

SURVEILLANCE NO. 1

Report for the Alaska Pacific Cod Fishery

Alaska Fisheries Development Foundation (AFDF)

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Objective:

The objective of this report is the first surveillance audit of the Alaska Cod fishery against the RFM standard v1.3.

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Reference to part of this report which may lead to misinterpretation is not permissible.

Rev. No.	Date	Reason for Issue	Prepared by
0	20.03.2019	First Issue	Andy Hough, Anna Kiseleva, Bill Brodie



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GLOSSARY

Abbreviations & acronyms

ABC	Allowable Biological Catch
ADFG	Alaska Department of Fish and Game
AFA	American Fisheries Act
AFSC	Alaska Fisheries Science Center
ASMI	Alaska Seafood Marketing Institute
BOF	Board of Fisheries
BSAI	Bering Sea and Aleutian Islands
CCRF	Code of Conduct for Responsible Fisheries
CDQ	Community Development Quota
CFEC	Commercial Fisheries Entry Commission
CIE	Center of Independent Experts
CPUE	Catch per Unit Effort
EBS	Eastern Bering Sea
EIS	Environmental Impact Statement
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
ESA	Endangered Species Act
FAO	Food and Agriculture Organization of the United Nations
FMP	Fishery Management Plan
GOA	Gulf of Alaska
GHL	Guideline Harvest Level
IFQ	Individual Fishing Quota
IPHC	International Pacific Halibut Commission
IRFA	Initial Regulatory Flexibility Analysis
IRIU	Improved Retention/Improved Utilization
IUU	Illegal, Unreported, and Unregulated (fishing)
LLP	License Limitation Program
MSFCMA or MSA	Magnuson-Stevens Fisheries Management and Conservation Act
mt or t	Metric tons
MSST	Minimum Stock Size Threshold
MSY	Maximum Sustainable Yield
NBS	Northern Bering Sea
NEPA	National Environmental Policy Act
nm	Nautical miles
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPFMC	North Pacific Fishery Management Council
OFL	Overfishing Level
OLE	Office for Law Enforcement
OY	Optimum Yield
PA	Precautionary Approach
PSC	Prohibited Species Catch
PWS	Prince William Sound
REFM	Resource Ecology and Fisheries Management
RFM	Responsible Fisheries Management
SAFE	Stock Assessment and Fishery Evaluation (Report)
SSC	Scientific and Statistical Committee
SSL	Steller Sea Lion
TAC	Total Allowable Catch
USCG	U.S. Coast Guard

1 SUMMARY AND RECOMMENDATION

1.1 Fundamental Clauses Summary

Fundamental Clause	Evidence adequacy rating:	Justification:
1: Structured and legally mandated management system	High	<p>The Alaskan P. cod fisheries are managed by the North Pacific Fishery Management Council (NPFMC) and the National Oceanic and Atmospheric Administration's NOAA National Marine Fisheries Service (NMFS) in the federal waters (3-200 nm); and by the Alaska Department for Fish and Game (ADFG) and the Board of Fisheries (BOF) in the state waters (0-3 nm). In federal waters, Alaska P. cod fisheries are managed under the Council's Gulf of Alaska (GOA) and Bering Sea and Aleutian Islands (BSAI) Groundfish Fishery Management Plans (FMPs) written and amended subject to the Magnuson Stevens Act (MSA). Within state waters, ADFG and the BOF manage the eight P. cod fisheries as "parallel" or state fisheries, conducted under federal TACs, regulations and management measures. Parallel fisheries occur simultaneously with federal fisheries and state fisheries operate after the federal/parallel fisheries close, and are based on Guideline Harvest Levels (GHL) set as percentages of the GOA federal Allowable Biological Catch (ABC). The US Coast Guard (USCG), the NMFS Office of Law Enforcement (OLE) and the Alaska Wildlife Troopers (AWT) and/or deputized ADFG staff, enforce fisheries regulations in federal and state waters respectively.</p>
2: Coastal area management frameworks	High	<p>The NMFS and NPFMC participate in coastal area management-related institutional frameworks through the federal National Environmental Policy Act (NEPA) processes. These include decision-making processes and activities relevant to fishery resources and users in support of sustainable and integrated use of living marine resources and avoidance of conflict among users. The NEPA processes provide public information and opportunity for public involvement that are robust and inclusive at both the state and federal levels. With regards to conflict avoidance and resolution between different fisheries, the Council and the BOF tend to avoid conflict by actively involving stakeholders in the process leading up to decision making. Both entities provide information on their websites, including agenda of meetings, discussion papers, and records of decisions. The Council and the BOF actively encourage stakeholder participation, and their deliberations are conducted in open, public sessions. The Community Development Quota (CDQ) Program was created by the NPFMC in 1992 to provide western Alaska communities an opportunity to participate in the BSAI fisheries. There are 65 communities within a fifty-mile radius of the Bering Sea coastline who participate in the program, which allocates a percentage of the BSAI TACs for several species.</p>
3: Management	High	<p>The Magnuson Stevens Fishery Conservation and</p>

objectives and plan

Management Act (MSA) is the primary domestic legislation governing the management of the USA marine fisheries. Under the MSA, NPFMC is authorized to prepare and submit to the Secretary of Commerce a Fishery Management Plan (FMP) and any necessary amendments, for each fishery under its authority that requires conservation and management. These include Groundfish FMPs for the Gulf of Alaska (GOA) and the Bering Sea & Aleutian Islands (BSAI) which incorporate the P. cod fisheries in those regions. Both FMPs present long-term management objectives for the Alaska P. cod fishery, reviewed annually by the Council. In state waters, the BOF has identified guiding principles for the development of their groundfish management plans.

4: Fishery data High

The NMFS and the ADFG collect fishery data and conduct fishery independent surveys to assess the P. cod fisheries and ecosystems in GOA and BSAI. Stock Assessment and Fishery Evaluation (SAFE) reports provide complete descriptions of data collections and time series. Records of catch and effort are firstly recorded through the e-landing (electronic fish tickets) catch recording system and secondly, collected by vessel captains in logbooks. Fishery independent data are collected in regular trawl and longline surveys of both the GOA and BSAI regions and additional fishery dependent data are collected by the extensive observer program present in both regions. Other sources of data are also considered during the stock assessment process.

5: Stock assessment High

The NMFS has a well-established institutional framework for research developed within the AFSC. Scientists at the AFSC conduct research and stock assessments on P. cod in Alaska each year, producing annual Stock Assessment and Fishery Evaluation (SAFE) reports for the federally managed EBS, GOA, and Aleutian Islands P. cod stocks. ADFG also conducts scientific research and surveys on its state-managed P. cod fisheries. These SAFE reports summarize the best-available science, document stock status, significant trends or changes in the resource, marine ecosystems, and fishery over time, assess the relative success of existing state and Federal fishery management programs, and produce recommendations for annual quotas and other fishery management measures. The annual stock assessments are peer reviewed by experts and recommendations are made annually to improve the assessments. An additional level of peer review by external experts is conducted periodically (CIE reviews). The most recent stock assessments for GOA and EBS P. cod have shown large declines in biomass, and management actions have reduced the ABC and TAC levels. None of the 3 P. cod stocks are determined to have overfishing occurring, and the EBS and GOA stocks are not overfished, and are not approaching an overfished condition.

6: Biological reference points and harvest control rule High

The stock assessment (SAFE) volume contains a chapter or sub-chapter for each stock, and contains estimates of all annual harvest specifications except



TAC, all reference points needed to compute such estimates, and all information needed to make annual status determinations with respect to “overfishing” and “overfished”. The NPFMC harvest control system is a complex and multi-faceted suite of management measures to address issues related to sustainability, legislative mandates, and quality of information. The tier system specifies the maximum permissible Allowable Biological Catch (ABC) and of the Overfishing Level (OFL) for each stock in the complex. Stocks in tier 3 are further categorized (a) (b) or (c) based on the relationship between Biomass and B40% (Tier 3). The category assigned to a stock determines the method used to calculate ABC and OFL. As specified in the MSA, if stocks decline below the MSST (e.g. B17.5%), a rebuilding plan must be established to bring the biomass back to the BMSY level within a specified timeframe. For P. cod and some other stocks, there is an additional threshold, B20%, used as a measure to protect Steller sea lions. Based on the 2018 SAFE report, there is a 20.7% probability that biomass for GOA P. cod is below the B20% threshold in 2019, but only a 1.1% probability that the stock is below B17.5%. Biomass of EBS P. cod was estimated to be above B40% in 2019 (Tier 3a), but projected to decline to below B40% in 2020 (Tier 3b).

7: Precautionary approach High

Precautionary approach (PA)-based reference points are used in the management of the P. cod stocks, and the scientific information and stock assessments available are at a consistently high level, providing the necessary basis for conservation and management decisions. There are three core components to the application of the PA in Alaskan groundfish fisheries. Firstly, the FMP for each management area sets out an Optimum Yield (OY) for the groundfish complex in each of BSAI and GOA Regions as a whole, which includes P. cod along with the majority of targeted groundfish species. This value has been accepted as 2 million t for the BSAI Region. The second component is the tier system, which assigns each groundfish stock to a tier according to the level of scientific understanding, data available, and uncertainty associated with the fishery. Each tier has an associated set of management guidelines, particularly in relation to calculating the level of catch permitted. The EBS and GOA P. cod stocks are categorized as tier 3 while the AI stock is tier 5. The third component is Overfishing Limit (OFL), Acceptable Biological Catch (ABC) and Total Allowable Catch (TAC) system.

8: Management measures to produce maximum sustainable levels High

The Magnuson Stevens Act is the federal legislation that defines how fisheries off the United States EEZ are to be managed. From this legislation and NPFMC objectives, the management system for the Alaska groundfish fisheries has developed into a complex suite of measures comprised of harvest controls—e.g., OY, TAC, ABC, OFL, effort controls (limited access, licenses, cooperatives), time and/or area closures (habitat protected areas, marine reserves), by-catch controls



(PSC limits, Maximum Retainable Allowances (MRA), gear modifications, retention and utilization requirements), observers, monitoring and enforcement programs, social and economic protections, and rules responding to other constraints (e.g., regulations to protect Steller sea lions (SSL)). Stocks are measured against metrics defined in the MSA and if they are overfished, approaching an overfished condition, or overfishing is occurring, specific measures must be taken, such as implementing a rebuilding program within specified timeframes. The NPFMC harvest control system is complex and multi-faceted in order to address issues related to sustainability, legislative mandates, and quality of information.

9: Appropriate standards of fisher's competence High

Alaska enhances through education and training programs the education and skills of fishers and, where appropriate, their professional qualifications. Records of fishers are maintained along with their qualifications.

10: Effective legal and administrative framework High

The Alaska P. cod fishery uses enforcement measures including vessel monitoring systems (VMS) on board vessels, USCG boardings and inspection activities. The U.S. Coast Guard (USCG) and NMFS Office of Law Enforcement (OLE) enforce fisheries laws and regulations. OLE Special Agents and Enforcement Officers conduct complex criminal and civil investigations, board vessels fishing at sea, inspect fish processing plants, and conduct patrols on land, in the air and at sea. Observers are required to report infringements, and OLE and USCG officers conduct debriefing interviews with observers, checking on vessels fishing practices and the conduct of the crew. NOAA Agents and Officers can assess civil penalties directly to the violator in the form of or can refer the case to NOAA's Office of General Counsel for Enforcement and Litigation. State regulations are enforced by the Alaska Wildlife Troopers (AWT).

11: Framework for sanctions High

The MSA provides four basic enforcement remedies for violations: 1) Issuance of a citation (a type of warning), usually at the scene of the offense, 2) Assessment by the Administrator of a civil money penalty, 3) for certain violations, judicial forfeiture action against the vessel and its catch, 4) Criminal prosecution of the owner or operator for some offenses. In some cases, the MSA requires permit sanctions following the assessment of a civil penalty or the imposition of a criminal fine. The 2011 NOAA Policy for the Assessment of Civil Administrative Penalties and Permit Sanctions issued by NOAA Office of the General Counsel – Enforcement and Litigation, provides guidance for the assessment of civil administrative penalties and permit sanctions under the statutes and regulations enforced by NOAA. The AWT enforce state water regulations with a number of statutes that enable the government to fine, imprison, and confiscate equipment for violations and restrict an individual's right to fish if convicted of a violation. The low proportion of violations encountered during at-sea patrols of the Alaska fisheries demonstrates effective

12: Impacts of the fishery on the ecosystem

High

deterrence. No recent sanctions have been applied by State of Alaska authorities in the state P. cod fisheries and ADFG considers that sanctions are effective deterrents.

The NPFMC, NOAA (NMFS) and other relevant organisations continue to closely monitor the fisheries and their respective environmental effects. Appropriate significance appears to be allocated to issues of concern (including in response to stakeholder concerns – such as effects on bycatch populations and effects on habitat). Fishery management plans, Environmental Impact Assessments and other assessments are kept under review. No changes are apparent in the management of the GoA or BSAI fisheries that would detrimentally affect performance against the confidence ratings for any supporting clauses. Full conformance continues against all supporting clauses.
NA: Not an enhanced fishery

13: Enhanced fisheries

NA

1.2 Audit conclusion

Fishery	Status of certification	Comment
<p>Pacific cod commercial fishery employing bottom trawl gear, longline gear, pot gear and jig gear within Alaska jurisdiction (200 nautical miles EEZ), and subjected to federal [National Marine Fisheries Service (NMFS)/North Pacific Fishery Management Council (NPFMC)] and state [Alaska Department of Fish and Game (ADF&G) & Board of Fisheries (BOF)] management.</p>	<p>Certified</p>	<p>Following the results of the 1st surveillance audit finalized in February 2019, the assessment team concludes that the RFM Certificate for this fishery shall remain active until the certificate expiry date of 5 December 2022.</p>

2 GENERAL INFORMATION

Table 1 General information

Fishery name	Alaska Cod Fishery		
Unit(s) of Assessment (UoA)	Applicant Group:	Alaska Cod Fishery Client Group	
	Product Common Name (Species):	Pacific cod (<i>Gadus macrocephalus</i>)	
	Geographic Location:	Gulf of Alaska and Bering sea & Aleutian Islands within Alaska jurisdiction (200 nautical miles EEZ).	
	Gear Types:	Bottom trawl, Longline, Pot and Jig gear	
	Principal Management Authority:	National Marine Fisheries Service; North Pacific Fishery Management Council; Alaska Department of Fish and Game; Alaska Board of Fisheries	
Date re-certified	6 December 2017	Date of certificate expiry	5 December 2022
Surveillance type	Off-site surveillance/document review		
Date of surveillance audit	January-February 2019		
Surveillance stage	1st Surveillance	X	
	2nd Surveillance		
	3rd Surveillance		
	4th Surveillance		
	Other (expedited etc)		
Surveillance team	Lead assessor: Anna Kiseleva Assessor(s): Andrew Hough, Bill Brodie		

This report contains the findings of the 1st annual RFM Fisheries surveillance audit conducted for the Alaska p. cod fishery during January-February 2019.

The Alaska RFM programme is a voluntary program that has been developed by ASMI to provide an independent, third- party certification that can be used to verify that these fisheries are responsibly managed according to the Alaska RFM standard.

This assessment is based on the fundamental clauses specified in the Alaska RFM Conformance Criteria v1.3. It is based on six major components of responsible management derived from the FAO Code of Conduct for Responsible Fisheries (1995) and Guidelines for the Eco-labeling of products from marine capture fisheries (2009). The fundamental clauses are:

- A The Fisheries Management System
- B Science and Stock Assessment Activities
- C The Precautionary Approach
- D Management Measures
- E Implementation, Monitoring and Control
- F Serious Impacts of the Fishery on the Ecosystem

The purpose of this annual Surveillance Report is:

1. To establish and report on any material changes to the circumstances and practices affecting the original complying assessment of the fishery;
2. To monitor any actions taken in response to non-conformances raised in the original assessment of the fisheries;
3. To re-score any clauses where practice or circumstances have materially changed since the last audit.

3 ASSESSMENT TEAM DETAILS

Name

William (Bill) Brodie

Main area of responsibility

Fundamental clause A (The Fisheries Management System), B (Science and Stock Assessment activities), C (The precautionary approach), D (Management measures), and E (Implementation monitoring and control)

Qualifications summary

Bill Brodie is an independent fisheries consultant with previously, a 36-year career with Science Branch of Fisheries and Oceans Canada (DFO, Newfoundland and Labrador Region). He has a BSc in Biology from Memorial University of Newfoundland and Labrador. For the last twelve years with DFO he worked as Senior Science Coordinator/Advisor on Northwest Atlantic Fisheries Organization (NAFO) issues, serving as chair of the Scientific Council of NAFO and chairing 3 of its standing committees. As a stock assessment biologist, he led assessments and surveys for several flatfish species and stocks, including American plaice, Greenland halibut, yellowtail and witch flounders. These include the largest stocks of flatfish in the NW Atlantic. He also participated in assessments of flatfish, gadoid, and shrimp stocks in the NE Atlantic and North Sea. Bill has participated in over 30 scientific research vessel fisheries surveys on various Canadian and international ships, and he has published extensively in the scientific and technical literature, primarily on flatfish stock assessment. He has been involved with fishery managers and the fishing industry on a wide range of issues, including identification of ecologically sensitive areas, and developing rebuilding plans for groundfish under a Precautionary Approach. Since retirement from DFO in 2014, Bill has been contracted to serve as an assessor and/or reviewer on several Responsible Fisheries Management certification assessment and surveillance audits for Alaskan stocks including Pacific cod, halibut, sablefish, pollock, flatfish, and crab. He has also provided peer review for MSC certification assessments for stocks in the Grand Banks and Icelandic areas.

Andrew Hough

Main area of responsibility

Fundamental clause F (Serious Impacts of the Fishery on the Ecosystem):

Following three years PhD research on crustacean ecology, Andy has worked in the field of marine research and management for over twenty years, including marine conservation biology, fishery impacts on marine ecosystems, marine and coastal environmental impact assessment and policy development.

Andrew has been active in the development of Marine Stewardship Council certification since 1997, when involved in the pre-assessment of the Thames herring fishery. He was a founding Director of Moody Marine and led the establishment of Moody Marine fishery certification systems. He has also worked with MSC on several specific development projects, including those concerned with the certification of small scale/data deficient fisheries. He has been Lead Assessor on many fishery assessments to date. This has included Groundfish (e.g. cod, haddock, pollock, hoki, hake, flatfish), Pelagics (e.g. tuna species, herring, mackerel, sprat, krill, sardine) and shellfish (molluscs and crustacea); included evaluation of the environmental effects of all main



Anna Kiseleva
DNV GL Lead Assessor:

gear types and considered many fishery administrations including the North Atlantic, South Atlantic, Pacific, Southern Ocean and in Europe, North America, Australia and New Zealand, Japan, China, Vietnam and Pacific Islands. He has recently acted solely as an expert team member of Principle 2 inputs of European inshore fisheries and Falkland Islands Toothfish. Andrew has also been involved in the development of certification schemes for individual vessels (Responsible Fishing Scheme) and evaluation of the Marine Aquarium Council standards for trade in ornamental aquarium marine species. Consultancy services have included policy advice to the Association of Sustainable Fisheries, particularly with regard to the implications of MSC standard development, and assistance to fisheries preparing for, or engaged in, MSC assessment.

Anna is a senior assessor responsible for MSC Fisheries and RFM certification schemes at DNV GL Business Assurance. She holds MSc degree in International fisheries management from the University of Tromsø and MSc degree in Business Management from Murmansk State Technical University. She has over 10 years of experience in the global seafood industry incl. assessment services, consultancy and project management. She is an experienced project management with proven ability to lead cross-disciplinary teams. She has been involved in the delivery of the Fisheries assessment services since 2008.

4 BACKGROUND TO THE FISHERY

4.1 Fishery description

No material changes occurred within this fishery since the re-assessment carried out in June-December 2017. All information on this fishery could be obtained from the original full-assessment report, subsequent surveillance reports and re-assessment report available for the download at: <http://www.alaskaseafood.org/rfm-certification/certified-fisheries/alaska-cod/>.

Catch data is similar to the previous years and recent data is presented below:

BSAI

Species	Latin name	2017 TAC (MT)	2017 (per 10.10.2017) Total Catch (MT)
p.cod in Eastern Bering Sea	Gadus Macrocephalus	223 704	199 646
p. cod in Aleutian Islands	Gadus Macrocephalus	15 695	14 673

GOA

Species	Latin name	2017 TAC (MT)	2017 (per 10.10.2017) Total Catch (MT) 2017 Total Catch (MT)
p.cod	Gadus Macrocephalus	64 442	45 364

4.2 Original Assessment and Previous surveillance audits

The Alaska Bering Sea/Aleutian Islands and Gulf of Alaska Pacific Cod fisheries were first certified under the requirements of the Alaska Responsible Fisheries Management standard v1.2 on 17th of April 2013. The initial certification and three annual surveillance audits were carried out by the certification body Global Trust (GT).

15 April 2017, the certificate for this fishery was transferred from GT to the DNV GL. The certificate transfer and the fourth surveillance audit were carried out by the DNV GL. During June-December 2017 the fishery went through the full re-assessment against a newer version of the standard, v1.3. This re-assessment did not result in any changes in the compliance of the fishery with the RFM standard and no non-conformities were raised. The new certificate was therefore issued with the validity date until 5 December 2022.



5 THE ASSESSMENT PROCESS

5.1 Meetings attended

No on-site stakeholder consultancy was carried out during the first surveillance audit. DNV GL has carefully reviewed the full-assessment report, all subsequent surveillance reports and re-assessment report and concluded that the low risk nature of the fishery, absence of conditions and history of excellent compliance with the rules and regulations in the client operations do allow for the remote surveillance audit with the desk-top review of new information only.

5.2 Stakeholder input

The first annual surveillance audit for this fishery was publicly announced on 11th of January 2019. No stakeholder input was received by the assessment team.

6 ASSESSMENT OUTCOME SUMMARY/ FUNDAMENTAL CLAUSES SUMMARIES

6.1 The Fisheries Management System (A)

Fundamental Clause 1.

There shall be a structured and legally mandated management system based upon and respecting International, National and local fishery laws, for the responsible utilization of the stock under consideration and conservation of the marine environment.

No. supporting clauses	13
Applicable supporting clauses	6
Non-applicable supporting clauses	7 (1.3, 1.3.1, 1.4, 1.4.1, 1.5, 1.6.1, 1.9)
Overall level of conformity	High
Non-conformance	None

Evidence of continuous compliance with the fundamental clause:

Considerable resources in the form of stock assessment, ecosystem monitoring and management expertise and capacity; management organisations and structures, e.g. NMFS Alaska region, NPFMC, OLE, USCG, Observer Program, are dedicated to fisheries, including P. cod, in Alaskan federal waters. National legislation and the regulatory process by which NPFMC and NMFS are directed and follow, enable the management of the resource at regional and localised levels. The adaptive and consultative management approach adopted by the NPFMC actively promotes stakeholder participation. The NOAA Office of General Council reviews any proposed management action to assure compliance with the MSA. International obligations, e.g. combating IUU, and the enforcement of federal regulations are upheld by the federal departments such as USCG and OLE.

Within state waters, the 8 P. cod fisheries (Kodiak, Chignik, South Alaska Peninsula, Aleutian Islands, Southeast Alaska, Prince William Sound, Cook Inlet, and Dutch Harbor) are supported by area specific stock assessment surveys as well as shared information from federal assessments. The ADFG and the BOF manage the state Pacific cod fishery as "parallel" or state fisheries. Parallel fisheries are conducted under federal TACs, regulations and management measures. State fisheries operate after the federal/parallel fisheries close, and are based on Guideline Harvest Levels (GHL) which, for P. cod, are based on 15-25% of P. cod ABC (27% of AI ABC for the Aleutian Islands fishery). Technical expertise is available in-house (ADFG) and supported through the participation in and with groups established by the NPFMC. The BOF provides a consultative management approach that offers and takes account of stakeholder input. The Alaska Wildlife Trooper input into the development of regulations and are responsible for their enforcement at-sea and ashore.

The assessment models used take into account all sources of fishing mortality and are based on complete catch reporting systems including extensive observer data. Catches from fisheries occurring in state-managed waters are included in the appropriate assessments. All retained catch and discards of P. cod are included in the total catch amounts input into the models. The assessments take into account various relevant aspects of Pacific cod biology and distribution. The assessments of EBS and GOA Pacific cod are age-structured, use a Bayesian approach, consider sources of uncertainty where possible, and evaluate stock status relative to reference points in a probabilistic way. Both EBS and GOA SAFE reports give extensive histories of the models used in the assessments. The AI P. cod assessment relies on survey biomass estimates and a simpler random effects model, although various age-structured models were examined and reported in recent Stock Assessment and Fishery Evaluation (SAFE) reports. The EBS, AI, and GOA P. cod draft SAFE reports (Thompson; Thompson and Palsson; Barbeaux et al., all 2018) are at

https://www.afsc.noaa.gov/refm/stocks/plan_team/2018/NovDraftDocs_2018.htm

The NPFMC FMPs (NPFMC 2018a) explicitly describe the Council's commitment to review management

issues and this is reflected in the numerous Council meetings that take place each year. Similarly, the BOF websites have dedicated pages to their public meetings and agendas and outcomes reflect a commitment to review previously agreed management measures.

There is an agreed system to finance the fishery management organizations and arrangements. In general, the costs of fisheries management and conservation are funded through Congressional and state appropriations that follow the federal and state budget cycles. Cost recovery from certain fleet sectors is also in operation. The MSA authorizes and requires the collection of cost recovery fees for limited access privilege programs, such as the Community Development Quota (CDQ) Program. Cost recovery fees recover the actual costs directly related to the management, data collection, and enforcement of the programs. The current groundfish observer program is a further example of management being financially supported through cost recovery. Estimates of the costs for federal and state management, research, and enforcement of the groundfish stocks in the BSAI and GOA are reported in the BSAI and GOA Groundfish FMPs.

There are procedures at multiple levels to review management measures, and the MSA is reviewed by Congress every five years and is periodically revised and reauthorized. The adaptive management approach taken in the Alaska P. cod fisheries requires regular and periodic review. Component parts of the FMPs are regularly reviewed, including outcome indicators, and various levels of Environmental Impact Statements (EIS) are undertaken when the FMPs are amended in order to review the environmental and socio-economic consequences, as well as assess the effectiveness of the changes. Stakeholders are actively encouraged to participate in Council and BOF meetings and, in so doing, opportunity to review management measures is provided. Stock status is reviewed and updated annually, producing SAFE reports for the federally managed GOA, EBS, and Aleutian Islands P. cod stocks. ADFG also conducts scientific research and surveys on its 8 state-managed P. cod fisheries. The SAFE reports document stock status and significant trends or changes in the resource, marine ecosystems and fishery over time. The reports also assess the relative success of existing state and Federal fishery management programs and, based on stock status indicators, provide recommendations for annual quotas and other fishery management measures.

The NPFMC (and NMFS) as well as the BOF (and ADFG) provide substantial amounts of information on their websites, including agenda of meetings, discussion papers, and records of decisions. The Council and the BOF actively encourage stakeholder participation, and all Council and BOF deliberations are conducted in open, public sessions. Anyone may submit regulatory proposals, and all such proposals are given due consideration by both the NPFMC and the BOF.

The current RFM assessment/certification document states that Pacific cod stocks in Alaska are not considered to be transboundary, straddling, highly migratory, or high seas stocks. Thus several sub-clauses in this fundamental clause have not been scored in that certification report, and subsequently in this surveillance audit. The 2018 SAFE document (Thompson 2018) contains this section of text: "... the genetic samples from the (Northern Bering Sea) NBS survey in 2017 are very similar to those from the EBS survey area, and quite distinct from samples collected in the Aleutian Islands and the Gulf of Alaska (Ingrid Spies, AFSC, pers. comm.). In addition, analyses indicated that the NBS samples were unlikely to be from a population that was not sampled, such as Russia". During discussion of the EBS stock assessment in the NPFMC process, it was pointed out that the current distribution of P. cod within the Bering Sea was unprecedented, and that there was uncertainty regarding the migration of P. cod between NBS, EBS, GOA, and areas outside the US EEZ. This is an issue to monitor in future surveillance audits.

Evidence of continuous compliance with the supporting clauses

There is no material change in compliance with any of the following supporting clauses. The Pacific cod stocks in Alaska are not considered to be transboundary, straddling, highly migratory, or high seas stocks and so clauses 1.3, 1.3.1, 1.4, 1.4.1, 1.5, 1.6.1, and 1.9 are not applicable.

1.1 There shall be an effective legal and administrative framework established at local and national level appropriate for fishery resource conservation and management. The management system and the fishery operate in compliance with the requirements of local, national and international laws and regulations, including the requirements of any regional fisheries management agreement.

1.2 Management measures shall consider 1) the whole stock biological unit (i.e. structure and

composition contributing to its resilience) over its entire area of distribution, 2) the area through which the species migrates during its life cycle and 3) other biological characteristics of the stock.

1.2.1 Previously agreed management measures established and applied in the same region shall be taken into account by management.

1.3 Where trans-boundary, straddling or highly migratory fish stocks and high seas fish stocks are exploited by two or more States, the Applicant Management Organizations concerned shall cooperate and take part in formal fishery commission or arrangements that have been appointed to ensure effective conservation and management of the stock/s in question.

1.3.1 Conservation and management measures established for such stock within the jurisdiction of the relevant States for shared, straddling, high seas and highly migratory stocks, shall be compatible. Compatibility shall be achieved in a manner consistent with the rights, competences and interests of the States concerned.

1.4 A State not member/participant of a sub-regional or regional fisheries management organization shall cooperate, in accordance with relevant international agreements and law, in the conservation and management of the relevant fisheries resources by giving effect to any relevant measures adopted by such organization/arrangement.

1.4.1 States seeking to take any action through a non-fishery organization which may affect the conservation and management measures taken by a competent sub-regional or regional fisheries management organization or arrangement shall consult with the latter, in advance to the extent practicable, and take its views into account.

1.5 The Applicant fishery's management system shall actively foster cooperation between States with regard to 1) information gathering and exchange, 2) fisheries research, 3) fisheries management, and 4) fisheries development.

1.6 States and sub-regional or regional fisheries management organizations and arrangements, as appropriate, shall agree on the means by which the activities of such organizations and arrangements will be financed, bearing in mind, inter alia, the relative benefits derived from the fishery and the differing capacities of countries to provide financial and other contributions. Where appropriate, and when possible, such organizations and arrangements shall aim to recover the costs of fisheries conservation, management and research.

1.6.1 Without prejudice to relevant international agreements, States shall encourage banks and financial institutions not to require, as a condition of a loan or mortgage, fishing vessels or fishing support vessels to be flagged in a jurisdiction other than that of the State of beneficial ownership where such a requirement would have the effect of increasing the likelihood of non-compliance with international conservation and management measures.

1.7 Procedures shall be in place to keep the efficacy of current conservation and management measures and their possible interactions under continuous review to revise or abolish them in the light of new information.

- Review procedures shall be established within the management system.
- A mechanism for revision of management measures shall exist.

1.8 The management arrangements and decision making processes for the fishery shall be organized in a transparent manner.

- Management arrangements
- Decision-making

1.9 Management organizations not party to the Agreement to promote compliance with international conservation and management measures by vessels fishing in the high seas shall be encouraged to accept the Agreement and to adopt laws and regulations consistent with the provisions of the Agreement.

Changes to Fundamental Clause Confidence Ratings.

There are no changes in the management of fisheries that would detrimentally affect performance

against the confidence ratings for the fundamental clauses and any supporting clauses.

Conformance:

Conformance level: High. Non-conformance: None

Fundamental Clause 2.

Management organizations shall participate in coastal area management institutional frameworks, decision-making processes and activities related to the fishery and its users, in support of sustainable and integrated resource use, and conflict avoidance.

No. supporting clauses	10
Applicable supporting clauses	8
Non-applicable supporting clauses	2 (2.1.1, 2.7)
Overall level of conformity	High
Non-conformance	None

Evidence of continuous compliance with the fundamental clause:

In managing the Alaska P. cod fisheries, NMFS, in conjunction with the NPFMC and ADFG, participate in coastal area management-related issues through processes established by the NEPA. NEPA requires that all federal agencies' funding or permitting decisions be made with full consideration of the impact to the natural and human environment. An environmental review process is required that includes a risk evaluation and evaluation of alternatives including a, "no action" alternative. The NPFMC and the BOF system was designed so that fisheries management decisions were made at the regional level to allow input from affected stakeholders. NPFMC meetings are open, and public testimony is taken on issues prior to deliberations and final decisions. In so doing, the management organizations within Alaska and their management processes take into account the rights of coastal fishing communities and their customary practices to the extent compatible with sustainable development.

The NPFMC and BOF websites actively encourage and demonstrate participation by stakeholders at their respective public meetings and cover a wide range of topics regarding the use, development and management of coastal resources. Potential conflict between fishermen and other coastal users at the federal level are usually discussed and resolved through the NEPA Process and, at the State level, through the BOF public meeting process or regional committee established as part of the State's land use and access planning processes.

The technical capacities of the federal and state agencies involved in the management of Alaska P. cod are significant, and include internationally recognized scientists, experienced fishery managers and policy makers and highly professional and trained enforcement officers. Appropriate technical and financial resources are in place. A joint protocol is in place between the NPFMC and ADFG which provides the intent to provide long term cooperative, compatible management systems that maintain the sustainability of the fisheries resources in federal and state waters.

Canada abuts the US border to the south and shares certain fisheries resources, however the P. cod stock is not considered to be transboundary. The US and Canada have a very strong working relationship at both the national and regional levels. In cases involving boundary disputes and treaties governing fishery access, the USCG, NOAA and Canadian Department of Fisheries and Oceans (DFO) along with Canadian Coast Guard (CCG) counterparts have effectively coordinated living marine resource enforcement efforts despite occasional related political and economic tensions. There are established agreements and shared management and working practices, e.g. International Pacific Halibut Commission, Pacific Salmon Treaty, and an Agreement between the US and Canada on enforcement.

The MSA requires NPFMC and other Councils to hold public meetings within their respective regions to discuss the development and amendment of FMPs. These meetings are publicised by the NPFMC and

stakeholders actively encouraged to participate changes and allow input from stakeholders. The BOF website publishes information on forth-coming BOF meetings including the "Proposal Book" which details proposed ADFG or stakeholder-requested changes that might lead to regulatory change. Stakeholders are actively encouraged to participate at the meetings and submit proposal prior to the meetings. The OLE and AWT put an emphasis on educating and informing stakeholders of new regulatory changes and other important fishery related matters.

The Community Development Quota (CDQ) Program was created by the NPFMC in 1992 to provide western Alaska communities an opportunity to participate in the BSAI fisheries that had been foreclosed to them because of the high capital investment needed to enter the fishery. The program involves eligible communities who have formed six regional organizations, referred to as CDQ groups. There are 65 communities within a fifty-mile radius of the Bering Sea coastline who participate in the program. The CDQ program allocates a percentage of the BSAI quotas to CDQ groups, including pollock, halibut, P. cod (10% of total BSAI quota), crab and bycatch species.

<https://alaskafisheries.noaa.gov/sites/default/files/reports/annualmatrix2018.pdf> The program is reviewed every ten years, with the last review occurring in 2012. Analysis by the State of Alaska in 2013 determined that each CDQ entity had maintained or improved performance against its objectives. The CDQ program provides an example of how the management system takes account of the allocation and use of coastal resources with respect to their economic, social and cultural value.

A considerable amount of monitoring of the coastal environment in Alaska is conducted and supported by multiple federal and state agencies, e.g. NMFS, AFSC, ADFG, universities, e.g. the University of Alaska Fairbanks Institute of Marine Science, and organisations that support and facilitate marine research, e.g. North Pacific Research Board (NPRB). The NPRB have helped fund two major projects in the Alaska region: The Bering Sea Project and the Gulf of Alaska Ecosystem Study. AFSC has established the Ecosystem Monitoring and Assessment Program (EMA), with an overall goal to improve and reduce uncertainty in stock assessment models of commercially important fish species through the collection of observations of fish and oceanography.

The State of Alaska is represented in the Oil Spill Task Force by the Department of Environmental Conservation. Its Division of Spill Prevention and Response (SPAR) prevents spills of oil and hazardous substances, prepares for when a spill occurs and responds rapidly to protect human health and the environment. The Oil Spill Recovery Institute (OSRI) located in PWS conducts research into oil spills and their effects on the Alaskan environment, particularly the natural resources in PWS.

Evidence of continuous compliance with the supporting clauses

There is no material change in compliance with any of the following supporting clauses. Clause 2.7 is not applicable.

2.1 An appropriate policy, legal and institutional framework shall be adopted in order to achieve sustainable and integrated use of living marine resources, taking into account 1) the fragility of coastal ecosystems and finite nature of their natural resources; 2) allowing for determination of the possible uses of coastal resources and govern access to them, 3) taking into account the rights and needs of coastal communities and their customary practices to the extent compatible with sustainable development. In setting policies for the management of coastal areas, 4) States shall take due account of the risks and uncertainties involved.

2.1.1 States shall establish mechanisms for cooperation and coordination among national authorities involved in planning, development, conservation and management of coastal areas. ⁽¹⁾_{SEP}

2.1.2 States shall ensure that the authority or authorities representing the fisheries sector in the coastal management process have the appropriate technical capacities and financial resources.

2.2 Representatives of the fisheries sector and fishing communities shall be consulted in the decision-making processes involved in other activities related to coastal area management planning and development. The public shall also be kept aware on the need for the protection and management of coastal resources and the participation in the management process by those affected.

2.3 Fisheries practices that avoid conflict among fishers and other users of the coastal area (e.g. aquaculture, tourism, energy) shall be adopted and fishing shall be regulated in such a way as to

avoid risk of conflict among fishers using different vessels, gear and fishing methods. Procedures and mechanisms shall be established at the appropriate administrative level to settle conflicts which arise within the fisheries sector and between fisheries resource users and other coastal users.

2.4 States and sub-regional or regional fisheries management organizations and arrangements shall give due publicity to conservation and management measures and ensure that laws, regulations and other legal rules governing their implementation are effectively disseminated. The bases and purposes of such measures shall be explained to users of the resource in order to facilitate their application and thus gain increased support in the implementation of such measures.

2.5 The economic, social and cultural value of coastal resources shall be assessed in order to assist decision-making on their allocation and use.

2.6 States shall cooperate at the sub-regional level in order to improve coastal area management, and in accordance with capacities, measures shall be taken to establish or promote systems for research and monitoring of the coastal environment, in order to improve coastal area management, and promote multidisciplinary research in support and improvement of coastal area management using physical, chemical, biological, economic, social, legal and institutional aspects.

2.7 States shall, within the framework of coastal area management plan, establish management systems for artificial reefs and fish aggregation devices. Such management systems shall require approval for the construction and deployment of such reefs and devices and shall take into account the interests of fishers, including artisanal and subsistence fishers.

2.8 In the case of activities that may have an adverse transboundary environmental effect on coastal areas, States shall:

- a) Provide timely information and if possible, prior notification to potentially affected States.
- b) Consult with those States as early as possible.

Changes to Fundamental Clause Confidence Ratings.

There are no changes in the management of fisheries that would detrimentally affect performance against the confidence ratings for the fundamental clauses and any supporting clauses.

Conformance:

Conformance level: High. Non-conformance: None

Fundamental Clause 3.

Management objectives shall be implemented through management rules and actions formulated in a plan or other framework.

No. supporting clauses	8
Applicable supporting clauses	8
Non-applicable supporting clauses	0
Overall level of conformity	High
Non-conformance	None

Evidence of continuous compliance with the fundamental clause:

The NPFMC has in place groundfish FMPs (NPFMC 2018a) in the BSAI and GOA that include the P. cod fisheries. Within these FMPs there are nine management and policy objectives, that are reviewed annually. These include preventing overfishing, preserving the food web, and reducing bycatch and waste. The BOF, when developing their initial groundfish management identified guiding principles for the development of these plans, which are considered to be similar to the NPFMC objectives.

The Alaska Licence Limitation Program (LLP) has been in place since 2000. The intent of the program has been to use fishing track records to rationalise the Alaska groundfish and crab fleet by limiting the number, size and specific operation of vessels as well as eliminating latent licences. The Restricted Access Management (RAM) Program has prepared lists of LLP groundfish and crab licenses. LLP licenses are initially issued to persons, based on the activities of original qualifying vessels.

Groundfish licenses are currently required to participate in the BSAI groundfish fisheries in Federal waters of Alaska. Licenses may contain endorsements for both areas (BS and AI), or one of the two areas. Gear endorsements define what type of gear may be used: non-trawl, trawl, or both. The GOA groundfish fisheries are among the few remaining limited access (not rationalised) fisheries in Alaska. Of these fisheries, P. cod is the predominant groundfish species targeted by the fixed gear sectors. In 2009, NPFMC took action to add gear-specific P. cod endorsements to GOA fixed gear licenses that met a minimum catch threshold during 2002-2008. This action reduced the number of fixed gear licenses eligible to access the GOA P. cod fisheries by 75%. As a result, the number of participants in the directed GOA P. cod fisheries will be permanently capped at the number of available licenses, and new entrants will have to purchase an existing license if they wish to fish in federal waters.

ADFG annually issues an emergency order creating parallel P. cod seasons inside state waters (0-3 nm) of the Kodiak, Chignik, and South Alaska Peninsula management areas. Vessels participating in parallel P. cod fisheries are not required to possess a LLP permit. General state-wide groundfish regulations include a vessel registration requirement, legal gear definitions, bycatch allowances, and requirements for seabird avoidance measures to be used when fishing with longline gear. The state fisheries for P. cod are not closed access fisheries.

The MSA requires that conservation and fisheries management measures prevent overfishing while achieving optimum yield on a continuing basis. NMFS and NPFMC follow a multi-faceted PA (OFL, ABC, TAC, OY) to manage the federal P. cod fisheries, based on targets, limits, and pre-defined HCRs, as well as overall ecosystem considerations (e.g. the OY limits). The fisheries management system is supported by high level science, and management measures have been generally effective in avoiding overfishing and promoting responsible fishing. Objectives for the BSAI and GOA are set out in the FMPs and include the need to take into account socio-economic considerations. Estimates of ex-vessel value by area, gear, type of vessel, and species, are included in the annual Economic Status SAFE report (Fissel et al. 2017), and each stock assessment SAFE also contains extensive economic data.

In the 2017 assessment of GOA P. cod, large declines in stock size were noted, believed to be related to increased natural mortality in 2014-2016 brought on by very warm oceanographic conditions (Barbeaux et al. 2017). P. cod catches in 2017 in GOA were well below the TAC, and the 2017 assessment established the basis for steep declines in ABC and OFL, and subsequently the TAC, for the 2018 fishery. Each of these values declined by about 80% from 2017 to 2018. This decline was not observed in the EBS and AI assessments, although substantial declines in survey abundance estimates were observed in EBS after 2014. The 2018 stock assessment of GOA P. cod (Barbeaux et al. 2018) confirmed the decline, and projected an increase in total P. cod biomass, but essentially no increase in female spawner biomass, in 2019 and 2020. Estimated end of year catch in 2018 for GOA P. cod was 13,096 t, compared to 64,442 t in 2017 (Table 2.3, Barbeaux et al. 2018). As was done in the previous year, a value of 17,000 t was recommended for ABC in 2019, down from the maximum ABC calculation of 19,665 t, to maintain the GOA stock in 2020 above B20%, which is the threshold for closure of directed fishing to protect Steller sea lions (Barbeaux et al. 2018, NPFMC 2018a). The SSC noted that reductions from the maximum ABC are made in response to factors not included in the Tier system.

The GOA and BSAI FMPs describe management measures designed to take into account the interests of subsistence, small-scale, and artisanal fisheries. Specific FMP management objectives include: the promotion of sustainable fisheries and communities, the promotion of equitable and efficient use of fishery resources and increase Alaska native consultation. Actions have been taken to minimise the bycatch of halibut and salmon, given its importance for subsistence and artisanal fisheries. The fishery dependence of coastal and western Alaska communities was addressed through the creation of the community development quota (CDQ) programs for the BSAI in the early to mid-1990s and the expansion of those programs into the multispecies CDQ Program by 1999.

FMPs, protected species management plans, and biological opinion reviews are all supported by well-designed data-gathering programs and analyses, widely available through NMFS and NPFMC websites. These are, in relation to the complexity of factors which may affect species dynamics, comprehensive and rigorous in their analysis.

There are mechanisms developed to identify significant effects on EFH and for identifying HAPC, and are considered consistent with achieving management objectives for avoidance, minimization or mitigation of impacts on essential habitats for the "stock under consideration" and on habitats that are highly vulnerable to damage by the fishing gear of the unit of certification. This is further supported by habitat ecosystem indicators considered as part of the SAFE process. There are processes in place – primarily through FMPs, endangered species management plans and Biological Opinions and EISs of the various plans - that allow for direct and indirect impacts that are likely to have significant (not only serious) consequences to be addressed. There is extensive evidence setting out the evaluation of effects and implementation of management response; this includes SAFE reports, FMPs, Endangered species Conservation Plans, supporting EIS and BiOps. These are all publicly available through NMFS and NPFMC websites.

Effects on ecosystem aspects are considered more fully under Fundamental Clause 12, addressed below. Essentially, there are several processes in place which demonstrably address actual or potential impacts identified through the monitoring of the groundfish fishery and the ecosystem supporting the fishery. The primary mechanism is the annual Stock Assessment and Fishery Evaluation (SAFE) report. There are specific processes through NMFS and U.S. Fish and Wildlife Service (USFWS) to review potential impacts (generally indirect effects through changes in prey availability) on endangered species (through the Endangered Species Act) and marine mammals (Marine Mammal Protection Act).

Evidence of continuous compliance with the supporting clauses

There is no material change in compliance with any of the following supporting clauses.

3.1 Long term management objectives shall be translated into a plan or other management document (taking into account uncertainty and imprecision) and be subscribed to by all interested parties.

3.2 Management measures shall provide inter alia that:

3.2.1 Excess fishing capacity shall be avoided and exploitation of the stocks remains economically viable.

3.2.2 The economic conditions under which fishing industries operate shall promote responsible fisheries.

3.2.3 The interests of fishers, including those engaged in subsistence, small-scale and artisanal fisheries shall be taken into account.

3.2.4 Biodiversity of aquatic habitats and ecosystems shall be conserved and endangered species shall be protected. Where relevant, there shall be pertinent objectives, and as necessary, management measures.

3.2.5 There shall be management objectives seeking to avoid, minimize or mitigate impacts of the unit of certification on essential habitats for the stock under consideration and on habitats that are highly vulnerable to damage by the fishing gear of the unit of certification.

3.2.6 There shall be management objectives that seek to minimize adverse impacts of the unit of certification, including any enhancement activities, on the structure, processes and function of aquatic ecosystems that are likely to be irreversible or very slowly reversible.

Changes to Fundamental Clause Confidence Ratings.

There are no changes in the management of fisheries that would detrimentally affect performance against the confidence ratings for the fundamental clauses and any supporting clauses.

Conformance:

Conformance level: High. Non-conformance: None

6.2 Science and Stock Assessment Activities (B)

Fundamental Clause 4.

There shall be effective fishery data (dependent and independent) collection and analysis systems for stock management purposes.

No. Supporting clauses	13
Supporting clauses applicable	10
Supporting clauses not applicable	3 (4.9, 4.10, 4.11)
Overall level of conformity	High
Non Conformances	None

Evidence of continuous compliance with the fundamental clause:

The NMFS and the ADFG collect fishery data and conduct fishery independent surveys to assess the P. cod fisheries and ecosystems in GOA and BSAI areas. Stock Assessment and Fishery Evaluation (SAFE) reports (e.g. Thompson; Thompson and Palsson; Barbeaux et al., all 2018) provide complete descriptions of the data collected and used in the annual assessments, used to determine stock status and harvest recommendations for the Alaskan P. cod stocks. For these fisheries, there is a well-established system that allows for the production, maintenance, regular update, and verification of statistical data. Reporting of commercial catch from both state and federally managed fisheries is done through the Catch Accounting System (CAS), a multi-agency (NMFS, IPHC and ADFG) system that centrally collates landings data from shore-based processing and landings operations as well as retained catch observations from individual vessels. Catch reports for previous years can be found on the NMFS and ADFG websites. The Alaska Fisheries Information Network (AKFIN) maintains an analytic database of both state and federal commercial fisheries data in Alaska and provides that data in usable formats.

All data from the state and federally managed P. cod fisheries are included in the stock assessments. Relative to commercial catch, there is minimal recreational, personal use, or subsistence fishing for P. cod in Alaskan waters, and all estimates of such catches compiled by ADFG are included in the assessment catch data. Smaller scale fisheries managed by ADFG and BOF are controlled with specified Guideline Harvest Level (GHL) and other regulations, such as closed areas around Steller sea lion rookeries.

Amendment 86 to the FMP of the BSAI and Amendment 76 to the FMP of the GOA established the new North Pacific Groundfish and Halibut Observer Program (NPGHOP), and all vessels fishing for groundfish in federal Alaskan waters are required to carry observers, at their own expense, for at least a portion of their fishing time. Data gathered in the NPGHOP cover all biological information from commercial fisheries, including catch weights (landings and discards), catch demographics (species composition, length, sex and age) and interactions with species such as sharks, rays, seabirds, marine mammals and other species with limited or no commercial value. NMFS and the NPFMC have developed at-sea Electronic Monitoring (EM) to integrate video monitoring into the Observer Program to improve data collection. On August 8, 2017 NMFS published a final rule to integrate electronic monitoring into the North Pacific Observer Program (Ganz et al. 2018). Observer coverage in the EBS P. cod fishery has been at or near 100% for the past several years, while in the GOA, lower coverage rates exist. Detailed annual reports (e.g. AFSC 2018; Ganz et al. 2018) from the Observer Program can be found on NMFS website, and provide extensive information on the NPGHOP, including observer deployments, coverage rates, data collections, etc.

Vessels less than 40 ft. are in the no-selection pool for observer coverage. However, in P. cod fisheries, the amount of P. cod taken by vessels < 40 ft. LOA was less than 1% of the total catch in recent years.

NMFS and ADFG have extensive scientific databases which include P. cod, and NPFMC has substantial information on management of P. cod in Alaskan waters. These data are made widely available

through the agency websites, publications and at various publicly-attended meetings. Data on certain aspects of commercial fishing are considered to be confidential, such as individuals or individual vessels in the analysis of fishery CPUE data, depending on the number of individuals or entities involved. Annual economic SAFE reports (e.g. Fissel et al. 2017) on social/cultural/economic value of the Alaskan fisheries resources are produced, which include extensive information on the Alaskan P. cod fisheries. Individual P. cod assessment SAFE reports have extensive sections on the economic performance of the fisheries.

Alaska supports both a Seafood Marketing Institute and the Kodiak Seafood and Marine Science Center to stimulate research and to support and distribute the benefits of seafood in human diets.

Evidence of continuous compliance with the supporting clauses:

There is no material change in compliance with any of the following supporting clauses. Clauses 4.7, 4.8, 4.9, 4.10, and 4.11 are not applicable.

4.1. All fishery removals and mortality of the target stock(s) shall be considered by management. Specifically, reliable and accurate data required for assessing the status of fishery/ies and ecosystems - including data on retained catch, bycatch, discards and waste shall be collected. Data can include relevant traditional, fisher or community knowledge, provided their validity can objectively be verified. These data shall be collected, at an appropriate time and level of aggregation, by relevant management organizations connected with the fishery, and provided to relevant States and sub-regional, regional and global fisheries organizations.

4.1.1 Timely, complete and reliable statistics shall be compiled on catch and fishing effort and maintained in accordance with applicable international standards and practices and in sufficient detail to allow sound statistical analysis for stock assessment. Such data shall be updated regularly and verified through an appropriate system. The use of research results as a basis for the setting of management objectives, reference points and performance criteria, as well as for ensuring adequate linkage, between applied research and fisheries management (e.g. adoption of scientific advice) shall be promoted. Results of analysis shall be distributed accordingly as a contribution to fisheries conservation, management and development.

4.1.2 In the absence of specific information on the "stock under consideration", generic evidence based on similar stocks can be used for fisheries with low risk to that "stock under consideration". However, the greater the risk of overfishing, the more specific evidence is necessary to ascertain the sustainability of intensive fisheries.

4.2. An observer scheme designed to collect accurate data for research and support compliance with applicable fishery management measures shall be established.

4.3. Sub-regional or regional fisheries management organizations or arrangements shall compile data and make them available, in a manner consistent with any applicable confidentiality requirements, in a timely manner and in an agreed format to all members of these organizations and other interested parties in accordance with agreed procedures.

4.4. States shall stimulate the research required to support national policies related to fish as food.

4.5. States shall ensure that a sufficient knowledge of the economic, social, marketing and institutional aspects of fisheries is collected through data gathering, analysis and research and that comparable data are generated for ongoing monitoring, analysis and policy formulation.

4.6. States shall investigate and document traditional fisheries knowledge and technologies, in particular those applied to small scale fisheries, in order to assess their application to sustainable fisheries conservation, management and development.

4.7 States conducting scientific research activities in waters under the jurisdiction of another State shall ensure that their vessels comply with the laws and regulations of that State and international law.

4.8 States shall promote the adoption of uniform guidelines governing fisheries research conducted on the high seas and shall, where appropriate, support the establishment of mechanisms, including, inter

alia, the adoption of uniform guidelines, to facilitate research at the sub-regional or regional level and shall encourage the sharing of such research results with other regions.

4.9 States and relevant international organizations shall promote and enhance the research capacities of developing countries, inter alia, in the areas of data collection and analysis, information, science and technology, human resource development and provision of research facilities, in order for them to participate effectively in the conservation, management and sustainable use of living aquatic resources.

4.10 Competent national organizations shall, where appropriate, render technical and financial support to States upon request and when engaged in research investigations aimed at evaluating stocks which have been previously unfished or very lightly fished.

4.11 Relevant technical and financial international organizations shall, upon request, support States in their research efforts, devoting special attention to developing countries, in particular the least developed among them and small island developing countries.

Changes to Fundamental Clause Confidence Ratings.

There are no changes in the management of fisheries that would detrimentally affect performance against the confidence ratings for the fundamental clauses and any supporting clauses.

Conformance:

Conformance level: High. Non-conformance: None

Fundamental Clause 5.

There shall be regular stock assessment activities appropriate for the fishery, its range, the species biology and the ecosystem, undertaken in accordance with acknowledged scientific standards to support its optimum utilization.

No. Supporting clauses	7
Supporting clauses applicable	7
Supporting clauses not applicable	0
Overall level of conformity	High
Non Conformances	None

Evidence of continuous compliance with the fundamental clause:

NMFS has a well-established institutional framework for research developed within the Alaska Fisheries Science Center (AFSC), which operates several laboratories and Divisions, including the Auke Bay Laboratories in Alaska which conduct scientific research on fish stocks, fish habitats, and the chemistry of marine environments. Peer reviewed stock assessments are done annually and used as the scientific basis to set catch quotas, taking into account uncertainty and evaluating stock status relative to reference points in a probabilistic way. The SAFE reports are compiled annually by the NPFMC, and include a volume on Ecosystem Considerations. The SAFE report provides information on the historical catch trend, estimates of the maximum sustainable yield of the groundfish complex as well as its component species groups, assessments on the stock condition of individual species groups; assessments of the impacts on the ecosystem of harvesting the groundfish complex at the current levels given the assessed condition of stocks, including consideration of rebuilding depressed stocks; and alternative harvest strategies and related effects on the component species groups.

The SAFE documents are reviewed first by the NPFMC Groundfish Plan Team, then by the Scientific and Statistical Committee (SSC) and Advisory Panel, and finally by the full Council. Upon review and acceptance by the SSC, the SAFE report and any associated SSC comments constitute the best scientific information available for purposes of the Magnuson-Stevens Act. The AFSC periodically requests a more comprehensive external review of groundfish stock assessments by the Center of Independent Experts (CIE). CIE review of the GOA P. cod assessment methods and data was carried out by three independent

experts in May 2018 – see reports of Sparholt, Maguire, and Stokes at

<https://www.st.nmfs.noaa.gov/science-quality-assurance/cie-peer-reviews/cie-review-2018>. Similarly, the EBS P. cod assessment was reviewed by three external reviewers from the CIE during February, 2016, and their reports, also available on-line, were considered in subsequent EBS cod assessments.

Data collected by scientists from the many surveys and P. cod fisheries are analysed and presented in peer reviewed meetings and/or in primary literature, following rigorous scientific protocols. Results of these analyses are disseminated in a timely fashion through numerous methods, including scientific publications, and as information on NMFS, ADFG, and NPFMC websites, in order to contribute to fisheries conservation and management. Confidentiality of individuals or individual vessels (e.g. in the analysis of fishery CPUE data) is fully respected where necessary.

NPFMC receives comprehensive presentations on the status of Alaska's marine ecosystems (Gulf of Alaska and Bering Sea, (e.g. Zador 2016, Siddon and Zador 2017, Zador and Yasumiishi 2017) at its SSC and Advisory Panel meetings, as part of its annual management process for Alaskan groundfish. These are prepared and presented by NMFS scientists, and contain report cards which look at a wide range of environmental and ecosystem variables, such as physical and environmental trends, zooplankton biomass, predator and forage species biomass, and seabird and marine mammal data. Essential fish habitat is identified for managed fish species, including P. cod. North Pacific Research Board (NPRB) and the National Science Foundation, is studying the Bering Sea ecosystem from atmospheric forcing and physical oceanography to humans and communities, as well as socio-economic impacts of a changing marine ecosystem. Scientists and researchers from a number of agencies and universities are involved. Ecosystem modelling, sound data management, and education and outreach activities are included in the program. An integrated GOA Ecosystem project, also funded by the NPRB, is examining recruitment processes of major groundfish species.

The Oil Spill Recovery Institute (OSRI) was established by US Congress in response to the 1989 Exxon Valdez oil spill. OSRI is administered through and housed at the Prince William Sound (PWS) Science Center, a non-profit research and education organization located in Cordova, AK. The PWS Science Center facilitates and encourages ecosystem studies in the Greater PWS region.

USA cooperates through relevant international organizations such as PISCES to encourage research in order to ensure optimum utilization of all fishery resources. Although the fishery for P. cod is conducted entirely within the US EEZ, there is also scientific cooperation with neighboring countries such as Canada who fish for P. cod from adjacent stocks. The Technical Subcommittee (TSC) of the Canada-U.S. Groundfish Committee <http://www.psmfc.org/tsc2> was formed in 1960 to coordinate fishery and scientific information resulting from the implementation of commercial groundfish fisheries operating in US and Canadian waters off the West Coast. Representatives from Canadian and American state and federal agencies continue to meet annually to exchange information and to identify data gaps and information needs for groundfish stocks of mutual concern from California to Alaska. Not all of these are transboundary stocks (e.g. P. halibut is, P. cod is not). Each agency prepares a comprehensive annual report highlighting survey and research activities, including stock assessments. These reports are compiled into an annual TSC report that is published online.

Evidence of continuous compliance with the supporting clauses

There is no material change in compliance with any of the following supporting clauses. Clause 5.4 is not applicable.

5.1. An appropriate institutional framework shall be established to determine the applied research which is required and its proper use (i.e. assess/evaluate stock assessment model/practices) for fishery management purposes.

5.1.1 With the use of less elaborate methods for stock assessment frequently used for small scale or low value capture fisheries resulting in greater uncertainty about the state of the stock under consideration, more precautionary approaches to managing fisheries on such resources shall be required, including where appropriate, lower level of utilization of resources. A record of good management performance may be considered as supporting evidence of the adequacy and the management system.

5.1.2 States shall ensure that appropriate research is conducted into all aspects of fisheries including

biology, ecology, technology, environmental science, economics, social science, aquaculture and nutritional science. Results of analyses shall be distributed in a timely and readily understandable fashion in order that the best scientific evidence is made available as a contribution to fisheries conservation, management and development. States shall also ensure the availability of research facilities and provide appropriate training, staffing and institution building to conduct the research, taking into account the special needs of developing countries.

5.2. There shall be established research capacity necessary to assess and monitor 1) the effects of climate or environment change on fish stocks and aquatic ecosystems, 2) the state of the stock under State jurisdiction, and for 3) the impacts of ecosystem changes resulting from fishing pressure, pollution or habitat alteration.

5.3 Management organizations shall cooperate with relevant international organizations to encourage research in order to ensure optimum utilization of fishery resources.

5.4 The fishery management organizations shall directly, or in conjunction with other States, develop collaborative technical and research programs to improve understanding of the biology, environment and status of transboundary aquatic stocks.

5.5. Data generated by research shall be analysed and the results of such analyses published in a way that ensures confidentiality is respected, where appropriate.

Changes to Fundamental Clause Confidence Ratings.

There are no changes in the management of fisheries that would detrimentally affect performance against the confidence ratings for the fundamental clauses and any supporting clauses.

Conformance:

Conformance level: High. Non-conformance: None

6.3 The Precautionary Approach (C)

Fundamental Clause 6.

The current state of the stock shall be defined in relation to reference points or relevant proxies or verifiable substitutes allowing for effective management objectives and targets. Remedial actions shall be available and taken where reference point or other suitable proxies are approached or exceeded.

No. Supporting clauses	4
Supporting clauses applicable	4
Supporting clauses not applicable	0
Overall level of conformity	High
Non Conformances	None

Evidence of continuous compliance with the fundamental clause:

The NPFMC groundfish fishery management plans for BSAI and GOA contain the details on the NPFMC precautionary approach, including the tier system, the Harvest Control Rules, and the reference points. Extensive analysis (e.g. a series of standard projections) is conducted in each stock assessment to determine the current and projected biomass level relative to the target reference points. Based on the information in the 2018 SAFE documents, none of the 3 P. cod stocks had overfishing occurring, as per the standard definitions applied to each stock.

The 2018 SAFE documents (referenced in Fundamental Clause 4, above) provide the status of P. cod

stocks relative to all available reference points. Extensive analysis is conducted in each stock assessment to determine the current and projected biomass level relative to the reference points, and to advise on the various catch levels appropriate to the HCRs. Comprehensive annual Ecosystem Reports for BSAI and GOA are presented to NPFMC, which look at numerous elements of the Alaskan ecosystems (e.g. Zador 2016, Siddon and Zador 2017, Zador and Yasumiishi 2017).

The following section provides updates on stock assessment and status for each of the three P. cod stocks, based on the 2018 SAFE documents and excerpts from Plan Team and SSC minutes from the Dec 2018 meetings.:

EBS (Thompson 2018): Catches of EBS P. cod were relatively stable around 240,000 t in 2012-2017, before declining in 2018 (end-of-year estimate in the SAFE was 201,000 t). A trawl survey of the northern Bering Sea (NBS) in 2018 was prompted by unusually warm bottom temperatures on the EBS shelf and concerns that many fish populations had shifted north outside of the EBS survey area. The EBS survey estimate for P. cod abundance has declined by over 75% from 2014, while the 2018 NBS survey showed a large increase over the 2017 NBS estimate. Age-based stock synthesis models continue to be used in this assessment, and numerous model formulations were explored and described in detail. These included models dealing with the survey estimates in the northern Bering Sea, which only exist for a few years. Assessment results show spawner biomass to be around 300,000 t in 2017-2019, which is higher than levels since the late 1980's. However, spawner biomass is projected to decline (from 290,000 t in 2019 to 246,000 in 2020, with further declines projected in spawner biomass and catch until 2022 if $F = \max F_{ABC}$ - Table 2.26a, 2018 SAFE) The SAFE document states that the 2008, 2011, and 2013 years classes are the three largest observed, but that the following four cohorts (2014-2017) include three of the six smallest in the time series. Thompson 2018 (SAFE report) notes that the author's recommended assessment model "... gives lower estimates (of relative spawning biomass) than previous models, to the extent that, in hindsight, the stock was being subjected to fishing mortality rates in excess of the retroactively calculated OFL values (but not the official OFL values that were calculated at the time) in all years from 1991-2017". Using the assessment results and the Tier 3 criteria, the stock is estimated to be above B40% in 2019 (in Tier 3a), but below B40% in 2020 (in Tier 3b). The stock is projected to decline substantially in 2020 with associated declines in the ABC and OFL. Using the formulae in these tiers, maxABC recommended for 2019 is 181,000 t, and for 2020 is 137,000 t. These values were approved by the Council at its Dec. 2018 meeting, noting that there had been considerable discussion, including by the Plan Team and SSC, around reducing the ABC from its maximum value due to various concerns.

AI (Thompson and Palsson 2018): Catches have doubled in recent years, from around 10,000 t in 2014-15 to about 20,000 t in 2018. The time series of NMFS bottom trawl surveys pertaining to the Aleutian survey area indicate a decline in P. cod biomass over the long term. However, the trend since 2010 has been largely positive. A Tier 5 random effects model (not age-based) has been used since 2013, and fits the survey data well; the correlation between the survey biomass data and the model estimates is 0.972. Results of the assessment were used to evaluate the stock against a standard metric for overfishing and to provide recommendations for ABCs for 2019 and 2020. The official AI catch estimate for the most recent complete year (2017) is 15,204 t, which is less than the 2017 AI OFL of 28,700 t. Using biomass from the model along with natural mortality = 0.34, under the tier 5 calculations, the authors' recommended ABCs for 2019 and 2020 are the maximum permissible values of 20,600 t in both years. These values were approved by the Council at its Dec. 2018 meeting.

GOA (Barbeaux et al. 2018): Catches of GOA P. cod (Federal + State) declined from about 85,000 t in 2014 to 49,000 t in 2017, and then to approx. 13,000 t (year end estimate) in 2018. The bottom trawl survey in GOA indicated that P. cod biomass declined by about 79% from 2013 to 2017. Age-based stock synthesis models continue to be used in this assessment, and numerous model formulations were explored and described in detail. Total biomass estimates show a long decline from their peak in 1988 until 2006 and then an increase to another peak in 2014 followed by decrease continuously through 2018. With average recruitment in 2017 and 2018 total biomass is expected to begin to increase again in 2019 (note that there is no information currently on the 2017 recruitment size). Spawning biomass shows a similar trend of decline since the late 1980s. There was a short increase in spawning biomass coincident with the maturation of the 2005-2008 year classes through 2014 to after which the decline continued to lowest level of 34,701 t, projected for 2019. Fishing mortality appears to have increased steadily with the decline in abundance from 1990 through a peak in 2008 with continued high F through 2017. In 2018 there was a sharp decrease in fishing mortality

coincident with the drastic cut in ABC and decreased catch. F was estimated to have been above the ABC control rule advised levels for 2008 through 2011 and 2014 through 2017, although the authors note that "this shows what the current model predicts not what the past assessments had estimated".

This summary of GOA P. cod population dynamics considerations is from Barbeaux et al (2018 SAFE, p.5): "Female spawning biomass is currently estimated to be at its lowest point in the 41-year time series considered in this assessment. This following three years of poor recruitment in 2014-2016 and increased natural mortality during the 2014-2016 GOA marine heat wave. There are no data in the assessment to estimate recruitment post-2016 and therefore recruitment for these years is estimated at average. With average recruitment it is expected that the stock status will improve, however there are no data to inform Pacific cod recruitment for these years." Based on a risk matrix evaluation, "extreme concern" was indicated, and along with environmental and ecosystem considerations, suggested that setting the ABC below the maximum value permitted was warranted. The recommended (reduced) ABC values of 17,000 t for 2019 and 21,592 t for 2020 were adopted by the Council at its Dec. 2018 meeting. The TAC established for 2019 was 12,368 t.

A standard series of projections is carried out annually on the GOA and EBS P. cod stocks, as required under the NPFMC FMPs, the NEPA, and the MSA. Based on the projections in the 2018 SAFE reports, these Tier 3 stocks are not overfished, are not being subjected to overfishing, and are not approaching an overfished condition, based on the MSA criteria and definitions. The AI stock (Tier 5) is not being subjected to overfishing (the two "overfished" criteria cannot be evaluated for a Tier 5 stock).

The concerns expressed with apparent high levels of fishing mortality apply to the EBS and GOA P. cod stocks. In both cases, the SAFE authors note it appears that in hindsight, F may have been higher than the retroactively-calculated reference points, although F was not above the reference points as calculated at the time. With the recent and current reductions in ABC and TAC, measures have been taken to reduce F to below the reference points. Future surveillance reports should monitor the effectiveness of these management actions.

The following text on stock rebuilding is directly from the NPFMC FMP for BSAI Groundfish (NPFMC 2018a): Within two years of such time as a stock or stock complex is determined to be overfished, an FMP amendment or regulations will be designed and implemented to rebuild the stock or stock complex to the MSY level within a time period specified at Section 304(e)(4) of the Magnuson-Stevens Act. If a stock is determined to be in an overfished condition, a rebuilding plan would be developed and implemented for the stock, including the determination of an FOFL and FMSY that will rebuild the stock within an appropriate time frame.

Evidence of continuous compliance with the supporting clauses

There is no material change in compliance with any of the following supporting clauses.

6.1. States shall establish safe target reference point(s) for management.

6.2 States shall establish safe limit reference point(s) for exploitation (i.e. consistent with avoiding recruitment overfishing or other impacts that are likely to be irreversible or very slowly reversible). When a limit reference point is approached, measures shall be taken to ensure that it will not be exceeded. For instance, if fishing mortality (or its proxy) is above the associated limit reference point, actions should be taken to decrease the fishing mortality (or its proxy) below that limit reference point.

6.3 Data and assessment procedures shall be installed measuring the position of the fishery in relation to the reference points. Accordingly, the stock under consideration shall not be overfished (i.e. above limit reference point or proxy) and the level of fishing permitted shall be commensurate with the current state of the fishery resources, maintaining its future availability, taking into account that long term changes in productivity can occur due to natural variability and/or impacts other than fishing.

6.4 Management actions shall be agreed to in the eventuality that data sources and analyses indicate that these reference points have been exceeded.

Changes to Fundamental Clause Confidence Ratings.

There are no changes in the management of fisheries that would detrimentally affect performance against the confidence ratings for the fundamental clauses and any supporting clauses.

Conformance:

Conformance level: High. Non-conformance: None

Fundamental Clause 7.

Management actions and measures for the conservation of stock and the aquatic environment shall be based on the precautionary approach. Where information is deficient a suitable method using risk assessment shall be adopted to take into account uncertainty.

No. Supporting clauses	5
Supporting clauses applicable	4
Supporting clauses not applicable	1 (7.2)
Overall level of conformity	High
Non Conformances	None

Evidence of continuous compliance with the fundamental clause:

The status of US fish stocks is determined by 2 metrics. The first is the relationship between the actual exploitation level and the overfishing level (OFL). If the exploitation level (or fishing mortality) exceeds the FOFL, the stock is considered to be subject to overfishing. The second is the relationship between the stock size and the minimum stock size threshold (MSST). This is considered to be one half of B35% (i.e. B17.5%) for the P. cod stocks. If the stock size is below the MSST it is considered to be overfished. A stock is considered to be approaching an overfished condition when it is projected that there is more than a 50% chance that the biomass of the stock or stock complex will decline below the MSST within 2 years.

Harvest specifications for each of the P. cod stocks are made annually by NPFMC, and include the OFL, acceptable biological catch (ABC), and total allowable catch (TAC). Links to these documents from the Dec 2018 NPFMC meeting, with harvest specifications adopted for 2019 and 2020, are as follows (for BSAI and GOA respectively):

<http://meetings.npfmc.org/CommentReview/DownloadFile?p=7f955903-fdb5-4fe2-8d91-82393d6791d7.pdf&fileName=C3%20MOTION%20-%20specs.pdf>

<http://meetings.npfmc.org/CommentReview/DownloadFile?p=f9de64f3-94ba-429a-8805-cd40ff8d4aac.pdf&fileName=C2%20MOTION.pdf>

The NPFMC management plans classify each stock based on a tier system (Tiers 1-6) with Tier 1 having the greatest level of information on stock status and fishing mortality relative to MSY considerations. The Tier system specifies the maximum permissible ABC and the OFL for each stock in the complex (usually individual species but sometimes species groups). GOA and EBS P. cod are classified in Tier 3. The BSAI and GOA groundfish fishery management plans have pre-defined harvest control rules (HCR) that define a series reference points for groundfish covered by these plans. The overall objectives of the management plans are to prevent overfishing and to optimize the yield from the fishery through the promotion of conservative harvest levels while considering differing levels of uncertainty.

The PA reference points are established by the NPFMC precautionary approach documented in their FMPs, and stock status is evaluated against these calculated reference points in the annual stock assessment SAFE reports. Where possible, projections are carried out as part of the stock assessments to determine future trajectories of biomass, and related risks of overfishing. There are numerous references and examples of how uncertainty is dealt with in the stock assessment of P. cod in the annual SAFE reports. Also, the NPFMC FMPs for groundfish in GOA and BSAI regions are explicit in how

different levels of uncertainty are accounted for in the management process. Environmental data and socioeconomic data are also well documented through annual SAFE reports. The SAFE reports and FMPs have been referenced in previous sections.

NPFMC FMPs also have another reference point, B20%, defined as follows: "For groundfish species identified as key prey of Steller sea lions (i.e., walleye pollock, Pacific cod, and Atka mackerel), directed fishing is prohibited in the event that the spawning biomass of such a species is projected in the stock assessment to fall below B20% in the coming year. However, this does not change the specification of ABC or OFL". For GOA P. cod, analyses from the 2018 SAFE (Barbeaux et al. 2018) show a 20.7% probability of the spawning stock biomass being below B20% and a 1.1% probability of being below B17.5% at the start of 2019.

Stock assessments are comprehensive and reviewed on a number of levels, including externally by CIE experts. Where data gaps have been identified, and these are outlined in the SAFE reports, the NMFS/AFSC has ongoing research programs capable of addressing these needs. Organisations such as NPRB allow scientists from a number of disciplines and agencies to work collaboratively on a variety of fishery related studies in Alaskan waters, including some on P. cod. Research is also conducted by ADFG on the state-managed P. cod.

There are pre-agreed NPFMC harvest control rules in place to ensure overfishing does not occur on the P. cod stocks, and to reduce fishing mortality if reference points are approached or exceeded, as outlined in the Tiered PA system described previously. Extensive provisions exist in the NMFS fishery regulations for in-season adjustments (e.g. gear modifications, fishery closures) where necessary to protect the resource from biological harm. NPFMC FMPs contain the following specific clause: "In the event that a stock or stock complex is determined to be approaching a condition of being overfished, an in-season action, an FMP amendment, a regulatory amendment or a combination of these actions will be implemented to prevent overfishing from occurring."

Regarding the distribution of fishing mortality, for the past several years, the ABC for GOA P. cod has been allocated among regulatory areas on the basis of the biomass distribution in the trawl surveys. The current apportionment, given in the 2018 SAFE, is 44.9% Western GOA, 45.1% Central, and 10% Eastern. The state-managed cod fisheries have GHs based on a percentage of the apportioned ABCs, for example, the cod fishery in state waters in Prince William Sound has a GH set at 25% of the Eastern GOA ABC. GOA P. cod is also allocated on the basis of processor component (inshore/offshore) and season. For AI P. cod, Steller sea lion protection measures require an estimate of the proportion of the AI Pacific cod stock residing in Area 543, which will be used to set the harvest limit in 543 after subtraction of the State GH from the overall AI ABC. Based on the analyses shown in the SAFE documentation, this percentage is currently around 25%.

In June 2018, the Council (NPFMC 2018d) initiated an analysis of alternatives to modify the existing four-season structure of the Western and Central GOA pollock fishery and the relative allocation of the trawl CV sector's annual P.cod TAC across A and B seasons. Given the many existing challenges in managing and prosecuting these limited access trawl fisheries, the Council is seeking small changes that improve fishery outcomes without causing unintended redistribution of fishing opportunities across management areas or gear sectors. The Council recognized that the existing seasonal allocations were implemented as Steller sea lion (SSL) protection measures, and that modification requires analysis of potential effects on SSLs and consultation with NMFS Protected Resources division once a preferred action has been recommended.

Clause 7.2 is not applicable, as fisheries for P. cod in Alaska are well established. There are no concerns with the use of introduced or translocated species.

Evidence of continuous compliance with the supporting clauses

There is no material change in compliance with any of the following supporting clauses. Clause 7.2 is not applicable.

7.1. The precautionary approach shall be applied widely to conservation, management and exploitation of living aquatic resources in order to protect them and preserve the aquatic environment. This should take due account of stock enhancement procedures, where appropriate. Absence of scientific information shall not be used as a reason for postponing or failing to take conservation and

management measures. Relevant uncertainties shall be taken into account through a suitable method of risk assessment, including those associated with the use of introduced or translocated species.

7.1.1 In implementing the precautionary approach, States shall take into account, inter alia, of uncertainties relating to the size and productivity of the stocks, reference points, stock condition in relation to such reference points, levels and distribution of fishing mortality and the impact of fishing activities, including discards, on non-target and associated or dependent species as well as environmental and socio-economic conditions.

7.1.2 In the absence of adequate scientific information, appropriate research shall be initiated in a timely fashion.

7.2 In the case of new or exploratory fisheries, States shall adopt as soon as possible cautious conservation and management measures, including, inter alia, catch limits and effort limits. Such measures should remain in force until there are sufficient data to allow assessment of the impact of the fisheries on the long-term sustainability of the stocks, whereupon conservation and management measures based on that assessment should be implemented. The latter measures should, if appropriate, allow for the gradual development of the fisheries.

7.3 Contingency plans shall be agreed in advance for the appropriate management response to serious threats to the resource as a result of overfishing or adverse environmental changes or other phenomena adversely affecting the fishery resource. Such measures may be temporary and shall be based on best scientific evidence available.

Changes to Fundamental Clause Confidence Ratings.

There are no changes in the management of fisheries that would detrimentally affect performance against the confidence ratings for the fundamental clauses and any supporting clauses.

Conformance:

Conformance level: High. Non-conformance: None

6.4 Management Measures (D)

Fundamental Clause 8.

Management shall adopt and implement effective management measures designed to maintain stocks at levels capable of producing maximum sustainable yields, including harvest control rules and technical measures applicable to sustainable utilization of the fishery and be based upon verifiable evidence and advice from available scientific and objective, traditional sources.

No. Supporting clauses	17
Supporting clauses applicable	15
Supporting clauses not applicable	2 (8.11, 8.14)
Overall level of conformity	High
Non Conformances	None

Evidence of continuous compliance with the fundamental clause:

The MSA requires that conservation and fisheries management measures prevent overfishing while achieving optimum yield on a continuing basis, and sets out the standards (e.g. optimal use and avoiding overfishing) which are followed in managing the P. cod fisheries in Alaska. NPFMC uses a multi-tier precautionary approach, which includes Optimum Yield and MSY reference points. NMFS and NPFMC follow a multi-faceted PA (OFL, ABC, TAC, OY) to manage the federal P. cod fisheries, based on

targets, limits, and pre-defined HCRs, as well as overall ecosystem considerations. These systems are described extensively in Fundamental Clauses 6 and 7 above. The objectives are spelled out clearly in FMPs for BSAI and GOA Regions, and both FMPs contain long-term management objectives for the Alaskan P. cod fisheries. The state P. cod fisheries are managed by ADFG and BOF using an annual Guideline Harvest Level (GHL) set as a percentage of the federal ABC for GOA P. cod, and regulations are spelled out by BOF. Extensive cooperation exists between federal and state authorities in assessing and managing the P. cod stocks. Using the AI stock as an example, during the period in which a State fishery has existed: 1) TAC has been reduced so that the sum of the TAC and GHL would not exceed the ABC, 2) catch in the Federal fishery has been kept below TAC, and 3) total catch (Federal+State) has been kept below ABC (Thompson and Palsson 2018)

OY is given (in the FMPs) as a range for the groundfish complexes in the BSAI and the GOA, and the sum of the TACs of all groundfish species (except Pacific halibut) is required to fall within the range. The range for BSAI is 1.4 to 2.0 million tons while the range for GOA is 116 to 800 thousand tons. To prevent overfishing, NPFMC management objectives include the following measures specific to Optimum Yield: Adopt conservative harvest levels for multi-species and single species fisheries and specify optimum yield; 2) continue to use the 2 million mt optimum yield cap for the BSAI groundfish fisheries; and 3) provide for adaptive management by continuing to specify optimum yield as a range.

AFSC runs the Economic and Social Sciences Research Program in Alaska. The aim of the Program is to provide economic and sociocultural information to assist NMFS in meeting its stewardship responsibilities with activities being conducted in support of this mission. NPFMC has established the Social Science Planning Team to improve the quality and application of social science data that informs management decision-making and program evaluation. The NPFMC FMPs include a substantial section on the economic and socioeconomic characteristics of the fisheries and communities in Alaska. There is a detailed annual SAFE report on economic status of Alaskan fisheries, including P. cod (Fissel et al. 2017) and a section on economics in the stock assessment SAFEs. Harvest levels for each groundfish species or species group that are set by the Council for a new fishing year are based on the best biological, ecological, and socioeconomic information available, and follow a rigorous and public peer-reviewed process. The 2019-20 harvest levels are specified by NPFMC, at the links given in Fundamental Clause 7 above.

As listed in the NPFMC FMPs and NMFS regulations, the only legal gears for taking P. cod in the Alaskan fisheries are pelagic trawl, bottom trawl, jig, longline, and pot. Regulations pertaining to vessel and gear markings in the P. cod fishery are established in NMFS and ADFG regulations as prescribed in the annual management measures published in the Federal Register. There was no evidence that indicated the marking of gear is not being followed, or is not effective. No destructive gears such as dynamite or poison are permitted, nor is there any evidence that such methods are being used illegally. There is no evidence that regulations involving gear selectivity in the P. cod fisheries are being circumvented either by omission, or through the illegal use of gear technology. Evidence provided by fishing fleets indicates that lost fishing gear is minimal. A NOAA (2015) study shows ghost fishing mortality and gear loss for derelict trawl (and other gears such as longline) are likely to be lower in comparison to gillnets and trap gears, although less is known of the effects of derelict trawls and longlines.

NPFMC and BOF have extensive processes in place to allow for identifying and consulting with domestic parties having interest in the Alaskan P. cod fisheries. The NPFMC is responsible for allocation of the P. cod resource among user groups in Alaskan waters, and the Alaskan Board of Fisheries (BOF) public meeting process provides a regularly scheduled public forum for all interested individuals, fishermen, fishing organizations, environmental organizations, Alaskan Native organizations and other governmental and non-governmental entities that catch P. cod off Alaska to participate in the development of legal regulations for fisheries. Organizations and individuals involved in the fishery and management process have been identified. The Alaska P. cod management process has many stakeholders, including license holders, processors, fishermen's organizations, cooperatives, coalitions, the states of Alaska, Washington, and Oregon, CDQ groups, and environmental groups. The NPFMC process is the primary means for soliciting stakeholder information important to the fisheries, and this is fully transparent and open to the public. Proposals for management measures may come from the public, state and federal agencies, advisory groups, or Council members. Fishing industry stakeholders work extensively with fishery scientists, managers, and other industry members on various initiatives to ensure sustainability of the P. cod fisheries.

The NPFMC established a Rural Outreach Committee in 2009 to improve outreach and communications

with rural communities and Alaska Native entities and develop a method for systematic documentation of Alaska Native and community participation in the development of fishery management actions. The Western Alaska Community Development Quota (CDQ) Program, established by NPFMC in 1992, allocates a percentage of all Bering Sea and Aleutian Islands quotas for groundfish, prohibited species, halibut, and crab to eligible communities. There are approximately 65 communities within a fifty-mile radius of the BS coastline who participate in the program.

Mechanisms have been established to reduce capacity to levels commensurate with sustainable use of the P. cod resource in Alaska. These include harvest control rules re catch and effort management, an overall OY cap in GOA and BSAI Regions, a license limitation and restricted access program, and reduction of the number of vessels through industry-based initiatives. The industry-based measures have been taken to rationalize effort, eliminate derby-style fisheries, improve retention and utilization and reduce bycatch, and include the formation of groundfish cooperatives under Amendment 80, aimed at reduction of by-catch and further rationalization of the fishery. Fleet capacity and regularly updated data on all P. cod fishing operations are presented in the annual SAFE documents, as well as in various cooperative reports. Each cooperative is responsible for its own target catch and bycatch, and when any allocation is reached, the cooperative must stop fishing. This provides a strong incentive for cooperatives to keep bycatch rates low and to fish efficiently.

The Amendment 80 program was implemented in 2008 for certain groundfish catcher/processors in the Bering Sea/Aleutian Islands (BSAI) and provides an allocation of six groundfish species including P. cod. As well, the freezer longline fleet in the BSAI Region formed a voluntary cooperative (the Freezer Longline Conservation Cooperative) in 2010, in an attempt to maximize the value of their allocation of P. cod. The number of active vessels in this fleet was stable between 2003 and 2009 at an average of approximately 39 vessels, but after the formation of the FLCC, only approximately 29-30 vessels continued to fish in 2011-2014. However, the number of fishing days utilized increased, as the race for fish was eliminated (Fissel et al. 2017). Amendment 83 to the GOA FMP allocates the P. cod TAC in the Western and Central regulatory areas of the GOA among various gear and operational sectors, and eliminates inshore and offshore allocations in these two regulatory areas. NPFMC regularly reviews the effectiveness of measures such as Amendment 80, and a detailed five-year review was prepared for NPFMC in 2014.

There have been numerous regulations, as well as technological developments, aimed at reducing waste and discards in the P. cod fisheries, and to ensure that the resources are harvested sustainably. These include various measures to address fish size, discards, and closed seasons and areas. Specific examples include development of excluder devices for trawl gear to reduce these by-catches, and closures of large areas to protect numerous ETP species (including salmon, crab, and marine mammals). Since 1998, full retention of P. cod is required in all Alaskan fisheries under the Improved Retention/Improved Utilization (IRIU) program. In addition, some vessels have made various gear modifications to avoid retention of smaller fish, and/or to minimize bottom contact. Maximum retainable amounts (MRA) are put in place to help manage bycatches in groundfish fisheries. Fishing industry groups such as cooperatives and coalitions have undertaken numerous conservation-oriented measures in relation to fish size, bycatch avoidance, and product utilization.

NMFS has a full suite of fishery regulations for Alaskan waters which cover all aspects of fishing, including seasons, gear limitations, and numerous area closures. There are specific rules laid out for P. cod, permitting the use of trawl gear in certain areas only, as well as regulations on seabird avoidance for vessels fishing with hook-and-line gear. The gear regulations also contain details on mesh sizes permitted, biodegradable panels in pot gears, types of hook and line gear allowed, etc. The use of bottom contact gear is prohibited in the Gulf of Alaska Coral and Alaska Seamount Habitat Protection Areas year-round. Fishing with trawl vessels is not permitted year-round in the Crab and Halibut Protection Zone and the Pribilof Island Habitat Conservation Area. As well, a number of closure zones for trawl gears are described in the NPFMC FMPs for GOA and BSAI. A suite of measures specific to seabird avoidance in hook and line fisheries in Alaskan waters also exists, and data on seabirds are collected by observers, and included in the SAFE documents. Various measures to reduce by-catches of PSC species (crabs, halibut, Chinook) in BSAI and GOA, including gear modifications and closed areas and seasons, have been adopted in recent years. Other industry-driven measures taken to reduce halibut catch include use of excluder devices, improved communication and data sharing among vessels to avoid halibut, and enhanced deck sorting to reduce mortality of halibut returned to the sea (Gauvin 2013). In 2016, NMFS reduced the maximum retainable amount (MRA) of skates using groundfish and halibut as basis species in the Gulf of Alaska (GOA) from 20 percent to 5 percent, as a necessary measure to limit the incidental catch and discards of skates in GOA groundfish

and halibut fisheries.

The NPFMC FMPs for BSAI and GOA groundfish state that “For groundfish species identified as key prey of Steller sea lions (i.e., walleye pollock, Pacific cod, and Atka mackerel), directed fishing is prohibited in the event that the spawning biomass of such a species is projected in the stock assessment to fall below B20% in the coming year”. In the 2018 SAFE for GOA P. cod, a recommendation was made to reduce the maxABC to 17,000 t to prevent the stock spawner biomass from declining below B20% in 2020 (Barbeaux et al. 2018), which has been adopted by NPFMC in its harvest specifications. There are a number of other SSL protection measures in place in various locations throughout BSAI and GOA, implemented by NMFS, including areas closed to P. cod fishing for trawl and non-trawl gears. NPFMC has acted in a precautionary manner to place protections around SSL rookeries and haulouts and close areas where fishing may impact SSL prey such as P. cod. ADFG has also implemented areas closed to fishing in PWS around SSL rookeries. ADFG notes that co-management agreements have been established between the NMFS and the Aleut Marine Mammal Commission, the Traditional Council of St George Island, and the Traditional Council of St Paul Island.

None of the P. cod stocks in Alaska are classified as overfished or undergoing overfishing, and no destructive fishing practices are allowed in GOA or BSAI which would adversely impact habitat. With regard to other resources taken in the P. cod fishery, considerable work has been done to reduce catches of species such as halibut and Chinook salmon in trawl catches, as there are concerns with the status of Chinook in many rivers. Extensive work on deck sorting (Gauvin 2013) has occurred in recent years in certain trawl fisheries to improve the survival rates of halibut discarded at sea (required under regulation). Exempted fishing permits have been issued for deck sorting on Amendment 80 Catcher Processors to reduce halibut mortality. Numerous measures to protect SSL populations and habitat affect are implemented in the FMPs for GOA and BSAI groundfish, and some are specific to the P. cod fisheries. NMFS and NPFMC must describe and identify EFH in FMPs, minimize to the extent practicable the adverse effects of fishing on EFH, and identify other actions to encourage the conservation and enhancement of EFH. Further details on this are described under Fundamental Clause 12, below.

Amendment 97 established annual Chinook salmon PSC limits for the groundfish trawl fisheries, except for pollock trawl fisheries, in the Western and Central GOA. This action established annual Chinook salmon PSC limits for various fleet sectors and also established incentives for reducing Chinook salmon PSC for the trawl C/P and Non-Rockfish Program CV sectors, and established seasonal Chinook salmon PSC limits for the trawl C/P sector. The majority of chinook by-catch in GOA is from the pollock fishery, and a recent supplementary Biological Opinion concluded that groundfish fisheries in the GOA were not likely to jeopardize the continued existence of threatened Chinook stocks. Amendment 103 to the GOA FMP, passed in September 2016, allows NMFS to reapportion unused Chinook salmon prohibited species catch (PSC) within and among specific trawl sectors in the Central and Western GOA, based on specific criteria and within specified limits. This rule does not increase the current combined annual PSC limit of Chinook salmon that applies to Central and Western GOA trawl sectors, and promotes more flexible management of GOA trawl Chinook salmon PSC.

NPFMC FMPs outline the allowable fishing gears allowed in the Alaskan P. cod fisheries, and no gillnetting is permitted. Evidence provided by fishing fleets indicates that lost fishing gear is minimal. Use of longline gear in the P. cod fisheries substantially reduces the impact on bottom habitats and bycatch of many bottom dwelling species. Longline is typically not associated with as much ghost fishing as some other fishing gears, such as gillnets and some types of traps (NOAA 2015). There are no formal estimates of lost pot gear in the P. cod fishery, however, it has been reported that in some locations there were periodic lost pot recovery programs. NMFS regulations require that each pot be equipped with a biodegradable panel and escape rings to reduce the ability of lost pots to ghost-fish. Advancements or developments in fishing gear are made widely available to fishers through websites of NPFMC, NOAA/NMFS, and ADFG, and public meetings and other forms of communication. Use of excluder devices is generally thought not to negatively impact the selectivity of the trawls toward P. cod, and are designed not to impede escaping fish.

The fishery for P. cod in Alaska is conducted by US vessels only. In adjacent waters of the GOA cooperation on P. cod research and management between Canada and USA occurs as part of the science and management process. One such avenue for cooperation is the Technical Subcommittee (TSC) of the Canada-U.S. Groundfish Committee, formed in 1960 to coordinate fishery and scientific information resulting from the implementation of commercial groundfish fisheries operating in US and Canadian waters off the West Coast. The TSC meets annually, reviews the effectiveness of existing regulations, and allows exchange of information on the status of groundfish stocks of mutual concern

and to coordinate wherever possible programs of research, including surveys, age reading, and gear research.

There are numerous measures implemented in Alaskan fisheries to minimize non-utilized catches, such use prohibition of discarding (IRIU program), use of salmon and halibut excluder devices in trawl nets, and use of streamers on longline gear to reduce seabird bycatch. Many of the studies and subsequent implementation have involved cooperative efforts between researchers at institutions in NMFS, ADFG, universities, and industry, and are introduced into regulations only after extensive testing has occurred. Key studies include research on excluder devices, deck sorting of halibut, and research on pots to reduce Tanner crab bycatch. Additional information on bycatch is presented in Fundamental Clause 12, below.

Evidence of continuous compliance with the supporting clauses

There is no material change in compliance with any of the following supporting clauses. Clauses 8.11 and 8.14 are not applicable.

8.1. Conservation and management measures shall be designed to ensure the long-term sustainability of fishery resources at levels which promote the objective of optimum utilization, and be based on verifiable and objective scientific and/or traditional, fisher or community sources.

8.1.1 Management targets are consistent with achieving maximum sustainable yield (MSY) (or a suitable proxy) on average, or a lesser fishing mortality if that is optimal in the circumstances of the fishery (e.g. multispecies fisheries) or to avoid severe adverse impacts on dependent predators.

8.1.2 In the evaluation of alternative conservation and management measures, their cost-effectiveness and social impact shall be considered.

8.1.3 Studies shall be promoted which provide an understanding of the costs, benefits and effects of alternative management options designed to rationalize fishing, in particular, options relating to excess fishing capacity and excessive levels of fishing effort.

8.2 States shall prohibit dynamiting, poisoning and other comparable destructive fishing practices.

8.3 States shall seek to identify domestic parties having a legitimate interest in the use and management of the fishery. When deciding on use, conservation and management of the resource, due recognition shall be given, where relevant, in accordance with national laws and regulations, to the traditional practices, needs and interests of indigenous people and local fishing communities which are highly dependent on these resources for their livelihood. Arrangements shall be made to consult all the interested parties and gain their collaboration in achieving responsible fisheries.

8.4 Mechanisms shall be established where excess capacity exists, to reduce capacity to levels commensurate with sustainable use of the resource. Fleet capacity operating in the fishery shall be measured and monitored. States shall maintain, in accordance with recognized international standards and practices, statistical data, updated at regular intervals, on all fishing operations and a record of all authorizations to fish allowed by them.

8.5 Technical measures shall be taken into account, where appropriate, in relation to:

- fish size
- mesh size or gear
- closed seasons
- closed areas
- areas reserved for particular (e.g. artisanal) fisheries
- protection of juveniles or spawners

8.6 Fishing gear shall be marked in accordance with national legislation in order that the owner of the gear can be identified. Gear marking requirements shall take into account uniform and internationally recognizable gear marking systems.

8.7 Measures shall be introduced to identify and protect depleted resources and those resources

threatened with depletion, and to facilitate the sustained recovery/restoration of such stocks. Also, efforts shall be made to ensure that resources and habitats critical to the well-being of such resources which have been adversely affected by fishing or other human activities are restored.

8.8 States and relevant groups from the fishing industry shall measure performance and encourage the development, implementation and use of selective, environmentally safe and cost effective gear, technologies and techniques that sufficiently selective as to minimize catch, waste and discards of non-target species - both fish and non-fish species and impacts on associated or dependent species. The use of fishing gear and practices that lead to the discarding of catch shall be discouraged and the use of fishing gear and practices that increase survival rates of escaping fish shall be promoted. Inconsistent methods, practices and gears shall be phased out accordingly.

8.9 Technologies, materials and operational methods or measures including, to the extent practicable, the development and use of selective, environmentally safe and cost effective fishing gear and techniques shall be applied to minimize the loss of fishing gear, the ghost fishing effects of lost or abandoned fishing gear, pollution and waste.

8.10 The intent of fishing selectivity and fishing impacts related regulations shall not be circumvented by technical devices and information on new developments and requirements shall be made available to all fishers.

8.11 Assessment and scientific evaluation shall be carried out on the implications of habitat disturbance impact on the fisheries and ecosystems prior to the introduction on a commercial scale of new fishing gear, methods and operations. Accordingly, the effects of such introductions shall be monitored.

8.12 International cooperation shall be encouraged with respect to research programs for fishing gear selectivity and fishing methods and strategies, dissemination of the results of such research programs and the transfer of technology.

8.13 States and relevant institutions involved in the fishery shall collaborate in developing standard methodologies for research into fishing gear selectivity, fishing methods and strategies, and on the behavior of target and non-target species in relation to such fishing gear as an aid for management decisions and with a view to minimizing non utilized catches.

8.14 Policies shall be developed for increasing stock populations and enhancing fishing opportunities through the use of artificial structures. States shall ensure that, when selecting the materials to be used in the creation of artificial reefs as well as when selecting the geographical location of such artificial reefs, the provisions of relevant international conventions concerning the environment and the safety of navigation are observed.

Changes to Fundamental Clause Confidence Ratings.

There are no changes in the management of fisheries that would detrimentally affect performance against the confidence ratings for the fundamental clauses and any supporting clause.

Conformance:

Conformance level: High. Non-conformance: None

Fundamental Clause 9.

Fishing operations shall be carried out by fishers with appropriate standards of competence in accordance with international standards and guidelines and regulations.

No. Supporting clauses	3
Supporting clauses applicable	3



Supporting clauses not applicable	0
Overall level of conformity	High
Non Conformances	None

Evidence of continuous compliance with the fundamental clause:

The North Pacific Fishing Vessel Owners Association (NPFVOA) provides a large and diverse training program that many of the professional crew members must pass, and the Sitka-based Alaska Marine Safety Education Association has trained more than 10,000 fishermen in marine safety and survival. Captains and some officers on certain larger vessels in Alaska require particular levels of navigational certification. The State of Alaska, Department of Labor & Workforce Development (ADLWD) includes AVTEC (formerly called Alaska Vocational Training & Education Center, now called Alaska’s Institute of Technology). One of AVTEC’s main divisions is the Alaska Maritime Training Center, which promotes safe marine operations by effectively preparing captains and crew members for employment in the Alaskan maritime industry. Also, the University of Alaska Sea Grant Marine Advisory Program (MAP) provides education and training in several sectors, including fisheries management, in the forms of seminars and workshops. Additional education is provided by the Fishery Industrial Technology Center, in Kodiak, Alaska.

All rules and regulations governing Alaskan P. cod fisheries, including those dealing with responsible fishing methods, are readily available on NMFS, NPFMC, and ADFG websites. A summary of the NPFMC management measures that govern the GOA and BSAI groundfish fisheries are contained in the FMPs for those two regions. These also cover legal definitions such as quota shares, IFQ’s, etc. To increase communications and understanding between the regulated users and enforcement personnel, NOAA Fisheries Office of Law Enforcement (OLE) strives to maintain a positive and productive relationship with all harvesters and industry personnel, by providing current regulatory information and guidance to promote compliance and responsible fisheries.

Data on the number and location of Alaskan fishers, permits issued, etc. can be found in the annual SAFE documentation, such as Fissel et al. 2017. Information on Alaska sport fish and crew license holders has been compiled through the Alaska Fisheries Information Network for Alaska Fisheries (AKFIN). Data on fishing in Alaskan state-managed fisheries can be found in the State of Alaska’s Commercial Fisheries Entry Commission website. Fishermen in the state-managed fisheries must register prior to fishing and are required to keep a logbook during the fishery. Completed logbook pages must be attached to the ADFG copy of the fish ticket at the time of delivery. USCG also maintains records and issues credentials on licenses for crewmembers, including engineers, captains, mates, deckhands, etc. State of Alaska issues commercial fishing licenses for all crew.

Evidence of continuous compliance with the supporting clauses

There is no material change in compliance with any of the following supporting clauses.

9.1. States shall enhance through education and training programs the education and skills of fishers and, where appropriate, their professional qualifications. Such programs shall take into account agreed international standards and guidelines.

9.2 States, with the assistance of relevant international organizations, shall endeavor to ensure through education and training that all those engaged in fishing operations be given information on the most important provisions of the FAO CCRF (1995), as well as provisions of relevant international conventions and applicable environmental and other standards that are essential to ensure responsible fishing operations.

9.3 States shall, as appropriate, maintain records of fishers which shall, whenever possible, contain information on their service and qualifications, including certificates of competency, in accordance with their national laws.

Changes to Fundamental Clause Confidence Ratings.

There are no changes in the management of fisheries that would detrimentally affect performance

against the confidence ratings for the fundamental clauses and any supporting clause.

Conformance:

Conformance level: High. Non-conformance: None

6.5 Implementation, Monitoring and Control (E)

Fundamental Clause 10.

An effective legal and administrative framework shall be established and compliance ensured through effective mechanisms for monitoring, surveillance, control and enforcement for all fishing activities within the jurisdiction.

No. Supporting clauses	6
Supporting clauses applicable	2
Supporting clauses not applicable	4 (10.3, 10.3.1, 10.4, 10.4.1)
Overall level of conformity	High
Non Conformances	None

Evidence of continuous compliance with the fundamental clause:

The US Coast Guard (USCG), NMFS Office of Law Enforcement (OLE) and Alaska Wildlife Troopers (AWT) conduct at-sea and shore-based inspections. At-sea, dockside monitoring, aerial surveillance and satellite vessel monitoring systems (VMS) are in operation within the fisheries and developmental of electronic monitoring (EM) is ongoing. Monitoring, control and surveillance (MCS) is carried out at-sea and shore-side for the federal fisheries by the OLE and the USCG. The AWT fulfils the MCS function for the state water fisheries. The AWT also liaise with the OLE and may also request the assistance of the USCG vessels and aircraft to help in their surveillance and enforcement activities.

The NPFMC Groundfish and Halibut Observer Program (NGHOP) is the main data gathering program for all biological and fishery data for P. cod stock assessment and management. An annual report is produced on the Alaskan observer program, which covers fisheries in the BSAI and GOA Regions. Although observers are not directly part of the federal MCS programme, they are required to report infringements, and OLE and USCG officers conduct de-briefing interviews with observers to check on vessels' fishing practices and the conduct of the crew.

The Alaska Commercial Fisheries Entry Commission (CFEC) helps to conserve and maintain the economic health of Alaska's commercial fisheries by limiting the number of participating fishers. CFEC issues permits and vessel licenses and provides due process hearings and appeals as and when needed. OLE, USCG and AWT staff have on-line access to information related to permits and licences and are therefore able to confirm whether a vessel or individual has the correct credentials to be operating in a fishery.

The OLE publishes a national annual report and the Alaska region submits six monthly reports to the NPFMC. The USCG publishes an annual report to the NPFMC on resources applied to fishery enforcement in the previous year, the number of boardings/inspections, the number of violations, lives lost at sea, safety issues, and any changes in regulations. The P. cod fishery is considered to be a relatively low risk fishery, with the potential for PSC bycatch, in particular halibut and salmon, at certain times of the year being the main issue. The December 2018 report from OLE to NPFMC, covering the period April to September 2018, did not note any specific issues with regard to the P. cod fisheries. The low occurrence of serious offences indicates that the P. cod fishery is generally very compliant with regulations and the sanctions are considered to be an effective deterrent.

Evidence of continuous compliance with the supporting clauses

There is no material change in compliance with any of the following supporting clauses. Clauses 10.3, 10.3.1, 10.4, and 10.4.1 are not applicable.

10.1. Effective mechanisms shall be established for fisheries monitoring, surveillance, control and enforcement measures including, where appropriate, observer programs, inspection schemes and vessel monitoring systems, to ensure compliance with the conservation and management measures for the fishery in question. This could include relevant traditional, fisher or community approaches, provided their performance could be objectively verified.

10.2 Fishing vessels shall not be allowed to operate on the resource in question without specific authorization.

10.3 States involved in the fishery shall, in accordance with international law, within the framework of sub-regional or regional fisheries management organizations or arrangements, cooperate to establish systems for monitoring, control, surveillance and enforcement of applicable measures with respect to fishing operations and related activities in waters outside their national jurisdiction.

10.3.1 States which are members of or participants in sub-regional or regional fisheries management organizations or arrangements shall implement internationally agreed measures adopted in the framework of such organizations or arrangements and consistent with international law to deter the activities of vessels flying the flag of non-members or non-participants which engage in activities which undermine the effectiveness of conservation and management measures established by such organizations or arrangements. In that respect, Port States shall also proceed, as necessary, to assist other States in achieving the objectives of the FAO CCRF (1995), and should make known to other States details of regulations and measures they have established for this purpose without discrimination for any vessel of any other State.

10.4 Flag States shall ensure that no fishing vessels entitled to fly their flag fish on the high seas or in waters under the jurisdiction of other States unless such vessels have been issued with a Certificate of Registry and have been authorized to fish by the competent authorities. Such vessels shall carry on board the Certificate of Registry and their authorization to fish.

10.4.1 Fishing vessels authorized to fish on the high seas or in waters under the jurisdiction of a State other than the flag State shall be marked in accordance with uniform and internationally recognizable vessel marking systems such as the FAO Standard Specifications and Guidelines for Marking and Identification of Fishing Vessels.

Changes to Fundamental Clause Confidence Ratings.

There are no changes in the management of fisheries that would detrimentally affect performance against the confidence ratings for the fundamental clauses and any supporting clauses.

Conformance:

Conformance level: High. Non-conformance: None

Fundamental Clause 11.

There shall be a framework for sanctions for violations and illegal activities of adequate severity to support compliance and discourage violations.

No. supporting clauses	3
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Applicable supporting clauses	2
Non-applicable supporting clauses	1 (11.3)
Overall level of conformity	High
Non-conformance	None

Evidence of continuous compliance with the fundamental clause:

The MSA provides four options for penalizing violations, listed in ascending order of severity:

- 1) Issuance of a citation (a type of warning), usually at the scene of the offence
- 2) Assessment by the Administrator of a civil money penalty,
- 3) For certain violations, judicial forfeiture action against the vessel and its catch.
- 4) Criminal prosecution of the owner or operator for some offences.

The policy of NMFS is to enforce the provisions of the MSA by utilizing the authorized remedies best suited in a particular case. OLE agents and officers can assess civil penalties directly to the violator in the form of a summary settlement or can refer the case to NOAA's Office of General Counsel for Enforcement and Litigation who can impose a sanction on the vessels permit or further refer the case to the U.S. Attorney's Office for criminal proceedings. The low proportion of violations encountered during at-sea patrols of the Alaska fisheries demonstrates effective deterrence. No recent sanctions have been applied by State of Alaska authorities in the state P. cod fisheries and ADFG staff consider that sanctions are effective deterrents.

NOAA Alaska region has available a "Summary Settlement and Fix-it Schedule" which describes the violation and penalties associated with them. It also includes an increasing scale of penalty for repeat offences. Alaska state law describes the penalties for violating a BOF regulation. Fines, up to a maximum of \$15,000 or imprisonment for not more than 1 year are stipulated, along with forfeiture of any fish, its market value, forfeiture of vessel and any fishing gear. The option of pursuing criminal action is also available to the state.

Evidence of continuous compliance with the supporting clauses

There is no material change in compliance with any of the following supporting clauses. Clause 11.3 is not applicable.

11.1 National laws of adequate severity shall be in place that provide for effective sanctions.

11.2 Sanctions applicable in respect of violations and illegal activities shall be adequate in severity to be effective in securing compliance and discouraging violations wherever they occur. Sanctions shall also be in force that affects authorization to fish and/or to serve as masters or officers of a fishing vessel, in the event of non-compliance with conservation and management measures.

11.3 Flag States shall take enforcement measures in respect of fishing vessels entitled to fly their flag which have been found by them to have contravened applicable conservation and management measures, including, where appropriate, making the contravention of such measures an offence under national legislation.

Changes to Fundamental Clause Confidence Ratings.

There are no changes in the management of fisheries that would detrimentally affect performance against the confidence ratings for the fundamental clauses and any supporting clauses.

Conformance:

Conformance level: High. Non-conformance: None

6.6 Serious impacts of the fishery on the Ecosystem (F)

Fundamental Clause 12.

Considerations of fishery interactions and effects on the ecosystem shall be based on best available science, local knowledge where it can be objectively verified and using a risk based management approach for determining most probable adverse impacts. Adverse impacts on the fishery on the ecosystem shall be appropriately assessed and effectively addressed.

No. supporting clauses	16
Applicable supporting clauses	16
Non-applicable supporting clauses	0
Overall level of conformity	High
Non-conformance	None

Evidence of continuous compliance with the fundamental and supporting clause:

There are no material changes (since the last assessment activity) in compliance with the supporting clauses, evidence of compliance is therefore provided in a summarized format.

Gulf of Alaska (GoA)

Assessment of environmental and social effects and management consideration (Supporting clauses: 12.1, 12.2, 12.3, 12.4, 12.10)

12.1 States shall assess the impacts of environmental factors on target stocks and species belonging to the same ecosystem or associated with or dependent upon the target stocks, and assess the relationship among the populations in the ecosystem.

12.2 Adverse environmental impacts on the resources from human activities shall be assessed and, where appropriate, corrected.

12.3 The most probable adverse impacts of the fishery on the ecosystem/environment shall be considered, taking into account available scientific information, and local knowledge. In the absence of specific information on the ecosystem impacts of fishing for the unit of certification, generic evidence based on similar fishery situations can be used for fisheries with low risk of severe adverse impact. However, the greater the risk the more specific evidence shall be necessary to ascertain the adequacy of mitigation measures.

12.4 Impacts that are likely to have serious consequences shall be addressed. This may take the form of an immediate management response or a further analysis of the identified risk. In this context, full recognition should be given to the special circumstances and requirements in developing countries and countries in transition, including financial and technical assistance, technology transfer, training and scientific cooperation.

12.10 Research shall be promoted on the environmental and social impacts of fishing gear and, in particular, on the impact of such gear on biodiversity and coastal fishing communities.

Programmes of monitoring, evaluation and management response continue at the level when the fishery was re-certified, supported by wide-ranging evaluations such as the PSEIS (2004 and reviewed 2014). This is reflected in updated SAFE reports (including evaluation of ecosystem considerations) and specific Gulf of Alaska Ecosystem Status Report (Zador 2017). Also carried out was an updated evaluation of the economic status of the groundfish fisheries off Alaska (Fissel et al 2017). Included in the environmental analyses are considerations of the effects of ecosystem variation (notably the warming of 2014-16) on production.

No changes are evident which would affect the existing confidence ratings

Monitoring and management regarding non-target catches (Supporting clauses 12.5, 12.6, 12.11)

- 12.5 Appropriate measures shall be applied to minimize:
- catch, waste and discards of non-target species (both fish and non-fish species).
 - impacts on associated, dependent or endangered species

12.6 Non target catches, including discards, of stocks other than the "stock under consideration" shall be monitored and shall not threaten these non-target stocks with serious risk of extinction, recruitment overfishing or other impacts that are likely to be irreversible or very slowly reversible; if such impacts arise, effective remedial action shall be taken.

12.11 There shall be outcome indicator(s) consistent with achieving management objectives for non-target stocks (i.e. avoiding overfishing and other impacts that are likely to be irreversible or very slowly reversible).

Monitoring is carried out principally through the North Pacific Groundfish and Halibut Observer Program operated by the NMFS. In 2017, 100% of the catcher/processor vessel catch was observed in MSC-certified Pacific cod fisheries in the GOA. Catcher vessels were observed at a level of: hook and line 6%, trawl 13%, and pot gears 4%. There was an overall decrease in the catches of retained FMP species in 2017 (6,643 t) compared the average over the period 2011 to 2016 of 7,347 (Mary Furuness, NMFS Alaska Regional Office, Catch Accounting System, 2018). This decrease was driven largely by a reduction in the catches of Pacific Ocean perch, Rex sole and octopus. The level of bycatch of non-target species in 2017 declined by about 50% to 691 t, a decline driven by a reduction in the catches of Giant grenadiers and starfish.

No changes are evident which would affect the existing confidence.

Monitoring and management regarding endangered species and dependent predators (Supporting clauses 12.5, 12.5.1, 12.12, 12.14)

- 12.5 Appropriate measures shall be applied to minimize:
- catch, waste and discards of non-target species (both fish and non-fish species).
 - impacts on associated, dependent or endangered species

12.5.1 There shall be management objectives that seek to ensure that endangered species are protected from adverse impacts resulting from interactions with the unit of certification and any associated culture or enhancement activity, including recruitment overfishing or other impacts that are likely to be irreversible or very slowly reversible.

12.12 There shall be outcome indicator(s) consistent with achieving management objectives that seek to ensure that endangered species are protected from adverse impacts resulting from interactions with the unit of certification and any associated culture or enhancement activity, including recruitment overfishing or other impacts that are likely to be irreversible or very slowly reversible.

12.14 There shall be outcome indicator(s) consistent with achieving management objectives that seek to avoid severe adverse impacts on dependent predators resulting from the unit of certification fishing on a stock under consideration that is a key prey species.

Mammals. The fishery continues to be listed as Category III (remote likelihood or no known interaction with marine mammals) fishery (NOAA Fisheries 2018). AFSC researchers continue to pursue studies to determine which life history traits (age-specific reproductive or survival rates) are implicated in the regional dynamics of Steller sea lions and to better understand the links between foraging behaviour, diets and dynamics. Modelled estimates of western Gulf of Alaska Steller sea lion non-pups counts were approaching the long-term in 2016, suggesting conditions had been favourable for sea lions in this area. However, preliminary estimates show a decline in the number of pups from 2015

Seabirds. Interactions with fishing gear are recorded through the NMFS Observer Programme, and

population trends are monitored by the US Fish and Wildlife Service. Interactions have shown an increase in recent years, although no short-tailed albatrosses have been taken in the Pacific cod fishery (USFWS 2015). In 2016, NOAA Fisheries formed an Alaska Groundfish and Halibut Seabird Working Group to serve as an advisory body to NOAA Fisheries and the USFWS to promote further reduction in the bycatch of Short-tailed albatross and other seabirds as prescribed in the USFWS 2015 Biological Opinion (USFWS 2015). Monitoring and management of effects continue at an appropriate level and, as part of ongoing management review, a Seabird Cable Strike Mitigation Workshop was held in 2017 in Seattle. The goal of the workshop was to identify effective, practical mitigation measures to reduce seabird cable strike mortality in the catcher-processor west coast hake and Alaska trawl fisheries.

No changes are evident which would affect the existing confidence ratings.

Monitoring and management regarding aquatic ecosystems (Supporting clauses 12.7, 12.8, 12.15)

12.7 The role of the “stock under consideration” in the food web shall be considered, and if it is a key prey species in the ecosystem, management objectives and measures shall be in place to avoid severe adverse impacts on dependent predators.

12.8 States shall introduce and enforce laws and regulations based on the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78).

12.15 There shall be outcome indicator(s) consistent with achieving management objectives that seek to minimize adverse impacts of the unit of certification, including any enhancement activities, on the structure, processes and function of aquatic ecosystems that are likely to be irreversible or very slowly reversible. Any modifications to the habitat for enhancing the stock under consideration must be reversible and not cause serious or irreversible harm to the natural ecosystem’s structure, processes and function.

The Gulf of Alaska Ecosystem Status Report includes continuing monitoring of a range of ecosystem indicators, all considered by the NPFMC in the decision making process. Further developments in management include creation of the Alaska Marine Ecosystem Forum to promote coordination between the agencies on issues of shared responsibilities related to the marine ecosystems off Alaska’s coast and an Ecosystem Research Workshop to discuss the integration of ecosystem knowledge into the Council process.

No changes are evident which would affect the existing confidence ratings.

Monitoring and management regarding essential habitats (Supporting clauses 12.9, 12.13)

12.9 There shall be knowledge of the essential habitats for the “stock under consideration” and potential fishery impacts on them. Impacts on essential habitats and on habitats that are highly vulnerable to damage by the fishing gear involved shall be avoided, minimized or mitigated. In assessing fishery impacts, the full spatial range of the relevant habitat shall be considered, not just that part of the spatial range that is potentially affected by fishing.

12.13 There shall be outcome indicator(s) consistent with achieving management objectives for avoiding, minimizing or mitigating the impacts of the unit of certification on essential habitats for the “stock under consideration” and on habitats that are highly vulnerable to damage by the fishing gear of the unit of certification.

In the GOA, fishing effort was also dispersed over a wide area along the shelf, though with some areas of more concentrated activity. The most recent five-year review of EFH took place in 2016 and was reported in the re-assessment report. The key conclusion being that only 1.8% of Pacific cod EFH in the GOA is impacted by Pacific cod fisheries. The final environmental assessment (EA) for Essential Fish Habitat (EFH) Omnibus Amendments was published in June of 2018. Amendment 105 is the relevant omnibus amendment to the Fishery Management Plan for the groundfish fishery of the Gulf of Alaska. Based on the most recent (2015) 5-year review of EFH that concluded in 2017, the Council

determined that new habitat and life history information is available to revise many of the EFH descriptions and maps. These amendments (A105 for the GOA) to the EFH provisions in the Council's FMPs would not substantively change the impacts of EFH as analysed in the 2005 EFH environmental impact statement. The 2015 EFH 5-year review concluded that no change to the conclusions of the evaluation of fishing effects on EFH is warranted based on new information. None of the FMP amendments require regulatory action.

No changes are evident which would affect the existing confidence ratings.

Bering Sea and Aleutian Islands (BSAI)

Assessment of environmental and social effects and management consideration (Supporting clauses: 12.1, 12.2, 12.3, 12.4, 12.10).

12.1 States shall assess the impacts of environmental factors on target stocks and species belonging to the same ecosystem or associated with or dependent upon the target stocks, and assess the relationship among the populations in the ecosystem.

12.2 Adverse environmental impacts on the resources from human activities shall be assessed and, where appropriate, corrected.

12.3 The most probable adverse impacts of the fishery on the ecosystem/environment shall be considered, taking into account available scientific information, and local knowledge. In the absence of specific information on the ecosystem impacts of fishing for the unit of certification, generic evidence based on similar fishery situations can be used for fisheries with low risk of severe adverse impact. However, the greater the risk the more specific evidence shall be necessary to ascertain the adequacy of mitigation measures.

12.4 Impacts that are likely to have serious consequences shall be addressed. This may take the form of an immediate management response or a further analysis of the identified risk. In this context, full recognition should be given to the special circumstances and requirements in developing countries and countries in transition, including financial and technical assistance, technology transfer, training and scientific cooperation.

12.10 Research shall be promoted on the environmental and social impacts of fishing gear and, in particular, on the impact of such gear on biodiversity and coastal fishing communities.

Programmes of monitoring, evaluation and management response continue at the level when the fishery was re-certified, supported by wide-ranging evaluations such as the PSEIS (2004 and reviewed 2014). This is reflected in updated SAFE reports (including evaluation of ecosystem considerations) and specific Eastern Bering Sea (Siddon and Zador, 2017) and Aleutian Island (Zador 2016) Ecosystem Status Reports. Also carried out was an updated evaluation of the economic status of the groundfish fisheries off Alaska (Fissel et al 2017). Included in the environmental analyses are considerations of the effects of ecosystem variation (notably the warming of 2014-16) on production.

No changes are evident which would affect the existing confidence ratings.

Monitoring and management regarding non-target catches (Supporting clauses 12.5, 12.6, 12.11)

12.5 Appropriate measures shall be applied to minimize:

- catch, waste and discards of non-target species (both fish and non-fish species).
- impacts on associated, dependent or endangered species

12.6 Non target catches, including discards, of stocks other than the "stock under consideration" shall be monitored and shall not threaten these non-target stocks with serious risk of extinction, recruitment overfishing or other impacts that are likely to be irreversible or very slowly reversible; if such impacts arise, effective remedial action shall be taken.

12.11 There shall be outcome indicator(s) consistent with achieving management objectives for non-target stocks (i.e. avoiding overfishing and other impacts that are likely to be irreversible or very

slowly reversible).

Monitoring is carried out principally through the North Pacific Groundfish and Halibut Observer Program operated by the NMFS. In 2017, 100% of catches taken by all motherships and catcher processors were observed. For catcher vessels, 9% of longline, 55% of trawl, and 6% of pot vessels were observed in 2017. The catches of retained FMP species (Pollock, Arrowtooth flounder, Flathead sole, Rock sole, and Yellowfin sole) in both the trawl and longline components of the fishery were similar to previous years while the retained catch of Atka mackerel increased slightly. Most catches, including retained, prohibited, and non-target species, were broadly similar in composition to that previously observed albeit there was an increase in the catches of Golden king crab (the status of which is uncertain but which is not thought to be undergoing overfishing).

No changes are evident which would affect the existing confidence ratings.

Monitoring and management regarding endangered species and dependent predators (Supporting clauses 12.5, 12.5.1, 12.12, 12.14)

12.5 Appropriate measures shall be applied to minimize:

- catch, waste and discards of non-target species (both fish and non-fish species).
- impacts on associated, dependent or endangered species

12.5.1 There shall be management objectives that seek to ensure that endangered species are protected from adverse impacts resulting from interactions with the unit of certification and any associated culture or enhancement activity, including recruitment overfishing or other impacts that are likely to be irreversible or very slowly reversible.

12.12 There shall be outcome indicator(s) consistent with achieving management objectives that seek to ensure that endangered species are protected from adverse impacts resulting from interactions with the unit of certification and any associated culture or enhancement activity, including recruitment overfishing or other impacts that are likely to be irreversible or very slowly reversible.

12.14 There shall be outcome indicator(s) consistent with achieving management objectives that seek to avoid severe adverse impacts on dependent predators resulting from the unit of certification fishing on a stock under consideration that is a key prey species.

Mammals. The BSAI longline fishery in 2017 continues to be classified as Category II (occasional interactions) and the trawl and pot fisheries as Category III (remote likelihood or no known interaction) (NOAA Fisheries 2018). Monitoring of fur seal and Steller sea lions continues, with fluctuations in populations closely monitored (although reasons for population fluctuation may be difficult to ascribe). Work is ongoing to determine which life history traits (age-specific reproductive or survival rates) are implicated in the regional dynamics of Steller sea lions and to better understand the links between forging behaviour, diet and population dynamics. Once completed these studies may provide new insight into the factors underlying recent population trends. Other work includes a Lenfest Ocean Program funded project, in which a team of researchers are developing a new spatially explicit bioenergetics model to estimate the dietary needs of northern fur seals, and link the model to the existing climate-to-fish model of the Bering Sea (FEAST) and the multi-species stock assessment model (CEATTLE).

Seabirds. The longline component of the Pacific cod fishery accounts for most of the seabirds taken in the BSAI. Generally, Seabird bycatch in groundfish fisheries in the EBS has generally declined since 2002 and the introduction of seabird mitigation devices. No short-tailed albatross or black-footed albatrosses were caught, and only 9 Laysan albatrosses were caught incidentally in 2017. There was, however, an increase in total catches in 2015 and again in 2016, due to increased catches of northern fulmar and shearwaters. Despite this increase, the bycatch of shearwaters is not a conservation concern and research and monitoring continues to investigate trends and contributing factors. Nonetheless, as part of ongoing management review, a Seabird Cable Strike Mitigation Workshop was held in 2017 in Seattle. The goal of the workshop was to identify effective, practical mitigation measures to reduce seabird cable strike mortality in the catcher-processor west coast hake and Alaska trawl fisheries.

No changes are evident which would affect the existing confidence ratings.

Monitoring and management regarding aquatic ecosystems (Supporting clauses 12.7, 12.8, 12.15)

12.7 The role of the “stock under consideration” in the food web shall be considered, and if it is a key prey species in the ecosystem, management objectives and measures shall be in place to avoid severe adverse impacts on dependent predators.

12.8 States shall introduce and enforce laws and regulations based on the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78).

12.15 There shall be outcome indicator(s) consistent with achieving management objectives that seek to minimize adverse impacts of the unit of certification, including any enhancement activities, on the structure, processes and function of aquatic ecosystems that are likely to be irreversible or very slowly reversible. Any modifications to the habitat for enhancing the stock under consideration must be reversible and not cause serious or irreversible harm to the natural ecosystem’s structure, processes and function.

The Eastern Bering Sea (Siddon and Zador, 2017) and Aleutian Island (Zador 2016) Ecosystem Status Reports include continuing monitoring of a range of ecosystem indicators, all considered by the NPFMC in the decision-making process. Further developments in management include creation of the Alaska Marine Ecosystem Forum to promote coordination between the agencies on issues of shared responsibilities related to the marine ecosystems off Alaska’s coast and an Ecosystem Research Workshop to discuss the integration of ecosystem knowledge into the Council process.

No changes are evident which would affect the existing confidence ratings.

Monitoring and management regarding essential habitats (Supporting clauses 12.9, 12.13)

12.9 There shall be knowledge of the essential habitats for the “stock under consideration” and potential fishery impacts on them. Impacts on essential habitats and on habitats that are highly vulnerable to damage by the fishing gear involved shall be avoided, minimized or mitigated. In assessing fishery impacts, the full spatial range of the relevant habitat shall be considered, not just that part of the spatial range that is potentially affected by fishing.

12.13 There shall be outcome indicator(s) consistent with achieving management objectives for avoiding, minimizing or mitigating the impacts of the unit of certification on essential habitats for the “stock under consideration” and on habitats that are highly vulnerable to damage by the fishing gear of the unit of certification.

The most recent 5-year review of Essential Fish Habitat took place in 2016 using a new Fishing Effects (FE) model to assess the impacts of fishing activities on EFH. It is estimated that 4.9% of Pacific cod EFH in the BS is impacted by Pacific cod fisheries and that 1.9% of Pacific cod EFH in the Aleutian Island is impacted by fisheries for Pacific cod. In April 2017, the Council concurred with the Plan Team consensus that the effects of fishing on EFH do not currently meet the threshold of more than minimal and not temporary, and so further mitigation action is not considered necessary at this time (NMFS 2017). In addition, the final environmental assessment (EA) for Essential Fish Habitat (EFH) Omnibus Amendments was published in June of 2018. Amendment 115 is the relevant omnibus amendment to the Fishery Management Plan for the groundfish fishery of the Bering Sea and Aleutian Islands Area. Based on the most recent (2015) 5-year review of EFH that concluded in 2017, the Council determined that new habitat and life history information is available to revise many of the EFH descriptions and maps. These amendments (A115 for the BSAI) to the EFH provisions in the Council’s FMPs would not substantively change the impacts of EFH as analysed in the 2005 EFH environmental impact statement. The 2015 EFH 5-year review concluded that no change to the conclusions of the evaluation of fishing effects on EFH is warranted based on new information. None of the FMP amendments require regulatory action.

No changes are evident which would affect the existing confidence ratings.

Changes to Fundamental Clause Confidence Ratings.

There are no changes in the management of fisheries that would detrimentally affect performance against the confidence ratings for the fundamental clauses and any supporting clauses.

Conformance:

Conformance level: High. Non-conformance: None

Fundamental Clause 13 – NOT APPLICABLE

Where fisheries enhancement is utilized, environmental assessment and monitoring shall consider genetic diversity and ecosystem integrity.

No. supporting clauses	19
Applicable supporting clauses	0
Non-applicable supporting clauses	19
Overall level of conformity	NA
Non-conformance	NA

Evidence of continuous compliance with the fundamental clause: NA

Evidence of continuous compliance with the supporting clauses: NA

13. 1 State shall promote responsible development and management of aquaculture, including an advanced evaluation of the effects of aquaculture development on genetic diversity and ecosystem integrity, based on the best available scientific information (and/or traditional, fisher or community objective and verifiable knowledge). Significant uncertainty is to be expected in assessing possible adverse ecosystem impacts of fisheries, including culture and enhancement activities. This issue can be addressed by taking a risk assessment/risk management approach.

13.1.1 In the case of enhanced fisheries, the fishery management system should take due regard of the natural production processes and be appropriate for the conservation of genetic diversity, biodiversity, protection of endangered species, maintenance of integrity of aquatic communities and ecosystems, minimising adverse impacts on ecosystem structure and function.

13.2 State shall produce and regularly update aquaculture development strategies and plans, as required, to ensure that aquaculture development is ecologically sustainable and to allow the rational use of resources shared by aquaculture and other activities.

13.2.1 State shall ensure that the livelihoods of local communities, and their access to fishing grounds, are not negatively affected by aquaculture developments.

13.3 Effective procedures specific to aquaculture of fisheries enhancement shall be established to undertake appropriate environmental assessment and monitoring with the aim of minimizing adverse ecological changes such as those caused by inputs from enhancement activities and related economic and social consequences.

13.4 With due regard to the assessment approach employed, stock assessment of fisheries that are enhanced through aquaculture inputs shall consider the separate contributions from aquaculture and natural production.

13.5 Any modification to the habitat for enhancing the stock under consideration is reversible and do not cause serious or irreversible harm to the natural ecosystem’s structure and function.

13.5.1 Efforts shall be undertaken to minimize the harmful effects of introducing non-native species or genetically altered stocks used for aquaculture including culture based fisheries into waters.

13.5.2 Steps shall be taken to minimize adverse genetic disease and other effects of escaped farmed fish on wild stocks.

13.5.3 Research shall be promoted to develop culture techniques for endangered species to protect, rehabilitate and enhance their stocks, taking into account the critical need to conserve genetic diversity of endangered species.

13.6 State shall protect transboundary aquatic ecosystems by supporting responsible aquaculture practices within their national jurisdiction and by cooperation in the promotion of sustainable aquaculture practices.

13.7 State shall, with due respect to their neighbouring States and in accordance with international law, ensure responsible choice of species, siting and management of aquaculture activities which could affect trans boundary aquatic ecosystems.

13.8 State shall consult with their neighbouring States, as appropriate, before introducing non-indigenous species into trans-boundary aquatic ecosystems.

13.9 State shall establish appropriate mechanisms, such as databases and information networks to collect, share and disseminate data related to their aquaculture activities to facilitate cooperation on planning for aquaculture development at the national, subregional, regional and global level.

13.10 State shall cooperate in the elaboration, adoption and implementation of international codes of practice and procedures for introductions and transfers of aquatic organisms.

13.11 States shall, in order to minimize risks of disease transfer and other adverse effects on wild and cultured stocks, encourage adoption and promote the use of appropriate practices/procedures in the selection and genetic improvement of broodstocks, the introduction of non-native species, and in the production, sale and transport of eggs, larvae, fry, broodstock or other live materials. States shall facilitate the preparation and implementation of appropriate national codes of practice and procedures to this effect.

13.12 Enhanced fisheries may be supported in part by stocking of organisms produced in aquaculture facilities or removed from wild stocks other than the "stock under consideration". Aquaculture production for stocking purposes should be managed and developed according to the above provisions, especially in relation to maintaining the integrity of the environment, the conservation of genetic diversity, disease control, and quality of stocking material.

13.13 Regarding the enhanced components of the "stock under consideration", provided that a natural reproductive stock component is maintained and fishery production is based primarily on natural biological production within the ecosystem of which the "stock under consideration" forms a part, enhanced fisheries shall meet the following criteria:

- the species shall be native to the fishery's geographic area or introduced historically and have subsequently become established as part of the "natural" ecosystem;
- there shall be natural reproductive components of the "stock under consideration";
- the growth during the post-release phase shall be based upon food supply from the natural environment and the production system shall operate without supplemental feeding.

13.14 In the case of enhanced fisheries, "stock under consideration" may comprise naturally reproductive components and components maintained by stocking. In the context of avoiding significant negative impacts of enhancement activities on the natural reproductive components of "stock under consideration":

- naturally reproductive components of enhanced stocks shall not be overfished;
- naturally reproductive components of enhanced stocks shall not be substantially displaced by stocked components. In particular, displacement shall not result in a reduction of the natural reproductive stock component below abundance-based target reference points (or their proxies) defined for the regulation of harvest.



Changes to Fundamental Clause Confidence Ratings. NA
Conformance: NA

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APPENDICES

Appendix 1 Stakeholder submissions

No stakeholder comments were received during the annual surveillance activities.



ABOUT DNV GL

Driven by our purpose of safeguarding life, property and the environment, DNV GL enables organizations to advance the safety and sustainability of their business. We provide classification and technical assurance along with software and independent expert advisory services to the maritime, oil and gas, and energy industries. We also provide certification services to customers across a wide range of industries. Operating in more than 100 countries, our 16,000 professionals are dedicated to helping our customers make the world safer, smarter and greener.