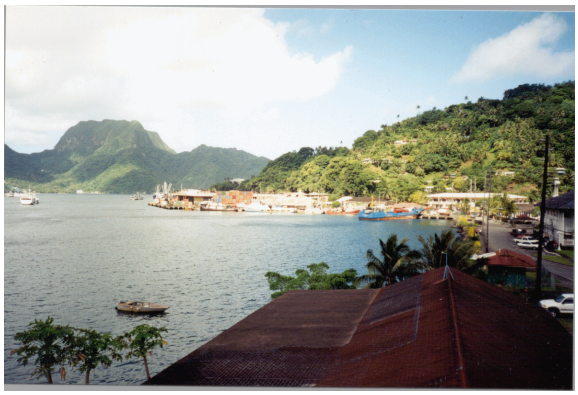
WESTERN
PACIFIC
REGIONAL
FISHERY
MANAGEMENT
COUNCIL

Measure to limit pelagic longline fishing effort in the Exclusive Economic Zone around American Samoa

Amendment 11 to the Fishery Management Plan for the Pelagic Fisheries of the Western Pacific Region

December 1, 2003



WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

Measure to limit pelagic longline fishing effort in the Exclusive Economic Zone around American Samoa

AMENDMENT 11
TO THE PELAGICS FISHERY MANAGEMENT PLAN
OF THE WESTERN PACIFIC REGION

INCLUDING AN ENVIRONMENTAL ASSESSMENT

Lead Agency: National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Pacific Islands Regional Office
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Abstract: This document considers a limited entry program fo the American Samoa longline fishery. The measure would allow entry by all those individuals that owned longline vessels at any time on or prior to March 21, 2002, provided that while under their ownership the vessel was used to legally harvest Pacific pelagic management unit species with longline gear in the EEZ around American Samoa, and those fish were landed in American Samoa, at some time on or prior to March 21, 2002. The objectives of this measure are to prevent local depletion; maintain sustained community participation and minimize adverse impacts on communities; ensure opportunities for substantial future participation by indigenous American Samoans in the domestic longline fishery; reduce the potential for gear conflicts; minimize fish bycatch and preclude waste of pelagic management unit species.

December 1, 2003

PROLOGUE

Samoa

Sa'a fa'aoti le utu a le faimea. Let the fisherman's bamboo receptacle (to hold hooks) be completely emptied out.

When used to encourage and persuade (*upu fa'aalualu*), "In a discussion each one should tell his opinion unreservedly; only then can the right decision be reached."

E. Schultz. 1953. Proverbial Expressions of Samoa.

Palagi

One of the most difficult matters in all of controversy is to distinguish disputes about words from disputes about facts.

Bertrand Russell. 1958. The ABC of Relativity. London: Allen and Unwin.

2.0 EXECUTIVE SUMMARY

2.1 Problem statement and need for action

A small-scale domestic longline fishery was established in 1995 by one American Samoa fisherman using techniques that were already successful in Independent Samoa. The target species was albacore tuna that is sold for canning in American Samoa. Other small vessels (alia) soon entered the American Samoa longline fishery. As early as 1997, these small-scale participants raised concerns about the potential for the entry of larger vessels that could lead to an excessive concentration of longline fishing in waters of the Exclusive Economic Zone (EEZ) around American Samoa, similar to the development of neighboring Independent Samoa's longline fishery. American Samoa's fishermen recommended a precautionary approach to managing their domestic longline fishery to avoid problems such as 1) gear conflict; 2) reduction in local catch rates of albacore tuna below economically viable levels; and, most importantly, 3) a possible "boom and bust" cycle of development that could disrupt community participation in and dependence on small-scale pelagic fisheries, and could lead to the loss of opportunity for substantial participation in the large-vessel sector (vessels greater than 50 ft in length) of the fishery by indigenous American Samoans. Between 1997 and 2002, the active longline fleet increased from approximately 21 mostly small vessels to 75 vessels of a variety of sizes, with American Samoans mostly owning small vessels and non-American Samoans mostly owning large vessels.

Although not yet occurring, the possibility of gear conflict between small-scale and large-scale longline vessels was a great concern of America Samoa's small-scale fishermen. In 1998, the Western Pacific Regional Fishery Management Council (WPRFMC or Council) responded by recommending that EEZ waters within 50 nm of shore around American Samoa (approximately 130,000 km^2) be closed to large-scale (more than 50 ft in length) pelagic fishing vessels. A final rule establishing the large vessel closed area went into effect on March 1, 2002. During the interim, the number of large vessels participating in American Samoa's domestic longline fishery increased from three in 2000 to 30 in March, 2002.

Longline vessels based in American Samoa have limited fishing grounds available to them for two reasons. First, EEZ waters around American Samoa are bounded on all sides by EEZ waters of neighboring nations. Due to regional geography, these shared boundaries are generally less than 200 m from American Samoa's shores. Second, the South Pacific Tuna Treaty currently prohibits US longlining on the high seas within the Treaty area. There are indications that this treaty will be amended shortly to remove this prohibition but it remains in place at this time.

Using seasonal adjustments and based on the number of vessels active in the last quarter of 2001, EEZ waters around American Samoa could be expected to have an annual average hook density of 33 hooks/km^2 (derived from NMFS' WPacFIN database). This compares with a longline hook density in the EEZ around the main

Hawaiian Islands (a portion of which is closed to longlining fishing) of about 15 hooks/ km^2 in 2001 (derived from Ito and Machado, 2002).

As a result of the large vessel closed area, most large-scale longline fishing effort (a few large-scale longline boats received exemptions to the large vessel closed area) has been compressed in the 260,000 km^2 of the remaining EEZ (outside of 50 nm). However, due to seasonal conditions and other operating patterns, not all domestic longline fishing effort by the large vessels has been exerted to date. The existing large-vessel longline fleet based in American Samoa has the capability of fishing effort that could reach and exceed a level that is believed to be associated with gear conflict (55 hooks/km^2 /year inferred from experience in Independent Samoa's longline fishery during its years of largest expansion). If left unchecked fishing effort exerted by the large-scale sector of American Samoa's longline fishery could reach higher levels of hook density (70 hooks/km^2/year) than those that prompted domestic longline license limitation by the government of Independent Samoa to maintain an economically viable tuna catch rate in its domestic longline fishery.

Further expansion of longline fishing effort within the finite area (390,000 km^2) of American Samoa's EEZ is likely to lead to the very problems that American Samoa's original longline fishery participants predicted in 1997. Depending on the distribution of fishing effort between nearshore and offshore areas, physical gear conflicts could be anticipated in the near future in one or both areas. Besides the inherent economic costs of fishery congestion (increased travel/search time and lost fishing time), social costs could be expected to include angry confrontations and loss of cohesion among fishery participants. In some fisheries, gear conflicts have resulted in destruction of fishing gear, gunfire and other violence. At higher levels, declines in local albacore catch rates could reduce vessel profits below those required to cover operating costs.

Closely related to issues of local depletion and gear conflicts, is the desire for sustained community participation in the fishery, and opportunities for substantial future participation in the large-vessel sector by indigenous American Samoans.

Unregulated expansion of the fleet could lead to unsustainable development; i.e., a "boom" of uncontrolled fishing by large vessels with greater fishing power, followed by a "bust" of overcapacity and reduced availability of pelagic fish. A "boom" cycle of longline fishery growth would increase the short-term supply of fish but the "bust" cycle that may follow could disrupt long-term fish supply and discourage sustained community participation in fisheries. Two boom-and-bust cycles have been previously experienced in American Samoa's bottomfish fishery and each "bust" reduced fish supply and domestic fishing effort for several years.

A "boom and bust" pattern of development could be prevented by regulatory action to restrict further expansion of American Samoa's longline fishery. This action would promote long-term fishery development for sustained community participation, not only

to produce food, income and employment but also to contribute to the perpetuation of American Samoan culture.

For these reasons, action to control the development of this fishery is no longer "precautionary" but absolutely necessary to achieve the following management objectives

1) Prevent local depletion.

2) Maintain sustained community participation and minimize adverse impacts on communities.

3) Ensure opportunities for substantial future participation by indigenous American Samoans in the domestic longline fishery.

4) Reduce the potential for gear conflicts.

5) Minimize fish bycatch and preclude waste of pelagic management unit species.

2.2 Summary of the alternatives

The Council considered nine alternatives as possible measures to manage longline fishing effort in the EEZ around American Samoa. The major elements of these alternatives are discussed below and summarized in Table ES.2. Under all alternatives, present regulations concerning the near shore closed area, logbooks, annual attendance by vessel operators at protected species workshops, and sea turtle mitigation measures would remain in effect.

Alternative 1 is the no action alternative, while Alternative 4 represents the consensus preference of American Samoa-based fishermen who participated in a series of workshops sponsored by American Samoa's Department of Marine and Wildlife Resources between April, 2001 and March, 2002.

Alternatives 2, 3, 5, 6, 7, 8 and 9 represent other viewpoints. Alternative 2 does not arise from workshop discussions but is considered to provide a broad range of alternative management actions to address this issue. Alternative 3 represents a variation of the workshop consensus but differs in that it does not limit the number of vessels in the smallest size class.

Alternatives 5 and 6 also were not addressed at the workshops but are included to provide relatively tight limits on total longline fishing effort in American Samoa's EEZ while maintaining opportunities for additional community participation in the small-scale sector (vessels under 50') of the domestic longline fishery. Alternative 5 would emphasize additional community participation using vessels in the 40 ft - 50 ft category

in order to improve vessel safety and encourage development of fresh export of non-albacore products from the American Samoa longline fishery as an alternative to complete reliance on the cannery market for albacore. Alternative 6 would emphasize additional community participation using vessels under 40', this would encourage maximum participation in the longline fishery with low investment thresholds and would continue and possibly expand the stream of social and cultural benefits from the alia fishery.

Alternative 7 was not addressed at the American Samoa workshops but instead reflects the concern of the Council's Scientific and Statistical Committee that longline fishing effort in EEZ waters around American Samoa is near its limits, before the onset of gear conflict and potential for local reductions in albacore catch rates to economically low levels, especially in the offshore area. Alternative 7 also addresses vessel safety concerns by prioritizing current participants wanting to upgrade to larger vessels over new participants. Due to these safety concerns, this alternative also includes a recommendation that a method to allow conversion of less than 40 ft vessels to 40 ft - 50 ft vessels without exceeding effort limits be developed in the near future. Although Alternative 7 does not explicitly prioritize participation by indigenous American Samoans, it is likely that ranking new applicants by previous experience in American Samoa-based pelagic fisheries would result in increased participation by this group. Due to remaining uncertainty over precisely how many vessels would be allowed in by the control date, this alternative includes an initial prohibition on the re-issuance of lost permits until attrition reduces effort to levels below those associated with gear conflict. This alternative does not include a requirement to land all pelagic management unit species as the SSC felt that this would impose an unfair burden on fishery participants given that stocks are healthy and there does not appear to be a market for fish that are currently being discarded.

Alternative 8 (limiting longline landings to 5,000 lbs per trip) is being considered as an method to managing American Samoa's expanding longline fishery that does not rely on limited entry mechanisms.

Alternative 9A was crafted at the Council's 113th meeting in American Samoa and addresses concerns raised by fishermen and other interested parties at that meeting. This alternative focuses on vessel owners rather than permit holders as permits were not required in the early days of the fishery (thus limiting entry to prior permit holders would restrict renewed participation by fishery "pioneers"). This alternative would restrict entry to those individuals who owned a longline vessel on March 21, 2002 - provided that the vessel was used to legally harvest Pacific pelagic management unit species with longline gear in the EEZ around American Samoa, and those fish were landed in

American Samoa, at some time on or prior to March 21, 2002[1]. In order to allow maximum efficiency in vessel operations, this alternative allows the use of vessels greater than 100 ft in length overall and does not impose any hook limits or landing requirements for bycatch (fish that would have otherwise been discarded). To address concerns of vessel safety and increased participation by historical community members, this alternative also includes a mechanism to allow some upgrading to larger vessels by the smallest vessel size class permit holders (generally those with the longest history of participation). However, to control effort, any permit holder receiving an "upgrade" permit would be required to relinquish his or her current permit in exchange. In addition, the new (upgrade) permit would not be transferrable for a period of three years. This is to ensure that the intent of the upgrading measure is not undermined by an immediate transfer to individuals without the desired historical community participation. Under this alternative, all other permits would be transferrable at any time to individuals with documented fishery participation. This allows flexibility for permit holders to enter and exit the fishery, but limits new entrants to those with at least some record of previous participation. In addition, permit holders would be required to, at all times, register a vessel that they own, to their permit.

Alternative 9B (preferred) was recommended for implementation by the Council at its 114th meeting in Honolulu. This alternative is similar to Alternative 9A, however it includes modifications designed to allow participation by the earlier fishery participants ("pioneers") and to reduce regulatory impacts on both historical and current participants. In addition it would require that vessels greater than 40 ft in length overall carry scientific observers if requested by NMFS. Management measures under this alternative are identical to 9A with the following exceptions: initial entry would include all those individuals that owned longline vessels *at any time on or prior to March 21, 2002*, provided that while under their ownership the vessel was used to legally harvest Pacific pelagic management unit species with longline gear in the EEZ around American Samoa, and those fish were landed in American Samoa, at some time on or prior to March 21, 2002[2]; permit holders would not be required to own the vessels registered to their permits; operators of vessels more than 40 ft in length overall would be required to carry observers if requested by NMFS; and the requirement for annual attendance at a vessel safety workshop was removed. Additional changes to the draft implementing regulations were also made at the Council's 114th meeting. These are: time limits for initial permit applications were extended from 90 to 120 days; time limits for registering a vessel to an initial permit were extended from 90 to 120 days; the requirements for continuous registration of vessels to permits was deleted; language codifying the maximum number of permits in each size class was deleted; language requiring an

[1]Note: An exception would be made for any individual who gave to the Council or NMFS, (prior to the control date), a written notice of intent to participate in American Samoa's longline fishery, and could document that he or she actually harvested PMUS fish from American Samoa's EEZ using longline gear and landed those fish in American Samoa prior to June 28, 2002.

[2] See note 1.

administrative fee be charged for each permit, permit renewal, and permit transfer was added; the appeal process was modified to reflect the process used in the Hawaii-based longline fishery; language codifying the permit renewal date was deleted; language limiting temporary permits to no more than 60 days was added; a requirement that operators of vessels greater than 40 ft in length notify NMFS no less than 72 hours before departing on a fishing trip in order to allow placement of observers was also added; and that Alternative 9A's requirement that permit holders notify NMFS immediately of any change in vessel ownership was clarified to specify that this notification occur within 30 days of such a change.

Details of the nine alternatives are as follows:

Under all alternatives, present regulations concerning the near shore closed area, logbooks, annual attendance by vessel operators at protected species workshops, and sea turtle mitigation measures would remain in effect.

Alternative 1 (no action): Under this alternative, no action would be taken to limit longline effort in EEZ waters around American Samoa and the fishery would continue to be managed under existing regulations. The recently implemented nearshore large vessel area closure would remain in effect, and Federal permits and logbooks would continue to be required for longline fishing in these waters. Current and historical fishery participation by federal permit holders is believed to be distributed across size classes as illustrated in Table ES.1.

Table ES. 1. March 21, 2002, distribution of active and inactive longline fishing vessels by size class. Source: DMWR, unpub. data

Vessel size class	Currently active vessels	Previously active vessels
A: equal to or less than 40'	40	33
B: 40.1' - 50'	5	1
C: 50.1' - 70'	15	0
D: greater than 70.1'	15	1
ALL	75	35

Alternatives 2-7 and 9 involve the use of a control date for determining initial participation. Based on the Council's recommendation, a control date of March 21, 2002 is used. Under Alternatives 2-7, qualification to enter by this control date is based on two criteria:

1) an individual must have legally held a Hawaii limited access or a general longline permit at some time on or prior to March 21, 2002 and;

2) landings of Pacific pelagic management unit species (PMUS[3]) must have been made in American Samoa by a vessel legally registered to that permit at some time on or prior to March 21, 2002.

Alternative 2: Alternative 2 would modify current regulations to allow all those individuals who qualify under the control date to participate in the longline fishery within the EEZ waters around American Samoa. In addition, new entrants would be allowed to participate to the extent that total permits do not exceed the following caps:

Alternative 2: Size class permit caps, and proportions reserved for indigenous use		
Vessel size class	Permit cap	Proportion of new or re-issued permits reserved for indigenous use
A: equal to or less than 40'	100	0%
B: 40.1' - 50'	50	0%
C: 50.1' - 70'	25	0%
D: 70.1' - 100'	40	0%
ALL	215	NA

Under this alternative, no vessels greater than 100 ft in length would be allowed to longline within EEZ waters surrounding American Samoa.

Alternative 2 includes a permit renewal “use it or lose it” landing requirement every year. Permit renewal would also be based on adherence to fishery regulations and a requirement that vessel operators attend annual vessel safety courses.

Permits would be non-transferable but could be re-registered to a replacement vessel in any length class in which permits issued are below the permit caps above.

“Lost” permits (those not renewed by a permit holder) would be re-issued by NMFS to the person who is highest on a list of applicants as ranked by date of application. Finally, to address concerns over bycatch, permitted vessel operators would be required to land all pelagic management unit species in port.

[3]PMUS are species managed by the Council and include tunas, wahoo, mahimahi, sharks and other pelagic species.

Alternative 3: Alternative 3 would modify current regulations to allow all those individuals who qualify under the control date to participate in the longline fishery within the EEZ waters around American Samoa. In addition, new entrants would be allowed to participate to the extent that total permits do not exceed the following caps:

Alternative 3: Size class permit caps, and proportions reserved for indigenous use		
Vessel size class	Permit cap	Proportion of new or re-issued permits reserved for indigenous use
A: equal to or less than 40'	unlimited	100%
B: 40.1' - 50'	50	80%
C: 50.1' - 70'	25	70%
D: 70.1' - 100'	40	60%
ALL	unlimited	NA

Under this alternative, no vessels greater than 100 ft in length would be allowed to longline within EEZ waters surrounding American Samoa.

Alternative 3 would also implement a permit renewal “use it or lose it” landing requirement, however this would be required only once every three years. Permit renewal would also be based on adherence to fishery regulations and a requirement that vessel operators attend annual vessel safety courses.

Permits would be generally non-transferable but could be re-registered to a replacement vessel in any length class in which permits issued are below the permit caps above. However, permit holders with vessels less than 40 ft who have more than five years experience in the domestic longline fishery based in American Samoa would be allowed unlimited vessel upgrades (re-registration of permits to vessels in larger size classes). Permit transfers would be allowed only for indigenous American Samoan permit holders with vessels less than 40 ft, and only to immediate family or community groups.

“Lost” permits (those not renewed by a permit holder) would be re-issued by NMFS so as to achieve the proportions of indigenous participation for new permit holders indicated above. Priority for new permits would be further ranked according to previous experience in American Samoa-based pelagic fisheries (longline, troll, handline, purse seine, albacore jig boat).

To address concerns over bycatch, permitted vessel operators would be required to land all Pacific pelagic management unit species port.

This alternative includes a requirement that all vessels more than 50 ft in length that are registered to longline permits and fishing in EEZ waters around American Samoa carry active vessel monitoring systems.

Alternative 4: Alternative 4 would also modify current regulations to allow all those individuals who qualify under the control date to participate in the longline fishery within the EEZ waters around American Samoa. In addition, new entrants would be allowed to participate to the extent that total permits do not exceed the following caps:

Alternative 4: Size class permit caps, and proportions reserved for indigenous use		
Vessel size class	Permit cap	Proportion of new or re-issued permits reserved for indigenous use
A: equal to or less than 40'	100	80%
B: 40.1' - 50'	50	80%
C: 50.1' - 70'	25	70%
D: 70.1' - 100'	40	60%
ALL	215	NA

Under this alternative, no vessels greater than 100 ft in length would be allowed to longline within EEZ waters surrounding American Samoa.

Alternative 4 would also implement a permit renewal “use it or lose it” landing requirement once every three years. Permit renewal would also be based on adherence to fishery regulations and a requirement that vessel operators attend annual vessel safety courses.

Permits would be generally non-transferable but could be re-registered to a replacement vessel in any length class in which permits issued are below the permit caps above. Permit transfers would be allowed only for indigenous American Samoan permit holders with vessels less than 40 ft, and only to immediate family or community groups.

“Lost” permits (those not renewed by a permit holder) would be re-issued by NMFS so as to achieve the proportions of indigenous participation for new permit holders indicated above. Priority for new permits would be further ranked according to previous experience in American Samoa-based pelagic fisheries (longline, troll, handline, purse seine, albacore jig boat).

To address concerns over bycatch, permitted vessel operators would be required to land all Pacific pelagic management unit species in port.

This alternative includes a requirement that all vessels more than 50 ft in length that are registered to longline permits and fishing in EEZ waters around American Samoa carry active vessel monitoring systems.

Alternative 5: Alternative 5 would also modify current regulations to allow all those individuals who qualify under the control date to participate in the longline fishery within the EEZ waters around American Samoa. In addition, new entrants would be allowed to participate to the extent that total permits do not exceed the following caps:

Alternative 5: Size class permit caps, and proportions reserved for indigenous use		
Vessel size class	Permit cap	Proportion of new or re-issued permits reserved for indigenous use
A: equal to or less than 40'	50	80%
B: 40.1' - 50'	25	80%
C: 50.1' - 70'	15	70%
D: 70.1' - 100'	16	60%
ALL	106	NA

Under this alternative, no vessels greater than 100 ft in length would be allowed to longline within EEZ waters surrounding American Samoa.

Alternative 5 would also implement a permit renewal “use it or lose it” landing requirement once every three years. Permit renewal would also be based on adherence to fishery regulations and a requirement that vessel operators attend annual vessel safety courses.

Permits would be generally non-transferable but could be re-registered to a replacement vessel in any length class in which permits issued are below the permit caps above. Permit transfers would be allowed only for indigenous American Samoan permit holders with vessels less than 40 ft, and only to immediate family or community groups.

“Lost” permits (those not renewed by a permit holder) would be re-issued by NMFS so as to achieve the proportions of indigenous participation for new permit holders indicated above. Priority for new permits would be further ranked according to previous experience in American Samoa-based pelagic fisheries (longline, troll, handline, purse seine, albacore jig boat).

To address concerns over bycatch, permitted vessel operators would be required to land all Pacific pelagic management unit species in port.

This alternative includes a requirement that all vessels more than 50 ft in length that are registered to longline permits and fishing in EEZ waters around American Samoa carry active vessel monitoring systems.

Alternative 6: Alternative 6 would also modify current regulations to allow all those individuals who qualify under the control date to participate in the longline fishery within the EEZ waters around American Samoa. In addition, new entrants would be allowed to participate to the extent that total permits do not exceed the following caps:

Alternative 6: Size class permit caps, and proportions reserved for indigenous use		
Vessel size class	Permit cap	Proportion of new or re-issued permits reserved for indigenous use
A: equal to or less than 40'	100	80%
B: 40.1' - 50'	10	80%
C: 50.1' - 70'	15	70%
D: 70.1' - 100'	16	60%
ALL	141	NA

Under this alternative, no vessels greater than 100 ft in length would be allowed to longline within EEZ waters surrounding American Samoa.

Alternative 6 would also implement a permit renewal “use it or lose it” landing requirement once every three years. Permit renewal would also be based on adherence to fishery regulations and a requirement that vessel operators attend annual vessel safety courses.

Permits would be generally non-transferable but could be re-registered to a replacement vessel in any length class in which permits issued are below the permit caps above. Permit transfers would be allowed only for indigenous American Samoan permit holders with vessels less than 40 ft, and only to immediate family or community groups.

“Lost” permits (those not renewed by a permit holder) would be re-issued by NMFS so as to achieve the proportions of indigenous participation for new permit holders indicated above. Priority for new permits would be further ranked according to previous

experience in American Samoa-based pelagic fisheries (longline, troll, handline, purse seine, albacore jig boat).

To address concerns over bycatch, permitted vessel operators would be required to land all Pacific pelagic management unit species in port.

This alternative includes a requirement that all vessels more than 50 ft in length that are registered to longline permits and fishing in EEZ waters around American Samoa carry active vessel monitoring systems.

Alternative 7: Alternative 7 would also modify current regulations to allow all those individuals who qualify under the control date to participate in the longline fishery within the EEZ waters around American Samoa. However, rather than setting permit caps, Alternative 7 would focus on capping EEZ longline effort (hooks) to levels below those associated with gear conflict in neighboring Independent Samoa (55 hooks per km^2) as follows:

Alternative 7: Effort limits for each EEZ area around American Samoa		
EEZ area	Square kilometers	Longline effort cap (annual hooks)
Nearshore (0-50 nm)	130,000	7.15 million
Offshore (50 - 200 nm, or remainder of EEZ waters)	260,000	14.3 million
Total	390,000	21.45 million

Under this alternative, vessels greater than 100 ft in length that qualify under the control date would be allowed to longline within EEZ waters surrounding American Samoa, however no additional vessels greater than 100 ft in length would be allowed to enter the fishery.

Due to continuing uncertainty about the precise number of vessels that will be allowed in by the control date, re-issuance of “lost” permits would be prohibited as necessary until attrition reduces predicted annual fishing effort to levels equal to or below these effort caps. Once predicted annual fishing effort is equal to or below the effort caps, new participation would then be possible when a permit was “lost” by an initial permit holder (permits would be non-transferable).

First priority for “lost” permits would go to current permit holders wanting to upgrade to larger vessel size classes in which effort is below the effort caps above. Second priority

would go to the person who is highest on the list of applicants. This list would be ranked according to previous experience in American Samoa-based pelagic fisheries (longline, troll, handline, purse seine, albacore jig boat).

Alternative 7 would implement a permit renewal “use it or lose it” landing requirement of 1,000 pounds once every three years. Permit renewal would also be based on adherence to fishery regulations and a requirement that vessel operators attend annual vessel safety courses.

Alternative 7 would also limit the number of hooks set by vessels over 50 ft in length to no more than 3,000 per set.

This alternative has no requirement to land all Pacific pelagic management unit species in port or requirement concerning vessel monitoring systems.

Alternative 7 includes a recommendation that methods to allow conversion of less than 40 ft size class permits to permits for vessels between 40 ft and 50 ft without exceeding effort caps be developed and implemented as soon as possible. Potential approaches include allowing a new 40 '-50 ft vessel size class permit to be issued whenever two permits for less than 40 ft vessels are “lost”.

Alternative 8: Alternative 8 would not limit longline permits or EEZ effort but instead would implement a trip landing limit of no more than 5,000 lbs of pelagic management unit species for any longline fishing trip that included fishing in EEZ waters around American Samoa.

Alternative 9 (Preferred): Two versions of Alternative 9 are presented here. These alternatives are similar in many ways however some differences do exist. Perhaps most significantly, Alternative 9A would limit participation to the owners - as of March 21,2002 - of vessels that made longline landings in American Samoa, while Alternative 9B (preferred) would include all (both current and historical) owners of such vessels.

Specifically, Alternative 9A would restrict entry to those individuals who owned a longline vessel on March 21, 2002 - provided that the vessel was used to legally harvest Pacific pelagic management unit species with longline gear in the EEZ around American Samoa, and those fish were landed in American Samoa, at some time on or prior to March 21, 2002[4].

[4]Note: An exception would be made for any individual who gave to the Council or NMFS, (prior to the control date), a written notice of intent to participate in American Samoa’s longline fishery, and could document that he or she actually harvested PMUS fish from American Samoa’s EEZ using longline gear and landed those fish in American Samoa prior to June 28, 2002.

By contrast, Alternative 9B would allow entry by all those individuals that owned longline vessels at any time on or prior to March 21, 2002, provided that while under their ownership the vessel was used to legally harvest Pacific pelagic management unit species with longline gear in the EEZ around American Samoa, and those fish were landed in American Samoa, at some time on or prior to March 21, 2002[5].

Based on available ownership and landing records, the distribution by size class of numbers of individuals potentially qualified for initial permits under Alternatives 9A and 9B are estimated as follows:

Alternatives 9A and 9B: entry based on vessel ownership and landings Estimated maximum number of qualifying vessels in each size class		
Vessel size class	Alternative 9A	Alternative 9B
A: equal to or less than 40'	75	93
B: 40.1' - 50'	9	9
C: 50.1' - 70'	15	15
D: 70.1' or larger	19	21
ALL	118	138

Under Alternative 9A, potentially qualified applicants would have 90 days from the effective date of the final rule to apply for an initial permit. If they were found to qualify for an initial permit, they would have another 90 days to register a vessel (of the appropriate size class, and owned by them) to that permit. If they failed to do so, that permit would not be issued and would not be available for use by other applicants. Under Alternative 9B, these time limits would extend to 120 days and the vessel ownership requirement would not apply. However, Alternative 9B includes an administrative fee (to be set by NMFS in accordance with its fee schedule) for the issuance, renewal or transfer of any permit.

Under both Alternatives 9A and 9B a total of 26 new “upgrade” permits would be made available over the first four years following the issuance of initial permits, for the exclusive use of initial permit holders in the smallest size class (less than or equal to 40 ft), with priority given to those with the first documented historical participation in the fishery. Similar to initial permits, qualified applicants would have 120 days to register a vessel (of the appropriate size class) to that permit. If they failed to do so, that permit would be made available for use by the next applicant “in line”. Those receiving an upgrade permit would have to retire their present permit and would not be allowed to

[5] See note 4.

transfer their new permit for three years. After three years they would be transferable to any individual who could document that they worked on a vessel that caught Pacific pelagic management unit species on longline gear in the EEZ around American Samoa, that were subsequently landed in American Samoa (regardless of date).

These upgrade permits would be distributed according to the following schedule:

Vessel size class	Year 1	Year 2	Year 3	Year 4	Total
40.1' - 50'	4	4	4	2	14
50.1 - 70'	2	2	2	0	6
70' or larger	2	2	2	0	6

All other permits would also be transferable to any individual who could document that they worked on a vessel that caught Pacific pelagic management unit species, on longline gear in the EEZ around American Samoa, that were subsequently landed in American Samoa (regardless of date). Note: Alternative 9A would require that this participation be on a vessel registered to either at Hawaii limited access or a general longline permit, Alternative 9B does not include this requirement.

Under both Alternatives 9A and 9B, permits for vessels in the smallest size class (equal to or less than 40 ft) would also be allowed to be transferred to family members or community groups as previously defined for community development projects. In addition, permits could be re-registered (by the same permit holder) to a different vessel in the same size class at any time.

Both alternatives would also prohibit any individual from owning more than 10% of the maximum permits allowed (in all vessel size classes combined), with any fractional interest in a permit counted as a whole permit.

In addition, both alternatives include permit renewal “use it or lose it” landing requirements of 1,000 pounds of Pacific pealgic management unit species once every three years for the two smaller vessel size classes with a similar 5,000 pound requirement for the two larger vessel size classes.

Under Alternative 9A, permit renewal would also be based on timely submission of logbooks, immediate notification to NMFS of changes in vessel ownership, and annual attendance by vessel owners at vessel safety courses and protected species workshops. Due to a lack of available personnel and resources, Alternative 9B would remove the vessel safety course requirement. It would maintain the remaining requirements but due to legal concerns it would not make them a condition of permit

renewal. It would also clarify that permit holders must notify NMFS within 30 days of any changes in vessel ownership.

Alternative 9A would also require that permits have vessels registered to them at all times while Alternative 9B does not include this requirement.

Under both alternatives, “lost” permits (those not renewed by a permit holder) would be re-issued by NMFS and would be available to any longline fishery participant, with priority given by vessel size class (those on the smallest vessels getting highest priority). Within size classes, priority would be based on the date of their first documented longline landing in American Samoa with the earliest landing getting highest priority. Under Alternative 9A, potential recipients would have 90 days to register a vessel to the permit, under Alternative 9B they would have 120 days. Under both alternatives, if they failed to do so, then the next “in line” would get a chance. However that potential recipient could apply again for an available permit after 6 months has passed.

These alternatives include a requirement that all vessels more than 50 ft in length that are registered to longline permits and fishing in EEZ waters around American Samoa carry active vessel monitoring systems if requested by NMFS.

Neither Alternative 9A or 9B include maximum vessel size limits, hook limits, or bycatch landing requirements. However, Alternative 9B includes a requirement that holders of permits registered to vessels more than 40 ft in length overall carry observers on board their vessels if requested by NMFS. This includes a requirement that operators of these vessels notify NMFS no less than 72 hours before embarking on a fishing trip so that observers may be placed on board if requested by NMFS.

Under Alternative 9B, all permits could be registered to vessels in smaller size classes than that for which they were issued.

Other regulatory changes under Alternative 9B are the modification of 9A’s appeal process to reflect the process used for the Hawaii-based longline fishery, a time limit of 60 days for temporary permits and deletion of text codifying the permit renewal date as December 31 of each year.

These alternatives are summarized in Table ES.2. Under all alternatives, present regulations concerning the near shore closed area, logbooks, annual attendance by vessel operators at protected species workshops, and sea turtle mitigation measures would remain in effect.

Table ES.2. Summary of management alternatives.

Alternative	Total Permits Allowed	Proportion of New or Re-issued Permits Reserved for Indigenous Use (by vessel size class)	Use-or-lose Requirement	Permit Re-registration and Transferability
1. No action	N/A	Not considered	No	Unlimited permit re-registration to replacement vessels is allowed. No permit transfers.
2. Emphasizes active participation, must land all PMUS.	100 less than 40' 50 between 40' - 50' 25 between 50' - 70' 40 between 70' - 100' Total: 215	Not considered	Yes (1 yr)	Permit re-registration allowed to replacement vessels in any size class with slots available, no permit transfers.
3. Emphasizes active, small-scale, indigenous participation, must land all PMUS.	Unlimited less than 40' 50 between 40' - 50' 25 between 50' - 70' 40 between 70' - 100' Total: unlimited	100% 80% 70% 60%	Yes (3 yr)	Permit re-registration allowed to replacement vessels in any size class with slots available; unlimited re-registrations allowed for upgrades by small-boat pioneers (5 yrs+); only indigenous permits <40' can be transferred and only to immediate family or community groups.
4. Emphasizes active and indigenous participation, must land all PMUS.	100 less than 40' 50 between 40' - 50' 25 between 50' - 70' 40 between 70' - 100' Total: 215	80% 80% 70% 60%	Yes (3 yr)	Permit re-registration allowed to replacement vessels in any size class with slots available; only indigenous permits <40' can be transferred and only to immediate family or community groups.
5. Emphasizes active, small-scale, indigenous participation, safety, no new large boats (> 50') allowed after March 21, 2002, must land all PMUS.	50 less than 40' 25 between 40' - 50' 15 between 50' - 70' 16 between 70' - 100 Total: 106	80% 80% 70% 60%	Yes (3 yr)	Permit re-registration allowed to replacement vessels in any size class with slots available; only indigenous permits <40' can be transferred and only to immediate family or community groups.

Table ES.2 continued - Summary of management alternatives.

Alternative	Total Permits Allowed	Proportion of New or Re-issued Permits Reserved for Indigenous Use (by vessel size class)	Use-or-lose Requirement	Permit Re-registration and Transferability
6. Emphasizes active, small-scale, indigenous participation, no new large boats (> 50') allowed after March 21, 2002, must land all PMUS.	100 less than 40', 10 between 40' - 50' 15 between 50' - 70' 16 between 70' - 100 Total: 141	80% 80% 70% 60%	Yes (3 yr)	Permit re-registration allowed to replacement vessels in any size class with slots available; only indigenous permits <40' can be transferred and only to immediate family or community groups.
7. Emphasizes active participation, safety, control of gear conflict, and historical participation. No requirement to land all PMUS.	Not applicable	Available ("lost") permits allocated based on current and historical participation.	Yes (3 yr)	Permit re-registration allowed to replacement vessels in any size class with slots available, no permit transfers. Available permits allocated first to current participants wanting to upgrade, then to applicants ranked by historical participation.
8. Controls effort indirectly through trip landing limits, no requirement to land all PMUS	Unlimited	Not considered	No	No limited entry - permit holders cannot land more than 5,000 pounds per trip.
9A. Emphasizes active participation, safety and efficiency. No requirement to land all PMUS	75 less than 40' 9 between 40' - 50' 15 between 50'-70' 17 between 70' - 100' 2 over 100' Total: 118	26 upgrade permits reserved for current holders of the smallest vessel size class permits. Available ("lost") permits allocated based on current and historical participation.	Yes (3 yr)	Upgrade permits are not transferable for 3 years, others are transferable to any individual with historical fishery participation. Permits <40' can also be transferred to family members or community groups.
9B. Emphasizes active participation, safety, historical participation and efficiency. No requirement to land all PMUS	93 less than 40' 9 between 40' - 50' 15 between 50' - 70' 19 between 70' - 100' 2 over 100' Total: 138	26 upgrade permits reserved for current holders of the smallest vessel size class permits. Available ("lost") permits allocated based on current and historical participation.	Yes (3 yr)	Upgrade permits are not transferable for 3 years, others are transferable to any individual with historical fishery participation. Permits <40' can also be transferred to family members or community groups.

2.3 Ability of the alternatives to achieve management objectives

Table ES.3 presents a summary of each alternative's anticipated ability to meet the management objectives of the FMP, as well as those objectives contained in the Magnuson-Stevens Fishery Conservation and Management Act. These are necessarily speculative conclusions as a variety of opinions exist as to how many eligible individuals will actually fish under each alternative. However, the preferred alternative is expected to improve the long-term potential for increased net benefits from this rapidly expanding fishery, without unnecessarily constraining its short-term growth.

Monetization of the national costs and benefits under the preferred (or any) alternative is not possible given the limited economic and operational information available on the vessels participating in this fishery, the structural economic relationships between longline vessels and gear and equipment suppliers and markets in American Samoa, and the uncertain effect of the alternatives on vessel operations and revenues. However the purpose of limited entry as a general rule is to reduce tendencies toward over-capacity which create over-investment and productive inefficiencies. Since investment in this fishery comes from a variety of locations within the United States, including from within American Samoa where small business development has been extremely limited, as well as investment from over-seas, avoiding a boom-bust cycle reduces the costs associated with such cycles (sunk investments, movement between fisheries, misallocated human capital, etc.). On the other hand, the history of limited entry is that in fisheries subject to over-fishing (i.e., those of restricted geographical range), fishing capacity of the permitted participants increases with time and generates inefficiencies in the non-regulated inputs. Because this is a fishery for a highly migratory species with a negligible impact on the overall stock of the primary species (albacore) due to the small size of the American Samoa fishery, fishery population effects are very unlikely to serve as constraints. However, to the extent that catch competition within the EEZ around American Samoa becomes an issue, which it is not at present, or other issues arise, creating limited entry – a constraint on the number of participants – improves the potential for controlling other inputs and for creating a "regulatory community" in which further adaptive management actions can occur in a timely manner.

Table ES.3 Summary of impacts of the alternatives.

Management Needs, Pelagics FMP Objectives	Prevent local overfishing, achieve OY?	Avoid gear conflicts?	Minimize fish bycatch?	Sustain small-scale community participation, avoid "boom and bust" fishery development?	Opportunities for future substantial large-scale indigenous fishery participation?
1. No action	No	No	No	No	No
2. Emphasizes active participation, must land all PMUS.	Doubtful	Doubtful	Yes	No	No
3. Emphasizes small-scale, indigenous participation, must land all PMUS.	Doubtful	Doubtful	Yes	Maybe	Yes
4. Emphasizes active and indigenous participation, must land all PMUS.	Doubtful	Doubtful	Yes	Maybe	Yes
5. Emphasizes active, small-scale, indigenous participation, vessel safety, no new large boats (> 50') allowed after March 21, 2002, must land all PMUS.	Maybe	Maybe	Yes	Maybe	No (short term); Yes (long term)
6. Emphasizes active participation, small-scale, indigenous participation, no new large boats (> 50') allowed after March 21, 2002, must land all PMUS.	Maybe	Maybe	Yes	Maybe	No (short term); Yes (long term
7. Emphasizes active participation, vessel safety, control of gear conflict and historical participation. No requirement to land all PMUS.	Likely	Likely	No	Maybe	No (short term) Maybe (long term)
8. Controls effort indirectly through trip landing limits, no requirement to land all PMUS.	Doubtful	Doubtful	No	Maybe	No
9A. Emphasizes active participation, vessel safety and efficiency, no requirement to land all PMUS	Likely	Likely	No	Likely	Yes
9B. Emphasizes active participation, vessel safety, historical participation and efficiency, no requirement to land all PMUS	Likely	Likely	No	Likely	Yes

2.4 Required provisions for FMP amendments

This section lists and discusses the required provisions for FMP amendments:

- **Contain necessary and appropriate conservation and management measures.** The proposed amendment contains these measures.

- **Contain a description of the fishery (number of vessels, gear used, management unit species).** All aspects of the fishery are described.

- **Assess and specify Maximum Sustainable Yield (MSY) and Optimum Yield (OY).** The proposed amendment references MSY and OY determinations in the Pelagics Fishery Management Plan (FMP) for the Western Pacific Region, as amended.

- **Assess and specify domestic harvesting and processing capacity relative to OY.** Domestic harvesting/processing capacity can take the entire OY, as defined by the Pelagics FMP.

- **Specify data to be reported for commercial, recreational and charter fisheries.** Data reporting is already required for this fishery via Federal logbooks. Data for the other pelagic fishery sectors will continue to be obtained by creel surveys.

- **Consider adjustments for safety if weather is bad.** No adjustments are needed as there are no quotas recommended; hence, no resulting race for fish.

- **Describe and identify essential fish habitat; minimize adverse effects.** Essential fish habitat (EFH) is described, and the anticipated impacts of the alternatives on EFH as defined under all Western Pacific FMPs are assessed.

- **Assess scientific data needed to implement the proposed amendment.** research needs are addressed.

- **Include a fishery impact statement for participants and communities.** A fishery impact statement is provided.

- **Specify criteria to define overfishing and overfished stocks.** The proposed amendment references definitions in the Pelagics FMP, as amended.

- **Establish reporting to assess bycatch, and reduce bycatch.** Bycatch reporting is already required for this fishery, measures to reduce bycatch are discussed.

- **Describe the commercial, recreational and charter fishing sectors.** These sectors are described.

- **Assess the amount of fish released alive in recreational fisheries.** As fishing in American Samoa is concerned with food production, recreational fishing is minimal and virtually none of fish caught in recreational fisheries are released alive. For these reasons, this issue is not discussed further in this document.

- **Allocate harvest restrictions fairly among sectors, if necessary.** Some alternatives would have the effect of allocating harvest restrictions within the commercial sector. No alternatives would include specific allocations among the recreational and charter sectors, although both could indirectly benefit from restrictions on the commercial longline fishery.

3.0 TABLE OF CONTENTS

3.1 List of Tables

3.2 List of Figures

4.0 INTRODUCTION

4.1 Responsible agencies

The Council was established by the Magnuson-Stevens Fishery Conservation and Management Act, to develop Fishery Management Plans (FMPs) for fisheries operating in the US Exclusive Economic Zone (EEZ) around American Samoa, Guam, Hawaii, the Northern Mariana Islands and the US possessions in the Pacific.[6] Once an FMP is approved by the Secretary of Commerce, it is implemented by federal regulations which are enforced by the National Marine Fisheries Service and the US Coast Guard, in cooperation with state, territorial and commonwealth agencies. For further information, contact:

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4.3 Public review process

At a meeting in June 2000, the Council voted to establish a control date of July 15, 2000, to be used if the Council decides to develop a limited entry program for the American Samoa longline fishery. This control date was implemented by NMFS but subsequently superceded by a new control date of March 21, 2002. Persons who enter the longline fishery in the EEZ around American Samoa after the control date are not guaranteed future participation if the Council prepares and NMFS approves a program limiting entry or fishing effort. Establishing a control date does not commit the Council

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1. Howland Island, Baker Island, Jarvis Island, Johnston Atoll, Midway Atoll, Kingman Reef, and Palmyra Atoll, and Wake Island.

or NMFS to limit effort or to prevent any other date from being selected for eligibility to participate in the American Samoa pelagic longline fishery. The Council or NMFS also may use other criteria to limit fishing effort or participation in a limited entry program if one is developed in the future.

Rulemaking actions to establish limited entry programs normally require three Council meetings, and the publication of proposed and final rules in the Federal Register. This process is required under the Pelagics FMP for management measures that have not been previously analyzed or that may be controversial.

Problems that may require resolution by limiting effort in American Samoa's longline fishery were identified during public scoping, primarily at "open workshops" held by the Department of Marine and Wildlife Resources in American Samoa on Sept 29, 2000, 25-27 April 2000, 11-14 September 2001 and 25 February - 1 March, 2002.

The first Council meeting to consider these issues occurred in October 2001. The rapid expansion of the American Samoa longline fishery during the second and third quarters of 2001 was of sufficient concern that the American Samoa Department of Marine and Wildlife Resources and the Council's Scientific and Statistical Committee strongly recommended that a temporary moratorium be established to halt new entry into the fishery so that a limited entry plan could be developed. The Council approved this recommendation but it was not implemented by NMFS, which recommended instead that a limited entry plan be prepared by the Council at an accelerated pace.

At a meeting in March 2002, the Council reviewed a draft document that included a description of the problem, evaluation of the need to control fishing effort in American Samoa's longline fishery and description of management alternatives identified through the scoping process. At this meeting, the Council selected a preliminarily preferred alternative from a wide range of possible alternatives and instructed its staff to prepare a draft FMP amendment that analyzes the potential impacts of a range of alternatives, including the preliminarily preferred alternative.

At its March 2002 meeting, the Council recommended that NMFS implement the new control date of March 21, 2002. This recommendation was made because recent fishery data indicated no gear conflicts or adverse impacts on fishery stocks were occurring, meaning that the previous control date would unnecessarily restrict fishing effort and economic returns from the fishery. This control date became effective on June 3, 2002.

At its June 2002, Council meeting in American Samoa the Council heard from potentially affected individuals and crafted a new alternative (Alternative 9A). At its August 2002 meeting, the Council modified aspects of Alternative 9A and took final action to recommend Alternative 9B (preferred). The Council's final recommendation will be transmitted to NMFS in a document that meets the analytical requirements of the Magnuson-Stevens Fishery Conservation and Management Act, the National

Environmental Policy Act, the Endangered Species Act and other applicable laws. If NMFS approves the Council's recommendation, it will publish a proposed rule in the Federal Register with a public comment period, followed by publication of a final rule.

5.0 PROBLEM STATEMENT AND NEED FOR ACTION

The purpose of this amendment to the Council's Pelagic FMP is to implement a limited entry program for the American Samoa longline fishery. The basis for implementing this Federal action are seven issues related to the recent and anticipated growth of American Samoa's longline fishery, which are examined in this section:

- Status of the South Pacific albacore stock.
- Potential to disrupt American Samoan community participation in, and dependence on, pelagic fisheries.
- Barriers to substantial participation by indigenous American Samoans in the large-vessel sector of the domestic longline fishery.
- Potential for significant decline in local albacore tuna abundance and local albacore catch rates as additional longline fishing effort is compressed within the finite area of American Samoa's EEZ.
- Potential for gear conflict as additional longline fishing effort is compressed within the finite area of American Samoa's EEZ.
- Potential for increased bycatch (i.e., discards) as larger vessels enter the fishery.
- Potential for adverse effects on sea turtles or their ecosystems.

These issues were identified during public scoping, primarily at "open workshops" held by the Department of Marine and Wildlife Resources in American Samoa on September 29, 2000, 25-27 April 2001, 11-15 and 17 September 2001, and 25 February - 1 March, 2002.

A small-scale domestic longline fishery was established in 1995 by one American Samoa fisherman using techniques that were already successful in Independent Samoa. The target species was albacore tuna that is sold for canning in American Samoa. Other small vessels (alia) soon entered the American Samoa longline fishery. As early as 1997, these small-scale participants raised concerns about the potential for the entry of larger vessels that could lead to an excessive concentration of longline fishing in waters of the Exclusive Economic Zone (EEZ) around American Samoa, similar to the development of neighboring Independent Samoa's longline fishery. American Samoa's fishermen recommended a precautionary approach to managing their domestic longline fishery to avoid problems such as 1) gear conflict; 2) reduction in local catch rates of albacore tuna below economically viable levels; and, most importantly, 3) a possible "boom and bust" cycle of development that could disrupt

community participation in and dependence on small-scale pelagic fisheries, and could lead to the loss of opportunity for substantial participation in the large-vessel sector (vessels greater than 50 ft in length) of the fishery by indigenous American Samoans.

Vessels participating in the American Samoa longline fishery are required to be registered for use with federal Hawaii limited access or general longline permits issued by the National Marine Fisheries Service (NMFS). From initial efforts in 1995 until early 2001, longline fishing effort was concentrated mostly within 50 nautical miles (nm) of shore of the American Samoa islands, generally using small, twin-hulled catamarans known as *alia* (WPRFMC, 2000). Between 1997 and 2002, the active longline fleet increased from approximately 21 mostly small vessels to 75 vessels of a variety of sizes fishing the entire EEZ, with American Samoans mostly owning small vessels and non-American Samoans mostly owning large vessels.

Much of the recent and anticipated future growth in the domestic longline fishery is due to the entry of monohull vessels larger than 50 ft in length. The number of longline vessels in this size category increased from three in 2000 to 30 by March 2002 (Figure 1) (DMWR, 2001, 2002 and unpublished data). As a consequence, annual longline fishing effort increased from approximately one million hooks set in 2000 to over 5.7 million hooks set in 2001 (Table 1) (DMWR, 2001, 2002).

The American Samoa longline fishery is presently characterized by three somewhat discrete components that are differentiated by vessel size class and fishing capability: alia vessels under 40 feet, monohull vessels between 40.1 and 50 feet and monohull vessels over 50 feet. Vessels over 50 feet typically set 5-6 times more hooks than smaller vessels (WPRFMC, in prep.).

The possibility of gear conflict between small-scale and large-scale longline vessels has been a great concern of America Samoa's small-scale fishermen. In 1998, the Western Pacific Regional Fishery Management Council (WPRFMC or Council) responded by recommending that EEZ waters within 50 nm of shore around American Samoa (approximately 130,000 km^2) be closed to large-scale (more than 50 ft in length) pelagic fishing vessels. Although the National Marine Fisheries Service was initially reluctant to give approval, a final rule establishing the large vessel closed area went into effect on March 1, 2002. During the interim, the number of large vessels participating in American Samoa's domestic longline fishery increased from three in 2000 to 30 in March, 2002.

Longline vessels based in American Samoa have limited fishing grounds available to them for two reasons. EEZ waters around American Samoa are bounded on all sides by EEZ waters of neighboring nations (Figure 2). Due to regional geography, these shared boundaries are generally less than 200 m from American Samoa's shores. Until June 2003, , the South Pacific Tuna Treaty prohibited US longlining on the high seas within the Treaty area (Figure 2). While high seas areas of within the treaty area to the north and south of American Samoa may now be accessible to the larger vessels in the

longline fleet, the majority of vessels will likely continue fishing within the US EEZ around American Samoa, due to limited vessel range, and uncertainties about albacore stocks in the high seas areas. Based on the number of vessels active in the last quarter of 2001 (53), EEZ waters around American Samoa can be expected to have an annual average hook density of 33 hooks/km^2 (derived from the WPacFIN database). This compares with a longline hook density in the EEZ around the main Hawaiian Islands (a portion of which is closed to longlining fishing) of about 15 hooks/ km^2 in 2001 (derived from Ito and Machado, 2002).

As a result of the large vessel closed area, most large-scale longline fishing effort (a few large-scale longline boats received exemptions to the large vessel closed area) has been compressed in the 260,000 km^2 of the remaining EEZ (outside of 50 nm). However, due to seasonal conditions and other operating patterns, not all domestic longline fishing effort by the large vessels has been exerted to date. The existing large-vessel longline fleet based in American Samoa has the capability of fishing effort that could reach and exceed a level that is believed to be associated with gear conflict (55 hooks/km^2 /year inferred from experience in Independent Samoa's longline fishery during its years of largest expansion). The estimated fishing effort exerted by the large-scale sector of American Samoa's longline fishery could reach higher levels of hook density than those (70 hooks/km^2/year) that prompted domestic longline license limitation by the government of Independent Samoa to maintain an economically viable tuna catch rate in its domestic longline fishery.

Unrestrained expansion of longline fishing effort within the finite area (390,000 km^2) of American Samoa's EEZ is likely to lead to the very "boom and bust" scenario that American Samoa's original longline fishery participants feared in 1997.

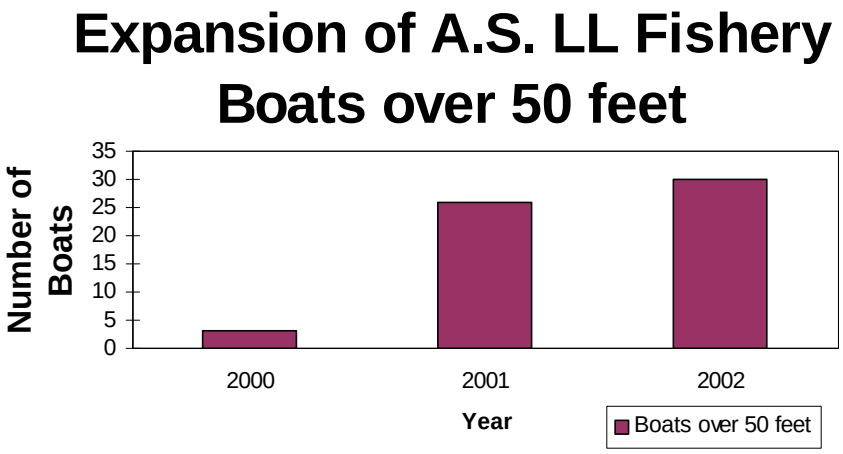


Figure 1. Expansion of effort in American Samoa's large-scale longline fishery. (vessels over 50 ft length) in 2001 and 2002 (preliminary), compared to 2000.
Source: DMWR 2001, 2002

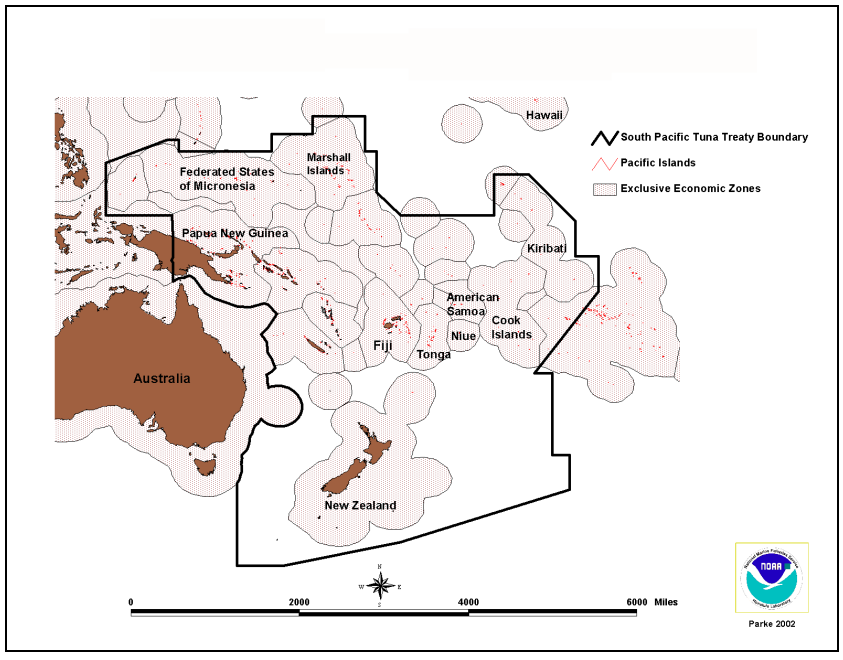


Figure 2. EEZ boundaries and the boundary of the South Pacific Tun Treaty area

Table 1. American Samoa 2001 longline effort by three types of longline vessels. Source: WPRFMC, in prep.

	Alias	Monohulls < 50'	Monohulls > 50'	Total
Number of boats	36	5	26	67
Number of sets	2,070	422	2,236	4,728
Number of hooks	631,000	723,000	4,373,000	5,727,000

There is no question that the development of the domestic longline fishery is generating economic benefits for American Samoa. Expansion of the American Samoa-based longline fishery is likely to continue. New entrants could arrive from several fisheries outside of American Samoa:

1. Hawaii-based vessels displaced from the North Pacific swordfish longline fishery because of recent management actions mandated by Biological Opinions issued by NMFS in 2001 and 2002 (NMFS, 2001a, 2002). These boats can presently fish with longline gear in the EEZ of American Samoa under their Hawaii limited access longline permits.

2. California-based vessels displaced from the US West Coast swordfish gillnet fishery because of management action mandated by an earlier Biological Opinion (NMFS, 2000). Owners of these boats can obtain general longline permits to fish with longline gear in EEZ waters around American Samoa.

3. About 50-60 US boats participate seasonally (southern summer) in the South Pacific albacore troll fishery south of American Samoa and deliver troll-caught albacore to the canneries in Pago Pago. Owners of these boats can obtain general longline permits to fish with longline gear in the EEZ of American Samoa. The potential number that may gear up for seasonal longline fishing in American Samoa's EEZ is estimated to be 20-30 (Heikkila, 2001).

4. Hawaii-based vessels displaced from the seasonal (April-May) tuna longline fishery off Palmyra Atoll and Kingman Reef also implemented under the 2001 and 2002 NMFS Biological Opinions (NMFS, 2001a, 2002). These boats can fish with longline gear in the EEZ of American Samoa under their Hawaii limited access longline permits. In the 1996-2000 period, the number of Hawaii-based participants in the longline fishery off Palmyra ranged from 10 to 56 vessels per year (NMFS Honolulu Laboratory Fishery Monitoring Program, unpubl. longline logbook summaries).

5. US vessels displaced from the Atlantic coast and Gulf tuna and swordfish longline fisheries because of various NMFS regulatory actions. Owners of these boats can

obtain general longline permits to fish with longline gear in the EEZ of American Samoa.

Vessels from the third and fourth groups are more likely to become seasonal participants in the American Samoa-based longline fishery, whereas boats from the first, second and fifth groups are more likely to become year-round participants.

Two factors have slowed new entry into the American Samoa longline fishery for the time being. The first is the typical pattern of low albacore catch rates in the American Samoa longline fishery during the first quarter of the year, which was evident in January-March 2002. The second is that the cannery price for albacore has declined from over $2,600 per metric ton (mt) in early 2001 (Forum Fisheries Agency, 2002) to $1,710/mt in February 2002 (B. Butler, Starkist Samoa, presentation at DMWR workshop, Feb. 28, 2002). However, this trend is likely to be only temporary. As albacore catch rates and prices improve, a “gold rush” of new entry could renew.

Few other factors act as constraints on further expansion of the American Samoa longline fishery. Pago Pago Harbor is the largest body of protected water in the South Pacific. Larger numbers of fishing and carrier vessels deliver tuna to the canneries at the head of the harbor and there is ample moorage in the harbor to accommodate the expanding domestic longline fleet. At one time, the harbor accommodated over 200 Asian vessels participating in the South Pacific albacore tuna longline fishery. Lack of experienced crew may be a constraint for growth of the locally owned sector of the fleet but vessels entering the fishery from outside areas bring crews and have contacts in fishing ports where crewmen can be recruited.

The fishing range of the Hawaii-based longline fleet extends far beyond the Hawaii EEZ into international waters. The average distance traveled by a Hawaii-based longliner to its first tuna set is well over 200 nm (Ito and Machado, 2001). Unlike Hawaii-based longline vessels, which range over large areas of international waters to locate concentrations of pelagic fish, the American Samoa-based longline fleet is unable to extend fishing beyond the EEZ without entering the exclusive economic zones of neighboring Pacific island countries (Figure 2). Therefore, each additional unit of new longline fishing effort added to the fishery is compressed into an EEZ of only 390,000 km^2.

Consequently, uncontrolled expansion of American Samoa’s longline fishery may have the potential for adverse effects on the pelagic resources, fisheries and community of American Samoa. Neighboring independent Samoa and French Polynesia are experiencing similar buildup of domestic longline fisheries that could add to cumulative effects within the region.

5.1 Status of South Pacific Albacore Stock

Albacore tuna, the target species of American Samoa's longline fishery, comprise a discrete stock in the South Pacific Ocean. Distant-water longline fleets of Japan, Korea and Taiwan and domestic longline fleets of several Pacific island nations catch primarily adult albacore over a larger proportion of their range. Longline gear accounts for the majority of the catch, about 30,000 metric tonnes (mt) per year on average (Bigelow et al., 2001).

The combined landings of longline fisheries in American Samoa and independent Samoa have accounted for 15-20 percent of the South Pacific annual longline albacore catch in recent years (WPRFMC, 2000b). Over the next five years, the domestic longline fleet operating in French Polynesia's EEZ is expected to increase from 50 to 150 vessels with an anticipated annual catch of 35,000 mt, much of it albacore tuna (WPRFMC, 2001a).

The Taiwanese distant-water longline catch-per-unit-effort (CPUE) data provides the best long-term indicator for the fishery because this fleet has consistently targeted albacore over a long period of time. Catch rates by this fleet in 1998 were high (> 3 albacore per 100 hooks) compared to fishery performance earlier in the 1990s (WPRFMC, 2001b). Longline CPUE is typically highest in the higher latitudes (STCZ and 30-50^{o} S), moderate in the tropics and subtropics (10-30^{o} S) and low near the equator (0-10^{o} S) (Lewis and Williams, 2001).

Albacore show distinctive size segregation by latitude, with the smallest fish being found to the south. Trolling for juvenile albacore has occurred in New Zealand coastal waters since the 1960s and in the central Pacific region of the Sub-Tropical Convergence Zone (STCZ) since the mid-1980s, producing less than 10,000 mt per year. Driftnet vessels from Japan and Taiwan targeted albacore in the central Tasman Sea and in the central Pacific near the STCZ during the 1980s and early 1990s. The driftnet catch reach ed 27,000 mt in 1989 but has since declined to zero following a United Nations' moratorium at the end of 1992 on industrial-scale driftnetting in the high seas (Bigelow et al., 2001).

Surface fisheries are highly seasonal, occurring mainly during December to April, whereas longline fisheries operate throughout the year (Bigelow et al., 2001). A South Pacific albacore tuna model has integrated catch, effort, length-frequency and tagging data into a coherent analysis that is broadly consistent with other information on albacore biology and fisheries. There is little evidence for significant fishery depletion in the central (10°-30^{o} S.) and southern (30°-50^{o} S.) regions of the stock, although a small impact occurs in the northern region (0°-10^{o} S.) where there is less fish relative to the other regions (Bigelow et al., 2001).

Some major conclusions to date are:

- The recruitment pattern shows a marked downward shift in the mid-to-late 1970s. The lower recruitments during the 1980s were followed by some increase during the early 1990s. Recruitment estimates for recent years are considerably higher than average, though they are relatively imprecise (Figure 3).

- Biomass trends are largely driven by the recruitment, showing a decline through the late 1980s, followed by an increase in the 1990s. Most of the albacore population is distributed in the southern and central regions of the South Pacific.

- The fishing mortality estimates are low for both adult and juvenile age classes. This is probably a reflection of the low observed recovery of tagged albacore. However, running the analysis without the tagging data did not significantly alter the results. It is unlikely that fishing mortality is underestimated to such an extent that overfishing could be currently occurring (Bigelow et al., 2001).

In summary, fisheries have had little impact on South Pacific albacore biomass. The significant decline in stock biomass from the mid-1970s to the early 1990s is attributed to a sharp downward shift in recruitment, possibly climate related. Partial recovery of South Pacific longline CPUE (all fleets) was seen during the 1990s (Hampton et al., 1999; Bigelow et al., 2001). Even with greatly increased fishing effort in the islands of the Samoan archipelago (Independent Samoa and American Samoa) and French Polynesia, it is unlikely that longline fishing in the vicinity of American Samoa could have stockwide effects on South Pacific albacore tuna. This stock may be in an upward cycle of abundance as compared to its long-term average (Figure 3). A precautionary approach would be conservative in managing the American Samoa longline fishery during the upward cycle to maintain the long-term viability of the fishery when faced with future downward cycles.

5.2 Potential to Disrupt American Samoan Community Participation in and Dependence on Pelagic Fisheries

American Samoa's history, culture, geography and relationship with the US are vastly different from the typical continental US community. Dependence on fishing undoubtedly goes back as far as the peopled history of the islands of the Samoan archipelago, about 3,500 years ago (Severance and Franco, 1989). Many aspects of the culture have changed in contemporary times but the people of the Samoan archipelago have retained a traditional social system (centered around an extended family – `aiga – and allegiance to a hierarchy of chiefs – (matai) that continues to strongly influence and depend upon the culture of fishing (Severance et al., 1999).

Inshore fishery potential around the islands of American Samoa is quite limited. The islands of the Samoan archipelago lack the broad, shallow shelves characteristic of most continental margins. The relatively small area of shallow reefs and the general inability of small-island profiles to induce much upwelling of nutrient-rich colder water from the deep ocean greatly limit productivity (Adams et al. 1999). A long-term decline in catches of coral reef fish in American Samoa's shoreline fishery is well documented (Saucerman, 1995; Craig, 1999; Tuilagi and Green, 1995). Attempts to develop deep slope fishing in American Samoa from mid-1960s to the mid-1980s were not sustained because of habitat and resource limitations, export marketing and logistical problems (Itano, 1991).

American Samoa is severely limited in terms of land-based development opportunities. In a climate of continued economic stagnation and high population growth, pelagic fish resources are likely to assume growing importance. "Quite simply, in most countries there are few, if any, alternatives" (p. 32, Gillett et al., 2000).

Population pressures and the fully exploited nature of inshore marine resources are likely to increase American Samoa's reliance on pelagic fish as a source of food, as well as a foundation for future economic development. Future food needs of American Samoa could be compensated for by fish imports, but economic forecasts for the territory (Territorial Planning Commission/Dept. of Commerce, 2001) suggest that the ability to pay for food imports may decline. In reviewing the general situation in the Pacific islands, FAO (1995) commented that one method of maintaining per capita fish consumption levels is to encourage tuna fishing by small and medium scale commercial operations. The only fishery in American Samoa with significant potential for expansion is the harvest of offshore pelagic fish resources.

Despite a 40-year history of tuna canning in American Samoa by two large processors, commercial fishing for tuna by domestic vessels in the US EEZ surrounding American Samoa's is a relatively recent endeavor. The importance of pelagic fish as a source of income and employment in American Samoa has increased rapidly since 1996, following the adoption of longline fishing methods patterned after those in the neighboring country of Independent Samoa. A continuous supply of fish is vital for food exchanges that perpetuate Samoan culture in Independent and American Samoa. Despite increasing commercialization, the pelagic fishery contributes strongly to the cultural identity and social cohesion of American Samoa (Severance et al., 1999).

Expansion of American Samoa's longline fishery involves considerable risk, not only financial risk for fishermen, but also a risk of developing overcapacity in the fishery that could be detrimental to the domestic economy, traditional social organization and cultural continuity of the American Samoa community. In general, the vessels that constitute the US longline fleet are highly mobile. The dozens of longline vessels that arrived in Hawaii during the late 1980s were from Alaska, California, the Gulf of Mexico and the East Coast (Travis, 1999). Such vessels can simply relocate if boom and bust development occurs in the American Samoa-based longline fishery. Small-scale

longline vessels owned and operated by American Samoans are not mobile.

Incremental expansion of the longline fishery in American Samoa would guard against unsustainable development; i.e., a “boom” of uncontrolled fishing by large vessels with greater fishing power, followed by a “bust” of overcapacity and reduced availability of pelagic fish. A “boom” cycle of longline fishery growth increases the short-term supply of fish to meet cultural obligations but the “bust” cycle that may follow could disrupt long-term fish supply and discourage sustained community participation in fisheries. Two boom-and-bust cycles have been previously experienced in American Samoa’s bottomfish fishery and each “bust” reduced fish supply and domestic fishing effort for several years (Itano, 1991).

A “boom and bust” pattern of development could be prevented by regulatory action to restrict further expansion of American Samoa’s longline fishery. This action would promote long-term fishery development for sustained community participation, not only to produce food, income and employment but also to contribute to the perpetuation of American Samoan culture.

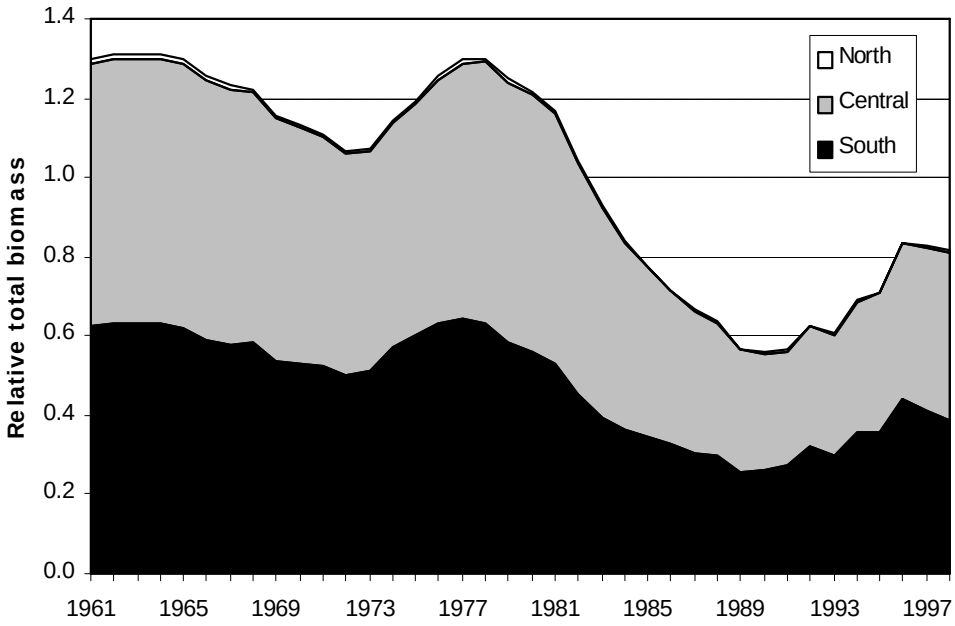
5.3 Barriers to Substantial Participation by Indigenous American Samoans in the Large-scale Sector of the Domestic Longline Fishery

Most, if not all, of the small-scale alia currently participating in the domestic longline fishery are owned and operated by American Samoans. Economic barriers, however, have prevented more substantial participation in the large-vessel (> 50 ft) sector of the longline fishery. A large-scale vessel has a harvesting capability 5-6 times greater than an alia. Lack of capital is the principal constraint to indigenous participation in the large-vessel sector of the domestic longline fishery (DMWR, 2001b). However, obtaining financing for large longline vessels may take native American Samoans from three years (A. Hunkin, pers. comm. to P. Bartram, September 2001) to over 10 years (T. Langkilde, pers. comm. to P. Bartram, September 2001).

A steady stream of large-scale vessels (> 50 ft), some displaced from heavily regulated fisheries in US waters, is expected to continue to enter the American Samoa-based longline fishery. In a “gold rush” of new entry, indigenous American Samoans are disadvantaged. Once the fishery is developed to full capacity, there will be little chance for native American Samoans to participate or to upgrade small-scale longline fishing operations.

Fluctuations in ocean environmental conditions or prey availability can cause striking and unpredictable changes in the local abundance and catch rates of pelagic fish, as a function of movement patterns rather than “overfishing.” Local reductions in pelagic fish density can be amplified by concentrated fishing. The effect of fishing tuna in one area may also affect the performance of a fishery harvesting the same stock in a nearby area (WPRFMC, 2000).

Figure 3: Trend in South Pacific albacore tuna biomass. Source: Oceanic Fisheries Program, Secretariat of the Pacific Community.



5.4 Potential for Significant Decline in Local Albacore Tuna Abundance and Local Albacore Catch Rates as New Longline Fishing Effort Is Compressed Within the Finite Area of American Samoa's EEZ.

Note: this figure portrays three areas of the South Pacific ocean, the northern area consists of waters between 0°-10° S., the central area (in which American Samoa is located) is waters between 10°-30° S. and the southern area is waters between 30°-50° S.

Interactions among pelagic fisheries can occur on different time/area scales (Itano and Holland 2000):

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- Direct gear interactions, which may occur concurrently between competing fisheries, including surface and subsurface gear types, in the same time/area strata for the same sized fish;

- Sequential or progressive interactions, which may occur as fish grow and recruit to different fisheries; or

- Spatially segregated interactions, which may occur where fish move between fishing grounds and enter new fisheries remote in time and

space.

Asian longline fleets targeted South Pacific albacore tuna starting in 1954, when 338 mt were delivered by seven vessels to American Samoa for canning. The fishery grew rapidly and, in 1965, 154 Asian longliners landed 15,600 mt at American Samoa canneries (Otsu and Sumida, 1968). Increasing longline fishing effort by Asian fleets during the 1966-1971 period was enough to cause a decline from 5 fish/100 hooks to 3 fish/100 hooks in the original albacore grounds north of 20° S (Yoshida, 1975).

Using Yoshida's (1975: 754-757) distribution of Asian longline fishing effort by two degree square grid during the 1966-1971 period, the average annual longline fishing effort in the areas that became the EEZs of American Samoa and Independent Samoa is estimated to have reached 10 million hooks/year. In 2001, the annual fishing effort by the combined longline fisheries in American Samoa and Independent Samoa exceeded this threshold. The basket-style longline gear traditionally used by the Asian longline fleets was less efficient in catching albacore tuna than monofilament gear presently used in the domestic longline fisheries based in American Samoa and Independent Samoa (DMWR, 2001b).

The average catch rate of albacore in the American Samoa-based small-scale longline fishery shows a downward trend (Figure 4) like that in the Independent Samoa-based longline fishery, in which a 40 percent decline in CPUE was evident from 1994 to 2000 (Watt et al., 2001). Between 1997 and 2000, estimated annual longline fishing effort in Independent Samoa increased from 6.6 million hooks (King et al., 1999) 10.3 million hooks (Watt et al., 2001).

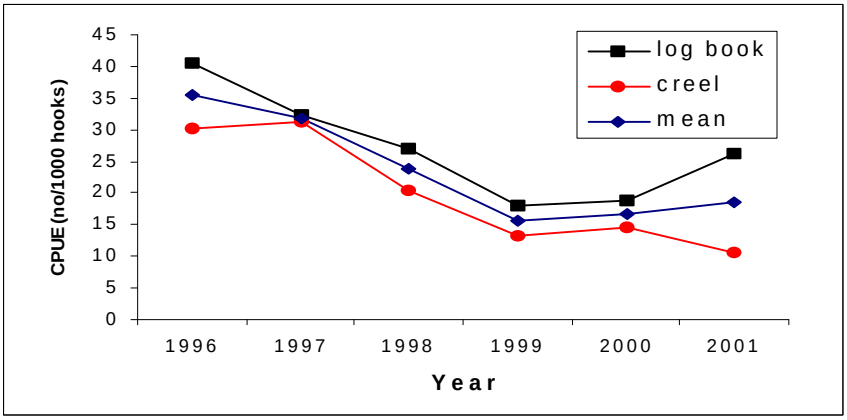

Figure 4. Trends in tuna catch rates in American Samoa's small-scale (alia) longline fishery. Source: NMFS.

Independent Samoa has recognized that even if "...the amount of fish passing through, or resident in, (Independent) Samoan waters is relatively constant for a given period, this amount of fish has to be shared by the number of people fishing during the period. If the size of the fishing fleet continues to increase, the same local quantity of resources will have to be shared by more and more fishers. That is, the catch rate (the average catch per boat) will decline" (King et al., 1999: p. 3).

Independent Samoa has adopted a scheme that limits licenses for longline fishing in its EEZ based on vessel size. The number of traditional small-scale *alia* (< 10 m length) engaged in longline fishing is not limited (A. Mulipola, Director, Samoa Fisheries Division, presentation at open workshop on fisheries management, American Samoa, 25-27 April 2001). The objectives of this scheme are to restrict overall longline fishing effort, while maintaining the opportunity for high tuna catch rates and associated economic benefits for the export-oriented sector of the fishery and reserving access for "wide and local participation" in the non-export sector of the longline fishery using traditional, small alia (King et al., 1999).

Although the American Samoa longline fishery's current conditions are economically and socially acceptable to fishery participants, concerns remain that the recent trend in hook densities will continue and lead to adverse impacts. Beliefs that fishing effort will continue to increase appear valid given recent observations by participants in the large-scale sector that fishery returns are good to excellent (O'Malley and Pooley, 2002)

The recent relationship between hook density and catch rates for American Samoa's longline fishery is presented in Figure 5. It can be seen that between 1996 and 1999, when the only vessels operating were alia that generally fished within 50 miles of shore, increasing hook density appeared to lead to local reductions in catch rates. However, as large vessels entered the fishery between 2000 and 2001, the intensity of this relationship seems to have waned, perhaps due to the fact that these larger vessels generally fish farther offshore and thus have a greater area in which to disperse their effort.

Unlike Hawaii-based longline vessels, which range over large areas of international waters to locate concentrations of pelagic fish, the American Samoa-based longline fleet is unable to extend fishing beyond the EEZ without entering the exclusive economic zones of neighboring Pacific island countries (Figure 2). Due to the cost and difficulty of obtaining foreign fishing licenses, each additional unit of longline fishing effort introduced by new vessel entry is compressed inside the finite EEZ of American Samoa. Without limits on domestic longline fishing effort in the EEZ, it could rise to average hook density levels (> 70 hooks/km^2 of EEZ/year) that prompted the government of Independent Samoa to initiate limits on domestic longline fishing licenses (King et al., 1999).

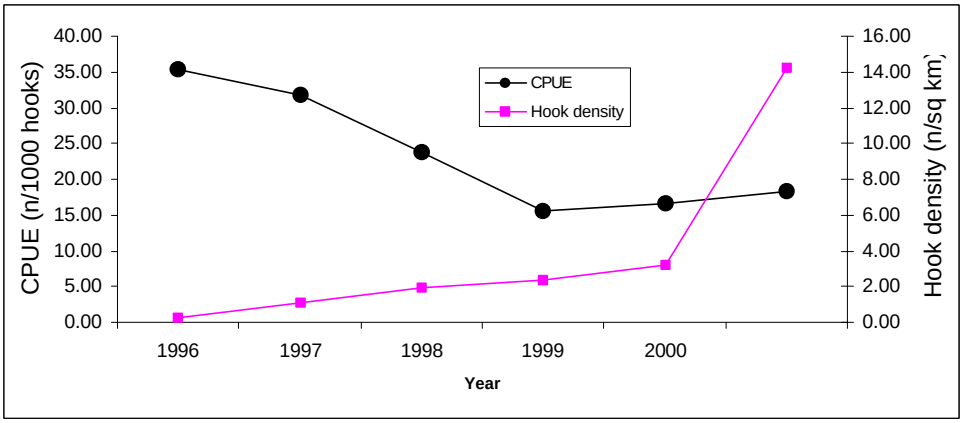

Figure 5. Catch rates and EEZ hook densities for the American Samoa longline fleet, 1996-2001. Source: WPacFIN

Without some dispersal of American Samoa-based longline fishing into neighboring EEZs, the continuing buildup of effort within American Samoa's EEZ can only be controlled through regulatory action to limit additional effort in the longline fishery. This would be necessary to maintain the potential for economically and socially viable longline catch rates over the long term.

The Council should avoid repeating the experience in Hawaii, where fishery managers were forced to respond to sudden and uncontrolled expansion of the Hawaii-based longline fishery in the late 1980s without adequate time or data for decision-making.

5.5 Potential for Gear Conflict as Additional Longline Fishing Effort Is Compressed Within the Finite Area of American Samoa's EEZ

Unlike Hawaii-based longline vessels, which range over large areas of international waters to locate concentrations of pelagic fish, the American Samoa-based longline fleet is unable to extend fishing beyond the EEZ without entering the exclusive economic zones of neighboring Pacific island countries (Figure 2). All of the latter require fees to be paid for foreign vessel licensing and access and some attach conditions to foreign fishing permits. For example, Tonga sells foreign vessel longline licenses for $10,000 per boat per year but the vessel must be operated by a Tongan company, the catch must be landed in Tonga, over 50 percent of the crew must be Tongan and the boat must carry a vessel monitoring system (VMS) (M. 'Akau'ola, Kingdom of Tonga Deputy Secretary of Fisheries, pers. comm to P. Bartram, April 12, 2002).

Nor is it possible for US longliners to fish in international waters far to the north or

south of American Samoa. US longline fishing is not permitted in these waters, which are part of the area regulated by the Forum Fisheries Agency under the South Pacific Tuna Treaty with the US (Figure I-2). Thus, all of the additional fishing effort entering American Samoa's longline fishery is compressed inside the finite area of the EEZ (approximately 390,000 km^2). With implementation of a new regulation that excludes large vessels (> 50ft) from fishing for pelagic species within 50 nautical miles (nm) of the American Samoa islands (FR 67, Jan. 30, 2002: 4369-4372), the area where large longliners can fish has been reduced to approximately two-thirds (260,000 km^2) of the EEZ.

The longline fishery in Independent Samoa developed a few years earlier than the one in American Samoa. Longline fishing effort by small-scale vessels expanded in the EEZ of Independent Samoa from an average density of 26 hooks/km^2 per year in 1996 to 55 hooks/km^2 per year in 1997. The specific density of longline hooks at which gear conflicts were first observed in this fishery is unknown. At an average annual density of 55 hooks/km^2 (calculated from King et al., 1999), severe gear conflicts in some areas were reported (Stanley and Toloa, 1998).

Fishermen observe that albacore run routes and are aggregated in a depth range defined by ocean temperature. Therefore, longline fishing effort is not evenly distributed in space or time. The longline hook density at any one time likely to produce gear conflicts is unknown but anecdotal reports from the Independent Samoa longline fishery suggest that problems occur at local densities greater than two hooks/km^2 (Stanley and Toloa, 1998). As early as September 2001, some large-scale vessel operators reported that longline fishing effort was already too concentrated in some portions of American Samoa's EEZ (DMWR, 2001b).

Depending on the distribution of fishing effort between nearshore and offshore areas, gear conflicts could be anticipated in the near future in one or both areas. Besides the inherent economic costs of fishery congestion (increased travel/search time and lost fishing time), social costs could be expected to include angry confrontations and loss of cohesion among fishery participants. In some fisheries, gear conflicts have resulted in destruction of fishing gear, gunfire and other violence.

Without limits on the fishery, the density of hooks may eventually reach a level at which gear conflicts cannot be avoided. Judging from the experience in independent Samoa's longline fishery, gear conflict is likely to occur well before heavy fishing of albacore could reduce catch rates below economically or socially viable levels.

5.6 Potential for Increased Bycatch

Albacore tuna is the primary target of the American Samoa-based domestic longline fishery because of the ease of marketing this species to local canneries. Compared to cannery prices for other species of tuna (lower than $0.50 per pound), albacore is

relatively high priced, despite dropping from a high of over $2,600/mt in early 2001 (FFA, 2002) to only $1,710/mt in February 2002 (B. Butler, Starkist Samoa, presentation at American Samoa workshop, Feb. 28, 2002).

A limited amount of non-albacore tuna can be sold in American Samoa's domestic market for $0.75 to $1.50/lb of whole weight, depending on species and quality. It is estimated that any more than two tons of pelagic fish per week would flood the existing domestic market (DMWR, 2001b).

The domestic longline fishery in independent Samoa has been able to develop an export market for fresh tuna (albacore, yellowfin) and some non-tuna species (e.g., moonfish), primarily in Los Angeles (J. Kaneko, pers. comm. to Paul Bartram, July 2001). Approximately 1,200 mt of fresh tuna were exported from Samoa to overseas fresh markets in 2000 (Watt et al., 2001). Overseas markets and air freight capacity and logistics have not yet been developed for large-scale fresh export of fresh tuna and non-tuna species harvested in the American Samoa-based longline fishery. Nor is shipboard handling adequate to preserve premium quality desired in overseas sashimi tuna markets (J. Kaneko, pers. comm. to P. Bartram, July 2001). At least one company in American Samoa is exporting fresh longline fish (non-target species) on a small scale.

Until recently, the discard ("bycatch") of fish in the American Samoa-based longline fishery was believed to be quite small. Reasons for limited bycatch are that fish is valued in the culture of the Samoan archipelago and most longline fishing crews retained all edible fish species on trips which landed fresh fish (DMWR, 2001b). Much of the unmarketable portion of the catch is taken home by the crews of small-scale alia for personal consumption (Mulipola, 2000).

Small-scale vessels discard the commonly-caught lancetfish *(Alepisaurus ferox*) and a few pelagic stingrays (Ocean Fisheries Programme, SPC, unpubl. observer data from 7 observed sets in Independent Samoa alia longline fishery). However, in addition to these species, which have no food value, larger monohull vessels which participate in Independent Samoa's longline fishery also discarded high percentages of bigeye tuna, blue marlin, spearfish and several species of shark (Ocean Fisheries Programme, SPC, unpubl. observer data from 13 observed sets in Independent Samoa alia longline fishery). NMFS 1997 logbook data for domestic longline vessels based in American Samoa indicates that discards amounted to 0.2 percent of the total catch of small vessels using longline gear and 4.5 percent of the total catch of large (>50 ft) longline vessels (WPRFMC, 2000).

Bycatch has increased sharply with the recent entry to the American Samoa-based longline fishery of larger vessels (> 50 ft) (Table 2, Figure 6). Logbook summary reports for the American Samoa longline fishery (there is currently no observer program in place for this fishery) during the last three quarters of 2001 (DMWR, 2001, 2002), a period of rapid expansion, indicate that about 70 percent of the blue marlin catch (by

numbers of fish) were discarded and about 60 percent of other billfish were discarded in addition to about 30 percent of skipjack tuna. The discard rate of yellowfin tuna decreased (from 21 percent to 10 percent) from the second quarter to the fourth quarter and the percentage of bigeye tuna discarded also dropped from 40 percent to about 18 percent over this period. The percentage of wahoo discarded increased from six percent to 12 percent in the same period. The percentage of masimasi (mahimahi) discarded varies considerably (7-23 percent of fish caught). Over two-thirds of other PMUS (moonfish, sickle pomfret, oilfish) were also discarded during this time period.

Longline vessels over 40 ft length discard 7-12 percent of their total catches, compared to only 0.65 percent of alia catches discarded (Table 3) (WPRFMC, in prep.). In terms of weight, a total of at least 816,000 lbs of fish were discarded by the American Samoa longline fishery in 2001. However it is likely that these logbook bycatch data are understated, as comparisons of Hawaii logbook and observer data have found that secondary or discarded species were more likely to be under reported than were primary target species (Walsh, 2002). Of that total, a minimum of 641,000 lbs were discarded by vessels over 50 ft in length, a minimum of 168,000 lbs were discarded by monohull vessels under 50 ft in length, and a minimum of 6,700 lbs were discarded by alia vessels (derived from WPacFIN database, unpub.) Thus, a requirement to land all Pacific pelagic management unit species caught in the longline fishery would result in a minimum of almost 7 mt per week of additional fish landed in American Samoa. Based on historically discarded species and sizes, the majority of this fish is likely to be unwanted by the cannery or local markets. If fish does enter local markets or communities in significant quantities, it may lower market prices paid by consumers, as well as lowering prices paid to the small-scale fishermen who typically supply these outlets.

If left unchecked, further increases in longline fishing effort by large vessels (> 50 ft) are expected in American Samoa because of continuing fleet expansion in this size class. The potential for incidental catch and discards is likely to increase in direct proportion (DMWR, 2001b). Unless significant overseas markets are opened for fresh fish exports, large increases in bycatch seem likely to occur as the American Samoa-based longline fishery continues to expand.

Table 2. Number and percentage of fish of incidental species (non-albacore) caught in American Samoa-based longline fishery but not kept (i.e., bycatch) – comparison of quarters 2, 3, and 4 of 2000 and 2001. Source: National Marine Fisheries Service Honolulu Laboratory and American Samoa Department of Marine and Wildlife Resources, American Samoa Longline Logbook Summaries, various dates.

Species	2000						2001					
	# Fish Not Kept			% Fish Not Kept			# Fish Not Kept			% Fish Not Kept		
Quarter:	**Q2**	**Q3**	**Q4**	**Q2**	**Q3**	**Q4**	**Q2**	**Q3**	**Q4**	**Q2**	**Q3**	**Q4**
Blue marlin	18	1	69	14.8	1.4	71.9	239	227	429	67.7	76.7	73.1
Other billfish	91	55	137	68.9	45.8	84.0	142	185	237	61.7	58.5	62.7
Skipjack tuna	0	4	118	0	0.5	25.7	588	2,518	1,063	34.2	36.0	29.2
Yellowfin tuna	0	0	33	0	0	8.8	580	801	240	21.0	24.7	9.7
Bigeye tuna	0	16	94	0	10.4	44.1	287	496	469	40.0	29.7	17.8
Masimasi	0	0	47	0	0	18.1	43	698	82	6.6	22.8	9.1
Wahoo	0	2	29	0	0.6	6.7	27	158	240	6.3	12.2	12.2
Other PMUS*	28	22	43	50	37.9	23.8	97	391	885	54.5	64.8	78.3

* Note: excluding sharks

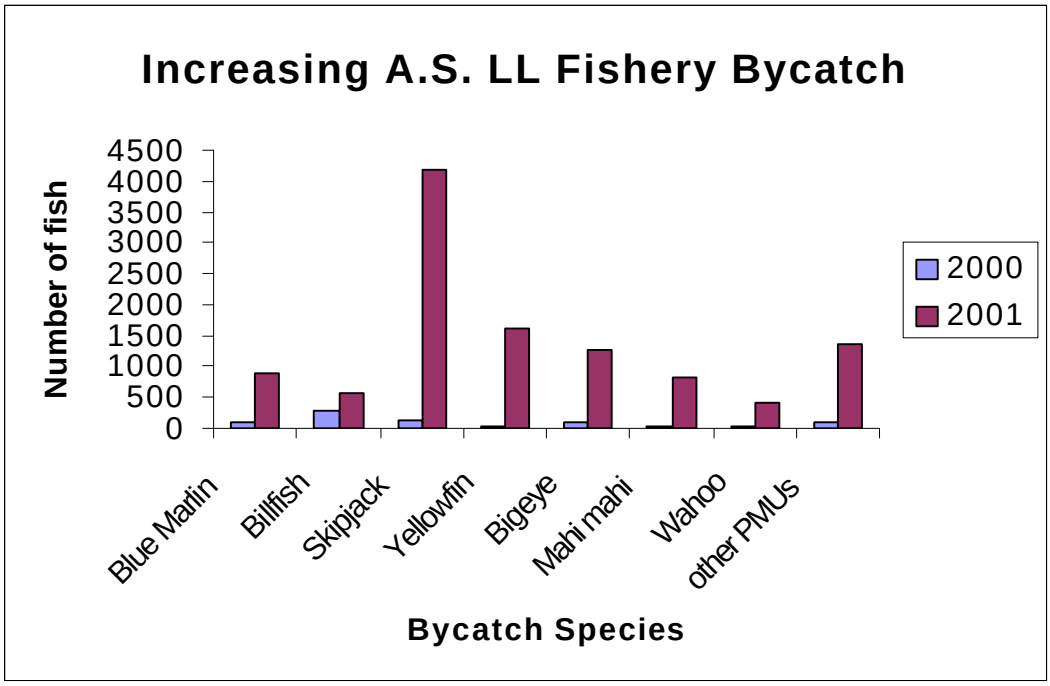

Figure 6. Comparison of bycatch in American Samoa longline fishery during the growth period of second to fourth quarter 2001, with same period in 2000. Source: DMWR.

Table 3. Bycatch rates (by number of fish) for three sizes of longline vessels fishing around American Samoa. Source: WPRFMC in prep.

Species	Vessel type			
	Alia	**Monohull < 50'**	**Monohull > 50'**	**All Boats**
Skipjack	3.13	97.19	32.13	34.07
Albacore	0.10	0.04	0.35	0.29
Yellowfin	1.44	35.24	20.70	17.81
Bigeye	1.72	38.89	25.16	24.25
Bluefin	0.00	0.00	83.33	52.63
Mahimahi	0.32	14.61	35.07	17.34
Black marlin	0.00	100.00	88.35	62.42
Blue marlin	1.62	78.76	86.85	70.88
Striped marlin	0.00	66.67	72.73	68.44
Wahoo	1.59	16.13	13.68	11.15
Sharks	66.67	99.54	98.96	98.96
Swordfish	0.00	57.69	34.59	26.99
Sailfish	6.67	55.56	83.94	68.65
Spearfish	66.67	91.67	76.40	77.27
Barracuda	0.00	0.00	43.10	39.06
Moonfish	0.00	78.95	66.09	59.50
Oilfish	0.00	99.00	94.69	93.33
Pomfret	9.09	27.45	27.32	26.91
Other pelagics	0.00	100.00	89.76	83.78
Weighted TOTAL	0.65%	12.39%	7.11%	6.97%

5.7 Potential for Adverse Effects on Sea Turtles or Their Ecosystems

Marine species protected under the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA) are present in some areas of the EEZ around American

Samoa and there is a potential for interaction with fishing gear. During 2001, the National Marine Fisheries Service prepared a Biological Opinion (BO) (NMFS, 2001a) and an accompanying Environmental Impact Statement (EIS) (NMFS, 2001b) to address comprehensively "any and all impacts" of fisheries managed under the Council's Pelagic FMP. Based on logbook and anecdotal data, the final documents do not identify any significant interactions or impacts of American Samoa's longline fishery on marine mammals or seabirds. Six interactions with sea turtles were reported for this fishery in the 1992-1999 period (NMFS, 2001a). NMFS reinitiated consultation under section 7 of the ESA on the ongoing operation of the pelagic fisheries of the Western Pacific region (including the American Samoa longline fishery under a limited entry program) and published a new Biological Opinion on November 15, 2002. The 2002 BO concluded that American Samoa's pelagic fisheries are not likely to jeopardize the continued existence of species listed as threatened or endangered under the Endangered Species Act.

Of particular concern in the vicinity of the islands of the Samoa archipelago is the hawksbill turtle, which is considered "seriously depleted", and the green sea turtle, whose population has seriously declined and "outside of Hawaii, the green turtle populations have seriously declined and should probably be classified as Endangered" (Pacific Sea Turtle Recovery Team, 1998a, b). Both species nest in American Samoa but little is known of their population movements or ecosystems. Eight green turtles tagged at Rose Atoll were recovered in Fiji. One other was taken at Vanuatu and another migrated to French Polynesia (Pacific Sea Turtle Recovery Team, 1998a,b; Craig, 2002).

The potential for takes and mortalities of sea turtles in the American Samoa-based longline fishery was of sufficient concern to NMFS that its 2002 Biological Opinion included incidental take and mortality levels for sea turtles caught in American Samoa pelagic fisheries. A "turtle take" is defined by the NMFS as any interaction between a turtle and a fishing vessel or its gear and usually implies that a turtle became entangled in a line or hooked (NMFS, 2002). The BO estimated that the American Samoa-based longline fishery will have interactions with 3 hardshell sea turtles and one leatherback turtle per year, with one hardshell turtle mortality resulting per year (NMFS, 2002). Re-consultation under section 7 of the ESA could occur if these incidental take or mortality estimates are exceeded in the American Samoa-based longline fishery (NMFS, 2002).

Under the requirements of the 2002 BO American Samoa-based longline skippers are required to handle and release sea turtles using specific tools and procedures and to be trained in sea turtle resuscitation, hook removal and gear disentanglement (NMFS, 2002).

Choosing appropriate fishery management measures to conserve any protected species and avoid jeopardizing its prospects for population survival and recovery is not a trivial exercise. Without basic data to compare the level of fishing mortality with population size and its net recruitment, mortality estimates in a fishery have only limited

value because "…the assessment is left to the 'gut feelings' of those interested" (Hall, 1999), which is problematic from both a scientific perspective and in terms of obtaining the confidence of managers and fishermen (Hall, 1998).

Complicating the picture for American Samoa is a lack of observer data as there is no observer program currently in place for this fishery. Nevertheless, some conclusions can be drawn using available information on vessel operating patterns and sea turtle biology.

As a high percentage of the incidental sea turtle catch by the Hawaii-based longline fishery was associated with shallow longline sets targeting swordfish, both the 2001 and 2002 BOs required a complete prohibition on shallow longline sets by US vessels in the North Pacific (NMFS, 2001a, 2002). Such a prohibition is not necessary for the American Samoa-based longline fishery because longline catch rates of albacore at the sub-equatorial latitudes of the Samoan archipelago and Fiji islands are highest when hook position is below 80 fm (Sesepasara, 1975) to 200 fm (Saito et al., 1970; DMWR, 2001b; Sokim and Chapman, 2000). The albacore caught below 100 fm are larger than fish taken in shallower waters (DMWR, 2001b). Depths where average water temperatures range from 15° to 19° C are associated with the highest catch rates of albacore and bigeye in the region of the islands of the Samoan archipelago (Sokimi and Chapman, 2000). These temperatures are commonly found between 100 and 200 fm around the Samoan archipelago (Sokimi and Chapman, 2000; Kinsolving and Craig, 1994).

Studies of longline gear deployment in the American Samoa-based longline fishery found that all sizes of vessels presently sink longline hooks deeper than 50 fm. Small-scale boats set most hooks between 50-100 fm by lengthening float lines to 20 fm (E. Mokoma, pers. comm. to P. Bartram, September 17, 2001). Large-scale vessels use mainline shooters, leaded swivels and weighted branch lines to deploy hooks below 100 fm. A detailed catalog covering about half of American Samoa longline fleet was completed for the WPACFIN data base (F. Aitaoto, unpubl. survey). All of the vessels studied as of October 2001 were deploying gear in a way that achieves "deep sets" by the definition of the NMFS BO (NMFS, 2001a). This is supported by the lack of catches of sea turtles when longline gear is sunk below 50 fm and sets are made offshore of deep reef slopes (DMWR, 2001b).

Information available from longline fisheries such as Hawaii (NMFS 2001a) and elsewhere in the Western Pacific (SPREP 2002) suggests that sea turtle takes can be almost completely eliminated fishery when longline gear is deployed in deep offshore waters to target albacore and other deep swimming tunas such as bigeye. Moreover, the number of longline hooks set within 12 nm of the islands of American Samoa has decreased since 1999 (Figure 7).

The purpose of the Endangered Species Act of 1973 (ESA) is "...to provide a means whereby the ecosystems upon which endangered species and threatened species

depend may be conserved, to provide a program for the conservation of such...species, and to take such steps as may be appropriate to achieve the purposes of ...treaties and conventions (affecting such species)....”

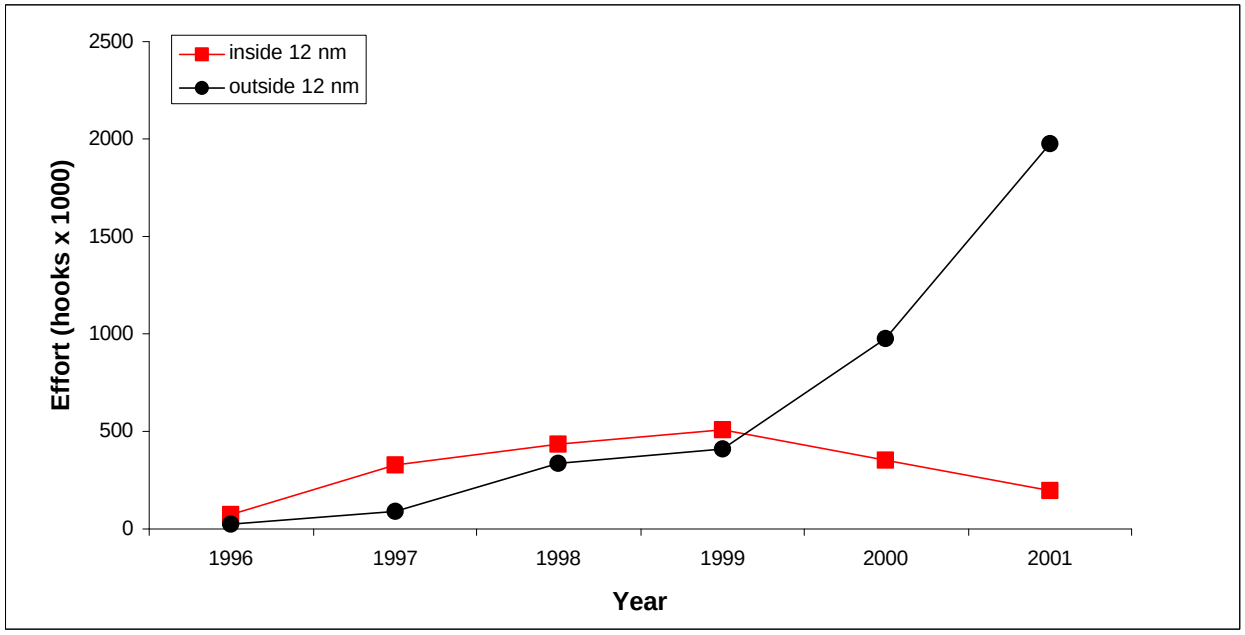

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Figure 7. Time trend in the distribution of American Samoa-based longline fishing effort inside and outside of 12 nm from shore. Source: WpacFIN, NMFS Honolulu Laboratory

Sea turtles are “shared stocks” living in and traveling across many national jurisdictions. To be effective, conservation of these species, especially on the scale necessary to conserve the ecosystems of sea turtles, will require international solutions (NMFS, 2001a). Limited tagging data indicate that turtles from the islands of the Samoan archipelago migrate great distances in the South Pacific, so impacts of distant fisheries must be considered in assessing and managing the incidental catch of hawksbill and other sea turtle species (Pacific Sea Turtle Recovery Team, 1998a,b). By far the most serious threat to sea turtles in the South Pacific is from direct take of adults and eggs, “…both within US jurisdiction and on shared stocks that are killed when they migrate out of US jurisdiction (e.g., nesting turtles from American Samoa migrate to Fiji and French Polynesia to feed)” (Pacific Sea Turtle Recovery Team, 1998b: 37).

Further action to conserve sea turtles that travel through the EEZ around American Samoa should be based on regional understanding and cooperation, remembering the lessons learned by the Inter-American Tropical Tuna Commission (IATTC) through 20

years of experience that dramatically reduced the incidental capture of dolphins by the multi-national, eastern Pacific tuna purse seine fishery (Hall, 1998; Hall, 1999):

- "Recognition by nations and industries/fishing communities that a problem exists and a commitment to its solution. "Orders from 'on high' (either at the national or international levels) without involving the affected communities can often be counter productive.

- "Continued and constructive interaction among fishing communities/industry, scientists, managers and environmentalists, based on the objective of finding a solution that achieves the desired conservation goals, while allowing the continuation of the fishery. This implies that the demands of the extreme fractions of all sectors involved will, most likely, not be met.

- "Protected species conservation may be impeded in an international context if politico-ethical considerations based solely on one country's perception of protected species are used as the overriding management objective. Not all nations, cultures or socio-economic classes value species or groups of species in the same way.

- "The development of a scientific program to understand why the incidental catches happen, and the conditions that affect their level. A critical part of the program is the flow of information to the fishers concerning all factors affecting incidental mortality. It should also inform managers and the public of the full ecological consequences of any alternative proposal put forward to mitigate or eliminate the problem.

- "The development of clear objectives with regards to the mitigation of impacts, with a schedule dictated by a realistic approach to the problem. Where appropriate, they should be defined within an international context and with the participation of all nations involved.

- "All concerned should work towards the objectives in an iterative manner via realistic short-term goals that will encourage fishers to achieve them.

- "The development of a system of incentives, from the level of the nation down to that of the individual fishers, with an emphasis on individual responsibility whenever possible. The system should serve as a selective force, encouraging the fishers to develop gear, techniques and decision-making skills that would allow them to continue using the resources while at the same time reducing the ecological impacts of their activity.

- "The development of a fair system of regulations, based on scientific findings and statistical analyses. This should be done in close consultation with the

fishers. The system should allow for creativity and experimentation and avoid micro-management.

- "The development of observer programs designed to determine the factors that cause, or increase, incidental mortality as well as the estimation of incidental catch numbers.

- "Continued monitoring for unforeseen developments after an apparent solution has been found."

6.0 OBJECTIVES

The principal goal of fishery management under the Magnuson-Stevens Act is "…to prevent overfishing while achieving, on a continual basis, optimum yield" (National Standard 1). The Pelagics FMP defines optimum yield (in part) as a pelagic fish harvest that is not "…causing or significantly contributing to growth overfishing or recruitment overfishing on a stock-wide basis."

Pelagic fish stocks are not confined to any particular EEZ or country but have a wide geographical distribution in the central and western Pacific. The species caught in the EEZ around American Samoa by the domestic longline fishery are part of larger populations that range throughout the tropical and sub-tropical Pacific Ocean and are harvested by the fishing fleets of many nations.

Effective conservation of tuna and tuna-like stocks in the central and western Pacific will require international cooperation. The Multilateral High-Level Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific (MHLC7) developed a framework for applying internationally accepted principles of management. Signed by 16 nations, MHLC7 established a preparatory conference that will work at least 3 years to create a commission to manage pelagic fish stocks in the central and western Pacific and to decide how the commission will function (Anon., 2001b).

The management approach of the Council is to use best available scientific information to anticipate and mitigate problems that would be far more difficult and costly to resolve if management is delayed and reactive. Unless fishing effort in American Samoa's longline fishery is limited, uncontrolled growth of the fishery is likely to conflict with the objectives of the Pelagics FMP as well as MSA Policy and National Standards, because of 1) local depletion of albacore tuna, leading to reduced opportunities for domestic commercial fishermen to engage in profitable fishing operations and thereby failing to achieve optimum yield as defined in the FMP; 2) reduced opportunities for continuation of traditional fishing practices for non-market personal consumption and cultural benefits; 3) lack of opportunity for more substantial participation by indigenous American Samoans in the large-scale sector of the domestic longline fishery; 4) increasing potential for gear conflicts; and 5) increasing levels of fish bycatch. The specific objectives of this action are discussed below, as well as their relationship to relevant objectives of the Pelagics FMP and the MSA's Policy and National Standards.

6.1 Prevent Local Depletion

Objective 1 of the Pelagics FMP is "to manage fisheries for management unit species in the Western Pacific Region to achieve OY". Similarly, National Standard (NS) 1 states that "conservation and management measures shall prevent overfishing while achieving on a continuing basis, the optimum yield from each fishery for the Unites States fishing

industry". The Pelagics FMP defines optimum yield (in part) as the amount of each management unit species or species complex that can be harvested by domestic and foreign fishing vessels in the EEZ and adjacent waters to the extent regulated by the FMP without causing local resource depletion or "economic overfishing" within the EEZ of each island area.

Domestic longline fisheries in American Samoa and Independent Samoa have combined to reach the level of annual fishing effort (10 million hooks/year) (American Samoa DMWR, 2001) by Asian longline fleets that was associated with a decline in the average catch rate of albacore tuna in the vicinity of the islands of the Samoan archipelago in the mid-1960s (Yoshida, 1975). The level or intensity of longline fishing effort that could trigger such a decline cannot be defined biologically with available information. However, local depletion could both occur in American Samoa's EEZ if longline fishing effort in the region of the Samoan archipelago reduces albacore tuna catch rates below levels of breakeven vessel operation. The level of fishing effort that could trigger such a decline is not known.

By the time a limited entry program was established for the domestic longline fishery in independent Samoa, longline fishing effort in the EEZ had reached an average of about 70 hooks per km^2 of EEZ (calculated from data provided by A. Mulipola, Samoa Fisheries Division). Maximum profitability for Independent Samoa's fleet occurred in 1998, when average longline hook density was approximately 70 hooks/km^2 of EEZ. The domestic longline fishery appeared had lower profits in 2000 when average longline hook density was approximately 80 hooks/km^2. The breakeven level of longline fishing effort estimated for the Independent Samoa fleet is 12 million hooks per year, for an average hook density of 94 hooks/km^2 (Watt et al., 2001).

At some threshold of increased fishing effort, fish will be removed faster from the waters of American Samoa's EEZ than they can be replaced by immigration of migratory albacore tuna. Above that level of fishing, average catch rates in the EEZ are likely to decline unless fishing effort can be distributed beyond the EEZ. At least one large longline vessel owner in American Samoa has acquired foreign permits to fish in the EEZs of some neighboring island nations. If other large vessel owners follow suit or if a regional agreement with several Pacific island nations patterned after the South Pacific Tuna Treaty could be negotiated with a group of South Pacific island nations by the US government on behalf of US longline associations, then new additions of American Samoa-based longline fishing effort would not be so compressed.

6.2 Maintain Sustained Community Participation and Minimize Adverse Impacts on Communities

Objective 2 of the Pelagics FMP is "to promote with the limits of managing at OY, domestic harvest of the management unit species in the Western Pacific EEZ and domestic fishery values associated with these species, for example, by enhancing the

opportunities for: a. satisfying recreational fishing experience, b. continuation of traditional fishing practices for non-market personal consumption and cultural benefits, c. domestic commercial fishermen, including charter boat operations, to engage in profitable fishing operations". On a the topic of communities, National Standard 8 states that "conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities". The islands of American Samoa have been defined as a fishing community under the MSA definition (WPRMC 1998b).

American Samoa has additional objectives that are related to its covenant with the US, its own constitution and its distinctive culture. These objectives concern greater economic self-reliance and perpetuation of *fa`a Samoa* (way of life in the islands of the Samoan archipelago). Despite increasing commercialization, pelagic fisheries contribute strongly to the cultural identity and social cohesion of American Samoa.

Uncontrolled expansion of longline fishing in the EEZ around American Samoa will eventually affect local pelagic fish densities and catch rates - and it will increase the discard (bycatch) of pelagic fish species that have low market value. All of these predicted effects would be detrimental to sustained American Samoa community participation and cultural practices that depend on the availability of fresh, community caught, fish.

6.3 Ensure Opportunities for Substantial Future Participation by Indigenous American Samoans in the Domestic Longline Fishery

This objective is also related to Objective 2 of the Pelagics FMP as described above. Also relevant is Policy 10 of the MSA which states "Pacific Insular Areas contain unique historical, cultural, legal, political, and geographical circumstances which make fisheries resources important in sustaining their economic growth".

Without controlled development of the American Samoa-based longline fishery, there is a high risk that the fishery will develop to full capacity before native American Samoans are able to upgrade small-scale longline fishing operations to more substantial participation. Interest in entering the large-scale sector has been expressed by indigenous American Samoans at limited entry workshops in American Samoa (DMWR 2001b) as well as at Council meetings and other fora.

Indigenous people comprise about 93 percent of the resident population of American Samoa (TPC/Dept. of Commerce, 2000). If the future development of the American Samoa-based longline fishery is controlled, an appropriate percentage of limited access longline permits could be reserved for indigenous American Samoans, as was done for

native Hawaiians in the limited access permit system for the “Mau Zone” of the Northwestern Hawaiian Islands.

6.4 Reduce the Potential for Gear Conflicts

Objective 3 of the Pelagics FMP is “to diminish gear conflicts in the EEZ, particularly in areas of concentrated domestic fishing”. Also relevant is National Standard 10 which states that “conservation and management measures shall, to the extent practicable, promote the safety of human life at sea/”

An average longline hook density of 55 hks/km^2 of EEZ per year is believed to be associated with the onset of physical gear conflict problems in Independent Samoa’s longline fishery. The potential fishing effort (based on typical vessel operating characteristics) represented by the American Samoa-based longline fleet as of March 2002 equals or somewhat exceeds this index in areas of the EEZ over 50 nm from shore. It would not be precautionary to allow further uncontrolled expansion of American Samoa’s longline fishery.

At least one large longline vessel owner in American Samoa has acquired foreign permits to fish in the EEZs of some neighboring island nations. If other large vessel owners follow suit or if a regional agreement with several Pacific island nations patterned after the South Pacific Tuna Treaty could be negotiated with a group of South Pacific island nations by the US government on behalf of US longline associations, then new additions of American Samoa-based longline fishing effort would not be so compressed. Otherwise, overcrowding of the EEZ by longline gear leading to gear conflicts would become a certainty.

Experience in Hawaii and elsewhere has shown that physical gear conflicts can result in destruction of fishing gear, gunfire, and other violence.

6.5 Minimize Fish Bycatch and Preclude Waste of PMUS

Objective 6 of the Pelagics FMP is “to preclude waste of management unit species associated with longline, purse seine, pole-and-line, or other fishing operations”. Although this emphasizes bycatch of Pelagic Management Unit Species (PMUS), National Standard 9 makes it clear that all bycatch is to be minimized as it states “conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B)to the extent bycatch cannot be avoided, minimize the mortality of such bycatch”.

Although unmarketable (non-PMUS) fish are useful for meeting cultural obligations to exchange food in the American Samoa community, from a commercial perspective albacore tuna is the only species taken in the American Samoa longline fishery that has

a ready and relatively high-value market (i.e., the local canneries). The tendency to discard non-albacore (i.e. to "high grade") to save storage space for albacore tuna is likely to increase in direct proportion to expansion of large vessel longline fishing effort in the EEZ around American Samoa.

Longline vessels based in American Samoa are required to record catches in the NMFS Western Pacific Daily Longline Fishing Log. These reports include the number of various pelagic species kept and the number released for every set. There is currently no observer program in place for this fishery.

A more effective method than regulation to reduce discards at sea would be to encourage increased export of potentially high-value species, such as bigeye and yellowfin tuna and some non-tuna (e.g., moonfish, oilfish, sickle pomfret) to overseas markets willing to pay premiums for good quality. Before such marketing channels could develop, however, significant improvements would be needed in shipboard fish handling and in airfreight capacity and logistics from American Samoa.

7.0 INITIAL ACTIONS, PROCESS AND SCHEDULE

In 1997, fishermen meeting in American Samoa expressed concern that reduced catch rates and gear conflict could occur if the longline fishery were to expand substantially. Fishermen believed that large vessels should to be excluded from nearshore areas of the EEZ to avoid gear conflicts and catch competition with small-scale vessels and the subsequent disruption in fresh fish supplies that could occur in local communities. They also believed that measures to control fishing effort, such as a license limitation system, might be required to prevent a future "gold rush" of longline fishery expansion, that could lead to reduced opportunities for fishery participation, especially in the large vessel sector, by indigenous American Samoans. The Council and NMFS established a control date of November 13, 1997, after which the owner of any large vessel (>50 ft) entering the fishery would not be assured of being allowed to use longline gear to fish for pelagic management unit species in the EEZ of American Samoa (WPRFMC, 2000). Effective March 1, 2002, a Council-recommended measure was implemented to prohibit large (> 50 ft length) pelagic vessels from fishing within 50 nm of shore. This has reduced gear conflicts between large and small vessels.

The new measure, however, is not expected to adequately control the risk of speculative entry (i.e., a "gold rush") into the American Samoa longline fishery. At a meeting in June 2000, the Council voted to establish a control date of July 15, 2000, to be used if the Council decides to develop a limited entry program for the American Samoa longline fishery. This control date was implemented by NMFS (65 FR 203, Oct. 19, 2000). Persons who enter the longline fishery in the EEZ around American Samoa after the control date are not guaranteed future participation if the Council prepares and NMFS approves a program limiting entry or fishing effort. Establishing a control date does not commit the Council or NMFS to limit effort or to prevent any other date from

being selected for eligibility to participate in the American Samoa pelagic longline fishery. The Council or NMFS also may use other criteria to limit fishing effort or participation in a limited entry program if one is developed in the future.

Rulemaking actions to establish limited entry programs normally require three Council meetings, and the publication of proposed and final rules in the Federal Register. This process is required under the Pelagics FMP for management measures that have not been previously analyzed or that may be controversial.

Problems that may require resolution by limiting effort in American Samoa's longline fishery were identified during public scoping, primarily at "open workshops" held by the Department of Marine and Wildlife Resources in American Samoa on Sept 29, 2000, 25-27 April 2000, 11-14 September 2001 and 25 February - 1 March, 2002.

The first Council meeting to consider these issues occurred in October 2001. The rapid expansion of the American Samoa longline fishery during the second and third quarters of 2001 was of sufficient concern that the American Samoa Department of Marine and Wildlife Resources and the Scientific and Statistical Committee strongly recommended that a temporary moratorium be established to halt new entry into the fishery so that a limited entry plan could be developed. The Council approved this recommendation but it was not implemented by NMFS, which recommended instead that a limited entry plan be prepared by the Council at an accelerated pace.

At a meeting in March 2002, the Council reviewed a draft document that included a description of the problem, evaluation of the need to control fishing effort in American Samoa's longline fishery and description of management alternatives identified through the scoping process. At this meeting, the Council selected a preliminarily preferred alternative from a wide range of possible alternatives and instructed its staff to prepare a draft FMP amendment that analyzes the potential impacts of a range of alternatives, including the preliminarily preferred alternative.

At its March 2002 meeting, the Council recommended that NMFS implement a new control date of March 21, 2002. This recommendation was made because recent fishery data indicated no gear conflicts or adverse impacts on fishery stocks were occurring, meaning that the previous control date would unnecessarily restrict fishing effort and economic returns from the fishery. This control date was implemented by NMFS on June 3, 2002.

At its June 2002, Council meeting in American Samoa the Council heard from potentially affected individuals and crafted a new alternative (Alternative 9A). At its August 2002 meeting, the Council modified aspects of Alternative 9A and took final action to recommend Alternative 9B (preferred). The Council's final recommendation will be transmitted to NMFS in a document that meets the analytical requirements of the Magnuson-Stevens Fishery Conservation and Management Act, the National Environmental Policy Act, the Endangered Species Act and other applicable laws. If NMFS approves the Council's recommendation, it will publish a proposed rule in the Federal Register with a public comment period, followed by publication of a final rule.

8.0 MANAGEMENT ALTERNATIVES

8.1 Derivation of Alternatives

The alternatives discussed here were developed to address the management needs and to further the Pelagics FMP management objectives presented in Sections 5 and 6. These alternatives bracket a wide range of potential fishery management measures and impacts. They are comprehensive in nature in that they consider a range of potential conflicts with gear, potential effects on harvests of both primary and secondary species, as well as bycatch of pelagic fish species, and the impacts of associated economic effects on the fishing industry, American Samoa's fishing community, and its indigenous fishery participants.

The potential direct, indirect and cumulative effects on the human environment of the management alternatives are compared with the no action baseline in the analyses contained in Section 10.1.

The alternatives were formulated based on the following sequence of analysis:

1) Identify major issues in American Samoa's longline fishery and assess their status in relation to the FMP objectives; identify needs not adequately addressed by the existing management regime. This was accomplished largely through fishermen's workshops held by the American Samoa Department of Marine and Wildlife Resources in April 2001, 11-15 and 17 September 2001, 25-28 February - 1 March 2002, and DMWR follow-up to these sessions.

2) Consider the potential of various possible control measures to resolve the identified problems and further management objectives. This was accomplished largely through the DMWR-sponsored fishermen's workshops held in American Samoa.

3) Define a range of alternatives that incorporate control measures likely to be effective and eliminate other alternatives that will not be considered in detail. Consensus was formed on the major elements of a limited access system proposal for American Samoa's longline fishery by the participants in the DMWR-sponsored workshops held in American Samoa. Whenever there was controversy or weak consensus on particular issues, the workshop facilitators added options that expanded the range of possible management measures and impacts.

As Section 8.2 explains, Alternative 1 is the "no action" alternative, meaning that it would continue the current management regime without change. This is the baseline against which the other alternatives are compared. Section 8.3 reviews the deliberations and recommendations of a series of fishermen's workshops held in American Samoa during 2001 and 2002, while Section 8.4 summarizes alternatives that were considered but eliminated from detailed analysis and discusses the reasons for elimination. Section 8.5 explains the formulation of, and describes in detail, the nine

alternatives.

8.2 No Action

Every analysis of potential management measures by the Western Pacific Regional Fishery Management Council includes a "no action" baseline against which other alternatives are compared. In this case, no action would continue open access to American Samoa's longline fishery and would continue the existing regulations for pelagic fisheries in the EEZ around American Samoa, including a federal regulation that went into effect on March 1, 2002 (67 FR 4369, January 30, 2002). That regulation prohibits large US vessels (> 50 ft length) from pelagic fishing in areas of the EEZ within 50 nautical miles (nm) of the islands of American Samoa. Federal longline general permits and reporting via federal logbooks would continue to be required for domestic longline fishing in the EEZ around American Samoa ,and present regulations concerning annual attendance by vessel operators at protected species workshops and sea turtle mitigation measures would remain in effect. In addition, provisions of Hawaii longline limited access permits would continue to allow Hawaii-based longline vessels to fish in EEZ waters around American Samoa. At a meeting in March 2002, the Council voted to establish a new control date of March 21, 2002, to be used if the Council and NMFS develop a limited entry program for the American Samoa longline fishery. If no further action is proposed at this time, the March 21, 2002 control date will remain in place should the Council and NMFS act in the future to limit entry into the American Samoa-based longline fishery.

8.3 Deliberations and Recommendations of American Samoa Workshop Participants

The Department of Marine and Wildlife Resources conducted a series of workshops in American Samoa at which participants deliberated on and expressed their preferences for control measures that could be applied to restrict effort in American Samoa's longline fishery. A limited entry system was strongly favored for management of the fishery.

The types of measures that workshop participants believe should be part of the management system include: a) target limits on numbers of vessels in different length classes with a percentage in each size class prioritized for indigenous American Samoan use; b) active participation in the longline fishery prior to a control date; c) "use it or lose it" criteria for inactive permits and availability to new participants within target limits on total vessel numbers and new applicant's documented experience in American Samoa-based pelagic fisheries; d) performance standards for permit renewal, including requirements to make fish landings and to land all edible fish catch; and e) restrictions on permit re-registration and transfer. These elements are described in the following section.

Target number of limited access permits by vessel size class and target percentage of limited access permits for indigenous American Samoan use: Unlike the Hawaii-based longline fishery, American Samoa's longline fishery is differentiated by a great diversity in vessel size and longline fishing capability (see Table 1). A new federal regulation excluding large vessels (> 50 ft) from pelagic fishing within 50 nm of the American Samoa islands went into effect on March 1, 2002 (67 FR 4369, January 30, 2002). Furthermore, each increment of larger vessel size is meaningful in terms of the amount of capital that indigenous American Samoan owners of small alia would need to upgrade to larger scale longline vessels.

Hence, in designing a limited access system for the American Samoa-based longline fishery, it is reasonable to differentiate vessel size classes based on relative capital investment, safe range of operation, longline fishing capabilities and on pelagic fishing area restrictions for large vessels (> 50 ft length). Longline fishing in American Samoa's EEZ is distributed as follows: 1) vessels 40 ft or under in length fish mostly inside 50 nm because of limited range and seaworthiness; 2) vessels between 40.1-50 ft fish inside and outside 50 nm as their range and capabilities allow; and 3) vessels larger than 50 ft fish outside 50 nm because a federal regulation excludes them from pelagic fishing within 50 nm of the American Samoa islands.

It is also reasonable to consider the target number of limited access permits by vessel size class in conjunction with a target percentage of permits for indigenous American Samoan use. Indigenous people comprise about 93 percent of the resident population of American Samoa (Territorial Planning Commission/Dept. of Commerce, 2000). A central premise of ceding the islands of eastern Samoa to the US was to preserve the rights and property of the islands' inhabitants. The language of that covenant specifically protects the Samoan way of life (Territorial Planning Commission/Dept. of Commerce, 2000).

American Samoa's dependence on fishing undoubtedly goes back as far as the peopled history of the islands of the Samoan archipelago, about 3,500 years ago (Severance and Franco, 1989). The pioneers of the small-scale alia longline fishery in American Samoa's EEZ are indigenous fishermen. Their initial success is largely responsible for subsequent growth of the longline fishery, which now includes non-indigenous as well as indigenous participants.

Economic barriers, however, have prevented more substantial participation in the large-vessel (> 50 ft) sector of the longline fishery. A large-scale vessel has a harvesting capability 5-6 times greater per set than an alia. Lack of capital is the principal constraint to indigenous participation in the large-vessel sector of the domestic longline fishery (DMWR, 2001b).

The level of American Samoan participation in the large-vessel sector of the American Samoa-based longline fishery that would be "substantial" was discussed by American Samoan and non-Samoan fishermen who attended workshops held 11-15, 17

September 2001, and 25-28 February, 1 March 2002, in American Samoa. There was consensus that the percentage of indigenous limited access longline permits should be higher (e.g., 80 percent or more of total permits issued) for the small-vessel (< 50 ft) sector than the percentage of indigenous limited access longline permits for larger vessel size classes (70 percent or less) (DMWR, 2001b).

There is precedent for an indigenous class of limited entry permits in fisheries managed by the Council. The Council has already established an "indigenous permit reserve" (two of 10 limited access permits) so that native Hawaiians are guaranteed an opportunity to participate in the bottomfish fishery around the southernmost of the Northwestern Hawaiian Islands ("Mau zone").

Considering that an American Samoan may require three years to finance an upgrade from a small-scale alia to a 50-ft vessel and as much as 10 years or more to upgrade to a 70+ ft vessel (DMWR, 2001b), an "indigenous permit reserve" for the American Samoa-based longline fishery should have a long time frame for implementation. This would mean holding some permits unused for many years before American Samoan fishermen are ready to enter the large-vessel sector of the fishery. This is consistent with American Samoan culture, which places high value on the conservation of marine (and other) resources for the benefit of future generations.

The alternatives for target number of limited access permits and target percentage of limited access permits for indigenous American Samoan use were combined into the following major alternatives that bracket the full range of possible impacts on pelagic fisheries and the human environment in American Samoa.

Longline vessels 40 ft length or less: Like neighboring Independent Samoa, American Samoa has a traditional alia fishery which allows participation by fishermen with low capital investment, and spreads fishery benefits in the community. As of March 2002, 40 vessels of 40 ft or under in length were registered for use in the American Samoa-based longline fishery with <u>current</u> Federal general longline permits. Up to 73 vessels in the under 40 ft length class have actively participated in the longline fishery (i.e., held a longline general permit and made at least one landing of Pacific pelagic management unit species) since its establishment (DMWR, unpubl. data). Fishermen who participated in the DMWR-sponsored workshops in American Samoa had concerns about safety, catch handling and storage limitations of the original 9-10 m alia. Even the larger and safer "super alia" constructed in Independent Samoa is limited in the quantity of fish (no more than 2 tons) that can be properly iced with the present boat design. The consensus of workshop participants was that no more than 100 limited access longline permits should be issued to vessels in this size class, with 80 percent reserved for indigenous use (DMWR, 2001b).

Some of the workshop participants strongly disagreed. They argue that indigenous American Samoans who wish to enter the small-scale alia longline fishery should not be limited. They note that the government of Independent Samoa has set a limit on the

number of domestic longline licenses for vessels 10 m or larger. However, there is no limit on the number of vessels smaller than 10 m allowed to participate in the small-scale longline fishery in the EEZ of Independent Samoa. Thus, access remains open to the traditional, small alia to encourage "wide and local participation" in the non-export sector of the domestic longline fishery (A. Mulipola, Samoa Fisheries Division, presentation at open workshop on fisheries management, American Samoa, 25-27 April 2001).

Longline vessels 40.1-50 ft length: As of March 2002, only five vessels between 40.1 and 50 ft length were registered for use in the American Samoa-based longline fishery with current Federal general longline permits. A sixth vessel in this length class is not presently active (DMWR, unpubl. data). The consensus of fishermen who participated in DMWR-sponsored workshops in American Samoa is that up to 50 limited access longline permits could be issued to vessels in this size class, with 80 percent of the permits reserved for indigenous American Samoan use (DMWR, 2001b).

Some workshop participants favored limiting the small-scale alia fleet near the present level of participation or even phasing out alia in favor of 40.1-50 ft monohull vessels because the latter would be safer and would be capable of delivering a high quality fresh fish product. Until fresh export marketing alternatives are better developed, however, there is little incentive to improve catch quality above cannery buying specifications.

In contrast, if widespread participation in the fishery at the alia scale of longline fishing is the primary objective, a lower target number of limited access permits may be advisable for vessels between 40.1-50 ft length.

Vessels over 50 ft in length: As of March 2002, an estimated 30 vessels over 50 ft in length were registered for use in the American Samoa-based longline fishery with current Federal general longline permits and one additional vessel is inactive (DMWR, unpubl. data). Fishermen who participated in the DMWR-sponsored workshops in American Samoa believe that no more than 65 limited access longline permits should be issued to vessels in this size class, with about 25 permits (70 percent for indigenous use) allocated to vessels between 50.1-70 ft in length and 40 permits (60 percent for indigenous use) allocated to vessels over 71 ft length (DMWR, 2001b).

This distinction in vessel size is not based on longline fishing capability but on range of operation. Unless fresh export marketing is established for pelagic fish products landed by the American Samoa longline fleet, there is little incentive for medium-range 50.1-70 ft vessels that are best suited to land chilled fresh fish compared to larger vessels that can freeze large quantities of albacore tuna for sale to the canneries in Pago Pago. In addition, 70+ ft vessels would be better suited than smaller boats to make extended fishing trips beyond American Samoa's EEZ into the waters of the Cook Islands, Niue or other neighboring island countries or high seas.

A high percentage of indigenous limited access longline permits for larger vessel size classes (> 50 ft length) could allow indigenous permit holders, over time, to upgrade permits originally registered for use with smaller vessels to larger vessels. This would reward the pioneers in American Samoa's small-scale alia longline fishery.

Selected large vessel participants in the American Samoa-based longline fishery were interviewed in December 2001. Those who had an opinion about limited access suggested that, with areas within 50 nm of the American Samoa islands closed to pelagic fishing by large vessels, the maximum number of large vessels that could be accommodated in American Samoa's EEZ longline fishery is 37 (average of their answers) (O'Malley and Pooley, 2002) A higher number of vessels over 70 ft length could participate in the American Samoa-based longline fishery if arrangements could be made to fish in the EEZs of neighboring Pacific island countries, based on either private fishing company to foreign government or US government to foreign government agreements.

There was strong consensus among workshop participants to disqualify and exclude vessels over 100 ft length from participation in the American Samoa longline fishery. There was also strong workshop support to discontinue the option of participation in the American Samoa longline fishery that is presently open to Hawaii-based longline limited access permit holders.

Qualification based on control date: If the July 15, 2000 (the original control date established by the Council) had been used to determine eligibility for participation in the proposed limited access program for the American Samoa longline fishery, only three vessels larger than 50 ft would be expected to qualify. There was strong consensus among participants in DMWR-sponsored workshops in American Samoa that all vessel owners who had entered the American Samoa longline fishery before March 21, 2002, should be able to qualify for limited access permits and continue participating in the fishery.

Qualification Based on Documented Experience in American Samoa-based Pelagic Fisheries: Participants in the DMWR-sponsored workshops in American Samoa were uncomfortable with the concept that only persons who meet initial qualification criteria would be able to participate in the American Samoa longline fishery. Therefore, alternatives were considered to allow persons to enter the fishery after the control date, as long as the target number of limited access permits was not completely in use. Indigenous and non-indigenous classes of permits could also be identified.

There is some precedent for such a management system. For example, new federal limited entry permits for bottomfish fishery in EEZ around Northwestern Hawaiian Islands (NWHI), (when it is determined that new permits may be issued), are based on eligibility determined by a point system based years in which owner/operator made documented landings of bottomfish from the NWHI or main Hawaiian Islands.

The consensus of the participants was to establish a list of applicants for limited access permits and to rank the list according to historical participation as demonstrated by previous landings of pelagic fish in American Samoa. Applicants could submit evidence in various forms (e.g., vessel logbooks, sales records, payment vouchers from local canneries) to substantiate a history of landing pelagic fish in American Samoa. This history would not be limited to longline fishing experience or to any particular time period. Each year of documented landings would earn an applicant one point. If limited access permits are not in use in either the indigenous or non-indigenous class of permits for any vessel length class, applicants could enter the longline fishery in order of their total points of previous experience. This balances historical participation by fishermen who entered the longline fishery prior to the control date (but may be currently inactive) with participation by fishermen who did not enter the fishery by the control date but who exhibited a commitment to, and experience in, American Samoa's pelagic fisheries.

Performance standards for permit renewal: Participants at the DMWR-sponsored workshops believe that annual renewal of proposed limited access permits for the American Samoa longline fishery should be based on vessel owners and operators meeting certain performance standards. This would offer a mechanism for rewarding responsible and active performers and eliminating inactive vessels from the fishery.

Conventional Standards : Some of the performance standards discussed at the workshops are already commonly practiced in the Hawaii-based longline limited access permit system (e.g., permit holders submit logbooks complete and on time; permitted vessels carry observers when required).

Workshop participants considered the requirement for all Hawaii-based longline vessels to carry and use vessel monitoring systems too stringent for the proposed American Samoa longline limited access program. It was noted that VMS should only be required for large-scale longline vessels (> 50 ft) based in American Samoa because they are now excluded from pelagic fishing within 50 nm of the American Samoa islands. There are no areas of the EEZ where small-scale vessels are excluded from pelagic fishing.

Vessel captains in the Hawaii-based longline fishery are required to attend protected species educational workshops once a year. This requirement was recently extended to American Samoa vessel operators as a further requirement of the 2001 Biological Opinion (NMFS, 2001). Such workshops are not generally favored for the American Samoa-based longline fishery but they will be tolerated by fishermen. Training in vessel safety is believed to be more worthwhile, especially for the small-scale fleet. Completion of an annual course by captains was considered necessary for every vessel to renew a limited access permit in the American Samoa longline fishery.

Many of the preceding performance standards are conventional in the management of Hawaii-based longline limited access permits. The standards could be required as conditions for annual renewal of limited access permits proposed for the American

Samoa-based longline fishery.

Fish Bycatch: The participants at DMWR-sponsored workshops discussed the problem of increasing fish bycatch (discards) that is associated with the rapid expansion of the large-vessel (> 50 ft length) sector of American Samoa's longline fishery during 2001. Options that would reduce bycatch were considered. There was consensus that, as a condition of annual permit renewal, vessels with limited access permits would be required to land on shore all potentially edible/marketable fish species (i.e., all Pacific pelagic management unit species) that are caught. It was acknowledged that the success of fish bycatch landing requirements would depend on the good faith of fishermen or on an extensive and costly shipboard observer program.

The danger of having sharks onboard small vessels was discussed. Also discussed but not favored by the workshop participants was an alternative that would require that all fish caught by permitted vessels be landed on shore with no discards at sea.

"Use it or lose it": American Samoa's economic and cultural needs would be best met by developing a stable longline fishery that has long-term sustainability. Workshop participants believe that a limited number of longline permits would need to be kept "working" to achieve this objective. Cycles in pelagic fish availability and cannery price may discourage longline fishing in a particular season or year. There was consensus among workshop participants, however, that over a longer period, limited access permit holders should have to use their permits for longline fishing or lose them. The preference was to require one longline pelagic fish landing in any three-year period or a limited access permit would be forfeited and returned to a pool of permits that could become available to applicants based on their ranking by previous experience in American Samoa-based pelagic fisheries. A one-year "use it or lose it" provision was discussed but not favored. There is precedent for a Federal "use it or lose it" provision in the Northwestern Hawaiian Islands EEZ bottomfish fishery.

Conditions for limited access permit transfer and re-registration: A Hawaii-based limited access longline permit can be re-registered by a permit holder to another vessel (under 100 ft in length), or a permit can be transferred (sold) to a new owner. The consensus of participants in the DMWR-sponsored workshops held in American Samoa was that limited access permits proposed for the American Samoa longline fishery should not generally be transferrable, as it was believed that freely transferable permits would over time move to individuals with no historical relationship with American Samoa. Delaying transfer for a two-year period was also discussed as a possible measure to discourage purely speculative entry into the American Samoa longline fishery.

The workshop participants favored an exception that would allow indigenous permit holders who are owners of vessels under 40 ft length to transfer vessels with permits to immediate family members (parents, brothers, sisters, sons, daughters, nephews, nieces) or to community organizations meeting the indigenous criteria. Federal permit holders in the Northwestern Hawaiian Islands' bottomfish fishery, on the other hand,

can re-register a permit to another vessel that does not exceed 60 ft in length but they cannot sell or transfer permits to a new vessel owner.

Re-registration of a permit if the original vessel for which it is registered is sold or sunk was favored by the workshop participants. They believe that the original limited access permit holder should retain the permit and have the option of re-registering it to a replacement boat in any size class having unused permits. An exception was discussed that would allow indigenous American Samoan vessel owners with over five years of experience (i.e., five years in which Federal longline general permits were renewed) to transfer a permit for a smaller vessel to a larger vessel size class without restriction, even if the target number of permits in the new vessel size class is fully utilized. The intent of this option is that the pioneers of the alia longline fishery should never have to wait for a permit opening to upgrade their vessels.

8.4 Alternatives Considered but Eliminated from Detailed Analysis

An array of "established measures" included in regulations implementing the Pelagics FMP have been evaluated in previous Council/NMFS documents. This section discusses the reasons for eliminating most of these, as well as other types of potential control measures, from detailed evaluation at this time.

Numerous types of fishery management techniques provide for direct or indirect control over fishing effort (Anderson, 1986). How to apply most of these controls to address the specific management needs in the American Samoa-based longline fishery is unclear, however. For example, quotas expressed as annual allowable catches of albacore, yellowfin and bigeye tuna have been in effect in Fiji since 1994 (King et al., 1999). Quotas are difficult to enforce and they do not reflect high natural fluctuations in pelagic fish availability and catchability. Nevertheless, if the central and western Pacific international tuna management commission agreed to by the MHLC comes into force, Pacific island countries and territories may be forced to accept quotas on tuna catches (King et al., 1999).

Fishing effort can be managed by restricting either the number of vessels, the number of hooks set by each boat, or a combination of both. Restrictions on how and how much longline gear can be set would be difficult to enforce and would interfere unnecessarily with economic efficiency. It should be noted, however, that when the number of vessels is limited, longline fishing effort is still likely to increase as the number of hooks set per boat increases with improving efficiency.

Several other possible alternatives were discussed at DMWR-sponsored workshops held in American Samoa. Reasons for their elimination are described in this section.

<u>Measures that would be enforced by prohibiting landing of pelagic fish in American Samoa:</u> Control measures that would prohibit pelagic fish landings by US fishing vessels without federal permits, as in the Hawaii-based longline limited access

program, were rejected as a management alternative for the American Samoa-based longline fishery. Foreign-flag vessels of many nations land fish at canneries in American Samoa without restriction. The Nicholson Act (46 U.S.C. sec. 251), which prohibits the landing of fish caught on the high seas in US ports by foreign-flag vessels, was specifically not made applicable to American Samoa by 48 U.S.C. sec. 1664. Under these circumstances, the federal government could not enforce a longline limited access program for American Samoa's EEZ based on landings by US vessels.

Limit entry into American Samoa's longline fishery without regard to vessel size (the "Hawaii model"): The Council limited permits available for the Hawaii-based longline fishery in 1994 (Pelagics FMP Amendment 7). Qualification for the permits is based on participation or investment to participate in the Hawaii-based longline fishery prior to a control date.

The American Samoa-based longline fishery is more differentiated than the Hawaii fleet in vessel size, equipment and fishing capacity. Any limited access system designed for American Samoa's more diverse longline fishery would need to recognize the differences in vessel size and fishing capabilities. No distinction is made between different vessel sizes in the Hawaii limited entry program. Hence, the Hawaii model was rejected and is not evaluated in detail.

Limit the number of permits for longline fishing only in nearshore areas of American Samoa's EEZ: In the late 1990s, when virtually all of the participants in American Samoa's longline fishery used small-scale vessels (< 50 ft length), the fishing community believed that limited entry might be necessary for nearshore areas (< 50 nm from shore) of the EEZ. The recent and continuing entry of large-scale vessels (> 50 ft length) that engage in longline fishing over 50 nm from shore has extended the need for limited entry to the entire EEZ of American Samoa. This alternative is no longer relevant and was rejected for detailed evaluation.

Establish the American Samoa Government as the limited access permit authority for the American Samoa longline fishery: Participants in the DMWR-sponsored workshops held in American Samoa discussed whether longline limited access permits for the American Samoa longline fishery should be issued in American Samoa or by the Federal government. The American Samoa Government could manage the domestic longline fishery under the authority of landing laws. There is widespread conviction that the local government should take over the program in the future simply to reduce the errors in vessel data (e.g., length) that are occurring under the existing system. The American Samoa Government would need strong support from outside agencies, including the Council, NMFS and the US Coast Guard, for fishery monitoring and enforcement. There was consensus among workshop participants that the American Samoa longline fishery should continue to be managed under the Pelagics FMP and Federal regulations while local natural resource management institution building continues in American Samoa. Therefore, this alternative was not analyzed in detail.

8.5. Formulation and Description of the Alternatives

The Council considered nine alternatives as possible measures to control longline fishing effort in the EEZ around American Samoa. This section formulates and describes the alternatives. Each alternative is stronger in furthering some management objectives and weaker in furthering other objectives, thus elucidating the tradeoffs that need to be considered. Some options are included in more than one alternative because they would be expected to contribute strongly to furthering more than one management objective. Under all alternatives, present regulations concerning the near shore closed area, logbooks, annual attendance by vessel operators at protected species workshops, and sea turtle mitigation measures would remain in effect.

Alternative 1 is the no action alternative while Alternative 4 represents the consensus recommendations of a series of fishermen's workshops held in American Samoa from April 2001-March 2002. This alternative was adopted by the Council at its 112th meeting as "preliminarily preferred" until the impacts of a wide range of alternatives could be analyzed. Alternative 2 is the same as Alternative 4 except that there would be no emphasis on indigenous American Samoan participation and there would be an annual rather than three-year "use it or lose it" requirement for limited access permit renewal. Alternative 3 is also similar to Alternative 4 but it represents a viewpoint strongly expressed by some American Samoan fishermen that indigenous participants in the small-scale longline fishery (vessels less than or equal to 40 ft) should not be limited. In addition, the small-scale participants who established American Samoa's longline fishery in 1996 would be allowed to upgrade their vessels. Alternative 5 would not allow new participants in the large-scale (vessels >50 ft) sector of the longline fishery after March 21, 2002 except under a "use it or lose it" provision. It would allow new participants in the small-scale sector (vessels < 50 ft) of the fishery, with an emphasis on vessels under 40 ft. Alternative 6 would not allow new participants in the large-scale sector of the longline fishery after March 21, 2002 except under a "use it or lose it" provision. It would allow new participants in the small-scale sector of the fishery, with an emphasis on vessels between 40-50 ft length. Alternative 7 would not allow for new participants to join the American Samoa longline fishery after March 21, 2002. This alternative reflects current and previous recommendations of the Council's Scientific and Statistical Committee to place a moratorium on new entry to the fishery. Alternative 8 would control total fishing effort by a means other than limited entry – a fleet-wide limit on catch per longline trip. This alternative is included to provide examination of a broad range of alternatives to evaluate which best furthers the management objectives. Alternative 9A (adopted as "preferred at the Council's 113th meeting) focuses on vessel owners rather than permit holders as permits were not required in the early days of the fishery (thus limiting entry to prior permit holders would restrict renewed participation by fishery "pioneers"). This alternative would restrict entry to those individuals who owned a longline vessel on March 21, 2002 - provided that the vessel was used to legally harvest Pacific pelagic management unit species with longline gear in the EEZ around American Samoa, and those fish were landed in

American Samoa, at some time on or prior to March 21, 2002[1]. In order to allow maximum efficiency in vessel operations, this alternative would allow the use of vessels greater than 100 ft in length overall and would not impose any hook limits or bycatch landing requirements. To address concerns of vessel safety and increased participation by historical community members, this alternative also includes a mechanism to allow some upgrading to larger vessels by the smallest vessel size class permit holders (generally those with the longest history of participation). However, to control effort, any permit holder receiving an "upgrade" permit would be required to relinquish his or her current permit in exchange. In addition, the new (upgrade) permit would not be transferrable for a period of three years. This is to ensure that the intent of the upgrading measure is not undermined by an immediate transfer to individuals without the desired historical community participation. Under this alternative, all other permits would be transferrable at any time to individuals with documented fishery participation. This allows flexibility for permit holders to enter and exit the fishery, but limits new entrants to those with at least some record of previous participation. In addition, permit holders would be required to, at all times, register a vessel that they own, to their permit.

Alternative 9B (preferred) was recommended for implementation by the Council at its 114th meeting in Honolulu. Management measures under this alternative are identical to 9A with the following exceptions: initial entry would include all those individuals that owned longline vessels *at any time on or prior to March 21, 2002*, provided that while under their ownership the vessel was used to legally harvest Pacific pelagic management unit species with longline gear in the EEZ around American Samoa, and those fish were landed in American Samoa, at some time on or prior to March 21, 2002[2]; permit holders would not be required to own the vessels registered to their permits; operators of vessels more than 40 ft in length overall would be required to carry observers if requested by NMFS; and the requirement for annual attendance at a vessel safety workshop was removed. Additional changes to the draft implementing regulations were also made at the Council's 114th meeting. These are: time limits for initial permit applications were extended from 90 to 120 days; time limits for registering a vessel to an initial permit were extended from 90 to 120 days; the requirements for continuous registration of vessels to permits was deleted; language codifying the maximum number of permits in each size class was deleted; language requiring an administrative fee be charged for each permit, permit renewal, and permit transfer was added; the appeal process was modified to reflect the process used in the Hawaii-based longline fishery; language codifying the permit renewal date was deleted; language limiting temporary permits to no more than 60 days was added; a requirement

[1]Note: An exception would be made for any individual who gave to the Council or NMFS, (prior to the control date), a written notice of intent to participate in American Samoa's longline fishery, and could document that he or she actually harvested PMUS fish from American Samoa's EEZ using longline gear and landed those fish in American Samoa prior to June 28, 2002.

[2] See note 1.

that operators of vessels greater than 40 ft in length notify NMFS no less than 72 hours before departing on a fishing trip in order to allow placement of observers was also added; and the requirement that permit holders notify NMFS immediately of any change in vessel ownership was clarified to specify that this notification occur within 30 days of such a change.

Alternatives 2-7 and 9 involve the use of a control date for determining initial participation. Based on the Council's recommendation, a control date of March 21, 2002 is used. Under Alternatives 2-7, qualification to enter by this control date would be based on two criteria:

1) an individual must have legally held a Hawaii limited access or a general longline permit at some time on or prior to March 21, 2002 and;

2) landings of Pacific pelagic management unit species (PMUS) must have been made in American Samoa by a vessel legally registered to that permit at some time on or prior to March 21, 2002.

Although some of the potentially qualified individuals in the American Samoa-based longline fishery were not actively fishing as of March 21, 2002, it is estimated that a total of 110 individuals would qualify under the control date criteria for Alternatives 2-7.

Table 4. Distribution by size class of vessels registered to individuals believed eligible to qualify for entry under the control date criteria for Alternatives 2-7.

Vessel size class	Actively fishing	Not actively fishing	Total
equal to or less than 40'	40	33	73
40.1' - 50'	5	1	6
50.1' - 70'	15	0	15
greater than 70.1'	15	1	16
ALL	75	35	110

Due to a number of changes in the methodology used by the Coast Guard to document larger vessel lengths, uncertainty remains concerning the precise number of permit holders in each of the above groups. For this reason, under Alternatives 2-6 attrition would be used as necessary to reduce initial participation (those allowed in under the control date) to levels equal to or below the relevant permit caps before any "lost" (i.e. not renewed) permits would be re-issued. Alternative 8 does not set permit caps while Alternatives 7, 9A, and 9B would allow them to be set by the number of applicants that successfully gain initial permits, plus or minus allowable vessel upgrades. Alternatives

2 - 7, 9A and 9B also involve the use of a list of applicants for new (lost) permits. Under Alternative 2, this list would be ranked by the date of application only. However under Alternatives 3 - 7, a point system would be established that would rank these applicants based on the extent of their historical participation in pelagic fisheries landing in American Samoa. Alternatives 9A and 9B would rank applicants based on the first date of participation in the fishery. In order to allow the timely re-issuance of lost permits to new participants, under Alternatives 2-7 the public would be notified that they would have a given time to place their names on the list before lost permits would begin to be re-issued (assuming that participation levels were below caps and other conditions of each alternative were met). At that time, lost permits could be re-issued to those at the top of the list. However, new applicants could continue to come forward and have their names placed on the list with their appropriate points or earliest fishery participation date. In other words, there would be no penalty for not coming forward in the given time period, but those who did initially come forward would begin to receive re-issued permits in a timely manner. Alternatives 2-6 would also prohibit participation by any vessels greater than 100 ft feet in length, while Alternative 7 would allow any such vessels that qualify under the control date to participate, but would not allow any additional vessels greater than 100 ft in length to enter the fishery. Alternatives 9A and 9B would not limit vessel sizes. Alternatives 2-8 all originally included requirements for vessel operators to annually attend NMFS' protected species workshops, however due to the recent implementation of this requirement under a regulatory adjustment to the FMP, this aspect has been deleted. Both versions of Alternative 9 would utilize the March 21, 2002 control date but would focus on vessel owners rather than permit holders. Alternative 9A would limit participation to the owners - as of the control date - of vessels that made longline landings in American Samoa, while Alternative 9B would include all (both current and historical) owners of such vessels, provided that while under their ownership the vessel was used to legally harvest Pacific pelagic management unit species with longline gear in the EEZ around American Samoa, and those fish were landed in American Samoa, at some time on or prior to March 21, 2002[3]. A summary of the alternatives in provided in Section 10's Table 6.

Alternative 1 (no action): Under the no action alternative, no action would be taken to limit longline effort in EEZ waters around American Samoa and the fishery would continue to be managed under existing regulations.

Alternative 2: Alternative 2 would modify current regulations to allow all those individuals who qualify under the control date to participate in the longline fishery within the EEZ waters around American Samoa. In addition, new entrants would be allowed to participate to the extent that total permits do not exceed the following caps:

[3] See note 1.

Alternative 2: Size class permit caps, and proportions reserved for indigenous use		
Vessel size class	Permit cap	Proportion of new or re-issued permits reserved for indigenous use
equal to or less than 40'	100	0%
40.1' - 50'	50	0%
50.1' - 70'	25	0%
70.1' - 100'	40	0%

Under this alternative, no vessels greater than 100 ft in length would be allowed to longline within EEZ waters surrounding American Samoa.

Alternative 2 includes a permit renewal “use it or lose it” landing requirement every year. Permit renewal would also be based on adherence to fishery regulations and a requirement that vessel operators attend annual vessel safety courses.

Permits would be non-transferable but could be re-registered to a replacement vessel in any length class in which permits issued are below the permit caps above.

“Lost” permits (those not renewed by a permit holder) would be re-issued by NMFS to the person who is highest on a list of applicants as ranked by date of application. Finally, to address concerns over bycatch, permitted vessel operators would be required to land all Pacific pelagic management unit species in port.

Alternative 3: Similarly to Alternative 2, Alternative 3 would modify current regulations to allow all those individuals who qualify under the control date to participate in the longline fishery within the EEZ waters around American Samoa. In addition, new entrants would be allowed to participate to the extent that total permits do not exceed the following caps:

Alternative 3: Size class permit caps, and proportions reserved for indigenous use		
Vessel size class	Permit cap	Proportion of new or re-issued permits reserved for indigenous use
equal to or less than 40'	unlimited	100%
40.1' - 50'	50	80%
50.1' - 70'	25	70%
70.1' - 100'	40	60%

Under this alternative, no vessels greater than 100 ft in length would be allowed to longline within EEZ waters surrounding American Samoa.

Alternative 3 would also implement a permit renewal “use it or lose it” landing requirement, however this would be required only once every three years. Permit renewal would also be based on adherence to fishery regulations and a requirement that vessel operators attend annual vessel safety courses.

Permits would be generally non-transferable but could be re-registered to a replacement vessel in any length class in which permits issued are below the permit caps above. However, permit holders with vessels less than 40 ft who have more than five years experience in the domestic longline fishery based in American Samoa would be allowed unlimited vessel upgrades (re-registration of permits to vessels in larger size classes). Permit transfers would be allowed only for indigenous American Samoan permit holders with vessels less than 40 ft, and only to immediate family or community groups.

“Lost” permits (those not renewed by a permit holder) would be re-issued by NMFS so as to achieve the proportions of indigenous participation for new permit holders indicated above. Priority for new permits would be further ranked according to previous experience in American Samoa-based pelagic fisheries (longline, troll, handline, purse seine, albacore jig boat).

To address concerns over bycatch, permitted vessel operators would be required to land all Pacific pelagic management unit species in port.

This alternative includes a requirement that all vessels more than 50 ft in length registered to longline permits and fishing in EEZ waters around American Samoa carry active vessel monitoring systems.

Alternative 4: Alternative 4 would also modify current regulations to allow all those individuals who qualify under the control date to participate in the longline fishery within the EEZ waters around American Samoa. In addition, new entrants would be allowed to participate to the extent that total permits do not exceed the following caps:

Alternative 4: Size class permit caps, and proportions reserved for indigenous use		
Vessel size class	Permit cap	Proportion of new or re-issued permits reserved for indigenous use
equal to or less than 40'	100	80%
40.1' - 50'	50	80%
50.1' - 70'	25	70%
70.1' - 100'	40	60%

Under this alternative, no vessels greater than 100 ft in length would be allowed to longline within EEZ waters surrounding American Samoa.

Alternative 4 would also implement a permit renewal “use it or lose it” landing requirement once every three years. Permit renewal would also be based on adherence to fishery regulations and a requirement that vessel operators attend annual vessel safety courses.

Permits would be generally non-transferable but could be re-registered to a replacement vessel in any length class in which permits issued are below the permit caps above. Permit transfers would be allowed only for indigenous American Samoan permit holders with vessels less than 40 ft, and only to immediate family or community groups.

“Lost” permits (those not renewed by a permit holder) would be re-issued by NMFS so as to achieve the proportions of indigenous participation for new permit holders indicated above. Priority for new permits would be further ranked according to previous experience in American Samoa-based pelagic fisheries (longline, troll, handline, purse seine, albacore jig boat).

To address concerns over bycatch, permitted vessel operators would be required to land all Pacific pelagic management unit species in port.

This alternative includes a requirement that all vessels more than 50 ft in length registered to longline permits and fishing in EEZ waters around American Samoa carry active vessel monitoring systems.

Alternative 5: Alternative 5 would also modify current regulations to allow all those individuals who qualify under the control date to participate in the longline fishery within the EEZ waters around American Samoa. In addition, new entrants would be allowed to participate to the extent that total permits do not exceed the following caps:

Alternative 5: Size class permit caps, and proportions reserved for indigenous use		
Vessel size class	Permit cap	Proportion of new or re-issued permits reserved for indigenous use
equal to or less than 40'	50	80%
40.1' - 50'	25	80%
50.1' - 70'	15	70%
70.1' - 100'	16	60%

Under this alternative, no vessels greater than 100 ft in length would be allowed to

longline within EEZ waters surrounding American Samoa.

Alternative 5 would also implement a permit renewal “use it or lose it” landing requirement once every three years. Permit renewal would also be based on adherence to fishery regulations and a requirement that vessel operators attend annual vessel safety courses.

Permits would be generally non-transferable but could be re-registered to a replacement vessel in any length class in which permits issued are below the permit caps above. Permit transfers would be allowed only for indigenous American Samoan permit holders with vessels less than 40 ft, and only to immediate family or community groups.

“Lost” permits (those not renewed by a permit holder) would be re-issued by NMFS so as to achieve the proportions of indigenous participation for new permit holders indicated above. Priority for new permits would be further ranked according to previous experience in American Samoa-based pelagic fisheries (longline, troll, handline, purse seine, albacore jig boat).

To address concerns over bycatch, permitted vessel operators would be required to land all Pacific pelagic management unit species in port.

This alternative includes a requirement that all vessels more than 50 ft in length registered to longline permits and fishing in EEZ waters around American Samoa carry active vessel monitoring systems.

Alternative 6: Alternative 6 would also modify current regulations to allow all those individuals who qualify under the control date to participate in the longline fishery within the EEZ waters around American Samoa. In addition, new entrants would be allowed to participate to the extent that total permits do not exceed the following caps:

Alternative 6: Size class permit caps, and proportions reserved for indigenous use		
Vessel size class	Permit cap	Proportion of new or re-issued permits reserved for indigenous use
equal to or less than 40'	100	80%
40.1' - 50'	10	80%
50.1' - 70'	15	70%
70.1' - 100'	16	60%

Under this alternative, no vessels greater than 100 ft in length would be allowed to longline within EEZ waters surrounding American Samoa.

Alternative 6 would also implement a permit renewal “use it or lose it” landing requirement once every three years. Permit renewal would also be based on adherence to fishery regulations and a requirement that vessel operators attend annual vessel safety courses.

Permits would be generally non-transferable but could be re-registered to a replacement vessel in any length class in which permits issued are below the permit caps above. Permit transfers would be allowed only for indigenous American Samoan permit holders with vessels less than 40 ft, and only to immediate family or community groups.

“Lost” permits (those not renewed by a permit holder) would be re-issued by NMFS so as to achieve the proportions of indigenous participation for new permit holders indicated above. Priority for new permits would be further ranked according to previous experience in American Samoa-based pelagic fisheries (longline, troll, handline, purse seine, albacore jig boat).

To address concerns over bycatch, permitted vessel operators would be required to land all Pacific pelagic management unit species in port.

This alternative includes a requirement that all vessels more than 50 ft in length registered to longline permits and fishing in EEZ waters around American Samoa carry active vessel monitoring systems.

Alternative 7: Alternative 7 would also modify current regulations to allow all those individuals who qualify under the control date to participate in the longline fishery within the EEZ waters around American Samoa. However, rather than setting permit caps, Alternative 7 would focus on capping EEZ longline effort (hooks) to levels below those associated with gear conflict in neighboring Independent Samoa (55 hooks per km^2) as follows:

Alternative 7: Effort limits for each EEZ area around American Samoa		
EEZ area	Square kilometers	Longline effort cap (annual hooks)
Nearshore (0-50 nm)	130,000	7.15 million
Offshore (50 - 200 nm, or remainder of EEZ waters)	260,000	14.3 million
TOTAL	390,000	21.45 million

Under this alternative, vessels greater than 100 ft in length that qualify under the control date would be allowed to longline within EEZ waters surrounding American Samoa,

however no additional vessels greater than 100 ft in length would be allowed to enter the fishery.

Due to continuing uncertainty about the precise number of vessels that would be allowed in by the control date, re-issuance of “lost” permits would be prohibited as necessary until attrition reduces predicted annual fishing effort to levels equal to or below these effort caps. Once predicted annual fishing effort is equal to or below the effort caps, new participation would then be possible when a permit was “lost” by an initial permit holder (permits would be non-transferable).

First priority for “lost” permits would go to current permit holders wanting to upgrade to larger vessel size classes in which effort is below the effort caps above. Second priority would go to the person who is highest on the list of applicants. This list would be ranked according to previous experience in American Samoa-based pelagic fisheries (longline, troll, handline, purse seine, albacore jig boat).

Alternative 7 would implement a permit renewal “use it or lose it” landing requirement of 1,000 pounds once every three years. Permit renewal would also be based on adherence to fishery regulations and a requirement that vessel operators attend annual vessel safety courses.

Alternative 7 would also limit the number of hooks set by vessels over 50 ft in length to no more than 3,000 per set.

This alternative has no requirement to land all Pacific pelagic management unit species in port.

This alternative does not include any requirement concerning vessel monitoring systems.

Alternative 7 includes a recommendation that methods to allow conversion of less than 40 ft size class permits to permits for vessels between 40 ft and 50 ft without exceeding effort caps be developed and implemented as soon as possible. Potential approaches include allowing a new 40 ft-50 ft vessel size class permit to be issued whenever two permits for less than 40 ft vessels are “lost”.

Alternative 8: Alternative 8 would not limit longline permits or EEZ effort but instead would implement a trip landing limit of no more than 5,000 lbs of Pacific pelagic management unit species for any longline fishing trip that included fishing in EEZ waters around American Samoa.

Alternative 9: Two versions of Alternative 9 are presented here. These alternatives are similar in many ways however some differences do exist. Perhaps most significantly,

Alternative 9A would limit participation to the owners - as of March 21, 2002 - of vessels that made longline landings in American Samoa, while Alternative 9B (preferred) would include all (both current and historical) owners of such vessels.

Specifically, Alternative 9A would implement regulations to restrict entry to those individuals who owned a longline vessel on March 21, 2002 - provided that the vessel was used to legally harvest Pacific pelagic management unit species with longline gear in the EEZ around American Samoa, and those fish were landed in American Samoa, at some time on or prior to March 21, 2002[4].

By contrast, Alternative 9B would allow entry by all those individuals that owned longline vessels at any time on or prior to March 21, 2002, provided that while under their ownership the vessel was used to legally harvest Pacific pelagic management unit species with longline gear in the EEZ around American Samoa, and those fish were landed in American Samoa, at some time on or prior to March 21, 2002[5].

Based on available ownership and landing records, the distribution by size class of numbers of individuals potentially qualified for initial permits under Alternatives 9A and 9B are estimated as follows:

Alternatives 9A and 9B: entry based on vessel ownership and landings Estimated maximum number of qualifying vessels in each size class		
Vessel size class	Alternative 9A	Alternative 9B
A: equal to or less than 40'	75	93
B: 40.1' - 50'	9	9
C: 50.1' - 70'	15	15
D: 70.1' or larger	19	21
ALL	118	138

Again, due to a number of changes in the methodology used by the Coast Guard to document larger vessel lengths, uncertainty remains concerning the precise number of permit holders in each of the above groups. However, Alternative 9 does not set permit caps but instead allows them to be set by the number of applicants that successfully

[4]Note: An exception would be made for any individual who gave to the Council or NMFS, (prior to the control date), a written notice of intent to participate in American Samoa's longline fishery, and could document that he or she actually harvested PMUS fish from American Samoa's EEZ using longline gear and landed those fish in American Samoa prior to June 28, 2002.

[5] See note 4.

gain initial permits, plus or minus allowable vessel upgrades.

Under Alternative 9A, potentially qualified applicants would have 90 days from the effective date of the final rule to apply for an initial permit. If they were found to qualify for an initial permit, they would have another 90 days to register a vessel (of the appropriate size class, and owned by them) to that permit. If they failed to do so, that permit would not be issued and would not be available for use by other applicants. Under Alternative 9B, these time limits would extend to 120 days and the vessel ownership requirement would not apply. However, Alternative 9B includes an administrative fee (to be set by NMFS in accordance with its fee schedule) for the issuance, renewal or transfer of any permit.

Under both Alternatives 9A and 9B a total of 26 new “upgrade” permits would be made available over the first four years following the issuance of initial permits, for the exclusive use of initial permit holders in the smallest size class (less than or equal to 40'), with priority given to those with the first documented historical participation in the fishery. Similar to initial permits, qualified applicants would have 120 days to register a vessel (of the appropriate size class) to that permit. If they failed to do so, that permit would be made available for use by the next applicant “in line”. Those receiving an upgrade permit would have to retire their present permit and would not be allowed to transfer their new permit for three years. After three years they would be transferable to any individual who could document that they worked on a vessel that caught Pacific pelagic management unit species on longline gear in the EEZ around American Samoa, that were subsequently landed in American Samoa (regardless of date).

These upgrade permits would be distributed according to the following schedule:

Vessel size class	Year 1	Year 2	Year 3	Year 4	Total
40.1' - 50'	4	4	4	2	14
50.1 - 70'	2	2	2	0	6
70' or larger	2	2	2	0	6

All other permits would also be transferable to any individual who could document that they worked on a vessel that caught Pacific pelagic management unit species, on longline gear in the EEZ around American Samoa, that were subsequently landed in American Samoa (regardless of date). Note: Alternative 9A would require that this participation be on a vessel registered to either at Hawaii limited access or a general longline permit, Alternative 9B does not include this requirement.

Under both Alternatives 9A and 9B, permits for vessels in the smallest size class (equal

to or less than 40') would also be allowed to be transferred to family members or community groups as previously defined for community development projects. In addition, permits could be re-registered (by the same permit holder) to a different vessel in the same size class at any time.

Both alternatives would also prohibit any individual from owning more than 10% of the maximum permits allowed (in all vessel size classes combined), with any fractional interest in a permit counted as a whole permit.

In addition, both alternatives include permit renewal “use it or lose it” landing requirements of 1,000 pounds of Pacific pelagic management unit species once every three years for the two smaller vessel size classes with a similar 5,000 pound requirement for the two larger vessel size classes.

Under Alternative 9A, permit renewal would also be based on timely submission of logbooks, immediate notification to NMFS of changes in vessel ownership and annual attendance by vessel owners at vessel safety courses and protected species workshops. Due to a lack of available personnel and resources, Alternative 9B would remove the vessel safety course requirement. It would maintain the remaining requirements but due to legal concerns it would not make them a condition of permit renewal. It would also clarify that permit holders must notify NMFS within 30 days of any changes in vessel ownership.

Alternative 9A would also require that permits have vessels registered to them at all times while Alternative 9B does not include this requirement.

Under both alternatives, “lost” permits (those not renewed by a permit holder) would be re-issued by NMFS and would be available to any longline fishery participant, with priority given by vessel size class (those on the smallest vessels getting highest priority). Within size classes, priority would be based on the date of their first documented longline landing in American Samoa with the earliest landing getting highest priority. Under Alternative 9A, potential recipients would have 90 days to register a vessel to the permit, under Alternative 9B they would have 120 days. Under both alternatives, If they failed to do so, then the next “in line” would get a chance. However that potential recipient could apply again for an available permit after 6 months has passed.

These alternatives include a requirement that all vessels more than 50 ft in length that are registered to longline permits and fishing in EEZ waters around American Samoa carry active vessel monitoring systems if requested by NMFS.

Neither Alternative 9A or 9B include maximum vessel size limits, hook limits, or bycatch landing requirements.

However, Alternative 9B includes a requirement that holders of permits registered to

vessels more than 40' in length overall carry observers on board their vessels if requested by NMFS. This includes a requirement that operators of these vessels notify NMFS no less than 72 hours before embarking on a fishing trip so that observers may be placed on board if requested by NMFS.

Under Alternative 9B, all permits could be registered to vessels in smaller size classes than that for which they were issued.

Other regulatory changes under Alternative 9B are the modification of 9A's appeal process to reflect the process used for the Hawaii-based longline fishery, a time limit of 60 days for temporary permits and deletion of text codifying the permit renewal date as December 31 of each year.

9.0 CONSISTENCY WITH NATIONAL STANDARDS FOR FISHERY CONSERVATION AND MANAGEMENT

National Standard 1 states that conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry. The preferred alternative is not expected to have a significant effect on fish stocks or stock-wide optimum yield but increased longline fishing effort allowed under this alternative could lead to local depletion of albacore. This potentially negative local effect is anticipated to be less than would occur under an open-access system and is offset by the economic and social benefits that will accrue as a result of the implementation of a limited entry program that has been largely developed by local community members over several years.

National Standard 2 states that conservation and management measures shall be based upon the best scientific information available. The preferred alternative is based on scientific information collected from fishery logbooks, and other assessments of both past and current regional relationships between catch, effort, and economic returns.

National Standard 3 states that, to the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination. The preferred alternative is not expected to have a significant effect on the status or management of fish stocks as a unit.

National Standard 4 states that conservation and management measures shall not discriminate between residents of different States. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges. The preferred alternative is anticipated to promote conservation and would limit entry based on historical participation (by vessel size) rather than on state residency.

National Standard 5 states that conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose. The preferred alternative is not expected to have a significant negative effect on efficiency.

National Standard 6 states that conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources and catches. Although the preferred alternative considers such variations, it is not expected to have a significant effect on fishery resources or total catches of target species.

National Standard 7 states that conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication. The preferred

alternative is anticipated to minimize costs through the use of relatively simple effort controls.

National Standard 8 states that conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities. The preferred alternative is anticipated to reduce the potential for local depletion while providing continued opportunities for community members to participate in the fishery (see Appendix I).

National Standard 9 states that conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch. The preferred alternative is anticipated to reduce bycatch indirectly by limiting the number of larger vessels which are more prone to discarding fish.

National Standard 10 states that conservation and management measures shall, to the extent practicable, promote the safety of human life at sea. The preferred alternative is anticipated to promote the safety of human life at sea by providing opportunities for many small-scale vessel owners to upgrade to larger vessels.

10.0 RELATIONSHIP TO OTHER APPLICABLE LAWS AND PROVISIONS OF THE MAGNUSON- STEVENS ACT

10.1 National Environmental Policy Act

This section has been prepared in accordance with the requirements of the National Environmental Policy Act (NEPA) of 1969, to assess the impacts on the human environment that may result from a proposed action. In March of 2001, NMFS published a Final Environmental Impact Assessment for the Pelagics Fisheries of the Western Pacific Region (FEIS), which provided an overall assessment of the impacts of the region's pelagic fisheries on the human environment. This is available from the NMFS Southwest regional office (501 West Ocean Boulevard, Suite 4200, Long Beach, CA 90802-4213; http://swr.ucsd.edu/)

The FEIS presented a brief summary of the specific issues surrounding the need for limiting longline fishing effort in the EEZ around American Samoa. The following Environmental Assessment (EA) tiers off of, and incorporates by reference, that document.

10.1.1 Purpose and Need for Action

The purpose and need for action are described in Section 5. Table 5 summarizes the potential problems, possible remedies and the potential costs of no action.

Table 5. How limiting longline effort could remedy or mitigate potential problems in American Samoa's longline fishery, and potential costs of no action.

Potential Problem	Potential Remedies	Potential Costs of No Action
Increasing risk of localized overfishing	Control intensity of longline fishing effort.	Additional longline fishing effort compressed within EEZ will eventually affect catch rates.
Increasing risk of gear conflict	Control intensity of longline fishing effort.	Additional longline fishing effort compressed within EEZ will eventually lead to gear conflict.
Increasing fish bycatch	Limiting effort will stabilize fishery and encourage long-term market development for major bycatch species.	Fish bycatch will continue to increase in proportion to longline fishery expansion.
Increasing risk of "boom and bust" fishery development	Stabilize fishery for sustained community participation and supply of fish to meet American Samoan cultural obligations.	Overcapitalization ("boom") of the fishery will be followed by a "bust" that discourages community participation and makes fewer fish available for American Samoan cultural needs.
Barriers to substantial participation in large-vessel longline sector by indigenous American Samoans.	Set aside an appropriate % of effort for indigenous American Samoan use in each vessel size class of longline fishery.	Large-scale sector of the fishery may reach full capacity before there is substantial participation by American Samoans.

10.1.2 Alternatives

The alternative management measures considered by the Council were described in Section 8.0. Table 6 summarizes their key elements.

Table 6. Summary of management alternatives.

Alternative	Total Permits Allowed	Proportion of New or Re-issued Permits Reserved for Indigenous Use (by vessel size class)	Use-or-lose Requirement	Permit Re-registration and Transferability
1. No action	N/A	Not considered	No	Unlimited permit re-registration to replacement vessels is allowed. No permit transfers.
2. Emphasizes active participation, must land all PMUS.	100 less than 40' 50 between 40 '- 50' 25 between 50' - 70' 40 between 70' - 100' Total: 215	Not considered	Yes (1 yr)	Permit re-registration allowed to replacement vessels in any size class with slots available, no permit transfers.
3. Emphasizes active, small-scale, indigenous participation, must land all PMUS.	Unlimited less than 40' 50 between 40 '- 50' 25 between 50' - 70' 40 between 70' - 100' Total: unlimited	100% 80% 70% 60%	Yes (3 yr)	Permit re-registration allowed to replacement vessels in any size class with slots available; unlimited re-registrations allowed for upgrades by small-boat pioneers (5 yrs+); only indigenous permits <40' can be transferred and only to immediate family or community groups.
4. Emphasizes active and indigenous participation, must land all PMUS.	100 less than 40' 50 between 40 '- 50' 25 between 50' - 70' 40 between 70' - 100' Total: 215	80% 80% 70% 60%	Yes (3 yr)	Permit re-registration allowed to replacement vessels in any size class with slots available; only indigenous permits <40' can be transferred and only to immediate family or community groups.
5. Emphasizes active, small-scale, indigenous participation, safety, no new large boats (> 50 ft) allowed after March 21, 2002, must land all PMUS.	50 less than 40' 25 between 40' - 50' 15 between 50' - 70' 16 between 70' - 100 Total: 106	80% 80% 70% 60%	Yes (3 yr)	Permit re-registration allowed to replacement vessels in any size class with slots available; only indigenous permits <40' can be transferred and only to immediate family or community groups.

Table 6. continued - Summary of management alternatives.

Alternative	Total Permits Allowed	Proportion of New or Re-issued Permits Reserved for Indigenous Use (by vessel size class)	Use-or-lose Requirement	Permit Re-registration and Transferability
6. Emphasizes active, small-scale, indigenous participation, no new large boats (> 50 ft) allowed after March 21, 2002, must land all PMUS.	100 less than 40', 10 between 40'-50' 15 between 50' - 70' 16 between 70' - 100 Total: 141	80% 80% 70% 60%	Yes (3 yr)	Permit re-registration allowed to replacement vessels in any size class with slots available; only indigenous permits <40' can be transferred and only to immediate family or community groups.
7. Emphasizes active participation, safety, control of gear conflict, and historical participation. No requirement to land all PMUS.	Not applicable	Available ("lost") permits allocated based on current and historical participation.	Yes (3 yr)	Permit re-registration allowed to replacement vessels in any size class with slots available, no permit transfers. Available permits allocated first to current participants wanting to upgrade, then to applicants ranked by historical participation.
8. Controls effort indirectly through trip landing limits, no requirement to land all PMUS	Unlimited	Not considered	No	No limited entry - permit holders cannot land more than 5,000 pounds per trip.
9A. Emphasizes active participation, safety, and efficiency. No requirement to land all PMUS	75 less than 40' 9 between 40' - 50' 15 between 50' - 70' 17 between 70' - 100' 2 over 100' Total: 118[1]	26 upgrade permits reserved for current holders of the smallest vessel size class permits. Available ("lost") permits allocated based on current and historical participation.	Yes (3 yr)	Upgrade permits are not transferable for 3 years, others are transferable to any individual with historical fishery participation. Permits <40' can also be transferred to family members or community groups.
9B. Emphasizes active participation, safety, historical participation, and efficiency. No requirement to land all PMUS	93 less than 40' 9 between 40' - 50' 15 between 50' - 70' 19 between 70' - 100' 2 over 100' Total: 138[1]	26 upgrade permits reserved for current holders of the smallest vessel size class permits. Available ("lost") permits allocated based on current and historical participation	Yes (3 yr)	Upgrade permits are not transferable for 3 years, others are transferable to any individual with historical fishery participation. Permits <40' can also be transferred to family members or community groups.

[1] Because Alternative 9 would cap effort based on participation prior to the control date, these figures are estimates based on historical records.

10.1.3 Affected Environment Given Cumulative Impacts to Date

10.1.3.1 Geographic Setting

Samoa, a 290-mile long archipelago of volcanic islands in the South Pacific, lies 2,300 miles southwest of Hawaii, 1,200 miles west of Tahiti, 800 miles northeast of Fiji and 1,600 miles north of New Zealand. The Samoa island chain is divided into two political entities. The Independent State of Samoa consists of four inhabited and four uninhabited islands in the west and the US Territory of American Samoa consists of six inhabited islands and one uninhabited island, in the east.

The islands comprising American Samoa lie on the Pacific plate and consist of the main archipelago of Tutuila, Manua and Rose Atoll and lying at about 14°-15° S and Swains Atoll, lying at 11° S. The region is geologically inactive and there are few seamounts or guyots in comparison to other Polynesian states. The majority of islands rise from deep (4,000 m) oceanic depths.

The total land mass of American Samoa is about 200 km^2, surrounded by an Exclusive Economic Zone of approximately 390,000 km^2 . The largest island, Tutuila, is nearly bisected by Pago Pago Harbor, the deepest and one of the most sheltered embayments in the South Pacific. The other islands include Ofu, Olosega and Ta'u in the Manu'a group located 60 miles east of Tutuila. Aunu'u is a small island one-quarter mile off the eastern shore of Tutuila. Rose Atoll is a wildlife refuge 60 miles east of Manu'a. Swains Island, geographically a member of the Tokelau archipelago, is 200 miles north of Tutuila.

American Samoa experiences southeast trade winds that result in frequent rains and a warm tropical climate. The year round air temperatures range from 70° to 90° F. Humidity averages 80 percent during most of the year. The average rainfall at Pago Pago International Airport is 130 inches per year, but Pago Pago Harbor, only 4.5 miles away, receives an average of 200 inches of rainfall per year (TPC/Dept. of Commerce, 2000).

The marine resources that may be affected by the proposed action are pelagic species inhabiting the waters of the Exclusive Economic Zone (EEZ) around the islands of American Samoa. These EEZ waters encompass approximately 390,000 km^2 of ocean. About one-third of this area lies within 50 nm of shore (WPRFMC, 2000). This EEZ is completely bordered by the EEZs of neighboring Pacific island countries (see Figure 2).

10.1.3.2 Regional Pelagic Ecosystem and Oceanography

The offshore pelagic ecosystem is very large compared to any other ecosystems where fishing occurs. Biological productivity in the pelagic zone is highly dynamic,

characterized by advection of organisms at lower trophic levels and by extensive movements of animals at higher trophic levels, both of which are strongly influenced by ocean climate variability and meso-scale hydrographic features. As the potential energy of stored biomass is transferred by the trophic level up the food web, the time scale for transfer between levels increases from seasonal to multi-annual scales (FAO, 2001).

The islands of the Samoa archipelago are an area of modest productivity relative to areas to the north and west. The region is traversed by two main currents: the southern branch of the westward-flowing South Equatorial Current during June - October and the eastward-flowing South Equatorial Counter Current during November - April. Surface temperatures vary between 27°-29° C and are highest in the January - April period. The upper limit of the thermocline in ocean areas is relatively shallow (27° C isotherm at 100m depth) but the thermocline itself is diffuse (lower boundary at 300m depth).

Surface currents : Ocean circulation is mainly driven by winds and changes in temperature and salinity which affect seawater density. Tuna generally live in the upper 300 m of the water column and currents may affect their distribution. Currents affect the depth of suitable tuna habitat by modifying temperature, salinity and oxygen levels. Divergent currents bring nutrient rich waters to the surface, which promotes phytoplankton growth, whereas convergent currents may accumulate forage items important for tuna distribution. The Westwind Drift (40°-50° S) and the equatorial current system create an anticlockwise current flow or gyre in the south Pacific. From the equator to 20° S, four main currents or countercurrents are recognized (Bigelow, 1997).

The northern branch of the South Equatorial Current (SECN) flows westward between 10° N and 7° S at a mean speed of 30 cm/sec and is 200 m thick. The southern branch of the South Equatorial Current (SECS) flows westward between 11° and 14° S at a mean speed of 5 cm/sec and is 200 m thick.

Between these two westward flowing currents is the eastward flowing South Equatorial Countercurrent (SECC) at 7° S - 11° S. The SECC has a mean speed of 20 cm/sec and is 50-100 m thick. South of 15° S the South Tropical Countercurrent (STCC) flows eastward (Bigelow, 1997).

Current systems in the south Pacific are not simple latitudinal features as vertical profiles of the equatorial western Pacific show a complex and dynamic stratification of currents (Delcroix et al. 1992). Current velocity fields affecting the American Samoa EEZ are weak with maximum velocity of about 25 cm sec (52 cm sec = 1 knot). In general, current velocities appear southwesterly in the north (5°-10° S), and southerly between 10° and 15° S. The northern branch of the South Equatorial Current (SECN) is the strongest current in the south Pacific. The SECN flows westward and usually attains its maximum velocities within 5° of the equator during March and April (Picaut &

Tournier 1991). The SECN mainly affects American Samoa EEZ from January to June.

The southern branch of the South Equatorial Current (SECS) flows westward but is weaker than the SECN. In the central Pacific it may fragment into a series of vortexes (Picaut & Tournier 1991). The SECS is evident to the north of 20° S each month and is strongest from May to October. The South Equatorial Countercurrent (SECC) shares a northern boundary with the westward flowing SECN and a southern boundary with the westward flowing SECS. From observational oceanographic studies in the western Pacific, the SECC flows eastward and in June or July its area of maximum velocity shifts abruptly from 10° S to 7° S, and it may fragment into branches which interrupt the flow of the SECN. In the central Pacific, the SECC is evident to the south of 10° S during November to April, during which time the velocity of the SECS is reduced. From May to October the SECS strengthens and the SECC is not evident in the climatology.

Thermal structure: A 100-m deep pool of uniformly warm (>29° C) water extends over the equatorial western Pacific within 10° N to 10° S (Delcroix et al. 1992). Virtually all of the American Samoa EEZ lies farther to the south than the western Pacific warm pool in more saline and cooler waters of the subtropical south Pacific. Bimonthly sea surface temperature (SST) fields were estimated from a climatology based on an optimal interpolation (OI) analysis of in situ ship and buoy data collected from 1950 to 1979 (Reynolds and Smith 1994). In American Samoa the SST is warmest during January and February and coolest during July and August. Part of the northern portion of the American Samoa EEZ is isothermal (29° C) during January to June. Sea surface temperatures show a north-south gradient, and seasonal variation increases with latitude. Climatological SSTs are 29° C while during winter, SST is 1° C cooler.

A SST time-series was estimated from 1982 to 1996 for an area north and south of 15° S. Monthly SST was estimated from an 0I analysis of blended in situ (ship and buoy) SST data and satellite retrievals (Reynolds and Smith 1994). Throughout the time-series the southern area had a greater annual range in SST (2°-50° C) than the northern area (0.5°-1.50° C). The three major El Nino or warm-events that occurred over the time-series (1982-83, 1986-87 and 1991-95) resulted in 10° C cooler winter SSTs (240° C) in the southern area than in normal years. The one major La Nina or cold-event that occurred in 1988-89 resulted in cooler summer SSTs (280° C) in the northern area than in normal years, but had little affect on the southern area.

While SST is a convenient indicator of water temperature, the subsurface thermal structure has a greater influence on the horizontal and vertical distribution of tunas. Two measurements used by oceanographers to characterize the subsurface thermal structure are the depth of the mixed layer and the depth of the lower boundary of the thermocline. The mixed layer is a relatively homogeneous layer of near surface water where the temperature remains constant with depth, while the thermocline is a region in the water column where temperature declines rapidly over a relatively small depth range. In tropical waters, the depth of the 27° C isotherm is commonly used as the lower boundary of the mixed layer (Cayre et al. 1989); however, the lower boundary of

the thermocline is more difficult to define. For the purposes of this document, the depth of the 15° C isotherm is considered as the lower thermocline depth as suggested by Toole et al. (1988). The latitudinal distribution of temperature with depth derived from historical in situ ship data (Levitus 1982). At 5° S the thermocline extends from about 120 m to 220 m where water temperature decreases from 27° C to 15° C.

Subsurface temperature data, compiled from expendable bathythermographs (XBTs), was used by Bigelow et al. to develop a time-series of profile of temperature with depth for the neighboring Cook Islands between 1982 to 1996. A total of 2,665 profiles were taken from a large area of the Cook Islands EEZ (5°-25° S, 170°-150 ° W). During this period 15 profiles were made per month.

The isotherm depths show very different time-series patterns for the two areas. In the northern area, at a range of latitude similar to American Samoa's EEZ, isotherms were 50-100 m shallower after the strong ENSO event of 1982-83. In contrast isotherm depths showed little temporal variability in the southern area. The average depth of the 27° C isotherm in the northern area was 100 m. The lower boundary of the thermocline was deeper in the southern area (330 m) compared to the northern area (275 m) (Bigelow, 1997).

Oxygen: The latitudinal distribution of oxygen with depth was derived from a climatology based on historical research ship data (Levitus 1982). There is a latitudinal gradient in dissolved oxygen as northern latitudes have less oxygen at a given depth than southern latitudes. In waters south of 15° S, oxygen concentrations are generally high (>3.5 ml O_2/liter above 300 m) and should not limit the vertical distribution of tuna. In contrast, catchability of yellowfin and bigeye is increased between 5° and 10° S because dissolved oxygen concentrations are low (<3.0 ml O_2/liter below 250 m) which effectively restricts their vertical habitat (Bigelow, 1997).

Primary and secondary productivity: Phytoplankton are microscopic single-celled organisms which produce carbon through photosynthesis and nutrient (e.g. nitrates, phosphates and silica) assimilation. The growth rate of phytoplankton in the ocean is referred to as primary productivity and constitutes the amount of energy available to higher tropic levels. Primary productivity is usually limited by nutrient availability (Bigelow, 1997).

Latitude: A monthly productivity climatology was derived from the Coastal Zone Color Scanner (CZCS) based on data from 1978 to 1986 and gives an indication of relative productivity. Within the Pacific, primary production is high in the equatorial western Pacific and the tropical eastern Pacific. In contrast, oceanic waters near American Samoa are low in productivity (~0.05 mg/m^3) compared to the Society Islands in French Polynesia (>0.1 mg in). These high islands are subject to heavy rainfall which may transport large amounts of nutrients to the ocean and stimulate phytoplankton growth. There is little intra-annual variation in productivity within the American Samoa fishing zone, but waters to the northeast of 10° S have high productivity during winter

months (May-August).

A current project of the SPC's Oceanic Fisheries Program is to develop indices of secondary productivity or potential tuna forage. Initial research has focused on a oceanic current-driven productivity displacement model, whereby primary production from the CZCS data is redistributed by ocean currents from the ocean general circulation model. The resulting distribution of potential tuna forage is consistent with the Pacific-wide distribution of skipjack catch and may be related to other tuna species.

The indices of secondary productivity for American Samoa are relatively low compared to the equatorial western Pacific. The model indicates moderate tuna forage in waters to the north of 10° S during most months of the year and relatively high forage to the northeast of 10° S during winter months (Bigelow, 1997).

Major climatic events: The El Nino-Southern oscillation (ENSO) phenomenon is an interannual perturbation of the climate system characterized by a periodic weakening of the trade-winds and warming of the surface of the layers in the equatorial Pacific Ocean every 4-7 years (McPhaden 1993). The impacts of ENSO events are strongest in the Pacific through disruption of the atmospheric circulation, generalized weather patterns and fisheries. ENSO affects the ecosystem dynamics in the equatorial and subtropical Pacific by considerable warming of the upper ocean layer, rising of the thermocline in the western Pacific and lowering in the east, strong variations in the intensity of ocean currents, low trade winds with frequent westerlies, high precipitation at the dateline and drought in the western Pacific (Cane 1983, McPhaden & Kessler 1995).

ENSO events usually start early in the year and collapse early in the following year, although there was an extended ENSO event from 1991 to 1995. ENSO activity is measured by the Southern oscillation index or SOI. Negative values of the SOI apply to El Nino or ENSO warm event conditions. Since 1980, strong ENSO event have occurred in 1982-83 (the strongest observed), 1986-87, and 1991- 95. The western Pacific cools during an ENSO event and a warm pool develops in the central and eastern Pacific. The trade winds weaken and retreat eastwards, but strong westerly winds sometimes blow over the equatorial western Pacific during intense ENSOs.

Positive values of SOI, or a rising trend over time are linked to La Nina or cool event conditions. The rise from negative SOI values of the 1991-95 ENSO is typical of La Nina trend, though not as extreme as past La Nina events (e.g. 1988-89) which usually result in higher positive values of SOI. In the equatorial Pacific, La Nina years are characterized by strong trade winds, strong westward flowing currents, the pooling of warm water in the western Pacific and a deepening of the thermocline (Bigelow, 1997).

A long-term shift in the physical environment of the equatorial Pacific Ocean began in 1977 (Miller et al. 1994). Conditions included more clouds, more rainfall, warmer sea surface temperatures and weaker trade winds, similar to a weak decadal el Nino state. They were most pronounced in the central equatorial Pacific, so American Samoa was

close to the center of this shift, which persisted until 1999, when conditions were very

different. Whether 1999 marks another regime shift will not be known for several years (J. Polovina, NMFS Honolulu Laboratory, pers. comm.).

10.1.3.3 Targeted and Non-targeted Finfish

Pacific pelagic management unit species: The Pacific pelagic management unit species (PMUS) commonly caught in pelagic fisheries around American Samoa are listed in Table 8. All the PMUS species harvested are part of larger populations which range throughout most of the tropical and sub-tropical Pacific Ocean. The stock structures of these species are not well defined.

Essential fish habitat: Surface fisheries for pelagic fish exploit the surface layer of the ocean to depths of 50-100 fm, whereas longlining may capture fish from waters as deep as 200 fm. The habitats of tuna and other pelagic species are determined by the temperature, availability of oxygen and food. Fish behavior may vary with the velocity and direction of currents, the presence and density of prey organisms or moon phase. The essential fish habitat for juveniles and adults of pelagic management unit species has been defined as the entire water column to an ocean depth of 1,000 m. For egg and larval forms of these species, the EFH has been defined as the water column to a depth of 200 m. Habitat areas of particular concern for PMUS are the water column to a depth over 1,000 m lying above seamounts and banks.

Spatial distribution: Populations of tuna and tuna-like fish occur in millions of square miles of ocean. Skipjack, yellowfin and bigeye tuna are ubiquitous in tropical regions and bigeye also occur in temperate waters. Albacore and bluefin spend most of their lives in temperate waters but move to warmer waters to spawn. Swordfish are cosmopolitan and widely distributed in the oceans and the adults typically migrate to temperate waters in the summer. Marlins are found throughout tropical and temperate waters, with seasonal latitudinal movements into temperate waters (FAO, 2001).

Movements: Tagging studies have shown that all major species of tuna and tuna-like fish are capable of large-scale movements (> 1000 nm). The general patterns of movement vary significantly among species and within species among different stages of the life history. Most of what is known about the movements of these species is derived from conventional tagging and recapture experiments. As the distribution of releases and returns in most tagging experiments are restricted to areas in which commercial fisheries operate, these studies most often describe movements within or among fishing grounds, which may not be representative of the actual range of migrations of species or populations. Recent applications of archival or pop-up tag technology in tuna and tuna-like species have demonstrated some previously undescribed patterns of movement in these species, in particular cyclic migrations and seasonal movements into unfished areas (FAO, 2001).

Table 7. Pacific pelagic management unit species taken in pelagic fisheries around American Samoa.

English Common Name	Scientific Name	Samoan Names
Albacore	*Thunnus alalunga*	Apakoa
Yellowfin tuna	*T. albacares*	Asiasi, To'uo
Indo-Pacific blue marlin	*Makaira mazara:*	Sa'ula
Bigeye tuna	*T. obesus*	Asiasi, To'uo
Oceanic sharks	Alopiidae, Carcharinidae, Lamnidae, Sphynidae	Malie
Mahimahi (dolphinfish)	*Coryphaena* spp.	Masimasi
Wahoo	*Acanthocybium solandri*	Paala
Sailfish	*Istiophorus platypterus*	Sa'ula
Swordfish	*Xiphias gladius*	Sa'ula malie
Other tuna relatives	*Auxis* spp, *Scomber* spp; *Allothunus* spp	(various)
Skipjack tuna	*Katsuwonus pelamis*	Atu, Faolua, Ga'oga
Striped marlin	*Tetrapturus audax*	
Shortbill spearfish	*T. angustirostris*	Sa'ula
Pomfret	family Bramidae	Manifi moana
Oilfish family	Gempylidae	Palu talatala
Moonfish	*Lampris* spp	Koko
Kawakawa	*Euthynnus affinis*	Atualo, Kavalau
Dogtooth tuna	*Gymnosarda unicolor*	Tagi

Schooling behavior: In the earlier stages of life, all tuna species exhibit strong schooling behavior. Schooling is less prevalent with increasing size in most species, except during spawning. Juvenile tropical tunas of different species, but the same size, are often caught in the same schools but at larger sizes, this is less frequent. The link between size and extent of association among tuna species is very evident in the catches around fish aggregation devices (FADs). A vertical heterogeneity, with juveniles on top and adults at the bottom of a school, is also frequently observed in free-swimming and FAD-associated schools. Little information exists on the schooling behavior of billfish (FAO, 2001).

Horizontal and vertical spatial heterogeneity: Both horizontal and vertical heterogeneity in the sizes of tuna have been observed. The surface fisheries that catch juveniles in surface waters and the longline fisheries that exploit adults well below the surface do not interact with one another simultaneously (FAO, 2001).

Temporal and geographic stability in biological parameters: In general, despite assumptions of stability, few data exist on the variability of the biology of tuna or billfish species over time, or the extent to which key parameters vary geographically. Recent work on southern bluefin demonstrated that the growth of juveniles varied over a 30-year period, as a result of either environmental or density-dependent factors (FAO, 2001).

Longevity and natural mortality: Longevity varies significantly among the tuna species. In many cases, tuna longevity has been estimated from tag return data. Recent analyses of tagging data have provided evidence for large variations in natural mortality with fish size, the rates for juveniles being much higher (5 to 10 fold) than those for adults. Estimates from tagging data have also indicated that the natural mortality is higher for the oldest fish of several species. Estimates of the longevity of billfish vary among species, although few age estimates are available. Little information exists about their natural mortality (FAO, 2001).

Growth: Growth is also highly variable among species of tuna – rapid for skipjack and yellowfin, intermediate for bigeye and albacore. Density-dependent effects seem to be common. Two-stanza growths have been observed for some species, from both otolith and tagging data. Marlin have relatively rapid growth as juveniles, close to those of tropical tuna species, whereas swordfish grow more slowly, resembling the temperate tuna species in this respect. Some tuna and tuna-like fish, such as yellowfin, bigeye, blue marlin and swordfish, have sex ratios that differ from 1:1 at large sizes, which could be due to differential growth or mortality (FAO, 2001).

Spawning and reproduction: High fecundity is characteristic of all tuna and tuna-like fish, with females spawning several million eggs per year. All of the major market species of tuna spawn in warm waters. Tropical tuna species spawn over wide areas, whereas bluefin have discrete spawning grounds in one or two relatively restricted areas. Age and size at first maturity are variable, from 1.5 years (45 cm) for skipjack to 12 years (147 cm) for southern bluefin. Spawning may occur throughout the year (skipjack) or during a limited period (2 months) for bluefin, with an intermediate situation for other tuna species. Billfish spawning occurs in warm tropical and subtropical waters throughout the year, with some seasonally at higher latitudes (FAO, 2001).

Recruitment: The spawner-recruit relationship is generally poorly known, as estimates of the recruitment and spawning biomass are derived from catch data, which are not well suited for this purpose. For tropical tuna species, the absolute levels of recruitment tend to be high, with relatively low variability among years (e.g., in a 3:1 ratio between the highest and lowest recruitments). For the temperate tuna species, the absolute recruitment levels tend to be lower. Long-term changes, such as cyclical (decadal) fluctuations and semi-cyclical (El Nino Southern Oscillation events), due to environmental effects, have been often shown to influence the recruitment of both tropical and temperature tuna species (FAO, 2001).

Abundance and present condition: The population dynamics of pelagic species differ significantly and affect their harvest potentials. For example, skipjack tuna are short lived and fast growing, with high natural mortality and a large standing stock size. These characteristics enable high catches to be sustained. Yellowfin tuna are also fast growing but longer lived than skipjack, with a moderate natural mortality rate and smaller standing stock. These characteristics are also conducive to large sustainable catches, but not as large as skipjack. A reliable bigeye tuna assessment is hindered by inadequate knowledge of stock structure and basic biological parameters, such as growth and mortality rates. Bigeye are possibly longer lived and have a lower natural mortality rate than yellowfin, thus their resilience to fishing may be less than for yellowfin. Albacore are slow growing and long lived relative to the three tropical and sub-tropical tuna species, therefore their fisheries potential may be more restricted than the other species (WPRFC, 2000).

Evaluation of the condition of the major tuna stocks in the western and central Pacific is one of the primary activities of the SPC Standing Committee on Tuna and Billfish (SCTB). Well-developed assessments are available for yellowfin and South Pacific albacore, with preliminary assessments for bigeye and skipjack (Sibert, 2001).

There is no indication that the purse seine fishery is having an adverse impact on the skipjack stock even though skipjack catches are very large. Recruitment continues to be high and the total biomass of skipjack appears to be on the increase (Sibert, 2001). Yellowfin biomass has dropped steadily since 1997 but remains above the historical lows of the early 1970s. Increased use of drifting fish aggregation devices (FADs) has elevated fishing mortality by purse seine fleets on juvenile yellowfin. The declines in biomass are most notable in equatorial subregions at the center of the purse seine fishing grounds. Recruitment has been low in the central and eastern subregions as well (Sibert, 2001).

Two different stock assessments are available for bigeye tuna. When the two models use the same structural assumptions and data, they produce nearly indentical results. The results of the Pacific-wide analysis using MULTIFAN-CL2 show a long-term decrease in bigeye recruitment and biomass since the 1960s. The widespread use of drifting FADs in the western and eastern Pacific has increased fishing mortality by purse seine fleets on juvenile bigeye. The SCTB has established a methods research group to compare and evaluate different stock assessment methods (Sibert, 2001).

At its 14th meeting, the SCTB made its first conservation recommendation, as follows: “Recognizing the continuing concern of the SCTB about the status of yellowfin and bigeye stocks in the WCPO, and recognizing the increasing catchability of juveniles of these species in surface fisheries, particularly those using FADs, SCTB 14 recommends that there be no increase in fishing mortality on these species in the WCPO until uncertainty in the current assessments has been resolved” (Sibert, 2001: 3).

South Pacific albacore is exploited by a variety of longline fleets, by an international troll fleet operating seasonally in the region of the subtropical convergence zone and by a domestic troll fleet in New Zealand coastal waters. In the 1990s, the longline catch in the South Pacific has been in the range of 23,000-38,000 mt per year, whereas the troll catch for a season spanning November-April has in the range of 4,000-8,000 mt per year, with the total of the two gear types in the range of 32,000-45,000 mt, well below the peak estimated catch of nearly 53,000 mt in 1989, when driftnet fishing was occurring (Lewis and Williams, 2001).

The SCTB14 concluded that South Pacific albacore tuna biomass is high, recruitment has been near record highs for the last three years and the fishery appears to have had little impact on the stock over the last 40 years (Sibert, 2001). Southern albacore is the principal target of longline fishing effort in American Samoa's EEZ.

The longline catch by distant-water fishing nations, primarily Taiwan, is widely distributed in the South Pacific, but catches are concentrated west of 130° W. Catches by domestic longline fleets in the Samoan archipelago, French Polynesia, Fiji, Solomon Islands, Tonga and New Caledonia and the Japanese fleet east of Australia also contribute significantly to this wide geographical catch distribution. Troll catches are distributed in New Zealand coastal waters and along the SCTZ (Lewis and Williams, 2001).

Longline-caught albacore are measured in various ports in the SPC statistical region. Usually a single multiple-age class length mode is evident throughout the year. Albacore are often smaller (approx. 75 cm FL) during winter (April-September) than during other months of the year (approx. 85-100 cm FL), this differing size composition within the year reflecting spatial changes in fleet distribution (smaller fish caught in temperate waters) (Lewis and Williams, 2001).

Albacore catch by domestic longline fisheries in Fiji (3,128 mt), French Polynesia (3,643 mt) and Independent Samoa (3,473 mt) continued to increase through 2000 (Lewis and Williams, 2001). Not included in these catch estimates are significant albacore catches since 1999 by Chinese longliners operating in high seas areas of the South Pacific (3,472 mt in 1999; 2,056 mt in 2000 – Dai, 2000). Several other longline fleets catch significant quantities of albacore while targeting yellowfin and bigeye tuna but there is considerable variation in CPUE among these fleets. The established fleets in New Caledonia and Tonga had the highest albacore CPUE during the early 1990s but recent years show general convergence in catch rates amongst the Pacific islands (Lewis and Williams, 2001).

Catch per unit effort (CPUE) for the US albacore troll fleet operating in the STCZ is variable, indicating possibly a greater impact of environmental variation on the ability of the fleet to locate and catch surface albacore. The 2000 catch for the US troll fleet (2,629 mt) may have been the highest for some years (Lewis and Williams, 2001).

The key indicators for South Pacific albacore are longline CPUE and troll CPUE. For the longline fishery, data from the Taiwanese distant-water fleet are generally used as this fleet has consistently targeted albacore over a long period of time. Longline CPUE expressed in numbers of albacore per 100 hooks is typically highest in the higher latitudes (STCZ and 30°-50° S), moderate in the tropics and sub-tropics (10°-30° S) and low near the equator (0°-10° S). For each of the two main latitudinal areas, longline CPUE has increased in the 1990s after a low point in 1989-1990. Preliminary data for 2000 suggest that nominal CPUE continued to decrease in the 30°-50° S latitude band, possibly reflecting some changes in targeting practices (Lewis and Williams, 2001).

It is unknown whether the albacore harvested in the vicinity of the islands of the Samoan archipelago is primarily a local sub-population or part of a more widely distributed regional mass. Catch and effort data collected from longline fisheries in American Samoa and Independent Samoa suggest that the regional abundance of albacore tuna, which has been the principal target of small-scale longline fisheries in the Samoan archipelago, is seasonal, although differences between the peak and low seasons are not extreme.

The average size of the fish presently landed by American Samoa's longline fishery is quite consistent at about 42-45 lb (WPRFMC, 2002). Few juveniles are harvested. The existing evidence from research on the South Pacific albacore stock suggests that larval albacore are present in waters associated with the 24° C isotherm of sea surface temperature, whereas juveniles are distributed in cooler waters (16°-20° C). Adults, on the other hand, are found over a broad temperature range from 13°-25° C. The distribution of prey species, bathymetry and temperature fronts are also factors that contribute to the distribution of albacore (WPRFMC, 2000).

Ocean temperatures between 15° C and 19° C produce the best catch rates of albacore by longline fishing in the Samoan archipelago. These temperatures are commonly found between 200 and 400 m in the waters of the Samoan archipelago (Sokimi and Chapman, 2000).

The results of presently available stock assessments suggest that recruitment of all four major tuna species appears to have been highly variable over the past 40 years, probably related to oceanographic conditions, particularly the El Nino Southern Oscillation (ENSO) cycle. However, the different species seem to respond to oceanographic changes in different ways; some species have higher recruitment during El Nino periods, whereas others have lower recruitment. Further, these species grow rapidly, so trends in biomass and fishery production often reflect changes in recruitment (Sibert, 2001).

The largest and strongest environmental influence on pelagic stocks in the western Pacific are ENSO events (negative values of the Southern Oscillation Index). ENSO events are associated with a weakening of the prevalent easterly trade winds in the tropical Pacific and an eastward shift of the western Pacific warm pool, the warm water

mass that lies between New Guinea and the Micronesian islands.

The eastward displacement of the warm pool during an ENSO event results in a greater abundance of skipjack and yellowfin tuna in the central Pacific (SPC 1997; Lehodey et al. 1997). Further, ENSO events appear to have a negative impact on recruitment of South Pacific albacore, with poor recruitment following albacore spawning during an ENSO event, and good recruitment following spawnings during La Niña periods when the Southern Oscillation Index is strongly positive (SPC 1997).
Environmental variables have a considerable influence on the abundance and condition of pelagic fish stocks. The three tropical tunas, skipjack, yellowfin and bigeye, and billfish such as blue and striped marlin prefer waters ranging in temperature from 18-31° C, whereas subtropical fish such as albacore and swordfish prefer cooler waters ranging from 10-25° C. Abundance of these tropical and sub-tropical stocks is related to the abundance of prey items, which in turn may be the result of a physical structure such as a seamount, or an oceanographic feature such as a frontal system where two different water masses converge (FAO, 2001).

Less is known about the status of billfish in the Central and Western Pacific. Most billfish are taken incidentally during longline operations targeting tuna but swordfish are specifically targeted by longliners in the higher latitudes north and south of the equator. Most studies suggest that Pacific billfish stocks are healthy but there is considerable uncertainty because of the quality of data and differences in the methods used to evaluate the trends. A blue marlin stock assessment is still in development but the preliminary conclusion is that the stock is fully exploited (Sibert, 2001).

10.1.3.4 Sea Turtles

Hawksbill and green sea turtle populations in the central South Pacific are in serious jeopardy, according to some researchers (Craig, unpubl. proposal, May 6, 2002). The US Recovery Team for the Pacific found that hawksbills are “rapidly approaching extinction” (NMFS/USFWS, 1998b). The team further found that green turtles in the Pacific outside of Hawaii have seriously declined and should probably be classified as “endangered” rather than “threatened” (NMFS/USFWS, 1998a).

It is well established that sea turtles migrate between nesting and feeding areas, often separated by large distances, but such information in the South Pacific is rudimentary because the region is so geographically large and contains thousands of islands. For post-nesting green turtles, tagging data reveal extensive migrations across the South Pacific. As sea turtles may nest in one country and feed in another, recovery actions are politically complex (Craig, unpubl. proposal).

For green turtles tagged in the central South Pacific, 96 percent of the 26 turtles recovered to date migrated westward after nesting, which indicates a common pattern of turtle movement in the region. A likely explanation of these results is that islands to the east of Fiji lack significant quantities of seagrass for green turtles to eat, so the

animals turn westward to better feeding areas (Craig, unpubl. proposal).

Over half of the tagged green turtles were recovered in Fiji, which has major seagrass beds. If it is assumed that adult green turtles have a 4-5 year interval between nestings, then, it would seem that most of the animals' time is spent foraging in Fiji, with relatively brief excursions to nest elsewhere (Craig, unpubl. proposal).

The sea grass foraging areas in Fiji are, thus, a regionally significant resource for green turtles that may well provide foraging habitat for over half of the adult greens in the central South Pacific. These foraging areas are vital to the green turtle's maturation and to the reproductive success of animals that nest in many neighboring island countries. The need to protect such foraging areas is becoming widely recognized as a critical part of sea turtle conservation (Craig, unpubl. proposal).

Research, including female turtle counts at nesting beaches, turtle tagging and tracking, and population modeling have established the current information base on marine turtles in the central South Pacific and elsewhere. After hatching, young sea turtles remain in offshore currents, drifting and feeding in the epipelagic layer of the ocean. Most species except leatherbacks generally return to inshore feeding grounds as immature adults when they are about 20 cm (straight carapace length, SCL). When they attain sexual maturity, which may be up to 30 years for some species, they return to the open ocean, once again embarking on long migrations to breeding and nesting sites (OFP, 2001).

Since 1995, information regarding sea turtles in American Samoa has come from highly opportunistic tagging of turtles and from dead (stranded) turtles. Hawksbill and green turtles are the most common species found in local waters. There is one record of a leatherback turtle that was incidentally captured about 5 km south of Swains Island and three records of olive ridleys (two dead and one live sighting) (Utzurrum, draft 2002). Hawksbill and green turtle populations have declined precipitously in American Samoa (Grant et al., 1997). Despite Federal and territorial laws prohibiting the killing of sea turtles and an extensive education program, some sea turtles and eggs are still harvested illegally in American Samoa (Grant et al., 1997). In addition to direct take of turtles and eggs, degradation of nesting habitat by coastal construction, environmental contaminants and increased human presence are viewed as the major problems to recovery of green and hawksbill turtle populations. Beach mining and beach erosion are also detrimental because the islands of American Samoa have very few beaches suitable for turtle nesting habitat. American Samoa's human population is one of the fastest growing of the Pacific Islands (Pacific Sea Turtle Recovery Team, 1998a,b) and the people of the Samoan archipelago have traditionally harvested sea turtles for food and the shell. It is not known if pelagic fisheries affect sea turtles in American Samoa.

Tag recoveries which originate from Pago Pago Harbor and Pala Lagoon on the island of Tutuila are either due to the fact that sea turtles forage in these areas or because that is where shore fishing is concentrated (Utzurrum, draft 2002). No juvenile green

turtles tagged in these areas have been recovered elsewhere. The majority of sea turtles recovered are juveniles in post-pelagic stages between 35 and 75 cm (curved carapace length). This suggests that the waters around Tutuila and probably around the Manua islands serve as foraging grounds. Based on recent surveys, the total number of nesting female sea turtles (hawksbill and green turtle species combined) is estimated to be approximately 50 (Utzurrum, draft 2002).

Hawksbill turtle: The hawksbill turtle (Eretmochelys imbricata) lives in littoral waters of island shelves and is more common where reef formations are present. It is the most tropical of all sea turtles and nesting is confined between 25° N and 35° S. Juveniles exhibit some degree of residential or non-migratory behavior. Adults are capable of undertaking both short and long-distance migrations.

Nesting occurs mostly toward the end of spring and throughout summer. Age at first maturity is not entirely clear. The female is estimated to reach maturity at sizes between 68 and 80 cm (SCL) and at body weights from 40 to 56 kg, depending on the locality. The hawksbill turtle is a benthic feeder and its diet consists principally of corals, tunicates, algae and sponges.

This species is presently listed as “critically endangered” under the 2000 IUCN-World Conservation Union red list of threatened species and “endangered” under the US Endangered Species Act. Throughout the Pacific, this species is rapidly approaching extinction, primarily due to harvesting for its meat, shell, as well as destruction and disruption of its nesting habitat (Marquez, 1990; OFP, 2001).

Age to maturity is not known but is believed to be 30-50 years. It is likely that nesting adult females return directly to their preferred foraging habitat but the geographic proximity of nesting and foraging habitats is unknown. Once a foraging or nesting site is chosen, hawksbill turtles tend to be persistent in the continuing use of that site (Pacific Sea Turtle Recovery Team, 1998b).

Green turtle: The green turtle (Chelonia mydas) is a circumglobal and highly migratory species, nesting and feeding in tropical/subtropical regions. Their range can be defined by a general preference for water temperature above 20° C.

This species is known to live in pelagic habitats as post hatchlings/juveniles, feeding at or near the ocean surface. The non-breeding range of this species can lead a pelagic existence many miles from shore. The breeding range primarily live in bays and estuaries and are rarely found in the open ocean. Most migration from rookeries to feeding grounds is via coastal waters with females migrating to breed only once every two years or more (Marquez, 1990; OFP, 2001).

The life cycle of the green sea turtle involves a series of long-distance migrations back and forth between their feeding and nesting areas (Craig, 2002). In American Samoa, their only nesting area is at Rose Atoll. When they finish laying their eggs there, the

green turtles leave Rose Atoll and migrate to their feeding grounds somewhere else in the South Pacific. After several years, the turtles will return to Rose Atoll to nest again. Every turtle returns to the same nesting and feeding areas throughout its life but that does not necessarily mean that all turtles nesting at Rose Atoll will migrate to exactly the same feeding area. In past years, biologists tagged 45 green sea turtles at Rose Atoll but only two were recovered, both in Fiji. Green turtles are herbivores. Their feeding grounds are areas with abundant algae and seagrasses (Craig, 2002).

Two green turtles with tagged flippers and three that were telemetered by satellite after nesting at Rose Atoll were recovered in Fiji (Balazs, G., et al., 1994). In addition, a green turtle with tagged flippers at Rose Atoll was found dead in Vanuatu less than one year later (G.H. Balaz cited in Grant et al., 1997).

The green turtle is a primarily herbivorous species and typically feeds during the day in shallow-water seagrass beds. Nesting occurs throughout the year in the western and central Pacific, with peaks in summer months when ocean temperature is typically over 25° C. The age at first maturity has been estimated to range from 6 to 13+ years. Some studies also show that these animals commence reproducing when in captivity at less than 10 years of age. The green turtle is currently listed as endangered under the IUCN red list of threatened species and “threatened” under the US Endangered Species Act (Marquez, 1990; OFP, 2001).

Leatherback turtle: The leatherback turtle (Dermochelys coriacea) is the most widely distributed of all sea turtles and can be found in the Pacific Ocean from the Gulf of Alaska to Tasmania and New Zealand. It is a highly pelagic species that approaches coastal waters only during the nesting season. Leatherbacks are the largest of the marine turtles and may span 270 cm (SCL) length as adults.

It is assumed that this species is carnivorous throughout its life cycle. The adults feed mainly on jellyfish, tunicates and other soft-bodied invertebrates that are abundant in the epipelagic layer, although observations have also found that the animals frequently descends into deeper waters. Rare nocturnal feeding within the deep scattered layer has also been observed, with some speculation that leatherbacks may locate some prey items due to their bioluminescence.

Migratory routes and nesting populations in the central and western Pacific Ocean are not fully known. Major nesting sites in the South Pacific include Indonesia, Solomon Islands, with scattered sites in Australia, Fiji and PNG. This species appears to grow faster than any other marine turtle and is believed to reach sexual maturity after a minimum of nine years, at a size of about 125 cm (SCL). The leatherback turtle is currently listed as “critically endangered” under the IUCN red list of threatened species and “endangered” under the ESA (Marquez, 1990; OFP, 2001).

In 1993, the crew of an American Samoa government vessel engaged in experimental longline fishing, pulled up a small freshly dead leatherback turtle about 5.6 km south of

Swains Island. The turtle weighed 7 kg and measured 42.7 cm curved carapace length and 39.3 cm straight carapace length. The turtle had been hooked on the dorsal surface of its left flipper during a shallow longline set at or above 40 fathoms water depth near 11° 8' S latitude. The ocean bottom in this area is about 1,400 m in depth. This is the first leatherback turtle seen by the vessel's captain in 32 years of fishing in the waters of American Samoa, and is the only known leatherback mortality in this fishery. The nearest known leatherback nesting area to the Samoan archipelago is the Solomon Islands and the turtle may have come from one of the major nesting beaches on the Pacific coast of Mexico or Costa Rica (Grant, 1994).

Olive ridley turtle: The olive ridley turtle (Lepidochelys olivacea) is a pantropical species, living principally in the northern hemisphere, but limited to waters above the 20° C isotherm. It is considered the most abundant of the world's sea turtles.

The geographic distribution of this species is not as well documented in the central and western Pacific as in other ocean areas, although nesting colonies are found primarily in the coastal waters off continents. In general, the nesting season is in the summer and autumn months. Large nesting aggregations with massive arrivals of females on the beach have been reported. Age at maturity is considered to be 6-8 years, with studies suggesting an average size of 62 cm (SCL).

The olive ridley, considered to the most abundant of the world's sea turtles, is currently listed as "endangered" under the IUCN red list of threatened species and "threatened" under the ESA, although most concern relates to the overharvesting of the Mexican nesting population (Marquez, 1990; OFP, 2001).

Olive ridley turtles are uncommon in American Samoa, although there have been sightings. Necropsy of a dead olive ridley recently recovered indicated that it was injured by a shark. Examination revealed that the animal may have recently laid eggs (Utzurrum, draft 2002).

Adults are mostly neritic, traveling or resting in surface waters, but olive ridley turtles diving and feeding to a depth of 200 m have been reported. The species is omnivorous, feeding on crustaceans, mollusks and tunicates (Marquez, 1990; OFP, 2001).

Loggerhead turtle: The loggerhead turtle (Caretta caretta) is widely distributed in temperature and subtropical waters of the Pacific, although there are no reports of this species around American Samoa. It is known to undertake long migrations using warm currents. There is some tendency to follow temperature fronts.

Nesting has been observed from Japanese beaches in the north to New Caledonia in the south, with major sites in Australia. Summer surface temperature for nesting must be over 20° C. Both juveniles and sub-adults forage in open ocean pelagic habitats. As adults, this carnivorous species feeds in coastal bays and estuaries, as well as in

shallow waters along continental shelves. The diet of the loggerhead turtle shows some preference to benthic fauna, such as crabs, shrimps and small fish. Age at first maturity has not been clearly determined and data from studies of individuals in captivity suggest this to be between 6 and 20 years.

The loggerhead turtle is listed as “endangered” under the IUCN red list of threatened species and “threatened” under the ESA (Marquez, 1990; OFP, 2001).

Six interactions with sea turtles were reported for American Samoa’s longline fishery between 1992 and 1999 (NMFS 2001a). These and other impacts on sea turtles are discussed in Sections 5.5 and 10.1.4.3, and are further detailed in NMFS’ 2001 and 2002 Biological Opinions and NMFS’ 2001 Final Environmental Impact Statement.

10.1.3.5 Marine Mammals

Although there are few fishery interactions, marine mammals are known to occur in waters around American Samoa. In Fagatele Bay National Marine Sanctuary, southern humpback whales mate and calve from June through September. Sperm whales are occasionally seen in the Sanctuary as well. Both species are listed as “endangered” under the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA). Several species of dolphins protected under the MMPA but not listed as threatened or endangered under the ESA also frequent the Sanctuary waters (WPRFMC, 2000). In addition there have been reports of pilot whales occasionally stealing bait and fish from American Samoa-based longline gear.

10.1.3.6 Seabirds

Table 8 presents the seabirds found in American Samoa. Twelve species of migratory seabirds reside on Rose Atoll, one of which is the bristle-thighed curlew, listed as “vulnerable” under the ESA. There is a remote possibility that shearwaters may interact with longline gear. However there are no albatrosses species (known to be vulnerable to hooking by longlines), in American Samoa. No seabirds, including threatened or endangered species, are known to interact with the longline fishery.

Table 8. Seabirds known to be present around American Samoa.

Common Name	Scientific Name
Resident seabirds (i.e., breeding):	
Wedge-tailed Shearwaters	*Puffinus pacificus*
Audubon's Shearwater	*Puffinus lherminieri*
Christmas Shearwater	*Puffinus nativitatis*
Tahiti Petrel	*Pseudobulweria rostrata*
Herald Petrel	*Pterodroma heraldica*
Collared Petrel	*Pterodroma brevipes*
Red-footed Booby	*Sula Sula*
Brown Booby	*Sula leucogaster*
Masked Booby	*Sula dactylatra*
White-tailed Tropicbird	*Phaethon lepturus*
Red-tailed Tropicbird	*Phaethon rubricauda*
Great Frigatebird	*Fregata minor*
Lesser Frigatebird	*Fregata ariel*
Sooty Tern	*Sterna fuscata*
Brown Noddy	*Anous stolidus*
Black Noddy	*Anous minutus*
Blue-gray Noddy	*Procelsterna cerulea*
Common Fairy-Tern (White Tern)	*Gygis alba*
Visitors/vagrants:	
Short-tailed Shearwater	*Puffinus tenuirostris*
Mottled Petrel	*Pterodroma inexpectata*
Phoenix Petrel	*Pterodroma alba*
White-bellied Storm Petrel	*Fregetta grallaria*
Polynesian Storm Petrel (Pratt - resident)	*Nesofregetta fuliginosa*
Laughing Gull	*Larus atricilla*
Black-naped Tern	*Sterna sumatrana*

10.1.3.7 Description of the Fisheries

The harvest of pelagic fish has been a part of the way of life in the Samoan archipelago since the islands were first settled some 3,500 years ago (Severance and Franco, 1989). The ancient Samoans fished for their very survival. Subsistence fishing continues to the present but the importance of pelagic fisheries as a source of income and employment is increasing. Commercial ventures are diverse, ranging from small-scale vessels having very limited range to large-scale vessels catching tuna in the EEZ and distant waters and delivering their catches to canneries based in American Samoa. Total pelagic landings by American Samoa-based longline, troll, and handline vessels were approximately 8 million pounds in 2001 (as compared to 1.9 million pounds in 2000), with longline landings comprising 99.6% of this total. During 2001, 88% of these longline landings were albacore, with yellowfin, bigeye and skipjack tuna making up the majority of the remainder (WPRFMC, in prep.).

Harvesting Participants- Commercial Sector

Domestic small-scale longline vessels (vessels equal to or less than 50 ft): Most, if not all, participants in the small-scale domestic longline fishery are indigenous American Samoans with vessels under 50 ft in length, most of which are alia catamaran-style boats under 40 ft in length. The stimulus for American Samoa's commercial fishermen to shift from troll or handline gear to longline gear in the mid-1990s (see Figure 8) was the fishing success of 28' alia catamarans that engaged in longline fishing in the EEZ around Independent Samoa. Following this example, the fishermen in American Samoa deploy a short monofilament longline, with an average of 350 hooks per set, from a hand-powered reel (WPRFMC, 2000). An estimated 90 percent of the crews working in the American Samoa small-scale alia longline fleet are from Independent Samoa. The predominant catch is albacore tuna, which is marketed to the local tuna canneries (DMWR, 2001b).

As of March 21, 2002, general longline permits had been issued for 40 vessels 40 ft or less in length, and five for vessels 40.1 ft - 50 ft in length (DMWR, unpubl. data). Virtually all of the smaller vessels and four of the five 40.1 ft - 50 ft vessels are owned by indigenous American Samoans (T. Beeching, DMWR, pers. comm. to P. Bartram, March 2002). The average capital investment in these small-scale longline vessels is between $25,000 and $175,000.

Domestic large-scale longline (vessels more than 50 ft): American Samoa's domestic longline fishery expanded rapidly in 2001. Much of the recent (and anticipated future) growth is due to the entry of monohull vessels larger than 50 ft in length. The number of permitted longline vessels in this sector increased from three in 2000 to 30 by March 21, 2002 (DMWR, unpubl. data). Of these, five permits (33 percent of the vessel size class) for vessels between 50.1 ft - 70 ft and five permits (33percent of the vessel size class) for vessels larger than 70 ft were believed to be held by indigenous American Samoans as of March 21, 2002 (T. Beeching, DMWR, pers. comm to P. Bartram,

March 2002). Economic barriers have prevented more substantial indigenous participation in the large-scale sector of the longline fishery. To date, lack of capital appears to be the primary constraint to substantial indigenous participation in this sector (DMWR, 2001b).

While the smallest (less than or equal to 40 ft) vessels average 350 hooks per set, a vessel over 50 ft can set 5-6 times more hooks and has a greater fishing range and capacity for storing fish (8-40 mt as compared to 0.5-2 mt on a small-scale vessel). Larger vessels are also outfitted with hydraulically-powered reels to set and haul mainline, and modern electronic equipment for navigation, communications and fish finding. Most are presently being operated to freeze albacore onboard, rather than to land chilled fish. The average capital investment in a large-scale longline vessel is approximately $400,000 (O'Malley and Pooley, 2002). Three vessels that left Hawaii after the swordfish longline fishery closure are operating in the American Samoa tuna longline fishery under new ownership. To date, it does not appear that large numbers of longliners from Hawaii are going to relocate in American Samoa. Instead, large vessels have entered the American Samoa longline fishery from diverse ports and fisheries, including US west coast (6), Gulf of Mexico (3), and foreign countries (4 now under US ownership) (O'Malley and Pooley, 2002).

Foreign large-scale longline vessels: In recent years, the number of foreign longline vessels delivering fish to the canneries has sharply declined, and, presently, only about 40 vessels are making landings in American Samoa. A typical Asian longline vessel is 80-150 ft in length, highly mechanized and sets 50-60 nm of mainline with 1,500-2,000 hooks each day (WPRFMC, 2000). Legal fishing by foreign longline vessels in the waters around American Samoa ceased completely in 1980 after the implementation of the pelagic fisheries Preliminary Management Plan for the Western Pacific Region,[2] which placed onerous requirements (e.g., permits, fees, observers) on foreign vessels. However, foreign longline vessels occasionally fish illegally in the EEZ around American Samoa. In 1992, for example, the Coast Guard seized a Taiwanese longline vessel fishing near Swains Island (WPRFMC, 2000).

Domestic distant-water purse seine fishery: The US purse seine fleet operating in the central and western Pacific uses large nets to capture skipjack, yellowfin and bigeye tuna near the ocean surface, in free-swimming schools and around fish aggregation devices (FADs) deployed by the fleet. These vessels often land their catches at canneries based in American Samoa. These large vessels (200-250 ft length) could not be economially operated for longline fishing but some former participants in the USpurse seine fishery have acquired more suitable vessels and entered the American Samoa-based longline fishery.

Domestic distant-water jig albacore fishery: Domestic albacore jig vessels also supply tuna to the canneries in American Samoa. Since 1985, about 50-60 US vessels have

[2] The PMP was superceded by the Council's Pelagic Fisheries Management Plan in 1986.

participated in the high-seas troll fishery for albacore. This fishery occurs seasonally (December through April) in international waters at 35°-40° S latitude. The vessels range in length from 50 to 120 feet, with the average length about 75 feet (Heikkila, 2001). They operate with crews of 3-5 and are capable of freezing 45-90 tons of fish (WPRFMC, 2000).

Harvesting Participants - Recreational Sector

From October 1985 to the present, catch and effort data in American Samoa fisheries have been collected through a creel survey that includes subsistence and recreational fishing, as well as commercial fishing. However, differentiating commercial troll fishing activity from non-commercial activity can be difficult.

Recreational fishing purely for sport or pleasure is uncommon in American Samoa. Most fishermen normally harvest pelagic species for subsistence or commercial sale. However tournament fishing for pelagic species began in American Samoa in the 1980s, and between 1974 and 1998, a total of 64 fishing tournaments were held in American Samoa (Tulafono, 2001). Most of the boats that participated were alia catamarans and small skiffs. Catches from tournaments are often sold, as most of the entrants are local small-scale commercial fishermen. In 1996, three days of tournament fishing contributed about one percent of the total domestic landings. Typically, 7 to 14 local boats carrying 55 to 70 fishermen participated in each tournament, which were held 2 to 5 times per year (Craig et al. 1993).

The majority of tournament participants have operated 28-foot alia, the same vessels that engage in the small-scale longline fishery. With more emphasis on commercial longline fishing since 1996, interest in the tournaments has waned (Tulafono, 2001) and pelagic fishing effort has shifted markedly from trolling to longling (see Figure 8). Catch and release recreational fishing is virtually unknown in American Samoa. Landing fish to meet cultural obligations is so important that releasing fish would generally be considered a failure to meet these obligations (Tulafono, 2001). Nevertheless, some pelagic fishermen who fish for subsistence release fish that are surplus to their subsistence needs (S. Steffany, pers. comm. to Paul Bartram, Sept. 15, 2001).

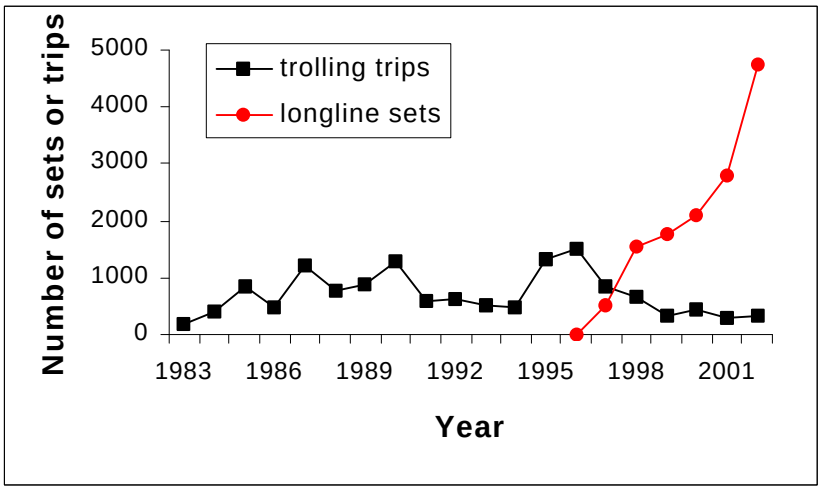

Figure 8. Trends in the distribution of pelagic effort between trolling and longlining by American Samoa vessels. Source: WPRFMC in prep.

Harvesting Participants - Charter Sector

American Samoa has been unable to develop a significant tourist industry that could support charter fishing (Territorial Planning Commission/Dept. of Commerce, 2000). Nor is American Samoa known for producing large game fish. Few, if any, charter boats are in operation (Tulafono, 2001), so no data are collected specifically for the charter fishing sector.

Processing and Marketing Participants

Private industry in American Samoa is centered around two tuna canneries owned by offshore interests. The continued growth of the tuna canning industry in American Samoa over the last 40 years has been based largely on exemptions from foreign fish landing restrictions, duty-free access to US markets, corporate income tax exemptions and a low minimum wage relative to the US. The two canneries directly account for some 4,500 jobs or about 35 percent of total employment in American Samoa (Territorial Planning Commission/Dept. of Commerce, 2000). However, only a small fraction of the raw material that is canned in American Samoa is from the domestic longline fishery.

The American Samoa-based longline fishery landed over 3,100 mt of albacore in 2001, most of which was sold to local canneries (WPRFMC, draft 2002). An approximate estimate of yield of finished white meat tuna (standard 6 oz cans) from this amount of albacore (assuming 40 lb average fish size) would be 280,000 cases, based on a conversion factor of 85-90 cases per ton of raw material (J. Kaneko, pers. comm. to P.

Bartram, May 1, 2002).

Using information obtained from industry sources for a presentation to the American Samoa Legislature (E. Faleomavaega, 2002), canning the 3,100 mt of albacore landed in American Samoa by the domestic longline fishery in 2001 is estimated to have generated 75 jobs, $420,000 in wages, $5 million in processing revenue and $1.4 million in direct cannery spending in the local economy. Ancillary businesses associated with the tuna canning industry also contribute significantly to American Samoa's economy. The American Samoa government calculates that the canneries represent, directly and indirectly, from 10% - 12% of aggregate household income, 7% of government receipts and 20% of power sales (Bank of Hawaii Economic Research Dept., 2002).

American Samoa's position in the industry is being eroded by forces at work in the world economy and in the tuna canning industry itself. Whereas wage levels in American Samoa are well below those of the US, they are considerably higher than in other canned tuna production centers around the world. To remain competitive, US tuna producers are purchasing more raw material, especially pre-cooked loins, from foreign manufacturers. Tax benefits to US canneries operating in American Samoa have also been tempered in recent years by the removal of a provision in the US tax code that previously permitted the tax-free repatriation of corporate income in US territories. Trends in world trade, specifically reductions in tariffs, are reducing the competitive advantage of American Samoa's duty-free access to the US canned tuna market (Territorial Planning Commission/Dept. of Commerce, 2000).

Despite the long history of the tuna canning industry in American Samoa, processing and marketing of pelagic fish by local enterprises has not yet developed beyond a few, short-term pilot projects. However, the government's comprehensive economic development strategy (Territorial Planning Commission/Dept. of Commerce, 2000) places a high priority on establishing a private sector fish processing and export operation proposed to be located at the Tafuna Industrial Park.

Albacore tuna is the primary target of this fishery because it is the only species that can be marketed in large quantities to local canneries for a price above $0.50/lb. Since the beginning of 2001, the cannery price for albacore has fluctuated considerably, from a high of $2,600/mt in early 2001 to a low of $1,710/mt in February 2002. The price is expected to rise when a supply contract between the canneries and Taiwanese longline fleets operating in the Indian Ocean ends. The vast majority of longline caught fish landed in American Samoa is sold to the canneries.

A limited amount of non-albacore tuna can be sold in American Samoa's domestic market for $0.75 to $1.50/lb of whole weight, depending on species and quality. The domestic market pays a higher price of $1.25/lb whole weight for "miscellaneous pelagic species" (i.e., non-tuna) especially mahimahi and wahoo. A few restaurants and groceries are becoming more sophisticated in their buying, creating a limited demand

for tuna loins or miscellaneous fish fillets. It is estimated that any more than two tons of pelagic fish per week would flood the existing domestic market (DMWR, 2001b). One company in American Samoa is exporting fresh fish (non-target species) from the domestic longline fishery on a small scale but large-scale export of fresh fish is hampered by the lack of air freight capacity on the scheduled airline that links American Samoa to Honolulu.

Hawaiian Airlines has been servicing the Pago Pago-Honolulu route using a DC 10-10, which has a maximum cargo capacity of two tons per flight. The carrier has announced an upgrade to a 767-300 aircraft with more capacity (four tons per flight). At present, there is little possibility of exporting large quantities of fresh fish exports on the existing aircraft currently chartered to carry parcel post to American Samoa.

Fishing Community

Amendment 8 to the Pelagics Fishery Management Plan identified the islands of American Samoa as a fishing community. However, American Samoa's history, culture, geography and relationship with the US are vastly different from those of the typical community in the continental US. American Samoa shares the same heritage, traditions and culture with independent Samoa. The seven islands that comprise American Samoa were ceded in 1900 and 1904 to the United States and governed by the US Navy until 1951, when administration was passed to the US Department of the Interior, which continues to provide technical assistance, represent territorial views to the federal government and oversee federal expenditures and operations. American Samoa elected its first governor in 1978 and is represented by a non-voting member of Congress.

Tutuila, American Samoa's largest island, is the center of government and business and is home to 90 percent of the estimated 63,000 total population of the territory. American Samoan natives born in the Territory are classified as US nationals and categorized as native Americans by the US government (TPC/Dept. of Commerce, 2000). Population density is about 320 people/km^2 and the annual population growth rate is nearly three percent, with projected population doubling time only 24 years (SPC, 2000). The net migration rate from American Samoa was estimated as 3.75 migrants/1,000 population in the year 2000 (CIA World Factbook).

Most of the islands are mountainous with limited flat land suitable for agriculture. American Samoa is lowest in gross domestic product and highest in donor aid per capita among the US Pacific islands (Adams et al. 1998). American Samoa has a small developing economy, with a narrow base of economic dependence (90 percent) on federal expenditures and tuna cannery operations. The American Samoa Government (ASG), which receives income and capital subsidies from the United States, employed 2,700 people, or 19 percent of the work force in 1996, the latest year for which ASG has compiled detailed labor force and employment data. The two canneries directly employed 4,500 people (32 percent of total employment), and through the multiplier or

re-spending process, were estimated to have supported a total of 5,700 workers (41 percent of total jobs). Altogether, the three segments employed 13,949 workers in 1996 (TPC/Dept. of Commerce, 2000).

In 1993, 2,718 people were registered as unemployed (that is, actively seeking employment). This gives a total labor force of 16,667 and an unemployment rate of 16 percent (Bank of Hawaii Economic Research Dept. 2002). The unemployment rate has remained above 10 percent for the past two decades (TPC/Dept. of Commerce, 2000).

With a total population in 1997 estimated at 59,600, the labor force represented 28 percent of the population, very low when compared with the overall USlabor force ratio (well over 50 percent) but typical of the smaller developing Pacific island economies. Of the 31,822 residents 16 years or older in 1993, the total labor force was equivalent to 51.1 percent. That half of the 16 years-plus population was not in the labor force in 1993 is explained by American Samoa's lack of major industry other than government and fish canning. Work opportunities are certainly limited but not having a job in the money economy does not necessarily equate with unemployment in the territory, where subsistence activity contributes to the extended family's total well-being (Bank of Hawaii Economic Research Dept. 2002).

Per capita income in American Samoa is only one-fifth that of the United States. Between 1979 and 1994, per capita income in American Samoa increased an average of 3.8 percent per year. With inflation rates averaging about 5 percent per year during the period, real personal income in American Samoa has declined about one percent per year over the 15-year period (TPC/Dept. of Commerce, 2000).

Official data notwithstanding, by many measures, American Samoa is not a poor economy. Its estimated per capita income of $5,000 is almost twice the average for all the Pacific island economies (at $2,700) (Bank of Hawaii Economic Research Dept. 2002). Per capita income in American Samoa does not represent the same market basket and value as it would, for example, in Honolulu.

There are aspects of work and the creation of value in the communal societies of the Pacific islands that are not captured by market measures. For instance, to the extent that unemployment among the younger population can cause both economic and social ills, American Samoa's tightly organized *aiga* (extended family) system is one way to keep young people from becoming economically unproductive and socially disruptive. Another avenue for American Samoan youth not available to the vast majority of youth in the Pacific islands is emigration to the United States, where an estimated 70,000 Samoans from American and Independent Samoa live, 20,000 of them in Hawaii (Bank of Hawaii Economic Research Dept. 2002). A large proportion of the territory's workers (in the case of the canneries as much as 90 percent) is from Independent Samoa. While it is correct to say that Independent Samoans working in the territory are legally alien workers, in fact, they are the same people, by culture, history and family ties.

The only US territory south of the equator, American Samoa is considered "unincorporated" because the US Constitution does not apply in full even though it is under US sovereignty (TPC/Dept. of Commerce, 2000). American Samoa's vision for the future is not fundamentally different from that of any other people in the US but American Samoa has additional objectives that are related to its covenant with the US, its own constitution and its distinctive culture (Territorial Planning Commission/Dept. of Commerce, 2000). A central premise of ceding eastern Samoa to the US was to preserve the rights and property of the islands' inhabitants. American Samoa's constitution makes it government policy to protect persons of American Samoan ancestry from the alienation of their lands and the destruction of the Samoan way of life and language. It provides for such protective legislation and encourages business enterprise among persons of American Samoan ancestry (Territorial Planning Commission//Dept. of Commerce, 2000).

American Samoan dependence on fishing undoubtedly goes back as far as the peopled history of the islands of the Samoan archipelago, about 3,500 years ago (Severance and Franco, 1989). Many aspects of the culture have changed in contemporary times but American Samoans have retained a traditional social system that continues to strongly influence and depend upon the culture of fishing. Centered around an extended family (`aiga) and allegiance to a hierarchy of chiefs (matai), this system is rooted in the economics and politics of communally-held village land. It has effectively resisted Euro-American colonial influence and has contributed to a contemporary cultural resiliency unique in the Pacific islands region (Severance et al. 1999).

From the time of the Deeds of Cession to the present, despite increasing western influences on American Samoa, American Samoans native have expressed a very strong preference for and commitment to the preservation of their traditional matai (chief), aiga (extended family) and communal land system, which provides for social continuity, structure and order. The traditional system is ancient and complex, containing nuances that are not well understood by outsiders (TPC/Dept. of Commerce, 2000).

Traditional American Samoan values still exert a strong influence on when and why people fish, how they distribute their catch and the meaning of fish within the society. When distributed, fish and other resources move through a complex and culturally embedded exchange system that supports the food needs of `aiga, as well as the status of both matai and village ministers (Severance et al. 1999).

A long-term decline in catches of coral reef fish in American Samoa's shoreline fishery is well documented (Saucerman, 1995; Tulagi and Green, 1995; Craig, 1999). Attempts to develop deep slope fishing for bottom in American Samoa from the mid-1960s to the mid-1980s were not sustained due to limited habitat and bottomfish resources and to marketing problems (Itano, 1991). Much of the reef and bottom fish resources presently consumed in American Samoa are imported from neighboring Independent Samoa.

Despite increasing commercialization, the pelagic fishery contributes strongly to the cultural identity and social cohesion of American Samoa (Severance et al., 1999). The role of pelagic fish in meeting cultural obligations is at least as important as the contributions made to nutritional or economic well-being of island residents (Severance et al. 1999).

Due to a rapidly growing population and overexploitation of some inshore seafood resources, the American Samoa community is becoming even more dependent on pelagic fish for food, employment and income from fisheries and for perpetuation of *fa'a Samoa* (Samoan cultural heritage and way of life) (Severance et al., 1999).

Despite recent major expansion of the domestic longline fishery in American Samoa, support industries and service providers, such as ship chandlery, equipment supplies and mechanical, electrical and refrigeration services, bait acquisition and distribution, are presently underdeveloped in the local economy. Please see Appendix 1 for further discussion.

10.1.4 Environmental Impacts of Alternatives

10.1.4.1 Impacts on Target and Non-target Finfish and Related Stocks

It is unlikely that any of the nine alternative measures considered would have a detectable negative stock-wide impact on tuna or secondary pelagic species, including billfish, sharks and epipelagic fish, which are taken in the pelagic fishery in the EEZ around American Samoa. Pelagic species are not confined to any particular EEZ or country but have a wide geographical distribution in the central and western Pacific. None of these stocks are presently overexploited in the South Pacific and stockwide effects are unlikely even if the American Samoa catch and bycatch increased several fold.

The stock structures of pelagic fish are by no means well defined. Long distance movements are evident for all tuna species but mixing of various fractions of stocks between areas, at least over short and medium time periods, seems to be quite incomplete. The regional “throughput” of pelagic fish and the relationship of the pelagic fish taken in American Samoa's longline fishery to the more widely distributed regional populations is not understood. Nor is it known whether catch rates obtained during the recent expansion of the American Samoa longline fishery are representative of the long-term average.

10.1.4.2 Impacts on Essential Fish Habitat and the Marine Environment

Longline fishing consists of suspending a series of steel hooks from nylon lines within the epi-pelagic zone of the high seas. This action would not have any substantial impact on the physical and chemical properties of the water column, given the inert nature of the materials used and the suspension of longlines beyond any demersal substrates in shallow or coastal waters. The method of fishing is designed to select for carnivorous open ocean pelagic fishes and the hook sizes and baits used select for these medium- to large-sized apex pelagic predators. None of the nine alternative measures considered would therefore adversely affect essential fish habitat (EFH) or habitat areas of particular concern (HAPC) for any FMP-managed species because longline fishing, even at increased levels of effort, in the EEZ of American Samoa is not likely to lead to substantial physical, chemical or biological alterations to the habitat, or result in loss of, or injury to, these species or their prey. EFH and HAPC for these species groups has been defined as presented in Table 9. For the same reason, the proposed action is not anticipated to cause substantial damage to the ocean and coastal habitats.

10.1.4.3 Impacts on Sea Turtles

Incidental catch of sea turtles in longline fisheries occurs when opportunistic-feeding

turtles encounter baited longline hooks or when they are accidentally entangled with the gear. Sea turtle mortalities, when they occur, typically result from drowning.
Of the various factors that may affect the level of sea turtle interactions in western tropical Pacific longline fisheries, the depth of set appears to be the most important. On average, observer data from other fisheries suggests that turtle catch rates in shallow longline sets are over 4 times greater than deep longline sets (0.060 turtles/1000 hooks

Table 9. Essential Fish Habitat (EFH) and Habitat Areas of Particular Concern (HAPC) for species managed under the Pelagics, Crustaceans, Bottomfish and Seamount Groundfish, Precious Corals Western Pacific Fishery Management Plans. All areas are bounded by the shoreline, and the outward boundary of the EEZ, unless otherwise indicated.

SPECIES GROUP (FMP)	EFH (juveniles and adults)	EFH (eggs and larvae)	HAPC
Pelagics	water column down to 1,000 m	water column down to 200 m	water column down to 1,000 m that lies above seamounts and banks.
Bottomfish	water column and bottom habitat down to 400 m	water column down to 400 m	all escarpments and slopes between 40-280 m, and three known areas of juvenile opakapaka habitat
Seamount Groundfish	(adults only): water column and bottom from 80 to 600 m, bounded by 29°-35° N and 171° E -179° W	(including juveniles): epipelagic zone (0-200 nm) bounded by 29°-35° N and 171° E -179° W	not identified
Precious Corals	Keahole, Makapu'u, Kaena, Wespac, Brooks, and 180 Fathom gold/red coral beds, and Miloli'i, S. Kauai and Au'au Channel black coral beds	not applicable	Makapu'u, Wespac, and Brooks Bank beds, and the Au'au Channel
Crustaceans	bottom habitat from shoreline to a depth of 100 m	water column down to 150 m	all banks within the Northwestern Hawaiian Islands with summits less than 30 m

vs 0.014 turtles/1000 hooks). The difference between shallow night sets and deep daytime sets is even more marked with shallow night sets catching on average 7 times more turtles than deep daytime sets (0.060 turtles/1000 hooks vs 0.009 turtles/1000 hooks) (SPREP 2002). Analysis of available observer data from the SPC statistical area suggests that the bait used, and whether the gear is set during the day or night, does

not have as marked an effect as do the strategies to set the longline gear shallow or deep. Analysis of the observer data also shows that when sea turtle interactions occurred on deep longline sets, they were almost always on the shallowest hooks (OFP, 2001).

Analyses of the Hawaii longline fishery observer data also show that sea turtle interactions on shallow-set longline gear are on average about 7 times greater than turtle interactions with deep set gear (0.078 turtles/1000 hooks vs 0.011 turtles/1000 hooks) (based on McCracken pers. comm.). Both sources of data suggest that there is a critical depth range of hooks where most sea turtle encounters would be expected to occur in the western tropical Pacific longline fishery (OFP, 2001),

Complicating the picture for American Samoa is a lack of observer data as there is no observer program in place for this fishery. Nevertheless, some conclusions can be drawn using available information on vessel operating patterns and sea turtle biology. Based on logbook and anecdotal information, six interactions with sea turtles were reported for this fishery in the 1992-1999 period (NMFS, 2001a).

Studies of longline gear deployment in the American Samoa-based longline fishery found that all sizes of vessels presently sink longline hooks deeper than 50 fm. Small-scale boats set most hooks between 50-100 fm by lengthening float lines to 20 fm (E. Mokoma, pers. comm. to P. Bartram, September 17, 2001). Large-scale vessels use mainline shooters, leaded swivels and weighted branch lines to deploy hooks below 100 fm. A detailed catalog covering about half of American Samoa longline fleet was completed for the WPACFIN data base (F. Aitaoto, 2001 unpubl. survey). None of the vessels studied as of October 2001, were deploying gear in a way that meets NMFS' description of shallow setting as defined as a part of its implementation of the 2001 Biological Opinion on the pelagic fisheries of the western Pacific region (66 FR 31561, June 12, 2001). This is supported by the lack of logbook reports of sea turtle interactions when longline gear is sunk below 50 fm and sets are made offshore of deep reef slopes (DMWR, 2001, 2002).

Available biological, logbook, and anecdotal information suggests that sea turtle takes are almost completely eliminated in the American Samoa-based fishery when longline gear is deployed in deep offshore waters to target albacore tuna. Concerning the potential for takes of coastal hawksbill turtles, as compared to early years (1995-1999), the number of longline hooks presently being set within 12 miles of shore is lower than in 1999 (see Figure 7 in Section 5). Because the hawksbill turtle is so coastal in its habits, it is no longer likely to be taken by this fishery. Thus, even though some of the alternatives considered here could result in higher levels of longline fishing effort, none would be expected to have an adverse impact on sea turtles. However, under the preferred alternative, a mandatory federal observer program would be implemented for vessels greater than 40 ft in length overall. This would provide further information on fishery operations and interactions with sea turtles, and is in accordance with the findings of the IATTC, as summarized by Hall (Section 5.7).

On November 15, 2002, NMFS issued a Biological Opinion which included an analysis of the preferred alternative contained in this document. This Opinion found that the ongoing operations of the western Pacific pelagic fisheries under the Council's jurisdiction (including the proposed limited entry program for American Samoa) do not jeopardize the ongoing existence of any sea turtle populations. Please see that document for a detailed discussion of this issue (NMFS 2002).

10.1.4.4 Impacts on Marine Mammals

No interactions with whales or dolphins have been reported in the logbook data from the American Samoa longline fishery. Based on the existing fishery's low rate of interactions with marine mammals, no adverse effects on marine mammals would be expected to result from the management alternatives, even at the higher levels of longline fishing effort that could occur under some of them.

10.1.4.5 Impacts on Seabirds

Based on the existing fishery's low rate of interactions with seabirds, no adverse effects on seabirds would be expected to result from the management alternatives, even at the higher levels of longline fishing effort that could occur under some of them.

10.1.4.6 Impacts on Biodiversity and Ecosystem Function

The effects that fishing has on pelagic food-webs, biodiversity or ecosystem functions are not currently understood. As pelagic fisheries have been operating for decades in the South Pacific, their impacts may have become part of the evolution of the ecosystem. Equilibria prevailing prior to the fishery may not be reached again, even if the fishery, or its impact, is eliminated. The aspect of the alternatives considered here that is most relevant to biodiversity and ecosystem function is that of bycatch (discards). A fraction of these discards would probably be consumed either on the surface or in the upper ocean layer by species such as dolphins and sharks. The remaining part of the discards sink down the water column and end up on the bottom in abyssal depths. The amount in question is not large, given the large area where it is dispersed.

Alternative 1 would allow continued expansion of longline fishing in American Samoa's EEZ without limit. As long as marketing options for other pelagic species are limited, longline fishing will target albacore for sale to local canneries and non-albacore bycatch is likely to increase in proportion to additional effort, especially by large vessels (see Table 3). Alternatives 2 -6 would require the landing of all PMUS but could result in discards on shore of unsaleable fish, as well as increased discards at sea of non-PMUS species due to increases in fishing effort. Alternative 7 would maintain fishing effort and bycatch at existing levels. Alternative 8 has the potential to reduce longline fishing effort

but could increase bycatch rates if highgrading occurs in response to its trip landing limits. Alternative 9 would control bycatch only indirectly through effort its limits but could lead to increases in current discard rates due to its mechanism to allow upgrading of small vessels to larger size classes.

10.1.4.7 Impacts on Fishery Participants

Three types of direct impacts on American Samoa's longline fishery are considered: 1) potential for gear conflict; 2) potential for decline in catch rates below economically viable levels; 3) potential for impacts to efficiency and resultant changes to vessel operations; and 4) potential economic value of limited access permits. Possible indirect impacts on other pelagic fisheries (troll, handline) and on fish processors, marketers and other secondary businesses in American Samoa are also analyzed.

Potential for gear conflict: The relationship between potential longline fishing effort and number of vessels permitted under each of the alternatives was compared with an index of gear conflict (55 hks/km^2 per year) inferred from the problems experienced in Independent Samoa's longline fishery.

The number of hooks set by longline vessels varies with boat size and capabilities. As a result of a recent Federal regulation that excludes large vessels (> 50 ft) from pelagic fishing within 50 nm of the American Samoa islands, longline fishing in American Samoa's EEZ has been observed to be distributed as follows: 1) Vessels under 40 ft length fish inside 50 nm because of limited range and seaworthiness; 2) vessels 40.1-50 ft length fish throughout the EEZ (inside and outside 50 nm); 3) vessels larger than 50 ft fish outside 50 nm by regulation. The practice of large vessels towing out alia to longline fish beyond 50 nm from shore was prevalent in 2001 but has been discontinued.

Tables 10 and 11 present a summary of the likely and maximum fishing effort anticipated under each alternative. Results are given for all vessels, as well as broken down by fishing area with nearshore waters defined as those within 50 miles of shore and offshore waters defined as the remaining EEZ waters. Effort levels and hook densities were estimated based on historical and survey data, provided from the NMFS WpacFIN database, concerning the typical operating patterns of longline vessels in American Samoa. Distribution of effort between the nearshore and offshore areas is based on the assumption that vessels less than or equal to 40 ft will fish exclusively in the nearshore area, vessels between 40 ft and 50 ft will divide their effort equally between the two areas, and vessels greater than 50 ft will fish exclusively in the offshore area (as they are prohibited from fishing in the nearshore area).

Likely effort levels (Table 10) are based on the assumption that only those 75 vessels fishing as of the control date (see Table 4) will participate it the limited entry program, while maximum effort levels (Table 11) assume that all permits available under each

alternative will be used. In both cases, vessels in the smallest size class (less than or equal to 40 ft) were assumed to make 125 sets per year, with 350 hooks used per set. Vessels in the next size class (40.1 ft to 50 ft) were assumed to make 175 sets per year with 1,250 hooks used per set. All vessels over 50 ft were assumed to make 225 sets per year with 2,100 hooks used per set (this may overestimate average effort levels for smaller vessels in this size class but it is believed that virtually all vessels over 50 ft are capable of these levels). [Note: some values have been corrected for errors found in previous versions.]

The predicted hook densities under each alternative represent best estimates given available information and some assumptions as to how participants would react to various regulatory regimes. As a result, these predictions cannot be viewed as precise assessments, but rather should be used to compare the relative impacts of alternatives.

Alternative 1 (no action) would be anticipated to have no economic impacts on fishery participants in the short run. In the long run it is likely that longline vessels would continue to enter the fishery. At some point, fishery participants would be expected to experience gear conflicts and reductions in local catch rates. Because the potential for gear conflict is believed to increase significantly when average hook density exceeds 55 hooks/km^2, while reductions in local catch rates may fall below vessel breakeven levels when average hook density reaches 80 hooks/km^2, it is likely that gear conflicts would affect fishery participants before local catch rates fell to unprofitable levels (see Figure 4). Depending on the distribution of fishing effort between nearshore and offshore areas, gear conflicts could be anticipated in the near future in one or both areas. Besides the inherent economic costs of fishery congestion (increased travel/search time and lost fishing time), social costs could be expected to include angry confrontations and loss of cohesion and cooperation among fishery participants. In some fisheries, gear conflicts have resulted in destruction of fishing gear, gunfire and other violence. At higher levels of hook density, declines in local albacore catch rates would reduce vessel profits to levels below those required to cover operating costs.

Historical experience has demonstrated that, in the absence of community or other informal regulatory mechanisms, open-access fisheries tend to suffer from a boom-and-bust cycle in which effort excess enters the fishery and over time catch rates fall. At this point, the more mobile participants leave for other fisheries, however those that remain continue fishing as long as they can cover their variable costs plus a portion of their fixed costs. If this becomes untenable, this group may investigate other gear types, tie up their vessels until circumstances improve, or cease fishing altogether. Such circumstances would lead to adverse economic impacts on fishery participants, and in the case of American Samoa, would also result in impacts to cultural practices which depend on the availability of fresh fish caught by community members.

Table 10. Likely hook densities for each management alternative - this assumes that only those actively fishing as of the control date will actually fish (this is the most probable short-term result for all alternatives).

Alternative	Total Permits Allowed	Likely Permits Fished	Likely total annual effort (million hooks)	Likely total annual nearshore effort (million hooks)	Likely total annual offshore effort (million hooks)	Likely average nearshore hook density (hooks/km^2)	Likely average offshore hook density (hooks/km^2)
1	unlimited	unknown	unknown	unknown	unknown	unknown	unknown
2	215	75	17.0	2.3	14.7	18	57
3	unlimited	75	17.0	2.3	14.7	18	57
4	215	75	17.0	2.3	14.7	18	57
5	106	75	17.0	2.3	14.7	18	57
6	141	75	17.0	2.3	14.7	18	57
7	110	75	17.0	2.3	14.7	18	57
8	unlimited	75	17.0	2.3	14.7	18	57
9A current w/out upgrades	118	75	17.0	2.3	14.7	21	57
9A current w/upgrades	118	75	24.6	2.7	21.9	18	84
9B all w/out upgrades	138	75	17.0	2.3	14.7	21	57
9B all w/upgrades	138	75	24.6	2.7	21.9	22	84

Note : Gear conflict potential is believed to increase significantly when:
nearshore effort exceeds 55 hooks/km^2/year (or 7.15 million hooks/year) or,
offshore effort exceeds 55 hooks/km^2/year (or 14.3 million hooks/year)

Table 11. Maximum hook densities for each management alternative - this assumes all permits issued before the control date will be actively fished (this is the most likely long-term result for Alternatives 1-8).

Alternative	Total Permits Allowed	Maximum total annual effort (million hooks)	Maximum annual nearshore effort (million hooks)	Maximum annual offshore effort (million hooks)	Maximum average nearshore hook density (hooks/km^2)	Maximum average offshore hook density (hooks/km^2)
1	unlimited	unknown	unknown	unknown	unknown but likely high	unknown but likely high
2	215	46.0	9.8	36.2	76	139
3	unlimited	unknown	unknown	36.2	unknown but likely high	139
4	215	46.0	9.8	36.2	76	139
5	106	23.3	5.9	17.4	46	67
6	141	21.2	5.5	15.7	42	61
7	110	19.2	3.9	15.3	30	59
8	unlimited	unknown	unknown	unknown	unknown	unknown
9A current w/out upgrades	118	21.3	4.3	17.0	33	66
9A current w/upgrades	118	28.9	4.7	24.3	36	93
9B all w/out upgrades	138	23.0	5.1	18.0	39	69
9B all w/upgrades	138	30.6	5.4	25.2	42	97

Note : Gear conflict potential is believed to increase significantly when:
nearshore effort exceeds 55 hooks/km^2/year (or 7.15 million hooks/year) or,

offshore effort exceeds 55 hooks/km^2/year (or 14.3 million hooks/year)

Effort predictions under the no action alternative are based on the assumption of a short-term effort equilibrium followed by an influx of larger fishing vessels in the longer-term. Under a boom and bust scenario, after some time this increase in fishing power would lead to local depletions in catch rates - and larger more mobile vessels would then migrate to other fisheries, leaving small scale, community based participants behind to await the replenishment of local stocks.

All alternatives that would limit entry to or effort in the fishery would represent a loss of opportunity for those who may have otherwise considered participating. In the short term, alternate opportunities for longline vessels are limited but include purchasing a transferable Hawaii limited access longline permit from a current permit holder so as to fish out of Hawaii, obtaining a high seas permit and fishing out of California, or moving to Atlantic or other fisheries. In the long-term, some alternatives would allow new participants to enter the fishery while others would provide relatively little opportunity. The cost of this lost opportunity is difficult to calculate as the reduction in resource availability that could occur under the no action alternative (continued open access) would reduce the value of the fishery.

Short-term impacts on successful limited entry applicants are most likely to be represented by hook densities somewhere between those presented in Table 10 (likely hook densities) and those in Table 11 (maximum hook densities), but probably closer to the lower (likely) end as those qualified to enter but not currently participating may not desire, attempt, or succeed in re-entering the fishery due to occupational changes, lack of financial capital or other reasons. In the long-term Alternatives 2-8 would allow new entrants to utilize available permits and thus effort would likely move towards maximum levels.

However both versions of Alternative 9 would require qualified applicants to register vessels of the appropriate size class to their permits within either 90 or 120 days. If, as is likely, any fail to do so - the number of initial permits would be reduced accordingly. Meaning that those permits would be revoked by NMFS, would not be made available to other applicants, and the maximum number of permits in that size class would be reduced accordingly. Thus, both short-term and long-term actual effort levels under both Alternatives 9A and 9B are anticipated to be closer to their lower (likely) predicted values than to their higher (maximum) predicted values. Short-term effort levels are most likely to be close to those predicted as likely values without upgrades, while in the long-term it is reasonable to assume that all upgrades will be utilized.

<u>Potential for decline in local albacore CPUE below vessel breakeven levels:</u>
Independent Samoa has established a domestic longline limitation program based on an analysis of estimated breakeven fishing costs for a typical 12.2 m (40 ft) length super alia vessel. At an average market price of $ 5.50/kg (Samoan tala/kg), a vessel of this type would require an average catch rate of 43 kg/100 hook (approximately 2.2

fish that could fetch the average market price) to cover fishing expenses and crew wages (King et al., 1999). Similar analyses have been completed for the small-scale sector (under 40 ft vessels) and large-scale sector (monohull vessels over 50 ft in length) of the American Samoa longline fishery.

Albacore tuna is the primary target of this fishery because it is the only species that can be marketed in large quantities to local canneries for a price above $0.30/lb. Since the beginning of 2001, the cannery price for albacore has fluctuated considerably, from a high of $2,600/mt in early 2001 to a low of $1,700/mt in February 2002.

Breakeven analysis for vessels equal to or less than 40 ft shows that these vessels may need to catch an average of 2 to 2.25 albacore/100 hooks (depending on average fish size and assuming a cannery price of $2,200/mt or about $1.00/lb whole weight) to cover fishing expenses and crew wages. These operating costs are estimated based on interviews with boat owners conducted as part of Kaneko et al. (2000) and updated through boat owner interviews by one of the co-authors of Kaneko et al (2000). Based on this series of interviews, the revenue needed to covering fishing expenses and crew wages was estimated to be $88 per 100 hooks.

The equal to or less than 40 ft vessel size class fleet needs much higher average catch rates (2.5-2.85 albacore/ 100 hooks, depending on average fish size) when the cannery price drops to $1,700/mt, as in February and March 2002. Should the cannery price drop even lower ($1,500/mt), these vessels would need to make an average catch of 2.9-3.2 albacore/100 hooks for breakeven operation.

Economic information was gathered in December 2001 for 18 longline vessels greater than 50 ft in length based in American Samoa (O'Malley and Pooley, 2002). Estimates of average albacore catch rates needed for a breakeven operation for these vessels were made based on the average operating cost ($545,000/year) of vessels surveyed. At the high end of cannery pricing ($2,496/mt), an average catch rate of 2.1 albacore/100 hooks is estimated to cover operating costs. At the low end of cannery pricing ($1,710/mt), an average catch rate of 2.8 albacore/100 hooks) is necessary to cover operating costs. A scenario in which the cannery price for albacore is even lower ($1,500/mt) was also examined. At this price, an average catch rate of 3.2 albacore/100 hooks would be needed to cover these vessels' operating costs (O'Malley and Pooley, 2002.)

The breakeven catch rates estimated for the small-scale and large-scale sectors of American Samoa's longline fishery were compared with the long-term historical trend in albacore catch rates by the Taiwan and other longline fisheries operating in the sub-equatorial region of the central South Pacific (Figure 9). At the higher end of cannery price for whole albacore ($2,200-2,500/mt), the average long-term longline catch rates for this species in the region have generally remained above breakeven levels, except in the period 1989 - 1991. At the lower end of cannery price ($1,700/mt), the average long-term longline catch rates for albacore in the region have been above breakeven

levels only in the late 1990s. In a worst case cannery pricing scenario ($1,500/mt), the average long-term longline catch rates in the region do not indicate that breakeven average albacore catch rates could be consistently achieved in American Samoa's longline fishery.

These analyses suggest that an average albacore catch rate of at least 2.1 fish/100 hooks should be maintained in American Samoa's longline fishery for long-term economic viability of both small-scale and large-scale fleets. Even so, periods of high global production of albacore would be expected to occur (as in 1999 and early 2002) that depress cannery prices so that the breakeven levels of average albacore catch rates would need to be almost 3 fish/100 hooks. The economic analysis on which Independent Samoa based its domestic longline limited entry program produced a similar result – the average tuna (rather than just albacore) catch rate would have to be maintained above 2.2 fish/100 hooks for long-term economic viability (King et al., 1999). As shown in Table 12, catch rates around American Samoa remained well above these levels during 2001.

The relationship between average albacore tuna catch rates and the total amount of longline fishing effort (number of hooks) or the density of longline fishing effort (hooks/km^2 /yr) in the EEZ of American Samoa is not known. Independent Samoa imposed license limits on its domestic longline fishery when total fishing effort exceeded an average hook density of 70 hooks/km^2 /yr in the EEZ of Independent Samoa. (derived from data in King et al., 1999). The Independent Samoa fleet was still profitable in 2000 at an average longline hook density of approximately 80 hooks/km^2 but profitability was lower than in 1998, when longline hook density averaged approximately 70 hooks/km^2 (derived from data in King et al., 1999). At an average longline hook density of 80 hooks/km^2, the average albacore catch rate in the Independent Samoa domestic longline fishery was about 2.2 fish/100 hooks, or about the breakeven catch rate predicted for the American Samoa longline fishery. However, the longline fishery in Independent Samoa is able to export about one of every four tuna caught to fresh fish markets overseas (Watt et al., 2001). Under this marketing scenario, which differs from that of American Samoa's longline fishery, the economic breakeven amount of fishing effort predicted for the Independent Samoa longline fishery is estimated to be about 12 million hooks per year, for an average longline hook density of approximately 94 hooks/km^2 of the EEZ.

Table 12. 2001 mean catch rates for the American Samoa longline fishery (large and small-scale vessels combined).
Source: WPacFin

Species	# fish/100 hooks
Albacore	3.3
All species	4.7

Although current conditions are economically acceptable to fishery participants, concerns remain that under the no-action alternative, the recent trend in hook densities will continue and lead to adverse impacts. Beliefs that fishing effort will continue to increase appear valid given recent observations by participants in the large-scale sector that fishery returns are good to excellent (O,Malley and Pooley, 2002).

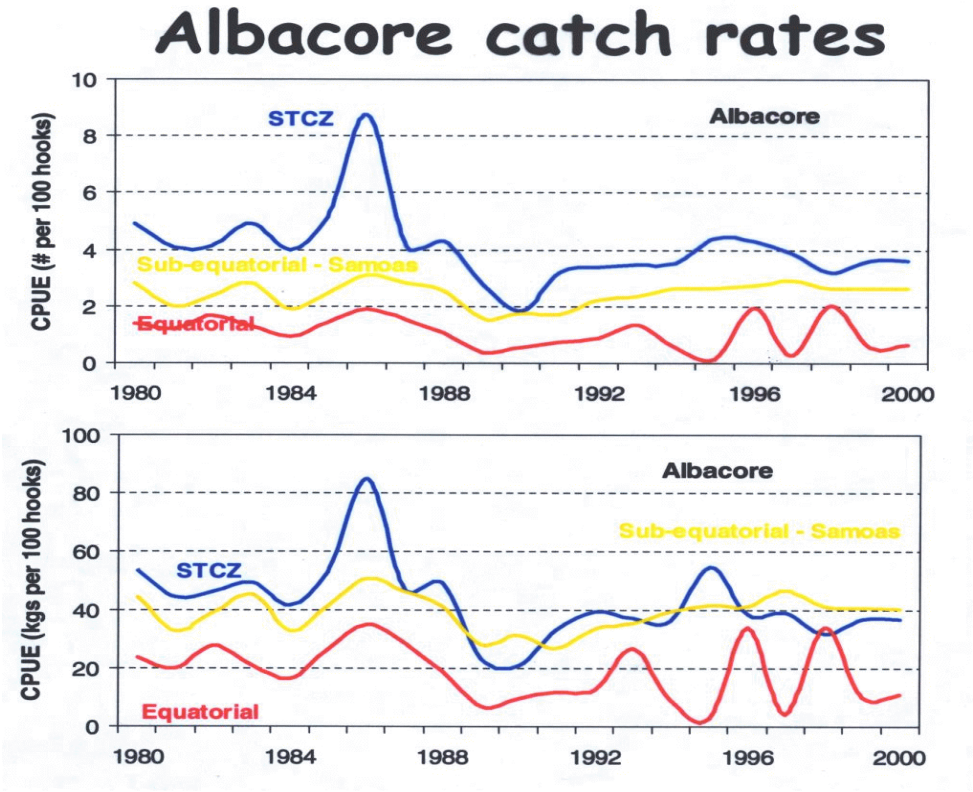

Figure 9. Long-term trend in albacore catch rates by Taiwan and other longline fleets operating in sub-equatorial region of central South Pacific. Source: Oceanic Fisheries Programme, SPC.

Potential for inefficiency: Except for Alternatives 1 (no action), 7 (effort caps) and 8 (trip limits), all alternatives include limits on the number of participants in the American Samoa longline fishery based on vessel length classes. The different sizes, fish holding capacities and fishing capabilities of existing and potential vessels in the American Samoa longline fishery cause large differences in harvesting efficiency.

Alternatives 2, 3, 4, 5, 6, 7 and 9 would limit upgrading from small-scale vessels to

larger, more efficient vessels and this could be considered inefficient in purely economic terms. However, all would promote equity in participation by allowing latent permits to be re-issued to new participants on the basis of historical participation or other measures. This would allow the resource to be shared by a larger number of people at the expense of some economic inefficiency. Alternatives 2-7 would also limit vessel harvesting efficiency by imposing a maximum vessel size limit of 100 ft, and Alternative 7 would additionally limit fishing effort to no more than 3,000 hooks per set. Alternative 9 would allow for greater efficiency in that it would not impose hook or vessel size limits.

Alternative 1 would allow for the greatest short-term economic efficiency in harvesting but with potential long-term costs for the fishery and for management. Alternative 8 would create the greatest inefficiency because it would establish a single longline landing limit (5,000 pounds) per trip, which would discriminate against larger vessels. Fishermen could circumvent this trip limit by making more trips, but limiting the quantity of fish landed per trip essentially places a ceiling on the potential revenue per trip. If fishing costs remain constant or increase with inflation, larger vessels with higher operating costs would become economically unfeasible under Alternative 8.

Potential economic value of limited access permits: Alternative 1 (no action) does not allow transfer of longline general permits from one vessel owner to another. Alternatives 2 and 7 would not allow free transfer of longline limited access permits for the American Samoa-based longline fishery. Because some fishery participants believe that the market value acquired by longline limited access permits when free transfer is permitted is a part of their return on investment in the fishery, Alternatives 2 and 7 would be viewed as strongly negative from this perspective. Alternatives 3 - 6 would be somewhat less negative because they allow for permit transfer but only by indigenous American Samoan longline limited access permit holders using vessels under 40 ft length to immediate family or community groups meeting the indigenous definition. Alternative 8 does not include a provision for a limited access fishery and thus permit transferability would remain as under Alternative 1. Alternative 9 would allow for limited permit transfers and thus permits would gain economic value to successful entrants. However, Hawaii limited access longline permits would lose value under Alternatives 2 - 7 and 9 because they would not longer allow entry into American Samoa's EEZ longline fishery.

10.1.4.8 Impacts on Public Health and Safety

The American Samoa longline fleet has been developing since 1995 with the main vessel used until 2001 being the alia catamaran. There are a range of limitations and problems that affect the safety, fishing capability and quality of fish catch of the alia. These are described by Sokimi and Chapman (2000).

American Samoa has been fortunate that there has not yet been a loss of life in the small-scale alia longline fishery. A total of 39 fishermen working in Independent Samoa's alia longline fishery were lost at sea between 1997 and September 2001 (Watt et al., 2001). These accidents were attributed to changes to the original alia design without the input of a naval architect and the greater distances traveled for fishing. The 9m alia was originally designed primarily for inshore and offshore bottom fishing and trolling, making at most a day trip or overnight trip of up to 20 nm and only in slight-to-moderate weather and sea conditions (Sokimi and Chapman, 2000).

Alternatives 5 and 7 would limit small-scale alia participation in American Samoa's longline fishery to a greater extent than the other alternatives. However, these alternatives might also limit new entry of more seaworthy, safer vessels under 40 ft length. Hence, their effects on public safety would be uncertain and they may not be more beneficial than Alternatives 2, 4 and 6 (which would limit the total number of small vessel participants), Alternative 1 (no action), Alternative 3 (which would not limit small-vessel participants who are indigenous), or Alternative 8 (which would indirectly encourage small-vessel participation by causing large-vessel operation to be highly inefficient). Elements of Alternative 9 which would allow upgrading of 26 small-scale alias to larger size classes (with the concurrent revocation of their alia permits) would enhance the safety of these operations and reduce the number of alias operating in the fishery.

Some alia have a high rate of tuna rejected from the canneries in American Samoa, where most of the albacore tuna catches are sold. Fish are rejected as a result of poor on-board handling and chilling practices and fishing trips with limited or no ice used to chill the catch. Even when the fish catch is iced, the lack of insulated storage space restricts the amount of fish that can be properly chilled on alia, resulting in poor quality (Sokimi and Chapman, 2000) and possibly elevating the potential risk of unsafe histamine levels in the fish muscle (W. Staruskiewicz, Research Chemist, FDA Seafood Research Lab, presentation at FDA/DOH Histamine Test Kit and Histamine Control Measures Workshop, Jan.8-9, 2002).

The canneries in American Samoa will not receive fresh tuna from local fishermen if the fish core temperature is above 40° F. If decomposition is detected in 15 percent or more of the tuna after the product is pre-cooked, the entire load received from a fishing vessel may be rejected by the cannery (B. Butler, Starkist Samoa, presentation at workshop, Feb. 28, 2002).

Because they emphasize additional participation in the domestic longline fishery by larger vessels that can chill the fish catch better than smaller vessels, Alternatives 5, 7,and 9 are likely to be more beneficial than the other alternatives in reducing the potential seafood hazard associated with elevated histamine levels in fish landed by the small-scale sector (vessels under 50 ft length) of American Samoa's longline fishery. The other alternatives allow for either expanded (Alternatives 2, 4, 6 and 8) or unlimited (Alternatives 1 and 3) participation in the fishery by vessels under 40 ft length that are

less capable of chilling their catches to prevent high histamine levels and thus would be less likely to reduce the potential for threats to public health.

10.1.4.9 Impacts on Consumers

No provision was made in the design of the alia for properly insulated ice holds to be constructed within the hulls of the catamaran. Portable insulated coolers or cast-off domestic refrigerators are used. This restricts the amount of fish that can be properly chilled on alia, resulting in poor quality (Sokimi and Chapman, 2000). Proper shipboard handling and chilling of the fish catch in the small-scale sector of American Samoa's longline fishery could preserve high quality of the catch so that selected fish could meet the demanding specifications of sashimi and other premium fresh fish markets overseas. Most of the large-scale vessels (> 50 ft length) presently participating in the longline fishery freeze their catches. Most also have some capability of landing chilled fish of sufficient quality to encourage development of a fresh export market for selected American Samoa longline products.

None of the alternatives are expected to have any significant impact on the supply of albacore tuna to American Samoa's canneries for "white meat" canned tuna production. Albacore is available from worldwide sources and the canneries would simply import raw material to replace fish that is not supplied by American Samoa's domestic longline fishery.

Other species landed under alternatives that require that all pelagic management unit species to be landed may bring additional fish into local markets and communities. If outlets can be found for this fish, it is likely to lower market prices paid by consumers, as well as lowering prices paid to the small-scale fishermen who typically supply these outlets.

Because of their emphasis on larger-vessel participation in American Samoa's longline fishery, Alternatives 1 (no limits on large vessels), 2, 3, 4 and 9 (additional participation in larger vessel length classes) are likely to be more beneficial to fresh fish consumers (locally and overseas) who desire the premium catch quality that large vessels are capable of producing. In contrast, Alternatives 5, 6 and 7 would limit large vessel (> 50 ft length) participation to those who qualify as of March 21, 2002, and Alternative 8 would indirectly limit additional large vessel participation because it would create highly inefficient operations for such vessels.

10.1.5 CUMULATIVE EFFECTS OF THE ALTERNATIVES

Cumulative effects would occur when direct and indirect effects of the alternatives combine with effects of factors exogenous to American Samoa's longline fishery to produce a net effect different than the separate effects or the exogenous factors. These net effects can be beneficial or adverse. Principles of cumulative effects analysis identified by the Council on Environmental Quality include the following:

1. Cumulative effects are caused by the aggregate of past, present, and reasonably foreseeable future actions.

2. Cumulative effects are the total effect, including both direct and indirect effects, on a given resource, ecosystem, and human community of all actions taken, no matter who (Federal, other government, or private) has taken the actions.

3. Cumulative effects must be analyzed in terms of the specific resource, ecosystem, and human community being affected.

4. It is not practical to analyze the cumulative effects of an action on the universe; the list of environmental effects must focus on those that are truly meaningful. In addition, there must be a relationship or "nexus" between the direct and indirect effects of the alternatives being evaluated and external effects.

5. Cumulative effects on a given resource, ecosystem, and human community are rarely aligned with political or administrative boundaries.

6. Cumulative effects may result from the accumulation of similar effects or the synergistic interaction of different effects.

7. Cumulative effects may last for many years beyond the life of the action that caused the effects.

8. Each affected resource, ecosystem, and human community must be analyzed in terms of its capacity to accommodate additional effects, based on its own time and space parameters.

Methodology: This section assesses the cumulative effects of the alternatives following a standard methodology:

1. The exogenous factor(s) that may directly effect each resource component are summarized. The list of exogenous factors and the overall conclusions for each factor remain constant across all of the alternatives. The potential impacts of fisheries not managed under the Pelagics FMP are considered as exogenous factors.

2. The potential direct effects of the alternatives analyzed in Sections 10.1.4.1-10.1.4.9 are summarized for each major resource component. Each alternative may have a different effect on a particular resource.

3. The potential indirect effects of the alternatives analyzed in Sections 10.1.4.1-10.1.4.9 are summarized for each major resource component. This procedural step only needs to be addressed if the indirect effects of alternatives effect exogenous factors. There may be no identifiable indirect effects.

4. Effects of exogenous factors (1) combined with potential direct effects of the alternatives (2), as modified by any indirect effects (3), result in the potential cumulative effects (see Table 13 for a summary comparison of these cumulative effects).

5. Possible mitigation measures are discussed for the potential cumulative effects that are likely to be significant.

10.1.5.1 Cumulative Effects of the Alternatives – Essential Fish Habitat and the Marine Environment

Exogenous Factors – Essential Fish Habitat and the Marine Environment: Five major exogenous factors were identified as having the potential to contribute to cumulative effects on essential fish habitat and the marine environment:

- Fluctuations in the pelagic ocean environment
- Drifting fish aggregation devices (FADs) deployed by the purse seine fishery
- Vessel groundings, marine debris and waste disposal
- Introductions of marine species
- Current and future regulatory regimes

Fluctuations in the Pelagic Ocean Environment: Environmental fluctuations are characteristic of the pelagic ecosystem and affect the distribution, movements and habitats of pelagic fish and non-fish species, both in the vertical and horizontal dimensions. Significant sources of inter-annual physical and biological variation are *El Niño* and *La Niña* events (Lehodey *et al.*, 1997). Physical and biological oceanographic changes have also been observed on decadal time scales. These low-frequency changes, termed regime shifts, can impact the entire ocean basin and pelagic ecosystem. Future ocean shifts will likely affect the abundance and distribution of target and non-target finfish, sea turtles and other marine species in the South Pacific. This factor, therefore, contributes significantly to cumulative effects on essential fish habitat and the marine environment. The current action will limit the volume of fishing effort by the American Samoa fleet, which with neighboring Independent Samoa now accounts for about one third of the total landings of South Pacific albacore. The limits on fishing

effort achieved through the program will have a beneficial impact during poor recruitment years following *La Niña* events (Lehodey et al, 1997). Moreover, in years when albacore are abundant from recruitment following an *El Niño*, the limits on fishing effort will prevent speculative entry to the fishery and hence avoid over-capitalization and 'boom and bust' cycles.

Drifting FADs Deployed by Purse Seine Fishery: An emerging issue with the potential for significant ecosystem effects is the increasing deployment of drifting FADS (or rafts known as *payao*) by the US and Spanish purse seine fleets in the central and western Pacific. Many large purse seiners deploy between 20-30 untethered FADs per vessel, with Spanish vessels sometimes using many more. With up to 200 purse seiners of several nations operating in the central and western Pacific, the total number of untethered FADS could be several thousand (SPC 2000). There is a risk that the migratory behavior of tuna in the central and western Pacific could be affected. FADs might lead to the retention and harvest of tuna in areas where they would otherwise quickly pass through and would not be enticed by concentrated forage to remain. Further, the use of untethered FADs across the Pacific has led to significant increases in the catches of juvenile bigeye and yellowfin tuna by purse seine fleets (SPC, 2000), and concerns about the impacts on recruitment and sustainability of longline catches of adults. The potential effects on the pelagic ecosystem are largely unknown and require research attention (Sakagawa, 2000). It is possible that the use of drifting FADS could contribute significantly to cumulative effects on essential fish habitat and marine environment. However, the longlining method for albacore currently employed in American Samoa does not make use of FADs, tethered or of the free floating untethered variety, and fishes on free swimming schools. Indeed, the incidental catch of yellowfin and bigeye tunas in this fishery may be negatively impacted by untethered FAD deployment. This impact will become more important if the fishery is able to find access to markets for this incidental catch.

Vessel Groundings, Marine Debris, Waste Disposal: The accidental grounding of fishing or non-fishing vessels could adversely affect shoreline nesting habitats of green or hawksbill sea turtles at Rose Atoll. Groundings can also damage coral reefs and other types of bottom habitat both locally and more broadly, if the vessel breaks up and releases fuel and oil that result in pollution of habitat. A grounding can also lead to the introduction of alien species, such as rodents or insects, which can have an adverse impact on terrestrial native fauna and flora. This exogenous factor has greater potential to add to cumulative effects on essential fish habitat and the marine environment in coral reef ecosystems than in the pelagic ecosystem. The limited entry program being considered for American Samoa would place a limit on the total fleet size for the longline fishery. While this in itself would not avoid the potential for vessel groundings, it does limit the number of the domestic longline fleet operating out of Pago Pago which have the potential to run aground. This fleet limit also minimizes the volume of marine debris and waste to be disposed of by the domestic longline fleet.

*Introduction of Marine Species***:** Transport of introduced marine species among world

ports has occurred with increasing frequency in the last 25 years and introductions have sometimes produced devastating changes in the marine ecosystems of receptor areas. Worldwide shipping is believed to be the primary vector responsible for such invasions. Ships may transport viable organisms within their ballast water or on their hulls as fouling organisms. If precautions are not taken, these potential invaders may be discharged in ports where, with no natural predators or controls, they may proliferate rapidly. Pago Pago Harbor, as one of the major fishing ports in the central South Pacific, potentially represents a regional center where marine species introductions may occur and spread (Coles and Eldredge, 2001). This exogenous factor has greater potential to add to cumulative effects on essential fish habitat and the marine environment in coral reef ecosystems than in the pelagic ecosystem. The limited entry program being considered for American Samoa would place a limit on the total fleet size for the longline fishery. While this in itself would not avoid the potential for exotic species introductions, it does place limits on the number of vessels that potentially might introduce exotic species to American Samoa.

Current and Future Regulatory Regimes (Exogenous to Pelagics FMP): There is growing concern whether the species-directed fisheries management policies presently in existence at the national and international levels are effective in preventing undesirable changes in marine ecosystem structure and function (Hall, 1998). General principles for ecosystem-level management have been proposed for US fisheries management (EPAP, 1999) but to what extent they can be practically implemented remains unclear. This factor has the potential to add to cumulative effects on essential fish habitat and the marine environment.

Cumulative effects: None of the exogenous factors which contribute to cumulative effects are expected to be modified by the indirect effects of any alternative, including the preferred alternative Any indirect effects of the large-vessel sector of the American Samoa-based longline fishery on essential fish habitat and the marine environment would likely be transferred to other areas to the extent that large-vessel longline fishing effort within EEZ waters around American Samoa is restricted. Any indirect effects of the small-scale sector of the American Samoa longline fishery may similarly be transferred to other small-vessel fisheries in American Samoa, such as pelagic troll or bottomfish, to the extent that small-vessel longline fishing effort is restricted.

When the estimated direct and indirect effects are combined with the potential effects of exogenous factors, none of the alternatives considered are likely to have effects that can be detected against fluctuations in pelagic habitats and the ecosystem driven by large-scale oceanographic processes.

Significant cumulative effects on essential fish habitat and the marine environment requiring mitigation: Longline fishing consists of suspending a series of steel hooks from nylon lines within the epi-pelagic zone of the high seas. This action would not have any substantial impact on the physical and chemical properties of the water column, given the inert nature of the materials used and the suspension of longlines beyond any

demersal substrates in shallow or coastal waters. The method of fishing is designed to select for carnivorous open ocean pelagic fishes and the hook sizes and baits used select for these medium- to large-sized apex pelagic predators. No significant cumulative effects requiring mitigation were thus identified for essential fish habitat and the marine environment.

10.1.5.2 Cumulative Effects of the Alternatives – Target and Non-target Pelagic Finfish Resources

Exogenous Factors – Target and Non-Target Pelagic Finfish Resources: Five major exogenous factors were identified as having the potential to contribute to cumulative effects on pelagic target and non-target finfish resources:

- Fluctuations in the pelagic ocean environment
- Pacific-wide stock status
- Drifting FADs deployed by the purse seine fishery
- Expanding Samoa region-wide longline fishing for albacore tuna
- Current and future regulatory regimes

Fluctuations in the Pelagic Ocean Environment: Catch rates of pelagic fish species fluctuate in a time and space in relation to environmental factors that influence the horizontal and vertical distribution and movement patterns of fish. Cyclical fluctuations in the pelagic environment affect pelagic habitats and prey availability at high frequency (e.g., seasonal latitudinal extension of warm ocean waters) and low-frequency (e.g., ENSO-related longitudinal extension of warm ocean waters). Low or high levels of recruitment of pelagic fish species are also strongly related to fluctuations in changes in the ocean environment.

The effects of such fluctuations on the catch rates of pelagic management unit species (PMUS) obscure the effects of the combined fishing effort from Pacific pelagic fisheries. During an *El Niño*, for example, the purse seine fishery for skipjack tuna shifts over 1,000 km from the western to central equatorial Pacific in response to physical and biological impacts on the pelagic ecosystem (Lehodey *et al.*, 1997). Future ocean shifts are likely to cause changes in the abundance and distribution of pelagic fish resources. This factor could contribute significantly to cumulative effects on these resources. The preferred alternative will limit the volume of fishing effort by the American Samoa fleet, which with neighboring Independent Samoa now accounts for about one third of the total landings of South Pacific albacore. The limits on fishing effort achieved through the program will have a beneficial impact during poor recruitment years following *La Niña* events (Lehodey et al, 1997). Moreover, in years when albacore are abundant from recruitment following an El Niño, the limits on fishing effort will prevent speculative entry to the fishery and hence avoid over-capitalization and ‘boom and bust’ cycles.

Pacific-wide Stock Status: Pelagic species are not confined to any particular EEZ or country but have a wide geographical distribution in the central and western Pacific. As described in Section 10.1.3.3, assessments of the status of pelagic fish indicate that on a stock-wide scale, Pacific pelagic management unit species (PMUS) are currently being exploited at or below sustainable levels, although the conditions of yellowfin and bigeye juvenile populations need to be carefully monitored because of elevated mortality associated with drifting FADs. Little is known about the level of fishing mortality versus natural mortality for most of the non-target PMUS and there are insufficient data to allow for stock assessments or to define MSY for most of these species.

The Pacific-wide distribution and harvest of pelagic fish resources is a significant factor in evaluating the cumulative effects on pelagic fish resources.

Drifting FADs Deployed by the Purse Seine Fishery: The shift towards purse seine fishing around untethered FADs (*payao*) has affected the US purse seine fleet's catch in two ways that have significantly increased fish discards. First, the average size of tuna caught in floating object sets tend to be smaller than in free-swimming school sets. A higher percentage of tuna that is caught in floating object sets is undersized for US canning and, hence, is discarded. Second, because floating objects tend to aggregate a large number of pelagic species other than tuna, they produce more bycatch than free-swimming school sets (Coan *et al.*, 1999).

The Forum Fishery Agency (FFA) administers an observer program covering a minimum of 20 percent of the fishing trips by US purse seiners for sampling per year, higher observer coverage than in any other central and western Pacific fishery. FFA observers collected bycatch and discard information from 616 sets made in 1998. The data indicate that the bycatch rate associated with floating object sets (1.59 mt of bycatch per set) is substantially higher than for free-swimming school sets (0.06 mt of bycatch per set) (Coan *et al.*, 1999).

Until recently, US purse seine fishing effort in the western Pacific was divided about equally between sets on floating objects (logs and FADs) and on free-swimming schools. During 1999, however, 90 percent of the fishing effort was around untethered FADS (i.e., rafts known as *payao*) deployed by the purse seiners themselves (Sakagawa, 2000). In 2000, the US purse seine fleet made 60 percent of total sets around drifting FADs (Lewis and Williams, 2001) and this percentage declined to about 50 percent in 2001 (WPRFMC, in prep.).

US purse seiners based in American Samoa deploy 15-20 drifting FADS per vessel (pers. observation by P. Bartram). Many large purse seiners in the Indian Ocean deploy between 20-30 untethered FADs per vessel (SPC 13th TBSC report, 2000), with Spanish vessels reportedly using 75 each (Itano, 2000).

FAD technology has gained wide acceptance in the US purse seine fishery because it

increases harvesting efficiency. FADs are easily deployed, tracked and located with radio beacon devices. Locating unassociated, free-swimming tuna schools is more difficult and requires long hours of searching and knowledge of the fishing grounds. The deployment of drifting FADs by the vessels themselves augments the supply of naturally occurring drifting objects that attract forage animals and tunas under them in the open ocean. FAD performance is thus similar to log performance. Both FAD and log sets are executed before day break and have a very high success rate (more than 90 percent) for catching tuna. This is nearly double the success rate of unassociated school sets, which are executed at all hours of the day (Sakagawa, 2000).

It is hypothesized that massive seeding of drifting FADS in offshore areas that are not necessarily favorable for tuna feeding in recent years may alter some biological characteristics of epipelagic populations associated with them: migration, growth, condition factors, predation and natural mortality. FADs could artificially transfer associated populations from one part of the ocean to another. The apparently strong association between small tunas and various species found in association with drifting FADs may then produce an unexpected biological impact on tuna populations (Marsac, WP-BET-5, 13th SCTB, 2000).

With increasing deployment of drifting FADs, there is a risk that the migratory behavior of tuna in the western Pacific could be affected. FADs might retain tuna in areas where they otherwise quickly pass through and are not enticed by concentrated forage to remain. This could affect their population parameters (growth, maturity, survival) and population dynamics. The potential effects on the population biology of tuna are largely unknown and require research attention (Sakagawa, 2000). There has been a rapid increase in the harvest of juvenile bigeye tuna by purse seiners of several nations around drifting FADs in the eastern tropical Pacific (Coan *et al.*, 1999).

The use of untethered FADs across the Pacific has led to significant increases in the catches of juvenile bigeye and yellowfin tuna by purse seine fleets (SPC, 2000), and concerns about the impacts on recruitment and sustainability of longline catches of adults. However, the longlining method for albacore currently employed in American Samoa does not make use of FADs, tethered or of the free floating untethered variety, and fishes on free swimming schools. Indeed, the incidental catch of yellowfin and bigeye tunas in this fishery may be negatively impacted by untethered FAD deployment. This impact will become more important if the fishery is able to find access to markets for this incidental catch It is possible that drifting FADs could contribute significantly to cumulative effects on pelagic fish resources

Expanding Samoa Region-wide Longline Fishing for Albacore Tuna: The albacore catch by longline fisheries in American Samoa and neighboring Independent Samoa totaled 8,465 mt in 2000 (Lewis and Williams, 2001), which represents nearly 25 percent of the entire albacore longline catch in the South Pacific for that year. Independent Samoa has established a longline licensing system that limits the number of vessels allowed to catch fish with longline gear in the EEZ for export purposes.

Nevertheless, longline fishing effort during the year 2000 in the EEZ of Independent Samoa reached an average hook density of 120 hooks/km^2 inside 50 nm and 49 hooks/km^2 outside 50 nm (Watt et al., 2001).

License limitation in Independent Samoa would still allow longline fishing effort to expand up to 24.6 million hooks per year (King et al., 1999). The effect of rapid expansion and high catches by the domestic longline fisheries in both Independent Samoa and American Samoa on the regional "throughput" of albacore cannot be estimated but it may be one of the significant factors contributing to cumulative effects on pelagic fish resources in the Samoa archipelago.

Current and Future Regulatory Regimes (Exogenous to Pelagics FMP): In April 2002, a fishery management plan was being prepared for US fisheries for highly migratory species in the Pacific. Further regulation of pelagic fisheries, such as US longline and distant-water troll fleets, under the proposed plan could cause some vessels to relocate to the American Samoa-based longline fishery.

A series of international Multi-Lateral High Level Conferences among representatives of Pacific island states and Pacific rim fishing nations, including the United States, culminated in September, 2000 with the adoption of the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Central and Western Pacific Region. The Convention was signed by 14 Pacific island states, nine Pacific rim countries and one European country with Pacific island possessions. The text of the Convention speaks of "developing criteria for allocation of total allowable catch or total level of fishing effort in the convention area."

Preparatory conferences will develop rules, regulations and procedures governing the operations of the commission. Preparatory activities will be voluntary and, until at least three North Pacific and seven South Pacific countries who are parties ratify the commission, there is no binding agreement. Upon entry into force, the commission may eventually assume responsibility for implementing the central and western Pacific pelagic fishery management regime described in the Convention. If this occurs, the commission could impose country quotas on the catch of tuna and associated species or on pelagic fishing effort in the central and western Pacific (URS, 2001).

A provision for negotiating Pacific Insular Area Fishery Agreements (PIAFA) was included in the Magnuson-Stevens Act to allow foreign vessels to fish in the EEZ around American Samoa, Guam, CNMI and remote US Pacific island areas in return for a negotiated fee. The PIAFA provision is intended to provide Pacific Insular Areas with an additional opportunity to derive economic benefits from the fishery resources within the EEZ. Any payments received under a PIAFA for American Samoa, Guam or the CNMI would be deposited in the island government treasuries. A PIAFA may not be entered into if it is determined by the Governor of the applicable Pacific Insular Area that the agreement will adversely affect the fishing activities of the indigenous people of the area (WPRFMC, 2000).

The Shark Finning Prohibition Act (P.L. 106-557), in addition to implementing a comprehensive ban on possession and landing of shark fins without corresponding carcasses by domestic fisheries, emphasizes the need for international cooperation to reduce the harvest of shark fins. The federal government would collect information about the extent of the shark fin trade in foreign ports. The United States would urge foreign governments to collect biological and trade data on shark species and to submit national plans of action for the conservation and management of sharks. The United States would also seek bilateral and multi-lateral agreements calling for an international ban on shark finning. A US National Plan of Action for the Conservation and Management of Sharks has been developed by NMFS (2000) to fulfill the national responsibility of the United States to the International Plan of Action for the Conservation and Management of Sharks that was adopted by the U.N. Food and Agriculture Organization in November 1999.

The described regulatory regimes that already exist or are in the process of being established have significant potential to influence cumulative effects on pelagic fish resources.

Cumulative effects: All of the alternatives except Alternative 1 (no action) could redirect some or all potential additional American Samoa-based longline fishing effort. If the redirected effort of larger, mobile vessels is relocated to other areas in the South Pacific, it could affect the same pelagic fish stocks that are harvested by American Samoa-based longline fishing effort. Thus, any increase in South Pacific albacore or other pelagic fish sub-populations in the region of the Samoa archipelago that might result from one or more alternatives would be offset by increased harvest of other sub-populations comprising the same overall stock.

When the estimated direct and indirect effects are combined with the potential effects of exogenous factors, none of the alternatives would be expected to change the cumulative stock-wide effects of PMUS or non-PMUS species, although alternatives that would allow for increased longline fishing effort in the EEZ around American Samoa (Alternatives 1, 2, 3 and 4) have greater potential to affect local resource availability and catch rates than alternatives that more tightly restrict expansion of longline fishing effort (Alternatives 5, 6, 7 and 9), or create economic inefficiencies for larger vessels that have greater fishing capabilities (Alternative 8).

Significant cumulative effects on pelagic fish resources requiring mitigation: No significant cumulative effects that require mitigation were identified for pelagic fish resources.

10.1.5.3 Cumulative Effects of the Alternatives – Sea Turtles

Exogenous Factors – Sea Turtles:
Given the lack of data on the status of the species and range of factors potentially

affecting these species, any cumulative effects may only be surmised at this time. However, some of the potential exogenous factors affecting these species may include fluctuations in the pelagic ocean environment, incidental take in other fisheries, ship traffic (collisions) and anthropogenic noise, marine debris and water quality, directed take and habitat loss, and current and future regulatory actions.

Four of these exogenous factors were identified as having the potential to contribute to significant cumulative effects on sea turtles:

- Fishery effects – pelagic
- Directed shore harvest
- Impacts on nesting habitats and the marine environment
- Current and future regulatory regimes

*Fishery Effects – Pelagic***:** The incidental mortality of all species of marine turtles in fishing operations has long been recognized as a serious threat to the stability of those populations (NMFS and FWS, 1998a, 1998b, 1998c, 1998d, 1998e,1998f; National Research Council, 1990). Under some circumstances, the effect of fishing mortality may have a higher impact on population stability than many other sources of mortality (e.g., extensive egg harvest, nesting habitat destruction) because fisheries impact larger size/age classes of sea turtles. The effect of mortalities in this size/age class is particularly damaging, as these turtles have some of the highest value to the population in terms of reproductive potential (Crouse *et al.*, 1987; Crowder *et al.*, 1994). Larger turtles not yet mature have survived many years of selective pressures but have not yet begun to support the population by reproducing themselves. Thus, while anthropogenic mortality may occur at many size/age classes in marine turtle population, it has been demonstrated that a relatively small anthropogenic mortality at these larger size/age classes may drive a population to extinction - despite almost complete protection of eggs and nesting females on the nesting beaches (Crouse *et al.*, 1987).

The survival of the affected sea turtle species will largely depend on their ability to retain abundance sufficient to enable populations to persist in the face of events operating at several levels (demographic variation, environmental variation, genetic variation) that affect the likelihood of extinction. The same traits that make long-lived species with delayed sexual maturity, such as sea turtles, so vulnerable to reduced survival rates also make their populations slow to recover once depleted (NMFS, 2000a). A population remains viable when it maintains sufficient genetic variation for evolutionary adaptation to a changing environment. It has been recommended that effective population sizes of at least hundreds of individuals be maintained to preserve evolutionarily important amounts of genetic variation (Lande and Barrowclough, 1987).

Population maintenance and recovery is highly sensitive to changes in the survival rates of the age classes which have a higher reproductive value (i.e., large juveniles and adults) than early life stages (i.e., eggs and hatchlings). Juvenile and adult survival rates should be sufficiently high to ensure enough juveniles survive to and through their

reproductive years to maintain stable populations. Even seemingly small numbers of takes, especially of certain life stages, may have negative effects on population viability and the prospects for recovery (NMFS, 2000a).

One of the hallmarks of a fishery-impacted population decline is that the rate of decline can be quite fast. An example of this is the eastern Pacific nesting populations of leatherback sea turtles. These populations apparently dropped more than 80 percent in 15 years (Sarti *et al.*, 1996; Spotila *et al.*, 2000), a decline that appears to have been caused primarily by incidental mortality by coastal and high seas gillnet fishing off S. America and in the N. Pacific (Eckert and Sarti, 1997). In contrast, the destruction of the leatherback population in Terengannu, Malaysia took more than 50 years and was primarily attributed to the overharvest of eggs (Chan and Liew, 1996).

Another issue which must be considered when evaluating the interaction of fisheries with sea turtles is that sea turtle distribution is not homogeneous but often patchy, both temporally and geographically. The factors which lead to such patchiness are not entirely known, though there are a few characteristics that can be important in governing turtle distribution (e.g., temperature, food availability, available refugia, etc.). Thus it is often impossible to predict total fishery interaction based on fishing effort alone or fleet distribution alone. As more information on sea turtle habitat preference becomes available it should be easier to anticipate fishery turtle interaction rates. Because of the highly migratory nature of sea turtle populations, there is significant overlap of sea turtle stocks between the western and eastern Pacific (NMFS, 2001a).

Of the various factors that may affect the level of sea turtle interactions in western tropical Pacific longline fisheries, the depth of set appears to be the most important. Analysis of available observer data from the SPC statistical area suggests that the bait used, and whether the gear is set during the day or night, does not have as marked an effect as do the strategies to set the longline gear shallow or deep. Analysis of the observer data also shows that when sea turtles interactions occurred on deep longline sets, they were almost always on the shallowest hooks (OFP, 2001).

Directed Shore Harvest: By far the most serious threat to sea turtles in the South Pacific is from the directed take of adults and eggs, "…both within US jurisdiction and on shared stocks that are killed when they migrate out of US jurisdiction (e.g., nesting turtles from American Samoa migrate to Fiji and French Polynesia to feed)" (Pacific Sea Turtle Recovery Team, 1998b: 37). Throughout the Polynesian and Melanisian islands in the central South Pacific, sea turtles have been traditionally harvested for food and the shells were often made into bracelets, combs, fishing hooks and ceremonial accessories. Sea turtles are part of native folklore and they are featured in songs, art and petroglyphs (rock carvings).

Directed take refers to the intentional killing of sea turtles or their eggs for food or other domestic or commercial purposes (e.g., jewelry, leather or other products). For most

regions of the Pacific and most species such directed take is illegal. However, enforcement is often difficult. As a general rule, egg take is more prevalent in most regions than the killing of reproductive females (NMFS, 2001a). However according to the Recovery Plans for Pacific Sea Turtles (NMFS and FWS.1998a,b,c,d,e) harvesting of adults and eggs remain a significant source of mortality in American Samoa. Turtles and their eggs, when found, are consumed. The concept of turtle conservation faces several difficulties in contemporary American Samoa. For example, many people are unaware that it is illegal to take sea turtles within the Territory. Public acceptance of conservation issues is a challenging problem. Although many people acknowledge that there are considerably fewer turtles on their beaches than when they were children, few indicated concern for the future of turtles. Some residents have expressed the view that turtles were placed in the ocean by God for man to take, and others felt that if they did not take the turtle, someone else would. Another aspect of the problem is that villagers may keep hatchlings as pets, which eventually die. Also the implications of nest beach fidelity and how this factor can accelerate extirpation of nesting stocks on specific islands are not well understood or acknowledged.

Nesting Environment: The Recovery Plans for Pacific sea turtles (NMFS and FWS, 1998a, 1998b, 1998c, 1998d, 1998e, 1998f) describe over 26 non-fishery related impacts to sea turtles and evaluate their impact to each population by region. These impacts are separated into “nesting environment” and “marine environment.” The following is a summary of those impacts:

Nesting environment:

- Increased Human Presence - refers to the increase presence of humans near or on nesting beaches. Problems include increased recreational use, construction of permanent or temporary structures on the beaches, litter or refuse, and general harassment of nesting turtles or their hatchlings.

- Coastal Construction - because of the value of coastal lands, and because such areas are often easiest to build on, sea turtle nesting beaches are frequent subjects of private and commercial construction. Construction results in the destruction of the nesting beach through direct impact (sand harvesting, etc.) or through collateral effects such as light pollution (sea turtles require dark beaches to nest), increased human harassment and increased egg or turtle harvesting.

- Nest Predation - egg and hatchling loss due to non-human predation is a serious problem in some areas. Often such problems are exacerbated in areas of high human occupancy because feral animals (e.g., dogs, pigs, cats, rats) are frequently the culprits. In some cases increased natural predators (e.g. racoons, coati-mundis,) can be a problem, but usually this only occurs where introduced terrestrial ecosystems have displaced the beach ecosystem.

- Beach Erosion - the effects of storms, sea level rise or seasonal changes can affect beaches, and thereby degrade nesting habitat.

- Artificial Lighting - as noted under human presence, artificial lighting can be a problem at nesting beaches. Adult and hatchling sea turtles use the presence of a lighter horizon to find the sea when returning from a nesting beach. Artificial light can disorient turtles or prevent them from nesting.

- Beach Mining - refers to the extraction of sand from nesting beaches to be used in construction (in concrete). The effect of removing sand from beaches is often increased erosion leading to destruction of the beach.

- Vehicular Driving on Beaches - crushes turtle eggs and destroys nesting habitat by causing compaction and rutting; makes it difficult or impossible for hatchlings to negotiate their way to the water.

- Exotic Vegetation - non-native species of vegetation can interfere with nesting beaches by affecting incubation temperatures (which impacts hatch success as well as hatchling sex ratios, which are thermally regulated), as well as by creating thick root masses which foul nests or by interfering with sand flow dynamics (beaches often need annual erosion and replenishment to clean the beach and remove residual organics that are left after incubation).

- Beach Cleaning - a process common to resort areas where mechanical rakes are used to remove accumulated debris, often damages nests in the process.

- Beach Replenishment - the replacement of sand onto a beach after it has been eroded away is called beach replenishment. However, such action can bury nests already deposited, or more significantly the replacement sand can be of the incorrect quality and can result in poor hatch success or even interfere with the turtle’s ability to dig a nest cavity.

Marine Environment:

- Natural Disasters - such as large storms, hurricanes etc. can kill sea turtle turtles, particularly those foraging in shallow coastal habitats. More long term natural phenomena such as *El Niño* can also impact turtle populations, particularly those which are already stressed by other problems.

- Disease and Parasites - can impact turtle populations, particularly once turtle populations have been reduced so severely that such natural

stresses have larger impacts than would normally be the case in healthy populations. Often turtles that have been compromised by other problems will secondarily exhibit high parasite loads that exacerbate the poor health conditions of the turtle. Finally disease epidemics can impact turtle populations. For example, the fibropapilloma epidemic has been severe on green turtles living around the islands of Hawai‘i, and threatens their recovery.

- Algae, Seagrass and Reef Degradation - is a form of marine habitat damage which clearly impact turtle populations by limiting food or refugia.

- Environmental Contaminants - such as oil or other chemical contaminants are particularly high in coastal areas with larger human populations and can harm turtles as well as their habitats. Less well known are chemical contaminants on the high seas but they are a source of mortality to sea turtles.

- Debris (Entanglement and Ingestion) - provide a potentially serious but impossible-to-quantify source of mortality in sea turtle populations. For example ghost fishing gear (abandoned or discarded) can kill turtles submerged for extended periods by entanglement. Particularly insidious is gear that may entangle turtles until the gear becomes so weighted that it sinks and once the turtles have decomposed it rises to surface waters to entangle turtles again. There are numerous reports of abandoned gear with large numbers of dead turtles and other species entangled in the gear. Equally unquantified and potentially serious is debris that turtles may consume and cause death. All pelagic sea turtles will eat jellyfish (and for leatherbacks this is all they eat), and they often confuse plastics with this prey. The effect can be to kill the turtle through intestinal blockage, or to create lesser physiological impacts as has been suggested for turtles who consume latex balloons (Lutz, 1989; Lutz and Alfaro-Schulman, 1991). Finally, many pelagic turtles (particularly hatchlings) are surface grazers who will consume anything found floating at the surface. This can include a large number of anthropogenic contaminants such as plastic beads used in plastic fabrication and oil or tar balls.

- Predation - is considered a natural source of mortality however it must be considered a threat when turtle populations become reduced. Pelagic turtles probably represent only an occasional food source for predators such as sharks and *Orca*, and thus predator population size may be decoupled (predator population size is not linked to prey population size as in the more familiar snowy owl/lemming model) from sea turtle population size. Thus, when turtle populations are reduced the effect of predation has a greater impact than would be seen when turtles are numerous.

- Boat Collisions - can be a threat to turtle populations primarily in coastal environments when boat traffic and turtle densities are high.

- Marina and Dock development - can act as an indirect threat to turtles through the destruction of habitat, elevated contaminant levels (caused by increased boat traffic) and increased risk of boat strikes.

- Dredging - represents a risk to sea turtle coastal habitats.

- Dynamite Fishing - threatens primarily coastal turtle populations by the incidental killing of turtles and habitat destruction.

- Oil Exploration and Development - is considered threatening to turtle populations because of possible contamination of habitats, increased boat traffic and pre-drilling seismic exploration. This latter activity can kill turtles or damage their hearing.

- Power Plant Entrapment - occurs in some coastal areas that use ocean water for cooling. Turtles swim into the sea water intakes and are sometimes drowned.

- Construction Blasting - can kill or injure turtles in the immediate area, as well as degrade important habitats.

The potential significance of any single factor or combination of factors varies significantly in different areas of the Pacific, so their contributions to cumulative effects can only be assessed within the geographic or ecosystem context of particular sea turtle sub-populations.

Current and Future Regulatory Regimes: Sea turtle species which are accidentally caught in Pelagics FMP-managed fisheries are protected under the Endangered Species Act. NMFS' 2002 Pelagics BO (NMFS, 2002) found that the Hawai'i-based longline fishery does not jeopardize the survival of loggerhead, leatherback and green sea turtles.

A fishery management plan is currently being prepared for US fisheries for highly migratory species in the Pacific. The California-based longline fishery will be managed under this plan. As necessary, this plan may also include restrictions on fishing methods in order to reduce or avoid impacts to sea turtles (NMFS, 2001a). When it enters into force, the Inter-American Convention for the Conservation and Protection of Sea Turtles the only international treaty dedicated exclusively to sea turtle conservation, is also expected to promote conservation of sea turtles in the convention area (NMFS, 2001a).

These regulatory factors may contribute significantly to cumulative effects estimated for sea turtles.

Cumulative effects: Fishery impacts are not limited to the American Samoa-based longline fishery alone. Historically a number of high seas and coastal fisheries as well as coastal management problems (including nesting beaches) have had direct bearing on the endangered status of Pacific sea turtles.

None of the alternatives would be expected to have a significant direct effect on sea turtles because of the method of targeting albacore in the American Samoa-based longline fishery deploys hooks in deep water. Moreover, the preferred alternative sets a limit to the total fleet size operating within the US American EEZ waters around the American Samoa archipelago. The limits to longline fleet size in conjunction with the deep method of longlining, that avoids most interactions with turtles, should minimize any cumulative impacts to turtles. A limited number of observer reports are available for the American Samoa fishery and from neighboring Independent Samoa. Based on the data, which include 96 longline sets in total, no protected species interactions were observed on any of the sets. When the estimated direct and indirect effects are combined with the potential effects of exogenous factors, none of the alternatives would be likely to measurably add to the already significant cumulative effects on sea turtle populations in the South Pacific.

Significant Cumulative Effects on Sea Turtles Requiring Mitigation: To reverse the trend of decline in sea turtle populations in the South Pacific and worldwide will take a multinational approach in both fisheries and coastal resource management. Efforts towards this goal are currently underway and will require comprehensive conservation and management of fisheries in addition to those managed under the Pelagics FMP. Tests in the Atlantic Ocean have shown that the combination of circle hooks and mackerel bait have a significant effect on reducing turtle interactions with longline vessels. Tests are planned with this gear in the Pacific Ocean, and could be extended to American Samoa in the event that further observations reveals any interactions with protected sea turtles.

10.1.5.4 Cumulative Effects of the Alternatives – Seabirds

Exogenous Factors – Seabirds: Only one major exogenous factor was identified as having the potential to contribute to cumulative effects on seabird species whose range includes American Samoa.

- Fluctuations in the ocean environment

Fluctuations in the Ocean Environment: Future ocean climate shifts are likely to cause changes in seabird abundance and this factor contributes significantly to cumulative effects on seabirds

Cumulative effects: None of the alternatives would be expected to change the cumulative effects on seabird species whose range includes EEZ waters around American Samoa. The problems with seabird interactions experienced by Pacific pelagic longline fisheries in higher sub-tropical and temperate latitudes are primarily with albatrosses and diving petrels. These type of interactions have not been reported from low latitude pelagic longline fisheries within the tropical zone of the Pacific (Bailey et al., 1996). Moreover, a limited number of observer reports are available for the American Samoa fishery and from neighboring Independent Samoa. Based on the data, which include 96 longline sets in total, no protected species interactions of any kind were observed on any of the sets.

Significant Cumulative Effects on Seabirds Requiring Mitigation: No significant cumulative effects that require mitigation were identified for seabirds. Several longline-seabird mitigation measures have been developed for Hawaii-based longline fisheries, for both deep-set tuna and shallow-set swordfish longline fishing. Should seabird interactions be perceived as a problem with the American Samoa fishery, these methods could be adapted for use in the American Samoa fishery.

10.1.5.5 Cumulative Effects of the Alternatives – Marine Mammals

Exogenous Factors – Marine Mammals: Most stocks of large whales were severely depleted by modern whaling. Moratoriums on hunting by the International Whaling Commission have restricted this activity, but poaching of whales and other marine mammals still occurs, although there is no information on whether this takes place in the EEZ around American Samoa. Four other major exogenous factors were identified as having the potential to contribute to cumulative effects on marine mammals:

- Fluctuations in the pelagic ocean environment
- Incidental take in fisheries
- Ship traffic and anthropogenic noise
- Marine debris and waste disposal

Fluctuations in the Pelagic Ocean Environment: Ocean climate fluctuations that change the habitat quality or the prey availability of marine mammals have the potential to affect their short-term or long-term distribution and abundance. Changes in oceanographic conditions may also alter rates of incidental takes of marine mammals in commercial fisheries. For example, during strong coastal upwelling events marine mammals that feed on zooplankton and small fish may be attracted to areas where drift gillnet fisheries are concentrated, and the concurrence of fishing effort and foraging animals may cause more entanglements than normal (NMFS, 2000). The magnitude of potential effects are uncertain but this factor could contribute significantly to cumulative effects on marine mammals.

Incidental Take in Fisheries: Domestic and foreign fisheries outside the Western Pacific Region may adversely affect marine mammals through gear hooking, entanglement or ingestion or by removal of prey species. This factor may contribute significantly to cumulative effects on marine mammals.

Ship Traffic and Anthropogenic Noise: Collisions with vessels and disturbance from low frequency noise are potential threats to the recovery of large cetaceans. Because many of the ship strikes occur far offshore and, thus, are unreported, this impact on large whales is most likely underestimated (NMFS, 2000). The increasing levels of anthropogenic noise in the world's oceans may have an adverse effect on whales, particularly deep-diving whales that feed in the oceans' "sound channel" (Forney *et al.*, 2000). These effects are difficult to assess but they may be significant as part of cumulative effects on marine mammals.

Marine Debris and Waste Disposal : Activities that may have adverse effects on marine mammal habitat include the dispersal of marine debris, large oil spills and other types of marine pollution. Petroleum has the potential to be toxic to marine mammals if it is inhaled, ingested or absorbed through the skin, mucous membranes or eyes, or if it inhibits feeding by fouling the baleen plates of whales. Hydrocarbons can also bio-accumulate in zooplankton and fish eaten by marine mammals and other wildlife. Any detrimental effects of marine pollution on their prey species would also affect marine mammals. Aside from large, catastrophic spills, the long-term effects of low levels of petroleum exposure are unknown.

Marine debris can be toxic to marine mammals if ingested or it can entangle them, leading to decreased ability to breathe, feed, breed, swim or haul out. The animals affected may be more vulnerable to predators or disease, reducing their survival or ability to reproduce.

These factors can have significance in local areas, where they contribute to cumulative effects on marine mammals.

Cumulative effects: A limited number of observer reports are available for the American Samoa fishery and from neighboring Independent Samoa. Based on the data, which include 96 longline sets in total, no protected species interactions were observed on any of the sets. Given the general lack of reliable information about the condition of marine mammal stocks in the central South Pacific, cumulative effects are difficult to determine. However, it is unlikely that any of the alternatives considered by the Council for controlling fishing effort in American Samoa's longline fishery would have measurable effects on marine mammals that would be significant. Any existing or potential longline fishing effort that could displaced from the American Samoa fishery by any of the alternatives would likely shift to other areas of the Pacific and transfer whatever effects that may be associated to those areas.

Significant Cumulative Effects on Marine Mammals Requiring Mitigation: No significant

cumulative effects that require mitigation were identified for marine mammals.

10.1.5.6 Cumulative Effects of the Alternatives – Economic Impacts

Exogenous Factors – Economic: Five major exogenous factors were identified as having the potential to contribute to cumulative economic effects:

- US longline fishing vessel access to EEZs and high seas surrounding American Samoa
- International tuna canning industry
- Global albacore tuna market
- Air transportation from American Samoa to overseas fresh fish markets
- American Samoa economy

US Longline Fishing Vessel Access to EEZs and High Seas Surrounding American Samoa: The concentration of longline fishing effort by US vessels in the EEZ of American Samoa could be partially relieved if these vessels obtained foreign fishing licenses to longline in the EEZs of surrounding Pacific island countries. The large EEZ of the Cook Islands would be of particular interest to longline vessels of 70+ ft that are presently fishing in American Samoa's EEZ. A few American Samoa-based longline vessel owners have made inquiries with the Cook Islands government but, in general, US fishermen lack basic information about the annual cost to obtain a foreign fishing license and other conditions, such as crewing, logbook and observer requirements, and the types of vessel monitoring systems that are acceptable to the Cook Islands government and the Forum Fisheries Agency. To date, the Cook Islands government does not appear to be in favor of granting longline fishing licenses to US vessels.

US longline fishing is not currently permitted in international waters far to the north or south of American Samoa that are part of the area regulated by the Forum Fisheries Agency under the South Pacific Tuna Treaty with the US However, this problem may be remedied if the new treaty is ratified and goes into force if ratified. The high seas areas north of the Tokelau archipelago are at equatorial latitudes which produce poor longline catch rates of albacore tuna but the high seas areas south of Niue are in a latitudinal band of water that should produce high longline catch rates of albacore tuna. Access to the southern high seas areas could be beneficial in relieving a small proportion of the US longline fishing effort that has built up in American Samoa's EEZ with the entry of large-scale vessels over 70 ft in length.

International Tuna Canning Industry: Canned tuna is American Samoa's major export. In the last two decades, American Samoa's canning industry has expanded substantially under declining production and rising imports in the US It has been able to do this because of wage levels well below those of the US mainland, conditional duty free access to the US market, exemption from prohibitions (Nicholson Act) on landing the catches of foreign vessels in the U.S and generous corporate income tax benefits

(TPC/Dept. of Commerce, 2000).

The international canned tuna industry continues to be plagued with slow growth rates, declining real prices and excess production capacity. All of this tends to intensify the struggle to lower costs. This often means relocating portions of or entire production centers. The little recovery that has occurred in the tuna canning industry in the US has been largely attributable to the use of precooked tuna loins. Loins are produced by thawing, cooking, butchering and cleaning frozen or fresh whole tuna. It is then packaged and frozen for shipment to a cannery. This is a strategy for moving more labor-intensive facets of the canning process to lower wage areas. To remain competitive, US canned tuna producers are purchasing more tuna product from foreign manufacturers (TPC/Dept. of Commerce, 2000).

Starkist Samoa has made a proposal to establish tuna freezing and processing facilities in Independent Samoa's coastal village of Asau on the island of Savai'i. The first phase of the project would involve freezing albacore tuna for shipment to American Samoa for canning. A second phase would involve tuna precooking and loining, a more involved process that could eventually employ more than 1,000 workers, possibly displacing an equal number from the fish cleaning line at the American Samoa cannery.

Forces in the world economy and in the international tuna canning industry itself are eroding American Samoa's position in the industry. Trends in world trade, specifically reductions in tariffs, are weakening the advantage of American Samoa's duty free access to the US market. The North American Free Trade Agreement (NAFTA) went into effect on January 1, 1994. Under this agreement, duties on canned tuna are to be eliminated by 2009. American Samoa was fortunate to receive the maximum 15 years for removal of the duty on canned tuna from NAFTA signatory countries. Most products had earlier tariff elimination dates. American Samoa's minimum wage, while well below the US average, is well above competing areas of the world, including Mexico, a signatory to NAFTA. The minimum cannery wage in American Samoa is presently $3.20/hr compared to about $0.70/hr in Mexico and Ecuador. It is thought that the removal of US tariffs on canned tuna will make Mexico a considerably lower cost location for canned tuna production than American Samoa (TPC/Dept. of Commerce, 2000).

Ecuador may be granted the same duty-free access to the US market as American Samoa if the Andean Trade Preference Expansion Act (ATPEA) is approved and signed into law. Some predict that Andean Pact nations have the capacity to process 2,250 tons of tuna per day (compared to 950 tons/day processed in American Samoa), enough product to supply the entire annual consumption of canned tuna in the US If Ecuador gains duty-free access, it will become the largest supplier of light meat tuna to the US (Faleomavaega, 2002). At the time of preparation of the present document, it was still uncertain whether canned tuna products would be included in the extension of the Andean Trade Promotion and Drug Eradication Act. The loss of the canneries in American Samoa, or any substantial portion of the industry, could have catastrophic

economic consequences (TPC/Dept. of Commerce, 2000). For example, if the canneries pulled out it could result in a direct loss of approximately 9,500 jobs and an indirect loss of another 3,500 jobs in government and social services.

Global Albacore Tuna Market: Cannery prices for frozen albacore in American Samoa and other processing centers fluctuates with the supply of this species and the demand for "white meat" canned tuna. The principal market for this product is the US, which consumes 57 percent of the world catch of albacore. US consumers pay a premium for white meat canned tuna compared to light meat canned tuna. At current retail pricing, demand should continue to be relatively stable (Forum Fisheries Agency, 2000).

More than 30 percent of the canned tuna sold in the US is "white meat" processed from albacore. There is approximately three times as much profit in white meat canned tuna than in light meat canned tuna. US fishermen harvest only about seven percent of the albacore used for canning white meat tuna. Japan and Taiwan-flag longline fleets supply about two-third's of the raw albacore for production of white meat canned tuna. Ecuador is rapidly becoming the third largest supplier of albacore to the US (Faleomavaega, 2002).

The recent trend in average cannery price for frozen whole albacore (22+ lb round weight) is shown in Figure 10. In the 1996-2000 period, the average price for whole frozen albacore (22+ lb) was relatively stable, between $2,400-2,500/mt (Anon., 2001). In 2001, the average price peaked at $2,600/mt (FFA, 2002) before declining in the latter part of the year and reaching an extreme low of $1,710/mt in February 2002 (B. Butler, Starkist Samoa, presentation at workshop, Feb. 28, 2002). American Samoa-based longliners who deliver albacore that is gilled and gutted rather than whole fish receive a price that is 10 percent higher than for whole weights.

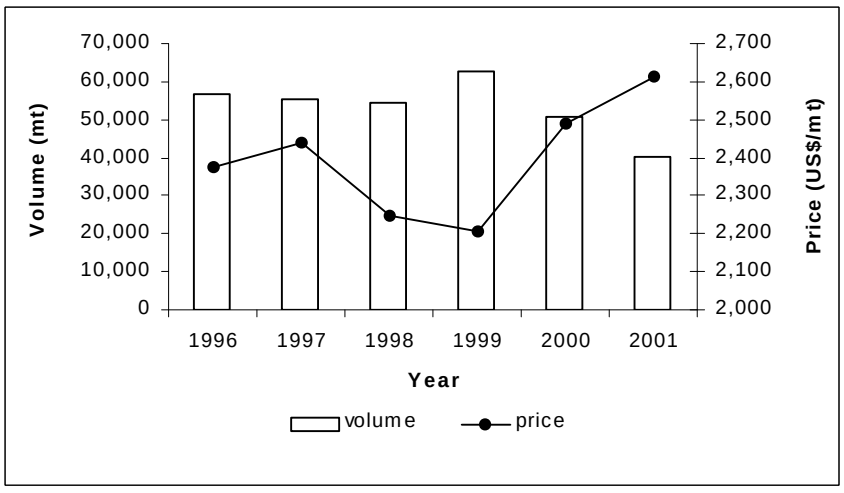

Figure 10. Recent trends in cannery prices for frozen whole albacore (22+ lb round weight). Sources: Anon. (2001); FFA (2002).

The sharp drop in the cannery price for frozen albacore is attributed to high supply from the Taiwanese longline fleet in the Indian Ocean, rather than a change in demand for white meat canned tuna. (B. Butler, ibid.). When the supply contract with the Pacific operating committee that represents the Taiwan longline fleet terminates, the cannery price is expected to rise again.

Air Transportation from American Samoa to Overseas Fresh Fish Markets: Before fresh fish exports by American Samoa can develop on a larger scale, significant improvements would be needed in airfreight capacity to overseas fresh fish markets. Hawaiian Airlines has been servicing the Pago Pago-Honolulu route using a DC 10-10, which has a maximum cargo capacity of 2 tons per flight. The carrier has announced an upgrade to a 767-300 aircraft with more capacity (4 tons per flight). There is little possibility of exporting larger quantities of fresh fish exports as backhaul on an aircraft chartered to carry parcel post to American Samoa because the airplane flies on to Australia after delivering mail to American Samoa.

American Samoa economy: American Samoa's most serious economic problem is low per capita personal income, estimated to be approximately one-fifth of the US average. More alarming is the fact that the income gap between American Samoa and the US appears to be getting larger, not small, and when inflation is considered, real personal income in American Samoa has declined about one percent per year over the 15-year period between 1979 and 1994 (TPC/Dept. of Commerce, 2000). Despite the existence of small local market niches for fresh and frozen seafood that may presently be under supplied (e.g., the *palagi* demand for value-added seafood), overall demand for fresh fish, especially better quality and higher-priced products, in American Samoa is not expected to grow substantially until residents' real personal income increases.

Tourism in Hawaii represents a substantial source of demand for good quality fresh fish. However, attempts to develop a tourist industry in American Samoa have not succeeded to date (TPC/ Dept. of Commerce, 2000), so a fresh fish market niche associated with tourist demand has never been established.

Cumulative effects: If US longline vessels presently fishing in the EEZ of American Samoa can gain access to the EEZs of neighboring Pacific island countries, particularly the EEZ of the Cook Islands, albacore catch rates could probably be kept at highly profitable levels for the near future. This would contribute very positively to cumulative economic impacts on participants operating long-range, 70+ ft length vessels. Alternatives that allow additional participation by vessels in this length class (Alternatives 1, 2, 3, 4, and 9) would be more positive than alternatives that tightly restrict additional participation by 70+ ft length longline vessels (Alternatives 5, 6, 7, and indirectly 8).

World market effects on tuna supply, demand, pricing and cost of canned tuna production could contribute significantly to cumulative economic impacts on American Samoa longline fishery participants under all of the alternatives. Adverse impacts would be greatest if all or a significant portion of canning operations were relocated

from American Samoa to lower-cost wage areas, such as Ecuador, Mexico or Independent Samoa. In this event, US vessels landing albacore from longline fishing in the EEZ of American Samoa might be forced to ship ocean containers of frozen product to distant processing areas, thereby adding inefficiency and extra cost.

Alternatives that emphasize small-scale vessel participation and small-scale albacore catches in the American Samoa longline fishery (Alternatives 3, 5, 6, 7 and, indirectly 8) could have greater negative impacts than those which emphasize large-scale vessel participation (Alternatives 1, 2, 4, and 9). Small-scale longline fishermen would have more difficulty than large-scale participants in consolidating small catches of albacore for ocean freight freezer container shipments to distant tuna processing areas. To obtain economical ocean freight rates, freezer containers should be loaded with 12 mt (20 ft container) to 24+ mt (40 ft container) of frozen tuna.

If a significant overseas market could be developed for fresh fish production by the American Samoa longline fishery, the harvesters could have an alternative and partially avoid some of the potential adverse effects of total reliance on world market trends in the tuna canning industry. A greater emphasis on fresh fish exports from American Samoa would favor vessels large enough for proper shipboard handling and chilling of the fish catch (over 40 ft length) but not too large for economic operation to deliver fresh catches. Alternatives 3, 6, and indirectly 8 would strongly emphasize participation by longline vessels under 40 ft that are unable to deliver the high quality fish that would be demanded in overseas fresh markets. The latter would be less positive than alternatives that could favor chilled fish longline operations by vessels over 40 ft length (Alternatives 2, 4, 5 and 9). Alternative 1 would encourage continued new participation in the American Samoa longline fishery by large freezer vessels, whereas Alternative 7 would not allow new participation in the longline fishery after March 21, 2002, thereby favoring the longline fleet size composition as of that date.

Significant Cumulative Economic Effects Requiring Mitigation: To relieve some of the concentration of longline fishing effort that has built up in the EEZ of American Samoa, the owners of US longline vessels based in American Samoa should be encouraged to obtain foreign fishing licenses that would allow their vessels to longline in the EEZ of the Cook Islands and possibly other neighboring Pacific island states. Vessel owners should receive assistance in understanding, obtaining and complying with foreign fishing licenses available from the Cook Island government and possibly other governments.

10.1.5.7 Cumulative Effects of the Alternatives – Social Impacts

Exogenous Factors – Social Impacts: Two major exogenous factors were identified as having the potential to contribute to cumulative social impacts.

- Fishermen's options for switching fisheries or relocating effort
- Economic climate

Fishermen's Options for Switching Fisheries or Relocating Effort: Increasingly restrictive regulatory environments and escalating compliance costs were major factors in the relocation of longline vessels from the Gulf of Mexico and Atlantic to Hawai'i in the late 1980s and early 1990s (Travis 1999). Since that time, longline operations in Hawai'i have become similarly constrained by the implementation of a limited access program, area closures and other regulations. New areas that these vessels could move to without encountering significant regulatory or economic obstacles are limited. Relocating to other island areas in the Western Pacific Region is also an option for longline vessels displaced from American Samoa's longline fishery. The possibilities for switching fisheries or relocating fishing effort have major significance for cumulative social effects (NMFS, 2001b).

Economic Climate: The economies of the island areas in the Western Pacific Region could be seriously affected by numerous factors exogenous to pelagic fisheries, including changes in regional tourism patterns and government spending (NMFS, 2001b). American Samoa's growth over the past 40 years has been based largely on a single industry (tuna canning) and a continuing infusion of federal funds. More than 90 percent of all jobs in the territory are directly or indirectly dependent on these two sources of primary income (TPC/Dept. of Commerce, 2001). Any future downturn in federal assistance or the loss of the canneries, or any substantial portion of this industry, could have catastrophic economic consequences for employment opportunities in American Samoa (TPC/Dept. of Commerce, 2001) outside of the longline fishing industry.

Cumulative effects: It is likely that management regimes in US fisheries will become more rather than less restrictive, thereby heightening any negative effects of alternatives that would limit fishing effort in American Samoa's longline fishery. Future regulatory changes could add significantly to negative cumulative effects on participants under all of the alternatives by further reducing their opportunities to shift to other fisheries.

The condition of island and regional economies could improve or worsen the effects of all of the alternatives. Should employment opportunities expand, displaced fishermen could possibly find new jobs. Should employment opportunities decrease, they will have more difficulty in finding new livelihoods. Therefore, the cumulative social effects associated with these economic variables may or may not be significant in a positive or negative direction. The social costs are likely to be more severe for the small-boat fleet and indigenous participants than for larger vessels and transients. Large longline vessels can compensate by relocating to more distant fishing grounds, whereas the small-scale longline fleet does not have this opportunity. Thus, alternatives that emphasize unlimited or additional participation by large-scale vessels (> 50 ft) with transient fishermen (Alternatives 1 and 2) would be expected to contribute more negatively to cumulative social effects than the other alternatives (Alternatives 3-9). Small-scale vessels have greater flexibility to change fisheries (.e.g, longline to troll or bottom handline) than large-scale vessels. Hence, alternatives that emphasize small-

scale participation (Alternatives 3, 4, 5 and, indirectly 8) have less potential for adverse cumulative impacts than those that don't.

Significant Cumulative Social Effects Requiring Mitigation: The rapidly diminishing options for US longline fishing vessels may indicate that some form of financial assistance should be made available to them. The most serious social and economic impact for the American Samoa longline fishery would be the closure of the two canneries based in Pago Pago. Should this occur the fishery would almost certainly collapse as the only viable market for the bulk of the catch, i.e. albacore tuna, would be closed. Several operators of large ocean-going longliners in the American Samoa fishery also have permits to operate in the Hawaii limited entry longline fishery, and so could relocate from one fishery to the other. However, the majority of other fishermen, particularly the alia fleet would have limited alternatives. The larger vessels unable to enter the Hawaii fishery may be able to relocate to other Pacific Island countries such as the Cook Islands, Independent Samoa or Fiji, but the alia fleet would likely have to convert to troll or bottomfish fishing for the local fresh fish market.

10.1.6 Reasons for Choosing the Preferred Alternative

Alternative 9B is preferred because it strikes a compromise between avoiding a boom-and-bust scenario (accompanied by local depletion and gear conflict), while maintaining and supporting opportunities for both historical ("pioneer") and new fishery participants. The preferred alternative was developed over a number of years, and seeks to recognize the concerns of both small and large scale vessel operators. It also explicitly addresses the cultural concerns of both fishery participants and the larger fishing community that is connected to the indigenous fleet through the fish that is harvested for traditional exchanges and customs. In addition, the preferred alternative would implement an observer program for this fishery, thus providing detailed information on fishery operations and interactions with endangered species, marine mammals, and seabirds. This action is not anticipated to provide a one-time "fix" but is rather a first step in adaptive management of this dynamic fishery.

10.1.7 Conclusions and Determination (Finding of No Significant Impact)

1. The preferred alternative is not expected to jeopardize the sustainability of any target species that may be affected by the action, based on historical and predicted fishing effort and on the stock-wide condition of target species (Section 10.1.4.1).

2. The preferred alternative is not expected to jeopardize the sustainability of any non-target species that may be affected by the action, based on historical and predicted fishing effort and the stock-wide condition of non-target species (Section 10.1.4.1).

3. The preferred alternative is not expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat as defined under the Magnuson-Stevens Act and identified in FMPs, because the action is not likely to lead to substantial physical, chemical, or biological alterations of these habitats (Section 10.1.4.5).

4. The preferred alternative is not expected to have a substantial adverse impact on public health or safety, because the action will encourage safer vessels that are more capable of preserving fish quality and assuring product safety (Section 10.1.4.8).

5. The preferred alternative is not expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species, because the prevalent fishing techniques are believed to minimize interactions and adverse impacts and are not anticipated to lead to any increases in fishery interactions or adverse impacts on other endangered or threatened species, or marine mammals (Sections 10.1.4.2, 10.1.4.3, 10.1.4.4).

6. The preferred alternative is not expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species, based on historical and predicted fishing effort and the condition of these stocks (Section 10.1.4.1).

7. The preferred alternative is not expected to have a substantial adverse impact on biodiversity and ecosystem function within the affected area (e.g. benthic productivity, predator-prey relationships etc.), because the action includes provisions to minimize bycatch and it is not expected to lead to changes in fishing operations that would alter significantly harvests or the species composition of fish catch (Section 10.1.4.6).

8. The preferred alternative is not expected to have significant social or economic impacts which are interrelated with adverse natural or physical environmental effects. Although this action will limit total fishing effort and participation, thereby removing one more opportunity for US vessels and fishermen, it is preferred because it will encourage economic stability in the fishery without substantially increasing the potential for gear conflict (Section 10.1.4.7).

9. The preferred alternative is not controversial. Limited entry programs have previously been implemented by the Council for the Hawaii-based longline fishery, and the bottomfish and crustacean fisheries in the Northwestern Hawaiian islands. The preferred alternative implements a limited entry program for the American Samoa longline fishery, which will limit fishing effort on target stocks and environmental impacts on the ecosystem and protected species. However limited entry programs have the potential to exclude participants who do not meet specific inclusion criteria, and bar future participation from other interested parties who also do not meet these criteria. Nevertheless, the Council

and NMFS conducted extensive public consultations with different segments of the American Samoa longline fishery (see section 4.3), which resulted in a limited entry program which reflects the consensus which emerged from these consultations. The preferred alternative does not threaten to violate any Federal or territorial requirements to protect the environment. There is the potential for the fishery to interact with protected species of sea turtles, and for this reason the 2002 BiOp issued by NMFS contains an anticipated take of 3 hardshell and 1 leatherback turtle for the American Samoa fishery. Interactions with seabirds and marine mammals have been judged to be negligible.

Based on the information contained in the environmental assessment, and other sections of this document, I have determined that the preferred alternative, which would limit entry into American Samoa's EEZ pelagic longline fishery to maintain economic viability and avoid gear conflict while providing for sustained community participation is consistent with existing national environmental policies and objectives set forth in sections 101 (a) and 101 (b) of the National Environmental Policy Act and will not have a significant impact on the quality of the human environment. As described in section 5.03.c of NOAA Administrative Order 216-6, a Finding of No Significant Impact is supported and appropriate for the preferred alternative. Therefore, preparation of an environmental impact statement for the preferred alternative is not required by Section 102 (c) of the National Environmental Policy Act or its implementing regulations.

_____ _____

William T. Hogarth Date
NOAA Assistant Administrator for Fisheries

Table 13: Summary of Impacts. Note: The impacts of each management alternative are described in comparison to the baseline No Action alternative (Alternative 1).

Essential Fish Habitat and the Marine Environment

EFFECTS:		ALT. 1	ALT. 2	ALT. 3	ALT. 4	ALT. 5	ALT. 6	ALT. 7	ALT. 8	ALT. 9
Essential fish habitat	Direct and Indirect	No detectable adverse effects	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action
	Cumula-tive	No detectable adverse effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects
Marine environ-ment	Direct and Indirect	No detectable adverse effects	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action
	Cumula-tive	No detectable adverse effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects

Pelagic Management Unit Species (PMUS)

EFFECTS:		ALT. 1	ALT. 2	ALT. 3	ALT. 4	ALT. 5	ALT. 6	ALT. 7	ALT. 8	ALT. 9
Stock-wide Catches and Popula-tions of PMUS	Direct and Indirect	No detectable effect on target or non-target stocks	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action
	Cumula-tive	No detectable effect on target or non-target stocks, including juvenile yellowfin and bigeye tuna populations	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects
Local Catches and Popula-tions of PMUS	Direct and Indirect	Potential decline in local longline albacore CPUE	Potential for decline in local albacore CPUE reduced moderately	Potential for decline in local albacore CPUE reduced moderately	Potential for decline in local albacore CPUE reduced moderately	Potential for decline in local albacore CPUE reduced substantially	Potential for decline in local albacore CPUE reduced substantially	Potential for decline in local albacore CPUE reduced very substantailly	Potential for decline in local albacore CPUE reduced indirectly	Potential for decline in local albacore CPUE substantially reduced
	Cumula-tive	High potential for decline in Samoa regional longline albacore CPUE	Potential for decline in Samoa regional albacore CPUE reduced moderately	Potential for decline in Samoa regional albacore CPUE reduced moderately	Potential for decline in Samoa regional lalbacore CPUE reduced moderately	Potential for decline in Samoa regional albacore CPUE reduced substantially	Potential for decline in Samoa regional albacore CPUE reduced substantially	Potential for decline in Samoa regional albacore CPUE reduced very substantially	Potential for decline in Samoa regional albacore CPUE reduced indirectly	Potential for decline in Samoa regional albacore CPUE substantially reduced

Sea Turtles

EFFECTS:		ALT. 1	ALT. 2	ALT. 3	ALT. 4	ALT. 5	ALT. 6	ALT. 7	ALT. 8	ALT. 9
Leather-back	Direct and Indirect	One reported mortality from shallow-set experimental longline fishing. No longline takes reported when gear is set deep	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action
	Cumula-tive	"Endangered" status	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects
Hawksbill	Direct and Indirect	No longline takes reported when gear is set deep and offshore	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action
	Cumula-tive	"Endangered " status	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects
Green Turtle	Direct and Indirect	No longline takes reported when gear is set deep and offshore	No significant change from no action	No significant change from no action	No significant change from no action	No significant change from no action	No significant change from no action	No significant change from no action	No significant change from no action	No significant difference from no action
	Cumula-tive	"Threatened" status	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects

Endangered Seabirds

EFFECTS:		ALT. 1	ALT. 2	ALT. 3	ALT. 4	ALT. 5	ALT. 6	ALT. 7	ALT. 8	ALT. 9
Endanger-ed Seabird Take and Populations	Direct and Indirect	American Samoa outside range of albatross, no fishery interactions	No significant change from no action	No significant change from no action	No significant change from no action	No significant change from no action	No significant change from no action	No significant change from no action	No significant change from no action	No significant change from no action
	Cumula-tive	American Samoa outside range of albatross	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects

Marine Mammals

EFFECTS:		ALT. 1	ALT. 2	ALT. 3	ALT. 4	ALT. 5	ALT. 6	ALT. 7	ALT. 8	ALT. 9
Marine Mammal Take and Popula-tions	Direct and Indirect	No takes of marine mammals, although low incidence of pilot whales stealing bait and fish without being directly observed	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action	No significant difference from no action
	Cumula-tive	No detectable adverse effects on any marine mammal population	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects	No detectable change in cumulative effects

Economic and Social Impacts

EFFECTS:		ALT. 1	ALT. 2	ALT. 3	ALT. 4	ALT. 5	ALT. 6	ALT. 7	ALT. 8	ALT. 9
Gross Revenue to Longline Fishery	Direct and Indirect	Decline in local longline albacore CPUE could reduce vessel revenue below breakeven costs	Potential for decline in local albacore CPUE (and associated revenue reduction) reduced moderately	Potential for decline in local albacore CPUE (and associated revenue reduction) reduced moderately	Potential for decline in local albacore CPUE (and associated revenue reduction) reduced moderately	Potential for decline in local albacore CPUE (and associated revenue reduction) reduced substantially	Potential for decline in local albacore CPUE (and associated revenue reduction) reduced substantially	Potential for decline in local albacore CPUE (and associated revenue reduction) reduced very substantially	Potential for decline in local albacore CPUE (and associated revenue reduction) reduced indirectly	Potential for decline in local albacore CPUE (and associated revenue reduction) reduced substantially
	Cumula-tive	High potential for decline in Samoa regional longline albacore CPUE (and associated revenue reduction)	Potential for decline in Samoa regional albacore CPUE (and associated revenue reduction) reduced moderately	Potential for decline in Samoa regional albacore CPUE (and associated revenue reduction) reduced moderately	Potential for decline in Samoa regional lalbacore CPUE (and associated revenue reduction) reduced moderately	Potential for decline in Samoa regional albacore CPUE (and associated revenue reduction) reduced substantially	Potential for decline in Samoa regional albacore CPUE (and associated revenue reduction) reduced substantially	Potential for decline in Samoa regional albacore CPUE (and associated revenue reduction) reduced very substantially	Potential for decline in Samoa regional albacore CPUE (and associated revenue reduction) reduced indirectly	Potential for decline in Samoa regional albacore CPUE (and associated revenue reduction) reduced substantially

EFFECTS:		ALT. 1	ALT. 2	ALT. 3	ALT. 4	ALT. 5	ALT. 6	ALT. 7	ALT. 8	ALT. 9
Cost and Efficiency of Longline Operations	Direct and Indirect	No regulatory encumbran-ces on operating efficiency	Permit distribution by vessel size class and “land all PMUS” requirement would create inefficiency	Permit distribution by vessel size class and “land all PMUS” requirement would create inefficiency	Permit distribution by vessel size class and “land all PMUS” requirement would create inefficiency	Permit distribution by vessel size class and “land all PMUS” requirement would create inefficiency	Permit distribution by vessel size class and “land all PMUS” requirement would create inefficiency	Encourages greater efficiency in small-scale fishery; Limit on hooks per set may create inefficiency for large-scale fishery	Creates high inefficiency for vessels over 50 ft length to indirectly control longline fishing effort	Permit distribution by vessel size class would create some inefficiency, mitigated by upgrades and no hook or vessel size limits
	Cumula-tive	No change in existing adverse cumulative effects on U.S. longline vessels	Moderate negative change in adverse cumulative effects on U.S. longline vessels	Moderate negative change in adverse cumulative effects on U.S. longline vessels	Moderate negative change in adverse cumulative effects on U.S. longline vessels	Moderate negative change in adverse cumulative effects on U.S. longline vessels	Moderate negative change in adverse cumulative effects on U.S. longline vessels	Moderate negative change in adverse cumulative effects on U.S. longline vessels	Major negative change in adverse cumulative effects on U.S. longline vessels	Minor negative change in adverse cumulative effects on U.S. longline vessels

EFFECTS:		ALT. 1	ALT. 2	ALT. 3	ALT. 4	ALT. 5	ALT. 6	ALT. 7	ALT. 8	ALT. 9
Transfer value of permits for American Samoa longline fishery	Direct and Indirect	Longline general permits cannot be transferred, so they have no transfer value	No transfer of limited access permits allowed, so no transfer value	Very limited transfer of indigenous limited access permits for vessels < 40 ft, so transfer value limited	Very limited transfer of indigenous limited access permits for vessels < 40 ft, so transfer value limited	Very limited transfer of indigenous limited access permits for vessels < 40 ft, so transfer value limited	Very limited transfer of indigenous limited access permits for vessels < 40 ft, so transfer value limited	No transfer of limited access permits allowed, so no transfer value	No limited entry permits issued	Fairly open transfer of permits, American Samoa permits will gain transfer value
	Cumula-tive	Longline fishing in American Samoa's EEZ allowed under Hawaii longline limited access permits	Longline fishing under Hawaii limited access permits no longer allowed, so they will lose transfer value	Longline fishing under Hawaii limited access permits no longer allowed, so they will lose transfer value	Longline fishing under Hawaii limited access permits no longer allowed, so they will lose transfer value	Longline fishing under Hawaii limited access permits no longer allowed, so they will lose transfer value	Longline fishing under Hawaii limited access permits no longer allowed, so they will lose transfer value	Longline fishing under Hawaii limited access permits no longer allowed, so they will lose transfer value	Longline fishing under Hawaii limited access permits no longer allowed, so they will lose transfer value	Longline fishing under Hawaii limited access permits no longer allowed, so they will lose transfer value

EFFECTS:		ALT. 1	ALT. 2	ALT. 3	ALT. 4	ALT. 5	ALT. 6	ALT. 7	ALT. 8	ALT. 9
Gear Conflict	Direct and Indirect	Unlimited longline fishing effort could lead to gear conflict	Potential for longline gear conflict reduced moderately	Potential for longline gear conflict reduced moderately	Potential for longline gear conflict reduced moderately	Potential for longline gear conflict reduced substantially	Potential for longline gear conflict reduced substantially	Potential for longline gear conflict reduced very substantailly	Potential for longline gear conflict reduced indirectly	Potential for longline gear conflict reduced substantially
	Cumula-tive	Increasing potential for gear conflict with troll, handline fishermen	Moderate reduction in potential for gear conflict with troll, handline fishermen	Moderate reduction in potential for gear conflict with troll, handline fishermen	Moderate reduction in potential for gear conflict with troll, handline fishermen	Moderate reduction in potential for gear conflict with troll, handline fishermen	Moderate reduction in potential for gear conflict with troll, handline fishermen	Moderate reduction in potential for gear conflict with troll, handline fishermen	Probable increase in potential for gear conflict with troll, handline fishermen	Moderate reduction in potential for gear conflict with troll, handline fishermen
Employment in American Samoa Longline Fishery and Alternative Employment, Relocation Prospects	Direct and Indirect	Longline employment increasing, poor prospects for alternative employment in American Samoa	Potential to increase up to maximum no. of vessels permitted	Potential to increase up to maximum no. of vessels permitted	Potential to increase up to maximum no. of vessels permitted	Potential to increase in small-scale sector up to maximum no. of permits; no further increase in large-scale sector	Potential to increase in small-scale sector up to maximum no. of permits; no further increase in large-scale sector	Limited potential to increase in small-scale sector but no further increase in large-scale sector	Could increase in small-scale sector but would decrease substantially in large-scale sector	Potential to increase in large-scale sector by utilizing 26 upgrade permits
	Cumula-tive	Diminishing prospects for relocating with longline vessels to less regulated U.S. fisheries	Moderate negative change in employment, relocation prospects	Moderate negative change in employment, relocation prospects	Moderate negative change in employment, relocation prospects	Significant negative change in employment, relocation prospects	Significant negative change in employment, relocation prospects	Significant negative change in employment, relocation prospects	Very significant negative change in employment, relocation prospects	Moderate negative change in employment, relocation prospects

EFFECTS:		ALT. 1	ALT. 2	ALT. 3	ALT. 4	ALT. 5	ALT. 6	ALT. 7	ALT. 8	ALT. 9
Effects on Specific Communities, Cultures	Direct and Indirect	Uncontrolled expansion of the longline fishery could lead to "boom and bust"	Potential beneficial impact in limiting longline permits; no priority for indigenous American Samoans	Potential beneficial impact in limiting longline permits; priority for indigenous American Samoans at all scales of longline fishery participation	Potential beneficial impact in limiting longline permits; priority for indigenous American Samoans at all scales of longline fishery participation	Potential beneficial impact in limiting longline permits; priority for indigenous American Samoans at all scales of longline fishery participation	Potential beneficial impact in limiting longline permits; priority for indigenous American Samoans at all scales of longline fishery participation	Significant potential beneficial impact in limiting total longline fishing effort; priority for historical participants, especially small-scale (who are indigenous)	Significant potential beneficial impact in indirectly limiting total longline fishing effort, possibly leading to wider indigenous participation in small-scale longline fishery	Significant potential beneficial impact in limiting total longline fishing effort; priority for historical participants, especially small-scale operators wishing to upgrade their vessels
	Cumula-tive	"Boom and bust" could add to other factors to disrupt sustained community participation	Positive change in reducing potential for "boom and bust"	Positive change in reducing potential for "boom and bust."	Positive change in reducing potential for "boom and bust."	Positive change in reducing potential for "boom and bust."	Positive change in reducing potential for "boom and bust."	Positive change in reducing potential for "boom and bust."	Positive change in reducing potential for "boom and bust" indirectly	Positive change in reducing potential for "boom and bust."

10.2 Regulatory Flexibility Act

The Regulatory Flexibility Act, 5 U.S.C. 601 et seq. (RFA) requires government agencies to assess the impact of regulatory actions on small businesses and other small organizations. An Initial Regulatory Flexibility Analyses prepared by NMFS is presented in full in Appendix II of this document. In summary, it is anticipated that Alternative 1 (no action) would not initially result in any additional costs, or changes in ex-vessel revenues due to changes in catch rates or market prices. However, in the longer -term this alternative would likely lead to local depletion, gear conflicts and a boom and bust scenario. Unregulated expansion of the fleet could lead to unsustainable development; i.e., a “boom” of uncontrolled fishing by large vessels with greater fishing power, followed by a “bust” of overcapacity and reduced availability of pelagic fish. A “boom” cycle of longline fishery growth would increase the short-term supply of fish but the “bust” cycle that may follow could disrupt long-term fish supply and discourage sustained community participation in fisheries. Economic impacts on fishery participants of the remaining alternatives vary but in general the most positive effects would be anticipated to result from alternatives that balance fishing effort with available fishing grounds and community needs.

10.3 Executive Order 12866

In order to meet the requirements of Executive Order 12866 (E.O. 12866) the National Marine Fisheries Service requires that a Regulatory Impact Review (RIR) be prepared for all regulatory actions that are of public interest (see Appendix II for the complete RIR for this action). This review provides an overview of the problem, policy objectives, and anticipated impacts of the action, and ensures that management alternatives are systematically and comprehensively evaluated such that the public welfare can be enhanced in the most efficient and cost effective way. In accordance with E.O. 12866, the following is set forth: (1) This rule is not likely to have an annual effect on the economy of more $100 million or to adversely affect in a material way the economy, a sector of the economy, productivity, jobs, the environment, public health or safety, or state, local, or tribal governments or communities; (2) This rule is not likely to create any serious inconsistencies or otherwise interfere with any action taken or planned by another agency; (3) This rule is not likely to materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights or obligations of recipients thereof; (4) This rule is not likely to raise novel or policy issues arising out of legal mandates, or the principles set forth in the Executive Order and; (5) This rule is not controversial. Monetization of the national costs and benefits under the preferred (or any) alternative is not possible given the limited economic and operational information available on the vessels participating in this fishery, the structural economic relationships between longline vessels and gear and equipment suppliers and markets in American Samoa, and the uncertain effect of the alternatives on vessel operations and revenues. However the purpose of limited entry as a general rule is to reduce tendencies toward over-capacity which create over-investment and productive

inefficiencies. Because this is a fishery for a highly migratory species with a negligible impact on the overall stock of the primary species (albacore) due to the small size of the American Samoa fishery, fishery population effects are very unlikely to serve as constraints. However, to the extent that catch competition within the EEZ around American Samoa becomes an issue, which it is not at present, or other issues arise, creating limited entry – a constraint on the number of participants – improves the potential for controlling other inputs and for creating a "regulatory community" in which further adaptive management actions can occur in a timely manner.

10.4 Magnuson-Stevens Act Discretionary Provisions to Establish a Limited Access System

Under the Magnuson-Stevens Act (16 U.S.C. 1853), when a Council is developing a limited access system, several factors must be taken into account:

(A) present participation in the fishery,
(B) historical fishing practices in, and dependence on, the fishery,
(C) the economics of the fishery,
(D) the capability of fishing vessels used in the fishery to engage in other fisheries,
(E) the cultural and social framework relevant to the fishery and any affected fishing communities, and
(F) any other relevant considerations.

Present Participation in the American Samoa Longline Fishery

Current and historical participation by federal permit holders in American Samoa's domestic longline fishery is summarized in Table 14 by vessel size and fishing status as of March 21, 2002. More detailed descriptions of participants can be found in Section 10.1 (NEPA analysis), Appendix I (Fishery Impact Statement), and Appendix II (Initial Regulatory Flexibility Analysis) of this document.

Table 14. March 21, 2002 distribution by size class of active and inactive longline fishing vessels in American Samoa's domestic longline fishery.

Vessel size class	Actively fishing	Not actively fishing	Total
equal to or less than 40'	40	33	73
40.1' - 50'	5	1	6
50.1' - 70'	15	0	15
70.1' - 100'	15	1	16
ALL	75	35	110

Historical fishing practices in, and dependence on, the fishery

Although American Samoa's domestic longline fishery is of relatively recent origin in American Samoa, it was an outgrowth of the traditional small-scale pelagic troll fishery utilizing traditional 28 ft alia catamaran vessels since the mid-1970s. It is only in the last year (2001) that a substantial number of large-scale vessels (> 50 ft length) have participated in the domestic longline fishery. Except for limited bottom handline fishing for deep-sea snapper, there are few other commercial fishing in American Samoa, so both the small-scale and large-scale fleets are almost completely dependent on the longline fishery, which targets a single species (albacore tuna) for sale to local canneries. More detailed discussion of historical fishing practices in American Samoa and the development of the domestic longline fishery can be found in Appendix I (Fishery Impact Statement) of this document.

Economics of the fishery

Detailed discussion of the economics of American Samoa's domestic longline fishery are contained in Section 10.1 (NEPA analysis) and Appendix II (IRFA analysis) of this document. In summary, sales revenue is generated almost entirely by selling albacore tuna to American Samoa-based canneries. Both the small vessel (< 50 ft length) and large vessel (50+ ft length) sectors of the fishery need to make average albacore tuna catches over 2.1 fish/100 hooks when the cannery price is about $2,200/mt for breakeven economic operation. When the cannery price for albacore is lower ($1,700/mt), the average longline albacore catch needs to be over 2.8 fish/100 hooks fpr breakeven operation.

Capability of fishing vessels used in the fishery to engage in other fisheries

Large-scale vessels (50+ ft length) presently engaged in American Samoa's domestic longline fishery are relatively mobile. Increasingly restrictive regulatory environments and escalating compliance costs were major factors in the relocation of longline vessels from the Gulf of Mexico and Atlantic to Hawai‘i in the late 1980s and early 1990s (Travis 1999). Since that time, longline operations in Hawai‘i have become similarly constrained by the implementation of a limited access program, area closures and other regulations. New areas that American Samoa-based vessels could move to without encountering significant regulatory or economic obstacles are limited (NMFS, 2001b).

Cultural and social framework relevant to the fishery and affected fishing communities

The cultural and social framework of the fishery, as well as the American Samoa fishing community, are described in detail in Appendix I (Fishery Impact Statement) of this document. In summary, due to a rapidly growing population and overexploitation of some inshore seafood resources, the American Samoa community is becoming even more dependent on pelagic fish for food, employment and income from fisheries and for perpetuation of *fa'a Samoa* (Samoan cultural heritage and way of life). Despite

increasing commercialization, the pelagic longline fishery contributes strongly to the cultural identity and social cohesion of American Samoa (Severance et al., 1999). The role of pelagic fish in meeting cultural obligations is at least as important as the contributions made to nutritional or economic well-being of island residents (Severance et al., 1999).

Other relevant considerations

Fairness and equity: Limiting further expansion of domestic longline fishing effort within the finite area of American Samoa's EEZ is crucial to achieve optimum yield and diminish the risks of gear conflict, a local reduction in albacore tuna catch rates and "boom and bust" longline fishery development. Under the "precautionary principle," the Council is considering alternatives that would institute fair and equitable controls before a crisis in the fishery occurs. Limiting effort in American Samoa's longline fishery would decrease the large reserve of potential effort that could continue to be added by large vessels from outside of American Samoa and would inevitably lead to the problems described above.

The Council regards voluntary withdrawal and rotation of permits as the fairest way to stabilize the size of the fleet and achieve optimum yield, while allowing for sustained community participation in the fishery. It would take into consideration historical participation in, and economic and social/cultural dependence on the fishery. Establishing long-term associations within the fishery and the community should encourage stability, long-term investment and confidence by fostering personal and professional commitments.

Opportunity for new participants to enter the fishery: Under alternatives that include "use-it-or-lose-it" landing requirements, "lost" permits provide opportunities for entry by new participants. Under some alternatives, a point system based on historical participation in other American Samoa-based pelagic fisheries would allow for new entrants who have demonstrated their experience in and commitment to American Samoa pelagic fisheries. Other alternatives would rank new entrants according to the date of their first recorded longline landing. Permit rotation mechanisms such as these would maintain optimum yield by reducing the number of latent permits and allow for new participation in the fishery.

10.5 Coastal Zone Management Act

The Coastal Zone Management Act requires a determination that a recommended management measure has no effect on the land or water uses or natural resources of the coast zone, or is consistent to the maximum extent practicable with an affected state's approved coastal zone management program. A copy of this document will be submitted to the appropriate state government agency in American Samoa for review and concurrence with a determination made by the Council that the recommended

measure is consistent, to the maximum extent practicable, with state and territorial coastal zone management programs.

10.6 Endangered Species Act

On March 29, 2001, NMFS issued a Biological Opinion on the continued operation of Western Pacific pelagic fisheries regulated under the Pelagics Fishery Management Plan. Based on its analysis, NMFS concluded that the numbers of green, leatherback and loggerhead turtles captured, injured, or killed in the proposed fisheries would reduce the numbers and reproduction of those species in a way that would be expected to appreciably reduce their likelihood of surviving and recovering in the wild. NMFS concluded that the numbers of olive ridley captured, injured, or killed in the proposed fisheries would not reduce the numbers and reproduction of that species in a way that would reduce its likelihood of surviving and recovering in the wild. The biological opinion includes a reasonable and prudent alternative that is expected to avoid the likelihood of jeopardizing green, leatherback, and loggerhead turtles. This reasonable and prudent alternative has been implemented by the Council. On November 15, 2002, NMFS issued a new Biological Opinion which included an analysis of the preferred alternative contained in this document. This Opinion found that the ongoing operations of the western Pacific pelagic fisheries under the Council's jurisdiction (including the proposed limited entry program for American Samoa) do not jeopardize the ongoing existence of threatened or endangered species.

10.7 Marine Mammal Protection Act

All pelagic fisheries in the Western Pacific Region under Council jurisdiction, including the American Samoa-based longline fishery, are classified as Category III under Section 118 of the Marine Mammal Protection Act (MMPA) of 1972 (FR Vol. 66, No. 158, pp42780-42801). Based on the low level of interactions with this fishery, the preferred alternative identified in this document is not expected to result in adverse impacts to marine mammals.

10.8 Paperwork Reduction Act

The preferred alternative identified in this document requires individuals who participate in the American Samoa-based pelagic longline fishery to have limited access permits. Interested persons must apply for American Samoa longline limited access permits that will be issued to qualifying individuals based on the eligibility criteria established under the fishery management plan. The limited access permits program includes application, appeal, permit renewal and transfer processes which require collection-of-information approved by the Office of Management and Budget (OMB), pursuant to the

Paper Work Reduction Act.

It is estimated that NMFS would process 120 to 150 applications for initial American Samoa longline limited access permits and 5 to 10 appeals on initial permit denials during the first year of the limited access fishery. During each of years 2 and 3, NMFS expects to receive 1 to 8 applications for permit upgrades and 20 to 25 permit transfers. In year 4, NMFS expects to receive 100 - 130 permit renewals, 1 to 8 permit upgrades, and 20 to 25 permit transfers.

The collection-of-information burden to fishermen for compiling, organizing, and submitting the required information to NMFS for initial entry into the fishery, including appeal cases in year 1 is estimated at 120 - 160 hours[1] (total). In year 2, the information collection burden associated with upgrading of permits and permit transfers is estimated at 16 -75 hours; for year 3 , the estimate is 16 - 75 hours, and for year 4, which includes permit renewals, the estimated collection burden is 91 - 123 hours. If approved by OMB, the collection-of-information for the limited access fishery would be valid for years 1 through 4, until late 2006, after which NMFS must request approval for the continued collection-of-information as required under the fishery management plan..

In addition to information collected by NMFS' limited access permits program, operators of vessels that are registered for use with American Samoa longline limited access permits and are longer than 40 feet in length overall and intend to target Pacific pelagic management unit species employing longline gear in federal waters around American Samoa must notify NMFS at least 72 hours prior to leaving port on a fishing trip. This notification (collection-of-information) is necessary for the placement of observers on board the vessels, if requested by NMFS. The amount of total public burden ascribed to this requirement is estimated at 25 -75 hours[2] annually, assuming that a total of 500 - 1,500 fishing trips are taken by large longline vessels each year.

Daily longline logs issued by NMFS for use by the fishermen to obtain fish catch/fishing effort data and information on bycatch and protected species interactions are currently approved under OMB Number 0648-0214: Southwest Region Logbook Family of Forms.

[1] Based on 0.75 hr per application for initial permits and permit transfers/renewals.

[2] Based on 0.05 hr per pre-trip notification .

10.9 Glossary of Selected Terms Used in Description of Alternatives

"Indigenous American Samoan" means a person born in American Samoa at least one of whose parents was born in American Samoa and at least one of whose grandparents was born in American Samoa. A person married to someone who meets these criteria would also be considered an indigenous American Samoan.

"Immediate family" of an indigenous American Samoa permit holder means wife, husband, son, daughter, mother, father, sister, brother or similar legal relatives by marriage.

"Indigenous American Samoan community group" means a non-governmental organization based in American Samoa that –

(I) serves the interests of American Samoans;
(ii) has indigenous American Samoans in substantive and policy-making positions (but not necessarily in all positions) within the organization;
(iii) incorporates indigenous Samoan perspective, values, language, culture and traditions into the core function of the organization; and
(iv) is recognized by traditional leaders (matai) of the area where the organization is based for the purpose of planning, conducting or administering programs for the benefit of indigenous American Samoans.

"Applicant for a limited longline access permit having documented experience in American Samoa-based pelagic fisheries" means any person who is applying to be ranked on an applicant's list and who, as a fishing vessel owner, captain or crew, has made at least one landing of a pelagic management unit species in any American Samoa pelagic fishery (longline, troll, handline, purse seine, distant-water jig boat).

"Ranking of applicants for a limited longline access permit" means a scoring of applicants based on the total number of points each applicant has accumulated, with one point for every year of previous documented experience by the applicant in any American Samoa-based pelagic fishery.

"Documentation" of experience in American Samoa-based pelagic fisheries" includes, but is not limited to, the following –

(I) American Samoa longline general logbook report;
(ii) (If proposed action is approved and implemented by NMFS) American Samoa longline limited access logbook report;
(iii) American Samoa Department of Marine and Wildlife Resources creel survey record;
(iv) American Samoa-based cannery or other marketer delivery or payment record;
(v) income or other tax return record to American Samoa Government;
(vi) individual wage record by a vessel that can meet any of criteria (i)-(v); or

(vii) any other evidence of association with a vessel that can meet any of criteria (i)-(v).

"Gear conflict index" means an intensity of longline hooks/km^2/year in American Samoa's EEZ that is believed to be associated with longline gear crowding and conflict based on inferences from longline fishery expansion in Independent Samoa. This index is based on an annual average of longline fishing effort distributed uniformly over large portions of the EEZ. Thus, it does not represent reality, in which fish and fishermen are concentrated in some areas and not in other areas. However, it is a reasonable tool for comparing the alternatives being considered in terms of their relative potential for gear conflict.

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APPENDIX I: Fishery Impact Statement

I.1 Overview of Community

I.1.1 Pre-European history of Samoa

About 1,500 B.C., people (probably from Southeast Asia) arrived in the Samoa islands, after having navigated the Pacific Ocean in rafts. This astonishing achievement occurred at approximately the time of the Trojan War or the Exodus in western history. Little is known about the original people who were to become Polynesians and who would populate the islands of the central and eastern Pacific from Hawaii to New Zealand and from Samoa to Easter Island. It was not until 1973 that Samoan pre-history was dated back this far. In that year, some pieces of clay pottery were discovered during a dredging project in Independent Samoa. These shards were made from clay found in the same area. Radiocarbon dating revealed that this Lapita form of pottery, a type of artifact found throughout the western Pacific, was made in about 1,200 B.C.

The oral history and traditions of Samoan are first known from about 850 A.D. This oral tradition blends legend, mythology and historical fact. It covers major wars and reigns, gods, creation and after-life beliefs, the origin of customs and genealogies. The oral history of Samoa continues up to the arrival of westerners in the 18th century and the colonization of Samoa in the 1830s, the beginning of modern or recorded history in Samoa.

I.1.2 European influences on Samoa

The period between 1830 and 1900 was a difficult one for Samoa. Europeans and Americans never really understood the complex and sophisticated Samoan political process. Samoan civil wars were ignited or exacerbated by foreign influences and the introduction of modern weapons. These weapons were often exchanged for Samoan lands. In the 1870s, Samoans were experiencing their own civil wars as well as the competitive influences of the western powers. By 1890, Germany, England, the US and France all had claims to Samoan lands that amounted to twice the land area of the Samoan islands. At final adjudication, they received about 20 percent of Samoa's total land area (TPC/Dept. Of Commerce, 2000).

I.1.3 The US and American Samoa

The United States has had an interest in Samoa since the 1830s. In eastern Samoa, the interest focused on Pago Pago Harbor but US transport companies and land development interests were also active in the western Samoa islands. The US entered into its first treaty with Samoa for the use of Pago Pago Harbor in 1872 but it was never

ratified by the US Senate. In 1877, the Secretary of State of Samoa, Le Mamea, visited President Hayes in Washington, D.C. for the express purpose of offering Samoa to the US through annexation or as a protectorate. Although Congress did not favor annexation, Hayes was able to obtain Senate ratification of a treaty under which the US would obtain Pago Pago Harbor in return for US peace and friendship (TPC/Dept. of Commerce, 2000).

This first treaty between Samoa and a major power increased the pressure exerted by England and Germany for treaties of their own. Increasing conflict led to the partitioning of the Samoa islands in 1899. The US obtained the islands of eastern Samoa, whereas Germany assumed control of the western Samoa islands. England renounced its claims in Samoa for German concessions in Tonga, the Solomon Islands and West Africa (TPC/Dept. of Commerce, 2000).

In 1900, the US Secretary of the Navy established a naval station at Pago Pago. The leading chiefs of Tutuila ceded their lands to the US in 1900 and the Manu'a islands were ceded in 1904. The Deeds of Cession signed by the chiefs of Tutuila ceded "all these islands ...of Tutuila and Aunu'u and all other islands, rocks, reefs, foreshores and waters lying between the 171st degree and 167th degree of west longitude...." Title 48 USC. Sec. 1661 enacted by the Congress refers only to the islands, but not to the reefs, foreshores and waters between the referenced coordinates (Anon., undated).

I.1.4 Deeds of Cession and Unincorporated US Territory Status

The Deeds of Cession speak of the promotion of peace and welfare of the Samoan people, the establishment of a good and sound government and the preservation of Samoan rights, lands and culture. A central premise of ceding eastern Samoa to the US was to preserve the rights and property of the islands' inhabitants.

The deeds of cession make no direct reference to the economy for the good reason that at the time there was only what could be described as a subsistence economy (TPC/Dept of Commerce, 2000). However, the US Congress (Title 48 USC. Section 1661) provides that "the existing laws of the United States relative to public lands shall not apply to such lands in the said islands of eatsern Samoa; but the Congress of the United States shall enact special laws for their management and disposition: Provided that all revenue from or proceeds of the same, except as regards such part thereof as may be used or occupied for the civil, military, naval purposes of the United States or may be assigned for the use of the local government, shall be used solely for the benefit of the inhabitants of the said islands of eastern Samoa for educational and other public purposes" (Anon., undated).

American Samoa remained isolated in the early decades of its relationship with the US During World War II, the territory was transformed from a subsistence economy to a commercial economy. This new economic prosperity was short lived, however. The

end of the war and the withdrawal of the US Navy caused severe economic distress in the late 1940s and early 1950s. A large migration of American Samoans to Hawaii and the US mainland began at that time (TPC/Dept. of Commerce, 2000).

In 1948, a tuna cannery was built on US Navy property at the head of Pago Pago Harbor. This operation closed in 1950 but the facilities became part of the base of cannery production that remains in American Samoa. Tuna processing represented the entry into the modern economic world for American Samoa. In the early 1960s, concerns were rising about education, infrastructure, health and fiscal conditions. By the early 1970s, rapidly rising federal expenditures financed improvement in education and training, roads, utilities and health care. Private sector development expanded accordingly (TPC/Dept. of Commerce, 2000).

American Samoa was governed by the US Navy until 1951, when administration was passed to the US Department of the Interior, which continues to provide technical assistance, represent territorial views to the federal government and oversee federal expenditures and operations. American Samoa elected its first governor in 1978 and is represented by a non-voting member of the US Congress (TPC/Dept. of Commerce, 2000).

Not being a state distinguishes American Samoa in several respects. It is considered "unincorporated" because the US Constitution does not apply in full to American Samoa, even though it is under US sovereignty. Federal laws often explicitly extend parts of the US Constitution to specific territories. In addition, the Supreme Court has ruled that certain individual rights in the Constitution must apply as well is US territories. Courts have also ruled that certain other parts of the Constitution must apply to individual territories, depending upon each territory's unique legal relationship with the US (TPC/Dept. of Commerce, 2000).

American Samoa's Constitution (Section 3) makes it a policy of the government:

(To) protect persons of Samoan ancestry against alienation of their lands and the destruction of the Samoan way of life and language, contrary to their best interests. Such legislation as may be necessary may be enacted to protect the land, customs, culture and traditional family organization of persons of Samoan ancestry and to encourage business enterprise by such persons (cited in TPC/Dept. of Commerce, 2000).

In 1986, American Samoa's Constitutional Review Committee recommended extending preferential treatment, by adding the following language to Section 3 of American Samoa's Constitution:

"No new small business in whatever form, except businesses not in direct competition with existing businesses owned and operated by persons born of American Samoan ancestry, shall be permitted to engage in business in American Samoa unless

the majority ownership and control of such business is vested in persons of American Samoan ancestry." This issue has never been resolved and periodic court cases have not been very conclusive (TPC/Dept. of Commerce, 2000).

I.1.5 Contemporary American Samoa

Tutuila, American Samoa's largest island, is the center of government and business and is home to 90 percent of the estimated 63,000 total population of the territory. Native Samoans born in the Territory are classified as US nationals and categorized as native Americans by the US government (TPC/Dept. of Commerce, 2000). Population density is about 320 people/km^2 and the annual population growth rate is over three percent, with a projected population doubling time of only 24 years (SPC, 2000).

American Samoa has had a high population growth rate since at least 1980. The employment growth rate was also relatively high over this period but most of the new jobs were in quite low wage employment sectors. American Samoa's rate of unemployment has remained above 10 percent for the past two decades (TPC/Dept. of Commerce, 2000). With a total population in 1997 estimated at 59,600, the labor force represented 28 percent of American Samoa's population, very low when compared with the overall USlabor force ratio (well over 50 percent) but typical of the smaller developing Pacific island economies. Of the 31,822 residents 16 years or older in 1993, the total labor force was equivalent to 51.1 percent.

That half of the 16 years-plus population was not in the labor force in 1993 is explained by American Samoa's lack of major industry other than government and fish canning. Work opportunities are certainly limited but not having a job in the money economy does not necessarily equate with unemployment in the territory, where subsistence activity contributes to the extended family's total well-being (Bank of Hawaii Economic Research Dept. 1999).

Per capita income in American Samoa is only one-fifth that of the United States. Between 1979 and 1994, per capita income in American Samoa increased an average of 3.8 percent per year. With inflation rates averaging about 5 percent per year during the period, real personal income in American Samoa has declined about one percent per year over the 15-year period (TPC/Dept. of Commerce, 2000).

Official data notwithstanding, by many measures, American Samoa is not a poor economy. Its estimated per capita income of $5,000 is almost twice the average for all the Pacific island economies (at $2,700) (Bank of Hawaii Economic Research Dept. 1999). Per capita income in American Samoa does not represent the same market basket and value as it would, for example, in Honolulu. There are aspects of work and the creation of value in the communal societies of the Pacific islands that are not captured by market measures. For instance, to the extent that unemployment among the younger population can cause both economic and social ills, American Samoa's

tightly organized *aiga* (extended family) system is one way to keep young people from becoming economically unproductive and socially disruptive. Another avenue for American Samoan youth not available to the vast majority of youth in the Pacific islands is emigration to the United States, where an estimated 70,000 Samoans live, 20,000 of them in Hawaii (Bank of Hawaii Economic Research Dept. 1999). Lack of employment opportunities is one factor that contributes to the high net migration rate from American Samoa, estimated as 3.75 migrants/1,000 population in the year 2000 (CIA World Factbook).

A large proportion of the territory's workers (in the case of the canneries as much as 90 percent) is from Independent Samoa. While it is correct to say that western Samoans working in the territory are legally alien workers, in fact, they are the same people, by culture, history and family ties.

American Samoa's vision for the future is not fundamentally different from that of any other people in the US but American Samoa has additional objectives that are related to its covenant with the US, its own constitution and its distinctive culture (Territorial Planning Commission/Dept. of Commerce, 2000).

Centered around an extended family group (`aiga) and a common allegiance to a hierarchy of chiefs (matai), this system is rooted in the economics and politics of communally-held village land. It has effectively resisted Euro-American colonial influence and has contributed to a contemporary cultural resiliency unique in the Pacific islands region (Severance et al. 1999). This adherence is not just ceremonial. The Samoan people strive to retain as much of their communal or aiga (family) land and matai (chief systems as possible (TPC/Dept. of Commerce, 2000).

Samoa's land and matai systems are ancient and complex. Each contains nuances that are not well understood by outsiders. In modern Samoa, disputes concerning family lands and titles are adjudicated by special courts that rely substantially on Samoan oral history, tradition and customs. It is the matai system that is at the core of Samoan society and that gives meaning to other Samoan institutions, including the economy. From the time of the Deeds of Cession to the present, despite increasing western influences on American Samoa, native Samoans have expressed a very strong preference for and commitment to the preservation of their traditional matai (chief), aiga (extended family) and communal land system, which provides for social continuity, structure and order (TPC/Dept. of Commerce, 2000).

I.1.6 Community Dependence on Fishing and Seafood

Amendment 8 to the Pelagics Fishery Management Plan identified the islands of American Samoa as a fishing community. American Samoa shares its heritage, traditions and culture with Independent (formerly western). In addition, American Samoa and its history, culture, geography and relationship with the US are vastly

different from those of the typical community in the continental US Indigenous people comprise about 93 percent of American Samoa's population (Territorial Planning Commission/Dept. of Commerce, 2000).

Samoans' dependence on fishing undoubtedly goes back as far as the peopled history of the Samoa islands, about 3,500 years ago (Severance and Franco, 1989). The dependence of the early Samoans on fishing for food security shaped their social organization, cultural values and religion. Many aspects of the culture have changed in contemporary times but Samoans have retained a traditional social system that continues to strongly influence and depend upon the culture of fishing (Severance et al. 1999).

The narrow reef shelf around the islands and the lack of shallow productive lagoon waters limit potential inshore fishery yields (Adams et al., 1999). A long-term decline in catches of coral reef fish in American Samoa's shoreline fishery is well documented (Saucerman, 1995; Tulagi and Green, 1995; Craig, 1999). Attempts to develop deep slope fishing for bottom in American Samoa from the mid-1960s to the mid-1980s were not sustained due to limited habitat and bottomfish resources and to marketing problems (Itano, 1991). Much of the reef and bottom fish resources presently consumed in American Samoa are imported from neighboring Independent Samoa.

Greater reliance on pelagic fish is an adaptation of the traditional dependence on inshore marine resources as fishing targets (Severance et al., 1999). Despite increasing commercialization, the pelagic fishery contributes strongly to the cultural identity and social cohesion of American Samoa (Severance et al., 1999). The role of pelagic fish in meeting cultural obligations is at least as important as the contributions made to nutritional or economic well-being of island residents (Severance et al. 1999).

I.2 Description of American Samoa-based pelagic fisheries participants

Subsistence fishing continues to the present but the importance of pelagic fisheries as a source of income and employment is increasing. Commercial ventures are diverse, ranging from small-scale vessels having very limited range to large-scale vessels catching tuna in the EEZ and distant waters and delivering their catches to canneries based in American Samoa. Total pelagic landings by American Samoa-based longline, troll, and handline vessels were approximately 8 million pounds in 2001 (as compared to 1.9 million pounds in 2000), with longline landings comprising 99.6% of this total. During 2001, 88% of these longline landings were albacore, with yellowfin, bigeye and skipjack tuna making up the majority of the remainder (WPRFMC, draft 2002).

I.2.1 Domestic fisheries in American Samoa's EEZ

<u>Historical development</u>

The harvest of pelagic fish has been a part of the Samoan way of life since the islands were first settled some 3,500 years ago. The ancient Samoans fished for their very survival. Until the 1950s on the island of Tutuila, and even into the 1970s in the Manu'a Islands, the indigenous residents of American Samoa captured skipjack tuna in offshore waters using traditional canoes and gear (Severance and Franco 1989). Other tuna species, billfish, wahoo and mahimahi were also occasionally taken by traditional techniques.

The introduction of outboard motors in the 1950s and 1960s brought about a decline in traditional fishing methods in favor of motorized dinghies and skiffs for trolling and handlining. Domestic commercial fisheries have evolved over the past 35 years in American Samoa through the efforts of several fisheries development and training programs. These have included boat building projects, low interest boat loan incentives, FAD programs and training in small craft navigation, marine electronics and outboard engine repair. Specific training and surveys with pelagic fishing techniques have included skipjack live bait pole-and-line fishing, live bait assisted trolling, ika shibi fishing, palu ahi handlining, dead bait trolling, vertical longlining and flying fish netting. The introduction of a technically simple, manually-operated wooden hand reel has gained the widest acceptance with the local small-boat fleet (Itano, 1991).

The development of offshore fisheries began in earnest during the early 1980s. It was at this time that the FAO-designed *alia* catamaran was introduced into the islands. The number of small vessels participating in commercial pelagic and bottomfish fisheries quadrupled between 1980 and 1985. During the latter period, almost all of the commercial catch of pelagic species was taken by trolling. Most pelagic fishing occurred near banks and seamounts where seabird flocks feed (thus indicating the presence of baitfish that tuna may also be feeding upon), or at fish aggregating devices (FADs) deployed around Tutuila Island. FADs were introduced to American Samoan coastal waters in 1979 and proved to be a popular way to increase the catch rates of widely dispersed pelagic fish (Craig et al. 1993). FADs attracted and retained schools of fish and made it easier for vessels to locate concentrations of tuna.

Moana (1988) noted 14 years ago that small boats were increasingly traveling to distant banks and seamounts such as South Bank and Southeast Bank, both of which are located about 45 nm from land. This trend of fishing further offshore was also observed in a more recent study of the small-scale pelagic fishery in American Samoa (Severance et al. 1999)

The development of a domestic tuna longline fishery among the early proposals for fishery development (Marr, 1961) but the stimulus for American Samoan fishermen to shift from troll or handline gear to longline gear in the late 1990s was the fishing success of 28-34 ft *alia* catamarans equipped with longline gear operating in the EEZ around Independent Samoa. Following the example of the Independent Samoa fleet, the fishermen in American Samoa deploy about 10 miles of monofilament mainline with 250-350 hooks from a hand-powered reel. The predominant catch is albacore tuna,

which is marketed to the local tuna canneries. Less than ten percent of the boats carry a depth finder, fish finder or global positioning system (Severance et al. 1999). In the early years of the small-scale longline fishery, the *alia* made one-day fishing trips to areas less than 20 nm from shore (WPRFMC, 2000).

Current participants

Domestic small-scale longline vessels (vessels equal to or less than 50'): Most, if not all, participants in the small-scale domestic longline fishery are indigenous Samoans with vessels under 50 ft in length, most of which are alia catamaran-style boats under 40 ft in length. The stimulus for American Samoa's commercial fishermen to shift from troll or handline gear to longline gear in the mid-1990s (see Figure I-1) was the fishing success of 28 ft alia catamarans that engaged in longline fishing in the EEZ around Independent Samoa. Following this example, the fishermen in American Samoa deploy a short monofilament longline, with an average of 350 hooks per set, from a hand-powered reel (WPRFMC, 2000). An estimated 90 percent of the crews working in the American Samoa small-scale alia longline fleet are from Independent Samoa. The predominant catch is albacore tuna, which is marketed to the local tuna canneries (DMWR, 2001b).

As of March 21, 2002, year 2002 general longline permits had been issued for 40 vessels 40 ft or less in length, and five for vessels 40.1 ft - 50 ft in length (DMWR, unpubl. data). Virtually all of the smaller vessels and four of the five 40.1 ft - 50 ft vessels are owned by American Samoans (T. Beeching, DMWR, pers. comm. to P. Bartram, March 2002). The average capital investment in these small-scale longline vessels is between $25,000 and $125,000.

Domestic large-scale longline (vessels more than 50'): American Samoa's domestic longline fishery expanded rapidly in 2001. Much of the recent (and anticipated future) growth is due to the entry of monohull vessels larger than 50 ft in length. The number of permitted longline vessels in this sector increased from three in 2000 to 30 by March 21, 2002 (DMWR, unpubl. data). Of these, five permits (33 percent of the vessel size class) for vessels between 50.1 ft - 70 ft and five permits (33 percent of the vessel size class) for vessels larger than 70 ft were believed to be held by indigenous American Samoans as of March 21, 2002 (T. Beeching pers. comm to P. Bartram). Economic barriers have prevented more substantial indigenous participation in the large-scale sector of the longline fishery. To date, lack of capital appears to be the primary constraint to substantial indigenous participation in this sector (DMWR, 2001b).

While the smallest (less than or equal to 40 ft) vessels average 350 hooks per set, a vessel over 50 ft can set 5-6 times more hooks and has a greater fishing range and capacity for storing fish (8-40 mt as compared to 0.5-2 mt on a small-scale vessel). Larger vessels are also outfitted with hydraulically-powered reels to set and haul mainline, and modern electronic equipment for navigation, communications and fish finding (T. Beeching, DMWR, pers. comm. to P. Bartram, March 2002). The average

capital investment in a large-scale longline vessel is approximately $400,000.

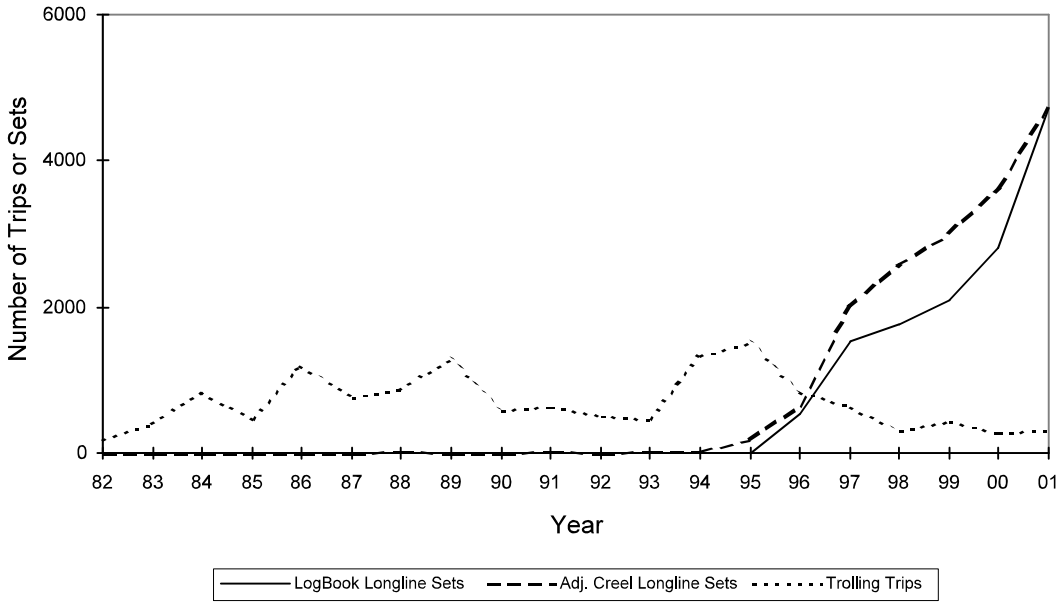

Figure I-1. Decline in troll fishing effort by American Samoa small-scale fleet since 1995.

Recreational domestic troll fishery: Recreational fishing purely for sport or pleasure is uncommon in American Samoa. Most fishermen normally harvest pelagic species for subsistence or commercial sale. However tournament fishing for pelagic species began in American Samoa in the 1980s, and between 1974 and 1998, a total of 64 fishing tournaments were held in American Samoa (Tulafono, 2001). Most of the boats that participated were alia catamarans and small skiffs. Catches from tournaments are often sold, as most of the entrants are local small-scale commercial fishermen. In 1996, three days of tournament fishing contributed about one percent of the total domestic landings. Typically, 7 to 14 local boats carrying 55 to 70 fishermen participated in each tournament, which were held 2 to 5 times per year (Craig et al. 1993).

The majority of tournament participants have operated 28 ft alia, the same vessels that engage in the small-scale longline fishery. With more emphasis on commercial longline fishing since 1996, interest in the tournaments has waned (Tulafono, 2001).
Catch and release recreational fishing is virtually unknown in American Samoa. Landing fish to meet cultural obligations is so important that releasing fish would generally be considered a failure to meet these obligations (Tulafono, 2001). Nevertheless, some pelagic fishermen who fish for subsistence release fish that are surplus to their subsistence needs (S. Steffany, pers. comm. to Paul Bartram, Sept. 15, 2001).

From October 1985 to the present, catch and effort data in American Samoa fisheries have been collected through a creel survey that included subsistence and recreational fishing, as well as commercial fishing. However, differentiating commercial troll and handline pelagic fishing activity from non-commercial activity can be difficult.

Charter Sector: American Samoa has been unable to develop a significant tourist industry that could support charter fishing (Territorial Planning Commission/Dept. of Commerce, 2000). Nor is American Samoa known for producing large game fish. Few, if any, charter boats are in operation (Tulafono, 2001), so no data are collected specifically for the charter fishing sector.

I.2.2 Domestic and Foreign Distant-water Fisheries

Domestic distant-water jig albacore fishery: Domestic albacore jig vessels supply tuna to the canneries in American Samoa. Since 1985, about 50-60 US vessels have participated in the high-seas troll fishery for albacore. This fishery occurs seasonally (December through April) in international waters at 35°-40° S latitude. The vessels range in length from 50 to 120 feet, with the average length about 75 feet (Heikkila, 2001). They operate with crews of 3-5 and are capable of freezing 45-90 tons of fish (WPRFMC, 2000).

Domestic distant-water purse seine fishery: The USpurse seine fleet operating in the central and western Pacific use large nets to capture skipjack, yellowfin and bigeye tuna near the ocean surface, in free-swimming schools and around fish aggregation devices (FADs) deployed by the fleet. These vessels often land their catches at canneries based in American Samoa. These large vessels (200-250 ft length) could not be economially operated for longline fishing but some former participants in the US purse seine fishery have acquired more suitable vessels and have entered the American Samoa-based longline fishery.

US purse seine vessels began exploratory fishing in the central and western Pacific in the late 1970s. The rapid expansion of the fleet during the 1980s coincided with an increase in the quantity of skipjack and yellowfin tuna landed at the canneries in American Samoa. At present, about 34 US purse seiners supply fish to the tuna

canneries. They are equipped with sophisticated “fish-finding” equipment, including helicopters. The purse seine nets typically capture 15 to 45 metric tons of fish in a single set. Most of the fishing activity by these vessels occurs in the EEZ waters of Papua New Guinea, Federated States of Micronesia and other Pacific island nations far to the west of American Samoa. During ENSO events, however, these vessels may shift their fishing activity to areas in the central Pacific, including the northern portion of the EEZ around American Samoa (WPRFMC, 2000).

Foreign large-scale longline vessels: Large-scale commercial longline fishing in what is now the EEZ around American Samoa was initiated by Japanese vessels in the late 1940s. The foreign vessels later supplied albacore tuna to the two canneries established in the Territory by Van Camp Seafood Company and Star-Kist Foods in 1954 and 1963, respectively. From 1950 to 1965 there was a progressive expansion of the area of operation of these longliners from the waters in the immediate vicinity of American Samoa to more distant waters (Otsu and Sumida 1968; Yoshida 1975). The expansion of fishing area paralleled an increase in fleet size. Between 1954 and 1965 the number of foreign longline vessels off-loading in Pago Pago increased from less than 20 to over 150. In the mid-1960s, the Japanese vessels began to be replaced by Taiwanese and Korean longline vessels as the canneries’ major suppliers of albacore. In recent years, the number of foreign longline vessels delivering fish to the canneries has sharply declined, and, presently, only about 40 vessels are making landings in American Samoa. A typical Asian longline vessel is 80-150 ft in length, highly mechanized and sets 50-60 nm of mainline with 1,500-2,000 hooks each day (WPRFMC, 2000). Legal fishing by foreign longline vessels in the waters around American Samoa ceased completely in 1980 after the implementation of the pelagic fisheries Preliminary Management Plan for the Western Pacific Region,[1] which placed onerous requirements (e.g., permits, fees, observers) on foreign vessels. However, foreign longline vessels occasionally fish illegally in the EEZ around American Samoa. In 1992, for example, the Coast Guard seized a Taiwanese longline vessel fishing near Swains Island (WPRFMC, 2000).

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There is a possibility that legal fishing in the EEZ by foreign vessels may resume under a Pacific Insular Area Fishing Agreement (PIAFA). This agreement could give foreign vessels access to EEZ waters around American Samoa in exchange for a negotiated fee and subject to a variety of permit conditions.

[1] The PMP was superceded by the Council’s Pelagic Fisheries Management Plan in 1986.

I.2.3 American Samoa-Based Tuna Processing and Marketing

Private industry in American Samoa is centered around two tuna canneries owned by offshore interests. The continued growth of the tuna canning industry in American Samoa over the last 40 years has been based largely on exemptions from foreign fish landing restrictions, duty-free access to US markets, corporate income tax exemptions and a low minimum wage relative to the US. The two canneries directly account for some 4,500 jobs or about 35 percent of total employment in American Samoa (Territorial Planning Commission/Dept. of Commerce, 2000).

American Samoa's position in the industry is being eroded by forces at work in the world economy and in the tuna canning industry itself. Whereas wage levels in American Samoa are well below those of the US, they are considerably higher than in other canned tuna production centers around the world. To remain competitive, US tuna producers are purchasing more raw material, especially pre-cooked loins, from foreign manufacturers. Tax benefits to US canneries operating in American Samoa have also been tempered in recent years by the removal of a provision in the US tax code that previously permitted the tax-free repatriation of corporate income in US territories. Trends in world trade, specifically reductions in tariffs, are reducing the competitive advantage of American Samoa's duty-free access to the US canned tuna market (Territorial Planning Commission/Dept. of Commerce, 2000).

Despite the long history of the tuna canning industry in American Samoa, processing and marketing of pelagic fish by local enterprises has not yet developed beyond a few, short-term pilot projects. However, the government's comprehensive economic development strategy (Territorial Planning Commission/Dept. of Commerce, 2000) places a high priority on establishing a private sector fish processing and export operation proposed to be located at the Tafuna Industrial Park.

Albacore tuna is the primary target of this fishery because it is the only species that can be marketed in large quantities to local canneries for a price above $0.30/lb. Since the beginning of 2001, the cannery price for albacore has fluctuated considerably, from a high of $2,600/mt in early 2001 to a low of $1,700/mt in February 2002. The current price is over $1,800/mt (0.81/lb) and should rise when a supply contract between the canneries and Taiwanese longline fleets operating in the Indian Ocean ends. The vast majority of longline caught fish landed in American Samoa is sold to the canneries.

A limited amount of non-albacore tuna can be sold in American Samoa's domestic market for $0.75 to $1.50/lb of whole weight, depending on species and quality. The domestic market pays a higher price of $1.25/lb whole weight for "miscellaneous pelagic species" (i.e., non-tuna) especially mahimahi and wahoo. A few restaurants and groceries are becoming more sophisticated in their buying, creating a limited demand for tuna loins or miscellaneous fish fillets. It is estimated that any more than two tons of pelagic fish per week would flood the existing domestic market (DMWR, 2001b).

One company in American Samoa is exporting fresh fish (non-target species) from the domestic longline fishery on a small scale but large-scale export of fresh fish is hampered by the lack of air freight capacity on the scheduled airline that links American Samoa to Honolulu. Hawaiian Airlines has been servicing the Pago Pago-Honolulu route using a DC 10-10, which has a maximum cargo capacity of two tons per flight. The carrier has announced an upgrade to a 767-300 aircraft with more capacity (four tons per flight). At present there is little possibility of exporting large quantities of fresh fish exports on the existing aircraft currently chartered to carry parcel post to American Samoa.

The American Samoa Economic Advisory Commission has identified air transportation as the single greatest obstacle to economic development. A commissioner noted that a fish dealer/broker in Fiji can chose from four flights per day, whereas a fish dealer in American Samoa has two flights per week (WPRFMC, 2000).

In 1998, the private, non-profit organization Tautua Samoa Association received a $346,000 federal grant from the Administration for Native Americans for start up of a small-scale fish processing facility. The organization also plans to apply for a federal grant in the amount of about $500,000 from the Economic Development Administration to complete the facility. Once implemented, the project will result in the establishment of a facility to procure fresh bottomfish and pelagic species landed by local fishermen and process it for local and export marketing. The facility will also process frozen "miscellaneous" fish landed by the foreign longline and US purse seine vessels which supply the two local tuna canneries. The miscellaneous fish includes tuna and incidental pelagic species unsuitable for canning. Portion-controlled steaks and other products would be processed from cannery by-products for export to food service markets in Hawaii and the continental USA. The processing facility will be located in the Senator Daniel Inouye Industrial Park on land leased from the American Samoa Government. The project will provide 20 to 40 full-time jobs and is expected to encourage additional investment in the local fishing industry (WPRFMC, 2000).

I.3 Description of the Socioeconomic Framework of the Domestic Fishery and Fishing Community

American Samoa is severely limited in terms of land-based development opportunities. In a future climate of continued economic stagnation and high population growth, it is inevitable that tuna will assume growing importance. "Quite simply, in most countries there are few, if any, alternatives" (p. 32, Gillett et al. 2000). Population pressures and the fully exploited nature of inshore marine resources are likely to increase American Samoa's reliance on pelagic fish as a source of food, as well as a foundation for future economic development. Future food needs of American Samoa could be compensated for by fish imports, but economic forecasts for the territory (TPC, 2001) suggest that the ability to pay for food imports may decline.

In reviewing the general situation in the Pacific islands, FAO (1995) commented that one method of maintaining per capita fish consumption levels is by encouraging tuna fishing by small and medium scale commercial operations. The only fishery in American Samoa with significant potential for expansion is the harvest of offshore pelagic fish resources.

Pelagic fisheries are viewed by the American Samoa Government as having an important role in the expansion and diversification of the local economy and in helping the Territory attain a higher level of economic self-reliance. As in most other Pacific islands, stocks of pelagic species in the vicinity of American Samoa offer far greater resource potential than deep slope bottomfish or inshore fish stocks. Inshore resources are heavily exploited or over-exploited in most areas of American Samoa (Wass 1980; Saucerman 1995). The exploitation of slow growing, deep slope snappers in American Samoa is limited by suitable habitat and the low standing stock of the resource (Itano 1991).

Encouraging domestic harvest of offshore pelagic fishery resources is highly compatible with existing economic activities. A fish processing industry developed in American Samoa in the 1950s and 1960s with the establishment of two tuna cannery operations. Since that time, the canneries have been the largest private sector employer in American Samoa and its leading exporter. Despite a 40-year history of tuna canning in American Samoa by two large processors, commercial fishing for tuna by domestic vessels in Samoa's EEZ is a relatively recent endeavor. The importance of pelagic fish as a source of income and employment in American Samoa's small-scale fishery has increased rapidly since 1996, following the adoption of longline fishing methods patterned after those in the neighboring country of Samoa.

The development of the local fish harvesting sector in American Samoa continues to be constrained by a shortage of private capital and, to some extent, by the economic preferences and cultural values of local fishermen. The median household income in the Territory is $16,114, and 56% of families have incomes below the federal poverty level (Department of Commerce 1998). Most residents interested in commercial fishing do not have sufficient financial resources to invest in large, expensive vessels. A new 40 ft *alia* can be acquired for about $60,000, with earlier versions of the *alia* available from $24,000-$40,000. By comparison, a 65 ft longline vessel would cost about $350,000. Assuming a 30% down payment and a 10-year loan at 10% annual interest, the initial payment of $18,000 and an annual loan payment of $6,835 are an affordable investment for small-scale fishing enterprises in American Samoa, whereas an initial payment of $105,000 and an annual loan payment of nearly $40,000 are affordable only for a select few (WPRFMC, 2000).

The technologies and patterns of fishing that have evolved over the years in American Samoa are culturally acceptable as well as economically reasonable for small-scale fishermen. They have demonstrated a willingness to adopt new types of fishing gear and methods so that their catching power and efficiency has increased incrementally.

The small to medium-size vessels favored by fishermen are easily and inexpensively built and maintained and they are capable of harvesting diverse fishery resources utilizing a variety of gear types. According to an early report on fisheries development in the American Pacific islands, this flexibility is essential in establishing commercially-viable fisheries in the region (PBDC 1984).

American Samoa's small-scale fishery is presently evolving from the realm of traditional subsistence activities to more commercial activities. This change involves considerable risk, not only financial risk for fishermen, but also a risk of developing overcapacity in the fishery that could be detrimental to the domestic economy, traditional social organization and cultural continuity of the American Samoa community. Incremental expansion of the longline fishery in American Samoa will guard against unsustainable development; i.e., a "boom" of uncontrolled fishing by large vessels with greater fishing power, followed by a "bust" of overcapacity and reduced availability of pelagic fish.

Local ownership of vessels participating in American Samoa's longline fishery enhances local income and employment, as well as retaining a higher percentage of fishing expenses and taxes on island as an indirect benefit to the local economy. The domestic longline fishery generates direct employment for crewmen on vessels and indirect employment through linkages to businesses that are closely connected to longline fishing. These include boat builders, engine mechanics, fishing gear suppliers, workers in ice plants, refrigeration specialists, processors and sellers of the fish catch (especially local tuna canneries), fuel and food suppliers and shipping companies.It is relatively conservative to estimate to estimate a job multiplier effect of 1:1 and 1:2 (Gillett et al., 2000). Arama (2000) expresses the impact of employment in tuna fishing/processing in a different manner. That study indicates that, for every employee at a tuna cannery in Fiji, there are four people (i.e., family members) who are affected by the job.

Conventional discounting in economic analysis reduces future net benefits from fishery management significantly since benefits are discounted using the time perspective of the current generation only. "Generational cost benefit analysis" takes into account the fact that fishery management may produce benefits that flow to future generations and that these benefits need to be valued using the respective "discounting clocks" of the generations receiving the benefits (Sumaila, in press). The future net benefits of an "indigenous permit reserve" for the American Samoa-based longline fishery should be valued in a multi-generational context.

I.4 Description of the Social and Cultural Framework of the Domestic Fishery and Fishing Community

Samoa has a long history of dependence on pelagic fishery resources. Severance and Franco (1989) and Severance et al. (1999) documented the traditional importance of capturing large pelagic fish, particularly skipjack tuna, and described the technology, skills, gear manufacture, elaborate customs and fishing nomenclature used by

Samoans in catching and distributing catches of pelagic fish. This included special bonita (skipjack tuna) canoes (*va'a alo*, the "most graceful of all Polynesian canoes") (Haddon and Hornell, 1936), designed for lightness and speed which could follow tuna schools, and tuna hooks made from mother-of-pearl and turtle shell. In the past, fishermen in canoes might fish as far as 30 miles from shore when following tuna schools. Other tunas, billfish, wahoo and mahimahi were occasionally caught with baited lines and trolling gear (Severance and Franco, 1989).

In contemporary Samoa, seafood continues to be a major component of the local diet, although island residents are no longer entirely dependent on local fishing for food. There has been no recent attempt to quantify the subsistence fishing contribution to American Samoa[2] but subsistence fishing is known to be an important supplement to cash income in many communities in the Territory (Severance et al. 1999).

Not all residents of American Samoa have ready access to fresh or frozen pelagic fish but annual local consumption of tuna and tuna-like species is probably at least 5 lb per capita, based on domestic tuna consumption estimated for the population of Independent Samoa (Gillett et al., 2000). Using this number as an average of per capita pelagic fish consumption, the total population of American Samoa probably eats at least 2 to 3 tons of pelagic fish per week.

In addition to nutrition, fishing continues to contribute to the perpetuation of Samoan culture, which involves exchange of food and other resources to support extended families and traditional leaders. Participation in commercial activities, wage labor and a cash economy has not weakened these obligations so much as it has allowed new opportunities for customary exchange of goods and services, both formally and informally, through kinship and friendship networks. Individual Samoans participate as members of extended families or *aiga* that share resources and responsibilities. Each *aiga* is headed by a titled "chief" or *matai* who is the decision-maker and spokesperson for the family in many matters of village life. Untitled men and women of the village have many obligations for service and are expected to contribute goods (including fish), cash and labor to important village ceremonies ranging from holidays to weddings and title investitures.

Traditional Samoan values still exert a strong influence on when and why people fish, how they distribute their catch and the meaning of fish within the society. When distributed, fish and other resources move through a complex and culturally embedded exchange system that supports the food needs of `aiga, as well as the status of both matai and village ministers (Severance et al. 1999). Customary exchanges include:

[2] Wass (1980) reported that annual per capita consumption of seafood in American Samoa is 148 lbs, which is several times higher than the US national average.

Fa`alavelave -- As a noun, mutual assistance to kinsmen in times of need; as a verb, to provide assistance in times of need. This assistance can be in the form of food from the land or sea, or money derived from local or overseas labor markets.

Tautua – As a noun, service to the kin group and to the matai as leader of the kin group; as a verb, to serve the kin group and its matai.

Fesoasoani – To help out; a less formalized, more individualized, response to a less serious need than in the case of fa`alavelave.

To`onai – A ceremonial need served after Sunday service, where ministers, matai, other village leaders and important visitors to the village, reaffirm cultural and spiritual solidarity.

Fa`ataualofa -- To give away or sell at a reduced price to friends or kinsmen as an expression of an ongoing, sustained relationship.

Commercial alia fishermen are expected to fish when village ceremonies are pending and to be generous in sharing their catch. Some keep fish in freezers with the expectation that they may be called upon by their *matai* to provide food for cultural purposes. Reef fish and bottomfish are acceptable offerings but yellowfin and skipjack tuna are preferred. At times, tuna are ceremonially cut up for formal presentation to the *matai* and village pastor (Severance and Franco 1989).

Severance et al. (1999) recently conducted a survey of fishermen in American Samoa who fish for pelagic species. The 60 fishermen interviewed in 26 villages represent about 50% of the total number of fishermen in the Territory who fish for pelagic species. Thirty-five percent of the fishermen surveyed reported that they sell less than half of their catch. Forty percent of these fishermen also reported that half or more of the catch that they sold was done so as *fa'ataulofa*, that is, sold at a reduced price to friends or kinsmen as an expression of a sustained social relationship.

The survey examined the cultural importance of the distribution of the unsold portion of the catch. The average number of times during the past year that individual fishermen contributed fish to Sunday village meetings was 22. Nineteen percent of the fishermen surveyed reported that half or more of their catch was contributed to a *matai* as a form of *tautua*, that is, service to the kin group. This service is expected of untitled men if they are to rise in status and perhaps achieve a *matai* title themselves. Twenty-five percent of the fishermen surveyed already hold *matai* titles, but they may be obligated to contribute fish to the village pastor or to a higher-ranked individual. Another form of obligatory contribution takes the form of assistance to kinsmen in times of need known as *fa'alavelave*. Forty-two percent of the fishermen surveyed reported contributing fish as *fa'alavelave* three or more times during the past year. A more individualized way of assisting kinsmen is referred to as *fesoasoani*. Thirty-two percent of the fishermen stated that half or more of the unsold portion of their catch was offered as *fesoasoani*.

The majority of the small-scale fishermen in American Samoa do not rely on the sale of their catch as their only source of income. According to a recent survey, 65% of local fishermen are employed at another job (Severance et al. 1999). Furthermore, all Samoans have cultural obligations to extended families, traditional leaders and village ministers that require the exchange of food and other resources. Undertaking fishing on a part-time basis, rather than as a full-time business, provides local residents with the flexibility to fulfill these obligations, which an integral part of *fa'a Samoa* (the Samoan way of life) (Severance, et al., 1999).
Due to a rapidly growing population and overexploitation of some inshore seafood resources, the American Samoa community is becoming even more dependent on pelagic fish for food, employment and income from fisheries and for perpetuation of *fa'a Samoa* (Samoan cultural heritage and way of life) (Severance et al., 1999).

I.5 Social Impacts of Alternatives

I.5.1 Measures of Impact

Social impacts of the alternatives are evaluated based on the following measures:

- Effects on community nutrition and subsistence
- Effects on sustained participation and direct employment in pelagic fisheries
- Effects on indirect and spin-off employment related to pelagic fishing and fish processing
- Effects on cultural values and practices
- Effects on recreational values and practices

Effects on community nutrition and subsistence

Alternative 1 (no action) would increase the supply of pelagic fish, much of it good quality, available for community consumption in the short term. A large percentage of non-targeted species taken in the large-vessel longline fishery would continue to be discarded at sea ("bycatch") and wasted as potential food. In the long term, however, this alternative would eventually lead to local overfishing of albacore and perhaps other pelagic fish sub-populations ("bust"), thereby reducing the supply of pelagic fish back to levels available to American Samoa residents prior to the domestic longline fishery expansion "boom" in 2001. Whether domestic fish availability after the "bust" would be lower than historical levels cannot be predicted. However, if a low supply of pelagic fish causes American Samoan consumers to substitute other, less healthy proteins (e.g., corned beef, turkey tails), negative effects on residents' health and longevity could be expected.

Alternative 2 could lessen the negative impacts of Alternative 1 by imposing caps on the number of American Samoa domestic longline fishery participants. However, Alternative 2 would still allow a high level of longline fishing in the EEZ that could lead to local overfishing of some pelagic fish sub-populations and possible disruption of pelagic fish supply to the community after a "boom and bust" pattern of fishery development.

Alternatives 2-6 would require landing of all pelagic management unit species from domestic longline fishing in American Samoa's EEZ. This would further increase the domestic supply of pelagic fish (i.e., non-albacore species that are presently discarded at sea), although the quality of fish landed because of regulation might be very low.

Alternative 3 would be expected to have a similar impact as Alternative 2 except that Alternative 3 emphasizes small-scale indigenous participation in the alia longline fishery. If "boom and bust" occurred in the domestic longline fishery, alia could possibly shift to troll or handline methods of pelagic fishing to maintain a continuous supply of product for local consumption. The impact of Alternative 4 would be anticipated to be quite similar to that of 3.

Alternative 5 would control participation in the small-scale alia longline fishery more tightly. Fewer indigenous participants could participate in the alia longline fishery, so fewer could shift to other pelagic fishing methods should there be "boom and bust" development of the domestic longline fishery. However, the total longline fishing effort in the EEZ allowed under this alternative may be low enough to prevent a boom and bust cycle and local overfishing of pelagic fishery resources.

The total longline fishing effort in the EEZ allowed under Alternative 6 might also be low enough to prevent a boom and bust cycle and local overfishing of pelagic fishery. If not, this alternative would provide a large enough number of indigenous small-scale participants in the alia longline fishery to possibly shift to troll or handline methods of pelagic fishing to maintain a continuous supply of product for local consumption.

Alternative 7 offers the best potential to limit domestic longline fishing effort to a level that would maintain the potential for economically viable catch rates, thereby maintaining a continuous supply of pelagic fishery products for community nutrition. A large percentage of non-targeted species taken in the large-vessel longline fishery would continue to be discarded at sea ("bycatch") and wasted as potential food.

Alternative 8 would create so much inefficiency for longline vessels over 50 ft length that continued operation would become economically unfeasible. While removing large vessels as a source of pelagic fish supply to the local community could have a short-term negative effect, this alternative might avoid "boom and bust" development by indirectly "turning back the clock" to the former small-scale alia longline fishery. The small-boat fleet could maintain a relatively continuous supply of pelagic fish for community consumption except when the ocean is too rough for safe operation of alia.

Due to insufficient capacity to chill and store the catch, alia would land fish of lower quality than pelagic fishery products landed by larger vessels.

Alternative 9 would allow less effort than Alternatives 1-4, or 6, but more than Alternatives 5 or 7. The additional effort allowed under Alternative 9B would be in the smallest vessel size class (<40') , or through gradual upgrading of vessels from this class. These vessels are likely to be locally owned and therefore less likely to induce a "boom and bust" pattern of development. Thus both versions of Alternative 9 are seen as likely to maintain economically viable catch rates. This would allow the continuance of a domestic longline fishery based in American Samoa and continued supply of pelagic fish to the community.

Effects on sustained participation and direct employment in pelagic fisheries

Alternative 1 (no action) would increase participation in American Samoa's longline fishery in the short term. In the long term, however, this alternative would eventually lead to local overfishing of albacore and perhaps other pelagic fish sub-populations ("bust"), thereby reducing community participation in the fishery. Two boom-and-bust cycles that occurred in American Samoa's bottomfish fishery over the past 20 years have had this effect (Itano, 1991). For every large vessel (> 50 ft length) that might leave American Samoa's longline fishery after a "bust," an average of 6 crew jobs would be affected. If these fishermen arrived in American Samoa on a longline vessel that can relocate to other fishing grounds, then they could move with the vessel and their jobs might not be lost. For every small vessel (< 50 ft) that might leave the longline fishery after a bust, an average of 3-4 crew jobs would be lost from longline fishing. These fishermen are mostly residents of American Samoa and some of them might be able to return to pelagic troll or handline fishing. Small-scale vessels would be unable to relocate to pelagic fishing areas outside of American Samoa, so they would have to target surface pelagic fishery resources if deep-water tuna were depleted by local overfishing.

Alternatives 2, 4-7 would all limit new participation in all vessel size classes of American Samoa's domestic longline fishery after March 21, 2002. This would reduce the number of young fishermen who could make longline fishing in American Samoa their livelihood. Alternative 3 would allow unlimited new participants in the longline fishery owning vessels under 40 ft length, thereby providing continuous opportunity for young residents to take up longline fishing in American Samoa as a livelihood.

Alternative 2 could lessen the negative impacts of Alternative 1 by imposing caps on the number of American Samoa domestic longline fishery participants. However, Alternative 2 would still allow a high level of longline fishing in the EEZ that could lead to local overfishing of some pelagic fish sub-populations and possible disruption of community participation after a "boom and bust" pattern of fishery development. For every large vessel (> 50 ft length) that might leave American Samoa's longline fishery after a "bust," an average of 6 crew jobs would be affected. If these fishermen arrived

in American Samoa on a longline vessel that can relocate to other fishing grounds, then they could move with the vessel and their jobs might not be lost. For every small vessel (< 50 ft) that might leave the longline fishery after a bust, an average of 3-4 crew jobs would be lost from longline fishing. These fishermen are mostly residents of American Samoa and some of them might be able to return to pelagic troll or handline fishing. However, small-scale vessels would be unable to relocate to pelagic fishing areas outside of American Samoa, so they would have to target surface pelagic fishery resources if deep-water tuna were depleted by local overfishing.

Alternative 3 would be expected to have a similar effect as Alternative 2 except that Alternative 3 emphasizes small-scale indigenous participation in the alia longline fishery. If "boom and bust" occurred in the domestic longline fishery, alia could possibly shift to troll or handline methods of pelagic fishing for sustained community participation. However, for every large vessel (> 50 ft length) that might leave American Samoa's longline fishery after a "bust," an average of 6 crew jobs would be affected. If these fishermen arrived in American Samoa on a longline vessel that can relocate to other fishing grounds, then they could move with the vessel and their jobs might not be lost.

Alternative 4 would be anticipated to have effects quite similar to those of 3 but with fewer small-scale indigenous participants allowed than under No.3, Alternative 4 may provide less flexibility in shifting to other pelagic fishing methods if there is over development causing "boom and bust" of the domestic longline fishery. Furthermore, Alternative 4 would limit the number of young fishermen who could take up small-scale longline fishing in American Samoa as a livelihood to a greater extent than Alternative 3. For every large vessel (> 50 ft length) that might leave American Samoa's longline fishery after a "bust," an average of 6 crew jobs would be affected. If these fishermen arrived in American Samoa on a longline vessel that can relocate to other fishing grounds, then they could move with the vessel and their jobs might not be lost. Small-scale vessels would be unable to relocate to pelagic fishing areas outside of American Samoa, so they would have to target surface pelagic fishery resources if deep-water tuna were depleted by local overfishing.

Alternative 5 would control participation in the small-scale alia longline fishery more tightly than Alternatives 2-4. Fewer indigenous participants could participate in the alia longline fishery, so fewer could shift to other pelagic fishing methods should there be "boom and bust" over development of the domestic longline fishery. However, the total longline fishing effort in the EEZ allowed under this alternative may be low enough to prevent a boom and bust cycle and local overfishing of pelagic fishery resources. If so, the crew working on longline vessels would not have to relocate to new areas or other pelagic fisheries or lose their jobs entirely.

The total longline fishing effort in the EEZ allowed under Alternative 6 might also be low enough to prevent a boom and bust cycle and local overfishing of pelagic fishery. If so, the crew working on longline vessels would not have to relocate to new areas or other

pelagic fisheries or lose their jobs entirely. If not, this alternative would provide a large enough number of indigenous small-scale participants in the alia longline fishery to possibly shift to troll or handline methods of pelagic fishing for sustained community participation.

Alternative 7 offers the best potential to limit domestic longline fishing effort to a level that would maintain the potential for economically viable catch rates, thereby maintaining community participation at existing levels but limiting the number of young fishermen who could take up longline fishing in American Samoa as their livelihood.

Alternative 8 would create so much inefficiency for longline vessels over 50 ft length that continued operation would become economically unfeasible. For every large vessel (> 50 ft length) that might leave American Samoa's longline fishery after a "bust," an average of 6 crew jobs would be affected. If these fishermen arrived in American Samoa on a longline vessel that can relocate to other fishing grounds, then they could move with the vessel and their jobs might not be lost.

Alternative 9 is anticipated to result in continued operation of the American Samoa based longline fishery, as well as providing opportunities for historical community members to move into larger vessel size classes through the provision of "upgrade" permits. The additional effort allowed under Alternative 9B would allow participation by the fishery "pioneers", which would generally be in the smallest vessel size class (<40') . Alternative 9B would also allow gradual upgrading of vessels from this class. These vessels are likely to be locally owned and therefore less likely to induce a "boom and bust" pattern of development. Both versions of Alternative 9 are seen as likely to maintain economically viable catch rates and to allow the continuance of a domestic longline fishery and its attendant employment opportunities.

Effects on indirect and spin-off employment related to pelagic fishing

The local canneries would substitute imported tuna for any reduction in supply from the American Samoa longline fishery, so no cannery jobs are expected to be lost under any of the alternatives, even those with a high potential for "boom and bust" longline fishery over development. However, for every fisherman's job that may be lost in a "bust." it is conservative to estimate that a second person employed somewhere in businesses linked to the domestic longline fishery would also be lost. Thus, the impacts of each alternative on indirect employment would parallel the impacts of each alternative on direct employment in the longline fishery, as described above.

Effects on cultural values and practices

The American Samoa community is increasingly dependent on pelagic fish for cultural obligations that perpetuate *fa'a Samoa* (Samoan cultural heritage and way of life). The estimated impacts of the alternatives on the supply of fish to meet Samoan cultural needs would be exactly the same as their impacts on the pelagic fish supply for

community nutrition, as evaluated above. However Alternative 9B would allow participation by fishery “pioneers” which is seen as equitable and culturally appropriate.

Effects on recreational values and practices

The usual purpose of pelagic fishing in American Samoa is food production for subsistence or commercial use. Pelagic troll or handline fishing purely for recreation is uncommon. American Samoa’s domestic longline fishery targets deep-water albacore tuna. Shallow-water species, such as skipjack and yellowfin tuna and masimasi are also taken but the extent of longline fishery interactions with surface fish populations is uncertain. To the degree that the alternatives decrease longline fishing effort, particularly in the nearshore waters of the EEZ, they might have some positive effect on trolling catch rates of surface pelagic species.

By this logic, Alternative 1 would allow continued buildup of longline fishing effort in the EEZ of American Samoa and, thus, would be expected to have the most negative impact on surface trolling for pelagic species, whether the purpose of fishing is recreational or not. For the simple reason that it would limit longline fishing effort to a lower level than other alternatives, Alternative 7 would be the most positive. Alternatives 2-4 and 9 would allow total longline fishing to increase above existing levels to a specified maximum but this might also be negative for the pelagic troll fishery. Alternatives 5 and 6 would tightly limit longline fishing effort in offshore waters (< 50 nm from shore) of the EEZ but the potential benefit for pelagic troll fishermen in nearshore waters is uncertain. Alternative 8 would indirectly eliminate large vessels from the longline fishery by creating high economic inefficiency but it would encourage further expansion of the small-scale alia longline fishery within 50 nm of shore, possibly adding to local fishing pressure on surface pelagic fish that are targeted by American Samoa-based trolling vessels.

APPENDIX II: Initial Regulatory Flexibility Analysis and Regulatory Impact Review

II.1 Introduction

The Regulatory Flexibility Act, 5 U.S.C. 601 et seq. requires government agencies to assess the impact of their regulatory actions on small businesses and other small organizations via the preparation of Regulatory Flexibility Analyses. In addition, in order to meet the requirements of Executive Order 12866 (E.O. 12866), the National Marine Fisheries Service requires that a Regulatory Impact Review be prepared for all regulatory actions that are of public interest. This review provides an overview of the problem, policy objectives, and anticipated impacts of the action, and ensures that management alternatives are systematically and comprehensively evaluated such that the public welfare can be enhanced in the most efficient and cost effective way. In accordance with E.O. 12866, the following is set forth: (1) This rule is not likely to have an annual effect on the economy of more than $100 million or to adversely affect in a material way the economy, a sector of the economy, productivity, jobs, the environment, public health or safety, or state, local, or tribal governments or communities; (2) This rule is not likely to create any serious inconsistencies or otherwise interfere with any action taken or planned by another agency; (3) This rule is not likely to materially alter the budgetary impact of entitlements, grants, user fees or loan programs or the rights or obligations of recipients thereof; (4) This rule is not likely to raise novel or policy issues arising out of legal mandates, or the principles set forth in the Executive Order and; (5) This rule is not controversial.

This document contains analyses of the economic impacts on affected small businesses and other small organizations of a range of alternatives designed to limit longline fishing effort in waters of the Exclusive Economic Zone around American Samoa. It also examines the national costs and benefits of these alternatives.

II.2 Problem Statement and Need for Action

A small-scale domestic longline fishery was established in 1995 by one American Samoa fisherman using techniques that were already successful in Independent Samoa. The target species was albacore tuna that is sold for canning in American Samoa. Other small vessels (alia) soon entered the American Samoa longline fishery. As early as 1997, these small-scale participants raised concerns about the potential for the entry of larger vessels that could lead to an excessive concentration of longline fishing in waters of the Exclusive Economic Zone (EEZ) around American Samoa, similar to the development of neighboring Independent Samoa's longline fishery. American Samoa's fishermen recommended a precautionary approach to managing their domestic longline fishery to avoid problems such as 1) gear conflict; 2) reduction in local catch rates of albacore tuna below economically viable levels; and most importantly, 3) a possible "boom and bust" cycle of development that could disrupt community participation in and dependence on small-scale pelagic fisheries, and could

lead to the loss of opportunity for substantial participation in the large-vessel sector (vessels greater than 50 ft in length) of the fishery by indigenous American Samoans. Between 1997 and 2002, the active longline fleet increased from approximately 21 mostly small vessels to 75 vessels of a variety of sizes, with American Samoans mostly owning small vessels and non-American Samoans mostly owning large vessels.

Although not yet occurring, the possibility of gear conflict between small-scale and large-scale longline vessels was a great concern of America Samoa's small-scale fishermen. In 1998, the Western Pacific Regional Fishery Management Council (WPRFMC or Council), responded by recommending that EEZ waters within 50 nm of shore around American Samoa (approximately 130,000 km^2) be closed to large-scale (more than 50 ft in length) pelagic fishing vessels. Although the National Marine Fisheries Service (NMFS) was initially reluctant to give approval, a final rule establishing the large vessel closed area went into effect on March 1, 2002. During the interim, the number of large vessels participating in American Samoa's domestic longline fishery increased from three in 2000 to 30 in March, 2002.

Longline vessels based in American Samoa have limited fishing grounds available to them for two reasons. First, EEZ waters around American Samoa are bounded on all sides by EEZ waters of neighboring nations. Due to regional geography, these shared boundaries are generally less than 200 miles from American Samoa's shores. Second, the South Pacific Tuna Treaty currently prohibits US longlining on the high seas within the Treaty area. There are indications that this treaty will be amended shortly to remove this prohibition but it remains in place at this time.

As a result of the recently implemented large vessel closed area, most large-scale longline fishing effort (a few large-scale longline boats received exemptions to the large vessel closed area) has been compressed in the 260,000 km^2 of the remaining EEZ (outside of 50 nm).

However, due to seasonal conditions and other operating patterns, not all domestic longline fishing effort by the large vessels has been exerted to date. The existing large-vessel longline fleet based in American Samoa has the capability of fishing effort that could reach and exceed a level that is believed to be associated with gear conflict (55 hooks/km^2 /year inferred from experience in Independent Samoa's longline fishery during its years of largest expansion). If left unchecked, fishing effort exerted by the large-scale sector of American Samoa's longline fishery could reach higher levels of hook density (70 hooks/km^2/year) than those that prompted domestic longline license limitation by the government of Independent Samoa to maintain an economically viable tuna catch rate in its domestic longline fishery.

Further expansion of longline fishing effort within the finite area (390,000 km^2) of American Samoa's EEZ is likely to lead to the very problems that American Samoa's original longline fishery participants predicted in 1997. Depending on the distribution of fishing effort between nearshore and offshore areas, gear conflicts could be anticipated

in the near future in one or both areas. Besides the inherent economic costs of fishery congestion (increased travel/search time and lost fishing time), social costs could be expected to include angry confrontations and loss of cohesion among fishery participants. In some fisheries, gear conflicts have resulted in destruction of fishing gear, gunfire and other violence. At higher levels, declines in local albacore catch rates could reduce vessel profits below those required to cover operating costs. For this reason, action to control the development of this fishery is no longer "precautionary" but absolutely necessary to achieve the following management objectives of the Fishery Management Plan for the Pelagic Fisheries of the Western Pacific Region (FMP), as well as those objectives contained in the Magnuson-Stevens Fishery Conservation and Management Act:

Closely related to issues of local depletion and gear conflicts, is the desire for sustained community participation in the fishery, and opportunities for substantial future participation in the large-vessel sector by indigenous American Samoans.

Unregulated expansion of the fleet could lead to unsustainable development; i.e., a "boom" of uncontrolled fishing by large vessels with greater fishing power, followed by a "bust" of overcapacity and reduced availability of pelagic fish. A "boom" cycle of longline fishery growth would increase the short-term supply of fish but the "bust" cycle that may follow could disrupt long-term fish supply and discourage sustained community participation in fisheries. Two boom-and-bust cycles have been previously experienced in American Samoa's bottomfish fishery and each "bust" reduced fish supply and domestic fishing effort for several years.

A "boom and bust" pattern of development could be prevented by regulatory action to restrict further expansion of American Samoa's longline fishery. This action would promote long-term fishery development for sustained community participation, not only to produce food, income and employment but also to contribute to the perpetuation of American Samoan culture.

For these reasons, action to control the development of this fishery is no longer "precautionary" but absolutely necessary to achieve the following management objectives

1) Prevent local depletion.

2) Maintain sustained community participation and minimize adverse impacts on communities.

3) Ensure opportunities for substantial future participation by indigenous American Samoans in the domestic longline fishery.

4) Reduce the potential for gear conflicts.
5) Minimize fish bycatch and preclude waste of pelagic management unit species.

II.3 Description of the Fisheries

The harvest of pelagic fish has been a part of the way of life since the islands of the Samoan archipelago were first settled some 3,500 years ago (Severance and Franco, 1989). The ancient Samoans fished for their very survival. Subsistence fishing continues to the present but the importance of pelagic fisheries as a source of income and employment is increasing. Commercial ventures are diverse, ranging from small-scale vessels having very limited range to large-scale vessels catching tuna in the EEZ and distant waters and delivering their catches to canneries based in American Samoa. Total pelagic landings by American Samoa-based longline, troll, and handline vessels were approximately 8 million pounds in 2001 (as compared to 1.9 million pounds in 2000), with longline landings comprising 99.6% of this total. During 2001, 88% of these longline landings were albacore, with yellowfin, bigeye and skipjack tuna making up the majority of the remainder (WPRFMC, 2002).

Small-scale longline vessels (vessels equal to or less than 50 ft): Most, if not all, participants in the small-scale domestic longline fishery are indigenous American and Independent Samoans with vessels under 50 ft in length, most of which are alia catamaran-style boats under 40 ft in length. The stimulus for American Samoa's commercial fishermen to shift from troll or handline gear to longline gear in the mid-1990s was the fishing success of 28' alia catamarans that engaged in longline fishing in the EEZ around Independent Samoa. Following this example, the fishermen in American Samoa deploy a short monofilament longline, with an average of 350 hooks per set, from a hand-powered reel (WPRFMC, 2000). An estimated 90 percent of the crews working in the American Samoa small-scale alia longline fleet are from Independent Samoa. The predominant catch is albacore tuna, which is marketed to the local tuna canneries (DMWR, 2001b).

As of March 21, 2002, year 2002 general longline permits had been issued for 40 vessels 40 ft or less in length, and five for vessels 40.1 ft - 50 ft in length (DMWR, unpubl. data). Virtually all of the smaller vessels and four of the five 40.1 ft - 50 ft vessels are owned by indigenous American Samoans (T. Beeching, DMWR, pers. comm. to P. Bartram, March 2002). The average capital investment in these small-scale longline vessels is between $25,000 and $125,000.

Large-scale longline (vessels more than 50 ft): American Samoa's domestic longline fishery expanded rapidly in 2001. Much of the recent (and anticipated future) growth is due to the entry of monohull vessels larger than 50 ft in length. The number of permitted longline vessels in this sector increased from three in 2000 to 30 by March 21, 2002 (DMWR, unpubl. data). Of these, five permits (33% of the vessel size class) for vessels between 50 ft - 70 ft and five permits (33% of the vessel size class) for vessels larger than 70 ft were believed to be held by indigenous American Samoans as of March 21, 2002 (T. Beeching pers. comm to P. Bartram). Economic barriers have prevented more substantial indigenous participation in the large-scale sector of the

longline fishery. To date, lack of capital appears to be the primary constraint to substantial indigenous participation in this sector (DMWR, 2001b).

While the smallest (less than or equal to 40 ft) vessels average 350 hooks per set, a vessel over 50 ft can set 5-6 times more hooks and has a greater fishing range and capacity for storing fish (8-40 mt as compared to 0.5-2 mt on a small-scale vessel). Larger vessels are also outfitted with hydraulically-powered reels to set and haul mainline, and modern electronic equipment for navigation, communications and fish finding (T. Beeching, DMWR, pers. comm. to P. Bartram, March 2002). The average capital investment in a large-scale longline vessel is approximately $400,000.

Pelagic troll fishery: Although not likely to be directly affected by any of the alternatives, the pelagic troll fishery around American Samoa could experience declines in local yellowfin tuna catch rates if longline effort continues to expand at its recent rate. From October 1985 to the present, catch and effort data in American Samoa fisheries have been collected through a creel survey that includes subsistence and recreational fishing, as well as commercial fishing. However, differentiating commercial troll fishing activity from non-commercial activity can be difficult. American Samoa has been unable to develop a significant tourist industry that could support charter fishing (Territorial Planning Commission/Dept. of Commerce, 2000). Nor is American Samoa known for producing large game fish. Few, if any, charter boats are in operation (Tulafono, 2001), so no data are collected specifically for the charter fishing sector. Total pelagic landings made by troll gear were 8,000 lbs in 2000. There have been no reports of gear conflicts between longline vessels and pelagic trollers around American Samoa.

Recreational fishing purely for sport or pleasure is uncommon in American Samoa. Most fishermen normally harvest pelagic species for subsistence or commercial sale. However tournament fishing for pelagic species began in American Samoa in the 1980s, and between 1974 and 1998, a total of 64 fishing tournaments were held in American Samoa (Tulafono, 2001). Most of the boats that participated were alia catamarans and small skiffs. Catches from tournaments are often sold, as most of the entrants are local small-scale commercial fishermen. In 1996, three days of tournament fishing contributed about one percent of the total domestic landings. Typically, 7 to 14 local boats carrying 55 to 70 fishermen participated in each tournament, which were held 2 to 5 times per year (Craig et al. 1993).

The majority of tournament participants have operated 28-foot alia, the same vessels that engage in the small-scale longline fishery. With more emphasis on commercial longline fishing since 1996, interest in the tournaments has waned (Tulafono, 2001). Catch and release recreational fishing is virtually unknown in American Samoa. Landing fish to meet cultural obligations is so important that releasing fish would generally be considered a failure to meet these obligations (Tulafono, 2001). Nevertheless, some pelagic fishermen who fish for subsistence release fish that are surplus to their subsistence needs (S. Steffany, pers. comm. to Paul Bartram, Sept. 15, 2001).

Processing and Marketing Participants: Private industry in American Samoa is centered around two tuna canneries owned by offshore interests. The continued growth of the tuna canning industry in American Samoa over the last 40 years has been based largely on exemptions from foreign fish landing restrictions, duty-free access to U.S. markets, corporate income tax exemptions and a low minimum wage relative to the U.S.. The two canneries directly account for some 4,500 jobs or about 35 percent of total employment in American Samoa (Territorial Planning Commission/Dept. of Commerce, 2000).

American Samoa's position in the industry is being eroded by forces at work in the world economy and in the tuna canning industry itself. Whereas wage levels in American Samoa are well below those of the US, they are considerably higher than in other canned tuna production centers around the world. To remain competitive, U.S. tuna producers are purchasing more raw material, especially pre-cooked loins, from foreign manufacturers. Tax benefits to U.S. canneries operating in American Samoa have also been tempered in recent years by the removal of a provision in the U.S. tax code that previously permitted the tax-free repatriation of corporate income in U.S. territories. Trends in world trade, specifically reductions in tariffs, are reducing the competitive advantage of American Samoa's duty-free access to the U.S. canned tuna market (Territorial Planning Commission/Dept. of Commerce, 2000).

Despite the long history of the tuna canning industry in American Samoa, processing and marketing of pelagic fish by local enterprises has not yet developed beyond a few, short-term pilot projects. However, the government's comprehensive economic development strategy (Territorial Planning Commission/Dept. of Commerce, 2000) places a high priority on establishing a private sector fish processing and export operation proposed to be located at the Tafuna Industrial Park.

Albacore tuna is the primary target of this fishery because it is the only species that can be marketed in large quantities to local canneries for a price above $0.30/lb. Since the beginning of 2001, the cannery price for albacore has fluctuated considerably, from a high of $2,600/mt in early 2001 to a low of $1,700/mt in February 2002. The current price is over $1,800/mt (0.81/lb) and should rise when a supply contract between the canneries and Taiwanese longline fleets operating in the Indian Ocean ends. The vast majority of longline caught fish landed in American Samoa is sold to the canneries. A limited amount of non-albacore tuna can be sold in American Samoa's domestic market for $0.75 to $1.50/lb of whole weight, depending on species and quality. The domestic market pays a higher price of $1.25/lb whole weight for "miscellaneous pelagic species" (i.e., non-tuna) especially mahimahi and wahoo. A few restaurants and groceries are becoming more sophisticated in their buying, creating a limited demand for tuna loins or miscellaneous fish fillets. It is estimated that any more than two tons of pelagic fish per week would flood the existing domestic market (DMWR, 2001b). At least one company in American Samoa is exporting fresh fish (non-target species) from the domestic longline fishery on a small scale but large-scale export of fresh fish is hampered by the lack of air freight capacity on the scheduled airline that links American

Samoa to Honolulu.

Hawaiian Airlines has been servicing the Pago Pago-Honolulu route using a DC 10-10, which has a maximum cargo capacity of two tons per flight. The carrier has announced an upgrade to a 767-300 aircraft with more capacity. At present there is little possibility of exporting large quantities of fresh fish exports on the existing aircraft currently chartered to carry parcel post to American Samoa.

II.4 Current Management Measures

The Fishery Management Plan for the Pelagic Fisheries of the Western Pacific Region (FMP) was published in 1987 (52 FR 5987, March 23, 1987). The FMP includes initial estimates of maximum sustainable yields (MSY) for the stocks and sets optimum yields for these fisheries in the EEZs. The management unit species at the time the FMP was published were billfish, wahoo, mahimahi, and oceanic sharks. Tuna species were later designated as fish under U.S. management authority and included in the FMP Management Unit (57 FR 48564, November 1992). Current FMP regulatory measures in place provide that:

- Fishing for pelagic species in the western Pacific EEZs with drift gillnets is prohibited (52 FR 5987, March 23, 1987).
- Each vessel using longline gear to fish for pelagic species in the EEZ around American Samoa, Guam, the Commonwealth of Northern Mariana Islands (CNMI), or other U.S. islands of the western Pacific, and vessels used to transport or land longline-harvested pelagic species shoreward of the outer boundary of these EEZ waters, must be registered for use with either a Hawaii limited access longline permit or a general longline permit, and must keep daily logbooks detailing species harvested, area of harvest, time of sets, and other information. Longline gear used in the western Pacific EEZ waters must be marked with the official number of the permitted vessel that deploys the gear (56 FR 24731, May 1991).
- Longline vessels registered to Hawaii limited access longline permits must carry a NMFS observer if requested to do so (55 FR 49285, November 1990; 58 FR 67699, December 1993).
- Fishing vessels greater than 50 ft in length overall are prohibited from fishing for pelagic management unit species within approximately 50 nm of shore around American Samoa (67 FR 4369, January 30, 2002).

Most recently, the FMP was amended in 2002 to minimize the interactions between sea turtles and Hawaii-based longline vessels. The regulations prohibit swordfish longline fishing north of the equator and impose a closure on tuna fishing between equator and 15 deg N lat, and 180 - 145 deg W long. The regulations also impose a ban on the possession of light-sticks, specifies gear requirements, and a trip limit on swordfish landings. These regulations also apply to all longline vessels under the Council's jurisdiction, including those in American Samoa. The American Samoa based longline

fishery is presently open access, with no limits on the number of longline vessels, individual or total vessel capacity, catch or effort. In anticipation of a need to limit fishing effort within American Samoa's EEZ, a series of control dates (November 13, 1997 and July 15, 2001) have been implemented and newly entering pelagic longline participants have been informed that they are not guaranteed future participation in the longline fishery around American Samoa. At its March, 2002, meeting, the Council recommended and NMFS subsequently implemented, a new control date of March 21, 2002. This recommendation was made because recent fishery data indicated that no gear conflicts or adverse impacts on fishery stocks were occurring, meaning that use of the previous control data would unnecessarily restrict fishing effort and economic returns from this fishery. There has been no legal fishing by foreign longline vessels in the EEZ around American Samoa since 1980, when the pelagic fisheries Preliminary Management Plan (PMP) for the Western Pacific Region was implemented. Although this plan has mechanisms for foreign fishing, they involve onerous requirements (e.g., permits, fees, observers) on foreign vessels which have made them unattractive. There is a possibility that legal fishing in the EEZ by foreign vessels may resume at some time under a Pacific Insular Area Fishing Agreement (PIAFA), which could give foreign vessels access to the EEZ around American Samoa in exchange for a negotiated fee and subject to a variety of permit conditions.

The FMP does not contain any management measures specifically applicable to vessels that use pole-and-line, troll or handline gear to harvest pelagic species in the Western Pacific Region. The Territory of American Samoa has no regulations that affect pelagic fishing activities in territorial waters, although fishing vessel registration is required and some villages impose fishing curfews on Sundays (R. Tulafono, Director DMWR, pers. comm.).

However, under a regulatory adjustment to the FMP that implemented the reasonable and prudent alternative of a Biological Opinion issued by NMFS (March 29, 2001) in compliance with the Endangered Species Act, all American Samoa based longline fishery participants, and any other vessel operator using hooks to target pelagic species in the EEZ around American Samoa, are subject to several new regulations as described in a final rule published on June 12, 2002 (67 FR 40232). These requirements are intended to mitigate the impact of interactions between fishing vessels and sea turtles and vary according to vessel gear types and sizes as summarized in Table II-1. Due to the practicalities of hoisting sea turtles on board fishing vessels, vessel sizes are defined on the basis of the distance from the sea surface to the vessel's deck. For the purposes of this rule, large vessels are defined as those with decks more than 3' above the sea's surface and small vessels are defined as vessels with decks less than or equal to 3' above the sea's surface. Under this rule, both vessel operators and owners will be held responsible for the actions of their crews. Owners and operators of all longline vessels (regardless of size) are prohibited from targeting swordfish, shallow setting, or using lightsticks north of the equator. In addition, no more than 10 swordfish may be landed from trips that include longline fishing north of the equator and longline fishing is prohibited during April and May within the area between

the equator and 15° N latitude and bounded on the sides by 180° and 145° W longitudes. Operators of American Samoa based longline vessels are also required to attend a NMFS protected species workshop each year.

Table II-1. Turtle mitigation management measures for American Samoa's pelagic vessels.

Gear type	Vessel size	Requirements
Longline	Large	Carry and use specific dip nets, line clippers and bolt cutters to release hooked or entangled turtles. Follow turtle handling guidelines.
	Small	Carry and use tools capable of cutting fishing line, and hooks to release hooked or entangled turtles. Follow turtle handling guidelines.
Non-longline[1] (troll, jig, handline)	Large	Carry and use specific line clippers, and bolt cutters to release hooked or entangled turtles. Follow turtle handling guidelines.
	Small	Carry and use tools capable of cutting fishing line, and hooks to release hooked or entangled turtles. Follow turtle handling guidelines.

II.5 Alternatives Considered

The Council considered nine alternatives as possible measures to control longline fishing effort in the EEZ around American Samoa. The major elements of these alternatives are detailed below and summarized in Table II-2. Few alternatives include freely transferable permits as the consensus of participants in the DMWR-sponsored workshops held in American Samoa was that limited access permits proposed for the fishery should not generally be transferrable, as it was believed that freely transferable permits would over time move to individuals with no historical relationship with American Samoa.

None of the alternatives are expected to conflict with existing regulations.

[1] These requirements for non-longline vessels were dropped in a new Biological Opinion issued by NMFS on November 15, 2002 and are in the process of being removed from federal regulations.

Under all alternatives, present regulations concerning the near shore closed area, logbooks, annual attendance by vessel operators at protected species workshops, and sea turtle mitigation measures would remain in effect.

Alternative 1 is the no action alternative, while Alternative 4 represents the consensus preference of American Samoa-based fishermen who participated in a series of workshops sponsored by American Samoa's Department of Marine and Wildlife Resources between April, 2001 and March, 2002.

Alternatives 2, 3, 5, 6, 7, 8 and 9 represent other viewpoints.

Alternative 2 does not arise from workshop discussions but is considered to provide a broad range of alternative management actions to address this issue. Alternative 3 represents a variation of the workshop consensus but differs in that it does not limit the number of vessels in the smallest size class.

Alternatives 5 and 6 also were not addressed at the workshops but are included to provide relatively tight limits on total longline fishing effort in American Samoa's EEZ (at or near levels of effort believed to be associated with gear conflict or local overfishing), while maintaining opportunities for additional community participation in the small-scale sector (vessels under 50 ft) of the domestic longline fishery.

Alternative 7 was not addressed at the American Samoa workshops but instead reflects the concern of the Council's Scientific and Statistical Committee (SSC) that longline fishing effort in EEZ waters around American Samoa is near its limits. This alternative would control effort by limiting the number of total hooks set rather than permits or vessels.

Alternative 8 (limiting longline landings to 5,000 lbs per trip) is being considered as an method to managing American Samoa's expanding longline fishery that does not rely on limited entry mechanisms.

Alternative 9A was crafted at the Council's 113th meeting in American Samoa and addresses concerns raised by fishermen and other interested parties at that meeting. This alternative focuses on vessel owners rather than permit holders as permits were not required in the early days of the fishery (thus limiting entry to prior permit holders would restrict renewed participation by fishery "pioneers"). This alternative would restrict entry to those individuals who owned a longline vessel on March 21, 2002 - provided that the vessel was used to legally harvest Pacific pelagic management unit species with longline gear in the EEZ around American Samoa, and those fish were landed in American Samoa, at some time on or prior to March 21, 2002[2]. In order to allow

[2]Note: An exception would be made for any individual who gave to the Council or NMFS, (prior to the control date), a written notice of intent to participate in American Samoa's longline fishery, and could document that he or she actually harvested PMUS fish from American Samoa's EEZ using longline gear

maximum efficiency in vessel operations, this alternative allows the use of vessels greater than 100 ft in length overall and does not impose any hook limits or bycatch landing requirements. To address concerns of vessel safety and increased participation by historical community members, this alternative also includes a mechanism to allow some upgrading to larger vessels by the smallest vessel size class permit holders (generally those with the longest history of participation). However, to control effort, any permit holder receiving an "upgrade" permit would be required to relinquish his or her current permit in exchange. In addition, the new (upgrade) permit would not be transferrable for a period of three years. This is to ensure that the intent of the upgrading measure is not undermined by an immediate transfer to individuals without the desired historical community participation. Under this alternative, all other permits would be transferrable at any time to individuals with documented fishery participation. This allows flexibility for permit holders to enter and exit the fishery, but limits new entrants to those with at least some record of previous participation. In addition, permit holders would be required to, at all times, register a vessel that they own, to their permit.

Alternative 9B (preferred) was recommended for implementation by the Council at its 114th meeting in Honolulu. This alternative is similar to Alternative 9A, however it includes modifications designed to allow participation by earlier fishery participants ("pioneers") and to reduce regulatory impacts on both historical and current participants. In addition it would require that vessels greater than 40 ft in length overall carry scientific observers if requested by NMFS. Management measures under this alternative are identical to 9A with the following exceptions: initial entry would include all those individuals that owned longline vessels *at any time on or prior to March 21, 2002*, provided that while under their ownership the vessel was used to legally harvest Pacific pelagic management unit species with longline gear in the EEZ around American Samoa, and those fish were landed in American Samoa, at some time on or prior to March 21, 2002[3]; permit holders would not be required to own the vessels registered to their permits; operators of vessels more than 40 ft in length overall would be required to carry observers if requested by NMFS; and the requirement for annual attendance at a vessel safety workshop was removed. Additional changes to the draft implementing regulations were also made at the Council's 114th meeting. These are: time limits for initial permit applications were extended from 90 to 120 days; time limits for registering a vessel to an initial permit were extended from 90 to 120 days; the requirements for continuous registration of vessels to permits was deleted; language codifying the maximum number of permits in each size class was deleted; language requiring an administrative fee be charged for each permit, permit renewal, and permit transfer was added; the appeal process was modified to reflect the process used in the Hawaii-based longline fishery; language codifying the permit renewal date was deleted;

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and landed those fish in American Samoa prior to June 28, 2002.

[3] See note 1.

language limiting temporary permits to no more than 60 days was added; a requirement that operators of vessels greater than 40 ft in length notify NMFS no less than 72 hours before departing on a fishing trip in order to allow placement of observers was also added; and that Alternative 9A's requirement that permit holders notify NMFS immediately of any change in vessel ownership was clarified to specify that this notification occur within 30 days of such a change.

Details of the nine alternatives are as follows:

Under all alternatives, present regulations concerning the near shore closed area, logbooks, annual attendance by vessel operators at protected species workshops, and sea turtle mitigation measures would remain in effect.

Alternative 1 (no action): Under this alternative, no action would be taken to limit longline effort in EEZ waters around American Samoa and the fishery would continue to be managed under existing regulations. The recently implemented nearshore large vessel area closure would remain in effect, and Federal permits and logbooks would continue to be required for longline fishing in these waters. Current and historical fishery participation by federal permit holders is believed to be distributed across size classes as illustrated in Table II-2.

Table II-2. March 21, 2002, distribution of active and inactive longline fishing vessels by size class. Source: DMWR unpub. data

Vessel size class	Currently active vessels	Currently inactive vessels
A: equal to or less than 40'	40	33
B: 40.1' - 50'	5	1
C: 50.1' - 70'	15	0
D: greater than 70.1'	15	1
ALL	75	35

Alternatives 2-7 and 9 involve the use of a control date for determining initial participation. Based on the Council's recommendation, a control date of March 21, 2002 is used. Under Alternatives 2-7, qualification to enter by this control date is based on two criteria:

1) an individual must have legally held a Hawaii limited access or a general longline permit at some time on or prior to March 21, 2002 and;

2) landings of Pacific pelagic management unit species (PMUS[4]) must have been made in American Samoa by a vessel legally registered to that permit at some time on or prior to March 21, 2002.

Alternative 2: Alternative 2 would modify current regulations to allow all those individuals who qualify under the control date to participate in the longline fishery within the EEZ waters around American Samoa. In addition, new entrants would be allowed to participate to the extent that total permits do not exceed the following caps:

Alternative 2: Size class permit caps, and proportions reserved for indigenous use		
Vessel size class	Permit cap	Proportion of new or re-issued permits reserved for indigenous use
A: equal to or less than 40'	100	0%
B: 40.1' - 50'	50	0%
C: 50.1' - 70'	25	0%
D: 70.1' - 100'	40	0%
ALL	215	NA

Under this alternative, no vessels greater than 100 ft in length would be allowed to longline within EEZ waters surrounding American Samoa.

Alternative 2 includes a permit renewal “use it or lose it” landing requirement every year. Permit renewal would also be based on adherence to fishery regulations and a requirement that vessel operators attend annual vessel safety courses.

Permits would be non-transferable but could be re-registered to a replacement vessel in any length class in which permits issued are below the permit caps above.

“Lost” permits (those not renewed by a permit holder) would be re-issued by NMFS to the person who is highest on a list of applicants as ranked by date of application. Finally, to address concerns over bycatch, permitted vessel operators would be required to land all pelagic management unit species in port.

Alternative 3: Alternative 3 would modify current regulations to allow all those individuals who qualify under the control date to participate in the longline fishery within the EEZ waters around American Samoa. In addition, new entrants would be allowed to

[4]PMUS are species managed by the Council and include tunas, wahoo, mahimahi, sharks and other pelagic species.

participate to the extent that total permits do not exceed the following caps:

Alternative 3: Size class permit caps, and proportions reserved for indigenous use		
Vessel size class	Permit cap	Proportion of new or re-issued permits reserved for indigenous use
A: equal to or less than 40'	unlimited	100%
B: 40.1' - 50'	50	80%
C: 50.1' - 70'	25	70%
D: 70.1' - 100'	40	60%
ALL	unlimited	NA

Under this alternative, no vessels greater than 100 ft in length would be allowed to longline within EEZ waters surrounding American Samoa.

Alternative 3 would also implement a permit renewal “use it or lose it” landing requirement, however this would be required only once every three years. Permit renewal would also be based on adherence to fishery regulations and a requirement that vessel operators attend annual vessel safety courses.

Permits would be generally non-transferable but could be re-registered to a replacement vessel in any length class in which permits issued are below the permit caps above. However, permit holders with vessels less than 40 ft who have more than five years experience in the domestic longline fishery based in American Samoa would be allowed unlimited vessel upgrades (re-registration of permits to vessels in larger size classes). Permit transfers would be allowed only for indigenous American Samoan permit holders with vessels less than 40 ft, and only to immediate family or community groups.

“Lost” permits (those not renewed by a permit holder) would be re-issued by NMFS so as to achieve the proportions of indigenous participation for new permit holders indicated above. Priority for new permits would be further ranked according to previous experience in American Samoa-based pelagic fisheries (longline, troll, handline, purse seine, albacore jig boat).

To address concerns over bycatch, permitted vessel operators would be required to land all Pacific pelagic management unit species port.

This alternative includes a requirement that all vessels more than 50 ft in length that are registered to longline permits and fishing in EEZ waters around American Samoa carry active vessel monitoring systems.

Alternative 4: Alternative 4 would also modify current regulations to allow all those individuals who qualify under the control date to participate in the longline fishery within the EEZ waters around American Samoa. In addition, new entrants would be allowed to participate to the extent that total permits do not exceed the following caps:

Alternative 4: Size class permit caps, and proportions reserved for indigenous use		
Vessel size class	Permit cap	Proportion of new or re-issued permits reserved for indigenous use
A: equal to or less than 40'	100	80%
B: 40.1' - 50'	50	80%
C: 50.1' - 70'	25	70%
D: 70.1' - 100'	40	60%
ALL	215	NA

Under this alternative, no vessels greater than 100 ft in length would be allowed to longline within EEZ waters surrounding American Samoa.

Alternative 4 would also implement a permit renewal “use it or lose it” landing requirement once every three years. Permit renewal would also be based on adherence to fishery regulations and a requirement that vessel operators attend annual vessel safety courses.

Permits would be generally non-transferable but could be re-registered to a replacement vessel in any length class in which permits issued are below the permit caps above. Permit transfers would be allowed only for indigenous American Samoan permit holders with vessels less than 40 ft, and only to immediate family or community groups.

“Lost” permits (those not renewed by a permit holder) would be re-issued by NMFS so as to achieve the proportions of indigenous participation for new permit holders indicated above. Priority for new permits would be further ranked according to previous experience in American Samoa-based pelagic fisheries (longline, troll, handline, purse seine, albacore jig boat).

To address concerns over bycatch, permitted vessel operators would be required to

land all Pacific pelagic management unit species in port.
This alternative includes a requirement that all vessels more than 50 ft in length that are registered to longline permits and fishing in EEZ waters around American Samoa carry active vessel monitoring systems.

Alternative 5: Alternative 5 would also modify current regulations to allow all those individuals who qualify under the control date to participate in the longline fishery within the EEZ waters around American Samoa. In addition, new entrants would be allowed to participate to the extent that total permits do not exceed the following caps:

Alternative 5: Size class permit caps, and proportions reserved for indigenous use		
Vessel size class	Permit cap	Proportion of new or re-issued permits reserved for indigenous use
A: equal to or less than 40'	50	80%
B: 40.1' - 50'	25	80%
C: 50.1' - 70'	15	70%
D: 70.1' - 100'	16	60%
ALL	106	NA

Under this alternative, no vessels greater than 100 ft in length would be allowed to longline within EEZ waters surrounding American Samoa.

Alternative 5 would also implement a permit renewal “use it or lose it” landing requirement once every three years. Permit renewal would also be based on adherence to fishery regulations and a requirement that vessel operators attend annual vessel safety courses.

Permits would be generally non-transferable but could be re-registered to a replacement vessel in any length class in which permits issued are below the permit caps above. Permit transfers would be allowed only for indigenous American Samoan permit holders with vessels less than 40 ft, and only to immediate family or community groups.

“Lost” permits (those not renewed by a permit holder) would be re-issued by NMFS so as to achieve the proportions of indigenous participation for new permit holders indicated above. Priority for new permits would be further ranked according to previous experience in American Samoa-based pelagic fisheries (longline, troll, handline, purse seine, albacore jig boat).

To address concerns over bycatch, permitted vessel operators would be required to land all Pacific pelagic management unit species in port.

This alternative includes a requirement that all vessels more than 50 ft in length that are registered to longline permits and fishing in EEZ waters around American Samoa carry active vessel monitoring systems.

Alternative 6: Alternative 6 would also modify current regulations to allow all those individuals who qualify under the control date to participate in the longline fishery within the EEZ waters around American Samoa. In addition, new entrants would be allowed to participate to the extent that total permits do not exceed the following caps:

Alternative 6: Size class permit caps, and proportions reserved for indigenous use		
Vessel size class	Permit cap	Proportion of new or re-issued permits reserved for indigenous use
A: equal to or less than 40'	100	80%
B: 40.1' - 50'	10	80%
C: 50.1' - 70'	15	70%
D: 70.1' - 100'	16	60%
ALL	141	NA

Under this alternative, no vessels greater than 100 ft in length would be allowed to longline within EEZ waters surrounding American Samoa.

Alternative 6 would also implement a permit renewal “use it or lose it” landing requirement once every three years. Permit renewal would also be based on adherence to fishery regulations and a requirement that vessel operators attend annual vessel safety courses.

Permits would be generally non-transferable but could be re-registered to a replacement vessel in any length class in which permits issued are below the permit caps above. Permit transfers would be allowed only for indigenous American Samoan permit holders with vessels less than 40 ft, and only to immediate family or community groups.

“Lost” permits (those not renewed by a permit holder) would be re-issued by NMFS so as to achieve the proportions of indigenous participation for new permit holders indicated above. Priority for new permits would be further ranked according to previous experience in American Samoa-based pelagic fisheries (longline, troll, handline, purse seine, albacore jig boat).

To address concerns over bycatch, permitted vessel operators would be required to land all Pacific pelagic management unit species in port.

This alternative includes a requirement that all vessels more than 50 ft in length that are registered to longline permits and fishing in EEZ waters around American Samoa carry active vessel monitoring systems.

Alternative 7: Alternative 7 would also modify current regulations to allow all those individuals who qualify under the control date to participate in the longline fishery within the EEZ waters around American Samoa. However, rather than setting permit caps, Alternative 7 would focus on capping EEZ longline effort (hooks) to levels below those associated with gear conflict in neighboring Independent Samoa (55 hooks per km^2) as follows:

Alternative 7: Effort limits for each EEZ area around American Samoa		
EEZ area	Square kilometers	Longline effort cap (annual hooks)
Nearshore (0-50 nm)	130,000	7.15 million
Offshore (50 - 200 nm, or remainder of EEZ waters)	260,000	14.3 million
Total	390,000	21.45 million

Under this alternative, vessels greater than 100 ft in length that qualify under the control date would be allowed to longline within EEZ waters surrounding American Samoa, however no additional vessels greater than 100 ft in length would be allowed to enter the fishery.

Due to continuing uncertainty about the precise number of vessels that will be allowed in by the control date, re-issuance of “lost” permits would be prohibited as necessary until attrition reduces predicted annual fishing effort to levels equal to or below these effort caps. Once predicted annual fishing effort is equal to or below the effort caps, new participation would then be possible when a permit was “lost” by an initial permit holder (permits would be non-transferable).

First priority for “lost” permits would go to current permit holders wanting to upgrade to larger vessel size classes in which effort is below the effort caps above. Second priority would go to the person who is highest on the list of applicants. This list would be ranked according to previous experience in American Samoa-based pelagic fisheries (longline, troll, handline, purse seine, albacore jig boat).

Alternative 7 would implement a permit renewal “use it or lose it” landing requirement of 1,000 pounds once every three years. Permit renewal would also be based on adherence to fishery regulations and a requirement that vessel operators attend annual vessel safety courses.

Alternative 7 would also limit the number of hooks set by vessels over 50 ft in length to no more than 3,000 per set.

This alternative has no requirement to land all Pacific pelagic management unit species in port or requirement concerning vessel monitoring systems.

Alternative 7 includes a recommendation that methods to allow conversion of less than 40 ft size class permits to permits for vessels between 40 ft and 50 ft without exceeding effort caps be developed and implemented as soon as possible. Potential approaches include allowing a new 40 '-50 ft vessel size class permit to be issued whenever two permits for less than 40 ft vessels are “lost”.

Alternative 8: Alternative 8 would not limit longline permits or EEZ effort but instead would implement a trip landing limit of no more than 5,000 lbs of pelagic management unit species for any longline fishing trip that included fishing in EEZ waters around American Samoa.

Alternative 9 (Preferred): Two versions of Alternative 9 are presented here. These alternatives are similar in many ways however some differences do exist. Perhaps most significantly, Alternative 9A would limit participation to the owners - as of March 21,2002 - of vessels that made longline landings in American Samoa, while Alternative 9B (preferred) would include all (both current and historical) owners of such vessels.

Specifically, Alternative 9A would restrict entry to those individuals who owned a longline vessel on March 21, 2002 - provided that the vessel was used to legally harvest Pacific pelagic management unit species with longline gear in the EEZ around American Samoa, and those fish were landed in American Samoa, at some time on or prior to March 21, 2002[5].

In order to allow entry by fishery “pioneers”, Alternative 9B would allow entry by all those individuals that owned longline vessels at any time on or prior to March 21, 2002, provided that while under their ownership the vessel was used to legally harvest Pacific pelagic management unit species with longline gear in the EEZ around American

[5]Note: An exception would be made for any individual who gave to the Council or NMFS, (prior to the control date), a written notice of intent to participate in American Samoa’s longline fishery, and could document that he or she actually harvested PMUS fish from American Samoa’s EEZ using longline gear and landed those fish in American Samoa prior to June 28, 2002.

Samoa, and those fish were landed in American Samoa, at some time on or prior to March 21, 2002[6].

Based on available ownership and landing records, the distribution by size class of numbers of individuals potentially qualified for initial permits under Alternatives 9A and 9B are estimated as follows:

Alternatives 9A and 9B: entry based on vessel ownership and landings Estimated maximum number of qualifying vessels in each size class		
Vessel size class	Alternative 9A	Alternative 9B
A: equal to or less than 40'	75	93
B: 40.1' - 50'	9	9
C: 50.1' - 70'	15	15
D: 70.1' or larger	19	21
ALL	118	138

Under Alternative 9A, potentially qualified applicants would have 90 days from the effective date of the final rule to apply for an initial permit. If they were found to qualify for an initial permit, they would have another 90 days to register a vessel (of the appropriate size class, and owned by them) to that permit. If they failed to do so, that permit would not be issued and would not be available for use by other applicants. In order to minimize inadvertent negative economic impacts resulting from delayed responses by potential participants, Alternative 9B extends these time limits to 120 days and the vessel ownership requirement would not apply. However, Alternative 9B includes an administrative fee (to be set by NMFS in accordance with its fee schedule) for the issuance, renewal or transfer of any permit.

Under both Alternatives 9A and 9B a total of 26 new “upgrade” permits would be made available over the first four years following the issuance of initial permits, for the exclusive use of initial permit holders in the smallest size class (less than or equal to 40 ft), with priority given to those with the first documented historical participation in the fishery. Similar to initial permits, qualified applicants would have 90 or 120 days to register a vessel (of the appropriate size class) to that permit. If they failed to do so, that permit would be made available for use by the next applicant “in line”. Those receiving an upgrade permit would have to retire their present permit and would not be allowed to transfer their new permit for three years. After three years they would be transferable to any individual who could document that they worked on a vessel that caught Pacific

[6] See note 4.

pelagic management unit species on longline gear in the EEZ around American Samoa, that were subsequently landed in American Samoa (regardless of date).

These upgrade permits would be distributed according to the following schedule:

Vessel size class	Year 1	Year 2	Year 3	Year 4	Total
40.1' - 50'	4	4	4	2	14
50.1 - 70'	2	2	2	0	6
70' or larger	2	2	2	0	6

All other permits would also be transferable to any individual who could document that they worked on a vessel that caught Pacific pelagic management unit species, on longline gear in the EEZ around American Samoa, that were subsequently landed in American Samoa (regardless of date). Note: Alternative 9A would require that this participation be on a vessel registered to either at Hawaii limited access or a general longline permit, in order to mitigate negative impacts on excluded participants Alternative 9B does not include this requirement.

Under both Alternatives 9A and 9B, permits for vessels in the smallest size class (equal to or less than 40 ft) would also be allowed to be transferred to family members or community groups as previously defined for community development projects. In addition, permits could be re-registered (by the same permit holder) to a different vessel in the same size class at any time.

Both alternatives would also prohibit any individual from owning more than 10% of the maximum permits allowed (in all vessel size classes combined), with any fractional interest in a permit counted as a whole permit.

In addition, both alternatives include permit renewal “use it or lose it” landing requirements of 1,000 pounds of Pacific pealgic management unit species once every three years for the two smaller vessel size classes with a similar 5,000 pound requirement for the two larger vessel size classes.

Under Alternative 9A, permit renewal would also be based on timely submission of logbooks, immediate notification to NMFS of changes in vessel ownership, and annual attendance by vessel owners at vessel safety courses and protected species workshops. Due to a lack of available personnel and resources, Alternative 9B would remove the vessel safety course requirement. It would maintain the remaining requirements but due to legal concerns it would not make them a condition of permit renewal. It would also clarify that permit holders must notify NMFS within 30 days of any changes in vessel ownership.

Alternative 9A would also require that permits have vessels registered to them at all times while Alternative 9B does not include this requirement.

Under both alternatives, “lost” permits (those not renewed by a permit holder) would be re-issued by NMFS and would be available to any longline fishery participant, with priority given by vessel size class (those on the smallest vessels getting highest priority). Within size classes, priority would be based on the date of their first documented longline landing in American Samoa with the earliest landing getting highest priority. Under Alternative 9A, potential recipients would have 90 days to register a vessel to the permit, under Alternative 9B they would have 120 days. Under both alternatives, if they failed to do so, then the next “in line” would get a chance. However that potential recipient could apply again for an available permit after 6 months has passed.

These alternatives include a requirement that all vessels more than 50 ft in length that are registered to longline permits and fishing in EEZ waters around American Samoa carry active vessel monitoring systems if requested by NMFS.

Neither Alternative 9A or 9B include maximum vessel size limits, hook limits, or bycatch landing requirements. However, Alternative 9B includes a requirement that holders of permits registered to vessels more than 40 ft in length overall carry scientific observers on board their vessels if requested by NMFS. This includes a requirement that operators of these vessels notify NMFS no less than 72 hours before embarking on a fishing trip so that observers may be placed on board if requested by NMFS.

Under Alternative 9B, all permits could be registered to vessels in smaller size classes than that for which they were issued.

Other regulatory changes under Alternative 9B are the modification of 9A’s appeal process to reflect the process used for the Hawaii-based longline fishery, a time limit of 60 days for temporary permits and deletion of text codifying the permit renewal date as December 31 of each year.

Table II-3. Summary of management alternatives.

Alternative	Total Permits Allowed	Proportion of New or Re-issued Permits Reserved for Indigenous Use (by vessel size class)	Use-or-lose Requirement	Permit Re-registration and Transferability
1. No action	N/A	Not considered	No	Unlimited permit re-registration to replacement vessels is allowed. No permit transfers.
2. Emphasizes active participation, must land all PMUS.	100 less than 40' 50 between 40' - 50' 25 between 50' - 70' 40 between 70' - 100' Total: 215	Not considered	Yes (1 yr)	Permit re-registration allowed to replacement vessels in any size class with slots available, no permit transfers.
3. Emphasizes active, small-scale, indigenous participation, must land all PMUS.	Unlimited less than 40' 50 between 40' - 50' 25 between 50' - 70' 40 between 70' - 100' Total: unlimited	100% 80% 70% 60%	Yes (3 yr)	Permit re-registration allowed to replacement vessels in any size class with slots available; unlimited re-registrations allowed for upgrades by small-boat pioneers (5 yrs+); only indigenous permits <40' can be transferred and only to immediate family or community groups.
4. Emphasizes active and indigenous participation, must land all PMUS.	100 less than 40' 50 between 40' - 50' 25 between 50' - 70' 40 between 70' - 100' Total: 215	80% 80% 70% 60%	Yes (3 yr)	Permit re-registration allowed to replacement vessels in any size class with slots available; only indigenous permits <40' can be transferred and only to immediate family or community groups.
5. Emphasizes active, small-scale, indigenous participation, safety, no new large boats (> 50 ft) allowed after March 21, 2002, must land all PMUS.	50 less than 40' 25 between 40' - 50' 15 between 50' - 70' 16 between 70' - 100 Total: 106	80% 80% 70% 60%	Yes (3 yr)	Permit re-registration allowed to replacement vessels in any size class with slots available; only indigenous permits <40' can be transferred and only to immediate family or community groups.

Table II-3 continued - Summary of management alternatives.

Alternative	Total Permits Allowed	Proportion of New or Re-issued Permits Reserved for Indigenous Use (by vessel size class)	Use-or-lose Requirement	Permit Re-registration and Transferability
6. Emphasizes active, small-scale, indigenous participation, no new large boats (> 50 ft) allowed after March 21, 2002, must land all PMUS.	100 less than 40', 10 between 40' - 50' 15 between 50' - 70' 16 between 70' - 100 Total: 141	80% 80% 70% 60%	Yes (3 yr)	Permit re-registration allowed to replacement vessels in any size class with slots available; only indigenous permits <40' can be transferred and only to immediate family or community groups.
7. Emphasizes active participation, safety, control of gear conflict, and historical participation. No requirement to land all PMUS.	Not applicable	Available ("lost") permits allocated based on current and historical participation.	Yes (3 yr)	Permit re-registration allowed to replacement vessels in any size class with slots available, no permit transfers. Available permits allocated first to current participants wanting to upgrade, then to applicants ranked by historical participation.
8. Controls effort indirectly through trip landing limits, no requirement to land all PMUS	Unlimited	Not considered	No	No limited entry - permit holders cannot land more than 5,000 pounds per trip.
9A. Emphasizes active participation, safety and efficiency. No requirement to land all PMUS	75 less than 40' 9 between 40' - 50' 15 between 50'-70' 17 between 70' - 100' 2 over 100' Total: 118	26 upgrade permits reserved for current holders of the smallest vessel size class permits. Available ("lost") permits allocated based on current and historical participation.	Yes (3 yr)	Upgrade permits are not transferable for 3 years, others are transferable to any individual with historical fishery participation. Permits <40' can also be transferred to family members or community groups.
9B. Emphasizes active participation, safety, historical participation and efficiency. No requirement to land all PMUS	93 less than 40' 9 between 40' - 50' 15 between 50' - 70' 19 between 70' - 100' 2 over 100' Total: 138	26 upgrade permits reserved for current holders of the smallest vessel size class permits. Available ("lost") permits allocated based on current and historical participation.	Yes (3 yr)	Upgrade permits are not transferable for 3 years, others are transferable to any individual with historical fishery participation. Permits <40' can also be transferred to family members or community groups.

II.6 Description of Small Businesses to Which the Rule Would Apply

As described above, the historical American Samoa based domestic longline fishery can be divided into two sectors, the small-scale (less than 50 ft) alia catamarans, and the larger scale (50 ft and larger) monohull fleet. The majority of vessels are not owner operated but are owned by private individuals, with maximum fleet percentage ownership by any one individual or entity believed to be approximately 6%. All vessels have gross revenues of less than $3.5 million annually and are thus considered to be small businesses.

The smallest longline vessels (alias less than or equal to 40 ft) average 50 to100 fishing trips annually, with trips lasting one to two days and consisting of one to two sets of 350 hooks each. Typical catch by these vessels is 500 lbs per set for an annual total of 50,000 pounds valued at $65,000 in ex-vessel revenue (per vessel). These vessels average 3 crew members (including the captain), and represent a capital investment of $25,000 - $125,000. These vessels are permanently based in American Samoa and may have been used to pelagic handline or troll in the past.

Longline vessels between 40 ft and 50 ft in length are typically monohull vessels. This group averages 23 to 28 fishing trips annually, with trips lasting four to six days and consisting of three to five sets of 1,500 hooks each. Typical catch by these vessels averages 8,000 pounds per trip (approximately 2,000 pounds per set) for an annual total of 200,000 pounds valued at $220,000 in ex-vessel revenue (per vessel). These vessels are also permanently based in American Samoa and were built for this fishery.

Typical large-scale longline vessels (greater than 50 ft in length) average 17 fishing trips annually, with a typical trip lasting 25 days and consisting of 25 sets of 2,100 hooks each. Typical catch by these vessels is 35,000 pounds per trip, for an annual total of 595,000 pounds valued at $657,000 in ex-vessel revenue (per vessel). These vessels average 6 crew members (including the captain) and represent a capital investment of approximately $400,000 per vessel. These vessels are currently based in American Samoa, and have also been used in other Pacific pelagic longline or jig fisheries.

All fishing operations affected by this rule are considered to be “small entities” under guidelines issued by the Small Business Administration because they are independently owned and operated and have annual receipts not in excess of $3.5 million. Entities potentially regulated under this rule include all past, present, and future owners and operators of pelagic longline fishing vessels operating in the EEZ around American Samoa.

Residents of this community have an average annual per capita income of $5,000 and a median annual household income of $16,000. With an unemployment rate approaching 17 percent and few alternate employment opportunities, fishing ventures represent an important path to sustainable development and economic self-reliance for American Samoa.

II.7 Economic Impacts of the Alternatives

Alternative 1 is the no action alternative and would be anticipated to have no economic impacts on fishery participants in the short run. In the long run it is likely that longline vessels would continue to enter the fishery. At some point, fishery participants would be expected to experience reductions in local catch rates and gear conflicts. Depending on the distribution of fishing effort between nearshore and offshore areas, gear conflicts could be anticipated in the near future in one or both areas. As longline density increases through more lines being deployed in a limited area, there is a greater potential for the gears to physically interact through tangling and to compete for the fishery resource. Fishermen are subject to greater costs through repairs to gear and decreased revenues from declining catch rates as albacore stocks are locally depleted. Fishermen will respond by trying to locate areas not yet subject to intensive fishign by the expanding fleet, which also ads to the cost burden. Besides the inherent economic costs of fishery congestion (increased travel/search time and lost fishing time), social costs could be expected to include angry confrontations and loss of cohesion and cooperation among fishery participants. In some fisheries, gear conflicts have resulted in destruction of fishing gear, gunfire and other violence. At higher levels of hook density, declines in local albacore catch rates would reduce vessel profits to levels below those required to cover operating costs (i.e. breakeven).

Breakeven analysis for vessels equal to or less than 40 ft shows that these vessels may need to catch an average of 0.0225 albacore/hook (assuming a cannery price of $2,200/mt or about $1.00/lb whole weight) to cover fishing expenses and crew wages. These operating costs are estimated based on interviews with boat owners conduced as part of Kaneko et al. (2001) and updated through boat owner interviews by one of the co-authors of Kaneko et al (2001). Based on this series of interviews, the revenue needed to covering fishing expenses and crew wages was estimated to be $350 per 350 hooks (one set or day of longline fishing), or approximately one dollar per hook.

The equal to or less than 40 ft vessel size class fleet needs much higher average catch rates (0.03 albacore/hook) when the cannery price drops to $1,700/mt, as in February 2002. Should the cannery price drop even lower ($1,500/mt), these vessels would need to make an average catch of 0.0325 albacore/hook for breakeven operation.

Economic information was gathered in December 2001 for 18 longline vessels greater than 50 ft in length based in American Samoa (O'Malley and Pooley, 2002 draft ms.). Estimates of average albacore catch rates needed for a breakeven operation for these vessels were made based on the average operating cost ($545,000/year) of vessels surveyed. At the high end of cannery pricing ($2,496/mt), an average catch rate of 0.021 albacore/hook is estimated to cover operating costs. At the low end of cannery pricing ($1,710/mt), an average catch rate of 0.028 albacore/hook) is necessary to cover operating costs. A scenario in which the cannery price for albacore is even lower ($1,500/mt) was also examined. At this price, an average catch rate of 0.032 albacore/hook would be needed to cover these vessels' operating costs (O'Malley and

Pooley, 2002 draft ms.)

The breakeven catch rates estimated for the small-scale and large-scale sectors of American Samoa's longline fishery were compared with the long-term historical trend in albacore catch rates by the Taiwan and other longline fisheries operating in the sub-equatorial region of the central South Pacific. At the higher end of cannery price for whole albacore ($2,200-2,500/mt), the average long-term longline catch rates for this species in the region have generally remained above breakeven levels, except in the period 1989 - 1991. At the lower end of cannery price ($1,700/mt), the average long-term longline catch rates for albacore in the region have been above breakeven levels only in the late 1990s. In a worst case cannery pricing scenario ($1,500/mt), the average long-term longline catch rates in the region do not indicate that breakeven average albacore catch rates could be achieved in American Samoa's longline fishery.

These analyses suggest that an average albacore catch rate of at least 2.25 fish/100 hooks should be maintained in American Samoa's longline fishery for long-term economic viability of both small-scale and large-scale fleets. Even so, periods of high global production of albacore would be expected to occur (as in 1999 and early 2002) that depress cannery prices so that the breakeven levels of average albacore catch rates would need to be almost 3 fish/100 hooks. The economic analysis on which Independent Samoa based its domestic longline limited entry program produced a similar result – the average tuna (rather than just albacore) catch rate would have to be maintained above 2.4 fish/100 hooks for long-term economic viability (King et al., 1999).

Independent Samoa has recognized that even if "...the amount of fish passing through, or resident in, (Independent) Samoan waters is relatively constant for a given period, this amount of
fish has to be shared by the number of people fishing during the period. If the size of the fishing fleet continues to increase, the same local quantity of resources will have to be shared by more and more fishers. That is, the catch rate (the average catch per boat) will decline" (King et al., 1999: p. 3).

Independent Samoa has adopted a scheme that limits licenses for longline fishing in its EEZ based on vessel size. The number of traditional small-scale *alia* (< 10 m length) engaged in longline fishing is not limited (A. Mulipola, Director, Samoa Fisheries Division, presentation at open workshop on fisheries management, American Samoa, 25-27 April 2001). The objectives of this scheme are to restrict overall longline fishing effort, while maintaining the opportunity for high tuna catch rates and associated economic benefits for the export-oriented sector of the fishery and reserving access for "wide and local participation" in the non-export sector of the longline fishery using traditional, small alia (King et al., 1999).

The recent relationship between hook density and catch rates for American Samoa's longline fishery is presented in Figure II-1. It can be seen that between 1996 and 1999, when the only vessels operating were alia that generally fished within 50 miles of shore,

increasing hook density appeared to lead to local reductions in catch rates. However, as large vessels entered the fishery between 2000 and 2001, the intensity of this relationship seems to have waned, perhaps due to the fact that these larger vessels generally fish farther offshore and thus have a greater area in which to disperse their effort.

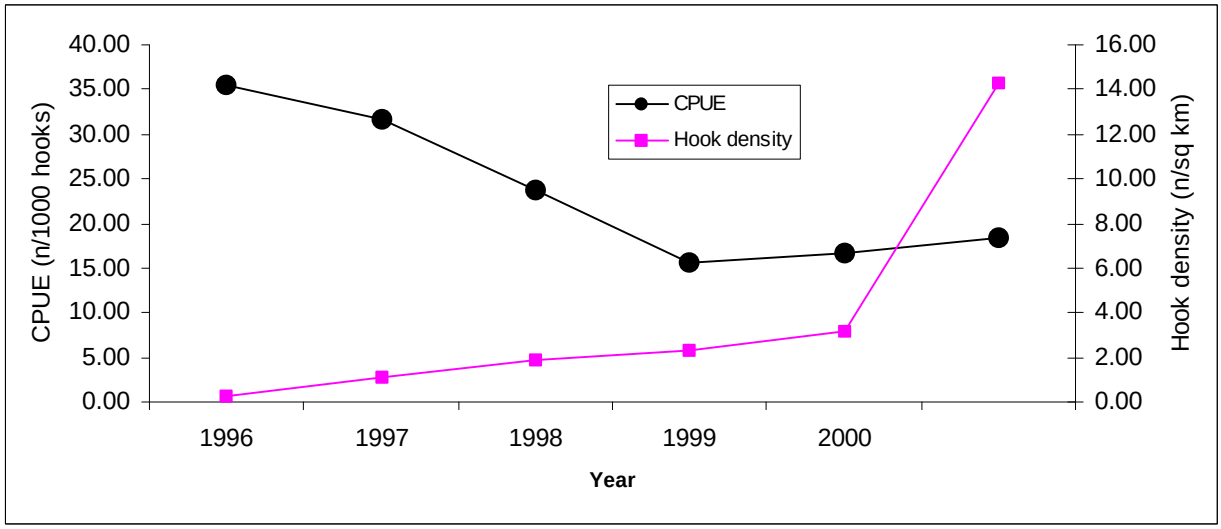

Figure II-1. Catch rates and EEZ hook densities for the American Samoa-based longline fleet, 1996-2001. Source: WPacFIN

Unlike Hawaii-based longline vessels, which range over large areas of international waters to locate concentrations of pelagic fish, the American Samoa-based longline fleet is unable to extend fishing beyond the EEZ without entering the exclusive economic zones of neighboring Pacific island countries (Figure 2). Due to the cost and difficulty of obtaining foreign fishing licenses, each additional unit of longline fishing effort introduced by new vessel entry is compressed inside the finite EEZ of American Samoa. Without limits on domestic longline fishing effort in the EEZ, it could rise to average hook density levels (> 70 hooks/km^2 of EEZ/year) that prompted the government of Independent Samoa to initiate limits on domestic longline fishing licenses (King et al., 1999).

Although the American Samoa longline fishery's current conditions are economically and socially acceptable to fishery participants, concerns remain that the recent trend in hook densities will continue and lead to adverse impacts. Beliefs that fishing effort will continue to increase appear valid given recent observations by participants in the large-scale sector that fishery returns are good to excellent (O'Malley and Pooley, 2002), as

well as recent catch rates for this fishery (Table II-3).

Table II-4. 2001 mean catch rates for the American Samoa-based longline fishery (large and small-scale vessels combined).
Source: WPacFin

Species	# fish/100 hooks
Albacore	3.3
All	4.7

Historical experience has demonstrated that, in the absence of community or other informal regulatory mechanisms, open-access fisheries tend to suffer from a boom and bust cycle in which effort excess enters the fishery and over time catch rates fall. Due to their higher operating costs, reduced catch rates would lead to participants on large-scale vessels being the first to experience a decline in profitability, followed by participants on small-scale vessels. At this point, the more mobile participants would be expected to leave for other fisheries, however those that remain are likely to continue fishing as long as they can cover their variable costs plus a portion of their fixed costs. If this becomes untenable, this group may investigate other gear types, tie up their vessels until circumstances improve, or cease fishing altogether. Such circumstances would lead to adverse economic impacts on fishery participants, and in the case of American Samoa, would also result in impacts to cultural practices which depend on the availability of fresh fish caught by community members.

Economic impacts under Alternatives 2 through 7 must be examined under two scenarios. In the first, of the 73 small longline vessels (equal to or less than 40 ft) allowed in under the control, only those 40 actively fishing as of March 21, 2002 are assumed to utilize their permits and actively fish (likely effort scenario). Under the second scenario, all 73 small longline vessels allowed in under the control date are assumed to actively fish (maximum effort scenario).

Tables II-5 and II-6 present a summary of the likely and maximum fishing effort anticipated under each alternative. Results are given for all vessels, as well as broken down by fishing area with nearshore waters defined as those within 50 miles of shore and offshore waters defined as the remaining EEZ waters. Effort levels and hook densities were estimated based on historical and survey data concerning the typical operating patterns of longline vessels in American Samoa. Distribution of effort between the nearshore and offshore areas is based on the assumption that vessels less than or equal to 40 ft will fish exclusively in the nearshore area, vessels between 40 ft and 50 ft will divide their effort equally between the two areas, and vessels greater than 50 ft will fish exclusively in the offshore area (as they are prohibited from fishing in the nearshore area).

The estimated effort levels and hook densities under each alternative represent best estimates given available information and some assumptions as to how participants would react to various regulatory regimes. As a result, these estimates cannot be viewed as precise assessments, but rather should be used to compare the relative impacts of alternatives.

Likely effort levels (Table II-5) are based on the assumption that only those 75 vessels fishing as of the control date will participate it the limited entry program, while maximum effort levels (Table II-6) assume that all permits available under each alternative will be used. In both cases, vessels in the smallest size class (less than or equal to 40 ft) were assumed to make 125 sets per year, with 350 hooks used per set. Vessels in the next size class (40.1 ft to 50 ft) were assumed to make 175 sets per year with 1,250 hooks used per set. All vessels over 50 ft were assumed to make 225 sets per year with 2,100 hooks used per set (this may overestimate average effort levels for smaller vessels in this size class but it is believed that virtually all vessels over 50 ft are capable of these levels). [Note: some values have been corrected for errors found in previous versions.]

Table II-5. Likely hook densities for each management alternative - this assumes that only those actively fishing as of the control date will actually fish (this is the most probable short-term result for all alternatives).

Alternative	Total Permits Allowed	Likely Permits Fished	Likely total annual effort (million hooks)	Likely total annual nearshore effort (million hooks)	Likely total annual offshore effort (million hooks)	Likely average nearshore hook density (hooks/km^2)	Likely average offshore hook density (hooks/km^2)
1	unlimited	unknown	unknown	unknown	unknown	unknown	unknown
2	215	75	17.0	2.3	14.7	18	57
3	unlimited	75	17.0	2.3	14.7	18	57
4	215	75	17.0	2.3	14.7	18	57
5	106	75	17.0	2.3	14.7	18	57
6	141	75	17.0	2.3	14.7	18	57
7	110	75	17.0	2.3	14.7	18	57
8	unlimited	75	17.0	2.3	14.7	18	57
9A current w/out upgrades	118	75	17.0	2.3	14.7	21	57
9A current w/upgrades	118	75	24.6	2.7	21.9	18	84
9B all w/out upgrades	138	75	17.0	2.3	14.7	21	57
9B all w/upgrades	138	75	24.6	2.7	21.9	22	84

Note : Gear conflict potential is believed to increase significantly when:
nearshore effort exceeds 55 hooks/km^2/year (or 7.15 million hooks/year) or,

offshore effort exceeds 55 hooks/km^2/year (or 14.3 million hooks/year)

Table II-6. Maximum hook densities for each management alternative - this assumes all permits issued before the control date will be actively fished (this is the most likely long-term result for Alternatives 1-8).

Alternative	Total Permits Allowed	Maximum total annual effort (million hooks)	Maximum annual nearshore effort (million hooks)	Maximum annual offshore effort (million hooks)	Maximum average nearshore hook density (hooks/km^2)	Maximum average offshore hook density (hooks/km^2)
1	unlimited	unknown	unknown	unknown	unknown but likely high	unknown but likely high
2	215	46.0	9.8	36.2	76	139
3	unlimited	unknown	unknown	36.2	unknown but likely high	139
4	215	46.0	9.8	36.2	76	139
5	106	23.3	5.9	17.4	46	67
6	141	21.2	5.5	15.7	42	61
7	110	19.2	3.9	15.3	30	59
8	unlimited	unknown	unknown	unknown	unknown	unknown
9A current w/out upgrades	118	21.3	4.3	17.0	33	66
9A current w/upgrades	118	28.9	4.7	24.3	36	93
9B all w/out upgrades	138	23.0	5.1	18.0	39	69
9B all w/upgrades	138	30.6	5.4	25.2	42	97

Note : Gear conflict potential is believed to increase significantly when:
nearshore effort exceeds 55 hooks/km^2/year (or 7.15 million hooks/year) or,

offshore effort exceeds 55 hooks/km^2/year (or 14.3 million hooks/year)

Effort predictions under the no action alternative are based on the assumption of a short-term effort equilibrium followed by an influx of larger fishing vessels in the longer-term. Under a boom and bust scenario, after some time this increase in fishing power would lead to local depletions in catch rates - and larger more mobile vessels would then migrate to other fisheries, leaving small scale, community based participants behind to await the replenishment of local stocks.

With the exception of the nearshore area under the likely effort scenario, impacts on hook density under Alternative 2 exceed those associated with both gear conflict and an inability for vessel operations to breakeven. Under the likely effort scenario, hook density in the nearshore area is predicted to exceed that associated with gear conflict, but not to exceed breakeven levels. Because this alternative would not allow longlining in EEZ waters around American Samoa by vessels more than 100 ft in length, two active vessels would have to cease their current operations. Alternate opportunities for longline vessels that leave the fishery are limited but include purchasing a (transferable) Hawaii limited access longline permit from a current permit holder so as to fish out of Hawaii, obtaining a high seas permit and fishing out of California, or moving to Atlantic or other fisheries. This alternative includes a requirement that all pelagic management unit species caught must be landed in port. Although this may reduce bycatch (fish not sold or consumed) it also places a burden on fishery participants, especially those on the smallest vessels that have limited hold capacity. In addition, given that there is apparently little or no profitable market outlet for currently discarded fish, it is not clear that bringing them into port will guarantee that they will be sold or consumed (in which case they would still be regarded as bycatch). If this fish does enter local markets or communities in significant quantities, it is likely to lower market prices paid by consumers, as well as lowering prices paid to the small-scale fishermen who typically supply these outlets. In addition, there is no indication that stocks harvested by this fishery are overfished. The impact of the requirements that vessels more than 50 ft in length carry active vessel monitoring systems (VMS) would be negligible as NMFS has indicated that they would bear this cost (as is the case for other western Pacific fisheries). Economic impacts of annual attendance at vessel safety classes are anticipated to be low as the workshop would likely be of less than one day's duration. Because this alternative would limit entry into the fishery, it represents a loss of opportunity for those who may have otherwise considered participating. The cost of this lost opportunity is difficult to calculate as the reduction in resource availability that could occur under the no action alternative (continued open access) would reduce the value of the fishery. This alternative would rank new applicants by date of application only, rather than considering their historical participation or investment in local pelagic fisheries.

Impacts on nearshore hook density under Alternative 3 are difficult to estimate as this alternative would not limit entry into the smallest vessel size class (this size class fishes almost exclusively inside the nearshore area). Although vessels in this size class exert

relatively low levels of fishing effort, it is likely that their combined and unlimited efforts would in time exceed hook densities associated with both gear conflict and an inability for vessel operations to breakeven. Offshore hook densities are predicted to exceed these levels under both the likely and maximum effort scenarios. Impacts of this alternative's prohibition on vessels more than 100 ft in length, bycatch, VMS, and vessel safety workshop requirements would all be as described for Alternative 2. Because this alternative would limit entry into the fishery, it represents a loss of opportunity for those who may have otherwise considered participating. The cost of this lost opportunity is difficult to calculate as the reduction in resource availability that could occur under the no action alternative (continued open access) would reduce the value of the fishery. This alternative would rank new applicants by their historical participation in local pelagic fisheries.

Impacts on offshore hook density under Alternative 4 exceed those associated with gear conflict under both the likely effort and maximum effort scenarios. However predicted inshore hook densities do not exceed levels associated with either gear conflict or an inability for vessel operations to breakeven under either scenario. Impacts of this alternative's prohibition on vessels more than 100 ft in length, bycatch, VMS, and vessel safety workshop requirements would all be as described for Alternative 2. Because this alternative would limit entry into the fishery, it represents a loss of opportunity for those who may have otherwise considered participating. The cost of this lost opportunity is difficult to calculate as the reduction in resource availability that could occur under the no action alternative (continued open access) would reduce the value of the fishery. This alternative would rank new applicants by their historical participation in local pelagic fisheries.

Alternative 5 is predicted to result in acceptable inshore hook densities under both the likely effort and the maximum effort scenarios. Offshore hook density is predicted to exceed levels associated with gear conflict, but not to exceed levels associated with an inability for vessel operations to breakeven under either scenario. Impacts of this alternative's prohibition on vessels more than 100 ft in length, bycatch, VMS, and vessel safety workshop requirements would all be as described for Alternative 2. Because this alternative would limit entry into the fishery, it represents a loss of opportunity for those who may have otherwise considered participating. The cost of this lost opportunity is difficult to calculate as the reduction in resource availability that could occur under the no action alternative (continued open access) would reduce the value of the fishery. This alternative would rank new applicants by their historical participation in local pelagic fisheries.

Similarly, Alternative 6 is predicted to result in acceptable inshore hook densities under both the likely effort and the maximum effort scenarios. Offshore hook density is predicted to exceed levels associated with gear conflict, but not to exceed levels associated with an inability for vessel operations to breakeven under either scenario. Impacts of this alternative's prohibition on vessels more than 100 ft in length, bycatch, VMS, and vessel safety workshop requirements would all be as described for

Alternative 2. Because this alternative would limit entry into the fishery, it represents a loss of opportunity for those who may have otherwise considered participating. The cost of this lost opportunity is difficult to calculate as the reduction in resource availability that could occur under the no action alternative (continued open access) would reduce the value of the fishery. This alternative would rank new applicants by their historical participation in local pelagic fisheries.

The initial impact of Alternative 7 is predicted to be acceptable inshore hook densities under both scenarios, however offshore hook density would initially exceed levels associated with gear conflict. However, because this alternative utilizes attrition to reach and maintain caps on effort (hooks per area), its long term effect is anticipated to result in acceptable hook densities in both areas. Utilizing attrition to reach effort caps is intended to mitigate impacts on initial fishery participants as they would be allowed to continue fishing until they make the decision to stop, rather than being forced out of the fishery. This alternative would also allow new entry and vessel upgrading to the extent that its effort caps are not exceeded thus allowing the full utilization of available resources in both the nearshore and offshore areas. Impacts of this alternative's vessel safety workshop requirements would be as described for Alternative 2.

Impacts on hook densities under Alternative 8 are difficult to predict as it would control fishing effort indirectly by imposing a trip limit, rather than limiting entry into the longline fishery. This trip limit (5,000 pounds of pelagic management unit species for any trip that includes longline fishing in EEZ waters around American Samoa) is estimated to be the lower limit of what a 40 ft to 50 ft monohull vessel could catch and would essentially make larger or more intensive fishing operations impracticable. This would be anticipated to result in the departure of the approximately 30 such currently active large fishing operations from the fishery, and thereby encourage the entry of additional alia catamaran-style vessels. Alternate opportunities for longline vessels that leave the fishery are limited but include purchasing a (transferable) Hawaii limited access longline permit from a current permit holder so as to fish out of Hawaii, obtaining a high seas permit and fishing out of California, or moving to Atlantic or other fisheries.

Impacts on hook density under Alternative 9 vary depending on which version is examined (9A vs. 9B) and whether likely or maximum effort scenarios are examined. Short-term impacts on successful limited entry applicants are most likely to be represented by hook densities somewhere between those anticipated as likely and those anticipated as maximums, but probably closer to the lower (likely) end as those qualified to enter but not currently participating may not desire, attempt, or succeed in re-entering the fishery due to occupational changes, lack of financial capital or other reasons.

However both versions of Alternative 9 would require qualified applicants to register vessels of the appropriate size class a given time period. If, as is likely, any failure to do so would reduce the number of initial permits accordingly. Meaning that those permits would be revoked by NMFS, would not be made available to other applicants,

and the maximum number of permits in that size class would be reduced accordingly. Thus, both short-term and long-term actual effort levels under both Alternatives 9A and 9B are anticipated to be closer to their lower (likely) predicted values than to their higher (maximum) predicted values. Short-term effort levels are most likely to be close to those predicted as likely values without upgrades, while in the long-term it is reasonable to assume that all upgrades will be utilized.

Other potential costs under both Alternatives 9A and 9B would result from requirements that both VMS units and NMFS observers be carried onboard larger vessels if requested by NMFS. The purchase, installation, and maintenance costs of VMS units would be as described for Alternative 2. The cost of the observer requirement is more difficult to quantify. Although NMFS has generally sought 20% observer coverage, observer placement on specific vessels is generally randomized to provide statistically reliable results concerning the fishery as a whole. This means that all vessels greater than 40' must be ready to carry observers if requested by NMFS (refusal can lead to permit loss). Although not required to undertake renovations to accommodate observers, vessel operators must demonstrate that their vessels have passed a US Coast Guard inspection certifying compliance with existing Coast Guard safety regulations for commercial fishing vessels. Many of the smaller vessels (40' to 60') appear unlikely to currently meet this standard and some may require substantial investment to reach compliance. American Samoa's remote location contributes to this problem as some required items (e.g. Coast Guard approved life rafts) and procedures (e.g. monthly safety drills and annual inspections of life rafts by certified inspectors) may not be locally available. The Council is working with NMFS, the American Samoa DMWR, and the Coast Guard to resolve these issues. Beyond the cost of complying with existing safety requirements, the costs of an observer program are typically either charged to industry, or borne by NMFS. As with VMS, observer programs in the western Pacific are funded by NMFS. Total costs for observers for this fishery have been estimated to be approximately $400 per day, this cost will paid by NMFS.

Carrying an observer also entails costs in terms of lost accommodations for crew and, depending on the size of the vessel, lost fishing efficiency due to reduced crew and crowding on board the vessel. Finally, some participants in other fisheries have reacted negatively to the onboard presence of observers, for some this is due to their status as government employees (who are sometimes used to monitor compliance with fishery regulations), or to their gender or ethnicity. For others, the presence of a stranger placed on their vessel to observer their fishing activities feels like an unwarranted invasion of their privacy.

Under Alternative 9B, a fee would be charged for all permit transactions, including issuance, renewal, and transfers. This fee would be set by NMFS and is anticipated to be less than $100 per transaction.

Both versions of Alternative 9 would require that vessel owners annually attended protected species workshops. Because current regulations only require attendance by

vessel operators who are already locally available to attend workshops, this requirement has had little negative economic impacts. The extension of this requirement to vessel owners is likely to have higher impacts as not all owners are located in American Samoa. It is possible that workshops will also be held in Hawaii or California in order to mitigate these impacts.

II.8 Impacts on National Costs and Benefits

The preferred alternative is expected to improve the long-term potential for net national benefits from this rapidly expanding fishery without unnecessarily constraining its short-term growth. Investment and reinvestment has been substantial in this fishery, and the economic evidence to date (O'Malley, 2002) suggests that positive economic returns are being realized. At the same time, failure to constrain this growth may lead to catch competition and gear conflicts within the EEZ around American Samoa which would increase operating costs, and through negative impacts on net income, reduce benefits in terms of income to capital and labor.

Monetization of national costs and benefits of the alternatives is not possible given the limited economic and operational information available on the vessels participating in this fishery, the structural economic relationships between longline vessels and gear and equipment suppliers and markets in American Samoa, and the uncertain effect of the alternatives on vessel operations and revenues. However the purpose of limited entry as a general rule is to reduce tendencies toward over-capacity which create over-investment and productive inefficiencies. Since investment in this fishery comes from a variety of locations within the United States, including from within American Samoa where small business development has been extremely limited, as well as investment from over-seas, avoiding a boom-bust cycle reduces the costs associated with such cycles (sunk investments, movement between fisheries, misallocated human capital, etc.). On the other hand, the history of limited entry is that in fisheries subject to over-fishing (i.e., those of restricted geographical range), fishing capacity of the permitted participants increases with time and generates inefficiencies in the non-regulated inputs. Because this is a fishery for a highly migratory species with a negligible impact on the overall stock of the primary species (albacore) due to the small size of the American Samoa fishery, fishery population effects are very unlikely to serve as constraints. However, to the extent that catch competition within the EEZ around American Samoa becomes an issue, which it is not at present, or other issues arise, creating limited entry – a constraint on the number of participants – improves the potential for controlling other inputs and for creating a "regulatory community" which can seek low transaction cost solutions.

Clearly alternatives that would lead to effort levels associated with gear conflict would decrease net national benefits as compared to the no action alternative as they would fail to maintain the ability of vessel operators to harvest fish efficiently and could lead to negative social impacts for fishery participants. While the preferred alternative allows a

substantial expansion in likely effort, it provides a ceiling on potential effort. The effect is that the preferred alternative allows investment in capital inputs and training of labor which should increase economic efficiency within the constraints identified by the hook density projections. The no action alternative – open access, which is in most contexts now an obsolete concept – would provide no relief from potential effort, leading to the usual problem of over-investment, retrenchment, and economic losses to both capital and labor (the unemployment and under-employment situation in American Samoa is substantial).

Alternatives which would constrain the fishery further in terms of number of vessels risks reducing the potential for net benefits from the development stage of this fishery as well as the potential for accessing the high seas fishery under revised international management regimes. While the preferred alternative does impose a greater risk of over-investment than such alternatives, this risk is viewed as small in the current environment relative to the losses to the Nation (and for American Samoa in particular) for failing to realize the potential benefits from this highly migratory resource. To the extent that this risk materializes, the size of a substantial number of the vessels operating in American Samoa does provide many of them the opportunity either to enter the foreign fisheries or other US longline fisheries.

Alternatives which would constrain the fishery on vessel lengths or individual vessel capacity or operating levels (hook deployments per set) or similar input factors would lead to inefficiencies in production and cannot be recommended in the status quo situation (where they are unnecessary). Vessel size constraints, particularly on the expansion from small to medium and larger sized vessels, also poses safety considerations and reduces their ability to enter other fisheries. Alternatives which would constrain the fishery through outputs (e.g., quotas) are similarly inefficient in a non-transferability context and where the primary competition for the fish is from foreign fishing vessels operating in neighboring EEZs or on the high seas.

None of the alternatives is expected to have any significant impact on the supply of albacore tuna to American Samoa's canneries for "white meat" canned tuna production. Albacore is available from worldwide sources and the canneries would simply import raw material to replace fish that is not supplied by American Samoa's domestic longline fishery.

The small-sized longliners, the alia, were not designed in a manner to allow properly-insulated ice holds to be placed within their catamaran hulls. Portable insulated coolers or cast-off domestic refrigerators are used instead. This restricts the amount of fish that can be properly chilled on alia, resulting in poor quality (Sokimi and Chapman, 2000). Proper shipboard handling and chilling of the fish catch in the small-scale sector of American Samoa's longline fishery could preserve a high quality catch so that selected fish could meet the demanding specifications of sashimi and other premium fresh fish markets overseas. Most of the large-scale vessels (> 50 ft length) presently participating in the longline fishery freeze their catches. Most also have some capability

of landing chilled fish of sufficient quality to encourage development of a fresh export market for selected American Samoa longline products.

The primary market for the product from the American Samoa longline fishery is that for canned tuna, an international commodity. As a result, no major market effects are anticipated. However, to the extent that an orderly industry is able to be generated, such that a boom-bust cycle is avoided, export markets for fresh or flash-frozen yellowfin and other pelagic species would be enhanced.

Because they allow a higher level of participation by large-sized vessels in American Samoa's longline fishery, Alternatives 1 (no limits on large vessels), 2, 3, 4 and 9 (additional participation in larger vessel length classes) are likely to be more beneficial to fresh fish consumers (locally and overseas) who desire the premium catch quality that large vessels are capable of producing. In contrast, Alternatives 5, 6 and 7 would limit large vessel (> 50 ft length) participation to those who qualify as of March 21, 2002, and Alternative 8 would indirectly limit additional large vessel participation because it would create highly inefficient operations for such vessels.

Open access (the no action alternative) obviously has the lowest transactions costs in the short-term. But to the extent that there is unbounded investment in a fishery with fixed physical range, the private (and social) costs of bankruptcy are significant. Limited entry itself (the preferred alternative) is a low administrative and private transactions cost regulatory measure. The primary cost for new entrants is the net cost (if any) of taking one trip in the American Samoa fishery prior to acquiring a limited entry permit. The other cost is that for acquiring a permit, which in the context of these fisheries, is small. Differences in transactions costs between the number of participants in the limited alternatives are similarly small.

Private and administrative transactions costs for other input constraints (e.g., vessel length and hook limits) would be more substantial. Vessel length restrictions would undoubtedly lead to private exchanges amongst participants to allow vessel owners to operate with the vessel size most appropriate to their abilities and objectives. These exchanges, like all private transactions, would require either a substantial contractual basis – which would be particularly costly in American Samoa – or an implied consent basis – which poses both inter-personal and social costs as well as risks of abrogation. Hook limits would include private costs of compliance as well as increased public (administrative) costs of monitoring and enforcement.

National net benefits will be maximized by management measures that fully utilize these resources in ways that are socially acceptable, efficient, and profitable for fishery participants. The preferred alternative provides a reasonable balance between the likelihood of continued development and the risks of over-development.

II.9 References

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APPENDIX III: Future Research and Monitoring

The implementation of a limited entry program for domestic longline fisheries based in American Samoa highlights the need for increased fishery research and monitoring. Topics of interest include:

Biological Monitoring and Research:

A) Fishery data - logbooks will tell us numbers and species of catches, as well as where they were caught. Other methods to monitor the average and total weight of fish harvested as well as length frequencies will be needed.

B) Local and regional pelagic longline catch and effort - this would include fisheries in both American Samoa and neighboring Independent Samoa. Due to the similarities between these fisheries and the fact that their combined landings produce 15% - 20% of the albacore caught in the southern Pacific ocean, a collaborative study may lead to results representative of the stock as a whole.

C) Oceanography - what are the features affecting this fishery? What effects do they have?

D) Fish movement - where do the fish come from, where do they go? What factors affect this movement?

E) Protected species - what is the status of local populations of sea turtles, seabirds, and marine mammals? How has fishing under the limited entry program affected these populations?

F) Vertical movement and habitat utilization of albacore - where do these fish live and what causes them to move about?

G) Gear configurations - did they change after implementation of the limited entry program? Why and with what result?

H) Size frequencies - basic and ongoing data is needed to address management needs

I) Unobserved trips - basic trip and set data (including gear configuration) for observed and unobserved trips can help researchers to make inferences about catches and bycatch on observed trips.

Economic Monitoring and Research:

J) Disposition of catch - what happens to the fish that are caught? How many are sold to the cannery vs. sold locally vs. exported vs. consumed at home vs. shared with the community for cultural or other events?

K) Market studies - this would include examinations of market channels (both local and export) as well as changes in demand, supplies, and prices (prices are not recorded in logbooks).

L) Employment affects - how has the limited entry program affected local employment?

M) Economics of fishery operations - what is the impact of the limited entry program on costs and revenues of vessel owners, operators, crew, permit holders and shoreside support industries?

N) Other American Samoa based fisheries - how has the limited entry program affected local non-longline fisheries such as commercial and recreational trollers?

O) Potential for accessing neighboring EEZs - what are the barriers to gaining access to fishing within neighboring EEZs, what would it take to overcome these barriers?

P) Market leakage - is there still "market leakage" from foreign fishing vessels? What is the impact and how is it perceived?

Q) Ownership changes and effects - who owns the permits and vessels? Where do they live? Is ownership consolidating? Is the value of permits and vessels increasing?

R) Consolidation of permits - is there a possibility of consolidation of permits within extended families?

Sociological Monitoring and Research:

S) Cultural impacts - how has the limited entry program affected the culture of American Samoa?

T) Impacts on the (fishing) community - what has happened to the American Samoa (fishing) community as a result of the limited entry program?

U) Fish distribution - how has the expansion of the longline fleet and targeting of albacore affected the customary fish distribution patterns associated with fa'a Samoa?

V) Cultural relationships - how has the increase in fleet size impacted relations between people and their chiefs, specifically Toulua between Tautoa and Matai, and the role of fish in ceremonial events?

W) Non-Samoans - how has the presence of non-Samoans in the fishery impacted cultural interactions between the two groups?

X) Demographics - what are the demographics of vessel crews, operators, and owners? How have they changed over time?

APPENDIX IV: Draft Regulations

Draft Regulations for Proposed American Samoa Limited Entry System
March 30, 2003

For the reasons set out in the preamble, 50 CFR part 660 is proposed to be amended as follows:

PART 660--FISHERIES OFF THE WEST COAST STATES AND IN THE WESTERN PACIFIC

1. The authority citation for part 660 continues to read as follows:

Authority: 16 U.S.C. 1801 et seq.

2. In § 660.12, the definitions of “Fisheries Management Division (FMD)”, “Hawaii longline limited access permit”, and “Longline general permit”, are removed, and new definitions for “American Samoa longline limited access permit”, “American Samoa pelagics mailing list”, “freeboard”, “Hawaiian Archipelago”, “PRIA pelagic troll and handline fishing permit”, "Regional Administrator", "Western Pacific Fishery Management Area" and “Western Pacific longline general permit” are added in alphabetical order to read as follows:

§ 660.12 Definitions.

* * * * *

American Samoa longline limited access permit means the permit required by § 660.21 to use a vessel shoreward of the outer boundary of the EEZ around American Samoa, to fish for Pacific pelagic management unit species using longline gear or to land or tranship Pacific pelagic management unit species that were caught in EEZ waters around American Samoa using longline gear.

American Samoa pelagics mailing list means the list maintained by the Pacific Islands Regional Office of names and mailing addresses of parties interested in receiving notices of availability for American Samoa longline limited access permits.

* * * * *

Freeboard means the straight-line vertical distance between a vessel's working deck and the sea surface.

* * * * *

Hawaii longline limited access permit means the permit required by § 660.21 to use a vessel shoreward of the outer boundary of the EEZ around the Hawaiian Archipelago to fish for Pacific pelagic management unit species using longline gear or to land or tranship Pacific pelagic management unit species that were caught using longline gear.

Hawaiian Archipelago means the Main and Northwestern Hawaiian Islands, including Midway Atoll.

* * * * *

PRIA pelagic troll and handline fishing permit means the permit required by § 660.21 to use a vessel shoreward of the outer boundary of the EEZ around the PRIA to fish for Pacific pelagic management unit species using pelagic handline or troll fishing methods.

* * * * *

Regional Administrator means the Administrator of the Pacific Islands Region, NMFS (see Table 1 of § 600.502 for address).

* * * * *

Western Pacific Fishery Management Area means those waters shoreward of the outer boundary of the EEZ around American Samoa, the Northern Mariana Islands, Guam, Hawaii, Midway, Johnston and Palmyra Atolls, Kingman Reef, and Wake, Jarvis, Baker, and Howland Islands.

Western Pacific longline general permit means the permit authorized under § 660.21 to use a vessel shoreward of the outer boundary of the EEZ around the Northern Mariana Islands, Guam, Johnston or Palmyra Atolls, Kingman Reef, and Wake, Jarvis, Baker and Howland Islands to fish for Pacific pelagic management unit species using longline gear or to land or transship Pacific pelagic management unit species that were caught using longline gear.

3. In § 660.13, paragraph (e) and the first and last sentences of paragraph (f)(2) are revised to read as follows:

§ 660.13 Permits and Fees.

* * * * *

(e) Issuance. After receiving a complete application, the Regional Administrator will issue a permit to an applicant who is eligible under § 660.21, § 660.36, § 660.41, § 660.61, or § 660.81 as appropriate.

(f) Fees. * * *

(2) The Pacific Islands Regional Office (PIRO) will charge a fee for each application for a Hawaii longline limited access permit, American Samoa longline limited access permit, or Mau Zone limited access permit, (including permit transfers and renewals). * * * Failure to pay the fee will preclude the issuance, transfer or renewal of a Hawaii longline limited access permit, American Samoa longline limited access

permit, or Mau Zone limited access permit.

* * * * *

4. Section 660.21 is revised to read as follows:

§ 660.21 Permits.

(a) A vessel of the United States must have been issued a valid permit under the High Seas Fishing Vessel Compliance Act if that vessel is used to fish for Pacific pelagic management unit species seaward of the outer boundary of the EEZ around the Western Pacific Fishery Management Area, as required under § 300.13.

(b) A vessel of the United States must be registered for use under a valid Hawaii longline limited access permit if that vessel is used:

(1) To fish for Pacific pelagic management unit species using longline gear in the EEZ around the Hawaiian Archipelago; or

(2) To land or transship, shoreward of the outer boundary of the EEZ around the Hawaii Archipelago, Pacific pelagic management unit species that were harvested using longline gear.

(c) A vessel of the United States must be registered for use under a valid American Samoa longline limited access permit if that vessel is used:

(1) To fish for Pacific pelagic management unit species using longline gear in the EEZ around American Samoa; or

(2) To land or tranship shoreward of the outer boundary of the EEZ around American Samoa Pacific pelagic management unit species that were harvested using longline gear in the EEZ around American Samoa.

(d) A vessel of the United State must have been issued a permit under the High

Seas Compliance Act or be registered to a Western Pacific longline general permit, American Samoa longline limited access permit, or Hawaii longline limited access permit if that vessel is used shoreward of the outer boundary of the EEZ around American Samoa, Guam, the Northern Mariana Islands, or the U.S. island possessions in the Pacific Ocean (with the exception of Midway Atoll) to land Pacific pelagic management unit species that were harvested on the High Seas using longline gear.

(e) A vessel of the United States must have been issued be registered for use under a valid Western Pacific longline general permit, American Samoa longline limited access permit, or Hawaii longline limited access permit if that vessel is used to fish for Pacific pelagic management unit species using longline gear in the EEZ around Guam, the Northern Mariana Islands, or the U.S. island possessions in the Pacific Ocean (with the exception of Midway Atoll).

(f) A vessel of the United States must be registered for use under a valid Western Pacific longline general permit, American Samoa longline limited access permit, or Hawaii longline limited access permit if that vessel is used shoreward of the outer boundary of the EEZ around American Samoa, Guam, the Northern Mariana Islands, or other U.S. island possessions in the Pacific Ocean (with the exception of Midway Atoll), to tranship Pacific pelagic management unit species that were harvested using longline gear.

(g) A vessel of the United States must be registered for use with a valid receiving vessel permit if that vessel is used to land or transship, within the Western Pacific Fishery Management Area, Pacific pelagic management unit species that were harvested using longline gear.

(h) A vessel of the United States must be registered for use with a valid PRIA troll and handline fishing permit if that vessel is used to fish for Pacific pelagic management unit species using pelagic handline or trolling fishing methods within EEZ waters around the PRIA.

(i) Any required permit must be on board the vessel and available for inspection by an authorized agent, except that if the permit was issued while the vessel was at sea, this requirement applies only to any subsequent trip.

(j) A permit is valid only for the vessel for which it is registered. A permit not registered for use with a particular vessel may not be used.

(k) An application for a permit required under this section will be submitted to the Pacific Islands Regional Office (PIRO) as described in§ 660.13.

(l) General requirements governing application information, issuance, fees, expiration, replacement, transfer, alteration, display, and sanctions for permits issued under this section, as applicable, are contained in § 660.13.

(m) A limited access permit may be transferred as follows:

(1) The owner of a Hawaii longline limited access permit may apply to transfer the permit:

(i) To a different person for registration for use with the same or another vessel; or

(ii) For registration for use with another U.S. vessel under the same ownership.

(2) An application for a permit transfer will be submitted to the Pacific Islands Regional Office as described in § 660.13(c).

(n) A Hawaii longline limited access permit will not be registered for use with a

vessel that has a LOA greater than 101 ft (30.8 m).

(o) Only a person eligible to own a documented vessel under the terms of 46 U.S.C. 12102(a) may be issued or may hold (by ownership or otherwise) a Hawaii longline limited access permit.

(p) In the event of a complete change in the ownership of a vessel registered to an American Samoa longline limited access permit, the permit holder must notify NMFS within 30 days.

(q) Except as provided in subpart D of 15 CFR part 904, any applicant for a permit or any permit owner may appeal to the Regional Administrator the granting, denial, conditioning, suspension, or transfer of a permit or requested permit under this section. To be considered by the Regional Administrator, the appeal will be in writing, will state the action(s) appealed, and the reasons therefor, and will be submitted within 30 days of the action(s) by the FMD. The appellant may request an informal hearing on the appeal.

(1) Upon receipt of an appeal authorized by this section, the Regional Administrator may request additional information. Upon receipt of sufficient information, the Regional Administrator will decide the appeal in accordance with the criteria set out in this part and in the fishery management plans prepared by the Council, as appropriate, based upon information relative to the application on file at NMFS and the Council and any additional information available; the summary record kept of any hearing and the hearing officer's recommended decision, if any, as provided in paragraph (l)(3) of this section; and such other considerations as deemed appropriate. The Regional Administrator will notify the appellant of the decision and the reasons

therefor, in writing, normally within 30 days of the receipt of sufficient information, unless additional time is needed for a hearing.

(2) If a hearing is requested, or if the Regional Administrator determines that one is appropriate, the Regional Administrator may grant an informal hearing before a hearing officer designated for that purpose. Such a hearing normally shall be held no later than 30 days following receipt of the appeal, unless the hearing officer extends the time. The appellant and, at the discretion of the hearing officer, other interested persons, may appear personally or be represented by counsel at the hearing and submit information and present arguments as determined appropriate by the hearing officer. Within 30 days of the last day of the hearing, the hearing officer shall recommend, in writing, a decision to the Regional Administrator.

(3) The Regional Administrator may adopt the hearing officer's recommended decision, in whole or in part, or may reject or modify it. In any event, the Regional Administrator will notify the appellant, and interested persons, if any, of the decision, and the reason(s) therefor, in writing, within 30 days of receipt of the hearing officer's recommended decision. The Regional Administrator's action shall constitute final Agency action for the purposes of the APA.

(4) In the case of a timely appeal from an American Samoa longline limited access permit initial permit decision, the Regional Administrator will issue the appellant a temporary American Samoa longline limited access permit. A temporary permit will expire 20 days after the Regional Administrator’s final decision on the appeal. In no event will a temporary permit be effective for longer than 60 days.

(5) With the exception of temporary permits issued under paragraph (4) of this

section, any time limit prescribed in this section may be extended for a period not to exceed 30 days by the Regional Administrator for good cause, either upon his/her own motion or upon written request from the appellant stating the reason(s) therefor.

(r) Except during October, NMFS will not register with a Hawaii longline limited access permit any vessel that is de-registered from a Hawaii longline limited access permit after March 29, 2001.

(s) Applications for the re-registration of any vessel that was de-registered from a Hawaii longline limited access permit after March 29, 2001, must be received at PIRO or postmarked between September 15 and October 15.

5. Section 660.22 is revised to read as follows:

§ 660.22 Prohibitions.

* * * * *

(c) Use a vessel that has not been issued a valid permit under the High Seas Fishing Vessel Compliance Act to fish for Pacific pelagic management unit species using longline gear, seaward of the outer boundary of the EEZ around the Western Pacific Fishery Management Area, in violation of § 660.21(a).

(d) Use a vessel without a valid Hawaii longline limited access permit registered for use with that permit to fish for Pacific pelagic management unit species using longline gear, shoreward of the outer boundary of the EEZ around the Hawaiian Archipelago, in violation of § 660.21(b)(1).

(e) Use a vessel without a valid Hawaii longline limited access permit registered for use with that permit to land or tranship Pacific pelagic management unit species that were caught with longline gear, shoreward of the outer boundary of the EEZ around the

Hawaiian Archipelago, in violation of § 660.21(b)(2).

(f) Use a vessel without a valid American Samoa longline limited access permit registered for use with that permit to fish for Pacific pelagic management unit species using longline gear, shoreward of the outer boundary of the EEZ around American Samoa, in violation of § 660.21(c)(1).

(g) Use a vessel without a valid American Samoa longline limited access permit registered for use with that permit to land or tranship Pacific pelagic management unit species that were caught with longline gear within the EEZ around American Samoa, shoreward of the outer boundary of the EEZ around American Samoa, in violation of § 660.21 (c)(2).

(h) Use a vessel shoreward of the outer boundary of the EEZ around American Samoa, Guam, the Northern Mariana Islands, or the U.S. Pacific island possessions (with the exception of Midway Atoll) to land Pacific pelagic management unit species that were harvested on the High Seas using longline gear, if that vessel has not been issued a valid permit under the High Seas Fishing Vessel Compliance Act or is not registered to a valid Western Pacific longline general permit, American Samoa longline limited access permit, or Hawaii longline limited access permit, in violation of § 660.21(d).

(i) Use a vessel shoreward of the outer boundary of the EEZ around Guam, the Northern Mariana Islands, or the U.S. Pacific island possessions (with the exception of Midway Atoll) to fish for Pacific pelagic management unit species using longline gear, if that vessel is not registered to a valid Western Pacific longline general permit, American Samoa longline limited access permit, or Hawaii longline limited access

permit, in violation of § 660. 21 (e).

(j) Use a vessel shoreward of the outer boundary of the EEZ around American Samoa, Guam, the Northern Mariana Islands, or the U.S. Pacific island possessions (with the exception of Midway Atoll) to land or tranship Pacific pelagic management unit species that were harvested with longline gear, if that vessel is not registered to a valid Western Pacific longline general permit, American Samoa longline limited access permit, or Hawaii longline limited access permit, in violation of § 660. 21 (f).

(k) Use a vessel shoreward of the outer boundary of the Western Pacific fishery management area to land or transship Pacific pelagic management unit species caught by other vessels using longline gear, without a valid receiving vessel permit registered for use with that vessel, in violation of § 660.21 (g).

(l) Use a vessel shoreward of the outer boundary of the EEZ around the PRIA employing handline or trolling methods to fish for Pacific pelagic management unit species without a valid PRIA pelagic troll and handline fishing permit registered for use for that vessel in violation of § 660.21 (h).

(m) Transfer a permit in violation of § 660.21(l) or § 660.36(h).

(n) Fish for Pacific pelagic management unit species with longline gear within the protected species zone in the NWHI.

(o) Fail to notify the NMFS Southwest Enforcement Office of intent to enter or depart the protected species zone, as required under § 660.23(b).

(p) Fish with longline gear within a longline fishing prohibited area, except as allowed pursuant to an exemption issued under § 660.17 or § 660.27.

(q) Fail to comply with notification requirements set forth in § 660.23 or in any

EFP issued under § 660.17.

(r) fish in the fishery after failing to comply with the notification requirements in § 660.23.

(s) Fail to comply with a term or condition governing the vessel monitoring system set forth in § 660.25 if using a vessel registered for use with a Hawaii longline limited access permit, or a vessel registered for use with a size class C or D American Samoa longline limited access permit, to fish for Pacific pelagic management unit species using longline gear.

(t) Fail to comply with a term or condition governing the observer program set forth in § 660.28 if using a vessel registered for use with a Hawaii longline limited access permit, or a vessel registered for use with a size class B, C or D American Samoa longline limited access permit, to fish for Pacific pelagic management unit species using longline gear.

(u) Fail to comply with other terms and conditions that the Regional Administrator imposes by written notice to either the permit holder or the designated agent of the permit holder to facilitate the details of observer placement.

(v) Enter the EEZ around the Hawaiian Archipelago with longline gear that is not stowed or secured in accordance with § 660.29, if operating a U.S. vessel without a valid Hawaii longline limited access permit registered for use with that vessel.

(w) Enter the EEZ around Guam, the Northern Mariana Islands, or the U.S. island possessions in the Pacific Ocean with longline gear that is not stowed or secured in accordance with § 660.29 if operating a vessel that is not registered with a valid Western Pacific longline general permit, American Samoa longline limited access permit, or Hawaii longline limited access permit.

(x) Enter the EEZ around American Samoa with longline gear that is not stowed

or secured in accordance with § 660.29, if operating a vessel without a valid American Samoa longline limited access permit registered for use with that vessel.

(y) Interfere with, tamper with, alter, damage, disable, or impede the operation of a VMS unit or to attempt any of the same; or to move or remove a VMS unit without the prior permission of the SAC.

(z) Make a false statement, oral or written, to an authorized officer, regarding the use, operation, or maintenance of a VMS unit.

(aa) Fish for, catch, or harvest Pacific pelagic management unit species with longline gear without a VMS unit on board the vessel after installation of the VMS unit by NMFS.

(bb) Possess on board a vessel without a VMS unit Pacific pelagic management unit species harvested with longline gear after NMFS has installed the VMS unit on the vessel.

(cc) Interfere with, impede, delay, or prevent the installation, maintenance, repair, inspection, or removal of a VMS unit.

(dd) Interfere with, impede, delay, or prevent access to a VMS unit by a NMFS observer.

(ee) Connect or leave connected additional equipment to a VMS unit without the prior approval of the SAC.

(ff) Fail to use a line setting machine or line shooter, with weighted branch lines, to set the main longline when operating a vessel that is registered for use under a Hawaii longline limited access permit and equipped with monofilament main longline, when making deep sets north of 23° N. lat., in violation of § 660.35 (a)(1) and (a)(2).

(gg) Fail to employ basket-style longline gear such that the mainline is deployed

slack when operating a vessel registered for use under a Hawaii longline limited access north of 23° N. lat., in violation of § 660.35 (a)(3).

(hh) Fail to maintain and use blue dye to prepare thawed bait when operating a vessel registered for use under a Hawaii longline limited access permit that is fishing north of 23° N. lat., in violation of § 660.35 (a)(4), (a)(5), and (a)(6).

(ii) Fail to retain, handle, and discharge fish, fish parts, and spent bait, strategically when operating a vessel registered for use under a Hawaii longline limited access permit that is fishing north of 23° N. lat., in violation of § 660.35 (a)(7) through (a)(9).

(jj) Fail to handle short-tailed albatrosses that are caught by pelagic longline gear in a manner that maximizes the probability of their long-term survival, in violation of § 660.35 (b).

(kk) Fail to handle seabirds other than short-tailed albatross that are caught by pelagic longline gear in a manner that maximizes the probability of their long-term survival, in violation of § 660.35 (c).

(ll) Own a vessel registered for use under an American Samoa longline limited access permit, or a Hawaii longline limited access permit that is engaged in longline fishing for Pacific pelagic management unit species, without maintaining, and having on file, a valid protected species workshop certificate issued by NMFS or a copy thereof, in violation of (to be designated) § 660.34(c)(2).

(mm) Operate a vessel registered for use under a Western Pacific longline general permit, American Samoa longline limited access permit or Hawaii longline limited access permit, that is engaged in fishing for Pacific pelagic management unit species using longline gear without having on board a valid protected species workshop certificate issued by NMFS or a legible copy thereof in violation of (to be designated) §

660.34(c)(1).

(nn) Fail to carry line clippers, dip nets, and wire or bolt cutters on a vessel registered for use under a Western Pacific longline general permit, American Samoa longline limited access permit, or Hawaii longline limited access permit, that has a freeboard of more than 3 ft (0.9 m) in violation of § 660.32(a)(1).

(oo) Fail to carry line clippers and wire or bolt cutters on a vessel fishing with hooks for Pacific pelagic management unit species within the Western Pacific Fishery Management Area, that has a freeboard of 3 ft (0.9 m) or more in violation of § 660.32(a)(2).

(pp) Fail to carry line clippers and wire or bolt cutters on a vessel registered for use under a Western Pacific longline general permit, American Samoa longline limited access permit, or Hawaii longline limited access permit or fishing with hooks for Pacific pelagic management unit species within the Western Pacific Fishery Management Area, that has a freeboard of 3 ft (0.9 m) or less in violation of § 660.32(a)(3).

(qq) Fail to comply with the sea turtle handling, resuscitation, and release requirements when operating a vessel registered for use under a Western Pacific longline general permit, American Samoa longline limited access permit, or Hawaii longline limited access permit, or fishing with hooks for Pacific pelagic management unit species within the Western Pacific Fishery Management Area in violation of §§ 660.32(b) through (d).

(rr) Direct fishing effort toward the harvest of swordfish (Xiphias gladius) using longline gear deployed north of the equator on a vessel registered for use under a Western Pacific longline general permit, an American Samoa longline limited access permit, or a Hawaii longline limited access permit in violation of § 660.33(a).

(ss) Fish for Pacific pelagic management unit species with a vessel registered for

use under a Western Pacific longline general permit, an American Samoa longline limited access permit, or a Hawaii longline limited access permit within closed areas or by use of unapproved gear configurations in violation of § 660.33(b), (c), (g), or (h).

(tt) Use a receiving vessel registered for use under a receiving vessel permit to receive, land, or tranship from another vessel, Pacific pelagic management unit species, that were harvested from closed areas with longline gear in violation of § 660.33(d).

(uu) Use a vessel registered under a Western Pacific longline general permit, an American Samoa longline limited access permit, or a Hawaii longline limited access permit to land or tranship within the Western Pacific fishery management area, Pacific pelagic management unit species, that were harvested from closed areas with longline gear in violation of § 660.33(e).

(vv) Possess a light stick on board a vessel registered for use under a Western Pacific longline general permit, an American Samoa longline limited access permit or a Hawaii longline limited access permit on fishing trips that include any fishing north of the equator (0˚ lat.) in violation of § 660.33(f).

(ww) Possess or land more than 10 swordfish on board a vessel registered for use under a Western Pacific longline general permit, an American Samoa longline limited access permit, or a Hawaii longline limited access permit, from a fishing trip where any part of the trip included fishing north of the equator (0˚ lat.) in violation of § 660.33(I).

(xx) Use a U.S. vessel employing pelagic handline or trolling methods to fish in the U.S. EEZ around the PRIA without a valid PRIA pelagic troll and handline fishing permit registered for use with that vessel.

6. Section 660.23 is revised to read as follows:

§ 660.23 Notifications.

(a) The permit holder for any vessel registered for use with a Hawaii limited access longline permit or any vessel greater than 40 feet in length overall that is registered for use with an American Samoa longline limited access permit, or an agent designated by the permit holder, shall provide a notice to the Regional Administrator or his or her designee at least 72 hours (not including weekends and Federal holidays) before the vessel leaves port on a fishing trip, any part of which occurs in EEZ waters around the Hawaiian Archipelago or American Samoa.

(b) The permit holder of any vessel that is registered for use with a Hawaii limited access longline permit or any vessel greater than 50 feet in length overall that is registered for use with an American Samoa longline limited access permit, and does not have on board a VMS unit while transiting the protected species zone as defined in § 660.12, or an agent designated by the permit holder, must notify the NMFS Pacific Islands Region Enforcement Office (see Table 1 of § 600.502 for address of Regional Administrator), immediately upon entering and immediately upon departing the protected species zone. The notification must include the name of the vessel, name of the operator, date and time (GMT) of access or exit from the protected species zone, and location by latitude and longitude to the nearest minute.

(c) The permit holder for any vessel registered for use with an American Samoa longline limited access permit, or an agent designated by the permit holder, shall notify PIRO within 30 days of a change in the owner of title for that vessel.

7. In § 660.25 insert the words ", or size class C or D American Samoa limited access longline permit," after Hawaii longline limited access permit" in paragraphs (b), (c), and (d).

8. Section 660.34 is revised to read as follows:

§ 660.34 Protected species workshops.

(a) Persons who must attend. (1) Each year the following persons must attend and be certified for completion of a workshop conducted by NMFS on biology, mitigation, handling, and release techniques for turtles and seabirds and other protected species:

(i) Both the owner and operator of a vessel registered under an American Samoa longline limited access permit (in the case of multiple individual owners, only one must attend and complete the workshop),

(ii) Both the owner and operator of a vessel registered under a Hawaii longline limited access permit (in the case of multiple individual owners, only one must attend and complete the workshop), and

(iii) The operator of a vessel registered for use under or a Western Pacific longline general permit.

(2) [Reserved]

(b) Workshop certificates. A protected species workshop certificate will be issued annually to any person who has completed the respective workshop.

(c) Maintenance of certificates. (1) The operator of a vessel registered for use with a Western Pacific longline general permit, an American Samoa longline limited access permit, or a Hawaii longline limited access permit that is engaged in longline fishing for Pacific pelagic management unit species, must have on board the vessel a valid protected species workshop certificate issued to them by NMFS or a legible copy thereof.

(2) An owner of a vessel registered for use under an American Samoa longline

limited access permit or a Hawaii longline limited access permit must maintain and have on file with PIRO a valid protected species workshop certificate issued by NMFS in order to maintain or renew their registration.

9. Section 660.36 is revised to read as follows:

§ 660.36 American Samoa Longline Limited Entry Program.

A vessel that uses longline gear to fish for Pacific pelagic management unit species in the EEZ around American Samoa, must have a valid American Samoa longline limited access permit registered for use with that vessel. With the exception of reductions in permits in vessel size class A under paragraph (a)(1) of this section, the maximum number of permits will be capped at the number of initial permits actually issued under paragraph (d)(1) of this section.

(a) Vessel size classes. The Regional Administrator shall issue American Samoa limited access longline permits in the following size classes:

(1) Class A: Vessels less than or equal to 40 feet length overall. The maximum number will be reduced as class B-1, C-1, and D-1 permits are issued under paragraph (e) of this section.

(2) Class B: Vessels over 40 feet to 50 feet length overall.

(3) Class B-1: Maximum number of 14 permits for vessels over 40 feet to 50 feet length overall, to be made available according to the following schedule:

(i) Four permits in the first calender year after the Regional Administrator has issued all initial permits in classes A, B, C, and D (initial issuance),

(ii) In the second calender year after initial issuance, any unissued, relinquished or revoked permits of the first four, plus four additional permits,

(iii) In the third calender year after initial issuance, any unissued, relinquished or

revoked permits of the first eight, plus four additional permits, and

(iv) In the fourth calender year after initial issuance, any unissued, relinquished or revoked permits of the first 12, plus two additional permits.

(4) Class C: Vessels over 50 feet to 70 feet length overall.

(5) Class C-1: Maximum number of 6 permits for vessels over 50 feet to 70 feet length overall, to be made available according to the following schedule:

(i) Two permits in the first calender year after initial issuance,

(ii) In the second calender year after initial issuance, any unissued, relinquished or revoked permits of the first two, plus two additional permits, and

(iii) In the third calender year after initial issuance, any unissued, relinquished or revoked permits of the first four, plus two additional permits.

(6) Class D: Vessels over 70 feet length overall.

(7) Class D-1: Maximum number of 6 permits for vessels over 70 feet length overall, to be made available according to the following schedule:

(i) Two permits in the first calender year after initial issuance,

(ii) In the second calender year after initial issuance, any unissued, relinquished or revoked permits of the first two, plus two additional permits, and

(iii) In the third calender year after initial issuance, any unissued, relinquished or revoked permits of the first four, plus two additional permits.

(b) A vessel subject to this section may only be registered with an American Samoa longline limited access permit of the class that matches or is larger than its length overall.

(c) Initial permit qualification. Any U.S. national or U.S. citizen qualifies for an

initial American Samoa limited access longline permit if they, on or prior to March 21, 2002, owned a vessel that was used during their ownership period to harvest Pacific pelagic management unit species with longline gear in the EEZ around American Samoa and that fish was landed in American Samoa:

(1) Prior to March 22, 2002 or

(2) Prior to June 28, 2002, provided that the person provided to the NMFS or the Western Pacific Fishery Management Council, prior to March 22, 2002, a written notice of his or her intention to participate in the pelagic longline fishery in the EEZ around American Samoa.

(d) Initial permit issuance. (1) Any application for issuance of an initial permit must be submitted to the Pacific Islands Regional Office no more than 120 days after the effective date of this rule. The Regional Administrator shall publish a notice in the Federal Register, send notices to persons on the American Samoa pelagics mailing list, and use other means to notify prospective applicants of the availability of permits. Applications for initial permits must be made, and application fees paid, in accordance with §§ 660.13(c)(1), (d) and (f)(2). If the applicant is any entity other than a sole owner, the application must be accompanied by a supplementary information sheet obtained from the Regional Administrator, containing the names and mailing addresses of all owners, partners, and corporate officers.

(2) Only permits of class A, B, C, and D will be made available for initial issuance. Permits of class B-1, C-1, and D-1, will be made available in subsequent calender years.

(3) The Pacific Islands Regional Office administrator shall make decisions on all complete applications for initial permits and notify successful applicants within 30 days of their receipt by a dated letter of notification sent to the address that appears on the

application. Successful applicants must register a vessel, of the equivalent size class or smaller than that to which their qualifying vessel would have belonged, to the permit within 120 days of the date of the letter of notification, and maintain this vessel registration to the permit for at least 120 days. Successful applicants must also submit a supplementary information sheet, obtained from the Regional Administrator, containing the name and mailing address of the owner of the vessel to which their permit is registered. If the registered vessel is owned by any entity other than a sole owner, the names and mailing addresses of all owners, partners, and corporate officers must be included.

(4) An appeal of a denial of an application for an initial permit shall be processed in accordance with § 660.21(k) of this subpart.

(5) After all appeals on initial permits are concluded in any vessel size class, the maximum number of permits in that class shall be the number of permits issued during the initial issuance process (including appeals). The maximum number of permits will not change, except that the maximum number of class A permits will be reduced if class A permits are replaced by B-1, C-1, or D-1 permits under paragraph (f) of this section. Thereafter, if any class A, B, C, or D permit becomes available, the Pacific Islands Regional Office administrator shall re-issue that permit according to the process set forth in paragraph (e) of this section.

(e) Standard permit issuance. (1) If the number of permits issued in class A, B, C, or D, falls below the maximum number of permits, the Regional Administrator shall publish a notice in the Federal Register, send notices to persons on the American Samoa pelagics mailing list, and use other means to notify prospective applicants for any available permit(s) in that class. The Regional Administrator shall issue permits to persons according the following priority standard:

(i) First priority accrues to the person with the earliest documented participation in the pelagic longline fishery in the EEZ around American Samoa on a Class A sized vessel, and then

(ii) The next priority accrues to the person with the earliest documented participation in the pelagic longline fishery in the EEZ around American Samoa on a Class B size, Class C size, or Class D size vessel, in that order.

(iii) In the event of a tie in the priority ranking between two or more applicants, then the applicant whose second documented participation in the pelagic longline fishery in the EEZ around American Samoa is first in time will be ranked first in priority. If there is still a tie between two or more applicants, the Regional Administrator will select the successful applicant by an impartial lottery.

(2) Applications must be made, and application fees paid, in accordance with §§ 660.13(c)(1), (d), and (f)(2). If the applicant is any entity other than a sole owner, the application must be accompanied by a supplementary information sheet obtained from PIRO, containing the names and mailing addresses of all owners, partners, and corporate officers.

(3) The Regional Administrator shall make decisions on all complete applications for standard permits and notify successful applicants within 30 days of receipt of their completed application by a dated letter sent to the address that appears on the permit application. The successful applicant must register a vessel of the appropriate vessel size or smaller to the permit within 120 days of the date of the letter of notification. Successful applicants must also submit a supplementary information sheet, obtained from PIRO, containing the name and mailing address of the owner of the vessel to which their permit is registered. If the registered vessel is owned by any entity other than a sole owner, the names and mailing addresses of all owners, partners, and

corporate officers must be included. If the successful applicant fails to register a vessel to the permit within 120 days, the Pacific Islands Regional Office administrator shall issue a letter of notification to the next person on the priority list or, in the event that there are no more prospective applicants on the priority list, re-start the issuance process pursuant to paragraph (e)(1) of this section. Any person who fails to register the permit to a vessel under this paragraph within 120 days shall not be eligible to apply for a permit for 6 months from the date those 120 days expired.

(4) An appeal of a denial of an application for a standard permit shall be processed in accordance with § 660.21(k).

(f) Class B-1, C-1, and D-1 Permits. (1) Permits of Class B-1, C-1, and D-1 may be initially issued only to persons who hold a class A permit and who, prior to March 22, 2002, participated in the pelagic longline fishery around American Samoa.

(2) The Regional Administrator shall issue permits to persons for Class B-1, C-1, and D-1 permits based on each person's earliest documented participation, with the highest priority given to that person with the earliest documented participation date.

(3) A permit holder who receives a Class B-1, C-1, or D-1 permit must relinquish his or her class A permit and that permit will be revoked. The maximum number of class A permits will be reduced accordingly.

(4) The Regional Administrator shall make decisions on all complete applications for Class B-1, C-1, and D-1 permits and notify successful applicants within 30 days of receipt of their completed application by a letter sent to the address that appears on the permit application. Successful applicants must also submit a supplementary information sheet, obtained from the Regional Administrator, containing the name and mailing address of the owner of the vessel to which their permit is registered. If the registered vessel is owned by any entity other than a sole owner, the names and mailing

addresses of all owners, partners, and corporate officers must be included.

(5) An appeal of a denial of an application for a Class B-1, C-1, or D-1 permit shall be processed in accordance with § 660.21(k).

(6) If a Class B-1, C-1, or D-1 permit is relinquished or revoked, the Pacific Islands Regional Office administrator shall make that permit available according to the procedure described in paragraphs (f)(1) through (f)(4) of this section.

(h) Permit transfers. The holder of an American Samoa limited access longline permit may transfer the permit to another individual, partnership, corporation or other entity as described in this section. Applications for permit transfers must be submitted to the Pacific Islands Regional Office administrator within 30 days of the transferral date. If the applicant is any entity other than a sole owner, the application must be accompanied by a supplementary information sheet obtained from the Regional Administrator, containing the names and mailing addresses of all owners, partners, and corporate officers. After such an application has been made, the permit is not valid until the Pacific Islands Regional Office administrator has issued the permit in the name of the new permit holder under § 660.13(c).

(1) Permits of all size classes except Class A. An American Samoa limited access longline permit of any size class except Class A may be transferred (by sale, gift, bequest, intestate succession, barter, or trade) to the following persons only:

(i) A Western Pacific community located in American Samoa that meets the criteria set forth in section 305(i)(2) of the Magnuson-Stevens Act, 16 U.S.C. 1855(i)(2), and its implementing regulations, or

(ii) Any person with documented participation in the pelagic longline fishery in the EEZ around American Samoa.

(2) Class A Permits. An American Samoa limited access longline permit of Class A may be transferred (by sale, gift, bequest, intestate succession, barter, or trade) to the following persons only:

(i) A family member of the permit holder,

(ii) A Western Pacific community located in American Samoa that meets the criteria set forth in section 305(i)(2) of the Magnuson-Stevens Act, 16 U.S.C. § 1855(i)(2), and its implementing regulations, or

(iii) Any person with documented participation in the pelagic longline fishery on a Class A size vessel in the EEZ around American Samoa prior to March 22, 2002.

(3) Class B-1, C-1, and D-1 Permits. Size class B-1, C-1, and D-1 permits may not be transferred to a different owner for 3 years from the date of initial issuance, except by bequest or intestate succession if the permit holder dies during those three years. After the initial 3 years, class B-1, C-1, and D-1 permits may be transferred only in accordance with the restrictions in paragraph (h)(1) of this section.

(i) Registration of vessels-- (1) Use It or Lose It. An American Samoa limited access longline permit will not be renewed following three consecutive calendar years (beginning with the year after the permit was issued in the name of the current permit holder) in which the vessel(s) to which it is registered landed less than:

(i) For permit size classes A or B: a total of 1,000 pounds of Pacific pelagic management unit species harvested in the EEZ around American Samoa using longline gear, or

(ii) For permit size classes C or D: a total of 5,000 pounds of Pacific pelagic management unit species harvested in the EEZ around American Samoa using longline gear.

(2) An American Samoa longline limited access permit will not be renewed if the owner of the vessel to which the permit is registered does not have on file with the Regional Administrator a valid protected species workshop certificate issued by NMFS, in accordance with § 660.34 (c)(2).

(j) Concentration of ownership of permits. No more than 10 percent of the maximum number of permits, of all size classes combined, may be held by the same permit holder. Fractional interest will be counted as a full permit for the purpose of calculating whether the 10-percent standard has been reached.

(k) Terminology. For purposes of this section, the following terms have these meanings:

(1) Documented participation means participation proved by a properly submitted NMFS or American Samoa logbook, an American Samoa creel survey record, a delivery or payment record from an America Samoa-based cannery, retailer or wholesaler, an America Samoa tax record, an individual wage record, ownership title, vessel registration, or other official documents showing:

(i) Ownership of a vessel that was used to fish in the EEZ around American Samoa, or

(ii) evidence of work on a fishing trip during which longline gear was used to harvest Pacific pelagic management unit species in the EEZ around American Samoa.

(2) [Reserved]

(m) 3-Year review. Within three years of the effective date of this rule the Council shall consider appropriate revisions to the America Samoa limited entry program after reviewing the effectiveness of the program with respect to its biological and socioeconomic objectives, concerning gear conflict, overfishing, enforceability,

compliance, and other issues.

10. In § 660.13 and throughout Subpart C, all references to "longline general permit" or "general longline permit" are revised to read "Western Pacific longline general permit".

11. In § 660.13 and throughout Subpart C, all references to "limited access permit" and "Hawaii limited access longline permit" are revised to read "Hawaii longline limited access permit".