AGENDA D-4(a)
SEPTEMBER 1987

M E M O R A N D U M

TO: Council, AP and SSC Members

FROM: Jim H. Branson
Executive Director

DATE: September 15, 1987

SUBJECT: Bering Sea/Aleutian Islands Groundfish FMP

ACTION REQUIRED

(a) Review Resource Assessment Document (RAD) recommendations for ABC.
(b) Set initial TACs and apportionments for 1988.

BACKGROUND

An initial 1988 Bering Sea/Aleutian Islands RAD was released for public review by the Plan Team in July, as required in the FMP. The RAD provided the Team's appraisal of the status of each groundfish stock and preliminary recommendations for EY/ABCs. These recommendations were the same as those presented in the November Update of the 1987 RAD, because no new information had yet become available.

Item D-4(a)(1) is a summary of an updated draft RAD, produced this September based upon preliminary information from surveys conducted this summer, which summarizes current status of stocks and ABC recommendations.

Worksheets for preliminary TACs and apportionments are provided following the RAD summary as Item D-4(a)(2).

HA1/DO

DRAFT RESOURCE ASSESSMENT DOCUMENT

FOR GROUNDFISH RESOURCES IN THE BERING SEA-ALEUTIAN ISLANDS REGION

AS ASSESSED IN 1987

AND ESTIMATED ACCEPTABLE BIOLOGICAL CATCH LEVELS FOR 1988

September 1987

Prepared by

Plan Team
North Pacific Fishery Management Council
P.O. Box 103136
Anchorage, Alaska 99510

NOTICE ON DATA UPDATE

This Resource Assessment Document is based on data analysis through September 1988. Between September and December, when the Council is scheduled to make final determinations of catch levels for each species group, additional analysis and new data from the commercial fishery and the summer field research program may become available that can change some of the estimates made in this RAD. Therefore, please be advised that this RAD may be updated and finalized in November or December.

Table 2.--Groundfish and squid catches (metric tons) in the eastern Bering Sea, 1954-86[a].

Year	Walleye Pollock	Pacific cod	Sablefish	Pacific ocean perch	Other rockfish	Yellowfin sole	Turbots	Other flatfish	Atka mackerel	Squid	Other species	Total all species
1954						12,562						12,562
1955						14,690						14,690
1956						24,697						24,697
1957						24,145						24,145
1958	6,924	171	6			44,153					147	51,401
1959	32,793	2,864	289			185,321					380	222,647
1960			1,861	6,100		456,103	36,843					500,907
1961			15,627	47,000		553,742	57,348					673,717
1962			25,989	19,900		420,703	58,226					524,818
1963			13,706	24,500		85,810	31,565	35,643				191,224
1964	174,792	13,408	3,545	25,900		111,177	33,729	30,604			736	393,891
1965	230,551	14,719	4,838	16,800		53,810	9,747	11,686			2,218	344,369
1966	261,678	18,200	9,505	20,200		102,353	13,042	24,864			2,239	452,081
1967	550,362	32,064	11,698	19,600		162,228	23,869	32,109			4,378	836,308
1968	702,181	57,902	14,374	31,500		84,189	35,232	29,647			22,058	977,083
1969	862,789	50,351	16,009	14,500		167,134	36,029	34,749			10,459	1,192,020
1970	1,256,565	70,094	11,737	9,900		133,079	32,289	64,690			15,295	1,593,649
1971	1,743,763	43,054	15,106	9,800		160,399	59,256	92,452			33,496	2,157,326
1972	1,874,534	42,905	12,758	5,700		47,856	77,633	76,813			110,893	2,249,092
1973	1,758,919	53,386	5,957	3,700		78,240	64,497	43,919			55,826	2,064,444
1974	1,588,390	62,462	4,258	14,000		42,235	91,127	37,357			60,263	1,900,092
1975	1,356,736	51,551	2,766	8,600		64,690	85,651	20,393			54,845	1,645,232
1976	1,177,822	50,481	2,923	14,900		56,221	78,329	21,746			26,143	1,428,575
1977	978,370	33,335	2,718	6,600	1,678	58,373	37,162	14,393		4,926	35,902	1,182,666
1978	979,431	42,543	1,192	2,200	12,155	138,433	45,781	21,040	832	6,886	61,537	1,334,004
1979	913,881	33,761	1,376	1,700	10,048	99,017	42,919	19,724	1,985	4,286	38,767	1,183,910
1980	958,279	45,861	2,206	1,100	1,367	87,391	62,618	20,406	4,697	4,040	34,637	1,222,598
1981	973,505	51,996	2,604	1,200	1,111	97,301	66,394	23,428	3,028	4,179	35,651	1,260,396
1982	955,964	55,040	3,184	200	863	95,712	54,908	23,809	328	3,837	18,200	1,221,301
1983	982,363	83,212	2,695	200	460	108,385	53,659	30,454	116	3,455	15,465	1,290,464
1984	1,098,783	110,944	2,793	300	327	159,526	29,294	44,286	57	2,798	7,349	1,449,287
1985	1,179,759	132,736	2,248	800	82	227,107	21,986	71,179	4	1,616	11,522	1,649,287
1986	1,188,449	130,376	3,173	800	174	208,597	14,453	76,464	14	848	10,471	1,633,851

[a]See individual species sections of this report for details of the catch statistics.

Table 3.--Groundfish and squid catches (metric tons) in the Aleutian Islands region, 1962-86[a].

Year	Pollock	Pacific cod	Sablefish	Pacific ocean perch	Other rockfish	Turbots	Atka mackerel	Squid	Other species	Total all species
1962			-	200						200
1963			664	20,800		7				21,471
1964		241	1,541	90,300		504			66	92,652
1965		451	1,249	109,100		300			768	111,868
1966		154	1,341	85,900		63			131	87,589
1967		293	1,652	55,900		394			8,542	66,781
1968		289	1,673	44,900		213			8,948	56,023
1969		220	1,673	38,800		228			3,088	44,009
1970		283	1,248	66,900		559	949		10,671	80,610
1971		2,078	2,936	21,800		2,331			2,973	32,118
1972		435	3,531	33,200		14,197	5,907		22,447	79,717
1973		977	2,902	11,800		12,371	1,712		4,244	34,006
1974		1,379	2,477	22,400		11,983	1,377		9,724	49,340
1975		2,838	1,747	16,600		3,754	13,326		8,288	46,553
1976		4,190	1,659	14,000		3,437	13,126		7,053	43,465
1977	7,625	3,262	1,897	5,900	9,587	4,488	20,975	1,808	16,170	71,712
1978	6,282	3,295	821	5,300	8,737	6,548	23,418	2,085	12,436	68,922
1979	9,504	5,593	782	5,500	14,543	12,847	21,279	2,252	12,934	85,234
1980	58,156	5,788	274	4,700	1,361	8,299	15,793	2,332	13,028	109,731
1981	55,516	10,462	533	3,600	1,397	8,040	16,661	1,762	7,274	105,245
1982	57,978	11,526	955	1,000	2,792	8,732	19,546	1,201	5,167	108,897
1983	59,026	9,955	673	300	1,147	7,869	11,610	524	3,675	94,779
1984	81,834	22,216	1,043	600	292	3,275	36,013	326	1,669	147,268
1985	58,730	12,690	2,089	500	217	104	37,856	5	2,049	114,240
1986	46,641	7,672	3,054	300	306	2,281	31,981	20	1,509	93,764

[a]See individual species sections of this report for details of the catch statistics.

Table 4.--Total allowable catches (t) for groundfish of the eastern Bering Sea and Aleutian Islands region 1977-1987.

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Eastern Bering Sea[a]											
Walleye pollock	950,000	950,000	950,000	1,000,000	1,000,000	1,000,000	1,000,000	1,200,000	1,200,000	1,200,000	1,200,000
Yellowfin sole	106,000	126,000	126,000	117,000	117,000	117,000	117,000	230,000	226,900	209,500	187,000
Greenland turbots	-	-	-	90,000	90,000	90,000	90,000	59,610	42,000	33,000	20,000
Arrowtooth flounders[b]	-	-	-	-	-	-	-	-	-	20,000	9,795
Other flounders[c]	100,000	159,000	159,000	61,000	61,000	61,000	61,000	111,490	109,900	124,200	148,300
Pacific cod	58,000	70,500	70,500	70,700	78,700	78,700	120,000	210,000	220,000	229,000	280,000
Sablefish	5,000	3,000	3,000	3,500	3,500	3,500	3,500	3,740	2,625	2,250	3,700
Pacific ocean perch	6,500	6,500	6,500	3,250	3,250	3,250	3,250	1,780	1,000	825	2,850
Other rockfish	-	-	-	7,727	7,727	7,727	7,727	1,550	1,120	825	450
Herring	21,000	18,670	18,670	-[d]	-	-	-	-	-	-	-
Squid	10,000	10,800	10,000	10,000	10,000	10,000	10,000	8,900	10,000	5,000	500
Other species	59,600	66,600	66,600	74,249	74,249	74,249	77,314	40,000	37,580	27,800	15,000
Aleutians[a]											
Walleye pollock	-	-	-	100,000	100,000	100,000	100,000	100,000	100,000	100,000	18,000
Sablefish	2,400	1,500	1,500	1,500	1,500	1,500	1,500	1,600	1,875	4,200	4,000
Pacific ocean perch	15,000	15,000	15,000	7,500	7,500	7,500	7,500	2,700	3,800	6,800	8,175
Other rockfish	-	-	-	-	-	-	-	5,500	5,500	5,800	1,430
Atka mackerel	-	24,800	24,800	24,800	24,800	24,800	24,800	23,130	37,700	30,800	30,800
Other species	34,000	34,000	34,000	-	-	-	-	-	-	-	-
Total all areas	1,367,500	1,486,370	1,485,570	1,571,226	1,579,226	1,579,226	1,623,591	2,000,000	2,000,000	2,000,000	2,000,000

[a]Total allowable catches are for the eastern Bering Sea and Aleutian Islands areas combined for pollock in 1977-79, other rockfish in 1980-83, other species in 1980-85, and in all years for yellowfin sole, turbot, other flounders, Pacific cod and squid.
[b]Combined with Greenland turbot until 1986.
[c]Excludes halibut but includes turbot until 1980.
[d]After 1979 herring no longer included with groundfish.

Table 5.--Bering Sea-Aleutian Islands groundfish apportionments and foreign allocations in metric tons, 1984-86.

	Final 1984	Final 1985	Final 1986	September 1987
ABC	-	2,149,330	2,199,000	2,245,780
TAC	2,000,000	2,000,000	2,000,000	2,000,000
DAP	111,105	137,210	243,849	286,749
JVP	431,210	697,850	1,155,863	1,123,763
Reserve	0	1,345	10,121	21,641
TALFF	1,457,685	1,163,595	590,167	567,847
Japan	1,019,891	861,332	455,439	371,998
ROK	264,160	239,872	112,177	96,169
West Germany	27,995	0	0	0
Portugal	6,815	600	0	0
Poland	55,556	35,295	8,043	7,043
USSR	30,000	10,782	0	0
China	0	0	4,920	3,963
Taiwan	0	0	0	3,685
Unallocated	53,268	15,714	9,545	84,989

Low 4a.12.1

Table 6.--Estimates of maximum sustainable yields (MSYs) and comparisons of acceptable biological catches (ABCs) for 1987 and 1988 with remarks on current condition of the resources for the eastern Bering Sea (EBS) and Aleutians.

Species/Region	MSY (t)	ABC (t)		Condition of Stocks
		1987	1988	
Pollock	...	...	...	Relatively high but declining due to recent poor year classes.
EBS	1,500,000	1,200,000	1,410,000	
Aleutians	150,000	100,000	160,000	
Pacific cod	60,000	400,000	326,000	Relatively high.
EBS		...	311,200	
Aleutians		...	14,800	
Yellowfin sole	150,000	187,000	216,000	Relatively high, possibly declining due to poor recruitment.
Greenland turbot	46,000	20,000	19,000	Depressed with no prospect of appreciable recruitment through 1990.
Arrowtooth flounder	9,800	30,900	109,500	High in abundance.
Other flatfish	146,100	193,300	440,700	At high levels of abundance.
EBS	...	...	434,000	
Aleutians	...	...	6,700	
Sablefish	7,700	7,700	10,600	Abundance increased, at historical highs.
EBS	3,700	3,700	3,900	
Aleutians	4,000	4,000	6,700	
Pacific ocean perch	26,300	14,700	22,600	Abundance stable, but below historical levels.
EBS	7,400	3,800	6,000	
Aleutians	18,900	10,900	16,600	
Other rockfish	1,800	...	1,500	Abundance stable.
EBS	500	450	400	
Aleutians	1,300	1,430	1,100	
Atka mackerel[a]	38,700	30,800	21,000	Abundance declining, due to passage of strong year class.
EBS	...	800		
Aleutians	...	30,000		
Squid	>10,000	10,000	10,000	Lacking information but estimates are conservative.
Other species	59,000	49,500	59,000	Abundance at average levels.
Total groundfish	2,205,400	2,245,780	2,805,900	

ACCEPTABLE BIOLOGICAL CATCH LEVELS FOR 1988

Amendment #1 to the Bering Sea-Aleutians groundfish FMP provides the framework to manage the groundfish resources as a complex. The MSY of this complex ranges from 1.8 to 2.4 million t. The OY is set at 85 percent of the MSY range, or 1.4 to 2.0 million t. The status of stocks analyses (Part I of this RAD) show that the ABC for the complex total 2.8 million t in 1988. This estimate contrasts with the long-term sustainable catch level estimate of 1.8 million t based upon the multispecies/ecosystem analyses for long term stability of the resources (Part II of the RAD). Since the ecosystem simulations assume a substantially lower biomass for most of the species than are currently present in the ecosystem, it is determined that the catch level in 1988 can exceed the 1.8 million t long-term sustainable catch estimate. Therefore, the 1988 catch level for the groundfish complex should be set at the high end of OY or 2.0 million t.

Table 6 provides a summary of the status of the stocks and estimates of MSY and ABC on a species-by-species basis. A comparison of the ABCs shows that ABC for the complex has increased from 2.2 million t in 1987 to 2.8 million t in 1988. This increase resulted from a combination of two key factors--(1) an actual increase in the status of some stocks, and (2) a change in the calculation procedure for ABC from last year.

In past years, the calculation procedure for ABC varies from species to species based upon the quality of the data available and prior knowledge on the status of the stocks. These data and knowledge have been continually improved. After more than 10 years of management experience under the MFCMA, the Scientific and Statistical Committees for the Pacific and North Pacific Fishery Management Councils have suggested that the ABC calculation procedure be defined explicitly. Accordingly, the National Marine Fisheries Service has published guidelines to Section 603.11 of the MFCMA which, among other clarifications, specifies a default method for calculating acceptable biological catch as:

"The ABC is calculated by multiplying the maximum sustainable yield exploitation rate by the size of the biomass for the relevant time period unless other biological information justifies a different method of derivation. The ABC, however, must equal zero when the stock is at or below its threshold."

The Plan Team has adopted the above procedure for calculating ABC in this RAD. This has resulted in some changes to the procedure of calculating ABC for some species in last year's RAD. In last year's RAD, the historical exploitation rate (instead of the MSY exploitation rate) was used to calculate ABC in many cases; thereby contributing to some of the increase in ABC estimates from 1987 to 1988 in Table 6. A species-by-species discussion of these changes follows:

Pollock:

EBS	1987 ABC = 1,200,000 t	1988 ABC = 1,410,000 t
Aleutians	1987 ABC = 100,000 t	1988 ABC = 160,000 t

The abundance of the pollock stocks has not changed radically from last year. Abundance still remains relatively high. The increase in ABC reflects an higher exploitation rate used. The historical exploitation rate ranged from 10 to 18 percent. The 1988 exploitation rate used is 16% (slightly below the historical maximum rate) whereas the 1987 rate was about 14%. The higher rate is used because other population dynamics theories suggest that the pollock resource can be exploited more intensively without loss in productivity.

Pacific Cod:

1987 ABC = 400,000 t 1988 ABC = 326,000

The same cod model simulation procedure was used to calculate ABC this year. The decrease in ABC reflects changes to the age composition of the resource as well as an over-projection of the 1987 biomass from last year's simulation model. However, trawl surveys show that the biomass of cod remains high and above 1 million t.

Yellowfin Sole:

1987 ABC = 187,000 t 1988 ABC = 216,000 t

The increase in ABC reflect a slightly higher biomass and the use of a higher exploitation rate (12.3% based on the F0.1 fishing strategy instead of the 10% historical rate).

Greenland Turbot:

1987 ABC = 20,000 t 1988 ABC = 19,000 t

The change in ABC reflect the use of MSY exploitation rate multiplied by the 1988 projected biomass from the SRA model. The same SRA model was used last year, but the 1987 ABC was based upon different exploitation scenarios rather than using the MSY exploitation rate. In reality, the Greenland turbot resource has continued to decline from last year and is projected to remain low for many years to come because of progressively poor recruitment.

Arrowtooth Flounder:

1987 ABC = 30,900 t 1988 ABC = 109,500 t

The substantial increase in ABC is attributed mainly to the use of the higher exploitation rate (MSY exploitation rate = 23% instead of using the historical rate of 10%) and an actual increase in the biomass. The resource remains in excellent condition and biomass is increasing.

Other Flatfishes:

1987 ABC = 193,300 t 1988 ABC = 440,700 t

The reasons for the substantial increase in ABC are the as in the case for arrowtooth flounder. All the species in this group are in high abundance, especially rock sole.

Sablefish:

EBS	1987 ABC = 3,700 t	1988 ABC = 3,900 t
Aleutians	1987 ABC = 4,000 t	1988 ABC = 6,700 t

The increases in ABCs reflect mostly higher abundance of the stocks and the use of the MSY exploitation rate which is higher than last year's historical rate. Sablefish stocks seem to have rebuilt to produce at or above MSY levels.

Pacific Ocean Perch:

EBS	1987 ABC = 3,800 t	1988 ABC = 6,000 t
Aleutians	1987 ABC = 10,900 t	1988 ABC = 16,600 t

The increases reflect mostly the higher abundance of the stocks because of stronger recruitment entering the fishery and the use of the MSY exploitation rate (6% instead of last year's historical 5% rate). In general, POP stocks continue to remain low when compared to biomass levels in the early 1960's.

Other Rockfishes:

EBS	1987 ABC = 450 t	1988 ABC = 400 t
Aleutians	1987 ABC = 1,430 t	1988 ABC = 1,100 t

The decreases in ABCs do not reflect a decline in biomass. They reflect a lower confidence in the reliability of biomass estimates since the trawl surveys cannot sample rockfishes very well. This is reflected in their wide confidence ranges. In 1987, the assumption was adopted that the survey biomass reflected only half the biomass actually present. This year, the

Plan Team reviewed the wide confidence intervals of the biomass estimates and decided to use the mean biomass derived from recent years' trawl surveys to estimate ABC. Lower biomasses were therefore used to calculate ABC, but a slightly higher exploitation rate was used (6% in 1988 instead of 5% in 1987). The higher exploitation rate was based on the MSY exploitation rate derived for POP.

Atka Mackerel:

1987 ABC = 30,800 t 1988 ABC = 21,000 t

The decrease in ABC from 1987 to 1988 reflects a lower abundance of the stocks.

Squid:

1987 ABC = 10,000 t 1988 ABC = 10,000 t

There is insufficient information to determine changes in the abundance of the stocks. The ABC estimates are conservative.

Other Species:

1987 ABC = 49,500 t 1988 ABC = 59,000 t

The increase in ABC from 1987 to 1988 is not real. The stocks have remained about the same. What has changed is the interpretation that the present biomass level can be exploited at MSY.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest and Alaska Fisheries Center
Resource Ecology and Fisheries
Management Division
7600 Sand Point Way Northeast
BIN C15700, Building 4
Seattle, Washington 98115-0070

September 15, 1987 F/NWC2:RN:4.22

MEMORANDUM FOR: F/NWC2 - Rich Marasco

FROM: F/NWC2 - Russ Nelson RN

SUBJECT: Summary of the Bycatch of Prohibited Species in the Yellowfin Sole/Flatfish Joint Venture in Area 514 (Including Togiak) of the Bering Sea, 1987.

The following summary of the bycatches of prohibited species in the 1987 yellowfin sole/flatfish fishery conducted in area 514 (Figure 1) of the Bering Sea is provided in response to the request of the North Pacific Fishery Management Council for information on the joint venture conducted in the area around Togiak. At this time, the only information we have available for the fishery conducted in that general area is from our in-season estimates of catches which are based on the areas shown in Figure 1. Area 514 is the area which includes the fisheries conducted near Togiak. Data which pertain specifically to Togiak will not be available until sometime during the first quarter of 1988.

Joint venture fisheries targeting on yellowfin sole and flatfish landed 138,010.3 t of groundfish in 1987 in area 514 of the Bering Sea. The composition of the groundfish catch is shown in Table 1. The combined catches of yellowfin sole and other flatfish species composed 94.6% of the total groundfish catch. Incidental catches of all the major prohibited species including Pacific herring occurred within the fishery. Those incidental catches and the corresponding bycatch rates expressed either in terms of percent by weight in the catch or number per ton of groundfish are listed in Table 2. The bycatches of chinook salmon, other salmon, all species of king crab and Chionoecetes bairdi were all generally low. The bycatch rates for salmon and king crab species were all less than 0.01 animals per ton of groundfish catch. The bycatch of C. baridi averaged 0.286 crab per ton. The bycatch of herring of 374.7 t was equivalent to 0.25 % of the total groundfish catch. The bycatch of 119,411 halibut averaged 0.865 halibut/t or 0.23 % of the groundfish catch by weight. Approximately, 1.6 million other Tanner crab (essentially 100% C. opilio) were taken in the fishery in area 514.

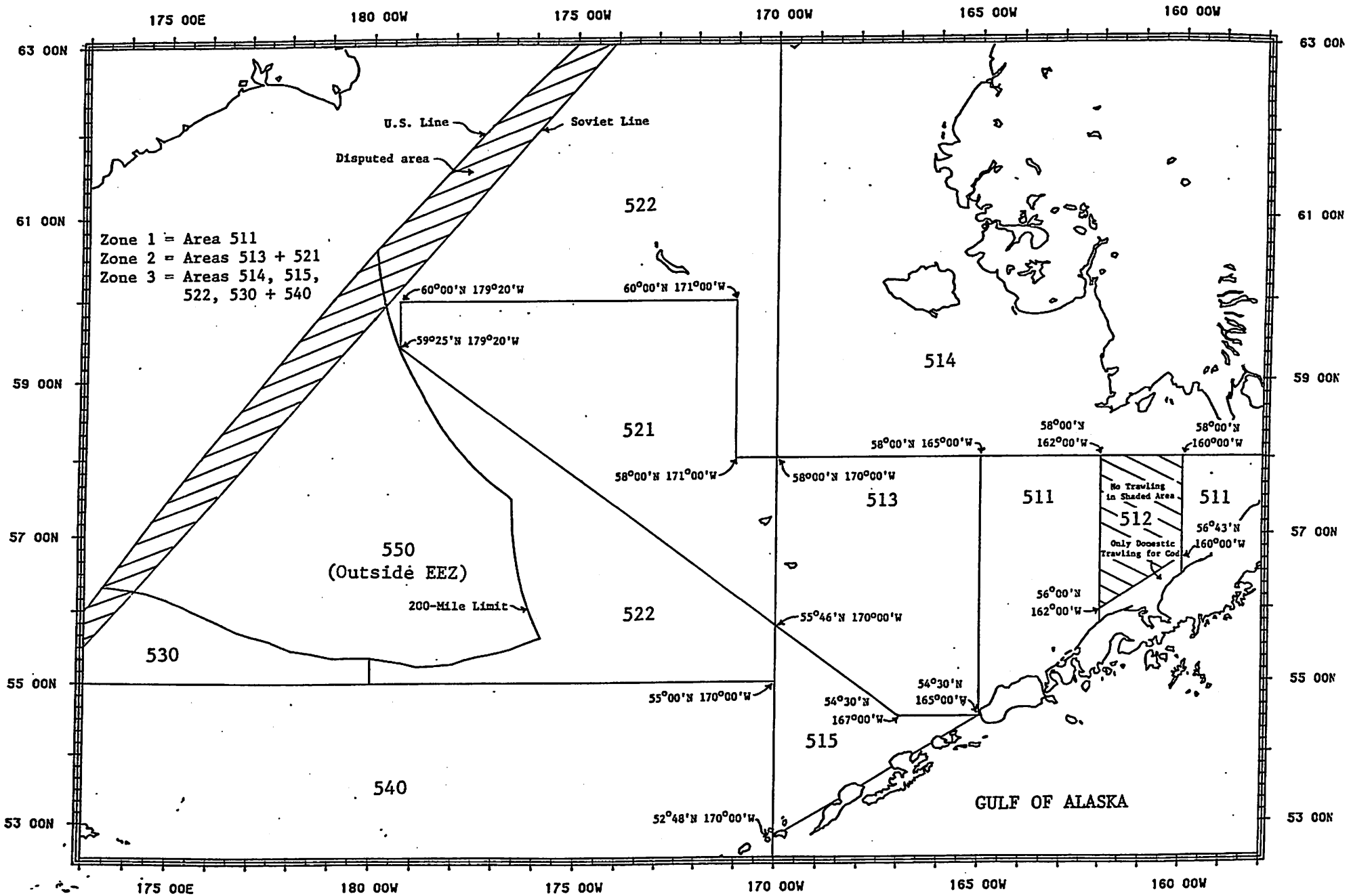

FIGURE 1. BERING SEA SUBAREAS USED TO ESTIMATE GROUNDFISH AND JOINT VENTURE CATCHES IN 1987.

TABLE 1.--The estimated catches (metric tons) of groundfish taken in the 1987 yellowfin sole/flatfish joint venture fishery conducted in Area 514 of the Bering Sea.

SPECIES	CATCH (METRIC TONS)	% OF TOTAL
YELLOWFIN SOLE	120,747.1	87.5%
OTHER FLATFISH	9,837.6	7.1%
PACIFIC COD	3,667.9	2.6%
POLLOCK	2,093.6	1.5%
SABLEFISH	0.0	0.0%
ATKA MACKEREL	0.1	<0.1%
POP COMPLEX	0.0	0.0%
OTHER ROCKFISH	0.0	0.0%
TURBOTS	14.5	<0.1%
OTHER FISH	1,649.5	1.2%
TOTAL	138,010.3	

TABLE 2.--Estimated catches of prohibited species and associated bycatch rates in 1987 yellowfin sole/flatfish joint venture fishery in Area 514 of the Bering Sea[1/]

SPECIES	ESTIMATED CATCH	BYCATCH RATE[1/]
HERRING	374.7 T	0.25 %
HALIBUT	119,411 fish	0.865 halibut/t
	312.9 T	0.23 %
CHINOOK SALMON	93 fish	0.0006 fish/t
OTHER SALMON SPECIES	470 fish	0.003 fish/t
RED KING CRAB	10,299 crab	0.075 crab/t
BLUE KING CRAB	245 crab	0.002 crab/t
OTHER KING CRAB SPECIES	18 crab	0.0001 crab/t
C. BAIRDI TANNER CRAB	39,423 crab	0.286 crab/t
OTHER TANNER CRAB SPECIES	1.6 Million crab	11.867 crab/t

1/ The bycatch rates of herring and halibut are expressed in terms of % by weight of total groundfish catch. The bycatch rates of halibut, king crab species, salmon species, and Tanner crab species are expressed in terms of number per ton of groundfish catch.

National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest and Alaska Fisheries Center
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D-4
Suppl.

September 17, 1987 F/NWC2:RJM

Mr. Peter Granger
Executive Director
American High Seas Fisheries Association
3040 West Commodore Way
Seattle, WA 98199

Dear Pete:

This letter confirms our recent discussions. The Northwest and Alaska Fisheries Center is committed to an extensive study of pollock of the Aleutian Basin in the Bering Sea. We intend to deploy research vessels over the next few years and participate in cooperative surveys with Japanese and Soviet research organizations. These surveys will be designed to approach the question of stock identity from several different directions.

It appears that there is a possibility for collecting biological data from Basin joint venture operations this fall. The Center views this as an important and valuable opportunity.

The following data from the Aleutian Basin pollock fishery are important:

1. length and weight at age of pollock caught. This would allow comparisons to be made with the growth rates of pollock from the shelf and slope regions of the Eastern Bering Sea. Lengths, weights and otoliths would be taken from several thousand pollock.

2. sexual maturity of fish. No studies have been undertaken to determine if spawning occurs during this time of year in the Basin.

3. stomach content analysis. Cannibalism of adults on juvenile pollock is greatest in the fall. Examination of adult stomachs will help determine if there are any juvenile pollock in the Basin.

4. frozen specimens for electrophoresis and morphometric/meristic studies. This analysis would be used to identify stocks of pollock. Several hundred fish are required.

5. coloration of pollock. This analysis would be done on board due to the probable deterioration of fish color with freezing.

6. logbook, CPUE, and echo sounder data. To assess the distribution and patchiness of pollock in the basin a detailed record of catch per haul, haul location, amount of time spent searching, search locations, and copies of echo sounder traces during all searching and fishing operations are requested.

The above data will be very useful. It must be emphasized that resolution of the question of stock identity requires additional work beyond that which can be done aboard the processing vessels participating in a joint venture operation. The above work must be carried out over a larger time and space scale. Additional work must focus on the movement of larvae and adults both within the basin and between the basin and the shelf/slope regions.

We appreciate the opportunity to deploy biologists on ships this fall. The personnel that participate will be either staff scientists or biologists from our observer program.

As details of any Aleutian Basin operation become available, please keep me informed.

Sincerely,

William Aron
Center Director

cc: F - Evans
F/AKR - McVey
NPFMC - Branson

PROPOSED GUIDELINES
FOR
1988 BERING SEA JOINT VENTURE FLOUNDER FISHERY

Fishery opens January 1, 1988.

Olympic rules apply.

Amendment 10 prohibited species caps by zone apply.

Goal: To establish and provide procedures to enforce crab bycatch rates within the established caps which are applied equally to all companies.

Procedure: All participating JV companies' performance checked at "check points" of 20%, 40%, 60%, and 80% of each zone's PSC.

Example: Using bairdi Tanner crab

at 20% check point:

1. Companies operating at 1.2 bairdi/mt or less allowed to continue fishing to next check point.
2. Companies operating at 1.2-2.0 bairdi/mt warned but allowed to continue fishing to next check point.
3. Companies operating above 2.0 bairdi/mt excluded from that zone by NMFS authority.

at 40% check point:

1. Companies operating at 1.2 bairdi/mt cummulative or less continue.
2. Companies operating at 1.2-1.5 bairdi/mt warned but continue.
3. Companies operating above 1.5 bairdi/mt excluded from that zone.

at 60% and 80% check points:

1. Companies operating at 1.2 bairdi/mt cummulative or less continue.
2. Companies operating above 1.2 bairdi/mt cummulative terminate that zone by NMFS authority.

at 100% check point:

1. All companies terminate that zone.

Proposed by:

Marine Resources Company, Inc.
Midwater Trawlers Cooperative
Profish International

687/AE-1

D-4

BSAI GROUNDFISH TESTIMONY 9/24/87 by MICK STEVENS

Urge council to adopt as preliminary ABCs - all those numbers recommended by SSC. SSC numbers are scientifically refined from plan team and RAD numbers and should be accepted as "best scientific information available".

To extent some numbers are ranges--so what - send out ranges.

To put out to public ABC's that don't accurately reflect level of understanding today is misleading. To put out overly low ABC's is as wrong as to put out ABCs which are too high.

To extent these ABCs total more than OY cap of 2 million mt - so what - these are biological numbers. Down the road you may not be so constrained.

I would suggest that if you want to be conservative then set some of the preliminary TACs equal to 1987 levels. If you disagree with the best scientific information available then adjust the TACs - not the ABCs.

We earnestly request the ABCs reflect the best biological thought today - even if that thought is reflected by ranges.