSC rates of vessels fishing in different areas during the same period of time. These direct comparisons are not possible for CVs delivering to shore-based plants. For these deliveries, a full accounting of Chinook PSC occurs at the plant, and in most cases covers multiple tows made within a trip. Therefore, assignment of trip-level Chinook PCS data to specific tows and specific geographic locations would be estimates from sampled tows and trip Chinook salmon PSC accounting.[18]

[17] If an IPA knowingly submits an application or report that contains false information, the IPA could be subject to an enforcement action.

[18] The methodology used currently for CAS estimates simply assigns Chinook PSC in proportion to groundfish catch. That methodology is likely inadequate for making area based distinctions that would be sought for these analyses. Other methodologies could be explored in the future.

**(2) Examining changes in the standard deviations of individual vessel Chinook salmon PSC rates**
Observer data combined with landings reports will allow analysts to assess trends in the standard deviations of individual Chinook PSC rates by vessel, and across co-ops, sectors, or the entire AFA fleet. These changes in the distribution of Chinook PSC rates may provide an indication of the effectiveness of Chinook PSC measures, provided analysts carefully consider the influence of other factors that affect Chinook PSC rate distributions.

**(3) Comparisons of individual vessel Chinook salmon PSC rates prior to and following changes in fishing locations**
For CPs and CVs delivering to motherships, observer data combined with VMS data and landings reports will allow analysts to make accurate and reliable comparisons of individual vessel Chinook PSC rates prior to and following changes in fishing locations. For shore-based CVs, Chinook PSC rates at specific geographic locations within a shore-based CV trip must be estimated based on observer samples and trip level Chinook PSC accounting. Although NMFS will no longer officially assign Chinook PSC rates to geographic location within a particular trip for shore-based CVs, analysts may choose to make estimates based on the formerly used or alternative methodologies.

**(4) Comparisons of individual vessel Chinook salmon PSC rates relative to distance traveled from port**
For CPs, and for CVs delivering to motherships, observer data combined with landings reports will allow analysts to make reliable comparisons of individual vessel Chinook PSC rates relative to distance traveled from port. It is possible to make similar assessments for shore-based CVs; however, analysts must take into consideration the potential error in Chinook PSC assignments to specific geographic locations for shore-based CVs that fished in multiple areas during a trip. If geographic areas are defined as relatively large blocks, then the relative importance of the assignment error diminishes. In addition, relationships between Chinook PSC and willingness to travel from port on a trip basis may be examined.

**(5) Estimates of salmon avoided through rolling hot spot closures**
The concerns with the potential for erroneous assignment of Chinook PSC to specific geographic areas for shore-based CVs (discussed above) raises concerns about the ability of existing data sources to provide reliable information on Chinook PSC that is occurring at the vessel's current location. Using this information to impute what might have occurred in areas that are no longer being fished is likely to render estimates of salmon PSC savings from RHS that are unreliable at best. In any case, the accuracy and reliability of such estimates will be highly dependent on analytical assumptions regarding salmon PSC rates in the closed areas after they were closed. It should not be construed that the inability to accurately estimate Chinook savings resulting from closing an area means that the RHS program should be curtailed or changed. According to Karl Haflinger of SeaState (2009), a comparison of trip to trip salmon PSC of vessels that leave a high salmon PSC area more often than not declines.

**(6) Comparisons of the percentage of the TAC harvested at times of relatively high and low Chinook salmon encounter rates**
Observer data combined with landings reports will allow analysts to make accurate and reliable comparisons of percentages of the TAC harvested at times of relatively high and low Chinook salmon encounter rates. However, it should be noted that there are no currently available means to determine "high and low Chinook salmon encounter rates" that are independent from the pollock fishery. In other words, the only information we have on the abundance of Chinook on the pollock grounds is through observations of salmon PSC.

**(7) Comparisons of Chinook salmon PSC rates achieved by vessels participating in an IPA and by vessels not participating in an IPA**
If there are sufficient numbers of vessels that are not participating in IPAs, the data available under Alternative 1 will allow accurate and reliable comparisons of Chinook salmon PSC rates achieved by vessels participating in an IPA, and by vessels not participating in an IPA.

## 2.4 Alternative 2

Under alterative 2, status quo data collection would be supplemented by collection of additional data concerning the distribution and transfer of Chinook PSC allowances, and fuel usage to avoid Chinook PSC.

### 2.4.1 Description of the alternatives

Alternative 2 has two sub-alternatives, Alternatives 2A and 2B. Both Alternative 2A and 2B will collect data on transactions of Chinook PSC allowances and data on vessel movements related to Chinook PSC avoidance. In addition, under Alternative 2B, data on pollock transactions will be collected. The additional data would be collected under one of the two following options:

**Alternative 2A**
In addition to the status quo data sources:

(1) Transaction data for salmon – quantity and price of transfers (survey will be used to determine whether these are arm's length transactions). As defined by:

**Option 1** – Transfer Ledger: All entities holding Chinook PSC credits will track all transfers, from the beginning of each year, in an official ledger that must be submitted to NMFS at the end of the year.

**Option 2** – Compensated Transfer Form: Require that IPAs and AFA Cooperatives summarize initial holdings of Chinook allowance credits by vessels or other entities, and that they summarize all transfers, regardless of whether the transfers were "compensated" transfers. For all "compensated" transfers, each party (transferor and recipient) must complete and submit to NMFS a Compensated Transfer Form. A transfer is "compensated," if there is an exchange of dollars (or any currency) for PSC credits from one party to another.

(2) Information regarding change in fishing grounds:
Defined by the collection of estimated gallons of fuel burned in moving to the next fishing location, when moving to avoid salmon PSC
[To be used with existing information allowing examination of:
a. For both the original and new fishing grounds, the date, time, PSC rate, location, and groundfish CPUE of tow.
b. Pollock quota remaining for harvest and salmon allowance remaining at time of event.
c. Time, distance, and use of fuel in searching for cleaner fishing grounds.]

**Alternative 2B**
In addition to the status quo data sources:
(1) Transaction data for salmon and pollock– quantity and price of transfers (survey will be used to determine whether these are arm's length transactions).

By expanding Options 1 and 2 from Alternative 2A to include pollock quota.

(2) Information regarding change in fishing grounds (as defined under Alternative 2B)

Because of the similarities between Alternatives 2A and 2B, the transaction options under 2A and 2B are discussed in one section, and vessel movements are discussed in another section.

### 2.4.2 Description of Data Collection under Alternative 2A and Alternative 2B

Under Alternatives 2A and 2B data describing transfers of Chinook PSC allowances (under 2A and 2B) or pollock quota (under 2B) and data describing fuel use to avoid Chinook PSC would be collected. These data could be used in conjunction with observer data showing pollock catch rates and Chinook PSC rates, as well as data concerning available pollock quota and Chinook PSC allowances. In addition, the analysis suggests that data could be collected concerning each vessel's estimate of its Chinook PSC. This additional data could be used to assess whether changes in estimated Chinook PSC contribute to the fleet's ability to avoid Chinook salmon.

**Transfer of Chinook PSC allowances or pollock quota**

Two options for tracking transfers. Under the first, a ledger form would be completed by any party to a transfer of Chinook PSC allowances (under 2A and 2B) or pollock quota (under 2B). Under the second option, IPAs or cooperatives would provide an accounting of all distributions and transfers of Chinook PSC allowances (under 2A and 2B) or pollock quota (under 2B) and any party to a transfer of Chinook PSC allowances (under 2A and 2B) or pollock quota (under 2B) that is compensated would specifically report on the terms of that transaction.

**In their current form, both reporting options would collect only financial compensation.** Financial compensation can be reported in a straightforward manner and provides a standardized metric for comparing changes in value over time; however, several other valuable forms of compensation could be paid for a transfer, including pollock quota, gear or gear storage, other in-kind compensation, or undefined future consideration. Admittedly, any data collection omitting these forms of compensation could miss a substantial number of compensated transactions. Collection of these data was not included in the forms, as they could greatly complicate reporting and administrative burdens associated with this data collection. Specifically, reporting non-financial compensation would require a modified form, likely including a single form for each transaction that provides space for a full description of the compensation. Meaningful reporting of compensation would require that compensation is valued. Most analysts are likely poorly equipped to value the in-kind compensation, as few have the expertise to value the types of compensation that are likely to be paid. Quota and PSC allowance exchanges may be an exception, if a substantial number of arms length financial transactions occur. While data submitters could be required to provide an estimate of compensation value for non-financial compensation as a part of the reporting, in the absence of verification of those values, it may not be prudent to rely on those estimates. In addition, to obtain reasonable estimates, a report would need to be subject to a reasonable level of oversight and enforcement. Yet, effective oversight may not be possible. Estimated values may be subjective and some goods that could be exchanged (such as used gear or a priority position in a delivery order) may not be subject to market exchange from which to derive a market price. Other alternatives for reporting and valuing non-financial compensation may be explored in the future, if the Council wishes to pursue such collection.

**An alternative could be to require any person participating in a transaction involving any form of compensation (including future undefined compensation) to complete a ledger form, but only require that financial compensation be specifically reported. A check box could be used to indicate whether compensation, beyond any financial compensation reported on the form, was included in the transaction.** This approach would ensure that the number of compensated transactions could be quantified, even if the value of compensation was unavailable. If the Council wishes to pursue this approach, it could specifically include such a reporting requirement in its preferred alternative.

**Option 1– Track All Transfers via Ledger Form**

The ledger form would be used by each vessel owner or entity holding pollock quota or salmon PSC credits to report each transaction to which it is a party. The form would identify the quantity of Chinook PSC allowance transferred, all parties to the transfer, and any compensation to or from those parties. In addition, the form would track the relationship between the parties, which would allow future analyses to estimate whether the transaction was arms-length. Figure 2-16 shows a sample ledger form appropriate for Alternative 2A. Figure 2-17 on the following page shows a sample ledger for Alternative 2B. On this form, all transfers of Chinook PSC allowances would be reported, as well as all transfers of pollock quota.

Information provided by these data include:

- A complete accounting of all transfers, including both compensated and uncompensated transfers; and in the case of Alternative 2B, paired transfers of pollock quota and Chinook PSC credits, as well as any non-paired transactions.
- The ability to analyze how historical per-season transfers change as the IPA program matures.
- The ability to analyze how ratios of compensated versus uncompensated transfers change as the program matures.
- The ability to study the distribution of Chinook PSC allowances in-season and over the long-term.
- The ability to analyze how paired and non-paired transfers change as the program matures, in the case of Alternative 2B.
- The ability to determine which types of exchanges are most likely to reflect fair market value, and to develop estimates of fair market value on a unit basis.

## Chinook Bycatch Credit Transfer Reporting Form for All Transfers Including Those that do not Involve Monetary Compensation

| Entity Name | Entity ID# | Entity Address | Entity Phone # | Entity Type (Check the Appropriate Box) | | | | | Salmon Bycatch Credits (#) at beginning of year | Check the box to the right if this form is a continuation from a previous form |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Co-op | IPA Manager | Company | Vessel | Other | | |
| | | | | ☐ | ☐ | ☐ | ☐ | ☐ | | ☐ |

| Name of the Other Entity Involved in the Transfer (See the list of registered entities at www.xxx.ccc) | Entity ID# (See the entitiy list at www.xxxx. ccc) | Direction of Transferred Shares (Circle In / Out) | | Transfer Date (MM/DD/YY) | Salmon Bycatch Credits Transferred (Number) | Indicate any Monetary Compensation (in US $) | Is the Value of the Compensation the Fair Market Value? ( Circle Yes / No) | | Circle the transaction type (see list at the bottom of this page) that best describes the entites involved in this transfer. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | In | Out | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | Yes | No | 1 | 2 | 3 | 4 |
| *Space for Legal Statement about Submittal of Data and Signature Requiments* | | | | | | | _____ *Signature* | | | | _____ *Date* | |

| Transaction Types | | | |
|---|---|---|---|
| Transaction Type 1: Between Two Entities Which Are Affliated as Defined by AFA. | Transaction Type 2: Between Two Entities in the Same Cooperative but not Affiliated as Defined by AFA. | Transaction Type 3: Between Two Entities in the Same Sector but not Affliated as Defined by AFA or in the same Cooperative. | Transaction Type 4: Between Two Entities not part of the Same Sectoror or Cooperative, or Affliated as Defined by AFA. |

**Figure 16. Option 1 Ledger Form for Alternative 2A**

**Pollock Quota and Chinook Bycatch Credit Transfer Reporting Form for All Transfers Including Those that do not Involve Monetary Compensation**

| Entity Name | Entity ID# | Entity Address | Entity Phone # | Entity Type (Check the Appropriate Box) | | | | | Pollock Quota (MT) at beginning of year | Salmon Bycatch Credits (#) at beginning of year | Check the box to the right if this form is a continuation from a previous form |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Co-op | IPA Manager | Company | Vessel | Other | | | |
| | | | | ☐ | ☐ | ☐ | ☐ | ☐ | | | ☐ |

| Name of the Other Entity Involved in the Transfer (See the list of registered entities at www.xxx.ccc) | Entity ID# (See the entitiy list at www.xxxx. ccc) | Direction of Transferred Shares (Circle In / Out) | | Transfer Date (MM/DD/YY) | Pollock Quota Transferred (MT) | Salmon Bycatch Credits Transferred (Number) | Indicate any Monetary Compensation (in US $) | Is the Value of the Compensation the Fair Market Value? ( Circle Yes / No) | | Circle the transaction type (see list at the bottom of this page) that best describes the entites involved in this transfer. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | In | Out | | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | | Yes | No | 1 | 2 | 3 | 4 |
| *Space for Legal Statement about Submittal of Data and Signature Requiments* | | | | | | | | *Signature* | | | | *Date* | |

| Transaction Types | | | |
|---|---|---|---|
| Transaction Type 1:<br>Between Two Entities Which Are Affliated as Defined by AFA. | Transaction Type 2:<br>Between Two Entities in the Same Cooperative but not Affiliated as Defined by AFA. | Transaction Type 1:<br>Between Two Entities in the Same Sector but not Affliated as Defined by AFA or in the same Cooperative. | Transaction Type 4:<br>Between Two Entities not part of the Same Sectoror or Cooperative, or Affliated as Defined by AFA. |

**Figure 17. Option 1 Ledger Form for Alternative 2B**

**Option 2— Track Transfers via Annual IPA Reports and Compensated Transfer Forms**
The second option comprises two components: 1) a summary report of initial allocations and transfers will be required of each IPA or cooperative that manages Chinook PSC allowances (under 2A and 2B) and pollock quota (under 2B); and 2) a compensated transfer form that would be completed and submitted to NMFS by each party to a transfer in which some form of monetary compensation is paid.

The impetus behind this option was the suggestion that the distribution and transfer of Chinook PSC allowances and/or pollock quota could be complicated by the IPA and cooperative structure in the fishery. For example, several ledger reports could be needed to document a single exchange between two vessels, if that transfer is conducted through cooperatives as intermediaries. Each transfer through an intermediary would require an separate ledger submission. In addition, it is possible that compensation would flow directly between vessel owners (rather than through intermediaries in the transaction). Determining whether reporting errors occurred may be very difficult, if compensation is reported for only one party to a transaction (since the payment might be made to another vessel owner, who is not a direct party to the transaction reported in a ledger with an intermediary).

To avoid this complexity, this alternative would require IPAs or cooperatives that oversee pools of quota or allowances distributed among participating vessels to provide a more comprehensive (yet specific) description of the distribution and exchange of quota and allowances among its members and between itself and outside parties. Supplementing this IPA and cooperative reporting with direct reports of compensated transfers would allow analysts to examine the flow of compensation among participants in the fisheries. Requiring each person paying or receiving compensation in exchange for quota or allowances would allow better tracking of the trading of these privileges.

Under Alternative 2A, IPA reports (or AFA cooperative reports, if a cooperative is overseeing Chinook PSC allowances in the absence of an IPA) would include the initial (and any subsequent) distribution of Chinook PSC allowances among vessels (or entities). In addition, the IPA (or cooperative) would report on exchanges of Chinook PSC allowances by any entity (including exchanges with non-members). For each transfer (or distribution), the summary report should indicate: transferor, recipient, date, number of allowances transferred, and whether or not monetary compensation was a part of the transfer.

Establishing a specific regulatory reporting requirement for this alternative could be complicated by the vagaries of IPA and cooperative structures. For example, an IPA structure that assigns Chinook PSC allowances to vessels, as PSC is used, may report in a very different manner from an IPA that distributes Chinook PSC allowances at the beginning of the year and oversees transfers within the IPA and with other IPAs throughout the year. Consequently, this option would establish a general reporting requirement for IPAs and cooperatives, but would not specify the form of the report.

In addition to the IPA (or cooperative) report, any party engaged in a transfer of Chinook PSC allowances in which monetary compensation occurs would be required to submit a compensated transfer report identifying the party paying and the party receiving compensation and the amount of Chinook PSC allowances transferred in exchange for that compensation. The ledger form used for option 1, with a modification to indicate the form is only required for transactions for monetary compensation, could be used for this purpose.

Under Alternative 2B, the IPAs (or cooperatives) would be required to report distributions and transfers of Chinook PSC allowances, and parties to compensated transfers of Chinook PSC allowances would be required to report those transactions, as under Alternative 2A. Alternative 2B adds a parallel reporting requirement for pollock quota, under which cooperatives would be required to report the initial (and any subsequent) distribution of pollock quota and any transfers by its members (including transfers to non-members). In addition, any party to a transfer of pollock quota in which monetary compensation occurs

would be required to submit a compensated transfer report that identifies the party paying and the party receiving compensation, as well as the amount of pollock quota transferred in exchange for that compensation. This form could also be a modified version of the ledger form required under option 1.

## Chinook Bycatch Credit Transfer Reporting Form for Transfers that Only Involve Monetary Compensation

| Entity Name | Entity ID# | Entity Address | Entity Phone # | Entity Type (Check the Appropriate Box) | | | | | Check the box to the right if this form is a continuation from a previous form |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Co-op | IPA Manager | Company | Vessel | Other | |
| | | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

| Name of the Other Entity Involved in the Transfer (See the list of registered entities at www.xxx.ccc) | Entity ID# (See the entitiy list at www.xxxx. ccc) | Direction of Transferred Shares (Circle In / Out) | | Transfer Date (MM/DD/YY) | Salmon Bycatch Credits Transferred (Number) | Indicate any Monetary Compensation (in US $) | Is the Value of the Compensation the Fair Market Value? ( Circle Yes / No) | | Circle the transaction type (see list at the bottom of this page) that best describes the entites involved in this transfer. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | In | Out | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | Yes | No | 1 | 2 | 3 | 4 |
| *Space for Legal Statement about Submittal of Data and Signature Requiments* | | | | | | | _____ *Signature* | | | | _____ *Date* | |

| Transaction Types | | | |
|---|---|---|---|
| Transaction Type 1: Between Two Entities Which Are Affliated as Defined by AFA. | Transaction Type 2: Between Two Entities in the Same Cooperative but not Affiliated as Defined by AFA. | Transaction Type 3: Between Two Entities in the Same Sector but not Affliated as Defined by AFA or in the same Cooperative. | Transaction Type 4: Between Two Entities not part of the Same Sectoror or Cooperative, or Affliated as Defined by AFA. |

**Figure 18. Compensated Transfer Ledger for Alternative 2A**

**Pollock Quota and Chinook Bycatch Credit Transfer Reporting Form for Transfers that Only Involve Monetary Compensation**

| Entity Name | Entity ID# | Entity Address | Entity Phone # | Entity Type (Check the Appropriate Box) | | | | | Check the box to the right if this form is a continuation from a previous form |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Co-op | IPA Manager | Company | Vessel | Other | |
| | | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

| Name of the Other Entity Involved in the Transfer (See the list of registered entities at www.xxx.ccc) | Entity ID# (See the entitiy list at www.xxxx. ccc) | Direction of Transferred Shares (Circle In / Out) | | Transfer Date (MM/DD/YY) | Pollock Quota Transferred (MT) | Salmon Bycatch Credits Transferred (Number) | Indicate any Monetary Compensation (in US $) | Is the Value of the Compensation the Fair Market Value? ( Circle Yes / No) | | Circle the transaction type (see list at the bottom of this page) that best describes the entites involved in this transfer. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | In | Out | | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | | Yes | No | 1 | 2 | 3 | 4 |
| | | In | Out | | | | | Yes | No | 1 | 2 | 3 | 4 |
| *Space for Legal Statement about Submittal of Data and Signature Requiments* | | | | | | | | _____ *Signature* | | | | _____ *Date* | |

| Transaction Types | | | |
|---|---|---|---|
| Transaction Type 1: Between Two Entities Which Are Affliated as Defined by AFA. | Transaction Type 2: Between Two Entities in the Same Cooperative but not Affiliated as Defined by AFA. | Transaction Type 1: Between Two Entities in the Same Sector but not Affliated as Defined by AFA or in the same Cooperative. | Transaction Type 4: Between Two Entities not part of the Same Sectoror or Cooperative, or Affliated as Defined by AFA. |

**Figure 19. Compensated Transfer Ledger for Alternative 2B**

**Collection of Data on Changes in Fishing Grounds under Alternatives 2A and 2B**
Alternatives 2A and 2B both contain the same language requesting the development of methods to track fleet movements associated with Chinook PSC avoidance. The language indicates that these methods should allow analysts to distinguish between original and new fishing grounds, and identify the date, time, Chinook PSC rate, location, and groundfish CPUE of each tow. In addition, the motion requests that data be provided that allow the analysts to identify the time, distance, and an estimate of fuel used in searching for cleaner grounds, along with the pollock quota and Chinook PSC allowances remaining after the move from the original location to the new location.

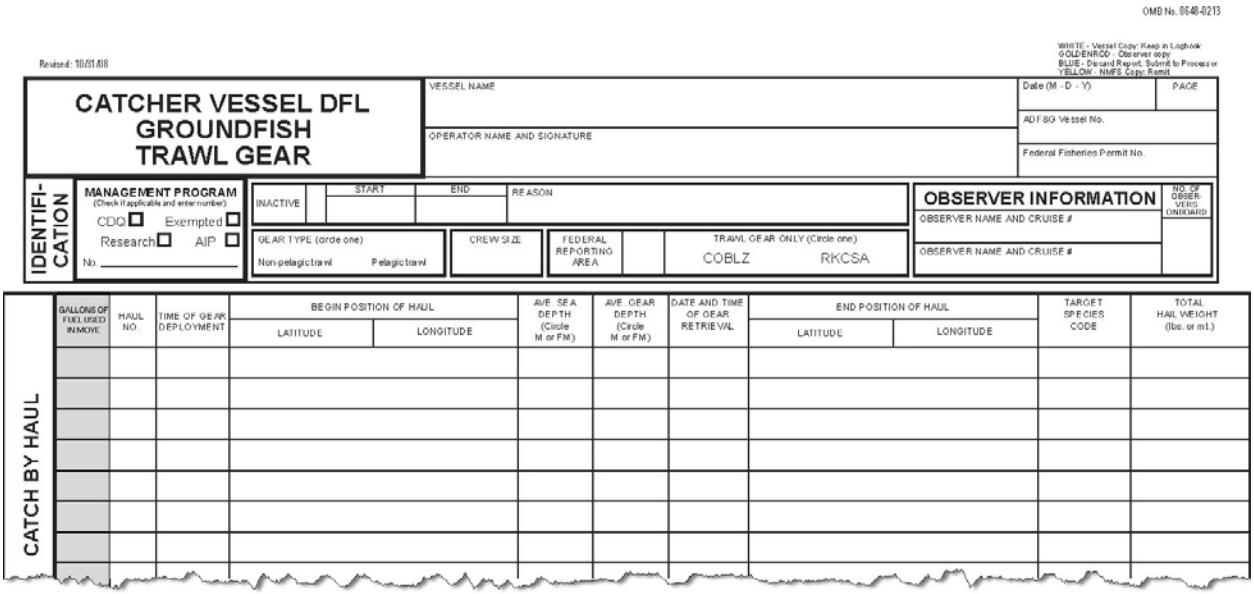
As discussed in significant detail in Alternative 1, much of the information needed to assess movements described in the preceding paragraph is currently available. However, the precision of the information varies significantly between data collected from CPs and mothership operations, and data collected from shore-based CVs. For CPs and mothership operations all of the requested information is already available in the CAS from observer data landings reports and VMS data with two exceptions: (1) data specifying when a move has been made in an effort to reduce Chinook PSC, and (2) the amount of fuel use in searching for clean fishing grounds. On CPs and motherships, observers report total pollock catch and the total Chinook PSC for each tow. Catcher vessels are not usually configured to allow observers to count each fish as they are on CPs and motherships. Therefore, accurate and reliable estimates of Chinook PSC on a tow-level for shore-based CVs, do not currently appear attainable. Observers in all operations (CPs, motherships, and shore-based CVs) are able to make reliable (if not always completely accurate) estimates of the total weight of each tow. They are also able (along with VMS data) to accurately report the towing times, and geographic coordinates of starting and stopping locations of each tow. Thus, with the exception of estimates of tow-by-tow Chinook PSC on shorebased CVs[19], the primary barrier to meeting the Council's data request appears to be data indicating when a move from the original fishing location to a new fishing location has taken place, along with information on how much time, distance, and fuel were used in searching for and moving to cleaner fishing grounds. To address this shortcoming, this alternative would create a marker which will identify moves that are primarily related to salmon PSC and will collect data on the cost of those moves as measured by fuel, time, and distance. The method involves the addition of a single column to the current logbook form. An example of the reformatted logbook for CVs is shown in Figure 20—the additional column is shaded. Similar changes would be made in logbook forms for CPs and for motherships.[20]

The logbook directions would instruct vessel operators to enter the amount of additional fuel they spend looking for cleaner fishing grounds, when they change fishing locations due primarily to Chinook PSC. The operators would enter the number of fuel gallons spent searching for and transiting to the new location in a cell located in the row for the first haul at the new location. The observer onboard would then record this information into their data. This fuel use marker would then be visible within the observer data not only signaling that a Chinook PSC related move occurred, but also indicating amount of fuel used in making the move. If the observer data are then linked with the VMS data showing vessel movements, the time and distance used in the move should then become visible to the analyst. Assuming that other movements can be distinguished from the VMS data, without additional movement indicators, the analyst can determine how Chinook PSC and those other moves differ.[21]

[19] In developing this data collection initiative, the Council indicated that it did not intend to revise the collection of catch data by observers, as defined under Amendment 91. Consequently, any change in observer estimates of Chinook PSC are beyond the scope of this action.

[20] A mechanism to enable observers stationed on motherships to capture data from CVs in the mothership operation would need to be developed. It may be feasible for each of the CVs in the operation to send the fuel use information to the observers on board the mothership via facsimile or other electronic means.

[21] As an alternative to collecting specific fuel usage for each move, the Council could consider collecting average fuel use in different operational modes (e.g., transiting and fishing). These data could then be applied in



OMB No. 0648-0213

Revised: 10.01.08

WHITE - Vessel Copy: Keep in Logbook
GOLDENROD - Observer copy
BLUE - Discard Report: Submit to Processor
YELLOW - NMFS Copy: Remit

CATCHER VESSEL DFL GROUNDFISH TRAWL GEAR

VESSEL NAME

OPERATOR NAME AND SIGNATURE

Date (M - D - Y) | PAGE

ADF&G Vessel No.

Federal Fisheries Permit No.

IDENTIFICATION

MANAGEMENT PROGRAM (Check if applicable and enter number)
CDQ ☐ Exempted ☐
Research ☐ AIP ☐
No. _____

INACTIVE | START | END | REASON

GEAR TYPE (circle one): Non-pelagic trawl | Pelagic trawl

CREW SIZE

FEDERAL REPORTING AREA

TRAWL GEAR ONLY (Circle one): COBLZ | RKCSA

OBSERVER INFORMATION

OBSERVER NAME AND CRUISE #

OBSERVER NAME AND CRUISE #

NO. OF OBSERVERS ONBOARD

CATCH BY HAUL

| GALLONS OF FUEL USED IN MOVE | HAUL NO. | TIME OF GEAR DEPLOYMENT | BEGIN POSITION OF HAUL | | AVE. SEA DEPTH (Circle M or FM) | AVE. GEAR DEPTH (Circle M or FM) | DATE AND TIME OF GEAR RETRIEVAL | END POSITION OF HAUL | | TARGET SPECIES CODE | TOTAL HAUL WEIGHT (lbs. or mt.) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | LATITUDE | LONGITUDE | | | | LATITUDE | LONGITUDE | | |
| | | | | | | | | | | | |
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**Figure 20. Example Change to Logbook to Record Chinook Related Vessel Movements and Fuel Use**

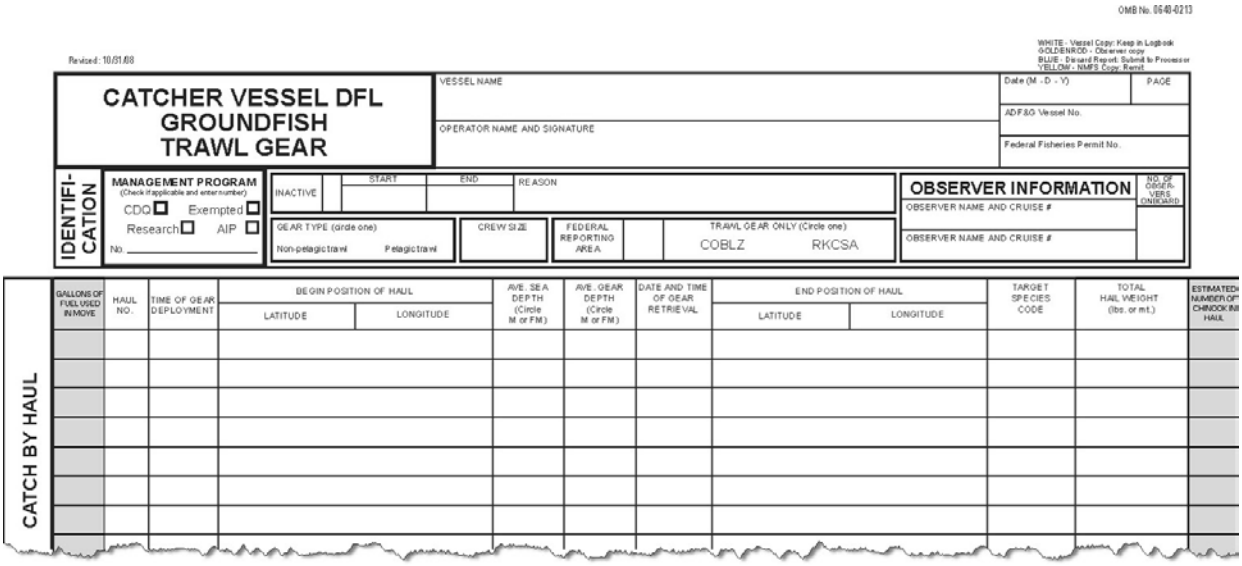
**Potential Methods for Reporting an Operators Estimate of Tow Level Chinook PSC**

Although the observer program collects detailed information concerning Chinook PSC, specific observer Chinook counts may be unavailable to vessel operators during their fishing trip. For example, a catcher vessel needs to wait until all of its catch is observed at a processing facility prior to knowing the exact number of salmon caught during a trip. Despite the absence of real time observer counts, vessel operators have some degree of knowledge concerning levels of Chinook salmon PSC throughout their fishing trip. For example, a vessel operator may instruct crews to count Chinook during the transfer of fish into its hold and may process the transfer in a particular manner to allow better observation of the number of Chinook. Vessel operators' efforts to avoid salmon in the future depend greatly on the accuracy of these estimates. Underestimation of Chinook salmon PSC could result in a vessel continuing to fish in an area of relatively high Chinook PSC; overestimation of Chinook salmon PSC could result in a vessel moving from an area of acceptably low Chinook PSC to an area with greater risk of Chinook PSC. In addition, for Chinook PSC management measures to be successful, vessel operator estimates of Chinook PSC rates should closely parallel actual rates.

Among the potential shortcomings of existing data on Chinook salmon PSC is any information concerning the perceived levels of Chinook PSC and how they compare with actual levels. To improve its understanding of whether Chinook PSC measures (including IPAs) are having their intended effect, **the Council could direct the collection of vessel operator estimates of Chinook salmon PSC on a tow-by-tow basis. Such a collection could require each shore-based catcher vessel and catcher processor operator to report its estimate of Chinook salmon PSC from a tow, prior to initiating its next tow.** The requirement could be implemented by requiring the vessel operator to communicate to the observer the estimate in a timely manner. Using these data, it is possible that analysts could assess the

conjunction with reporting on moves to avoid Chinook salmon PSC, to derive estimated fuel usage to avoid PSC. Although this approach might provide less accurate estimates of fuel usage for any specific move, it would provide data that can be more appropriately applied to other activities of the vessel. These data are requested under alternative 3, which provides a more complete analysis of those other possible uses. In the case of catcher processors, it is possible that average fuel costs might prove adequate, as isolating fuel usage associated with a move could prove very difficult. A vessel may be using fuel in processing operations while moving, so attributing the fuel use specifically to the move might be excessive.

extent to which Chinook PSC may be unavoidable, as a result of poor (or misperception of) information concerning Chinook PSC rates. These estimates could be reported in the vessel logbook and migrated into the observer database. An analysis of the vessel's estimates over the entire trip and observer counts could be used to determine the reliability of the vessel Chinook PSC estimates.[22] If Chinook PSC measures are effective, vessel estimates might be expected to improve over time. An example of the potential change in the logbook that would be required for these additional data is shown in Figure 21. The shaded column on the right would be used for the vessel's estimate of Chinook PSC.


OMB No. 0648-0213

Revised: 10.01.08

WHITE - Vessel Copy: Keep in Logbook
GOLDENROD - Observer copy
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YELLOW - NMFS Copy: Remit

CATCHER VESSEL DFL GROUNDFISH TRAWL GEAR

VESSEL NAME | Date (M - D - Y) | PAGE

OPERATOR NAME AND SIGNATURE | ADF&G Vessel No. | Federal Fisheries Permit No.

IDENTIFICATION

MANAGEMENT PROGRAM (Check if applicable and enter number)
CDQ ☐ Exempted ☐
Research ☐ AIP ☐
No. _____

INACTIVE | START | END | REASON

GEAR TYPE (circle one): Non-pelagic trawl | Pelagic trawl

CREW SIZE

FEDERAL REPORTING AREA

TRAWL GEAR ONLY (Circle one): COBLZ | RKCSA

OBSERVER INFORMATION
OBSERVER NAME AND CRUISE #
OBSERVER NAME AND CRUISE #
NO. OF OBSERVERS ONBOARD

CATCH BY HAUL

| GALLONS OF FUEL USED IN MOVE | HAUL NO. | TIME OF GEAR DEPLOYMENT | BEGIN POSITION OF HAUL | | AVE. SEA DEPTH (Circle M or FM) | AVE. GEAR DEPTH (Circle M or FM) | DATE AND TIME OF GEAR RETRIEVAL | END POSITION OF HAUL | | TARGET SPECIES CODE | TOTAL HAUL WEIGHT (lbs. or mt.) | ESTIMATED NUMBER OF CHINOOK IN HAUL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | LATITUDE | LONGITUDE | | | | LATITUDE | LONGITUDE | | | |
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**Figure 21. Example Changes to Logbook to Record Estimates of Chinook in Each Haul.**

Although catcher processor operators will have access to information on Chinook PSC levels as their catch is processed, it is possible that a tow could be started prior to observer counts being completed. In this instance, the operator's decision to fish would not be based on the observer count, but the operator's estimate. That estimate could be based on a partial count by the observer (or vessel crew) or a sample. In any case, it is the operator's estimate that would affect the fishing decision (as opposed to the observer count that might be unavailable). Catcher vessels delivering to motherships will not have any information on the composition of a specific tow until it is delivered and censused by an observer on board the mothership. These vessel operators could base estimates on previous tows, or information about tows by other vessel operators delivering to the same mothership.

The potential for operators to misreport their estimates is not known. These estimates are clearly subjective. Yet, it is unclear what a vessel operator might gain from misreporting an estimate. Any deviation of an estimate from observed Chinook salmon PSC would make the operator appear unable to accurately estimate Chinook PSC. Intentional underestimation of Chinook PSC could be used to give an appearance of low Chinook PSC in a particular area, and vice versa for intentional overestimation. Since reports are delivered only to agency staff, who cannot make regulatory closures based solely on these estimates, it is unlikely that misreporting could be used to avoid closure of an area. Nonetheless, the potential for misreporting should not be dismissed and should be given further attention, if this data collection is implemented.

[22] For comparison purposes, estimates would be summed across a trip for catcher vessels and compared to trip level observer Chinook PSC counts.

These data could be used for several purposes, most of which should provide information concerning the effectiveness of Chinook PSC measures (including any IPAs). Analysts and fishery participants can compare operator estimates to observed Chinook PSC to assess the extent to which vessel operators are able to accurately estimate their Chinook PSC. For catcher vessels delivering to shore-based plants, uncertainty will remain concerning accuracy, since catcher vessel estimates of Chinook salmon PSC will be at the tow level and observer data will be at the trip level. Yet, comparison of aggregated tows with trip observations will provide information concerning an operator's ability to accurately estimate Chinook salmon PSC. Most importantly, without accurate estimates, participants are unlikely to be able to effectively avoid salmon, remaining in areas with relatively high Chinook salmon PSC or moving from areas of relatively low Chinook salmon PSC. Pressure within cooperatives and IPAs could lead operators to give greater or more effective attention to their estimates. In addition, exchanges of information among fleet members could improve estimates.

Several aspects of the effectiveness of IPAs could be suggested by these estimates and their comparison to observed PSC levels. For example, differences in the accuracy of estimates throughout the season might suggest that operators are less attentive to Chinook PSC at certain times of the year (such as during periods of high roe recovery). The extent to which estimates vary from observed levels could also vary with pollock catch rates. Alternatively, if the difference between estimates and observed levels increases in years of low Chinook PSC, it could suggest that operators are less concerned with Chinook PSC, if overall caps or performance standards are not binding. Over time, improvements in estimates could suggest that IPAs (and PSC management measures) are creating an effective incentive for attentiveness to Chinook PSC levels and avoidance.

Although improvements in estimates might be observed across the fleet, it is also possible that differences in the ability of vessels and vessel operators to accurately estimate Chinook PSC may persist. For example, smaller vessels with less deck space may not allow for as thorough inspection of catch as larger vessels that use belts to convey catch into holds. Correlation of these differences with fishing behaviors might suggest that operators less able to estimate Chinook PSC are using different measures to address these shortcomings. For example, it is possible vessels or operators with relatively weak estimates may enter fishing arrangements through cooperatives or IPAs to avoid fishing in areas until other vessels have determined the extent of Chinook PSC. Only after acceptable minimum Chinook PSC rates are known to be present would these vessels fish the area. Although these measures could be motivated within IPAs without regulatory involvement, it is possible that required reporting of estimated Chinook PSC could stimulate faster or greater fleet responses.

Reporting of these Chinook PSC estimates could be established in a manner similar to the reporting of vessel movements to avoid Chinook PSC. Data could be recorded in logbooks and later reported through the observer program. Logbook reporting would facilitate timely collection of information by the vessel operator, while the later transcription by the observer would simplify data management. The vessel operator would be required to report the estimate to the observer prior to commencing a tow, or the observer would simply report that no timely estimate was received. Implementation of this method would ensure that estimates are delivered in a timely manner (which may be critical on vessels that are capable of counting salmon, but elect to use estimates to determine whether to fish an area). In addition, this method of reporting would obviate the need for the development of separate reporting instruments, which could increase the potential for reporting errors that could make data difficult to track.

The burden of the collection of these estimates on the industry is expected to be relatively small, approximately 3 minute per tow for reporting (but not making the estimate). It is anticipated that vessels participating in the fishery (and particularly those subject to IPAs) will be making these estimates regardless of any regulatory requirement; therefore, the estimated burden is only the burden of reporting. Ninety-eight vessels qualify as inshore catcher vessels under the AFA. These vessels are estimated to have made a total of 4,157 tows, in 2008. Each vessel is estimated to have made approximately 43 tows during the year. If reporting requires three minute per tow, the average vessel would require

approximately two-and-one-quarter hours per year, reporting these data. If catcher processors are required to report these data, their average burden would be greater (as average catches by these vessels is substantially greater). Catcher processors made 6,342 tows in the pollock fishery in 2008. If the reporting burden is divided equally among 19 catcher processors that qualify for the AFA, and each report takes 3 minutes, it is estimated that the average vessel would require approximately 17 hours annually, to report these data.

**To gain further information concerning Chinook PSC estimates, the Council could include additional questions in the vessel master survey (described in Alternative 3) concerning the methods used for estimating Chinook PSC. Through these questions, the Council might gain insights into techniques used to accurately estimate Chinook PSC and potential methods to overcome obstacles to accurate estimation.**

### 2.4.3 Evaluation of quality of data to be collected

Under **option 1 for tracking transfers**, the ledger form should provide the means to accurately and reliably track numbers of Chinook PSC allowances (under 2A and 2B) and pollock quota (under 2B) transferred and the parties to those transfers. Since all distributions and transfers would be reported using the same form, a uniform data set may be constructed across IPAs and cooperatives from these data. Although this uniformity may have appeal for simplifying analytical uses of the data, it is possible that it could mask underlying differences in the institutional structures of IPAs and cooperatives that are important to understanding the effects of the IPAs and cooperatives. Depending on the descriptions of transactions and distributions, it may be difficult to distinguish some transfers made by agreement of the parties to the transaction from distributions governed by the rules of an IPA. These uncertainties could affect use of the data.

The use of ledgers may also complicate attempts to fully understanding transactions, particularly for transfers that involve IPAs and cooperatives as intermediaries. It is possible that some transactions may be difficult to track, if an IPA or cooperative holds allowances or quota on behalf of members for a period of time before transferring them on. In addition, ledgers may prove misleading or difficult to prepare for some fishery participants, particularly when privileges are transferred to an intermediary and payments are received from a different party, who is the ultimate recipient of the transfer. In addition, it may be difficult to develop a form that allows for reporting in a manner that would enable analysts to understand the variety of exchanges that might be involved in a transaction with more than a single intermediary. It is possible that these complications could lead to unintentional incorrect or misleading reporting in some cases.

Under **option 2 for tracking transfers**, the IPA or cooperative reports should provide a clearer description of the structure of distributions and transfers of allowances and quotas than might be discernable under option 1. Having an overview of distributions and transfers may overcome some of the complications associated with ledgers tracking each movement of privileges. In addition, the generality of the reporting requirement (without a specific form) should provide some flexibility to IPAs and cooperatives to tailor their reports to the structure used for making distributions and transfers. On the other hand, the absence of a specific reporting form could create some uncertainty concerning the level of detail in reports and the comparability of reports across IPAs and cooperatives. Using a ledger only for recording compensated transfers may aid analysts in interpreting the structure of transactions that involve intermediaries or multiple parties, which may be difficult to discern under option 1, where all movements of privileges (including transfers to intermediaries) are reported in a ledger.

Determining the fair market value for shares could also be challenging, given the size and relationships of participants in the market. While the form does ask that transferees and recipients indicate whether a transfer is at fair market value and to indicate the relationship between the two parties, in a small market with ongoing interactions, it is possible that prices will be distorted by relationships and good will. To some degree these price effects could be neutralized, as managers and operators do have a fiduciary

responsibility to their shareholders to obtain a fair market value for any of the firm's assets that are sold, and to pay no more than a fair market value for any asset purchase. Furthermore, because most of the vessels are structured as independent corporations, each firm will need to follow accepted accounting practices when reporting financial transactions.

Although accuracy of reports is likely to be similar for **Alternatives 2A and 2B**, the data under Alternative 2B may prove more useful as an indicator of market prices, particularly if transfers include both Chinook PSC allowances and pollock quota. In these cases, a fair market value transfer would need to consider the transfer of both types of privileges to correctly value those different privileges. Under Alternative 2A, pollock quota would not be included in the report, leaving analysts with incomplete information concerning the transaction. ***As a result, Alternative 2B likely provides for more complete and accurate reporting of Chinook PSC allowance prices.***

Logbook **reports of vessel movements to avoid Chinook PSC** (made under either 2A or 2B) are likely to accurately reflect the vessel operator's perspective on whether the vessel moved due to Chinook salmon PSC reduction efforts. It should be noted that a decision to move may be related to many factors and whether a move is primarily related to Chinook PSC avoidance is quite subjective. Because of this subjectivity, some vessels may indicate a move is related to Chinook PSC avoidance, while another vessel under the same circumstances may not indicate the move was related to Chinook PSC avoidance. From this perspective, these data are not likely to be seen as perfectly reliable. The fact that the data may not be entirely reliable should not be construed as a conclusion that the data should not be collected. Rather, analysts will need to use the data with a full understanding of it limitations. It is possible that instructions for reporting whether a move is Chinook salmon PSC related can be made to limit the subjective nature of the data.

In general, vessel operators do not know precisely how much fuel is being burned at any given time. Many vessels now have fuel flow meters that make estimates of fuel use over time, but the reliability and accuracy of these meters is not well documented in the fleet. Some vessel owners have stated that estimates may be poor approximations of actual fuel consumption on the vessels. Vessels without flow meters will likely estimate usage based on average fuel usage (with possible adjustments for circumstances and conditions). In either case, estimates are likely to suffer from some unknown amount of error.

### 2.4.4 Analytical uses of the data

Data on transfers of pollock allocations and Chinook PSC allowances will be important to understanding the functioning of any IPAs and may be an important indicator of the effectiveness of Amendment 91 regardless of whether IPAs are formed. Alternative 2 attempts to collect information on two aspects of transfers: (1) the number, quantities of quota or allowances, and direction of transfers, and (2) the cost of transferred Chinook PSC allowances and/or pollock quota.[23] The number and direction of transfers may be an important indicator of the effectiveness of the incentives created by distributing Chinook PSC allowances among and within sectors. For example, few transfers may suggest:

- Most vessels are able to harvest their pollock quota without needing additional Chinook PSC allowances;
- Vessels have made significant improvements in their ability to avoid Chinook PSC and do not need additional Chinook PSC allowances; or
- The IPA creates effective disincentives for the transfer of Chinook PSC allowances for use by others.

[23] It is presumed that the reporting of all transfers of pollock quota would be also required under Alternative 2B.

The direction of transfers may also be important. If transfers are flowing to low Chinook PSC vessels, it could be that the IPA's incentives are forcing vessels that cannot reduce PSC efficiently from the fishery at certain times. This conclusion may be reinforced, if these trades are occurring in years of low Chinook encounters. Note that if Chinook PSC allowances are flowing to low PSC vessels, one would also expect that pollock quota is flowing in the same direction. It is also possible that pollock quota without PSC allowances could flow from high PSC vessels to low PSC vessels, once the high PSC vessels have used their allowances.

On the other hand, if Chinook PSC allowances are flowing to high PSC vessels, then it can be assumed that the profitability of those vessels is such that even with the additional cost of their efforts to reduce Chinook PSC and the costs of buying additional Chinook PSC allowances, it is still more profitable for the owners to fish for pollock, than to trade pollock to lower Chinook PSC vessels. In this case, pollock quota may not accompany the transfer of Chinook PSC allowances. Further study of the IPA's incentives may be appropriate to determine whether these transfers are increasing Chinook PSC usage.

The cost of transferred Chinook PSC allowances may also be an important indicator of the effectiveness of Amendment 91. In an active competitive market, the price of Chinook PSC allowances should be an indicator of the increment to each firm's net operating revenues that could be earned in the absence of the transaction. From the perspective of the buyer of Chinook PSC allowances, the price is an indicator that they can earn at least that much in additional net operating revenues by acquiring the allowances. Conversely, from the seller's perspective, the price of the allowances is at least as much as the amount of net operating revenues the seller could reasonably expect to generate, if the seller kept the allowances.

Alternative 2B will not only collect data on the cost of purchasing additional Chinook PSC allowances, it will also collect data on the cost of acquiring additional pollock quota in the absence of additional Chinook PSC allowances and the cost of a joint transfer of both pollock quota and Chinook PSC allowances. Again, assuming a competitive market, a compensated trade of pollock quota should provide indications of the incremental net operating revenues generated from that amount of additional pollock. Similarly, a joint transfer of both pollock and Chinook PSC allowances provides an indication of the incremental net operating revenues that can be reasonably expected from the transferred quota and Chinook PSC allowances.

The specific uses of these data will depend, to some extent, on their quality and the level of richness. In the first instance, simple, more rudimentary analyses can be used to understand the operations of IPAs and cooperatives and the movement and use of pollock quota and Chinook PSC allowances in the fishery. These analyses are likely to use basic counts of transfers and simple statistics and qualitative analysis of data, at the vessel, cooperative, and IPA level, together with anecdotal evidence and other data from the fishery. This level of analysis may provide an understanding of the mechanical operation of the IPAs and cooperative rules and the incentives created by those structures. If the data prove to be of reliable quality and sufficient quantity, more rigorous, quantitative analyses may be undertaken to examine values of Chinook PSC and pollock quota and the incentives of the IPAs and the other measures adopted in Amendment 91.

In considering the proposed uses of these data, it is important to bear in mind that a critical element of Amendment 91 and the system of IPAs permitted by that action is the latitude those measures provide to industry to address Chinook PSC. IPAs are intended to allow flexibility to industry to develop innovative incentives to constrain Chinook PSC. In providing that flexibility, it is important that industry also provide information that can be used to verify the effectiveness of their actions. The collection of transfer data, in particular, is important to understanding the operation of IPAs, as they reveal access to PSC allowances. This access is fundamental to understanding both the effectiveness and effects of an IPA.

Data concerning **movements to avoid Chinook PSC** would be used to assess vessels' willingness to leave fishing grounds to avoid Chinook PSC. Using these data together with VMS and observer data

should allow analysts to examine both individual vessel and fleet behaviors. In the first case, the tendencies of vessels to move from areas with high Chinook PSC and to search for areas with lower PSC rates. These data can also be used across cooperative fleets to examine the extent to which members coordinate searches to avoiding Chinook PSC. Fuel usage data under this alternative can be used to assess the extent to which fleet members are willing to incur those expenses to avoid Chinook PSC. Although these data are unlikely to have great precision or accuracy, they should provide useful estimates of fuel usage for avoiding Chinook PSC.

As with the transfer data, these data will likely be used initially for simple estimates of operational fuel costs that can be compared over time, sectors, IPAs, and cooperatives. These estimates will be used with other available data, including Chinook PSC rates and pollock catch rates to examine both the effectiveness and the effects of IPAs and the more general measures adopted under Amendment 91. Uses of these data may evolve from more basic data analyses to more quantitative estimates of the fuel costs of salmon avoidance under the IPAs and measures adopted under Amendment 91.

### 2.4.5 Other uses of the data

Some of the data that will be collected under Alternative 2 may have other potential uses. This section provides an overview of these potential uses.

**Transfer data** collected under Alternatives 2A and 2B may be used as predictors of overall net operating revenue, after operating costs, of fishing vessels. The amount that a buyer is willing to pay for additional Chinook PSC allowances should be no greater than the amount the vessel is likely to earn in net operating revenues from the purchase of those allowances. If the vessel would earn less in net operating revenues, then it would be better off selling its remaining pollock quota and exiting the fishery for the remainder of the year. Because of their direct link to the profitability of vessels, estimates of the fair market value of Chinook PSC allowances (or of pollock quota under Alternative 2B) will have the potential to be used in a many other applications, particularly in analyses of impacts of other proposed regulatory changes.

Data identifying **moves to avoid Chinook PSC** will provide analysts valuable insight into vessel operator's perspectives on the definition of a move, regardless of its cause. Currently, analysts must rely on anecdotal information and the analyst's own set of criteria to determine when a move has occurred. The applications of an improved criteria set for defining a move are not readily apparent, but it is certainly possible that the information may prove useful in other analyses. Estimates of **fuel used when moving** will provide analysts with useful information concerning fuel use in the fishery by a particular vessel. These data should prove useful for understanding variability of fuel usage across the fleet, which can aid in assessing fuel costs more generally in the fishery.

### 2.4.6 Costs to industry

This section examines the costs to industry of compliance with the various reporting requirements that would be established by Alternatives 2A and 2B.

Completing the **transfer ledgers** under **option 1 for collection of transfer data** is believed to require approximately 15 minutes for the first transaction and 5 minutes for each subsequent transaction. The number of transactions is not known *a priori*. Each vessel should receive (and report) at least one distribution of both pollock quota (under 2B) and Chinook PSC allowances (under 2A and 2B). After this initial distribution, the number of transfers is uncertain and may depend on both conditions in the fishery and the applicable IPA and cooperative structure. For example, the number of transfers could be increased in years of high encounters, if some vessels run short of Chinook PSC allowances. Also, an IPA structures that makes periodic distributions and limits participants periodically may constrain participants and thereby contribute to a greater number of transactions. These uncertainties prevent any direct estimate of the total burden on any vessel or the fleet, as a whole.

Under **option 2**, IPA and cooperative managers must include a their **IPA and cooperative reports details on the distribution and transfer** of Chinook PSC allowances (under 2A and 2B) and pollock quota (under 2B), and for each transfer in which compensation is involved each entity involved will need to complete and submit a **compensated transfer form**.

The burden associated with the IPA and cooperative reports cannot be predicted, as that will likely depend on the structure of the IPA or cooperative and the rules applicable to distributions and transfers. A simple IPA structure that either directly limits or creates disincentives for transfers may have little associated reporting burden. On the other hand, a structure that either makes frequent distributions or favors transfers could have a substantial associated burden. In considering this burden, it should be noted that a structure with substantial disincentives for transfers of Chinook PSC allowances may reduce the reporting burden on IPAs, but create an incentive for pollock quota transfers that would increase the cooperative reporting burden. Since the participating vessels are expected to be members of both IPAs and cooperatives, the burden will ultimately be borne by the same persons. It should also be noted that IPA managers are required to submit an IPA report detailing the incentives for Chinook PSC avoidance created by the IPA. Given this requirement, it is possible that transfers may be reported, regardless of a specific requirement in this action. In that case, this IPA reporting requirement would have no associated burden. Currently cooperatives do not provide a detailed account of the distribution and transfer of pollock quota by their members. A reporting burden associated with providing that detail would arise under this alternative.

While the current number of transfers of pollock among participants is not known, it is not clear that current transfers provide a good indicator of the number of transfers that will take place in the future as IPAs and Chinook PSC avoidance incentives could substantially change the number of pollock quota transfers. Assuming a separate IPA for each sector, it is possible that a single IPA report will be generated for each sector. Under a simple IPA structure with few or no transfers, only the initial distribution of Chinook PSC allowances would need to be reported. Since the IPA manager must administer these distributions, the burden associated with including the distributions in the report would be minimal (i.e., one or two hours). While each transfer arguably increases the reporting burden, it is likely that the IPA manager will also need to administer and monitor those transfers for IPA members. Consequently, the reporting burden is reduced, as the IPA manager will have undertaken some of that burden, independent of this reporting requirement, in the course of IPA oversight. Likewise, cooperative managers will distribute pollock quota and administer transfers among members, independent of any reporting requirement under this action. Despite these administrative obligations, the reporting burden under this action could be substantial, if complex exchanges of pollock quota and Chinook PSC arise out of the IPA and cooperative structures adopted by members.

Nonetheless, we estimate that an IPA manager that is actively tracking transfers will be able to develop and submit a report on transfers to NMFS over the course of a 40 hour work week. Assuming there will be three IPAs (one for each sector) a total of 120 hours of time could be required for the submission of the IPA reports on transfers.

In addition, each entity involved in a compensated transfer will have to submit a report, each time such a transfer occurs. Those reports would be similar to the ledgers required under option 1. It is believed that 15 minutes will be required by each entity for the first transfer it is involved in, and 5 minutes for each subsequent transfer. Since the IPA and cooperative structures are likely to influence the propensity of members to engage in transfers and the number of those transfers that are made for monetary compensation are not known, the number of compensated transfer reports that must be completed by any participant cannot be determined. [24]

[24] An additional burden would arise, if an auditing process is used to verify the accuracy of reporting. The time burden for audits would be minimized by participants who keep accurate and complete records for their transfer activity. In such a case, it is possible that audits would take little of the respondent's time (i.e., less than one-hour).

The burden associated with **reporting each move to avoid Chinook PSC,** and the fuel used for that move, is expected to be minor (approximately 5 minutes for each move). Although no reliable estimate can be made for the number of moves that will need to be reported, reasonable assumptions could be used to determine an upper bound on the number of moves. If each shore based CV makes 25 trips per year and, on average, a Chinook PSC avoidance related move is made every other trip, each would make 12.5 moves per year, requiring slightly more than one hour per vessel. If 90 vessels operate in the fleet, slightly less than 95 hours would be required to complete forms for submission. If we assume that CPs and mothership operations will also require 5 minutes time every move and that these vessel make one Chinook related move every two days of operations, and that they operate a total of 150 days per year, then each vessel operator will need slightly more than 6 hours to complete and submit the data. Assuming there are 15 active CPs, 3 active mothership and 25 mothership CVs then a total of 269 hours would be required. The total industry burden is estimated at 685 hours (or approximately 6 hours per vessel).[25]

### 2.4.7 Costs to NMFS of administering the program

The costs to the agency associated with collecting **transfer data via option 1 (the ledger option)** arise from the production and distribution of ledger forms, the processing of completed forms, data entry, and data management. Reports may be distributed to fishery participants by mail, electronically, through a web interface, or by a combination of the above. Each of these distribution methods has an ongoing cost in terms of NMFS or contracted staff. In addition, the agency could have extensive costs associated with organizing these data for use. Under an IPA or cooperative arrangement, transfers are typically administered through intermediaries (e.g., IPAs or cooperatives). A simple transaction between two parties could involve multiple intermediaries, which could complicate organization of the data for use by analysts, driving up agency costs associated with this option. The extent of these costs will depend, in part, on the IPA and cooperative structures adopted by industry. Structures that limit the number of transfers and simplify the transfer structure would reduce agency administrative costs.

Forms may be distributed to fishery participants by mail, and/or electronically, through a web interface. Each of these distribution methods has an ongoing cost in terms of NMFS or contracted staff and equipment and materials. Processing of forms includes tasks of tracking of responses for each field or variable in the data form, and maintaining the database and summary reports concerning quality of response. Processing typically includes scheduled reminders and responses to questions concerning the forms. In past economic collections NMFS analysts have often utilized contractors to assist with the collection phase. The costs of this survey would include direct costs for NMFS staff to finalize forms. There could also potentially be additional expenses associated with having the survey data verified by a third party.

The cost of the reporting depend greatly on the number of transactions. These would likely be around $35,000 in the first year. Finalizing forms would likely require approximately 1 month of time ($10,000). NMFS would also need to pay a contractor to mail out the surveys and answer any questions that arise during survey administration. These costs will depend greatly on the number and complexity of transactions (and whether the collection includes all forms of compensation and the effort undertaken to determine values of non-monetary compensation). Development of an electronic database, which would ideally be merged with other state and federal databases related to the pollock fishery, could also be costly. These costs will also be reflective of the complexity of transactions and involvement of intermediaries (such as IPAs and cooperatives). Reconstructing data in a manner that clearly defines such multiparty transactions could add substantially to the costs of these data. Although experience

If a respondent does not maintain organized, complete records, it is possible that an audit could require several hours of the respondent's time.

[25] For the mothership sector, it is likely that a mothership would make a determination to move to avoid Chinook PSC, after which each catcher vessel would report fuel usage for the move. Administration of this reporting would be complicated, since these catcher vessels do not carry observers. A separate reporting mechanism for these costs would need to be developed, which could be coordinated across the fleet associated with each mothership.

administering the collection may reduce costs after the first year, the number and complexity of transactions are likely to be determinants of administration costs. Should data validation be pursued, given the number of submitters in this fishery, it is likely that the data could be verified for a statistically representative sample of respondents. Assuming approximately 30 companies had their submissions validated, the cost of the validation by a certified public accountant would be approximately $40,000 per year.

Depending on the complexity of transactions, the number of compensated transactions that must be reported, agency costs could be substantially less, if **IPA and cooperative reports are used to collect transfer data, with individual reporting on compensated transfers (under option 2)**. Under this option, the agency costs of processing transfer ledgers would be reduced, as IPAs and cooperatives would provide summary reports of member transfer activity. Distribution costs will be the same, but processing costs could be reduced, if only transactions with monetary compensation must be reported and few of qualified transactions occur. Data entry costs are likely to be required for transactions reported in both IPA and cooperative reports and the compensated transfer reports; yet, these costs may be substantially less than those associated with organizing transfer ledgers, particularly, if a substantial number of transactions include intermediaries.

The annual costs associated with collecting data on **inseason vessel movements** will arise from the production and distribution of revised logbook forms, the processing of completed forms, data entry, and data management. As with the transfer data, there are likely to be costs associated with organizing workshops and training for the vessel operators. The cost to NMFS of adding a field to the logbook would be relatively minor. Additional printing costs may be incurred to accommodate timing of the change. The cost to have Federal observers begin entering this logbook data into their database is significantly greater. The cost of modifying the software used by federal observers and the database in which this data ultimately resides depends upon the year in which the modification is requested. At present, the software and database are updated every two (even) years (e.g., 2010, 2012, 2014). If the goal is to implement this data collection in 2011, an unexpected programmatic change would be required which would generate considerable marginal costs, approximately $22,000 – $25,000 which includes modifying the software, traveling to and installing the modified software onboard vessels, and incorporating the changes in the NMFS database and the applications staff use to manage the data. Should the data collection be implemented in 2012, we estimate the cost of this change to be a small marginal cost to an already planned change cycle. In addition to the one-time implementation costs, we there will be additional work required of observers, but we do not anticipate this work increasing the cost to the NMFS. To the extent that electronic logbooks become available and are used by industry, the data collection costs would be the marginal costs of modifying the e-logbook. In cases where an e-log is used, there are no Observer Program costs as the data would be available to NMFS directly through the e-logbook itself.

It is important to note that observers are not stationed on catcher-vessels delivering unsorted cod-ends to motherships. Thus, there is no mechanism for the observers to gain access to the catcher vessel logbooks, as they are currently submitted to NMFS directly from the vessel owner/operator in a paper format. NMFS could modify the mothership logbook and require the motherships to obtain this information from their catcher-vessels. In this case, the costs would be as noted above. Alternatively, NMFS could extract the information from the logbooks which are submitted in a paper format, quality control these data, and develop a database for long term storage of them.[26] Based on past efforts to extract information from paper logbooks, NMFS estimates this would cost $10,000 in the start-up year for development of databases, and $30,000, annually, for three months of a NMFS FTE to manage these data. There will also

[26] For catcher vessels delivering to motherships, the preferred alternative selected by the Council would rely on the vessel operator to check the logbook box on the DFL log sheet, if they moved prior to a haul to avoid Chinook salmon PSC, and submit these to the mothership. That data would be entered on the eLandings, landing report by the mothership.

be additional staff time required to construct reports summarizing vessel relocation efforts and expenses. An annual report would require approximately one month of time from a NMFS FTE ($10,000).

Under all of the collections in this alternative, processing of forms includes tracking responses for each field or variable in the data form, maintaining the database, and producing summary reports concerning quality of response. Processing typically includes scheduled reminders and responses to questions concerning the forms. In past economic collections NMFS analysts have often utilized contractors to assist with the collection phase. Data entry and data management could require trained staff to enter any hand written responses. The data would be maintained on a secure database, and though the costs of maintain secure data of this type may be captured in the ongoing data management costs of the agency, a description and communication of the security used for this information to the public and possibly the Office of Management and Budget, will involve additional agency cost. Data requests would also use agency resources.

Unless the Council articulates a level of conservation and management importance for the various components of new recordkeeping and reporting requirements under each of the alternatives that would support an alternative approach, NMFS would enforce compliance of these requirements as it would many of the other general recordkeeping and reporting requirements implemented to date. This means that a person could continue to fish while an enforcement action was being pursued. If logbook data, annual transfer reports, or annual surveys are misreported, or not completed or submitted on time, such noncompliance of regulations could result in an enforcement action. Unlike the crab EDR program, the alternatives for this action do not include compliance provisions that would tie submission of a new report or survey to an annual issuance of a harvesting privilege (e.g., IFQ permit) or some other annual permitting process. Such provisions may require additional assessment and analysis of options.

## 2.5 Alternative 3

Alternative 3 supplements status quo data and transaction data collected under Alternative 2B, with the collection of additional fuel usage and expenditure data and a vessel master reporting requirement.

### 2.5.1 Description of the alternative

In addition to the status quo data sources, the following data will be collected:

1) Transaction data for salmon and pollock– quantity and price of transfers (survey will be used to determine whether these are arm's length transactions) (as defined under Alternative 2):
   Average annual hourly fuel burned fishing and transiting and annual fuel purchases in cost and gallons to be used to: estimate costs of moving vessels to avoid Chinook salmon PSC (vessel fuel use, transit time, and lost fishing time).
2) Post-season surveys of vessel masters to determine rationale for decision making during the pollock season (fishing location choices and Chinook salmon avoidance measures).

### 2.5.2 Description of data collection

Under this alternative, data concerning **fuel and salmon avoidance gear costs**[27] would be collected. The following two annual reporting requirements would be established:

(1) Estimated hourly fuel consumption and annual fuel consumption and costs.
(2) Descriptions and costs of gear and equipment purchases and modifications to reduce salmon PSC (including whether the expense is exclusively for Chinook PSC avoidance).

[27] Note, that gear costs were removed in the final version of the Vessel Fuel Survey approved by the Council, due to difficulty and burden of obtaining consistent gear use and cost across the vessels in this fleet.

The draft components of the survey instrument that will be used to collect these data are shown below. Further collaboration with industry to fully specify the data elements and necessary instructions and ensure data quality standards are met will be necessary before a final annual report form could be implemented. The final version of the Vessel Fuel Survey is located in Appendix B.

DRAFT SAMPLE SURVEY INSTRUMENT FOR THIS ALTERNATIVE

Vessel Fuel Consumption: In Table 1.a, below, report the average fuel consumption of the vessel in gallons per hour under normal operating conditions in each category of vessel activity.

Table 1.a: Vessel Fuel Consumption

| Activity | Average Gallons of Fuel per Hour |
|---|---|
| Fishing | gal/hr |
| Transiting (not fishing) | gal/hr |

Annual Fuel Purchases and Cost: In Table 1.b, below, report the total fuel purchased, in gallons, and total fuel expenditures for this vessel during the calendar year. Indicate if fuel costs included lubrication and fluids costs.

Table 1.b: Fuel Purchase and Costs, by Season

| Gallons of Fuel Purchased | Total Fuel Cost |
|---|---|
| gallons | $<br>Includes lubrication/fluids costs? ☐Yes ☐No |

Gear/Equipment Purchases or Modifications for Salmon Bycatch Avoidance: In Table 1.c below, report any gear or equipment purchases, or modifications to existing gear and equipment made for the purpose of reducing Chinook salmon bycatch. Briefly describe the equipment purchase or modification and report the total cost. Report costs of installation or maintenance services separately if they are not included in the equipment purchase invoice. Indicate whether the expenditure was exclusively for Chinook salmon bycatch avoidance and not made for additional purposes including avoidance of other species bycatch. Report only those expenditures that were invoiced during the calendar year.

Table C: Gear/Equipment Purchases or Modifications for Salmon Bycatch Avoidance

| Description | Total Cost | Chinook bycatch only |
|---|---|---|
| | | ☐Yes ☐No |
| | | ☐Yes ☐No |
| | | ☐Yes ☐No |
| | | ☐Yes ☐No |
| | | ☐Yes ☐No |
| | | ☐Yes ☐No |
| | | ☐Yes ☐No |

The **vessel master survey** element of this alternative would pose a series of questions to elicit vessel operator input on important factors that impacted the vessel's performance during the year. The draft list of questions below was developed through consultation with members of the industry at workshops and through discussions with analysts and could be refined further with additional consultation.

**DRAFT Annual Post-Season Vessel Operator Survey (Vessel Master Survey)**

Please answer the following questions, noting any differences between the A and B Seasons where applicable.

Did your Incentive Plan Agreement (IPA) affect your pollock fishing? ☐Yes ☐No
If yes, please describe.

Did the amount and cost of salmon bycatch allocation available to the vessel lead you to make changes in pollock fishing operations? ☐Yes ☐No
If yes, please describe.

How would you compare the salmon bycatch conditions during the A and B seasons this year relative to the last two years? Please describe any unique aspects of the season.

Did you cease pollock fishing for some period during the past A and/or B season because of Chinook salmon bycatch conditions? ☐Yes ☐No
If yes, please describe when (if known) and for how long.

Did you ever end a trip and return to port early because of salmon bycatch conditions? Please indicate the number of trips that this occurred in each season.

| Number of trips suspended due to bycatch | A season | B season |
|---|---|---|
| 0 | ☐ | ☐ |
| 1-3 | ☐ | ☐ |
| 4-10 | ☐ | ☐ |
| More than 10 | ☐ | ☐ |

Other than Rolling Hotspot Closures, what new/special area closure(s) or restrictions were imposed this season that affected where you fished for pollock? Please describe the restrictions and how you readjusted your fishing in response. (An example of such a closure would be the squid closure imposed with high squid bycatch.)

Compared to a typical year, did weather have more, less, or about the same impact on fishing as usual? Please describe, especially if there were particularly uncommon conditions at any point this year.

Were there special conditions other than weather that affected your vessel's fishing operations this year (for example, extra maintenance, exceptional personnel or health conditions, special contracts in other fisheries, etc.)? Please describe.

Other than your cooperative's Incentive Plan Agreement, do you have any agreements or contracts with processors, vessel owners, or other parties that provides financial incentives to you to reduce Chinook salmon bycatch? ☐Yes ☐No

If yes, please describe.

Did actual or potential bycatch of species other than Chinook salmon cause you to change your harvesting decisions during the pollock season? ☐Yes ☐No

### 2.5.3 Evaluation of quality of data to be collected

The **fuel and gear cost** information collected under this reporting requirement would include average fuel use in different modes of operation, annual fuel usage, and gear and equipment purchases to avoid Chinook salmon PSC. Industry participants familiar with vessel operations have expressed that they are able to provide an average rate of fuel consumption (i.e., gallons/hour) when fishing and transiting with a significant degree of accuracy. These data may not be useful for more than general reporting on annual fuel consumption patterns. Many vessels have flow meters indicating the instantaneous rate of fuel use; however, industry participants have stressed that the cost for a particular vessel to travel a given distance can vary dramatically with weather conditions and currents, and the gallons of fuel burned per hour may vary greatly. It may be suggested that an analyst, using VMS and observer data, can examine the time spent on the grounds and estimate the amount of fuel used by each vessel over the course of the year. This estimate could be compared with annual fuel use reported for the vessel. If the estimate is a close approximation of annual fuel usage, it could suggest that average fuel consumption rates are relatively accurate. On the other hand, such estimates may be inaccurate and could lead to unreasonable reliance on these data, particularly if vessel owners estimate average fuel usage based on hours of operation and total fuel usage. In this case, the exercise could be a simple verification of the vessel owner's calculations. Some vessel owners have attempted to use flow meter outputs and average fuel usage to estimate overall fuel use. These owners have stated that estimates are typically poor approximations of actual fuel consumption on the vessels.[28] In addition, with some vessels fishing species other than pollock (including some bottom fish fisheries), it is likely that fuel burn rates will vary across those different fisheries. As a result, pollock fishing fuel usage could be further distorted from reported values. Without discerning these different fishery activities reliability of these data may be questionable.

Unit costs of fuel for each vessel are proposed to be measured at the annual level by reporting the total annual fuel purchased for the vessel (in gallons) and the total fuel purchase cost. These data are intended to permit calculation of an annual average price per gallon by vessel, which may vary with the location of purchase and the fuel contract of the vessel owner. While it is not the intention to collect cost information for fisheries beyond the pollock fishery, discussions with industry indicated that it would be infeasible to differentiate fuel purchases by fishery. Therefore, total annual purchases and costs are expected to be the only practicable means of collecting vessel specific fuel cost information. While collection of annual price data may provide some reference for the different costs experienced by different vessels over the course of a year, those data are not likely to be usable for estimating fuel costs at any specific time in a season (and may not accurately contrast prices across vessels at particular times). Fuel prices are known to fluctuate greatly throughout the year. In addition, the benefits of a given fuel contract may vary across time, with changes in base prices. For example, it is possible that one vessel's average fuel price may be better than that of another vessel, while for a portion of the pollock season the first vessel paid a higher fuel price. Consequently, the averaging of price information may not be accurate for discerning cost differences at any point in the season.[29]

This collection of information would also include gear and equipment purchases to show industry effort and costs to reduce salmon PSC. Descriptions of any purchases and costs would be collected, along with a statement of whether the purchase was made exclusively for salmon PSC reduction purposes. No data quality issues are apparent.

[28] An additional consideration to note is that even if the information requested in the fuel cost survey is collected or tracked by industry, data quality problems can arise when the specific form of the information requested in the survey is misunderstood by respondents or differs somewhat from the way in which they keep their records. With few data elements to be collected under this item, it is believed that any such difficulties can be overcome in the first few years of the collection program.

[29] Some industry members suggested that average prices of fuel in Dutch Harbor would be adequate to estimate unit fuel costs. While these amounts may be accurate for obtaining a general understanding of fuel costs, they may prove inadequate for understanding the effects of different fuel prices on fishing decisions.

The **vessel master survey** would pose a series of questions to elicit vessel operator input on important factors that impacted the vessel's performance during the year. The draft questions would be refined further with additional industry consultation and finalized once pre-testing has occurred to ensure the questions are as clear as possible.

While members of the fleet have been willing to provide qualitative information on the factors that influence their fishing decisions through informal discussion, more formal and comprehensive collection of information has some potential to improve the quality of information by including portions of the fleet that might otherwise be excluded from less formal data collection efforts. Obtaining information from some of these participants could help analysts develop insights into fishing behavior important to salmon PSC avoidance that might otherwise be overlooked. Written responses to open ended questions might be incomplete or misleading. In addition, most questions are subjective making it difficult to assess their accuracy. Careful and qualified use of these data can overcome these shortcomings. In addition, the development of worksheets or other materials that could assist industry members in recording in season impressions could be used to ensure that recollections are preserved for inclusion in the post season survey. See Appendix B for the final version of this survey (Vessel Master Survey).

### 2.5.4 Analytical uses of the data

Data collected under this alternative is intended to provide analysts with a better ability to examine certain costs associated with Chinook PSC avoidance (including prices of allowances and pollock quota, travel costs, and gear costs).

Fuel is believed to be the greatest variable cost that operators will incur in efforts to avoid Chinook PSC. Vessels attempting to avoid Chinook PSC are believe to travel greater distances from port and spend more time and effort searching for pollock schools that can be fished with low Chinook encounters. Data on fuel costs are intended to improve the ability of analysts to understand the costs of movement that are likely to affect responses to the incentives created by Chinook PSC limits (including the performance standard) and any IPAs. Vessel-specific average rates of fuel consumption can be combined with existing VMS and observer data to allow the estimation of the differences in travel costs to different fishing locations. Using existing data sources, differences in fishing behavior of high and low Chinook PSC vessels can be examined. Incorporating fuel costs into these analyses is intended to improve the understanding of the effects of Chinook PSC measures and IPA incentives on the choices that drive those differences.

The fuel use data proposed for collection under this alternative are intended to provide an understanding of fuel costs incurred under the salmon PSC reduction measures, and to estimate the costs of fishing location choices; however, characteristics of these data may require careful use and qualification of results. Industry members have suggested that application of average fuel use to specific activity is unlikely to provide accurate estimates of actual fuel use for any specific short time period. Fuel use on an hourly basis varies with changes in conditions. For example, a vessel towing against a strong current in high seas is very likely to burn substantially greater amounts of fuel than a vessel fishing in calm conditions. Applying the same hourly rates to these two different conditions is unlikely to accurately estimate operating costs. Likewise, general operational choices (such as running faster to avoid product quality deterioration) will affect fuel use.[30] In short, fuel costs are known to vary substantially from the average, so applying averages to specific activity is likely to distort results. Fuel pricing also raises several questions concerning costs. This alternative proposes to collect average fuel prices for each vessel. Large fluctuations in fuel costs in recent years mean these cross company comparisons may not

[30] For example, to maintain product quality, a vessel operator may limit the time between its first catch and making a delivery. This requirement may lead an operator to transit at a higher speed, burning more fuel. While some effort can be made to account for these influences, such as incorporating available weather data into a model, data precise enough to accurately account for these influences are not likely available, as only general weather information is available, while conditions are quite variable across the fishing grounds.

provide meaningful distinctions. Although these data are likely to provide some information concerning price variability among vessels, the degree to which annual average prices vary from seasonal prices will be unknown. To the extent that these data are intended to better capture operating costs differences across vessels at any specific time, they may prove unreliable.

Fuel usage and cost data collected under this alternative should provide some broad scale information concerning the changes in fuel costs arising in the fishery. Although annual usage and costs will include data from other fisheries, these data may provide some information concerning overall changes in operating costs for vessels in the pollock fishery. Using these data with VMS data could provide a better understanding of the costs of the redistribution of effort that may arise from vessels' efforts to avoid Chinook salmon PSC.

Despite these shortcomings, fuel use and cost data proposed to be collected under this alternative should provide analysts with an improved ability to understand and assess costs associated with changes in fishing operations that may be driven by IPAs and limits on Chinook PSC. When used in conjunction with pollock quota and Chinook PSC allowance data, this fuel data may provide improved insight into the effectiveness of IPAs and PSC limits on Chinook avoidance efforts in the fishery.

The **vessel master survey** contained in this data collection alternative attempts to capture qualitative information concerning several factors that may or may not appear in any proposed or collected quantitative information from the fishery. The information collected in the survey may be beneficial for understanding vessel operator decision making and responses to conditions, and may also provide information concerning variation in those decisions with vessel characteristics, technology, and production goals. This information, can serve several purposes.

Analysts will use the data to examine decision making on vessels and the effects of Chinook PSC measures, including IPAs, on decision making. Although these data are subjective, they will should provide some insights into responses to the incentives in an IPA, and variations in those responses over time, and across circumstances, including variations with vessel size, number of Chinook encounters, pollock TAC, and season. These insights could, in turn, have several benefits. First, they could lead to revisions in IPAs. If certain incentives are found to be either more or less effective than expected, the IPAs could be modified to alter incentives. If an IPA is found to induce undesirable responses, it may be modified to address those responses. If certain aspects of an IPA achieve particularly beneficial responses, those aspects may be enhanced. Within the fishery, it is possible that participants may gain some insights into methods of improving Chinook PSC avoidance. Managers may learn which aspects of the Chinook PSC measures affect on grounds decision making and the nature and timing of those affects. In making these assessments, data users will need to consider the subjective nature of the survey. Notwithstanding, these data should provide insights into decision making that could benefit fishery participants and managers alike.

The collection of gear and equipment purchase data under this alternative is intended to provide information concerning the cost of technology changes that may be adopted to avoid salmon. To the extent that these purchases are motivated by Chinook salmon avoidance measures, these data will provide useful information concerning the willingness of participants to incur added costs to avoid Chinook salmon PSC. While these data may provide information concerning capital expenses, the broader effect of these technology changes may not be fully understood unless data are collected to show the extent of use and any effect of use on operating costs. **If the Council is interested in pursuing information concerning changes in gear and equipment to avoid salmon PSC, a broader collection of data concerning use of those gear and equipment and their effectiveness could be adopted, as a part of a later action.**

### 2.5.5 Other uses of the data

The data proposed to be collected under this alternative could have several applications in analysis of the pollock fishery. In each of these cases, the use of the data will be compromised to the extent that the data contain errors or provide a poor representation of the factor of interest.

Lease price data for pollock and any salmon PSC allowance transaction information could be used to examine changes in profitability to the extent those data reveal market prices. Fuel usage and cost data provide information concerning annual and average hourly fuel usage and costs. Although likely too general to provide information concerning any specific vessel operation, the data may be useful for assessing changes in general costs from year to year, including the effects of fuel price changes and large scale changes that arise with changes in the redistribution of fish and fishing, including changes that arise from area closures. For example, many participants have reported that fish are moving north, particularly in the B season. Changes in fuel usage and costs arising from this movement of the fishery should be reflected in annual fuel usage.

### 2.5.6 Costs to industry

The costs to the industry of providing **transaction data concerning Chinook salmon PSC and pollock** data are described under Alternative 2.

The costs to industry of providing estimated **annual fuel costs and average fuel usage, and costs** for different aspects of operation are relatively small, if owner estimates of these different factors are acceptable. In most cases, vessel owners monitor their fuel usage in season and maintain records concerning fuel expenditures and usage allowing low burden reporting. Depending on the degree of accuracy sought by any data collection, estimates of average usage and costs transiting and fishing may require some additional effort on the part of some vessel owners. Currently, these estimates are believed to be rough approximations of average usage and cost. Additional research into accurate measurement of fuel usage will likely be required for improvements in data quality. Estimates of the costs to industry would then be modified in response to any change in the level of burden.

Periodic monitoring of fuel usage throughout the season will likely be required to assess fuel usage in different modes of operation (e.g., fishing or transiting). If a vessel operator monitors use periodically throughout the season, it is believed that approximately 3 hours would be used to gather and submit average fuel use rate estimates. An additional hour would likely be required to gather and submit annual fuel use and costs information requested under this alternative for a total of 4 hours.

The cost to industry of reporting expenses of **gear and equipment purchases or modifications** intended to improve salmon PSC avoidance is also believed to be quite small. These expenditures are relatively simple to record and report and can easily be monitored by industry members at the time of the expenditure for year-end reporting. In the event that the Council believes additional data concerning use of gear and equipment and its effects on salmon PSC avoidance, a greater burden would arise. The extent of the increased burden would depend on the nature and scope of that additional data collection.

The **vessel master survey** would be conducted at the end of the year, and supplement information collected through this action, VMS, and observer data regarding fishing decisions. To fully respond to the survey, it is likely that many vessel masters may compile notes in season to be used to respond to the specific survey at year's end. The burden associated with tracking activity will vary depending on the circumstances encountered during the year. Fully completing the form is likely to require approximately 2 hours of inseason time, recording impressions of conditions and decision making. Completion of the form and submission could require as much as 2 additional hours at the end of the season for a total of 4 hours.

### 2.5.7 Administration of the program and its costs

Costs of administration for **transaction data for salmon and pollock** are as reflected under Alternative 2 above.

**Fuel usage and cost** reports would be required annually under this alternative. To reduce costs associated with this reporting to the extent feasible, this requirement would be consolidated with other annual reports, including reporting of **gear and equipment purchases and modifications**[31]. The costs to the agency arise from the production and distribution of annual reporting forms, the processing of completed forms, data entry, data management and producing summary reports concerning quality of responses. In addition, workshops and training for the submitters are likely to be necessary for this collection due to the variation in recordkeeping from one operation to the next. Reports may be distributed to fishery participants by mail, and/or electronically, through a web interface. Each of these distribution methods has an ongoing costs in terms of NMFS or contracted staff and equipment and materials. Processing of forms includes tasks of tracking of responses for each field or variable in the data form, and maintaining the database and summary reports concerning quality of response. Processing typically includes scheduled reminders and responses to questions concerning the forms. In past economic collections NMFS analysts have often utilized contractors to assist with the collection phase.

The costs of this survey would include direct costs for NMFS staff to develop and implement an annual vessel fuel survey which would also record any expenditures for gear or equipment explicitly undertaken to reduce Chinook PSC. There could also potentially be additional expenses associated with having the survey data verified by a third party.

The cost of the survey would likely be around $35,000 in the first year. NMFS would also need to pay a contractor to mail out the surveys and answer any questions that arise during survey administration ($15,000). Finally, the contractor would need to enter the information into an electronic database, which would ideally be merged with other state and federal databases related to the pollock fishery ($10,000). After the first year of the program the annual cost of administering the survey and entering the data would be approximately $25,000.

Should data validation be pursued, given the number of submitters in this fishery, it is likely that the data could be verified for a statistically representative sample of respondents. Assuming approximately 30 companies had their submissions validated, the cost of the validation by a certified public accountant would be approximately $20,000 per year.

NMFS does not anticipate extensive administrative costs for implementing physical changes to paper logbooks or changes to the electronic logbook from additional data on fuel used in a haul or Chinook salmon caught in a haul, under Alternative 2A and 2B. These new fields would be added to the catcher vessel trawl daily fishing logbook and to the catcher/processor trawl daily cumulative production logbook. Regarding the catcher vessel daily fishing logbooks and catcher processor daily cumulative production logbooks, some additional cost could be incurred for print setting of changes suggested for the fuel and Chinook catch fields, but the costs for these changes would be small (less than $1,000). The fuel and catch fields will also be added to the electronic logbook for trawl catcher/processors introduced in Amendment 91. The electronic logbook works as an extension to eLandings for trawl catcher/processor entities affected under Amendment 91. The addition of the electronic logbook to eLandings will require changes to the software to add not only the additional fields for fuel and Chinook catch data but also all of the fields currently found in the catcher/processor daily cumulative production logbook.

Data entry and data management could require trained staff to enter any hand written responses. The data would be maintained on a secure database, and though the costs of maintain secure data of this type may

[31] Gear and equipment and modifications data were removed from the final version of the Vessel Fuel Survey (see Appendix B for final version of this form)

be captured in the ongoing data management costs of the agency, a description and communication of the security used for this information to the public and possibly the Office of Management and Budget, will involve additional agency cost. Data requests would also use agency resources.

As with other annual reports, the annual costs associated with the **vessel master survey** will arise from the production and distribution of reporting forms, the processing of completed forms, data entry, and data management. While the use of written open ended questions in the survey may increase the quality of information received in the survey, it also could increase the administrative costs associated with the survey. Electronic submission could be used to control data entry costs, but the administrative burden associated with managing written survey responses may be expected to be substantial.

Factors that contribute to NMFS cost for the vessel master survey include pre-testing and refinement by NMFS to fully define a satisfactory set of questions to ask the vessel masters. The expected cost of these activities should not exceed $15,000 in staff time. The use of a written survey will require NMFS to print and mail a number of four-to-six page pamphlets (there will be less than one page of questions, but the instrument must provide instructions and allow space for the vessel master to respond). We anticipate mailing approximately 150 of these surveys to the vessel master population. With mailing costs and the inclusion of a self-addressed, stamped envelope for return mailing, the total costs of the written survey would not exceed $350. A web-page could also be developed to facilitate the survey, and the cost of developing such a survey should not exceed $5,000.

## 2.6 The Preferred Alternative

Under the preferred alterative, status quo data collection would be supplemented by collection of additional data concerning the distribution and transfer of Chinook PSC allowances (including quantities and prices for all transfers), the distribution and transfer of pollock quota (including quantities transferred), information concerning movements on the grounds to avoid Chinook PSC, average hourly fuel usage and total annual fuel usage and costs, and information concerning vessel masters decision making during the pollock fishery (including fishing location choices and Chinook PSC reduction measures).

### 2.6.1 Description of the alternative

The preferred alternative adopted by the Council includes the following components:

(1) Transaction data for Chinook salmon PSC allowance credits and pollock quota – quantity and price of salmon PSC units transfers (survey will be used to determine whether these are arm's length transactions) and quantity of pollock transfers.

Require that IPAs and AFA Cooperatives summarize the assignment of Chinook PSC allowances and pollock to each participating vessel at the start of each fishing season, and that they summarize all in-season transfers of Chinook PSC allowances and pollock, regardless of whether the transfers were "compensated" transfers.

For all "compensated" Chinook salmon PSC credits transfers, each party (transferor and recipient) must complete and submit to NMFS a Compensated Transfer Form. A transfer is "compensated" if there is an exchange of dollars (or any currency) for PSC credits from one party to another.

For all compensated transfers, the transfer form will indicate the amount of any monetary compensation for Chinook salmon and whether any other assets were included in the transaction (e.g., pollock quota or non-monetary compensation).

(2) Information regarding change in fishing grounds defined via identification of any tow prior to a move that is due primarily to Chinook salmon avoidance (implemented through a logbook check box).

(3) NMFS will administer annual reporting to collect:

Average annual hourly fuel burned fishing and transiting and annual fuel purchases in cost and gallons for each to be used to estimate costs of moving vessels to avoid Chinook salmon (vessel fuel use, transit time, and lost fishing time).

(4) Post-season surveys of each vessel master for each vessel to determine rationale for decision making during the pollock season (fishing location choices and Chinook salmon PSC reduction measures).

### 2.6.2 Description of Data Collection under the Preferred Alternative

The preferred alternative proposes to collect data concerning transfers of Chinook PSC allowances and pollock quota, as well as information concerning changes of fishing grounds and fuel use and costs. The preferred alternative also includes a more qualitative reporting requirement for vessel masters to report on their fishing location choices and salmon avoidance efforts.

Under the preferred alternative, data describing **transfers of Chinook PSC allowances and pollock quota** would be collected. These data will be reported annually in either IPA reports or AFA cooperative reports currently required in 50 CFR 679, and for monetary compensated transfers of Chinook PSC credits, in a new form called the Chinook PSC Allocation In-season Compensated Transfer Report (CTR). IPAs or cooperatives would provide a general accounting of all distributions and transfers of pollock quota and Chinook PSC allowances in the IPA report or AFA cooperative report. These reports would not require a specific form, but would be developed by the IPAs and cooperatives, based on the structures adopted for distribution and transfer of allowances and quota.

Reporting of the distribution and transfer of Chinook PSC allowances and pollock quota by IPAs and cooperatives could simplify reporting by being adapted to the structure the distribution of those interests in the fishery. Less adaptable reporting requirements (such as form-based ledger reports for all transfers) could be difficult to verify and could complicate use of the data, if analysts have difficulty tracking transfers through intermediaries. Using this unstructured reporting requirement should allow for more responsive, less costly reporting of transfers.

In addition to general information on pollock and Chinook PSC allowances and transfers included in the IPA report or AFA cooperative report, any party to a transfer of Chinook PSC allowances that includes monetary compensation would specifically report the terms of that transaction, including the amount of any monetary compensation and whether other non-monetary assets were included in the transaction (such as pollock quota or non-monetary compensation). The draft CTR form for reporting these data is in figure 2-18 under Alternative 2A and was used as an example of a table format for this information. In October 2010, the Council approved the final version of this data form, called the: Chinook PSC Allocation In-season Compensated Transfer Report (Appendix B, Pg 121, Table 1).

Limiting the specific reporting on compensation to monetary compensation is intended to provide a clear metric that can be used to compare value across time. Recognizing that several other forms of compensation could be paid, the preferred alternative requires that the parties state whether other forms of compensation were included in the transaction. This will ensure that analysts know whether reported monetary compensation is the only compensation in the transaction. Including non-monetary compensation could greatly complicate the forms, increasing both the reporting and administrative burdens associated with the data collection; however, if few transactions are exclusively PSC allowances in exchange for monetary compensation, it is possible that little information concerning the value of PSC allowances will be available, in any case.

The preferred alternative includes provision for the **collection of data concerning vessel moves to avoid Chinook salmon PSC**. The requirement would be implemented for trawl CVs by revising the trawl DFL to add a single column to the trawl DFL to identify whether, prior to the haul, the operator moved fishing

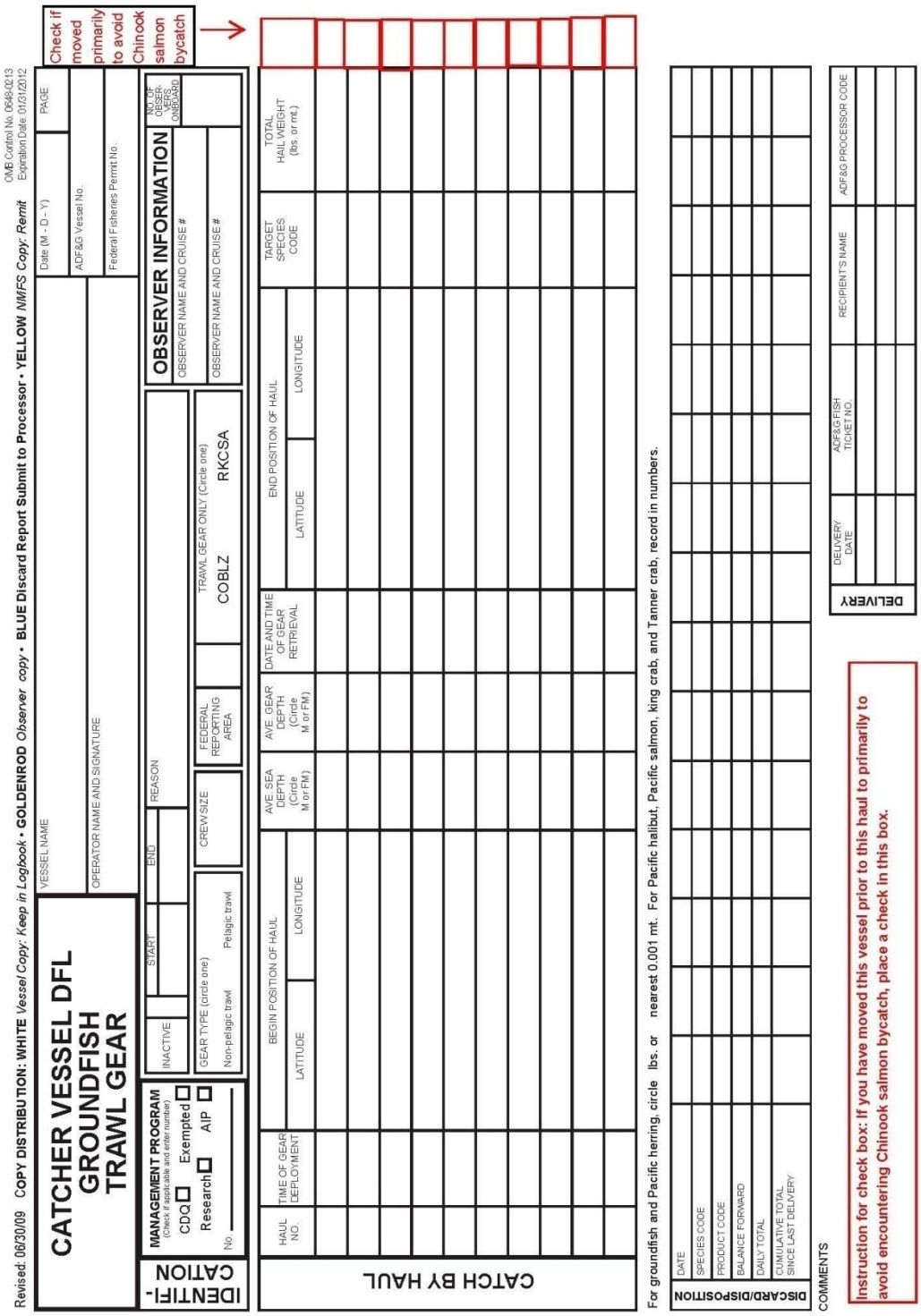
location to avoid salmon PSC. The operator of a catcher/processor using trawl gear may use a combination of catcher/processor trawl gear DCPL or a NMFS-approved catcher/processor trawl gear ELB and eLandings to record and report groundfish information, including if, prior to the haul, the operator moved fishing location to avoid salmon PSC. The operator of a catcher vessel using trawl gear that delivers to a mothership will indicate a move from the original fishing location to a new fishing location in an effort to avoid Chinook PSC, by placing a checkmark ( ) in the trawl gear DFL.

When used together with observer, catch accounting, and VMS data, this reporting will enable analysts to examine operators' vessel movement responses to Chinook PSC rates and pollock catch rates in the fishery throughout the season.

The information available for analysis varies across sectors (catcher processor, mothership, shore-based catcher vessel). For the CP and mothership sectors, catch accounting and observer data will be available to show Chinook PSC and pollock catch rates on a tow-by-tow basis. Since observers are not able to count each fish on catcher vessels, accurate and reliable estimates of Chinook PSC on a tow-level are not currently attainable. Observers in all operations (CPs, Motherships, and shore-based CVs) are able to make reliable (if not always completely accurate) estimates of the total weight of each tow. They are also able (along with VMS data) to accurately report the towing times, and geographic coordinates of starting and stopping locations of each tow. This alternative would create a marker which will identify moves that are primarily related to Chinook PSC avoidance. The use of single check box in the current logbook form simplifies administration of the reporting.

The intent of the vessel movement data was clarified at the October 2010 Council meeting, to apply primarily to Chinook salmon and not all salmon. As part of the Councils January 2009 recommendation on the Chinook salmon PSC EDR, the Council recommended that: "Information regarding change in fishing grounds defined via identification of any tow prior to a move that is due primarily to salmon PSC avoidance (implemented through a logbook check box)." The Council deliberated whether to apply vessel movement data to all "salmon," as opposed to "Chinook salmon", because it will be difficult to discriminate between actions to avoid a specific salmon species as opposed to avoidance of all salmon prohibited species catch. The RIR/IRFA also noted that salmon movement data collected in the DCPL, ELP and trawl gear DFL was to apply primarily to Chinook salmon PSC and not to all salmon PSC.

In preparing the draft Chinook salmon PSC EDR forms for the Council's October 2010 review, NMFS proposed that data required on vessel movement be specific to avoidance of "Chinook salmon." The complete label provided in the DCPL form stated: "Check if moved to avoid Chinook salmon bycatch." At the October 2010 meeting the Council determined that the NMFS proposed text differed from their motion, and to retain the original intent of their motion recommended that the final field for the logbook check box be revised to include the words "primarily Chinook salmon." At the October 2010 meeting, the Council reviewed draft regulatory amendment text and a proposed revision to the trawl Catcher Vessel Daily Fishing Log, to modify the check box heading to state: "Check if moved primarily to avoid Chinook salmon bycatch." Figure 18 highlights the probable location, text and instructions for the new check box. That wording was revised to specify that the movement data was to apply "primarily to avoid Chinook salmon." It was also recommended for the ELB data by C/Ps and to eLandings data entry by CVs delivering to motherships.



Revised: 06/30/09 COPY DISTRIBUTION: WHITE *Vessel Copy: Keep in Logbook* • GOLDENROD *Observer copy* • BLUE Discard Report Submit to Processor • YELLOW *NMFS Copy: Remit*

OMB Control No. 0648-0213
Expiration Date 01/31/2012

CATCHER VESSEL DFL GROUNDFISH TRAWL GEAR

VESSEL NAME | Date (M - D - Y) | PAGE

OPERATOR NAME AND SIGNATURE | ADF&G Vessel No. | Federal Fisheries Permit No.

Check if moved primarily to avoid Chinook salmon bycatch

IDENTIFICATION

MANAGEMENT PROGRAM (Check if applicable and enter number)
CDQ ☐ Exempted ☐
Research ☐ AIP ☐
No. ____

INACTIVE | START | END | REASON

GEAR TYPE (circle one): Non-pelagic trawl | Pelagic trawl

CREW SIZE | FEDERAL REPORTING AREA | TRAWL GEAR ONLY (Circle one): COBLZ | RKCSA

OBSERVER INFORMATION
OBSERVER NAME AND CRUISE # | OBSERVER NAME AND CRUISE # | NO. OF OBSERVERS ONBOARD

CATCH BY HAUL

| HAUL NO. | TIME OF GEAR DEPLOYMENT | BEGIN POSITION OF HAUL: LATITUDE | BEGIN POSITION OF HAUL: LONGITUDE | AVE. SEA DEPTH (Circle M or FM) | AVE. GEAR DEPTH (Circle M or FM) | DATE AND TIME OF GEAR RETRIEVAL | END POSITION OF HAUL: LATITUDE | END POSITION OF HAUL: LONGITUDE | TARGET SPECIES CODE | TOTAL HAUL WEIGHT (lbs. or mt.) |
|---|---|---|---|---|---|---|---|---|---|---|
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For groundfish and Pacific herring, circle lbs. or nearest 0.001 mt. For Pacific halibut, Pacific salmon, king crab, and Tanner crab, record in numbers.

DISCARD/DISPOSITION

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DATE | | | | | | | | | | | | | | | | | | | | | | | |
| SPECIES CODE | | | | | | | | | | | | | | | | | | | | | | | |
| PRODUCT CODE | | | | | | | | | | | | | | | | | | | | | | | |
| BALANCE FORWARD | | | | | | | | | | | | | | | | | | | | | | | |
| DAILY TOTAL | | | | | | | | | | | | | | | | | | | | | | | |
| CUMULATIVE TOTAL SINCE LAST DELIVERY | | | | | | | | | | | | | | | | | | | | | | | |

COMMENTS

Instruction for check box: If you have moved this vessel prior to this haul to primarily to avoid encountering Chinook salmon bycatch, place a check in this box.

DELIVERY

| DELIVERY DATE | ADF&G FISH TICKET NO. | RECIPIENT'S NAME | ADF&G PROCESSOR CODE |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

**Figure 22. Example Change to Catcher Vessel Daily Fishing Logbook to Record Chinook Related Vessel Movements**

The preferred alternative would also collect data on average fuel use fishing and transiting and annual fuel use and costs in the **Vessel Fuel Survey**. Data will be reported on a vessel basis annually, in a manner similar to the requirement described under Alternative 3. These data, when used with existing data and data concerning Chinook avoidance efforts, will allow analysts to examine fuel use and costs associated with choices of fishing grounds and Chinook PSC avoidance. The final version of the Vessel fuel Survey was approved by the Council in October 2010 (see Appendix B). At the October 2010 Council meeting, the Council made minor revisions to the Vessel Fuel Survey to clarify that estimates submitted on the rate fuel of consumption were to apply to pollock fishing only, and not other target species. They also revised the description for the annual amount of fuel purchased in Table 2, by clarifying that the data supplied is to apply to all fishing by a vessel, to be consistent with the instructions.

Although this approach might provide less accurate estimates of fuel usage for any specific move, it would provide data that can be more appropriately applied to other activities of the vessel. These data are requested under alternative 3, which provides a more complete analysis of those other possible uses. In the case of catcher processors, it is possible that average fuel costs might prove adequate, as isolating fuel usage associated with a move could prove very difficult. A vessel may be using fuel in processing operations while moving, so attributing the fuel use specifically to the move might be excessive.

The **Vessel Master Survey** element of the preferred alternative is intended to improve analysts understanding of vessel operators' decision making (including decisions related to Chinook PSC avoidance) by asking a series of primarily qualitative questions concerning their on grounds impressions and choices. The specific survey was fashioned after the survey included in Alternative 3, adapted in response to industry input, and revised by industry at the June 21, 2010 Chinook Salmon PSC Economic Data Collection workshop in Seattle. A revised version of this form was provided to the Council for review in October 2010. The Council proposed editorial changes to three questions in this form to improve the clarity and narrow the focus of the questions to solicit information changes caused by the avoidance of Chinook salmon PSC. That final version is displayed in Appendix B.

### 2.6.3 Evaluation of quality of data to be collected

The IPA or cooperative reports should provide a relatively clear description of the structure of the sub-allocations or transfers of Chinook PSC and pollock by any of the parties authorized to receive Chinook PSC from NMFS. The parties that could either receive sub-allocations or transfer sub-allocations of Chinook PSC or pollock allocations include the:

1) owner or leaseholder of an AFA permitted vessel;
2) representative of any entity that received an allocation of Chinook PSC from NMFS; or
3) any person who paid or received money for a transfer of Chinook salmon PSC allocation.

Applying this generalized overview of distributions and transfers may overcome some of the complications associated with reporting each movement of privileges (including each transfer through an intermediary). In addition, the generality of the reporting requirement (without a specific form) should provide flexibility to IPAs and cooperatives to tailor their reports to the structure used for making distributions and transfers. On the other hand, the absence of a specific reporting form could create some uncertainty concerning the level of detail in reports and the comparability of reports across IPAs and cooperatives. Determining the fair market value for shares could be challenging, given the size and relationships of participants in the market. While the form does ask that transferees and recipients indicate whether a transfer is at fair market value and to indicate the relationship between the two parties, in a small market with ongoing interactions, it is possible that prices will be distorted by relationships and good will. In addition, if few transactions occur or if most transactions include non-monetary compensation (such as pollock quota) discerning a value for Chinook PSC allowances may not be possible. These factors may be influenced by the IPA structures adopted, which are not fully predictable and may change over time.

Data collected on transfers of Chinook PSC allocations or sub-allocations that include monetary compensation augments data collected in the IPA and AFA cooperative reports, by including the corresponding price paid or received for a given quantity of Chinook PSC transferred. Where monetary compensation can be matched with an amount of Chinook PSC transferred, and if sufficient numbers of these data are reported it is possible that a market value for Chinook PSC can be estimated that is independent of other prices from goods that may be merged with Chinook PSC transactions.

Logbook **reports of vessel movements to avoid Chinook PSC** are likely to accurately reflect the vessel operator's perspective on whether a vessel moved to avoid Chinook PSC. It should be noted that, because a decisions can be influenced by many factors, this reporting is likely to be subjective. Analysts should consider the subjective nature of these data.

The **fuel use and cost** information collected in the Vessel Fuel Survey would include average fuel use in different modes of operation, annual fuel usage and cost on a vessel basis. Industry participants familiar with vessel operations have expressed that they are able to provide an average rate of fuel consumption (e.g., gallons/hour) when fishing and transiting with a significant degree of accuracy. Yet, these data may have substantial error for uses other than general reporting on annual fuel consumption patterns. Industry participants have stressed that the cost for a particular vessel to travel a given distance can vary dramatically with weather conditions and currents, and the gallons of fuel burned per hour may vary greatly. In addition, with some vessels fishing species other than pollock (including some bottom fish fisheries), it is likely that fuel burn rates will vary across those different fisheries. As a result, pollock fishing fuel usage could be further distorted from reported values. Without discerning these different fishery activities reliability of these data may be questionable.

Unit costs of fuel for each vessel are proposed to be measured at the annual level by reporting the total annual fuel purchased for the vessel (in gallons) and the total fuel purchase cost. These data are intended to permit calculation of an annual average price per gallon by vessel, which may vary with the location of purchase and the fuel contract of the vessel owner. While collection of annual price data may provide some reference for the different fuel costs experienced by different vessels over the course of a year, those data are not likely to be usable for estimating fuel costs at any specific time in a season (and may not accurately contrast prices across vessels at particular times). Fuel prices are known to fluctuate greatly throughout the year. In addition, the benefits of a given fuel contract may vary across time, with changes in base prices. Consequently, the averaging of price information may not be accurate for discerning cost differences at any point in the season.

The **Vessel Master Survey** would collect qualitative information on the factors that influence fishing decisions comprehensively from the pollock fleet (including participants that might otherwise be excluded from less formal data collection efforts). Obtaining information from some of these participants could help analysts develop insights into fishing behavior important to salmon PSC avoidance that might otherwise be overlooked. Yet, written responses to open ended questions might be incomplete or misleading. In addition, most questions are subjective, making it difficult to assess their accuracy. Careful and qualified use of these data may overcome these shortcomings.

### 2.6.4 Analytical uses of the data

Data on **transfers of pollock allocations and Chinook PSC allowances** will be important to understanding the functioning of any IPAs and may be an important indicator of the effectiveness of Amendment 91. The number and direction of transfers of these different privileges may be an important indicator of the effectiveness of the incentives created by distributing Chinook PSC allowances among and within sectors. Depending on the IPA structure and its intended incentives, it is possible that the number of transactions alone will be an indicator of success. For example, if an IPA that penalizes recipients of transfers, the absence of transfers may suggest the incentive is effective. The direction of transfers may also be important. Transfers of pollock to vessels with better PSC rates may suggest that vessels with poor PSC performance have an incentive to leave the fishery (at certain time or altogether).

Knowing the extent of transfers in years of low Chinook encounters will also provide information concerning whether the incentives operate at all times. The specific IPA structures and their intended incentives will affect any assessment of transfers. No firm conclusions about indicators of success of the IPAs can be made until the structures are be needed to assess the effect of transfers on Chinook PSC usage.

The cost of transferred Chinook PSC allowances may also be an important indicator of the effectiveness of Amendment 91. In an active competitive market, the price of Chinook PSC allowances should be an indicator of the buyer's minimum net operating revenues that could be earned in the absence of the transaction. The price should indicate the potential earnings of a buyer from the additional allowances. Similarly, price will reflect the maximum net operating revenues the seller could reasonably expect to generate if the seller kept the allowances.

The specific uses of these data will depend, to some extent, on their quality and the level of richness. In the first instance, simple, more rudimentary analyses can be used to understand the operations of IPAs and cooperatives and the movement and use of pollock quota and Chinook PSC allowances in the fishery. These analyses are likely to use basic counts of transfers and simple statistics and qualitative analysis of data, at the vessel, cooperative, and IPA level, together with anecdotal evidence and other data from the fishery. This level of analysis may provide an understanding of the mechanical operation of the IPAs and cooperative rules and the incentives created by those structures. If the data prove to be of reliable quality and sufficient quantity, more rigorous, quantitative analyses may be undertaken to examine values of Chinook PSC and pollock quota and the incentives of the IPAs and the other measures adopted in Amendment 91.

In considering the proposed uses of these data, it is important to bear in mind that a critical element of Amendment 91 and the system of IPAs permitted by that action is the latitude those measures provide to industry to address Chinook PSC. IPAs are intended to allow flexibility to industry to develop innovative incentives to constrain Chinook PSC. In providing that flexibility, it is important that industry also provide information that can be used to verify the effectiveness of their actions. The collection of transfer data, in particular, is important to understanding the operation of IPAs, as they reveal access to PSC allowances. This access is fundamental to understanding both the effectiveness and effects of an IPA.

Data concerning **movements to avoid Chinook PSC** could be used to assess vessels' willingness to leave fishing grounds to avoid Chinook PSC. Using these data together with VMS and observer data should allow analysts to examine both individual vessel and fleet behaviors. Differences in the willingness of individual vessels to move from areas with high Chinook PSC and to search for areas with lower PSC rates may reflect differences in the incentives created by an IPA. Alternatively, examining these data for an entire cooperative or IPA fleet may reflect that fleet's coordination, which could also be driven by IPA incentives.

Depending on the number of IPAs, it is possible that data could be used to compare incentives created by IPAs. In addition, these data might be useful for comparing responses of cooperatives to IPA incentives. It is possible that some cooperatives may coordinate Chinook avoidance measures, while other use the incentives to drive internal competition. These differences may be important to overall reductions in Chinook PSC rates. The data should also be useful for examining whether and how responses change throughout the season and across seasons with changes in Chinook encounters. These insights will be critical to understanding whether IPAs are effectively creating incentives to avoid Chinook at all encounter rates.

In examining these aspects of Chinook PSC avoidance, analysts will need to use these data in conjunction with IPA and cooperative reports. In addition, analysts will need to consider the subjective nature of reported Chinook avoidance moves. Despite these challenges, these data should improve our

understanding of operators' responses to Chinook PSC encounters and the effects of Chinook avoidance measures, including IPAs, on those responses.

**Fuel use and cost** data can be used to assess the extent to which fleet members are willing to incur fuel expenses to avoid Chinook PSC. These data are unlikely to have great precision or accuracy, as fuel use is likely to vary with conditions and costs are likely to vary across a season. Yet these data should provide useful estimates of fuel usage and costs. As with the transfer data, these data will likely be used initially for simple estimates of operational fuel costs that can be compared over time, sectors, IPAs, and cooperatives. These estimates will be used with other available data, including Chinook PSC rates and pollock catch rates to examine both the effectiveness and the effects of IPAs and the more general measures adopted under Amendment 91. Uses of these data may evolve from more basic data analyses to more quantitative estimates of the fuel costs of salmon avoidance under the IPAs and measures adopted under Amendment 91.

Since fuel may be a critical cost for Chinook avoidance efforts, fuel data could be important to understanding the ability of vessels to respond to Chinook PSC measures. The relative costs incurred by vessels searching for clean grounds or traveling to avoid Chinook salmon PSCs may affect their responses to Chinook encounters. Used in combination with VMS and observer data, average rates of fuel consumption may allow for the estimation of the differences in travel costs to different fishing locations. Differences in vessel responses to Chinook salmon encounter rates may be examined to determine whether these operational differences are affected by fuel costs, which in turn may have implications for the effectiveness of the IPAs. Specifically, it is possible that vessel fuel costs could affect the responsiveness of vessels to certain incentives. Recognizing these differences may be important to the development of an effective IPA.

Since these data may not be accurate for assessing costs associated with any specific fishing activity, interpretation of results will require some care and qualification. Despite these limitations, these fuel use and cost data should provide solid baseline data to begin understanding the effects of fuel on operational decisions. When used with other available data, including observer reports, VMS data, catch accounting data, and IPA and cooperative reports, the fuel data collection proposed under this alternative should provide important information for understanding the effects of Chinook PSC avoidance measures, including IPAs.

The **Vessel Master Survey** will collect vessel operators' impressions of operational conditions and decision making. The survey is tailored to obtain operator responses to on the grounds conditions that might demonstrate the effectiveness of IPAs and other Chinook PSC avoidance measures. Additional questions are intended to gain information concerning the effect of IPAs and Chinook PSC measures on decision making. Not only should these surveys provide information that can be used to assess the effectiveness of the IPAs and other measures, but also when used with vessel and operation specific information the survey should provide information concerning how the incentives differ with operational differences. These differences have been important for fashioning IPAs.

Analysts will use the data to examine decision making on vessels and the effects of Chinook PSC avoidance measures, including IPAs, on decision making. In the first instance, the data may help analysts understand how decisions are made on a vessel and the importance of various influences on those decisions. In some cases, the effect of these stated influences may be examined in greater detail with other data sources, such as observer data, VMS data, and catch accounting data. Understanding these influences should help both managers and fishery participants develop effective Chinook PSC avoidance measures. Measures that have little effect on decision making may be removed, while those that have greater influence may be enhanced. Depending on the level of detail in responses, it might also be possible to learn of undesirable effects arising from measures, in which case, the Chinook PSC avoidance measures might be revised to minimize those effects.

### 2.6.5 Other uses of the data

Data collected under the preferred alternative may have uses beyond the analysis of Chinook PSC measures.

**Data on transfers of Chinook PSC allowances and pollock quota** may be used to examine the distribution of privileges in the fishery and how those distributions change over time (both within and across seasons). While these distributions are likely to be influenced by Chinook PSC avoidance measures, other factors, most importantly operational efficiencies, are will likely affect this distribution. Analysts may also gain insight into other factors, including management measures, on the distribution of these privileges.

Data identifying vessel **moves to avoid Chinook PSC** may help analysts understand vessel operator's perspectives on the definition of a move regardless of its cause. Currently analysts must rely on anecdotal information and the analyst's own set of criteria to determine when a move has occurred. These criteria may applied to models of the fishery that examine operational efficiencies and fishing location choices.

**Fuel usage and cost data** will be useful for assessing changes in general costs from year to year, including the effects of fuel price changes and large scale changes that arise with changes in the redistribution of fish and fishing. For example, many participants have reported that fish are moving north, particularly in the B season. Changes in fuel usage and costs arising from this movement of the fishery should be reflected in annual fuel usage. In addition, fuel data could prove useful for examining the effects of area closures, such as the Steller sea lion measures, on the fishery. Although the data may not be precise enough to provide information concerning specific activity, the data should be useful for examining general trends and broader effects that are likely to arise from broad measures that have large scale effects on the fishery.

The **Vessel Master Survey** should also help analysts improve their understanding of the fishery by providing new information concerning decision making. Although subjective, the survey should help analysts understanding the variety of factors that affect decision making and how those factors and their influences change over time. Although directed to understanding the effectiveness (and effects) of Chinook PSC reduction measures, the survey should have a broader benefit on the understanding of all decision making in the fishery and the effects of factors beyond Chinook salmon PSC reduction measures.

### 2.6.6 Costs to industry

Under the preferred alternative, IPA and cooperative managers must include in their **IPA and cooperative reports details on the distribution and transfer** of Chinook salmon PSC allowances and pollock quota, and for each transfer in which monetary compensation is paid for Chinook PSC allowances, each entity involved will need to complete and submit a **compensated transfer form**.

The current number of transfers of pollock among fishery participants is not known. Even so, these transfers may not be a good indicator of future transfers, since the incentives of the Chinook PSC management measures have yet to be applied. IPA and cooperative structures, including the distribution rules and incentives for transfers, will determine the burden associated with the IPA and cooperative reporting requirement under this alternative. Structures that create incentives for transfers will increase the associated reporting burden. The burden could be shifted to cooperatives from an IPA, if the IPA structure creates an incentive for the transfer of pollock by discouraging transfers of Chinook PSC allowances. Since the participating vessels are expected to be members of both IPAs and cooperatives, the burden will ultimately be borne by the same persons.

If each sector adopts a single IPA, one report will be generated for each sector. Under a simple IPA structure with few or no transfers, only the initial distribution of Chinook PSC allowances would need to be reported. Since the IPA manager must administer these distributions, the burden associated with

including the distributions in the report would be minimal (i.e., one or two hours). While each transfer arguably increases the reporting burden, it is likely that the IPA manager will also need to administer and monitor those transfers for IPA members. Consequently, the reporting burden is reduced, as the IPA manager will have undertaken some of that burden, independent of this reporting requirement, in the course of IPA oversight. Likewise, cooperative managers will distribute pollock quota and administer transfers among members, independent of any reporting requirement under this action. Despite these administrative obligations, the reporting burden under this action could be substantial, if complex exchanges of pollock quota and Chinook PSC allowances arise out of the IPA and cooperative structures adopted by members.

Nonetheless, we estimate that an IPA manager or cooperative manager that is actively tracking transfers will be able to develop and submit a report on transfers to NMFS in 40 hours or less. Assuming there will be three IPAs (one for each sector) a total of less than 120 hours of time could be required for the submission of the IPA reports on transfers. One mothership cooperative, one catcher processor cooperative, and six catcher vessel cooperatives. Collectively, these reports should take less than 320 hours to complete.

In addition, each entity involved in a compensated transfer will have to submit a report, each time such a transfer occurs. Those reports would be similar to the ledgers required under option 1. It is believed that 15 minutes will be required by each entity for the first transfer it is involved in, and 5 minutes for each subsequent transfer. Since the IPA and cooperative structures are likely to influence the propensity of members to engage in transfers and the number of those transfers that are made for monetary compensation are not known, the number of compensated transfer reports that must be completed by any participant cannot be determined. [32]

The burden associated with **reporting each move to avoid Chinook salmon PSC,** and the fuel used for that move, is expected to be minor (approximately 5 minutes for each move). Although no reliable estimate can be made for the number of moves that will need to be reported, reasonable assumptions could be used to determine an upper bound on the number of moves. If each shore based CV makes 25 trips per year and, on average, a Chinook PSC avoidance related move is made every other trip, each would make 12.5 moves per year, requiring slightly more than one hour per vessel. If 90 vessels operate in the fleet, slightly less than 95 hours would be required to complete forms for submission. If we assume that CPs and mothership operations will also require 5 minutes time every move and that these vessel make one Chinook related move every two days of operations, and that they operate a total of 150 days per year, then each vessel operator will need slightly more than 6 hours to complete and submit the data. Assuming there are 15 active CPs, 3 active mothership and 25 mothership CVs then a total of 269 hours would be required. The total industry burden is estimated at 685 hours (or approximately 6 hours per vessel).[33]

The costs to industry of providing estimated annual fuel costs and average fuel usage and costs in the **Vessel Fuel Survey** for different aspects of operation are relatively small, if owner estimates of these different factors are acceptable. In most cases, vessel owners monitor their fuel usage in season and maintain records concerning fuel expenditures and usage, which should limit the burden associated with

[32] An additional burden would arise, if an auditing process is used to verify the accuracy of reporting. The time burden for audits would be minimized by participants who keep accurate and complete records for their transfer activity. In such a case, it is possible that audits would take little of the respondent's time (i.e., less than one-hour). If a respondent does not maintain organized, complete records, it is possible that an audit could require several hours of the respondent's time.

[33] For the mothership sector, it is likely that a mothership would make a determination to move to avoid Chinook PSC, after which each catcher vessel would report fuel usage for the move. Administration of this reporting would be complicated, since these catcher vessels do not carry observers. A separate reporting mechanism for these costs would need to be developed, which could be coordinated across the fleet associated with each mothership.

this reporting. Depending on the degree of accuracy sought by any data collection, estimates of average usage and costs transiting and fishing may require some additional effort on the part of some vessel owners. Currently, these estimates are believed to be rough approximations of average usage and cost. If these estimates are acceptable, the burden of this reporting should be relatively small. Periodic monitoring of fuel usage throughout the season will likely be required to assess fuel usage in different modes of operation (e.g., fishing or transiting). If a vessel operator monitors use periodically throughout the season, it is believed that approximately 3 hours would be used to gather and submit average fuel use rate estimates. An additional hour would likely be required to gather and submit annual fuel use and costs information requested for a total of 4 hours under this alternative.

The completed **Vessel Master Survey** would be submitted to NMFS by the owner of each AFA vessel in the following June for its previous year of pollock fishing. The vessel master survey data may also be combined with information collected through this action and VMS and observer data regarding fishing decisions. To fully respond to the Vessel Master Survey it is likely that many vessel masters may compile notes in season to be used to respond to the specific survey at year end. The burden associated with tracking activity related to the questions on the Vessel Master Survey will vary depending on the circumstances encountered during the fishing year. Fully completing the form is likely to require approximately 4 hours of inseason time, recording impressions of conditions and decision making. Completion of the form and submission is not expected to require more than 2 hours for a each vessel owner to collected the forms from vessel masters during or at the end of the season.

### 2.6.7 Costs to NMFS of administering the program

Agency costs are expected to be associated with use of **IPA and cooperative reports to collect transfer data, and individual reporting on compensated transfers** arising through data collection and data processing. Since IPA and cooperative reports will summarize the transfers without use of a form and few IPAs and cooperatives are likely to be formed, the costs associated with this collection is likely to be minimal. Collection of compensated transfer information will likely be greater, as forms must be produced, distributed, and collected. Reports may be distributed to fishery participants by mail, electronically, through a web interface, or by a combination of the above. Each of these distribution methods has an ongoing cost in terms of NMFS or contracted staff.

In addition, the agency could have extensive costs associated with processing these forms and organizing these data for use (in conjunction with the IPA and cooperative reports). Compensated transfers that were administered through intermediaries (e.g., IPAs or cooperatives) will need to be integrated with the IPA and cooperative reports to make full use of the data. The extent of these costs will depend on the number of compensated transactions and the IPA and cooperative structures adopted by industry. Structures that limit the number of transfers and simplify the transfer structure would reduce agency administrative costs. Processing of forms will include tracking of responses for each variable, and maintaining the database and summary reports concerning quality of response. Processing typically includes scheduled reminders and responses to questions concerning the forms.

The cost of the reporting depend greatly on the number of transactions. These would likely be around $35,000 in the first year. Finalizing forms would likely require approximately 1 month of time ($10,000). NMFS would also need to pay a contractor to mail out the surveys and answer any questions that arise during survey administration. These costs will depend greatly on the number and complexity of transactions (and whether the collection includes all forms of compensation and the effort undertaken to determine values of non-monetary compensation). Development of an electronic database, which would ideally be merged with other state and federal databases related to the pollock fishery, could also be costly. These costs will also be reflective of the complexity of transactions. Reconstructing data in a manner that clearly defines such multiparty transactions could add substantially to the costs of these data. Although experience administering the collection may reduce costs after the first year, the number and complexity of transactions are likely to be determinants of administration costs. Should data validation be

pursued, given the number of submitters in this fishery, it is likely that the data could be verified for a statistically representative sample of respondents.

The annual costs associated with collecting **inseason vessel movement data** will arise from the production and distribution of revised logbook forms, the processing of completed forms, data entry, and data management. As with the transfer data, there are likely to be costs associated with organizing workshops and training for the vessel operators. The cost to NMFS of adding a field to the logbook would be relatively minor. Additional printing costs may be incurred to accommodate timing of the change. The cost to have Federal observers begin entering this logbook data into their database is significantly greater. The cost of modifying the software used by federal observers and the database in which these data ultimately reside depends upon the year in which the modification is requested. At present, the software and database are updated every two (even) years (e.g., 2010, 2012, 2014). Should the data collection be implemented in 2012, as projected, we estimate the cost of this change to be a small marginal cost to an already planned change cycle. In addition to the one-time implementation costs, there will be additional work required of observers, but we do not anticipate this work increasing the cost to NMFS. To the extent that electronic logbooks become available and are used by industry, the data collection costs would be the marginal costs of modifying the e-logbook. In cases where an e-log is used, there are no Observer Program costs, as the data would be available to NMFS directly through the e-logbook itself. It is important to note that for catcher-vessels delivering unsorted cod-ends to motherships, this would be administered by NMFS modifying the mothership logbooks and requiring the motherships to obtain this information from their catcher-vessels.

There will also be additional staff time required to construct reports summarizing vessel relocation efforts and expenses. An annual report would require approximately one month of time from a NMFS FTE ($10,000).

**The Vessel Fuel Survey** would be required annually under this alternative. To reduce costs associated with this reporting to the extent feasible, this requirement would be consolidated with other annual reports. The costs to the agency arise from the production and distribution of annual reporting forms, the processing of completed forms, data entry, data management, and producing summary reports concerning quality of responses. In addition, workshops and training for the submitters are likely to be necessary for this collection due to the variation in recordkeeping from one operation to the next. Reports may be distributed to fishery participants by mail, and/or electronically, through a web interface. Each of these distribution methods has an ongoing cost in terms of NMFS or contracted staff and equipment and materials. Processing of forms includes tasks of tracking of responses for each field or variable in the data form, and maintaining the database and summary reports concerning quality of response. Processing typically includes scheduled reminders and responses to questions concerning the forms. In past economic data collections NMFS analysts have often utilized contractors to assist with the collection phase. There could also potentially be additional expenses associated with having the survey data verified by a third party.

The cost of the survey would likely be around $35,000 in the first year. One month of time for a NMFS FTE would be required to pre-test and to finalize the existing survey ($10,000). NMFS would also need to pay a contractor to mail out the surveys and answer any questions that arise during survey administration ($15,000). Finally, the contractor would need to enter the information into an electronic database, which would ideally be merged with other state and federal databases related to the pollock fishery ($10,000). After the first year of the program, the annual cost of administering the survey and entering the data would be approximately $25,000.

Should data validation be pursued, given the number of submitters in this fishery, it is likely that the data could be verified for a statistically representative sample of respondents. Assuming approximately 30 companies had their submissions validated; the cost of the validation by a certified public accountant would be approximately $20,000 per year. Data entry and data management could require trained staff to

enter any hand written responses. The data would be maintained on a secure database, and though the costs of maintain secure data of this type may be captured in the ongoing data management costs of the agency, a description and communication of the security used for this information to the public, and possibly the Office of Management and Budget, will involve additional agency cost. Data requests would also use agency resources.

As with other annual reports, the annual costs associated with the **vessel master survey** will arise from the production and distribution of reporting forms, the processing of completed forms, data entry, and data management. While the use of written open ended questions in the survey may increase the quality of information received in the survey, it also could increase the administrative costs associated with the survey. Electronic submission could be used to control data entry costs, but the administrative burden associated with managing written survey responses may be expected to be substantial.

A few factors will contribute to NMFS cost for the vessel master survey. Some pre-testing and refinement by NMFS staff will be necessary to fully define a satisfactory set of questions to ask the vessel masters. The expected cost of these activities should not exceed $15,000 in staff time. The use of a written survey will require NMFS to print and mail a number of four-to-six page pamphlets (there will be less than one page of questions, but the instrument must provide instructions and allow space for the vessel master to respond). We anticipate mailing approximately 185 of these surveys to the vessel master population. With mailing costs and the inclusion of a self-addressed, stamped envelope for return mailing, the total costs of the written survey would not exceed $350. A web-page could also be developed to facilitate the survey, and the cost of developing such a survey should not exceed $5,000.

In addition to the agency costs discussed here, portions of these data (such as compensated transfer prices and fuel costs) may be subject to data validation. Assuming approximately 30 companies have their submissions validated, the cost of the validation by a certified public accountant would be approximately $40,000 per year. The inseason vessel movement questions and vessel master surveys proposed in this alternative are subjective assessments of the vessel master concerning different aspects of the fishery. An audit of these data is unlikely to provide any quality improvement, so should be dismissed. In some instances, an audit (or follow up process), could provide additional insights into fishery operations.

NMFS would enforce compliance with these requirements as it would many of the other general recordkeeping and reporting requirements implemented to date. This means that a person could continue to fish while an enforcement action was being pursued. If logbook data, annual transfer reports, or annual surveys are misreported, or not completed or submitted on time, such noncompliance could result in an enforcement action. Unlike the crab EDR program, the alternatives for this action do not include compliance provisions that would tie submission of a new report or survey to an annual issuance of a harvesting privilege (e.g., IFQ permit) or some other annual permitting process.

### 2.6.8 Conclusions

The data collection proposed under this alternative is largely intended to provide improve insight into the effectiveness of Chinook PSC reduction measures and other factors affecting Chinook avoidance efforts. Distribution and transfers of Chinook PSC allowances and pollock quota are important to understanding the incentives and effects of these measures. Fuel usage and costs may provide general insight into travel costs associated with choices of fishing locations and movements to avoid Chinook PSC. The vessel master surveys should provide analysts with improved understanding of the factors that affect fishing decisions, particularly those likely to affect Chinook PSC rates. Data from these surveys should improve analysts understanding of the effectiveness of IPAs and other measures intended to contribute to Chinook PSC avoidance. Overall, these data (when used with existing data sources) should provide analysts with information that is beneficial to understanding the workings of the Chinook PSC avoidance management measures and the effectiveness of the incentives arising from those measures.

### 2.6.9 Confidentiality

Protecting the confidentiality of any economic data collected under this action is a high priority for the management agency and the industry. Since the data would be collected under the authority of the MSA, the substantial protections provided by the Act will be maintained for all data. To prevent disclosure of confidential information, it is imperative that regulations preclude the data from being used, either by individuals that are not intended to have access to the data. Authorized agency staff members from NMFS, ADF&G, and Council are currently defined as the potential users of such data. Other users could include individuals that are contractors of the above agencies that are conducting research associated with the program and its fisheries. University faculty conducting research for one of the above agencies would also be envisioned as users that would be given access to these data.[34] The release of these data outside of the primary users would be strictly regulated. NMFS has stated that protecting the confidentiality of the data will be one of its highest priorities. At a minimum, all persons with access to the data are sworn, under penalty of law, to protect the confidentiality and use of the data.

# 3.0 FINAL REGULATORY FLEXIBILITY ACT (FRFA)

## 3.1 Introduction

This Final Regulatory Flexibility Analysis (FRFA) addresses the statutory requirements of the Regulatory Flexibility Act (RFA) of 1980, as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996 (5 U.S.C. 601-612). This FRFA evaluates the potential adverse economic impacts on small entities directly regulated by the action.

## 3.2 The Purpose of a FRFA

The 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 adverse economic impacts, while still achieving the stated objective of the action.

On March 29, 1996, President Clinton signed the SBREFA. 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 alleged violation of the RFA.

In determining the scope, or 'universe', of the entities to be considered in a FRFA, NMFS generally includes only those entities that can reasonably be expected to be directly regulated by this action. If the effects of the rule fall primarily on a distinct segment, or portion thereof, of the industry (e.g., user group,

[34] In addition, agencies such as AKFIN or PSMFC may be contracted to maintain and supply data to agencies users and would be authorized to have access to the data for that purpose. Access to the data by these agencies would also be subject to confidentiality restrictions applicable to all other agency staff.

gear type, geographic area), that segment would be considered the universe for the purpose of this analysis.

Data on cost structure, affiliation, and operational procedures and strategies in the fishing sectors subject to the 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 "significant economic 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 action be adopted, a formal FRFA has been prepared and is included in this package for the
final rule

## 3.3 What is required in a FRFA?

Under 5 U.S.C., Section 604(a), each FRFA is required to contain:

(1) a succinct statement of the need for, and objectives of, the rule;

(2) a summary of the significant issues raised by the public comments in response to the initial regulatory flexibility analysis, a summary of the assessment of the agency of such issues, and a statement of any changes made in the final rule as a result of such comments;

(3) a description of, and an estimate of, the number of small entities to which the rule will apply or an explanation of why no such estimate is available;

(4) a description of the projected reporting, recordkeeping, and other compliance requirements of the rule, including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for preparation of the report or record; and

(5) a description of the steps the agency has taken to minimize the significant economic impact on small entities consistent with the stated objectives of applicable statutes, including a statement of the factual, policy, and legal reasons for selecting the alternative adopted in the final rule and why each one of the other significant alternatives to the rule considered by the agency which affect the impact on small entities was rejected.

## 3.4 What is a small entiy?

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

Small businesses. 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 United States, including fish harvesting and fish processing businesses. Effective January 5, 2006, a business involved in fish harvesting is a small business if it is independently owned and operated, not dominant in its field of

operation (including its affiliates), and if it has combined annual gross receipts not in excess of $4.0 million for all its affiliated operations worldwide.[35] 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 $4.0 million criterion for fish harvesting operations. Finally, a wholesale business servicing the fishing industry is a small business 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 percent 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 percent 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.

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

<u>Small governmental jurisdictions.</u> 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.

[35]Effective January 6, 2006, SBA updated the Gross Annual Receipts thresholds for determining "small entity" status under the RFA. This is a periodic action to account for the impact of economic inflation. The revised threshold for "commercial fishing" operations (which, at present, has been determined by NMFS HQ to include catcher-processors, as well as catcher vessels) changed from $3.5 million to $4.0 million in annual gross receipts, from all its economic activities and affiliated operations, worldwide.

## 3.5 A succinct statement of the need for, and objectives of the final rule?

This action is needed because current sources of data collected under Amendment 91, including catch accounting, observer, and vessel monitoring system data do not provide all the industry data that is desirable for analysis of the management measures implemented to reduce catch of Chinook salmon PSC. The Council proposed to address those data limitations, by creating the EDR. The EDR provides data to evaluate the effectiveness of the IPA incentives in times of high and low levels of Chinook salmon PSC abundance, the hard cap, and the performance standard in terms of reducing Chinook salmon PSC, and (2) evaluates how the Council's action affects where, when, and how pollock fishing and Chinook salmon PSC occur. The data collection program will also provide data for the agency to study and verify conclusions drawn by industry in the IPA annual reports.

## 3.6 Public Comments

The proposed rule was published on July 18, 2011 (76 FR 42099)). An IRFA was prepared for the proposed rule, and described in the classifications section of the preamble to the rule. The public comment period ended on August 17, 2011. No comments specific to the IRFA were received. Five comments were received and are summarized below:

Comment 1: To avoid duplicate reporting of an AFA cooperatives sub-allocations to each participating vessel, of the number of Chinook salmon PSC and amount of pollock (mt) at the start of each fishing season, and number of Chinook salmon PSC and amount of pollock (mt) caught at the end of each season, the proposed rule required these data be reported in either the IPA annual report in § 679.21(f)(13), or the AFA annual cooperative report in § 679.61(f)(2), but not both. The commenter requests that the reporting of this data be required only in the IPA annual report, and be optional for each AFA cooperative to report these data in the AFA cooperative report. Because each IPA may be formed by more than one cooperative, it is difficult for each AFA cooperative to be informed of a different AFA cooperative's records of sub-allocations and catches, complicating the coordination of data from multiple sources into a single report without some centralized depository for this data. In contrast, an IPA representative has the ability to request, organize and report that information from each AFA cooperative.

Response: NMFS agrees with the commenter. The option for avoiding duplicate data reporting by requiring all Chinook PSC and pollock sub-allocation data, and number of salmon caught at the end of each season be reported in either the AFA cooperative report or the IPA report (not both) was proposed by NMFS. NMFS believed that providing a choice for either an AFA cooperative or the IPA representative to submit that data (but exclusively in one location or the other) provides some additional flexibility, and would reduce confusion for the industry. The commenter provides new information that this approach in the proposed rule will create additional reporting burden and will not provide the flexibility intended by NMFS. The approach applied in the proposed rule is not a requirement identified in the Council motion for reporting EDR data. The alternative proposed by the commenter is consistent with the RIR/IRFA and results in less confusion for the IPA representative to request that each AFA cooperative representative provide relevant sub-allocation and catch data, while AFA cooperatives would still have the option of volitionally providing any additional data from each AFA cooperative on these sub-allocations and catches of Chinook PSC and pollock in the AFA cooperative report. Thus, the condition specified in the proposed regulations for the IPA annual report at § 679.21(f)(13)(ii)(E) "unless reported under §679.61(f)(2)" is removed. The condition specified in the proposed regulations for the AFA cooperative report at §679.61(f)(2)(vii) to report "Sub-allocation to each participating vessel of the number of Chinook PSC and amount of pollock retained and discarded at the end of each season, unless that data is reported in the IPA annual report at § 679.21 (f)(13)(ii)(E)," is removed.

The revisions in the proposed rule at §679.61(f)(2)(ii) that would have moved the reporting of retained and discarded catch of pollock and Chinook salmon PSC are unnecessary and are removed from this paragraph. Retained and discarded catch of pollock and Chinook salmon PSC will continue to be

reported in the AFA annual cooperative report under §679.61(f)(2)(ii) because the reporting of retained and discarded catch of pollock and Chinook salmon PSC at §679.61(f)(2)(vii) is removed. Thus, §679.61 will no longer be revised under this final rule.

Comment 2: The commenter points out that the representative for the AFA cooperative or sector level entity are not likely to be informed of the price of each transaction for Chinook salmon PSC, and therefore the quality of data in the Chinook Transfer Report (CTR) will not be improved by requiring this price data from these representatives.

Response: In the proposed rule, NMFS took a broad approach to identify the persons that may have knowledge of CTR price data, because the Amendment 91 program had been implemented recently and little information was available about which industry participants would have knowledge about the details of all Chinook PSC transactions. The four persons required to report price and amounts of Chinook PSC transfers in the CTR are the owner or leaseholder of an AFA permitted vessel, or the representative for an AFA cooperative, sector-level entity or CDQ group. NMFS is aware that not all of these persons required to submit a completed CTR may have transferred Chinook salmon PSC allocation, and paid or received money for the transfer during the reporting year. That is why the CTR data entry form includes a single-page certification where each submitter may indicate if he/she did or did not participate in any qualifying Chinook PSC transactions. If the submitter did not participate in any qualifying Chinook PSC transactions he/she may submit only the certification page, and is not required to fill out any additional data. If NMFS removed the requirement for a representative of an AFA cooperative or sector level entity to submit a CTR or certification page, NMFS would not be able to differentiate between a representative of an AFA cooperative that that had conducted a Chinook PSC transaction and forgotten to submit the CTR, from a representative that had not conducted any qualifying Chinook PSC transactions. NMFS believes that the requirement for representatives of an AFA cooperative or sector level entity to submit the CTR is necessary to ensure complete reporting, and that the CTR reporting burden for those that did not pay or receive money for a transfer is minimal.

Comment 3: The Vessel Master Survey should include on the Vessel Owner Certification Page a "check box" to indicate that the vessel did not participate in the Bering Sea pollock fishery during the reporting year and consequently will not include a completed Vessel Master Survey. The checkbox should be similar to the check box on the Vessel Fuel Survey.

Response: NMFS agrees with this comment. This is a minor revision to the Vessel Master survey that would reduce unnecessary reporting burden. Neither the Council motion nor the RIR/IRFA suggest that the data forms should or should not use a checkbox to indicate when a vessel is operated in a given year. NMFS proposed the use of a similar checkbox for simplifying the reporting in the vessel fuel survey, and applying a checkbox to indicate no participation in the Bering Sea pollock fishery should reduce the burden of reporting on other fields in the form. Thus, a check box has been added to the Vessel Master Survey to indicate if the vessel did not participate in the Bering Sea pollock fishery during the reporting year, and in that event the vessel owner will not be expected to submit a Vessel Master Survey.

Comment 4: The commenter does not object to requiring a Vessel owner to submit each Vessel Master Survey filled out by a vessel master, but the vessel owner should not be held responsible if the vessel master fails to submit a complete Vessel Master Survey.

Response: The proposed rule indicates that the Vessel owner must submit all Vessel Master Surveys filled out by each vessel master who fished on the owner's vessel, and verify that each vessel master listed on the Certification page for this form is a master of the AFA-permitted vessel. This responsibility is assigned to the vessel owner because the owner is the individual most likely to hire a vessel master and arrange for collection of any information relevant to the operation of the vessel. No other database of vessel masters names and contacts exist for NMFS to contact each vessel master operating a given vessel. Neither the proposed rule nor RIR explicitly indicate that vessel owners must share any direct liability for

incomplete responses of data submitted by the vessel master. A vessel owner however, may be contacted by NMFS to assist in verifying the identity of vessel masters, but the proposed rule and this final rule do not require the vessel owner to provide copies of additional data to facilitate verification by NMFS and its DDCA on the accuracy and completeness of a Vessel Master Survey, as is required for the CTR. In responding to this comment, no additional regulatory revisions to the final rule are required.

Comment 5: Under the proposed rule persons submitting an EDR would be required to respond within 20 days of a NMFS information request. A 20-day time limit is an unreasonable number of days to expect a response, and a 90 day interval of time for responding to a request for additional data for verifying the accuracy of an EDR would be more practical.

Response: This comment is factually inconsistent with the proposed rule. The 20-day limit for responding to an inquiry from NMFS for additional information does not apply to all three Chinook EDR report and surveys as stated in the public comment. The 20 day time limit only applies to the CTR and not the Vessel Fuel or Vessel Master Surveys. The 20-day time limit for allowing a person to respond to a request from NMFS for submitting clarifying support data for a CTR was modeled from catch share program EDR regulations for both BSAI Crab (70 FR 10174, March 2, 2005) and the Amendment 80 (72 FR 52668, September 14, 2007). Revising the 20-day limit to a different interval would create an inconsistency with these established EDR programs.

In both the BSAI Crab and Amendment 80 EDR programs, the protocol for implementing the 20-day time limit for a response from a submitter is invoked only after a formal and multi-day sequence of steps for contacting submitters. The protocol for the sequence of phone, email and letter contacts with a submitter of any EDR for whom NMFS request additional information requires from three weeks to a month, prior to concluding that NMFS data collection staff are unable to solicit a response from an EDR submitter. The total elapsed time prior to forwarding a request for NOAA Office for Law Enforcement to assist in contacting a submitter is approximately six to eight weeks. Based on the history of the submitter contact process for the BSAI Crab and Amendment 80 EDRs, only a single event has occurred where NMFS requested that the NOAA Office for Law Enforcement contact the submitter of a Crab EDR to resolve a delay in the response to a NMFS EDR information request. Thus, NMFS has retained the 20 day time limit for responding to a formal request for additional information on a submitted EDR.

## 3.7 Number of Small Entities Impacted by the Final Rule

The final rule applies only to those entities that participate in the directed pollock trawl fishery in the EBS. These entities include the American Fisheries Act (AFA) affiliated pollock fleets and the six western Alaska Community Development Quota (CDQ) organizations that presently receive CDQ allocations of EBS pollock.

The RFA requires a consideration of affiliations between entities for the purpose of assessing if an entity is small. The AFA pollock cooperatives in the EBS are an important type of affiliation. All of the AFA pollock cooperatives directly regulated by the proposed action are considered to be large entities for RFA purposes, as each is a fishing enterprise with in excess of $4.0 million in annual gross receipts.

The six CDQ groups, which are also directly regulated by the proposed action, are identified as small entities under the RFA

## 3.8 Recordkeeping and reporting requirements

Substantial record keeping, reporting, requirements are included in this action. The three new data forms include the CTR, Vessel Fuel Survey, and Vessel Master Survey, as well as two amendments to current recordkeeping requirements for recording vessel movements to avoid Chinook salmon PSC, and to the IPA Report and AFA Cooperative Report. The three new data reports and revisions to current recordkeeping and reporting are detailed in section 2.6.2 through 2.6.5. The costs to industry and to

NMFS are also detailed in these sections, as well as the compliance requirements for each data report, survey or revision to existing recordkeeping requirement. The directly affected AFA pollock cooperatives are not small entities and thus, no small AFA-permitted entities are impacted by these requirements.

CDQ groups are small entities that may be directly regulated by the proposed action if they are have received or sold Chinook salmon PSC in a monetary exchange. In that even, a representative for a CDQ group may be required to fill out the CTR.

## 3.9 Description of significant alternatives to the proposed action

A FRFA must describe the steps the agency has taken to minimize the significant economic impact on small entities consistent with the stated objectives of applicable statutes, including a statement of the factual, policy, and legal reasons for selecting the alternative adopted in the final rule and why each one of the other significant alternatives to the rule considered by the agency which affect the impact on small entities was rejected. "Significant alternatives" are those that achieve the stated objectives for the action, consistent with prevailing law, with potentially lesser adverse economic impacts on small entities, as a whole.

The Council also considered alternatives that would collect more detailed revenue and cost data (including roe production and revenue data, and daily operating cost data). Collection of these data would be intended to facilitate improved study of the effectiveness of salmon PSC avoidance measures (including IPAs) across various segments of the AFA fleets and an improved understanding of the effects of those measures on participants in the EBS pollock fisheries. Specifically, these data could be used to examine, in greater detail, operating revenue and variable cost tradeoffs of the various vessels and operating modes, resulting from efforts to avoid Chinook salmon PSC.

While acknowledging that these additional data could improve our understanding of the EBS pollock fishery and its efforts at Chinook PSC avoidance, the Council elected to remove alternatives collecting these data from consideration at this time. The removed alternatives were believed by the Council to contain too many aspects that would require additional time to fully develop and implement, which could result in a delay in analysis and implementation of this action. In its purpose and need statement, the Council expressed its intent to have collection of these additional data considered by its comprehensive data collection committee, after IPAs have been developed by industry. This delay in consideration of a more elaborate collection effort could allow this, the data collection action which is the subject of the present analysis, to be more focused, which should allow for earlier implementation of this action. In addition, by incorporating the more expansive data collection into a later action, the Council hopes to allow for additional development of a more considered, broader based data collection program. Furthermore, selection of the preferred alternative, identified above, is expected to result in no discernable adverse economic impacts on any directly regulated small entities. This conclusion may <u>not</u> be the case, when (if) the Council initiates a more comprehensive and inclusive (i.e., more burdensome) data collection program for the EBS pollock fishery. Therefore, the preferred alternative is the least burdensome choice available to the Council that simultaneously achieves the objectives set forth for this action.

# 4.0 CONSISTENCY WITH APPLICABLE LAW AND POLICY

This section examines the consistency of the alternatives with the National Standards and Fishery Impact Statement requirements in the Magnuson-Stevens Act and Executive Order 12866.

## 4.1 National Standards

Below are the ten National Standards contained in the Magnuson-Stevens Act, and a brief discussion of the consistency of the proposed alternatives with each of those National Standards, as applicable.

***National Standard 1***
*Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery.*

None of the alternatives considered in this action would result in overfishing of groundfish in the BSAI or GOA. The alternatives would also not impact, on a continuing basis, the ability to achieve the optimum yield from each groundfish fishery.

***National Standard 2***
*Conservation and management measures shall be based upon the best scientific information available.*

The analysis for this amendment is based upon the best and most recent scientific information available.

***National Standard 3***
*To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.*

The proposed action is consistent with the management of individual stocks as a unit or interrelated stocks as a unit or in close coordination.

***National Standard 4***
*Conservation and management measures shall not discriminate between residents of different States. If it becomes necessary to allocate or assign fishing privileges among various U.S. fishermen, such allocation shall be (A) fair and equitable to all such fishermen, (B) reasonably calculated to promote conservation, and (C) carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.*

The proposed alternatives treat all directed pollock fishery participants fairly and equitably and would be implemented without discrimination among participants.

***National Standard 5***
*Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources, except that no such measure shall have economic allocation as its sole purpose.*

This action considers efficiency in the utilization of the EBS pollock resource and the removals incurred through Chinook salmon PSC in the pollock fishery. The action does not have economic allocation as its sole purpose.

***National Standard 6***
*Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.*

None of the proposed alternatives is expected to affect the availability of and variability in the groundfish resources in the BSAI and GOA in future years. The EBS pollock harvest would be managed to and limited by the TACs for each species, regardless of the proposed action considered in this amendment.

***National Standard 7***
*Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.*

This action does not duplicate any other management action.

***National Standard 8***

*Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.*

This action is not expected to have adverse impacts on communities or affect community sustainability.

***National Standard 9***
*Conservation and management measures shall, to the extent practicable, (A) minimize bycatch, and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.*

The proposed action could provide additional information to assist in the development of management measures to minimize Chinook salmon Prohibited Species Catch. The action does not address the more general issue of 'bycatch'.

***National Standard 10***
*Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.*

The proposed action is not expected to have adverse impacts on safety at sea.

## 4.2 Section 303(a)(9) – Fisheries Impact Statement

Section 303(a)(9) of the Magnuson-Stevens Act requires that any management measure submitted by the Council take into account potential impacts on the participants in the fisheries, as well as participants in adjacent fisheries. The proposed alternatives are believed to have some, albeit unknown, 'potential' to inform decisions that affect the EBS pollock fisheries and the impacts of those pollock fisheries on subsistence, commercial, and recreational fisheries for Chinook salmon throughout the western and central Alaska regions, as well as Chinook salmon fisheries southward along the Alaska panhandle, British Columbia, Canada, and U.S. Pacific Northwest.

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# APPENDIX A: BERING SEA AFA POLLOCK TRAWL FISHERY CHINOOK SALMON BYCATCH MOTION

## Preferred alternative

This alternative would establish a Chinook salmon bycatch cap for each pollock fishery season which, when reached, would require all directed pollock fishing to cease for that season. Components 2-4 specify the allocation and transferability provisions associated with the cap.

### Component 1: Hard cap with option for incentive plan agreements (IPA)

### Annual scenario 1: Hard cap with an IPA(s) that provides explicit incentive(s) to promote Chinook salmon avoidance in all years

Hard cap if an IPA(s) is in place that provides explicit incentive(s) for each participant to avoid Chinook salmon bycatch in all years:

Overall Chinook salmon cap: 60,000, allocated by season and under Components 2-4 as described below.

For those vessels or CDQ groups that opt out of such a NMFS approved incentive plan agreement, the maximum hard cap (backstop cap) will be established as follows:

An amount no greater than the overall cap: 28,496

Option 3: To ensure the overall cap can be managed as a hard cap, subtract from the overall cap a proportion representing vessels or CDQ groups opting out of the incentive plan(s), and create a backstop cap so that the sum of the caps does not exceed the high cap.

Option C: Subtract from the overall cap the proportion of the backstop cap represented by vessels or CDQ groups opting out and fishing under the backstop cap and use this same amount to create the backstop cap.

Adjustments to the overall cap and backstop cap for vessels or CDQ groups opting out will be made after sector allocations. The amount of the adjustments will be based on the opt out vessel's percentage of AFA pollock within their sector as specified on pages 67- 70 of the DEIS or on the CDQ group's current percentage allocation of their sector allocation of the Chinook salmon cap.

IPA requirements (for NMFS approval):

- An IPA must describe incentive(s) for each vessel to avoid Chinook salmon bycatch under any condition of pollock and Chinook salmon abundance in all years.
- Incentive measures must describe rewards for Chinook salmon bycatch avoidance, penalties for failure to avoid Chinook salmon bycatch at the vessel level, or both.
- The IPA must specify how those incentives are expected to promote reductions in actual individual vessel bycatch rates relative to what would have occurred in absence of the incentive program. Incentive measures must promote Chinook salmon savings in any condition of pollock and Chinook salmon abundance, such that they are expected to influence operational decisions to avoid Chinook salmon bycatch.
- The IPA must describe how the IPA ensures each vessel will manage their bycatch to keep total bycatch below the sector level regulatory performance standard.

Annual reporting:

- The IPA(s) must be made available for Council and public review. In addition, year-end annual reports are required to be submitted to the Council by April 1 the following year to provide sufficient time for independent evaluation by the Council.

- An annual report to the Council must include:

  1) a comprehensive explanation of incentive measures in effect in the previous year,

  2) how incentive measures affected individual vessels, and

  3) Evaluation of whether incentive measures were effective in achieving salmon savings beyond levels that would have been achieved in absence of the measures.

IPA eligibility:
On an annual basis, before a date certain established by NMFS through regulation, participants in the pollock fishery may file an IPA with NMFS or join or exit an existing approved IPA. An IPA will be considered valid if 1) it meets the criteria set forth above; 2) it commits each party to be bound by the rules of the IPA; and 3) the parties to the IPA represent not less than 9% of the pollock quota and at least two non-affiliated companies using the AFA definition of affiliation.

Membership in an IPA is voluntary. No person may be required to join an IPA. Upon receipt of written notification that a person wants to join an IPA, that IPA must allow the person to join subject to the terms and agreements that apply to all members of the IPA as established in the contract governing the conduct of the IPA.

In the event that no IPA is approved by NMFS, then the pollock fishery shall be managed under annual scenario 2.

**Annual scenario 2: Hard cap in absence of an approved IPA with explicit incentive(s) to promote Chinook salmon avoidance**
Hard cap in absence of an approved IPA that provides explicit incentive(s) to all participants to avoid salmon bycatch in all years:

Overall Chinook salmon cap: 47,591, allocated by season and under Components 2-4 as described below

**Seasonal distribution of caps**
Any hard cap would be apportioned between the pollock A and B seasons. The seasonal distribution is 70/30.

**Seasonal rollover of caps**

Unused salmon from the A season would be made available to the recipient of the salmon bycatch hard cap in the B season within each management year at an amount equal to the recipient's unused A season bycatch cap.

**Component 2: Sector allocation**
Separate sector level caps will be distributed within each season for the CDQ sector and the three remaining AFA sectors, the inshore catcher vessel (CV) sector, the mothership sector, and the offshore catcher processor (CP) sector, as follows:

**A season:** CDQ 9.3%; inshore CV fleet 49.8%; mothership fleet 8.0%; offshore CP fleet 32.9%

**B season:** CDQ 5.5%; inshore CV fleet 69.3%; mothership fleet 7.3%; offshore CP fleet 17.9%

Rationale for distribution: This distribution is based on an estimate of the 5-year (2002-2006) historical average of the annual proportion of Chinook salmon bycatch by sector within each season, adjusted by blending the reported bycatch for CDQ and non-CDQ partner sectors. It is also weighted by the AFA pollock allocation for each sector. In each season, the proportional allocation by sector is made up of 0.75 multiplied by the adjusted 5-year historical average bycatch by sector and 0.25 multiplied by the AFA pollock allocation by sector.

**Component 3: Sector transfers**

Allocate Chinook salmon bycatch caps to each sector and allow the entity representing each non-CDQ sector and the CDQ groups to transfer Chinook salmon bycatch caps among the sectors and inshore cooperatives and CDQ groups.

Allow post-delivery (bycatch) transfer of Chinook salmon allocations. This provision would be administered consistent with the post-delivery provisions the Council adopted for the BSAI crab rationalization program, Amendment 80, and Rockfish Program, except that any recipient of a post delivery transfer during a season may not fish for the remainder of that season.

**Component 4: Cooperative provisions**

Each inshore cooperative and the inshore limited access fishery (if the inshore limited access fishery existed in a particular year) shall receive a Chinook salmon allocation managed at the cooperative level. If the cooperative or limited access fishery Chinook salmon cap is reached, the cooperative or limited access fishery must stop fishing for pollock.

The initial allocation of Chinook salmon by cooperative within the shore-based CV fleet or to the limited access fishery would be based upon the proportion of total sector pollock catch associated with the vessels in the cooperative or limited access fishery.

**Cooperative transfers**

When a Chinook salmon cooperative cap is reached, the cooperative must stop fishing for pollock. Cooperatives may transfer Chinook salmon bycatch with other sectors, inshore cooperatives, or CDQ groups.

Allow post-delivery (bycatch) transfer of Chinook salmon allocations. This provision would be administered consistent with the post-delivery provisions the Council adopted for the BSAI crab rationalization program, Amendment 80, and Rockfish Program, except that any recipient of a post delivery transfer during a season may not fish for the remainder of that season.

**Component 5: Performance standard**

Each sector will be annually evaluated against a performance standard. If the sector's annual Chinook salmon bycatch exceeds the sector's portion of the annual scenario 2 cap level in any 3 years within a consecutive 7-year period, all vessels within that sector will operate under annual scenario 2 in all subsequent years. Any vessel or CDQ group that fishes under the opt out backstop pool will not be evaluated or included in annual calculations of a sector's performance standard.

**Component 6: Observer program**

The Council includes in its preferred alternative the observer coverage and monitoring requirements recommended by NMFS for the PPA and described in section 2.5.4.3 (page 98) of the DEIS and in sections 2.5.2.7 and 2.5.2.8 (pages 81 - 84). These recommendations increase observer coverage to 100 percent for catcher vessels regardless of vessel length. This increase in observer coverage does not apply to catcher vessels delivering unsorted codends at sea. Chinook salmon would be allowed to be discarded from catcher vessels only after being reported to and recorded by the vessel observer.

The Council also authorizes NMFS to develop modifications to regulations for the shoreside processors' catch monitoring and control plans to add performance standards to ensure accurate accounting for Chinook salmon at the plants, if NMFS determines that such modifications are needed.

**Remove current regulations for Chinook salmon PSC management**

In taking final action, the Council's intent is for NMFS to remove current regulations governing Chinook salmon PSC management in the Bering Sea and replace those regulations with the preferred alternative. Revisions to current regulations are as follows:

- Remove regulations for the current BS Chinook salmon PSC limit of 29,000 salmon that triggers closure of the Chinook salmon savings area for the BS pollock fishery.

- Remove Chinook salmon savings area definition for the BS.

- Remove exemptions to closure of the BS Chinook salmon savings areas for those cooperatives and CDQ groups participating in the current voluntary rolling hot spot (VRHS) ICA.

- Remove all elements of the current VRHS ICA regulations addressing Chinook salmon. New Chinook salmon bycatch management measures, including any incentive plan agreement requirements, would be added to the regulations. Retain regulations for the non-Chinook salmon components of the current VRHS ICA would remain.

The Council deems proposed regulations that clearly and directly flow from the provisions of this motion to be necessary and appropriate in accordance with section 303 (c) and therefore the Council authorizes the Executive Director and the Chair to review the draft proposed regulations when provided by NMFS to ensure that the proposed regulations to be submitted to the Secretary under section 303 (c) are consistent with these instructions.

**APPENDIX B: DRAFT FORMS FOR CHINOOK TRANSFER REPORT, FUEL SURVEY, AND VESSEL MASTER SURVEY**

ANNUAL

# AMENDMENT 91
# AFA POLLOCK FISHERY

## CHINOOK PSC ALLOCATION IN-SEASON COMPENSATED TRANSFER REPORT CALENDAR YEAR 20XX

This form can be downloaded from
http://www.fakr.noaa.gov

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**PUBLIC REPORTING BURDEN STATEMENT**

Public reporting burden for this collection of information is estimated to average 40 hours per response, including time for reviewing the instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden to Assistant Regional Administrator, Sustainable Fisheries Division, NOAA National Marine Fisheries Service, P.O. Box 21668, Juneau, AK 99802-1668.

**ADDITIONAL INFORMATION**

Before completing this form, please note the following: 1) Notwithstanding any other provision of law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the Paperwork Reduction Act, unless that collection of information displays a currently valid OMB Control Number; 2) This information is mandatory and is required to manage commercial fishing efforts for groundfish under section 402(a) of the Magnuson-Stevens Act (16 U.S.C. 1801, *et seq*.) as amended by the Magnuson-Stevens Fishery Management and Conservation Reauthorization Act of 2006; 3) Responses to this information request are confidential under section 402(b) of the Magnuson-Stevens Act (16 U.S.C. 1801, *et seq*.). They are also confidential under NOAA Administrative Order 216-100, which sets forth procedures to protect confidentiality of fishery statistics.

## ANNUAL CHINOOK PSC COMPENSATED TRANSFER REPORT

Introduction

An owner or leaseholder of an AFA permitted vessel and the representative of any entity that received an allocation of Chinook PSC from NMFS must submit a Compensated Transfer Report (CTR) Part 1 each year, for the previous calendar year. In addition, any person who paid or received money for a transfer of Chinook salmon PSC allocation after January 20 must submit a completed CTR (Part 1 and Part 2) for the previous calendar year. Each year, the completed
CTR must be submitted on or before 1700 hours A.l.t. on June 1, The CTR must be submitted to the NMFS Data Collection Agent (DCA), Pacific States Marine Fisheries Commission, at the address below:

Pacific States Marine Fisheries Commission
NMFS Economic Data Reports
205 SE Spokane, Suite 100
Portland, OR 97202
FAX No. 503-595-3450
EMAIL:CTR@psmfc.org
For more information, or if you have questions, please call toll free 1-877-741-8913

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**PART 1: CERTIFICATION PAGE – 1 of 2**

This is a **required form.** Provide all information requested below.

| **Entity Information**<br>Check the appropriate entity type and record the name and NMFS ID for the entity. | | |
|---|---|---|
| Reporting Entity Type (Check One) | ☐ AFA Vessel | ☐ IPA |
| | ☐ Inshore Cooperative | ☐ Sector-level Entity |
| | ☐ CDQ Group | ☐Other: describe _____ |
| Name of Reporting Entity | | AFA Permit Number or Entity NMFS ID |

| **Person Completing this Report**<br>**Check one:**<br>❒ Representative for an IPA, Inshore Cooperative, Sector-Level Entity, or CDQ Group (record the name and NMFS ID of the individual registered with NMFS as the representative)<br>❒ Vessel Owner/Leaseholder (Provide the name, title, and contact information for the individual submitting the form)<br>❒ Other Designated Representative (complete all information below) | |
|---|---|
| Name | Title/NMFS ID |
| Business Number Telephone | Business FAX Number |
| Business E-mail address (if available) | |

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## PART 1: CERTIFICATION PAGE – 2 of 2

**Provide any requested information. Check one box below.**

| |
|---|
| ❒ 1. You are the owner or leaseholder of an AFA permitted vessel or are a person or representative of a person that received an allocation of Chinook PSC from NMFS, and must submit a Compensated Transfer Report (CTR) Part 1 each year, for the previous calendar year.<br>**Complete and submit CTR Part 1 form for the 20XX calendar year**. |
| ❒ 2. You are the owner or leaseholder of an AFA permitted vessel or are a person or representative of a person who paid or received money for a transfer of Chinook salmon PSC allocation after January 20 must submit a completed CTR (Part 1 and Part 2) for the previous calendar year.<br>**Complete and submit CTR Part 1 and Part 2 form for the 20XX calendar year** |

### Read the following statement, and sign and date the box below:

| **I certify under penalty of perjury that I have reviewed all the information in this report and that it is true and complete to the best of my knowledge.** | |
|---|---|
| Signature | Date signed |

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## PART 2: CHINOOK SALMON PSC ALLOCATION TRANSFER INFORMATION

In Table 1, report each transfer of Chinook salmon Prohibited Species Catch (PSC) allocation to or from another person during the calendar year 2009 for which you paid or received monetary compensation. Compensated transfers are those transfers that include monetary compensation for a part of or the whole value of the transferred Chinook PSC allocation:

**NMFS ID:** identify the other person who paid or received money for each transfer. If the other person was a vessel owner/leaseholder, record the AFA Vessel Permit Number. For other persons, record the NMFS ID. If an AFA Vessel Permit or NMFS ID of entity is unavailable, record the entity name.

**Direction of Transfer:** using the checkbox, indicate if the Chinook salmon were transferred (sold) to another person by you, or transferred (bought) from another person by you.

**Date of transfer:** record the date Chinook salmon were transferred to the receiving person. This may not be the date of final settlement on terms of compensation.

**Transfer Type:** Identify the type(s) of association between you and the other entity in the transfer. Use the following codes to identify the type(s) of association (check all that apply):

| Association Type | Association between transfer entities description |
|---|---|
| 1 | Transfer is between 2 persons which are affiliated as under AFA as defined in 50 CFR part 679.2 |
| 2 | Transfer is between 2 persons in the same pollock cooperative but not affiliated under AFA |
| 3 | Transfer is between 2 persons in the same AFA sector but not affiliated under AFA or in the same pollock cooperative (inshore only) |
| 4 | Transfer is between 2 persons not part of the same AFA sector or pollock cooperative, and not affiliated under AFA |

**Entity Type:** indicate the entity type of the other party in the Chinook salmon PSC allocation transfer. Check one: Vessel Owner/Leaseholder, IPA, Inshore Cooperative, Sector-level Entity, CDQ Group, or other entity type.

**Chinook Salmon PSC Allocation Transferred and Compensation**

**Number of Chinook salmon transferred:** for each transfer, record the number of Chinook salmon transferred.

**Payment amount:** record the total amount of money in U.S. dollars for each transfer. Report all payment as of the date of submission of this form. This includes all money paid for the transfer regardless of whether other assets, such as pollock quota, are included in the transaction. Do not report any compensation made in any form other than monetary compensation.

**Other assets included:** If the transaction included assets other than Chinook salmon and monetary compensation, indicate this using the checkbox. Other assets could include pollock quota, goods, or services of value. Do not check the box if additional assets included only assets of nominal or no value.

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## Table 1. Chinook PSC Allocation Transfer Information

| NMFS ID or NMFS ID of Entity Transferred To/From | Transfer to other person, or from other person to you | Date of Transfer (mm/dd/yy) | Transfer Type I, 2, 3,or 4 | Entity Type (Check One) | | | | | | Chinook salmon PSC Allocation Transferred and Compensation | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Vessel Owner/ Leaseholder | IPA | Inshore Coop | Sector-Level Entity | CDQ Group | Other | Amount of Chinook salmon Transferred (number of salmon) | Payment Amount ($US) | Nonmonetary assets Included? (Check if Yes) |
| | ☐To ☐From | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | ☐ |
| | ☐To ☐From | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | ☐ |
| | ☐To ☐From | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | ☐ |
| | ☐To ☐From | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | ☐ |
| | ☐To ☐From | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | ☐ |
| | ☐To ☐From | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | ☐ |
| | ☐To ☐From | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | ☐ |
| | ☐To ☐From | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | ☐ |
| | ☐To ☐From | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | ☐ |
| | ☐To ☐From | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | ☐ |
| | ☐To ☐From | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | ☐ |
| | ☐To ☐From | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | ☐ |
| | ☐To ☐From | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | ☐ |
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| | ☐To ☐From | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | ☐ |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ☐To<br>☐From | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | ☐ |
| | ☐To<br>☐From | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | ☐ |
| | ☐To<br>☐From | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | ☐ |
| | ☐To<br>☐From | | | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | ☐ |

OMB Control No. XXXX-XXXX
Expiration Date: XX/XX/XX

ANNUAL

# AMENDMENT 91
# AFA POLLOCK FISHERY

# VESSEL FUEL SURVEY

CALENDAR YEAR 20XX

This form can be downloaded from
http://www.fakr.noaa.gov

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**PUBLIC REPORTING BURDEN STATEMENT**

Public reporting burden for this collection of information is estimated to average 4 hours per response, including time for reviewing the instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden to Assistant Regional Administrator, Sustainable Fisheries Division, NOAA National Marine Fisheries Service, P.O. Box 21668, Juneau, AK 99802-1668.

**ADDITIONAL INFORMATION**

Before completing this form, please note the following: 1) Notwithstanding any other provision of law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the Paperwork Reduction Act, unless that collection of information displays a currently valid OMB Control Number; 2) This information is mandatory and is required to manage commercial fishing efforts for groundfish under section 402(a) of the Magnuson-Stevens Act (16 U.S.C. 1801, *et seq*.) as amended by the Magnuson-Stevens Fishery Management and Conservation Reauthorization Act of 2006; 3) Responses to this information request are confidential under section 402(b) of the Magnuson-Stevens Act (16 U.S.C. 1801, *et seq*.) and the Trade Secrets Act (18 U.S.C. 1905). They are also confidential under NOAA Administrative Order 216-100, which sets forth procedures to protect confidentiality of fishery statistics.

## ANNUAL AFA POLLOCK VESSEL FUEL SURVEY

Introduction

An owner or leaseholder of an AFA permitted vessel must submit a Vessel Fuel Survey for each vessel used to harvest pollock in the Bering Sea in the year listed on this form. It is the responsibility of the vessel owner/leaseholder to submit all completed surveys to NMFS. This survey is intended to provide information to fishery managers to evaluate the effectiveness of Chinook salmon bycatch management measures. The survey collects information on the quantity and cost of all fuel consumed by each AFA vessel harvesting or processing pollock during the calendar year.

Please contact Brian Garber-Yonts at the NMFS Alaska Fisheries Science Center with any questions regarding this survey. He can be contacted at (206) 526-6301 or brian.garber-yonts@noaa.gov.

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## PART 1: CERTIFICATION PAGE

This is a **required form.** Provide all information requested below.

| **AFA Vessel Owner or Vessel Leaseholder Information**<br>Record the name and NMFS ID for the AFA Vessel Owner/Leaseholder here. NMFS ID for all AFA participating entities can be accessed at http:/XXX | |
|---|---|
| AFA Vessel Owner/Leaseholder Name | Vessel Owner/Leaseholder NMFS ID |

**Select one of the following statements and provide any requested information. Check one box below.**

| |
|---|
| ❒ **1. You were the AFA permit holder or leaseholder for one or more AFA vessels that harvested or processed pollock during the calendar year 20XX.**<br>**Complete and submit <u>entire form</u> for the 20XX calendar year.** |
| ❒ **2. You were the AFA permit holder for an AFA vessel that did not harvest or process AFA pollock during the calendar year 20XX.**<br>**Complete and submit the <u>Certification Page only.</u>** |

### Read the following statement, and sign and date the box below:

| **I certify under penalty of perjury that I have reviewed all the information in this report and that it is true and complete to the best of my knowledge.** | |
|---|---|
| Signature | Date signed |

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**Part 2: Vessel Fuel Consumption and Purchase Cost**

In Table 2, for each vessel operated by you in the AFA pollock fishery during calendar year 20XX, report the following information:

1. AFA Vessel Permit Number

2. Average rate of fuel consumption. For each vessel, report the average rate of fuel consumption per hour under average operating conditions during the calendar year. Report the fuel consumption rate separately for operating while towing and operating while transiting (traveling between points on fishing grounds, but not towing). Report fuel consumption rates for the pollock fishery only. For motherships, report the rate of fuel consumption for transiting only. If you do not have equipment on the vessel for actively monitoring the rate of fuel usage, provide the most accurate estimate you can based on the best information you have available.

3. Fuel Purchased During Calendar Year. For each vessel, report the total amount of purchased fuel loaded to the vessel, in gallons, and total purchase cost of fuel loaded to the vessel during the calendar year. Include all fuel that was loaded and invoiced, even if not completely used or paid for during the calendar year. Do not include lubrication and fluids costs other than fuel.

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**Table 2: Vessel Fuel Consumption and Costs**

| AFA Vessel Permit Number | Average Rate of Fuel Consumption for pollock fishing only (gallons per hour) | | Fuel Purchased During Calendar Year for all fishing | |
|---|---|---|---|---|
| | Fishing | Transiting (not fishing) | Fuel Loaded (gallons) | Fuel Cost ($ US) |
| | | | | |
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ANNUAL

# AMENDMENT 91
# AFA POLLOCK FISHERY

# VESSEL MASTER SURVEY

CALENDAR YEAR 20XX

This form can be downloaded from
http://www.fakr.noaa.gov

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**PUBLIC REPORTING BURDEN STATEMENT**

Public reporting burden for this collection of information is estimated to average 4 hours per response, including time for reviewing the instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden to Assistant Regional Administrator, Sustainable Fisheries Division, NOAA National Marine Fisheries Service, P.O. Box 21668, Juneau, AK 99802-1668.

**ADDITIONAL INFORMATION**

Before completing this form, please note the following: 1) Notwithstanding any other provision of law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the Paperwork Reduction Act, unless that collection of information displays a currently valid OMB Control Number; 2) This information is mandatory and is required to manage commercial fishing efforts for groundfish under section 402(a) of the Magnuson-Stevens Act (16 U.S.C. 1801, *et seq*.) as amended by the Magnuson-Stevens Fishery Management and Conservation Reauthorization Act of 2006; 3) Responses to this information request are confidential under section 402(b) of the Magnuson-Stevens Act (16 U.S.C. 1801, *et seq*.) and the Trade Secrets Act (18 U.S.C. 1905). They are also confidential under NOAA Administrative Order 216-100, which sets forth procedures to protect confidentiality of fishery statistics.

## ANNUAL AFA POLLOCK VESSEL MASTER SURVEY

Introduction

An owner or leaseholder of an AFA permitted vessel must submit a Vessel Master Survey completed by each master of each vessel used to harvest pollock in the Bering Sea in the previous year. It is the responsibility of the vessel owner/leaseholder to submit all completed surveys to NMFS and fill out Part 1A for each MS. Part 1A must list each Vessel Master who participated in the BS pollock fishery. Each Vessel Master Survey submitted by the owner or leaseholder of an AFA permitted vessel must have Part 1B and Part 2 filled out by the Vessel Master.

This survey is intended to provide information to fishery managers to evaluate the effectiveness of Chinook salmon bycatch management measures. The questions in this survey ask about different aspects of your decision-making during the pollock season, including your incentives, fishing location choices, and salmon bycatch reduction measures.

Please contact Brian Garber-Yonts at the NMFS Alaska Fisheries Science Center with any questions regarding this survey. He can be contacted at (206) 526-6301 or brian.garber-yonts@noaa.gov.

## PART 1A: CERTIFICATION PAGE (OWNER AFA PERMITTED VESSEL)

Complete and submit with each vessel master survey for an AFA Permitted Vessel**.** Provide all information requested below.

| | |
|---|---|
| Vessel Owner /Leaseholder Name | Vessel Name |
| | AFA Permit Number |

| | |
|---|---|
| Vessel Master Name | CFEC Gear Operator Permit Number |
| Vessel Master Name | CFEC Gear Operator Permit Number |
| Vessel Master Name | CFEC Gear Operator Permit Number |
| Vessel Master Name | CFEC Gear Operator Permit Number |

**Read the following statement, and sign and date the box below:**

| **I certify under penalty of perjury that I have reviewed all the information in this report and that it is true and complete to the best of my knowledge.** | |
|---|---|
| Signature (owner or leaseholder of an AFA permitted vessel) | Date signed |

## PART 1B: CERTIFICATION PAGE (VESSEL MASTER)

This is to be completed by the Vessel Master of each AFA vessel**.** Provide all information requested below.

| Vessel Owner /Leaseholder Name | Vessel Name |
|---|---|
| | AFA Permit Number |

| Vessel Master Name | CFEC Gear Operator Permit Number |
|---|---|
| | |

**Read the following statement, and sign and date the box below:**

| **I certify under penalty of perjury that I have reviewed all the information in this report and that it is true and complete to the best of my knowledge.** | |
|---|---|
| Signature (Vessel Master) | Date signed |

**Part 2: Pollock Fishing and Salmon Bycatch Avoidance**

Please consider the following questions carefully and provide the most complete answers you can, to your best ability. Where applicable, please note any differences between the A and B pollock seasons. Please attach extra sheets if more space is needed to complete your answers.

1. If the vessel participated in an Incentive Plan Agreement (IPA), did the IPA affect your fishing strategy? ☐Yes ☐No
If yes, please describe and discuss what incentives had the largest impact on your strategy.

2. Did the amount and/or cost of Chinook PSC allocation available to the vessel lead you to make changes in pollock fishing operations? ☐Yes ☐No
If yes, please describe.

3. How would you compare the Chinook salmon bycatch and pollock conditions during the A and B seasons this year relative to the last two years? Please describe any unique aspects of the season.

4. Did Chinook salmon bycatch conditions cause you to delay the start of your pollock fishing or otherwise alter the timing of your pollock fishing for some period during the past A and/or B season? ☐Yes ☐No

If yes, please describe the Chinook salmon bycatch condition, when it occurred, and any change in your pollock fishing as a result.

5. In the past year, did you end a trip and return to port early because of Chinook salmon bycatch conditions? Please indicate the number of trips that this occurred in each season (use a check to mark the appropriate answer for each season).

| Number of trips suspended due to bycatch | Season | |
|---|---|---|
| | A | B |
| 0 | ☐ | ☐ |
| 1-3 | ☐ | ☐ |
| 4-10 | ☐ | ☐ |
| More than 10 | ☐ | ☐ |

6. Please describe how any area closures or restrictions for the purpose of reducing Chinook salmon bycatch affected where and how you fished.

7. Please describe how any regulatory or other area closures or restrictions for a purpose other than reducing Chinook salmon bycatch affected your avoidance of Chinook PSC.

8. Compared to a typical year, did weather or sea ice conditions have more, less, or about the same impact on fishing as in a typical year? Please describe especially if there were particularly uncommon conditions at any point this year. If these conditions had an impact on your ability to avoid Chinook salmon bycatch, please describe.

9. Were there exceptional factors that affected your pollock fishing this year in regard to Chinook salmon bycatch avoidance? For example, were there unusual market or stock conditions, unusual pollock fishing conditions, or maintenance problems? Please describe.

10. Separate from an Incentive Plan Agreement, were there other incentives for you to reduce Chinook salmon bycatch? ⚐Yes ⚐No

If yes, please describe.

11. Did actual or potential bycatch of species other than Chinook salmon cause you to change your harvesting decisions during the pollock season? ☐Yes ☐No

If yes, please describe.

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R:\region\archives\2012\Jan\BS Chinook salmon bycatch EDR Final FRFA.frfa.docx.docx

Jhartman: 9/14/11, 9/25/11, 9/30/11
Gaberle: 9/23/11
MBrown:9/30/11
Gmerrill:
Sbibb:
Tmeyers:
Llindeman:
NMFS Edits: