PACIFIC FISHERY MANAGEMENT COUNCIL

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July 21, 1998

The Honorable William M. Daley, Secretary
U.S. Department of Commerce
14th Street between Constitution and Pennsylvania Avenues NW
Washington, DC 20230

Dear Secretary Daley:

Enclosed you will find the latest draft of the business plan of the capacity reduction program for the Pacific coast groundfish limited entry trawl fishery. The Pacific Fishery Management Council's Buyback Committee, comprised of industry representatives, has refined the program to expand on procedural issues and to address the concerns raised in your January 20, 1998 letter. In addition, Council members and interested public have raised other concerns which are addressed in this latest draft of the program and the supporting analyses. Although the Buyback Committee and analysts have attempted to project possible scenarios under the capacity reduction program, it is impossible to know exactly how this capacity reduction program, if approved by referendum and implemented by National Marine Fisheries Service (NMFS), will affect the future of the trawl fleet and other fisheries. However, it is the strong belief of trawl industry and processing sector members on the Buyback Committee that taking some action to address overcapitalization in the groundfish trawl fleet is preferable to doing nothing at all. The Council has repeatedly determined that reducing capacity in the groundfish fishery is a high priority.

The specific concerns raised by your letter and by others are addressed below with references to specific analyses in the enclosed documents.

1. Further refinement of range of cost/results. Based on the economic analysis enclosed as Appendix A, the Buyback Committee proposes to request a loan of $28 million. Although it is difficult to project what the permits will sell for, the Buyback Committee has devised a purchase mechanism which may allow the capacity reduction program to buy the desired number of permits for a cost as low as $10 million (see page 5 of the business plan, attached). Table 3 of the attached analysis models four different scenarios of which permits are likely to sell and what the resulting benefits to the remaining industry would be under each scenario.

2. Effect on Income/Expense Performance. Table 4 of the analysis projects what the likely redistributed profits would be under each of the four buyback scenarios. In addition, Table 8 projects a range of potential trip limit increases for major trip limit species. Table 9 projects the potential increases in exvessel values associated with these trip limit increases.

3. Statutory Provisions. The Business plan has been revised to address how the capacity reduction proposal is consistent with the Pacific Coast Groundfish Fishery Management Plan (FMP) (see page 3) and the provisions in the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) (see page 3). The Buyback Committee has requested a regulatory amendment under the FMP to allocate some important species between fishery sectors to ensure that the benefits from the capacity reduction program are not negated by a reduction in the proportion of catch by the trawl fleet (see pages 7-8). If the Council proceeds with allocation of these species, the resulting regulatory amendment would be sufficient to ensure the FMP is consistent with the capacity reduction program.

4. Funding. The Buyback Committee understands that Congressional action may be necessary for loan authorization under the Federal Credit Reform Act and is obtaining clarification on what the necessary steps are to prevent delays in the buyback process.

Other, more specific concerns raised by the Council, industry, and interested persons include:

5. Replacement of Capacity into the Groundfish Fishery. Are provisions in the current FMP sufficient to prevent replacement of capacity into the groundfish fishery after a permit capacity reduction program? The Buyback Committee believes that the existing trip limit management and FMP restrictions on vessel upgrades provide no incentive to upgrade capacity for use in the groundfish limited entry trawl fishery. See page 4 of the business plan for further treatment of this issue.

6. Effort Shifts Into other Fisheries. Will the groundfish permit capacity reduction program simply free 80 to 90 vessels to enter or increase participation in other West Coast fisheries, exacerbating current overcapitalization in those fisheries? The Buyback Committee reviewed Tables 10 through 14 in the analysis, which documents participation levels in other fisheries by groundfish trawl permit holders. Permit holders bought out in the capacity reduction program may increase effort in fisheries in which they already participate or enter new fisheries. Fisheries likely to be affected include pink shrimp, Dungeness crab, swordfish, albacore, spot prawn, and market squid (currently all state-managed fisheries). Shrimp and crab require state permits in all three states, and some groundfish trawl permit holders already participate in these fisheries. Swordfish and squid require permits in California, and the prawn fishery requires a permit in Washington and Oregon. It is difficult to predict how much of an increase in participation in other fisheries would result from vessels that sell their groundfish permits or how much participation levels in crab or shrimp would increase if those vessels buy a crab or shrimp permit (displacing a current participant). At the same time, the status quo of not reducing capacity in the trawl fleet may also have adverse effects on other fisheries. With recent harvest guideline reductions and ocean conditions, many trawl permit holders may already be diversifying and increasing effort in other fisheries. If effective, the capacity reduction program could in fact reduce effort by the trawl fleet in other fisheries by providing higher trip limits and longer seasons.

7. Whiting Industry Participation. Some members of the whiting industry have raised questions about the fact that the whiting industry segment will most likely not be interested in selling permits, but will end up paying a large share of the debt service. Participants in the whiting fishery have the same opportunity as other trawl permit holders to vote against the program in the referendum. The Buyback Committee also noted that the offshore whiting fleet may benefit from decreased pressure on whiting and increased trip limits for other species.

This package contains the information required by the National Marine Fisheries Service [illegible]

PACIFIC COAST GROUNDFISH LIMITED ENTRY TRAWL PERMIT BUYBACK BUSINESS PLAN

PREPARED BY THE PACIFIC FISHERY MANAGEMENT COUNCIL'S BUYBACK COMMITTEE

Pacific Fishery Management Council
2130 SW Fifth Avenue, Suite 224
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JULY 1998

INTRODUCTION AND PURPOSE

The Pacific Fishery Management Council (Council) has convened a Buyback Committee to develop a capacity reduction program in accordance with section 312 (b) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). The Buyback Committee has developed this program for the trawl sector of the limited entry groundfish fishery. The purpose of this capacity reduction program is to promote fisheries management, conservation of the resource, and economic efficiency by reducing the fishing capacity of the Pacific Coast groundfish trawl fleet to a level that is more balanced with the size of the available resource. This program is designed so that the remaining industry participants pay for the reduction and share the benefits of a smaller fishing fleet.

DESCRIPTION OF THE FISHERY

The Pacific Coast groundfish fishery is a multi-species fishery for various species of rockfish and flatfish, Pacific whiting, sablefish, lingcod, Pacific cod, and several species of skates and sharks. The fishery has operated under a limited entry system since January 1994. The limited entry permits are endorsed for the use of trawl, longline, and/or pot gear. These permits are also endorsed for the length of the vessel. The permits are transferable and may be used on any vessel within plus or minus five feet of the endorsed length. Multiple permits may also be combined and used on a vessel of greater length. The formula for combining permits is an exponential relationship based upon the length endorsement of the permit.

There were approximately 400 trawl permits issued in 1994 when the limited entry program was adopted. Within the first year more than 100 permit holders sold their permits to individuals wishing to acquire permits to license factory trawlers. There are currently 280 permits, of which ten are factory trawlers. The majority of trawl vessels are between 50 feet and 80 feet.

HISTORY OF THE FISHERY

Domestic landings from the Pacific Coast groundfish fishery were relatively stable, averaging about 30,000 mt annually, until the early 1970's when they began a fairly steady increase. By 1976, when the Magnuson-Stevens Act was passed, annual groundfish landings had reached 60,000 mt, generating $36.2 million in real exvessel revenues. By 1982, when the fishery management plan (FMP) for Pacific Coast groundfish was implemented, total landings (excluding foreign and joint venture catch) had peaked at 116,000 mt valued at $71.5 million.

A major reason for this rapid growth in groundfish landings was a substantial buildup in harvesting capacity that greatly exceeded the sustainable production capacity of the groundfish resource taken in traditional fisheries. Harvesting capacity increased as newly constructed vessels entered the fishery and as vessels were displaced from other fisheries due to changing economic and regulatory conditions. The number of trawlers rose from 286 in 1977 to 472 in 1979. Furthermore, improved electronic, navigational, and fish-finding equipment significantly increased the harvesting efficiency of the fleet.

Trawling has been the dominant means of harvesting Pacific Coast groundfish for the past 50 years. In 1978, large productive trawl grounds in British Columbia, Canada were closed to U.S. fishermen. This action forced Washington state fishers to fish exclusively in U.S. waters, primarily off Washington. Foreign fishing fleets have also operated in the Washington, Oregon, and California area. The Soviet Union operated a large trawl fleet as early as the mid-1960's for rockfish and Pacific whiting. Poland, the German Democratic Republic, the Federal Republic of Germany, and the Republic of Korea also sent vessels, primarily factory trawlers, to fish in this area prior to the implementation of the Magnuson-Stevens Act.

In the late 1980's, joint venture operations for Pacific whiting expanded, leading to elimination of all foreign harvesting in 1989. Beginning late in 1990, U.S. catcher-processor (factory trawler) vessels conducted exploratory fisheries to determine if whiting might provide a viable fishery for U.S. at-sea processing. This at-sea fishery by American vessels immediately preempted the joint venture fishery. In 1991, for the first time

in roughly 30 years, the entire groundfish fishery was conducted by American operations. At the same time, shore-based processing of Pacific whiting expanded as processors of more traditional groundfish species rushed to carve out their portion of the market. Thus, Pacific Coast groundfish landings reached a new peak in 1991, more than doubling the previous high established in 1982.

The overall result was that in just a few years the Pacific Coast groundfish fishery had progressed from harvesting surplus production from generally healthy or under harvested fish stocks, to the point of excessive effort, with stocks at maximum sustainable yield (MSY) levels and limited room for expansion of traditional fishing operations. These problems characterize a rapidly maturing open access fishery and signal the need for management.

HISTORY OF MANAGEMENT

Prior to implementation of the FMP in September 1982, management of domestic groundfish fisheries was under the jurisdiction of the states of Washington, Oregon, and California. State regulations had been in effect on the domestic fishery for about 80 years and each state acted independently in both management and enforcement. However, many fisheries overlapped state boundaries and were participated in by citizens of two or more states. Management and uniformity of regulation became a difficult problem which stimulated the formation of the Pacific States Marine Fisheries Commission (PSMFC) in 1947. PSMFC had no regulatory power, but acted as a coordinating entity with authority to submit specific recommendations to states for their adoption.

Early regulations took the form of area closures (e.g., San Francisco Bay was closed to trawling in 1906), because of concerns about stock depletion. Minimum trawl mesh sizes were adopted in the early 1930's in California as the production of flatfish decreased. During 1935 to 1940, voluntary mesh size limits were adopted by the trawl industry after markets imposed minimum size limits on certain flatfish and gear-saving studies demonstrated that a larger mesh size (five inches) caught fewer unmarketable fish. Shortly thereafter, mandatory minimum mesh sizes were adopted by California. Since this time, mesh regulations have been in effect in all three coastal states.

Between the implementation of the Magnuson Fishery Conservation and Management Act in 1977 and the implementation of the FMP in 1982, state agencies worked with the Council to address conservation issues. Specifically, in 1981 the Council proposed a rebuilding program for Pacific Ocean perch. To implement this program, the states of Oregon and Washington established landing limits for Pacific Ocean perch in the Vancouver and Columbia areas. These limits were revised in January 1982, prior to enactment of the FMP in September, but the 20-year rebuilding program remained unchanged.

Generally, the groundfish FMP focused on solutions to the problems stemming from open access instead of changing the open access system. Aggregate harvest quotas (or guidelines) for certain species and other restrictive measures (e.g., trip limits) on fishing enterprises have been instituted to achieve economic and social objectives. While these harvest regulations may have been sufficient to prevent fish stock depletion, they did not address the economic problem of excess harvesting capacity.

In response to the conditions of excessive effort that developed during the 1980's, members of the fishing industry asked the Council to develop a limited entry program. After several years of development, a license limitation plan was approved and became effective on January 1, 1994.

NEED FOR PROGRAM

The capacity reduction program described in this document, in accordance with §312 (b)(1)(A) of the Magnuson-Stevens Act is necessary to achieve measurable and significant improvements in the conservation and management of the Pacific Coast groundfish fishery. Currently, management measures in the form of cumulative trip limits extend the fishing and marketing opportunities throughout the year while preventing the annual harvest guideline from being exceeded. This system has been effective in preventing the acceptable

biological catch (ABC) from being exceeded in any one year, and for many species it has worked to extend the fishing and marketing of product throughout the year. However, trip limit regulation has diminished the economic efficiency of the fishing fleet, particularly the larger, more productive vessels. As trip limits have been reduced over time, they have affected a larger portion of the fleet.

The license limitation system restricted new entrance into the fishery, but increased effort and revised stock assessments have led to considerably lower harvest guidelines. This in turn has led to lower trip limits and even greater economic impacts. Lower trip limits have led to increased discards and wastage, and degraded the available data on fishery-induced mortality. The Buyback Committee believes the only method to improve this situation and reverse the trend is to reduce the current fishing fleet. In the absence of outside funding, the industry must fund the purchase of permits.

Reducing fleet capacity would allow the available groundfish resource to be distributed among a smaller fleet, increasing the efficiency of the remaining fleet. In addition, the resulting higher cumulative trip limits and fewer number of vessels fishing would decrease management-induced discards, reducing waste of the resource and providing more realistic data on fishery-induced mortality. Future management measures to reduce harvest guidelines and/or trip limits would also be facilitated simply by the fact that they would affect fewer vessels.

CONSISTENCY WITH THE PACIFIC COAST GROUNDFISH FMP

The Magnuson-Stevens Act requires the capacity reduction program to be consistent with the Pacific Coast Groundfish FMP and that the FMP

> (i) will prevent the replacement of fishing capacity removed by the program through a moratorium on new entrants, restrictions on vessel upgrades, and other effort control measures, taking into account the full potential fishing capacity of the fleet; and
> (ii) establishes a specified or target total allowable catch of other measures that trigger closure of the fishery or adjustments to reduce catch. (Magnuson-Stevens Act §312 (b)(1)(B)).

This capacity reduction program is consistent with the goals and objectives of the FMP, primarily Goal 2, of maximizing the value of the groundfish resource as a whole. The capacity reduction program, by reducing the number of vessels vying for the groundfish harvest guidelines, will decrease the aggregate costs associated with harvest of groundfish species by trawl vessels, increasing the overall value of the resource. Objective 5 of the FMP specifically states that the plan must attempt to achieve the greatest possible net economic benefit to the nation from the managed fisheries. In addition, Objective 10 of the FMP is to strive to reduce the economic incentives and regulatory measures that lead to wastage of fish. The capacity reduction program serves this objective by allowing managers to set cumulative trip limits for harvest guideline species at higher levels postbuyback, decreasing the likelihood of management-induced discards. Objective 14 (when considering alternative management measures to resolve an issue, choose the measure that best accomplishes the change with the least disruption of current domestic fishing practices, marketing procedures and environment) will also be served by the capacity reduction program, in that any future reductions or restrictive management measures will cause disruption to a smaller fleet than now exists.

PREVENTION OF REPLACEMENT OF POSTBUYBACK FISHING CAPACITY

The FMP prevents the replacement of fishing capacity removed by the program via Amendment 6 (Limited Entry) to the FMP, which established the limited entry program and placed a moratorium on new permits. Vessel length endorsements prevent upgrades to larger vessels without combining two or more permits. Gear endorsements limit what type of gear can be used by those permits.

In addition, the FMP includes a process by which the Council sets ABCs and mechanisms for triggering closure of the fishery or for reducing catch. The Council sets ABCs for species or species groups based either on recent catch history, nonquantitative assessments, or quantitative assessments, depending on what data are available. For individual species or species groups, the FMP allows the Council to determine the need to manage by harvest guidelines. Harvest guidelines serve as management objectives that may require management measures, such as trip limits and size limits, to achieve. Harvest guidelines and corresponding

management measures may be adjusted inseason for resource conservation or for socioeconomic reasons. This allows the Council to adjust trip limits or close the fishery in the event of a conservation problem. The combination of limited entry permits with gear and length endorsements, harvest guidelines, and trip limits act together as disincentives for vessel owners to modify their vessels to increase fishing power. Such changes would provide no benefits in increased harvest.

The Magnuson-Stevens Act also requires that the FMP be consistent with the capacity reduction program. To ensure that the benefits of a capacity reduction program accrue to those who participate in the program, a plan amendment is necessary to directly allocate harvest guideline species between sectors of the fishery. The Council has indicated its intent to proceed with such an amendment allocating rockfish and lingcod between the trawl, nontrawl, and recreational sectors of the fishery (after any current allocations to tribal and open access sectors). The necessary allocations are described below in the section marked "Allocations."

GOAL

The goal of the Pacific Coast groundfish capacity reduction program is to achieve a permanent reduction of capacity in the groundfish fishery as a means to prevent overfishing, rebuild stocks, and achieve measurable and significant improvements in conservation and management of the groundfish fishery. The sectors of the industry that are reduced should receive the benefits of the capacity reduction program.

TARGET

The objective of the Pacific Coast groundfish capacity reduction program is to reduce the number of permits in the trawl fleet by approximately one third. Currently, there are 280 permits, including ten factory trawl permits. The target number of permits to be removed through this programs is a range from 80 to 90 permits. In other words, a minimum of 80 permits must be purchased for the program to occur, but if there are a sufficient number of bids then additional permits will be purchased up to and including 90 permits.

DESCRIPTION OF THE CAPACITY REDUCTION PROGRAM

The proposed capacity reduction program shall be funded by an industry fee system established under section 312(1)(d) of the Magnuson-Stevens Act and in accordance with section 1111 of Title XI of the Merchant Marine Act, 1936. The Secretary of Commerce (Secretary) will hold a referendum of the groundfish limited entry trawl permit holders. The industry fee system will be established if the referendum votes which are cast in favor of the proposed system constitute a two-thirds majority of the participants voting. The program would establish a fee of not greater than five percent of the exvessel value. This fee would be used to repay a loan from the U.S. Department of Commerce over a 20-year period. The loan money would be used to purchase limited entry "A" trawl permits and destroy them. Permits would be purchased from willing sellers in the existing market for these permits. This market currently trades in a point-based system related to the length endorsement on the permit.

The fee will be applied to the value of the catch when purchased by the first receiver. Since factory trawlers catch and process their catch without purchasing the fish, the value used as the exvessel value for Pacific whiting caught by factory trawl vessels will be the average exvessel price paid by mothership operations. The fees will be withheld, as is the common industry practice, by the first receiver of the fish, including factory trawl operations, and sent to the Department of Commerce on a monthly basis. The first receiver will submit the following information along with the payment: pounds by species, exvessel price by species, total paid, to whom paid, producing vessel, date bought, date paid.

PERMIT PURCHASE POLICY

The buyback program must have a guiding policy governing the conditions of when a permit is to be purchased. Minimizing the total cost of the program must be balanced with the need to remove a large number of permits. In this program, permits which have the lowest price will be purchased first. To eliminate the possibility of purchasing permits which have exceptionally high bids, all bids which have a value greater than one standard deviation from the mean bid in a certain round will not be considered

PURCHASE MECHANISM

The Secretary will send a notice to permit holders to submit bids if they are interested in selling their permit. The submission period should be a fixed amount of time. Following the closure of the submission period the Secretary will rank the bid from lowest to highest based on price. Any bid which is greater than one standard deviation from the mean bid will be rejected.

If the total number of qualifying bids is equal to or greater than the capacity reduction goal and the sum of the bid prices is equal to or less than the amount of money which is available to the program then all qualifying permits will be purchased. At this point the purchase phase of the program is complete. If the total number of qualifying permits is less than the capacity reduction goal then no permits will be purchased and a second round of bid submissions would occur.

The Buyback Committee is requesting a loan amount of $28 million. However, in an effort to achieve the goal of the buyback program at the least cost, the money available for the first round would be ten million dollars. If the program goals is not attained in the first round, then no permits would be purchased and the second round of bids would be solicited at $15 million. If the second round was not successful, a third and fourth round of bids would be solicited at $20 million and $28 million, respectively. Although this incremental increase in round amounts gives bidders incentive to wait for later rounds when bids might be higher, it is hoped that those permit holders truly interested in selling would be compelled to bid reasonably and early in case the program was successful in the first round.

First Round	$10 million
Second Round	$15 million
Third Round	$20 million
Fourth Round	$28 million

PROGRAM REVENUE

This program will be funded by the sale of a government bond which will be repaid by the remaining trawl fleet permit holders over a 20-year period. The amount of that bond cannot exceed the ability of the industry to service that debt, through a fee not to exceed five percent of the exvessel value of the participants. The fee will be determined by the Secretary and adjusted from time to time as the Secretary considers necessary to ensure the availability of sufficient funds to repay such debt. The rate of interest on the bond is projected to be near seven to eight percent.

COST OF THE PROGRAM

The total cost of this program may not exceed five percent of the annual exvessel value of the remaining participants. How much permits will sell for is difficult to estimate. In the year following the initial issuance of the permits, approximately 100 permits were purchased by factory trawlers. The current market price per point ranges from $5,000 to $7,000. Although permit sales have slowed, this per point price range appears to prevail. Presumably, the Buyback Program will have to pay an amount greater than the market value of permits. Table 4 of Appendix A shows projections of prices per point that the program may be able to cover as a range from $9,600 to $36,000.

LOAN AMOUNT

The amount of money requested by this program is $28 million. This is approximately the maximum loan amount which could be repaid through the revenue generated from a maximum five percent fee applied to a constant fishery value of $50 million (see Tables 5 and 6 in Appendix A). The 1996 exvessel value of the fishery $68 million, and the 1997 exvessel value was $72 million. The value of $50 million is thought to be a worst case estimate of exvessel value. The exvessel value of the 1998 harvest is estimated to be $63 million. The decline in the estimated value for 1998 reflects reduced harvest levels calculated at 1997 exvessel values and anticipated low value for Pacific whiting surimi.

CAPABILITY OF REPAYING DEBT OBLIGATION

The Magnuson-Stevens Act requires that a capacity reduction program be cost-effective and capable of repaying any debt obligation incurred under section 1111 of title XI of the Merchant Marine Act, 1936 [Magnuson-Stevens, §312(b)(1)(C)]. The capability of the postbuyback fleet to repay debt obligation is directly linked to the benefits that will accrue to the remaining permit holders as a result of the program. The benefit to the remaining permit holders will be, all things remaining equal, an increase in the amount of fish available to be caught as reflected in increased trip limits (see Tables 8 and 9 for estimates of trip limit increases as a result of buyback). The increase in trip limits is dependent on the amount of catch history which is retired through buyback. The amount of catch history retired through a buyback is difficult to estimate. Table 3 of Appendix A outlines four different possible scenarios to project which permits might sell to a buyback program, and how much revenue would be redistributed under each scenario.

ALLOCATIONS

In order to allow the benefits of the capacity reduction program to be enjoyed by those sectors that participate in the buyback program, allocation of the ABC needs to occur. In addition to the existing tribal and open access allocations, the ABC should be split between trawl, nontrawl, and recreational participants. The Buyback Committee recommends that the basis for the allocations should be the proportion of the landings that trawl, nontrawl, and recreational fishermen made in the 1993 to 1997 period. The allocation mechanism should be the total "quota" minus the tribal share, minus the recreational share, minus open access. The balance would be divided between trawl and nontrawl. The following is a table of allocations that will be necessary to ensure benefits of capacity reduction to participants. If a cell is blank, the allocation would be essentially zero. An amount to provide nontargeted incidental landings should be provided. Allocations proposed by the Buyback Committee are provided in the following table:

Quota Managed Species	Trawl	Non-Trawl	Recreational
Sablefish[a/]	X	X	
Whiting	X		
Dover Sole	X		
Thornyheads	X	X	
Lingcod	X	X	X
Rockfish			
Shelf	X	X	X
Slope	X	X	
Nearshore	X	X	X
Widow	X	X	X
POP[b/]	X		

Non-quota Species:	Trawl	Non-Trawl	Recreational
Other flatfish	X	X	
Pacific Cod	X	X	
Grenadiers	X	X	
Sharks	X	X	X
Skates	X	X	X

a/ Sablefish is currently allocated between trawl and nontrawl.

b/ The harvest guideline for POP currently only provides for incidental take.

PURCHASE MECHANISM

The Secretary will send a notice to permit holders to submit bids if they are interested in selling their permit. The submission period should be a fixed amount of time. Following the closure of the submission period the Secretary will rank the bid from lowest to highest based on price. Any bid which is greater than one standard deviation from the mean bid will be rejected.

If the total number of qualifying bids is equal to or greater than the capacity reduction goal and the sum of the bid prices is equal to or less than the amount of money which is available to the program then all qualifying permits will be purchased. At this point the purchase phase of the program is complete. If the total number of qualifying permits is less than the capacity reduction goal then no permits will be purchased and a second round of bid submissions would occur.

The Buyback Committee is requesting a loan amount of $28 million. However, in an effort to achieve the goal of the buyback program at the least cost, the money available for the first round would be ten million dollars. If the program goals is not attained in the first round, then no permits would be purchased and the second round of bids would be solicited at $15 million. If the second round was not successful, a third and fourth round of bids would be solicited at $20 million and $28 million, respectively. Although this incremental increase in round amounts gives bidders incentive to wait for later rounds when bids might be higher, it is hoped that those permit holders truly interested in selling would be compelled to bid reasonably and early in case the program was successful in the first round.

First Round	$10 million
Second Round	$15 million
Third Round	$20 million
Fourth Round	$28 million

PROGRAM REVENUE

This program will be funded by the sale of a government bond which will be repaid by the remaining trawl fleet permit holders over a 20-year period. The amount of that bond cannot exceed the ability of the industry to service that debt, through a fee not to exceed five percent of the exvessel value of the participants. The fee will be determined by the Secretary and adjusted from time to time as the Secretary considers necessary to ensure the availability of sufficient funds to repay such debt. The rate of interest on the bond is projected to be near seven to eight percent.

COST OF THE PROGRAM

The total cost of this program may not exceed five percent of the annual exvessel value of the remaining participants. How much permits will sell for is difficult to estimate. In the year following the initial issuance of the permits, approximately 100 permits were purchased by factory trawlers. The current market price per point ranges from $5,000 to $7,000. Although permit sales have slowed, this per point price range appears to prevail. Presumably, the Buyback Program will have to pay an amount greater than the market value of permits. Table 4 of Appendix A shows projections of prices per point that the program may be able to cover as a range from $9,600 to $36,000.

LOAN AMOUNT

The amount of money requested by this program is $28 million. This is approximately the maximum loan amount which could be repaid through the revenue generated from a maximum five percent fee applied to a constant fishery value of $50 million (see Tables 5 and 6 in Appendix A). The 1996 exvessel value of the fishery $68 million, and the 1997 exvessel value was $72 million. The value of $50 million is thought to be a worst case estimate of exvessel value. The exvessel value of the 1998 harvest is estimated to be $63 million. The decline in the estimated value for 1998 reflects reduced harvest levels calculated at 1997 exvessel values and anticipated low value for Pacific whiting surimi.

Evaluation of financial costs and benefits to remaining permits of a buy-back program for limited-entry trawl permits

Prepared by Dr. Jim Hastie, NMFS/GMT Economist
May 11, 1998

The analysis presented in this document supersedes previous draft analyses and is intended to reflect decisions made by the buyback committee and Council at the April 1998 Council meeting. The intent of the paper is to provide a better understanding of the range of potential financial benefits that would accrue to those remaining in the fleet, following implementation of a buy-back program, and to examine potential costs of acquiring permits in the context of the proposed loan budget and potential benefits. An attempt is made to estimate the magnitude of impacts from buying up various numbers of trawl permits, both in terms of the revenue of various groundfish species that would be redistributed to remaining permits, and also the present value of profits from a future stream of those revenues that would form the basis of the remaining fleet's ability to repay the debt incurred by buying the permits. The principal analysis assumes that fleet revenue from groundfish will remain unchanged throughout the repayment period, although a sensitivity analysis has been developed to illustrate the effect that future decreases in price of ABC would have on the present value of future redistributed profits.

The first step in this process is to identify which permits would be the most likely to be sold to a buyback program, given various targets for the number of retired permits. Ideally, one would estimate the tender offers that would be made by each permit, and rank them accordingly. However, such estimation would require not only operation-specific revenue, cost, and debt information, but also other information, such as the permit owner's age (nearness to retirement), financial status, permit length, and alternative opportunities (inside and outside of the fishing industry). Since permit revenues and length are the only components of the tender function which are readily available at this time, I have used them to develop four scenarios reflecting different orderings of which permits would be purchased first. For this purpose, I used the data set assembled to address several issues at the November 1997 Council meeting, which was drawn from the July 1996 through June 1997 time period.

Table 1 provides an overview of the numbers of current "A" trawl permits, by length and home state of the permit owner. Currently market prices for permits are based on a "point" system which is derived from the formula used for combining permits. This relationship is depicted in Figure 1, with permit prices for different point values shown in Figure 2. Current market prices are believed to be in the range of $5,000-7,000 per point. The importance of this relationship in determining which permits are most likely to sell out derives from the fact that the absolute dollar amount of an offer will determine whether it is accepted. Even though permits sales in recent years reflect a wide variety of permit lengths and degrees of groundfish participation, it is important to remember that they also sold for a wide range of prices. For example, at $5,000/point, permits of 50 ft, 60 ft, and 80 ft would sell for $50,000, $78,000, and $160,000, respectively. In this example, in order for an 80 ft permit, valued by the owner at $160,000, to have a lower tender offer than the shorter permits, point values for some 50 ft and 60 ft permits would have to exceed $16,200/point and $10,300/point, respectively.

In Scenario A, permits are ordered simply on the basis of their total groundfish revenue. When the potential benefits are calculated using the actual revenues from permits that are purchased according to this ranking, the result is the worst case for benefits provided to those remaining in the fishery. Scenario B replaces some of these permits with ones where ownership transfer occurred between the beginning of 1997 and the beginning of 1998. Permits where a change in recorded ownership did not appear to represent a substantive change in ownership were excluded from the group of recent transfers. This group of permits contained 22 that had shoreside landings of groundfish during the study period. Inclusion of these permits is intended to reflect the fact that some permits which have been more active in the fishery have been sold recently. Although these particular permits might not be

included in a buyback removal, they may be indicative of the catch histories of some of those that are. The two remaining intermediate scenarios are based largely on permit length. In Scenario I-1, permits with less than $200,000 of groundfish revenue during the study period are ordered by length, with the smallest removed first. In Scenario I-2, permits are ordered strictly on the basis of length, without regard to catch history.

Since there is no allocation in place between gears for species other than sablefish, the percentage of the LE total for each trip-limit species (other than sablefish) during the study period was used to represent future apportionment for purposes of this analysis. These percentage were then applied to the landed catch harvest guideline amounts for limited entry for 1998 to arrive at the annual tonnages assumed for the 20-year repayment period, under all four scenarios. These amounts, shown in Table 2, were then multiplied by the prices reflecting 1997 conditions to arrive at baseline trawl revenues for each species for 1998 (and beyond). Values associated with whiting and other species not listed in Table 2 were assumed to be the same as in the study period.

Because the buyback committee established a target range for the number of retired permits (minimum of 80, maximum of 90), projected impacts for both ends of this range are provided. Tables 3a-3d summarize the amounts of base and 1998 revenues for all trawl permits and those associated with the specific permits slated for buyback under each of the four scenarios. In the absence of a working cost model for this fishery, I assumed that 50% of the gross revenues from redistributed fish would represent realized profit. Using a 7% discount rate, I then calculated the present value of this profit stream over a 20-year time horizon. This value is then divided by the number of permits retired, in order to show the average price that could be paid for each retired permit from redistributed profits. Since it is not certain that all groundfish revenue by retired permits will be recaptured by the remaining fleet, each table provides a range of potential benefits. One estimate includes all groundfish revenue, while the other assumes that only the revenue from major trip-limit species and whiting would be recaptured by remaining permits. The rationale for including these latter values is that existing operations could

depending on the distribution of asking prices, the resulting price line could look rather different. If the same dollar amount could be added to the original market price to secure the permits, the result would resemble, the thin dashed line, where $90,000 has been added to the original market prices for each length. The thicker dashed line above this represents an average of these two values, at each length. Or we could observe a dampening of the exponential curve only at larger permit lengths, as shown by the thick dotted line.

There are many factors that will influence an individual's asking price in addition to the monetary return from use of the permit. However it is impossible to quantify these factors in the context of this analysis. Revenue is identifiable, and Figure 5 provides an opportunity to visually assess the extent to which average and maximum groundfish revenues within length categories conform to the exponential formula embodied in the market-point curve. Data are grouped by 10-foot intervals from 40-89 ft, with all permits from 90-109 ft grouped together. Because this latter grouping includes 20 ft of permit lengths, the point curve takes an uncharacteristic jump from the 80 to 90 ft categories, as point values are averaged over the entire length interval. Average revenue is illustrated by the thick solid line, with maximum revenue represented by the thick dashed line. The point curves have been scaled to align, to the extent possible, with the ascending left side of the revenue curves. The exponential nature of these point curves remains unchanged. It is easily apparent that both revenue curves bear a close correspondence to the exponential formula for permit lengths from 40-79 ft. Beyond that point, revenue flattens dramatically, while the exponential curves increase at a faster rate.

Although Figure 5 does not examine the distribution of revenues within each length category, and does not reflect any of the other factors that may influence the determination of asking price, it does at least suggest that for the range of permit lengths that are most likely to be retired (40-70 ft), the exponential relationship is likely to hold as increasing numbers of permits are retired from each length group. In other words, the tender offer from the 10th lowest 60-69 ft permit is likely to exceed the existing market price by a greater dollar amount than the difference between the 10th-lowest tender offer and current price in the 40-49-ft group.

To the extent that one accepts this conclusion, greater weight should be attached to results for Scenarios I-1 and I-2 than either of the original scenarios. And to the extent that one believes that the owner of a 50-foot permit that grosses $250,000 from groundfish is more likely to have a higher asking price than the owner of a 60-foot permit that earns $50,000, then between those two scenarios, more weight should be accorded the results for I-1.

Tables 5 and 6 provide information pertaining to the ability of the remaining fleet to make payments on loan amounts of various sizes, given the restriction that no more than 5% of annual groundfish revenues may be paid. Table 5 shows a range of possible loan amounts, which are then translated into annual payments, given a 20-year repayment schedule, at 7% interest. These values are then divided by 5% to arrive at the minimum fleet revenues that would be required to allow the fleet to make its annual payment. Table 6 provides and overview of limited-entry trawl revenues for 1995-97, and estimates for 1998, based on values used in earlier projections. The at-sea whiting values reflect application of the shore-side whiting ex-vessel price to estimated retained catch.

It is important to keep in mind that future changes in prices or harvest guidelines, resulting from changes in abundance or changes in policy (i.e. mandated rebuilding programs) will alter these results. This analysis presented above assumes that the revenue generated by groundfish species over the next 20 years is constant. Table 7 explores the effects of 9 alternative revenue paths on the amount of redistributed profits available to the remaining fleet. While there should certainly be due consideration of the possibility of future declines in harvest guidelines, it should also not be forgotten that consumer demand for seafood has, by most accounts, increased over the past 20 years, and may continue to do so. The next 20 years may also see reductions in the availability of many of the more desirable, commercially caught species from around the world. These developments could lead to increases in the prices of west coast groundfish over the 20-year time-frame of this analysis, increasing the benefits that

are redistributed to remaining permits.

The information provided in Tables 1-7 is intended to provide a sense of whether it makes sense for the fleet as a whole to endorse a buyback proposal. However, individual permit holders require additional information in order to evaluate potential program benefits and the desirability of remaining in a smaller, but indebted fleet. Using base period participation, Tables 8 and 9 provide projections of how bi-monthly cumulative limits might change in moving from status quo management to a post-buyback fleet. Table 9 presents a summary of projected limit changes, under each modeling scenario and permit retirement target.

Effects on alternative fisheries

Table 10a and 10b present the tonnage and revenue, for retired and remaining permits under each scenario, associated with landings of groundfish and 6 other categories of species, for the combined years of 1996-97. Similarly, Tables 11a and 11b, show for retired and remaining permits during this period, the number of permits participating annual in each of these non-groundfish categories, along with their total and average tonnage and revenue. In an effort to highlight joint participation in non-groundfish fisheries, Table 12 shows the number of annual participants in each non-groundfish fishery that also made landings of either shrimp, crab, or California halibut in the same year. Table 13 presents the number of non-groundfish participants in each category, grouped by the number of non-groundfish categories in which the permit participated. Finally, Table 14 organizes retired and remaining permits under each scenario on the basis of the percentage of their annual revenue that was derived from non-groundfish species.

Additional Issues

The analysis provided here does not address the manner in which the burden of loan repayment will be distributed between capital and labor. The existing analysis is couched in terms of ownership's ability to repay, based on increased profits. However, if 80-90 permits are removed from the groundfish fishery, and are subsequently less fully occupied in available alternatives, a surplus of skilled groundfish labor may result. This could increase the ability of ownership to negotiate crewshares downward, or to deduct repayment fees prior to calculating crewshares, so that labor could wind up paying for some or all of the costs of loan repayment. The bottom line is that it is not known whether a labor surplus would emerge, and even if it did, whether institutional barriers would prevent existing crewshares from being reduced.

[redacted]

8, by permit length

	Total	
h	# of Permits	Mean length
48	34	46
60	74	57
64	44	66
0	71	75
83	28	85
0	19	106
0	10	304
64	280	76

Table 2.--Calculation of estimated Limited-entry trawl revenue in 1998, using base-period trawl landings and percentages of landings, 1997 prices, and 1998 allocations to limited-entry.

Species	Mts landed during 7-96/6-97		Trawl % of LE total	LE mts (1,000s) in 1998	Assumed Limited-entry trawl landings in 1998		$/lb from 1997	1998 revenue ($1,000s)
	All LE	LE Trawl			mts (1,000s)	lbs (1,000s)		
Lingcod	1,288	1,211	94.0%	0.324	0.305	672	0.41	275
Sablefish *	4,275	4,275	100.0%	2.282	2.282	5,030	1.23	6,187
Dover sole	11,811	11,672	98.8%	8.955	8.850	19,510	0.29	5,658
Longspine	5,184	4,966	95.8%	4.123	3.950	8,707	0.74	6,443
Shortspine	1,460	1,361	93.2%	1.100	1.025	2,261	0.93	2,102
POP	622	614	98.7%	0.650	0.642	1,415	0.32	453
Widow	6,622	6,580	99.4%	4.118	4.092	9,021	0.32	2,887
Yellowtail	2,489	2,380	95.6%	2.631	2.516	5,546	0.35	1,941
Boccacio	259	248	95.8%	0.128	0.123	270	0.36	97
Canary	893	823	92.2%	0.801	0.738	1,627	0.37	602

* Because of the existing trawl allocation, only trawl poundage is included.

Table 3a.--Groundfish revenues and revenue shares during the 7/96-6/97 base period, and revenues expected during the 1998 fishery for the target range of retired permits, under Scenario A, in which permits are retired according to their groundfish revenue during the base period.

			Revenue landed by retired permits during the base period, percentage of LE trawl base-period revenue, and expected 1998 revenue for retired permits					
			80 permits retired			90 permits retired		
Species	7/96-6/97 base period	1998	Base period		1998	Base period		1998
Number of permits/ retired	270		80	29.6%	80	90	33.3%	90
Revenue retired ($1,000s)								
Lingcod	1,094	275	74	6.8%	19	102	9.3%	26
Sablefish	11,347	6,187	913	8.0%	498	1,240	10.9%	676
Dover sole	7,467	5,658	575	7.7%	436	772	10.3%	585
Longspine	8,488	6,443	500	5.9%	380	685	8.1%	520
Shortspine	2,765	2,102	194	7.0%	148	266	9.6%	202
POP	430	453	15	3.5%	16	21	4.9%	22
Widow	4,364	2,887	84	1.9%	56	173	4.0%	114
Yellowtail	1,683	1,941	91	5.4%	105	125	7.4%	144
Boccacio	194	97	8	4.1%	4	11	5.7%	6
Canary	654	602	25	3.8%	23	35	5.4%	32
All trip limit species *	38,486	26,646	2,479	6.4%	1,683	3,430	8.9%	2,327
Shoreside Whiting	5,462	5,462	225	4.1%	225	293	5.4%	293
TLS + whiting	43,948	32,108	2,704	6.2%	1,908	3,723	8.5%	2,620
Remaining groundfish	11,134	11,168	1,562	14.0%	1,567	1,859	16.7%	1,865
All groundfish	55,082	43,276	4,266	7.7%	3,474	5,582	10.1%	4,485
Funds available from redistributed revenue for repayment of the buyback loan								
If all groundfish revenue is redistributed								
Additional annual profit ($1,000) for those permits remaining (assuming a 50% profit margin on redistributed income)					1,737			2,243
Present value ($1,000) over 20 years (7% discount rate)					18,404			23,758
Average present value ($1,000) per permit purchased					230			264
If only revenue from the major trip-limit species and whiting are redistributed								
Additional annual profit ($1,000) for those permits remaining (assuming a 50% profit margin on redistributed income)					954			1,310
Present value ($1,000) over 20 years (7% discount rate)					10,104			13,881
Average present value ($1,000) per permit purchased					126			154

* Not including revenue associated with other Sebastes species.

Table 3b.--Groundfish revenues and revenue shares during the 7/96-6/97 base period, and revenues expected during the 1998 fishery for the target range of retired permits, under Scenario I-1, in which permits with less than $200,000 of groundfish revenue during the base period are retired according to permit length.

			Revenue landed by retired permits during the base period, percentage of LE trawl base-period revenue, and expected 1998 revenue for retired permits					
			80 permits retired			90 permits retired		
Species	7/96-6/97 base period	1998	Base period		1998	Base period		1998
Number of permits/ retired	270		80	29.6%	80	90	33.3%	90
Revenue retired ($1,000s)								
Lingcod	1,094	275	95	8.7%	24	112	10.2%	28
Sablefish	11,347	6,187	1,455	12.8%	793	1,829	16.1%	997
Dover sole	7,467	5,658	1,027	13.8%	778	1,305	17.5%	989
Longspine	8,488	6,443	881	10.4%	669	1,202	14.2%	912
Shortspine	2,765	2,102	320	11.6%	243	441	15.9%	335
POP	430	453	15	3.5%	16	15	3.5%	16
Widow	4,364	2,887	42	1.0%	28	55	1.3%	36
Yellowtail	1,683	1,941	91	5.4%	105	94	5.6%	108
Boccacio	194	97	13	6.7%	7	25	12.9%	13
Canary	654	602	29	4.4%	27	33	5.0%	30
All trip limit species *	38,486	26,646	3,968	10.3%	2,689	5,111	13.3%	3,466
Shoreside Whiting	5,462	5,462	1	0.0%	1	1	0.0%	1
TLS + whiting	43,948	32,108	3,969	9.0%	2,690	5,112	11.6%	3,467
Remaining groundfish	11,134	11,168	1,835	16.5%	1,841	2,118	19.0%	2,124
All groundfish	55,082	43,276	5,804	10.5%	4,531	7,230	13.1%	5,591
Funds available from redistributed revenue for repayment of the buyback loan								
If all groundfish revenue is redistributed								
Additional annual profit ($1,000) for those permits remaining (assuming a 50% profit margin on redistributed income)					2,265			2,796
Present value ($1,000) over 20 years (7% discount rate)					24,000			29,616
Average present value ($1,000) per permit purchased					300			329
If only revenue from the major trip-limit species and whiting are redistributed								
Additional annual profit ($1,000) for those permits remaining (assuming a 50% profit margin on redistributed income)					1,345			1,733
Present value ($1,000) over 20 years (7% discount rate)					14,251			18,363
Average present value ($1,000) per permit purchased					178			204

* Not including revenue associated with other Sebastes species.

Table 3c.--Groundfish revenues and revenue shares during the 7/96-6/97 base period, and revenues expected during the 1998 fishery for the target range of retired permits, under Scenario I-2, in which permits are retired according to permit length.

			Revenue landed by retired permits during the base period, percentage of LE trawl base-period revenue, and expected 1998 revenue for retired permits					
			80 permits retired			90 permits retired		
Species	7/96-6/97 base period	1998	Base period		1998	Base period		1998
Number of permits/ retired	270		80	29.6%	80	90	33.3%	90
Revenue retired ($1,000s)								
Lingcod	1,094	275	102	9.3%	26	132	12.1%	33
Sablefish	11,347	6,187	1,721	15.2%	938	2,137	18.8%	1,165
Dover sole	7,467	5,658	1,240	16.6%	940	1,563	20.9%	1,184
Longspine	8,488	6,443	1,211	14.3%	919	1,427	16.8%	1,083
Shortspine	2,765	2,102	421	15.2%	320	508	18.4%	386
POP	430	453	9	2.1%	9	23	5.3%	24
Widow	4,364	2,887	43	1.0%	28	63	1.4%	42
Yellowtail	1,683	1,941	73	4.3%	84	127	7.5%	146
Boccacio	194	97	10	5.2%	5	16	8.2%	8
Canary	654	602	41	6.3%	38	53	8.1%	49
All trip limit species *	38,486	26,646	4,871	12.7%	3,308	6,049	15.7%	4,122
Shoreside Whiting	5,462	5,462	1	0.0%	1	1	0.0%	1
TLS + whiting	43,948	32,108	4,872	11.1%	3,309	6,050	13.8%	4,123
Remaining groundfish	11,134	11,168	2,024	18.2%	2,030	2,447	22.0%	2,454
All groundfish	55,082	43,276	6,896	12.5%	5,339	8,497	15.4%	6,577
Funds available from redistributed revenue for repayment of the buyback loan								
If all groundfish revenue is redistributed								
Additional annual profit ($1,000) for those permits remaining (assuming a 50% profit margin on redistributed income)					2,670			3,288
Present value ($1,000) over 20 years (7% discount rate)					28,281			34,838
Average present value ($1,000) per permit purchased					354			387
If only revenue from the major trip-limit species and whiting are redistributed								
Additional annual profit ($1,000) for those permits remaining (assuming a 50% profit margin on redistributed income)					1,654			2,061
Present value ($1,000) over 20 years (7% discount rate)					17,528			21,837
Average present value ($1,000) per permit purchased					219			243

* Not including revenue associated with other Sebastes species.

Table 3d.--Groundfish revenues and revenue shares during the 7/96-6/97 base period, and revenues expected during the 1998 fishery for the target range of retired permits, under Scenario B, in which all permits transferred between 1/1/97 and 1/1/98 are retired, along with others based ongroundfish revenue during the base period.

			Revenue landed by retired permits during the base period, percentage of LE trawl base-period revenue, and expected 1998 revenue for retired permits					
			80 permits retired			90 permits retired		
Species	7/96-6/97 base period	1998	Base period		1998	Base period		1998
Number of permits	270		80	29.6%	80	90	33.3%	90
Revenue retired ($1,000s)								
Lingcod	1,094	275	167	15.3%	42	195	17.8%	49
Sablefish	11,347	6,187	1,836	16.2%	1,001	2,163	19.1%	1,179
Dover sole	7,467	5,658	1,112	14.9%	843	1,309	17.5%	992
Longspine	8,488	6,443	1,187	14.0%	901	1,372	16.2%	1,042
Shortspine	2,765	2,102	417	15.1%	317	489	17.7%	372
POP	430	453	76	17.7%	80	82	19.1%	86
Widow	4,364	2,887	453	10.4%	300	542	12.4%	359
Yellowtail	1,683	1,941	259	15.4%	299	293	17.4%	338
Boccacio	194	97	14	7.2%	7	17	8.8%	9
Canary	654	602	78	11.9%	72	88	13.5%	81
All trip limit species *	38,486	26,646	5,599	14.5%	3,861	6,550	17.0%	4,506
Shoreside Whiting	5,462	5,462	634	11.6%	634	702	12.9%	702
TLS + whiting	43,948	32,108	6,233	14.2%	4,495	7,252	16.5%	5,208
Remaining groundfish	11,134	11,168	2,211	19.9%	2,218	2,508	22.5%	2,516
All groundfish	55,082	43,276	8,444	15.3%	6,713	9,760	17.7%	7,724
Funds available from redistributed revenue for repayment of the buyback loan								
If all groundfish revenue is redistributed								
Additional annual profit ($1,000) for those permits remaining (assuming a 50% profit margin on redistributed income)					3,356			3,862
Present value ($1,000) over 20 years (7% discount rate)					35,558			40,912
Average present value ($1,000) per permit purchased					444			455
If only revenue from the major trip-limit species and whiting are redistributed								
Additional annual profit ($1,000) for those permits remaining (assuming a 50% profit margin on redistributed income)					2,248			2,604
Present value ($1,000) over 20 years (7% discount rate)					23,811			27,587
Average present value ($1,000) per permit purchased					298			307

* Not including revenue associated with other Sebastes species.

Table 4.--Comparison of redistributed profits and potential permit retirement costs for Scenarios A and B, and for two scenarios based on permit-length criteria

Modeling scenario / Number of permits retired	Weighted mean permit length of retired permits	Earnings available from redistributed catch: Retired 1998 ground-fish revenue ($1,000s)	Net present retired profits, assuming [profit=50% of rev., 20 year loan @ 7%]: Total ($ millions) based on redistributed revenue from: All GF $s	Total ($ millions) based on redistributed revenue from: TLS + W $	per retired permit ($1,000s), based on redistributed revenue from: All GF $s	per retired permit ($1,000s), based on redistributed revenue from: TLS + W $	Cost / feasibility of permit acquisition: Minimum average permit cost ($1,000s), based on a current market range of ($/point): $5,000 ->	<- $7,000	Maximum average permit purchase price ($/point) that could be covered by: redistributed profits from: All GF $	redistributed profits from: TLS + W $	$28 million purchase budget
Column ->	1	2	3	4	5	6	7	8	9	10	11
Scenario A (worst-case)											
80 permits retired	56.6 ft	3,474	18.4	10.1	230	126	66	92	17,500	9,600	26,573
90 permits retired	57.4 ft	4,485	23.8	13.9	264	154	68	96	19,300	11,300	22,740
Intermediate scenarios											
I-1 (Shortest permits with less than $200,000 GF rev.)											
80 permits retired	51.7 ft	4,531	24.0	14.3	300	178	53	74	28,500	16,900	33,258
90 permits retired	53.1 ft	5,591	29.6	18.4	329	204	56	78	29,400	18,200	27,760
I-2 (Shortest permits)											
80 permits retired	50.9 ft	5,339	28.3	17.5	354	219	52	72	34,300	21,300	33,969
90 permits retired	51.7 ft	6,577	34.8	21.8	387	243	54	75	36,000	22,600	28,940
Scenario B (replaces some retired permits from "A" with recent transfers)											
80 permits retired	61.2 ft	6,713	35.6	23.8	444	298	69	113	27,600	18,500	21,718
90 permits retired	61.5 ft	7,724	40.9	27.6	455	307	71	114	27,900	18,800	19,088

Table 5.--Annual payment amounts for a range of original loan amounts, and the minimum total groundfish revenue that would be required to make the payment using 5% or less of ex-vessel revenues.

Original Loan Amount ($ millions)	Annual Payment [20 yrs/ 7%] ($ millions)	Limited-entry trawl revenue required to cover payment @ 5% of revenue ($ millions)
28	2.64	52.9
25	2.36	47.2
22	2.08	41.5
20	1.89	37.8
18	1.70	34.0
16	1.51	30.2
14	1.32	26.4

Table 6.--Recent limited-entry trawl ex-vessel revenue from groundfish, and estimated values for 1998.

Year	At-Sea Whiting ($ millions)	Shoreside LE Trawl ($ millions)	Limited-entry total ($ millions)
1998 est.	19.2	43.3	62.5
1997	19.2	51.5	70.7
1996	11.6	55.7	67.3
1995	10.2	62.0	72.2

Notes: Ex-vessel revenue for the at-sea whiting fleet is derived by multiplying retained catch by the coastwide average price for shoreside landings.

1997 at-sea whiting revenue was used as the estimated value for 1998. Estimated shoreside revenue used projections from Table 1 for the trip-limit species shown there, and used base-period revenues for remaining species.

Table 7.--Sensitivity of net present value (NPV) results to alternative assumptions regarding the time-path of fishery revenues, relative to the base-case assumption that groundfish revenue will remain constant over time, at 1988 levels.

Based on:	Base case annual redistributed: revenue ($mil)	profits ($mil)		Base NPV of profits ($ mil)	Alternative revenue scenarios 1	2	3	4	5	6	7	8	9
			% change in NPV >		71%	75%	82%	84%	90%	95%	100%	105%	116%
Scenario A: TLS+whiting $s	1.8	0.9	NPV of profits >	9.5	6.8	7.2	7.8	8.0	8.5	9.0	9.5	10.0	11.0
			$ change in NPV >		-2.8	-2.3	-1.7	-1.5	-1.0	-0.5	0.0	0.5	1.5
Scenario A: All GF $s	3.4	1.7	NPV of profits >	18.0	12.8	13.6	14.8	15.1	16.1	17.0	18.0	18.9	20.8
			$ change in NPV >		-5.3	-4.4	-3.2	-2.9	-1.9	-1.0	0.0	0.9	2.8
Scenario B: TLS+whiting $s	5.2	2.6	NPV of profits >	27.5	19.5	20.8	22.6	23.1	24.7	26.0	27.6	28.9	31.8
			$ change in NPV >		-8.0	-6.8	-4.9	-4.5	-2.9	-1.5	0.0	1.4	4.3
Scenario B: All GF $s	7.6	3.8	NPV of profits >	40.3	28.5	30.4	33.1	33.7	36.0	38.1	40.3	42.3	46.5
			$ change in NPV >		-11.7	-9.9	-7.2	-6.5	-4.2	-2.2	0.0	2.0	6.3

Year, following implementation	Base weight	Alternative revenue weights, relative to 1998, over the 20-year repayment period 1	2	3	4	5	6	7	8	9
1	1.00	0.75	0.95	0.90	1.00	0.90	0.90	0.95	1.00	0.90
2	1.00	0.70	0.75	0.81	0.90	0.75	0.75	0.8	1.00	0.75
3	1.00	0.65	0.60	0.73	0.81	0.60	0.60	0.75	1.00	0.90
4	1.00	0.60	0.62	0.65	0.73	0.70	0.70	0.8	1.00	1.00
5	1.00	0.60	0.64	0.65	0.66	0.80	0.80	0.85	1.00	1.04
6	1.00	0.62	0.66	0.70	0.59	0.90	0.90	0.9	1.00	1.08
7	1.00	0.64	0.68	0.70	0.59	0.95	0.95	0.95	1.00	1.12
8	1.00	0.66	0.70	0.74	0.66	1.00	1.00	1	1.00	1.16
9	1.00	0.68	0.72	0.78	0.73	1.00	1.02	1.03	1.02	1.20
10	1.00	0.70	0.74	0.82	0.81	1.00	1.04	1.06	1.04	1.24
11	1.00	0.72	0.76	0.86	0.90	1.00	1.06	1.09	1.06	1.28
12	1.00	0.74	0.78	0.90	1.00	1.00	1.08	1.12	1.08	1.32
13	1.00	0.76	0.80	0.94	1.00	1.00	1.10	1.15	1.10	1.36
14	1.00	0.78	0.82	0.98	1.00	1.00	1.12	1.18	1.12	1.40
15	1.00	0.80	0.84	1.00	1.00	1.00	1.14	1.21	1.14	1.44
16	1.00	0.82	0.86	1.00	1.00	1.00	1.16	1.24	1.16	1.48
17	1.00	0.84	0.88	1.00	1.00	1.00	1.18	1.27	1.18	1.52
18	1.00	0.86	0.90	1.00	1.00	1.00	1.20	1.3	1.20	1.56
19	1.00	0.88	0.92	1.00	1.00	1.00	1.22	1.33	1.22	1.60
20	1.00	0.90	0.94	1.00	1.00	1.00	1.24	1.36	1.24	1.64

Table 8.--Projected effect of permit retirement on the size of bi-monthly cumulative limits, for 7 trip-limit species

Species / Fleet composition / Scenario	Bi-monthly limit poundage	% change from status quo	Number of permit-periods at limit	Number of permits at limit for >0 periods	Number of other permits w/ landings	Projected total fleet tonage, by period						Annual target tonnage	Unconstrained base-period landings by remaining permits
						1	2	3	4	5	6		
Sablefish													
All vessels in base period	5,100		848	192	50	330	379	413	400	405	354	2,282	4,678
80 permits retired													
A	5,800	14%	758	161	16	340	381	400	386	401	374	2,282	4,303
I-1	6,200	22%	702	152	22	346	380	399	384	397	375	2,282	4,075
I-2	6,400	25%	673	150	24	348	381	402	388	397	366	2,282	3,954
B	6,400	25%	662	146	17	330	381	401	386	409	376	2,282	3,926
90 permits retired													
A	6,100	20%	721	151	16	342	384	400	380	399	377	2,282	4,171
I-1	6,600	29%	664	144	20	349	382	398	382	394	377	2,282	3,920
I-2	6,600	29%	664	144	20	349	382	398	382	394	377	2,282	3,920
B	6,800	33%	622	137	16	332	383	401	380	406	379	2,282	3,795
Dover sole													
All vessels in base period	25,600		480	154	82	1,399	1,608	1,555	1,437	1,642	1,315	8,955	12,683
80 permits retired													
A	29,600	16%	397	138	31	1,470	1,692	1,452	1,365	1,616	1,361	8,955	11,762
I-1	33,500	31%	295	118	47	1,548	1,731	1,414	1,330	1,582	1,351	8,955	10,999
I-2	35,800	40%	256	113	52	1,549	1,759	1,406	1,352	1,583	1,307	8,955	10,635
B	34,600	35%	266	112	43	1,461	1,705	1,436	1,378	1,644	1,331	8,955	10,860
90 permits retired													
A	31,300	22%	351	129	30	1,501	1,715	1,426	1,351	1,593	1,369	8,955	11,428
I-1	37,000	45%	239	108	47	1,583	1,789	1,362	1,329	1,545	1,348	8,955	10,511
I-2	40,600	59%	196	99	56	1,585	1,828	1,346	1,318	1,571	1,309	8,955	10,113
B	37,200	45%	238	107	38	1,492	1,740	1,399	1,370	1,617	1,339	8,955	10,526

Table 8.--Projected effect of permit retirement on the size of bi-monthly cumulative limits, for 7 trip-limit species (continued)

Species / Fleet composition / Model	Bi-monthly limit poundage	% change from status quo	Number of permit-periods at limit	Number of permits at limit for >0 periods	Number of other permits w/ landings	Projected total fleet tonage, by period						Annual target tonnage	Unconstrained base-period landings by remaining permits
						1	2	3	4	5	6		
Longspine													
All vessels in base period	11,700		543	149	62	713	732	642	662	715	660	4,123	5,473
80 permits retired													
A	12,900	10%	469	133	34	705	717	628	669	737	667	4,123	5,163
I-1	13,900	19%	404	125	34	722	717	625	674	739	646	4,123	4,906
I-2	15,000	28%	332	112	45	730	722	609	679	744	640	4,123	4,703
B	15,000	28%	338	111	42	705	717	600	679	764	658	4,123	4,729
90 permits retired													
A	13,400	15%	438	129	28	705	720	627	671	737	663	4,123	5,046
I-1	15,000	28%	334	110	39	726	721	618	684	736	638	4,123	4,710
I-2	15,900	36%	318	108	41	741	726	594	673	751	638	4,123	4,568
B	15,700	34%	327	107	36	705	721	592	684	766	656	4,123	4,612
Shortspine													
All vessels in base period	2,800		597	167	58	182	194	181	175	194	174	1,100	1,478
80 permits retired													
A	3,200	14%	493	146	22	183	193	178	175	193	178	1,100	1,375
I-1	3,400	21%	398	135	28	190	193	174	174	191	180	1,100	1,310
I-2	3,800	36%	292	118	45	195	198	170	175	194	176	1,100	1,257
B	3,800	36%	286	116	38	184	197	176	177	198	180	1,100	1,251
90 permits retired													
A	3,300	18%	454	140	18	185	193	177	174	192	179	1,100	1,339
I-1	3,900	39%	297	116	37	194	197	170	177	193	181	1,100	1,248
I-2	4,400	57%	231	104	49	205	207	165	177	200	182	1,100	1,212
B	4,300	54%	227	102	42	190	203	171	181	203	184	1,100	1,215

Table 8.--Projected effect of permit retirement on the size of bi-monthly cumulative limits, for 7 trip-limit species (continued)

Species / Fleet composition / Model	Bi-monthly limit poundage	% change from status quo	Number of permit-periods at limit	Number of permits at limit for >0 periods	Number of other permits w/ landings	Projected total fleet tonage, by period						Annual target tonnage	Unconstrained base-period landings by remaining permits
						1	2	3	4	5	6		
Widow													
All vessels in base period	25,000		246	84	118	677	632	648	823	757	582	4,118	6,959
80 permits retired													
A	26,200	5%	238	83	82	684	638	654	810	751	581	4,118	6,830
I-1	25,600	2%	244	84	80	685	637	644	815	751	585	4,118	6,902
I-2	25,600	2%	244	84	77	685	639	639	816	755	585	4,118	6,901
B	30,400	22%	188	71	80	668	645	669	829	747	561	4,118	6,237
90 permits retired													
A	27,200	9%	218	79	80	679	645	656	817	751	570	4,118	6,691
I-1	25,700	3%	242	83	73	675	640	646	818	752	587	4,118	6,882
I-2	25,800	3%	242	84	69	688	637	639	812	755	586	4,118	6,874
B	31,700	27%	179	69	76	660	655	670	838	747	548	4,118	6,098
Yellowtail													
All vessels in base period	14,300		285	101	83	334	469	590	552	407	279	2,631	4,438
80 permits retired													
A	16,300	14%	235	80	61	329	462	574	559	426	281	2,631	4,171
I-1	16,300	14%	233	79	61	337	449	561	576	423	285	2,631	4,161
I-2	16,100	13%	240	80	62	327	446	567	584	427	280	2,631	4,192
B	19,500	36%	179	68	61	315	458	578	585	415	281	2,631	3,720
90 permits retired													
A	17,000	19%	224	78	57	329	458	568	562	427	287	2,631	4,077
I-1	16,400	15%	231	79	56	338	444	559	579	424	286	2,631	4,149
I-2	17,100	20%	221	77	56	334	446	556	589	425	280	2,631	4,048
B	20,500	43%	165	64	59	313	453	570	590	415	289	2,631	3,627

Table 8.--Projected effect of permit retirement on the size of bi-monthly cumulative limits, for 7 trip-limit species (continued)

Species / Fleet composition / Model	Bi-monthly limit poundage	% change from status quo	Number of permit-periods at limit	Number of permits at limit for >0 periods	Number of other permits w/ landings	Projected total fleet tonage, by period						Annual target tonnage	Unconstrained base-period landings by remaining permits
						1	2	3	4	5	6		
Lingcod													
All vessels in base period	1,200		402	149	90	38	41	69	69	69	38	324	1,231
80 permits retired													
A	1,500	25%	327	121	50	39	42	68	68	69	39	324	1,152
I-1	1,600	33%	304	111	57	40	41	65	68	69	39	324	1,130
I-2	1,600	33%	301	109	59	40	41	65	69	70	39	324	1,124
B	1,700	42%	275	104	53	38	41	69	68	70	38	324	1,047
90 permits retired													
A	1,600	33%	306	116	47	39	42	68	67	69	39	324	1,122
I-1	1,600	33%	291	108	50	41	41	66	68	68	39	324	1,112
I-2	1,700	42%	277	100	58	40	41	64	69	70	39	324	1,090
B	1,800	50%	262	100	49	38	41	69	67	70	39	324	1,017

Notes: In Scenario A (worst case), the group of permits with the least amount of groundfish revenue are retired.

In Scenario I-1, the shortest permits with less than $250,000 of groundfish revenue are retired.

In Scenario I-2, the shortest permits are retired.

In Scenario B, the group of permits with the least amount of groundfish revenue, or those that were transfered from 1/1/97 through 1/1/98 are retired.

Annual target tonnages are taken from Table 1.

"Unconstrained base period landings" represent actual landings under the limits that were in place from 7/96-6/97, with the following exceptions:

- All bi-monthly periods within 5% of a limit were increased by 20%, to reflect the constraining nature of the limit;
- Due to reductions in bi-monthly limits for Yellowtail during the last 4 bi-monthly periods of the base timeframe, permit landings were multiplied by factors ranging from 2 to 5, depending on the actual limit in place and their percentage attainment of it.

Table 9.--Summary of projected effects of permit retirement on bi-monthly landing limits, and associated changes in their ex-vessel value.

Fleet composition / Scenario	Bi-monthly limit poundages for specified species						
	Sablefish	Dover sole	Longspine	Shortspine	Widow	Yellowtail	Lingcod
All vessels in base period	5,100	25,600	11,700	2,800	25,000	14,300	1,200
80 permits retired							
A	5,800	29,600	12,900	3,200	26,200	16,300	1,500
I-1	6,200	33,500	13,900	3,400	25,600	16,300	1,600
I-2	6,400	35,800	15,000	3,800	25,600	16,100	1,600
B	6,400	34,600	15,000	3,800	30,400	19,500	1,700
90 permits retired							
A	6,100	31,300	13,400	3,300	27,200	17,000	1,600
I-1	6,600	37,000	15,000	3,900	25,700	16,400	1,600
I-2	6,600	40,600	15,900	4,400	25,800	17,100	1,700
B	6,800	37,200	15,700	4,300	31,700	20,500	1,800
1997 price ($/lb)	$ 1.23	$ 0.29	$ 0.74	$ 0.93	$ 0.32	$ 0.35	$ 0.41

	Increase in ex-vessel value ($), relative to base limit						
	Sablefish	Dover sole	Longspine	Shortspine	Widow	Yellowtail	Lingcod
80 permits retired							
A	$ 861	$ 1,160	$ 888	$ 372	$ 384	$ 700	$ 123
I-1	1,353	2,291	1,628	558	192	700	164
I-2	1,599	2,958	2,442	930	192	630	164
B	1,599	2,610	2,442	930	1,728	1,820	205
90 permits retired							
A	1,230	1,653	1,258	465	704	945	164
I-1	1,845	3,306	2,442	1,023	224	735	164
I-2	1,845	4,350	3,108	1,488	256	980	205
B	2,091	3,364	2,960	1,395	2,144	2,170	246

Table 10a.--Total tonnage and revenue in seven species categories from 1996-97 from landings by **retired** permits, for four modeling scenarios and two numbers of permits retired.

	Scenario A		Scenario I-1		Scenario I-2		Scenario B	
	# of permits retired		# of permits retired		# of permits retired		# of permits retired	
Species group	80	90	80	90	80	90	80	90
Groundfish								
Mts	19,495	23,866	9,908	12,009	11,395	14,297	39,542	43,913
Rev. ($1,000)	$ 9,450	$ 11,878	$ 11,106	$ 13,654	$ 12,995	$ 16,107	$ 17,379	$ 19,808
Shrimp / prawns								
Mts	2,228	2,708	1,831	2,943	1,622	1,784	2,772	3,252
Rev. ($1,000)	$ 2,425	$ 2,952	$ 2,032	$ 4,010	$ 1,825	$ 2,013	$ 3,029	$ 3,556
Crab								
Mts	1,505	1,682	1,237	1,453	1,242	1,408	1,648	1,826
Rev. ($1,000)	$ 4,658	$ 5,211	$ 3,949	$ 4,615	$ 3,941	$ 4,449	$ 5,079	$ 5,631
CA Halibut / croaker								
Mts	170	182	218	218	202	215	181	193
Rev. ($1,000)	$ 842	$ 906	$ 932	$ 932	$ 857	$ 904	$ 858	$ 922
Tuna / albacore								
Mts	131	138	144	145	147	154	135	142
Rev. ($1,000)	$ 236	$ 245	$ 253	$ 255	$ 259	$ 270	$ 242	$ 251
Cstl. Pelagic / Squid								
Mts	300	314	186	186	182	183	461	474
Rev. ($1,000)	$ 72	$ 74	$ 67	$ 67	$ 66	$ 66	$ 77	$ 79
Other species								
Mts	1,242	1,442	1,406	1,492	1,347	1,717	1,555	1,754
Rev. ($1,000)	$ 624	$ 759	$ 712	$ 751	$ 676	$ 836	$ 758	$ 893

Notes: In Scenario A (worst case), the group of permits with the least amount of groundfish revenue are retired.
In Scenario I-1, the shortest permits with less than $250,000 of groundfish revenue are retired.
In Scenario I-2, the shortest permits are retired.
In Scenario B, the group of permits with the least amount of groundfish revenue, or those that were transfered from 1/1/97 through 1/1/98 are retired.

Table 10b.--Total tonnage and revenue in seven species categories from 1996-97 from landings by **remaining** permits, for four modeling scenarios and two numbers of permits retired.

	Scenario A		Scenario I-1		Scenario I-2		Scenario B	
	# of permits retired		# of permits retired		# of permits retired		# of permits retired	
Species group	80	90	80	90	80	90	80	90
Groundfish								
Mts	236,145	231,775	245,732	243,632	244,246	241,344	216,099	211,728
Rev. ($1,000)	$ 96,514	$ 94,085	$ 94,857	$ 92,309	$ 92,968	$ 89,856	$ 88,584	$ 86,156
Shrimp / prawns								
Mts	9,485	9,005	9,882	8,769	10,090	9,929	8,940	8,460
Rev. ($1,000)	$ 11,160	$ 10,633	$ 11,553	$ 9,575	$ 11,760	$ 11,572	$ 10,556	$ 10,029
Crab								
Mts	1,700	1,522	1,968	1,751	1,962	1,797	1,556	1,379
Rev. ($1,000)	$ 5,179	$ 4,626	$ 5,888	$ 5,222	$ 5,896	$ 5,388	$ 4,758	$ 4,205
CA Halibut / croaker								
Mts	121	109	73	73	89	76	110	98
Rev. ($1,000)	$ 371	$ 308	$ 281	$ 281	$ 357	$ 309	$ 356	$ 292
Tuna / albacore								
Mts	259	252	246	244	242	236	255	248
Rev. ($1,000)	$ 431	$ 422	$ 414	$ 412	$ 408	$ 396	$ 425	$ 416
Cstl. Pelagic / Squid								
Mts	2,393	2,380	2,508	2,508	2,511	2,510	2,233	2,219
Rev. ($1,000)	$ 51	$ 50	$ 57	$ 57	$ 58	$ 58	$ 46	$ 45
Other species								
Mts	2,710	2,511	2,547	2,461	2,606	2,236	2,398	2,199
Rev. ($1,000)	$ 1,133	$ 998	$ 1,044	$ 1,006	$ 1,080	$ 921	$ 999	$ 864

Notes: In Scenario A (worst case), the group of permits with the least amount of groundfish revenue are retired.
In Scenario I-1, the shortest permits with less than $250,000 of groundfish revenue are retired.
In Scenario I-2, the shortest permits are retired.
In Scenario B, the group of permits with the least amount of groundfish revenue, or those that were transfered [illegible]

Table 11a.--Annual participation in non-groundfish fisheries during 1996/1997 by **retired** permits under four scenarios (cont.).

Year /	Scenario A		Scenario I-1		Scenario I-2		Scenario B	
	# of permits retired		# of permits retired		# of permits retired		# of permits retired	
Species group	80	90	80	90	80	90	80	90
1997								
Shrimp								
# of permits	23	28	28	36	30	35	31	36
Total mts	1,272	1,498	1,035	1,740	971	1,028	1,643	1,869
Mean mts	55.3	53.5	37.0	48.3	32.4	29.4	53.0	51.9
Total value ($1,000s)	$ 1,084	$ 1,274	$ 887	$ 1,921	$ 857	$ 906	$ 1,458	$ 1,648
Mean ($1,000s)	$ 47.1	$ 45.5	$ 31.7	$ 53.4	$ 28.6	$ 25.9	$ 47.0	$ 45.8
Crab								
# of permits	33	37	37	40	39	42	37	41
Total mts	290	354	317	364	318	362	338	403
Mean mts	8.8	9.6	8.6	9.1	8.2	8.6	9.1	9.8
Total value ($1,000s)	$ 1,172	$ 1,404	$ 1,264	$ 1,436	$ 1,248	$ 1,411	$ 1,337	$ 1,570
Mean ($1,000s)	$ 35.5	$ 38.0	$ 34.2	$ 35.9	$ 32.0	$ 33.6	$ 36.1	$ 38.3
CA Halibut / croaker								
# of permits	31	32	34	34	34	36	35	36
Total mts	103	107	109	109	105	109	112	116
Mean mts	3	3	3	3	3	3	3	3
Total value ($1,000s)	$ 514	$ 534	$ 530	$ 530	$ 506	$ 521	$ 526	$ 546
Mean ($1,000s)	$ 16.6	$ 16.7	$ 15.6	$ 15.6	$ 14.9	$ 14.5	$ 15.0	$ 15.2
Tuna / ablacore								
# of permits	17	20	24	26	27	28	19	22
Total mts	71	78	83	84	86	91	74	81
Mean mts	4	4	3	3	3	3	4	4
Total value ($1,000s)	$ 125	$ 134	$ 140	$ 142	$ 145	$ 154	$ 130	$ 139
Mean ($1,000s)	$ 7.3	$ 6.7	$ 5.8	$ 5.5	$ 5.4	$ 5.5	$ 6.9	$ 6.3
Cstl. Pelagic / Squid								
# of permits	12	13	10	11	10	13	20	21
Total mts	183	196	75	75	71	72	315	328
Mean mts	15	15	8	7	7	6	16	16
Total value ($1,000s)	$ 33	$ 35	$ 28	$ 28	$ 27	$ 27	$ 37	$ 39
Mean ($1,000s)	$ 3.0	$ 2.9	$ 2.8	$ 2.6	$ 2.7	$ 2.1	$ 2.2	$ 2.2
Other species								
# of permits	70	79	73	83	73	83	84	93
Total mts	847	921	922	977	868	1,115	1,045	1,120
Mean mts	12	12	13	12	12	13	12	12
Total value ($1,000s)	$ 402	$ 440	$ 441	$ 466	$ 414	$ 516	$ 496	$ 533
Mean ($1,000s)	$ 5.8	$ 5.6	$ 6.0	$ 5.6	$ 5.7	$ 6.2	$ 6.0	$ 5.8

Table 11b.--Annual participation in shrimp and crab fisheries during 1996/1997 by **remaining** permits under four scenarios.

Year / Species group	Scenario A # of permits retired 80	Scenario A # of permits retired 90	Scenario I-1 # of permits retired 80	Scenario I-1 # of permits retired 90	Scenario I-2 # of permits retired 80	Scenario I-2 # of permits retired 90	Scenario B # of permits retired 80	Scenario B # of permits retired 90
1996								
Shrimp								
# of permits	90	84	84	76	83	78	83	77
Total mts	3,845	3,591	4,006	3,598	4,150	4,045	3,672	3,418
Mean mts	42.7	42.8	47.7	47.3	50.0	51.9	44.2	44.4
Total value ($1,000s)	$ 5,522	$ 5,185	$ 5,718	$ 4,774	$ 5,896	$ 5,756	$ 5,293	$ 4,956
Mean ($1,000s)	$ 61.4	$ 61.7	$ 68.1	$ 62.8	$ 71.0	$ 73.8	$ 63.8	$ 64.4
Crab								
# of permits	38	34	37	32	38	35	36	32
Total mts	1,216	1,103	1,511	1,342	1,506	1,385	1,121	1,008
Mean mts	32.0	32.4	40.8	41.9	39.6	39.6	31.1	31.5
Total value ($1,000s)	$ 3,462	$ 3,142	$ 4,264	$ 3,770	$ 4,255	$ 3,911	$ 3,207	$ 2,887
Mean ($1,000s)	$ 93.6	$ 95.2	$ 118.5	$ 121.6	$ 115.0	$ 115.0	$ 91.6	$ 93.1
1997								
Shrimp								
# of permits	88	83	83	75	81	76	80	75
Total mts	5,639	5,413	5,876	5,172	5,940	5,884	5,269	5,042
Mean mts	64.1	65.2	70.8	69.0	73.3	77.4	65.9	67.2
Total value ($1,000s)	$ 5,637	$ 5,448	$ 5,835	$ 4,800	$ 5,864	$ 5,816	$ 5,263	$ 5,074
Mean ($1,000s)	$ 64.1	$ 65.6	$ 70.3	$ 64.0	$ 72.4	$ 76.5	$ 65.8	$ 67.6
Crab								
# of permits	40	36	36	33	34	31	36	32
Total mts	484	419	456	409	456	412	435	371
Mean mts	12.1	11.6	12.7	12.4	13.4	13.3	12.1	11.6
Total value ($1,000s)	$ 1,716	$ 1,484	$ 1,624	$ 1,452	$ 1,640	$ 1,477	$ 1,551	$ 1,318
Mean ($1,000s)	$ 42.9	$ 41.2	$ 45.1	$ 44.0	$ 48.2	$ 47.6	$ 43.1	$ 41.2

Table 12.--With 90 permits retired under each scenario, non-groundfish participation by retired and remaining permits with some landings of shrimp, crab, or California halibut, for 1996 and 1997.

Group / Year /	Species group	Scenario A Permits with landings of: Shrimp	Crab	CA Hal.	Scenario I-1 Permits with landings of: Shrimp	Crab	CA Hal.	Scenario I-2 Permits with landings of: Shrimp	Crab	CA Hal.	Scenario B Permits with landings of: Shrimp	Crab	CA Hal.
Retired permits with landings of:													
1996	Shrimp / prawns	**34**	23	13	**42**	27	13	**40**	23	14	**41**	24	14
	Crab	23	**49**	25	27	**51**	25	23	**48**	25	24	**51**	26
	CA Halibut / croaker	13	25	**32**	13	25	**33**	14	25	**35**	14	26	**34**
	Tuna / albacore	6	6	3	7	7	4	8	8	4	8	7	4
	Cstl. Pelagic / Squid	6	9	9	5	8	9	5	8	9	8	10	9
	Other species	24	40	29	30	41	30	33	41	32	31	42	31
1997	Shrimp / prawns	**28**	17	10	**36**	22	11	**35**	23	12	**36**	21	12
	Crab	17	**37**	17	22	**40**	18	23	**42**	20	21	**41**	19
	CA Halibut / croaker	10	17	**32**	11	18	**34**	12	20	**36**	12	19	**36**
	Tuna / albacore	8	10	7	14	13	10	16	16	10	9	11	8
	Cstl. Pelagic / Squid	3	6	5	4	6	7	8	8	6	8	9	6
	Other species	26	36	32	36	40	34	35	42	36	34	40	36
Remaining permits with landings of:													
1996	Shrimp / prawns	**84**	24	12	**76**	20	12	**78**	24	11	**77**	23	11
	Crab	24	**34**	5	20	**32**	5	24	**35**	5	23	**32**	4
	CA Halibut / croaker	12	5	**25**	12	5	**24**	11	5	**22**	11	4	**23**
	Tuna / albacore	16	4	3	15	3	2	14	2	2	14	3	2
	Cstl. Pelagic / Squid	17	11	6	18	12	6	18	12	6	15	10	6
	Other species	75	31	24	69	30	23	66	30	21	68	29	22
1997	Shrimp / prawns	**83**	28	10	**75**	23	9	**76**	22	8	**75**	24	8
	Crab	28	**36**	7	23	**33**	6	22	**31**	4	24	**32**	5
	CA Halibut / croaker	10	7	**27**	9	6	**25**	8	4	**23**	8	5	**23**
	Tuna / albacore	33	15	14	27	12	11	25	9	11	32	14	13
	Cstl. Pelagic / Squid	39	19	11	38	19	9	34	17	10	34	16	10
	Other species	80	36	27	70	32	25	71	30	23	72	32	23

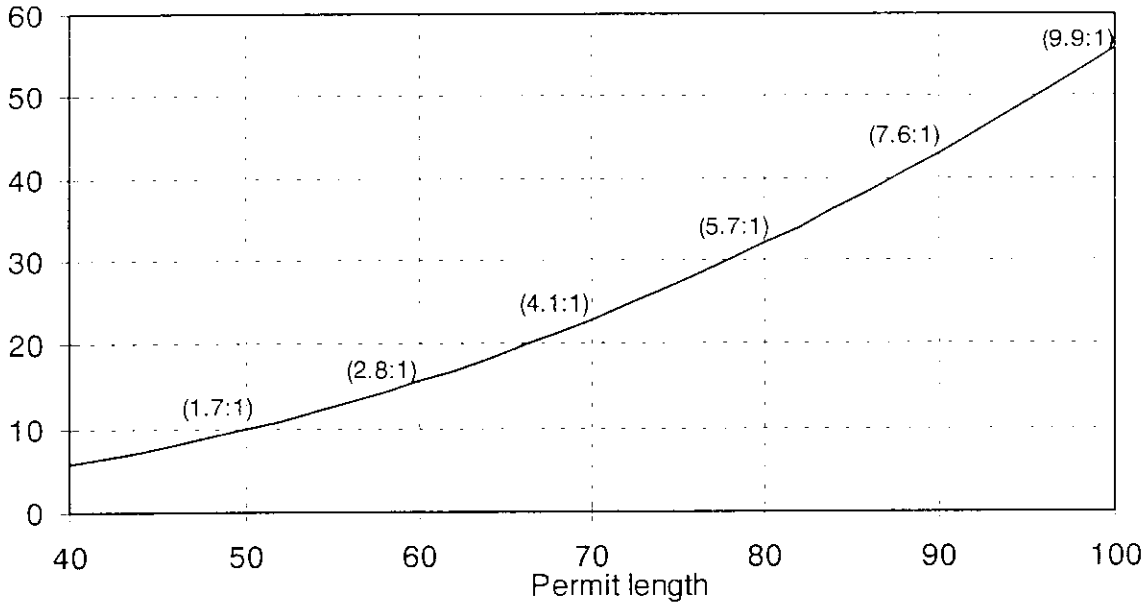
Table 13.--With 90 permits retired under each scenario, the number of retired and remaining permits with some landings in 6 non-groundfish categories, grouped by the number of these categories in which the permit had landings during the year, 1996-1997.

Group / Year / Species group	Number of non-groundfish categories in which landings were made											
	Scenario A			Scenario I-1			Scenario I-2			Scenario B		
	1-2	3-4	5-6	1-2	3-4	5-6	1-2	3-4	5-6	1-2	3-4	5-6
Retired permits												
1996 Shrimp / prawns	11	19	4	16	22	4	14	22	4	15	21	5
Crab	12	33	4	11	36	4	9	35	4	12	34	5
CA Halibut / croaker	3	25	4	4	25	4	5	26	4	4	25	5
Tuna / albacore	1	6	2	1	8	2	2	9	2	1	7	3
Cstl. Pelagic / Squid	4	10	3	2	8	3	3	8	3	6	13	3
Other species	26	36	4	26	37	4	31	37	4	36	39	5
1997 Shrimp / prawns	7	17	4	8	22	6	6	20	9	9	22	5
Crab	5	28	4	4	30	6	5	28	9	5	31	5
CA Halibut / croaker	6	23	3	5	25	4	6	25	5	8	24	4
Tuna / albacore	2	16	2	2	20	4	2	19	7	2	17	3
Cstl. Pelagic / Squid	4	6	3	1	6	4	.	7	6	6	11	4
Other species	36	39	4	33	44	6	32	42	9	43	45	5
Remaining permits												
1996 Shrimp / prawns	37	45	2	32	42	2	34	42	2	33	43	1
Crab	4	28	2	5	25	2	7	26	2	4	27	1
CA Halibut / croaker	9	14	2	8	14	2	7	13	2	8	14	1
Tuna / albacore	7	16	1	7	14	1	6	13	1	7	15	0
Cstl. Pelagic / Squid	25	24	1	27	26	1	26	26	1	23	21	1
Other species	93	53	2	93	52	2	88	52	2	83	50	1
1997 Shrimp / prawns	21	50	12	20	45	10	22	47	7	19	45	11
Crab	2	23	11	3	21	9	2	23	6	2	20	10
CA Halibut / croaker	6	14	7	7	12	6	6	12	5	4	13	6
Tuna / albacore	8	33	13	8	29	11	8	30	8	8	32	12
Cstl. Pelagic / Squid	26	46	10	29	46	9	30	45	7	24	41	9
Other species	77	71	13	80	66	11	81	68	8	70	65	12

Table 14.--With 90 permits retired under each scenario, the number of retired and remaining permits in three categories based on the percentage of total annual revenue from non-groundfish species, 1996-1997.

Year: group / % of revenue from non-groundfish	Scenario A		Scenario I-1		Scenario I-2		Scenario B	
	Number of permits	Mean % of rev. from non-ground-fish	Number of permits	Mean % of rev. from non-ground-fish	Number of permits	Mean % of rev. from non-ground-fish	Number of permits	Mean % of rev. from non-ground-fish
1996: Retired permits								
1-25%	25	6.1%	28	7.9%	34	7.6%	34	5.7%
26-50%	14	41.4%	16	42.3%	15	40.8%	15	41.0%
51-100%	40	78.5%	39	76.7%	35	76.1%	38	78.5%
1997: Retired permits								
1-25%	31	7.5%	30	8.6%	33	8.0%	39	7.2%
26-50%	20	36.7%	25	36.9%	26	36.0%	22	36.2%
51-100%	30	75.7%	28	76.2%	24	76.1%	27	75.7%
1996: Remaining permits								
1-25%	124	6.4%	121	6.0%	115	6.0%	113	6.6%
26-50%	26	37.8%	24	36.9%	25	38.0%	24	37.8%
51-100%	7	66.4%	8	76.7%	12	78.6%	7	66.4%
1997: Remaining permits								
1-25%	123	6.1%	124	5.9%	121	5.9%	112	6.1%
26-50%	28	35.8%	23	35.4%	22	36.3%	25	36.1%
51-100%	8	63.4%	10	64.5%	14	68.0%	8	63.4%

Figure 1.--Current market sales "points" for permits of various lengths



Note: Ratios between the point values for selected lengths and 40 ft are shown in parentheses

Figure 2.--Permit costs for alternative prices per point

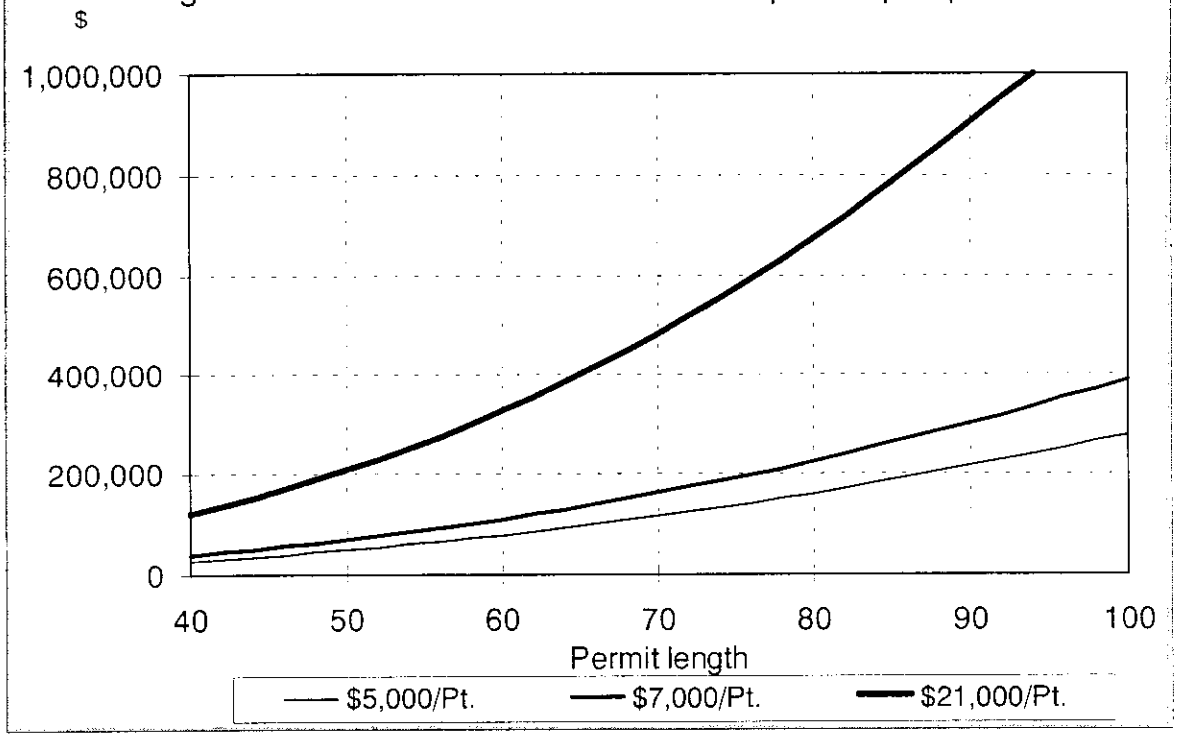


Figure 3.--Comparison of the net present values of redistributed profits, per retired permit, and the minimum costs of retiring 90 permits, based on current market prices.

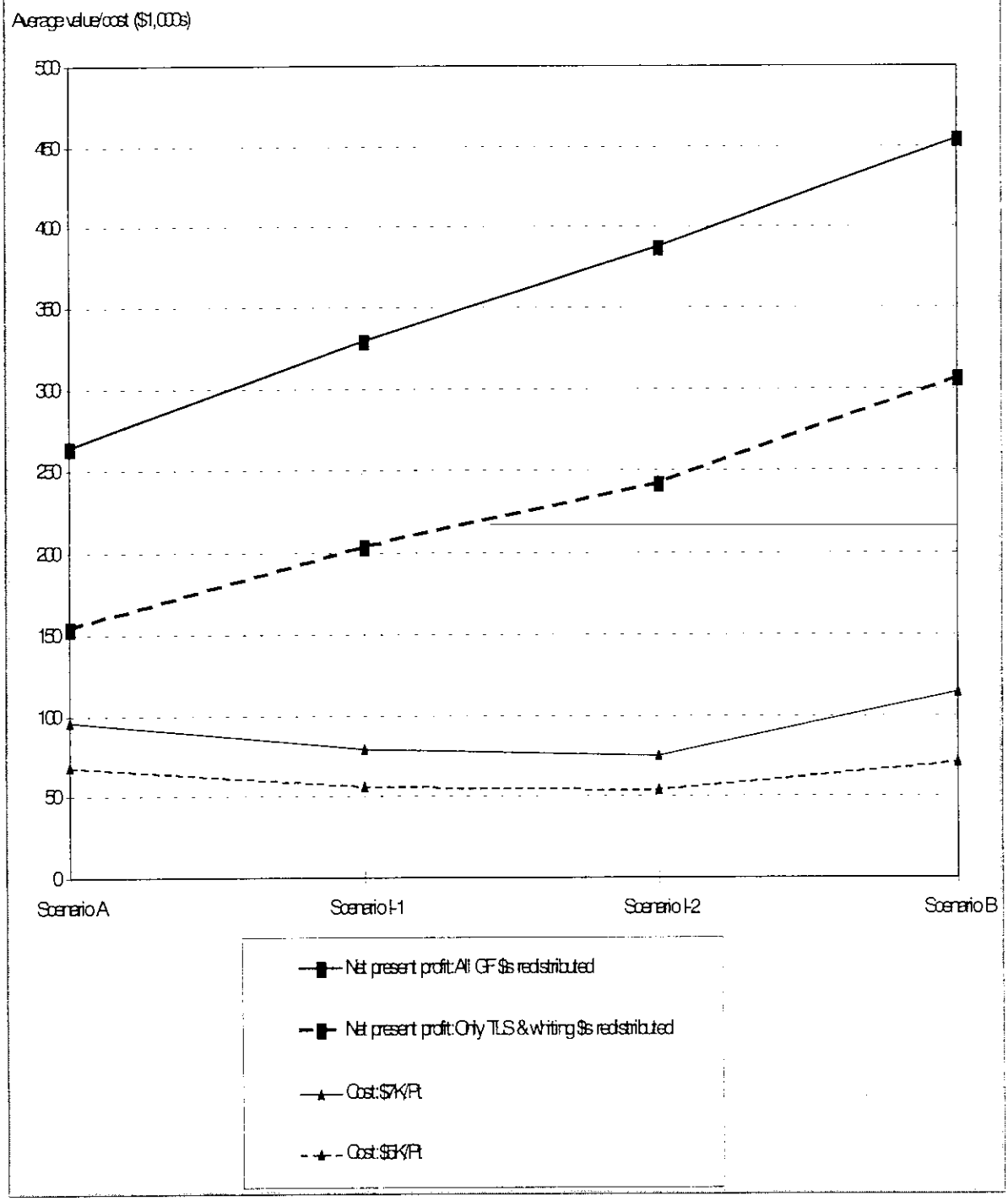


Figure 4.--Alternative ways in which the willingness to sell relationships across permit lengths might shift as more permits are purchased

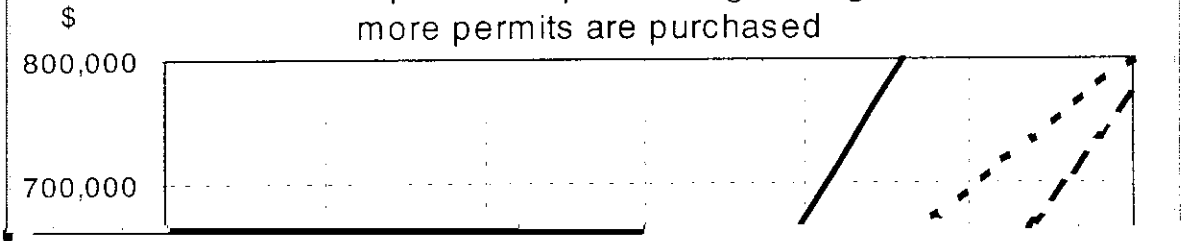


Figure 5.--Comparison of the shape of the permit combination (point) curve with mean and maximum groundfish revenue, by permit length intervals