

ALASKA

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RESOURCES

MARCH 24, 1986

APPENDIX D

3.0 COLOUR DETERMINATION

3.1 The colour score for each sample can is obtained from its colour rating as indicated in Table IV. The colour rating of the salmon sample is a direct measure of its colour in comparison to porcelain standards.

TABLE IV

Colour Rating of Individual Cans and Corresponding Score:

Chum	Score	Steelhead-Pink	Score	Coho	Score	Blueback	Score	Sockeye	Score
7	-1	7	-1	7	-1	7 6	-2 -1	7 6	-2 -1
6, 5 4, 3	0	6, 5 4, 3	0	6, 5, 4	0	5, 4	0	5, 4	0
2, 1	1	2	1	3	1	3	1	3	1
				2	2	2	2	2	3
		1	3						
				1	4	1	4	1	4

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APPENDIX E

1.0 STEPS IN SCORING AND GRADING OF CANNED PACIFIC SALMON

1.1 PRORATING OF OIL SCORES

This involves the adjusting of the oil score (ml of free oil) to correspond to six pounds of fish. As the oil score is always obtained by measuring the amount of free oil from 12 samples, (except for 4 lb can) it is necessary to adjust the oil score for the different size cans as per Table V.

NOTE: Sockeye salmon is used as an example, but table V applies to all species.

TABLE V. Prorating of Oil Scores

<u>Species</u>	<u>Can Size</u> (lb)	<u>Free Oil</u> (ml)	<u>Factor</u> (C)	<u>Adjusted</u> <u>Free Oil</u> (ml)	<u>Score</u>	<u>Remarks</u>
Sockeye	1/4	20	2	40	-2	multiply given volume of oil (ml) by 2, then locate score on chart in Table VI.
Sockeye	1/2	50	1	50	-4	no adjustment required.
Sockeye	1	60	1/2	30	0	multiply given volume of oil (ml) by 1/2, then locate score on chart in Table VI.
Sockeye	4	40	1	40	-2	no adjustment required.

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TABLE VI

Volume of oil in ml from 6 pounds of Fish and Corresponding Score:

Steelhead & Spring	Score	Sockeye	Score	Coho (Blueback) Pink	Score	Chum	Score
95+	-6	60+	-6	35+	-6	25+	-6
90							
85	-5	55	-5		-5		-5
80							
75	-4	50	-4	30	-4	20	-4
70	-3	45	-3		-3		-3
65							
60	-2	40	-2	25	-2	15	-2
55	-1	35	-1		-1		-1
50							
45	0	30	0	20	0	10	0
40	1	25	1	15	1	8	1
35							
30	2	20	2	10	2	7	2
25	3	15	3		3	5	3
20							
15	4	10	4	5	4	4	4
10	5	5	5		5	2	5
5							
0	6	0	6	0	6	0	6

1.2 A negative score is given for a sample found to contain more than an average amount of oil. This is intended to compensate for the increase in score given samples whose softness is partly attributed to high oil content. A total score that corresponds to six pounds of sampled fish or that has been prorated or extrapolated to correspond to six pounds of fish is subtracted if negative, directly from the texture total, after it in turn has been prorated or extrapolated to twelve sampled cans.

1.3 "PRORATED" OIL SCORE - A positive total oil score is also adjusted for the purpose of grading by prorating or extrapolating to correspond to six pounds of fish.

APPENDIX E COND'T

2.0 TEXTURE READINGS ("TEXTOMETER METHOD)

"Prorated and Modified" Texture Score

For the purpose of grading, the total texture score of the cans examined must be prorated or extrapolated to correspond to twelve sample cans, diminished by the oil score corresponding to six pounds, providing this latter score is negative.

TABLE VII

Prorating of texture, colour, appearance and odour scores

<u>No. Samples</u> <u>(A)</u>	<u>Total Score</u> <u>(D)</u>	<u>Factor</u> <u>(B)</u>	<u>Prorated 12 Can Total</u> <u>(B/A X D)</u>
6	10	12	20
12	22	12	22
18	24	12	16
20	15	12	9
24	40	12	20
36	31	12	10
48	45	12	11

NOTE: All total scores for these categories are adjusted to correspond to a 12 can sample.

3.0 MODIFIED SCORES

3.1. MODIFIED TEXTURE SCORE

In the scoring system used for the oil volume (ml), a sample may be given a negative score if it is found to contain more than an average amount of oil. This is intended to compensate for the increase in score given to samples whose softness is partly attributed to high oil content. The only time in which the oil score enters into the grading system is when it is negative. In this instance, the total texture score is decreased by the amount of the oil score.

Note: Scores are modified only after having prorated them to correspond to a 12 can sample.

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APPENDIX E COND'T

4.0 COLOUR RATINGS

4.1 A negative score is given for samples noticeably redder than average. As this improves the appearance of the salmon, the total appearance score is modified by subtracting the total colour score, if negative, after both have been prorated or extrapolated to correspond to a twelve can sample.

4.2 "PRORATED" SCORE

A positive total colour score is also adjusted for grading purposes by prorating or extrapolating it to correspond with a twelve can sample. (See Table VI). Note that Spring salmon is classified by colour as red, pink and white and has therefore not been included in the above table.

5.0 APPEARANCE RATINGS

5.1 Defects such as bruises, poor cleaning, grey discolouration, pugh marks, the presence of curd, cross packing, untrimmed fins, watermarked red skin, belly burned reddened flesh are rated 1, 2 or 3 according to their severity. A slight defect is rated 1, a readily noticeable defect is rated 2, and a marked defect is rated 3. Ratings of 1 are not scored against the product unless there are 2 or 3 such ratings for a can, in which case the score of 1 or 2, respectively is given.

5.2 "Prorated and Modified" Appearance Score

To obtain the modified appearance score required for grading, the score for all defects are totalled and prorated or extrapolated to correspond to a twelve can sample, (as per Table VI) then the total colour score, if negative, is subtracted after it has been prorated or extrapolated to also correspond to a twelve can sample.

6.0 ODOUR RATINGS

Cans with odour defects are rated and scored in accordance with the intensity of the odour on a scale of 1 to 9.

The rating of 1 is used where there is only a detectable trace of a particular odour identified. Ratings of 1 are not scored against the product unless 2 or 3 different trace odours are detected in combination for a can, in which case the score of 1 or 2 respectively is assigned.

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The rating of 9 is assigned where advanced prominent and pronounced decomposition is detected in a sample. A rating of 6 is assigned when a persistent and distinct odour of decomposition or tainted is detected in the sample.

6.1 It may be noted that there are 9 steps (and intermediate steps) from a score of 1 to a score of 256 inclusive. These steps or ratings are used to simplify the examination. Their relation to the score is shown in Table VIII.

TABLE VIII

RATINGS AND CORRESPONDING SCORE

<u>RATING</u>	<u>SCORE</u>
1	0
(1+1)	1
(1+1+1) etc	2
2	2
3	4
4	8
5	16
6	32
7	64
8	128
9	256

6.2 Scores must be prorated as per Table VI, Appendix E.

NOTE: Refer to Appendix F for rating of canned salmon packed in 4 pound cans.

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APPENDIX F

1.0 RATING SCHEME FOR SALMON PACKED IN 4 LB CANS

- 1.1 During routine inspection of salmon packed in 4 lb cans, a great deal of downgrading of the product results from appearance defects in combination with scorching.
- 1.2 Salmon packed in 4 lb cans exhibits inherent odours, flavours, and appearance associated with scorching of the product due to the long processing time involved (approximately three hours at 250 degrees F).
- 1.3 In instances where these defects are pronounced, the final grade of the product may be affected. This situation may be further aggravated by appearance defects such as bruising, curd, cleaning, top appearance, watermarking, and belly burn.

Rating for odour and flavour of salmon packed in 4 lb cans is limited to a score of 3 0 or 0 depending on the extent of the problem as defined below:

<u>Rating</u>	<u>Rating</u>
<u>Highly</u> scorched product characterized by:	<u>Scorched</u> product characterized by:
1. Distinct and persistent abnormal odours and/or flavours that are burnt or acrid	1. Distinct and persistent odours and/or flavours that are burnt or acrid at a level normally associated with product processed for a long time but not including reprocessed product.
2. Discolouration characterized by persistent orange colours in the flesh not normally associated with the species of fish.	2. The orange discolouration may or may not be present, but if it is, it is at a level normally associated with product processed for a long time but not including reprocessed product

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APPENDIX C

GRADING CRITERIA FOR CANNED PACIFIC SALMON

- 1.0 "Acceptable" grade may be assigned to canned salmon in the case of:
 - 1.1 regular pack canned salmon having a "prorated" score for colour of 44 or less, on condition that either:
 - 1.1.1 the total of the "prorated" score for odour and the "modified and prorated" scores for texture and for appearance when added together is 36 or less; or
 - 1.1.2 the "prorated and modified" score for texture is 24 or less and also the total of the "prorated" score for odour and the "prorated and modified" score for appearance when added together is 24 or less.
 - 1.2 minced canned salmon or salmon tips, providing that the "prorated and modified" total of appearance scores plus the "prorated" total of odour scores is 30 or less.
- 2.0 Grade "B" is to be assigned to canned salmon that does not comply with the requirements of the acceptable grade, providing that the "prorated" total of odour scores is 72 or less.
- 3.0 CONDITIONS FOR GRADE B (REGULAR PACK SALMON)
 - 3.1 COLOUR: when the total prorated score for colour alone is greater than 44 ("B" in Table IX).
 - 3.2 TEXTURE: when the total prorated score for texture alone is greater than 24 ("A" in Table IX). In this case, if the oil score is negative, ("X" in Table IX), the total texture score is decreased by the amount of the oil score.
 - 3.3 APPEARANCE AND ODOUR: when the total of the prorated scores for both appearance and odour added together is greater than 24 (C + D in Table IX).
 - 3.4 TEXTURE, APPEARANCE AND ODOUR: when the total of the prorated scores for texture, appearance and odour added together is greater than 36 (A + C + D in Table IX).
- 4.0 BELOW GRADE B CRITERIA
 - 4.1 This classification is assigned to canned salmon whose prorated total odour score alone is greater than 72. A lot falling into this category is of reject quality.

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APPENDIX G COND'T

TABLE X

Species: Sockeye 1/2's - Grade B - Scoring Example

Can No.	OIL		FIRMNESS		COLOUR		APPEARANCE		ODOUR	
	ml	Score	Reading	Score	Rating	Score	Rating	Score	Rating	Score
1			22	1	1	4	KC	1	2L	2
2			18	3	1	4	2C	2	L	-
3			23	1	2	3	K	-	2L	2
4			20	2	1	4	K	-	3L	4
5			15	4	1	4	BK	1	L	-
6			20	2	1	4	2B	2	L	-
7			21	2	1	4	KCB	2	3L	4
8			23	1	1	4	K	-	3L	4
9			18	3	1	4	K	-	L	-
10			19	3	1	4	B	-	L	-
11			20	2	2	3	2CB	2	L	-
12	35	-1	21	2	1	4	KB	1	2L	2

Total		-1		26		46		11		18
		X		A		B		C		D

APPENDIX H

(Inspection Level I, AQL = 6.5)

Sampling Plan 1

Net weight is equal to or less than 1 kg

Lot Size (N)	Sample Size (n)	Acceptance No. (C)*
4,800 or less	6	1
4,801 - 24,000	13	2
24,001 - 48,000	21	3
48,001 - 84,000	29	4
84,001 - 144,000	48	6
144,001 - 240,000	84	9
more than 240,000	126	13

Net weight is greater than 1 kg but not more than 4.5 kg

Lot Size (N)	Sample Size (n)	Acceptance No. (C)*
2,400 or less	6	1
2,401 - 15,000	13	2
15,001 - 24,000	21	3
24,001 - 42,000	29	4
42,001 - 72,000	48	6
72,001 - 120,000	84	9
more than 120,000	126	13

*NOTE: As canned Pacific salmon is assessed on the basis of a grade standard, the acceptance number (C) is used only to assess acceptance or rejection for defects such as foreign material, sulphiding, mixed colours, mixed species and grey discoloration.

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APPENDIX H COND'T

(Inspection Level II, AQL = 6.5)

Sampling Plan 2

Net weight is equal to or less than 1 kg

Lot Size (N)	Sample Size (n)	Acceptance No. (C)*
4,800 or less	13	2
4,801 - 24,000	21	3
24,001 - 48,000	29	4
48,001 - 84,000	48	6
84,001 - 144,000	84	9
144,001 - 240,000	126	13
more than 240,000	200	19

Net weight is greater than 1 kg (2.2 lb) but not more than 4.5 kg

Lot Size (N)	Sample Size (n)	Acceptance No. (C)*
2,400 or less	13	2
2,401 - 15,000	21	3
15,001 - 24,000	29	4
24,001 - 42,000	48	6
42,001 - 72,000	84	9
72,001 - 120,000	126	13
more than 120,000	200	19

*NOTE: As canned Pacific salmon is assessed on the basis of a grade standard, the acceptance number (C) is used only to assess acceptance or rejection for defects such as foreign material, sulphiding, mixed colours, mixed species and grey discoloration.

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APPENDIX I

GLOSSARY

- Distinct - capable of being readily perceived (by sight, smell, touch or taste) through a sharp clear unmistakable impression; not blurred, obscured or indefinite.
- Persistent - existing without significant change; not fleeting.
- Pungent - a sharp or stinging sensation of an odour such as that of aldehyde.
- Rating - the process of assigning a number to a defect in order to describe its intensity.
- Scoring - the process of assigning a number corresponding to a specific rating number.
- Prorated Score - the process of adjusting a score for a given number of samples to correspond to a twelve can sample.
- Modified Score - the process of adjusting the score for a particular characteristic (eg. appearance, texture). This is done by subtracting from the score of one characteristic score (only if it is a negative score) contributed by another characteristic. Thus a negative score for colour (redder than average) is subtracted from the appearance score as the bright colour tends to improve the appearance of the product.
- A negative score is given for a sample found to contain more than an average amount of oil. This is intended to compensate for the increase in score given to samples whose softness is partly attributed to high oil content.
- Grading - the process of assigning a grade to a lot of fish.

FEBRUARY 12, 1988

APPENDIX J

Canned Skinless and Boneless Salmon

1.0 SCOPE

This standard shall identify canned and heat-processed Pacific skinless and boneless salmon in hermetically sealed containers prepared from the species shown in Table I, page 3 using current good manufacturing practices.

2.0 FORM OF PRODUCT PRESENTATION

2.1 Skinless salmon shall consist of regular pack salmon from which the skin has been substantially removed.

2.2 Boneless salmon shall consist of regular pack salmon from which the vertebrae have been substantially removed. No significant or prominent presence of rib or pin bones.

2.3 Solid - fish cut into transverse segments to which no free fragments are added. In containers of 450 g (one pound) or less of net content, such segments are cut in lengths suitable for packing into one layer.

In containers of more than 450 g net content, such segments may be cut into lengths suitable for packing in one or more layers of equal thickness and no layer shall have a thickness less than 2.5 cm. Segments are placed in the can with the planes of their transverse cut ends parallel to the ends of the can. A piece of a segment may be added, if necessary, to fill a container.

2.4 Chunk or chunks - a mixture of fish most of which have dimensions of not less than 1.2 cm in each direction and in which the original muscle structure is retained.

2.5 Flake, flaked or flakes - a mixture of particles of fish in which the muscle structure of the flesh is retained.

3.0 TOLERANCES

3.1 Solid pack salmon shall contain not more than 18% chunks and/or flaked salmon.

3.2 Chunk pack salmon shall contain not more than 50% flaked salmon.

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APPENDIX J (cont..)

- 3.3 Flaked salmon shall contain not more than 20% grated and/or shredded salmon.
- 3.4 A sample unit of skinless salmon in a 1/4 lb can exhibiting a piece of skin exceeding 25 sq mm or a combination of pieces exceeding 50 sq mm is a reject unit. (See Table XI)
- 3.5 Tolerances for 1/2 lb, 1 lb, and 4 lb containers are given in Table XI.
- 3.6 A sample unit of 1/4 lb, 1/2 lb, 1 lb or 4 lb can containing whole vertebrae or parts of vertebrae exceeding the acceptable numbers given in Table XI is considered a reject unit.
- 3.7 A sample unit shall show no significant or prominent presence of rib or pin bones.

3.8 TABLE XI

TOLERANCES FOR SKIN AND BONES BASED ON CONTAINER SIZE

Container Size	Skin (sq mm)		Bone
	Single Piece	Combination Pieces	Numbers
1/4 lb	25	50	1.0
1/2 lb	50	100	1.0
1 lb	100	200	2.0
4 lb	200	400	4.0

4.0 Rejection of a lot is based on A.Q.L. 6.5 (Appendix H, pages 21 and 22).

GRADE STANDARD
FOR
FRESH OR FROZEN
EVISCERATED SALMON

DEPARTMENT OF FISHERIES AND OCEANS
INSPECTION SERVICES DIRECTORATE
OTTAWA, ONTARIO

MARCH 26, 1991

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GRADE STANDARD FOR FRESH OR FROZEN EVISCERATED SALMON

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1.0 INTRODUCTION

This standard applies to fresh or frozen salmon that have been eviscerated, washed and presented with or without the head, and quick frozen as applicable. Authority for the standard which defines three acceptable grades for "Grade A", "Standard" and "Utility" is made under the Fish Inspection Regulations. Methods for sampling and examination are also described to determine lot compliance to the designated grade.

2.0 SCOPE

This standard for fresh or frozen eviscerated fish of the Salmonidae family covers the following species:

<u>Species</u>	<u>Common Name</u>	<u>Comments</u>
<u>Oncorhynchus nerka</u>	Sockeye Salmon	For all grades
<u>Oncorhynchus tshawytscha</u>	Spring Salmon	For all grades
	King Salmon	" " "
	Chinook Salmon	" " "
<u>Oncorhynchus kisutch</u>	Coho Salmon	For all grades
	Silver Salmon	" " "
<u>Oncorhynchus gorbuscha</u>	Pink Salmon	For all grades
<u>Oncorhynchus keta</u>	Chum Salmon	For all grades
	Keta Salmon	" " "
	Silver Bright Chum	For Grade A only
	Bright Chum	" " "
	Semi-Bright Chum	For standard grade
	Dark Chum Steaking Grade Qualla Chum	For standard & Utility Grades " "
<u>Oncorhynchus mykiss</u>	Steelhead Salmon	For all grades
	Steelhead Trout	" " "
	Rainbow Trout	" " "
	Deep Sea Trout	" " "
	Steelhead	" " "
<u>Salmo salar</u>	Salmon	For all grades
	Atlantic Salmon	" " "

The fish should be prepared using good manufacturing practices from sound wholesome raw material which is eviscerated to remove internal organs and viscera, washed to remove excess slime, blood, etc. and, where applicable, quick frozen and protected from oxidation and dehydration with a glaze ice coating or tightly wrapped membrane.

Codes of practice which are used for interpreting current good manufacturing practices include:

- (1) Recommended International Code of Practice - General Principles of Food Hygiene, CAC/RCP 1-1969 Rev. 1.
- (2) International Sampling Plans for Prepackaged Foods (1969) (AQL-6.5), CAC/RM 42-1969.
- (3) Recommended International Code of Practice for Fresh Fish CAC/RCP 9-1976.
- (4) Recommended International Code of Practice for Frozen Fish CAC/RCP 16-1978.
- (5) Recommended International Standard for Quick Frozen Guttled Pacific Salmon CAC/RS 36-1970.

3.0 Forms of Presentation

The product may be presented as fresh or frozen eviscerated fish, and may be:

- a) headless, or
- b) head-on

4.0 Labelling Requirements

Individual salmon or containers of salmon of the same species shall be labelled to indicate the:

- common name
- net weight
- name of packer or distributor
- date of production
- grade

When labelling containers, a descriptive term accurately identifying the method of harvest may precede the common name of the fish.

5.0 Grade Requirements

Eviscerated salmon or containers of eviscerated salmon designated with a grade must meet the appropriate grade description as follows:

- (a) "Grade A" if the salmon has a colour typical of the species of fish. It will be free from defects such as pugh holes, bites, cuts or disfiguring or open scars in the edible portion of the fish. The belly cavity and peritoneal lining must be intact. However, small, clean cuts or breaks in the lining or slight reddening (blushing) of the peritoneum may be permitted. The flesh must be firm and resilient with a colour typical of a prime fish of that species. Dressing must be thorough with no kidney tissue and no free blood left in the belly cavity. The odour shall be characteristic of the species, with no abnormal odours. Belly walls should be sound, indicating a healthy, well fed fish. Net marks that do not cut through the skin or bruise or soften the underlying flesh are permitted. There may be evidence of the onset of sexual maturity but predominant appearance will show dark above and silvery-white below, although some dulling may be apparent. Water marks (colour change caused by two fish resting against each other) and distinctive bars on chums may be evident but red, brown or green tints have not developed.

Pinks may start to show slight humping. Slight nooking of the nose may also be present in some salmon. Glaze or protective coating on frozen salmon shall be complete, with no dehydration or oxidation, minimal body distortion and no oil migration.

- (b) "Standard" grade if the salmon has lost the colour associated with fresh sea-run salmon of the species. The flesh may be softer so that an impression from finger pressure will be retained. The fish as a whole may be fairly limp. Small clean cuts, bites, pugh marks or gaff marks may be present. The flesh colour must be good to fair, characteristic of the species but may appear somewhat bleached. The belly cavity may have cuts, scrapes or some broken or cut ribs. Some ribs may be protruding as a result of belly burn and subsequent deterioration of the peritoneal lining. The belly lining may appear reddish (flushed) due to advancing belly burn.

There shall be no sour odour, but a late odour may be evident. Glaze or protective coating on frozen salmon shall be complete, with no dehydration or oxidation, moderate body distortion and no oil migration.

- (c) "Utility" grade if the salmon fails to meet the requirements for "Standard" but is not tainted, decomposed, or unwholesome.

6.0 Sampling and Examination

The sampling and examination procedures outlined in this section are used to determine the acceptability of the lot to the grade requirements.

6.1 Sampling

Sampling of lots of a specific species and grade for determination of the compliance to the designated grade shall be in accordance with the FAO/WHO Codex Alimentarius Sampling Plan (AQI, -6.5) (CAC/RM42-1969) except that the acceptance number for decomposition shall be reduced in accordance with the sampling plans contained in Annex B.

The tables in Annex B specify the minimum number of fish to be used for the following type of inspections:

- (a) Level I - the examination of all lots other than lots which are subject to reinspection.
- (b) Level II - the examination of all lots which are under reinspection.

For the purposes of the tables in Annex B, the average net weight of the fish of a specific species and grade must be known or determined prior to deciding the official sample size for inspection.

Example: A Level I inspection conducted on a lot consisting of 5000 kg of sockeye salmon, the average weight of which is determined to be 5 kg, requires an official sample size of 13 salmon, randomly collected from the lot.

6.2 Examination

Each fish will be individually examined for defects as described for the designated grade of the lot. In the case of frozen fish, the fish is examined in the frozen state for frozen state defects, defrosted, and subsequently examined for defects in the thawed or fresh state. Under the grade descriptions defined in Section 4.0, defects can be categorized into four types:

- (a) external appearance factors including frozen state defects;
- (b) internal appearance of the belly cavity factors;
- (c) flesh texture and colour factors; and
- (d) sexual maturity factors.

Annex "A" summarizes the Grade descriptions for each category of defects. The fish will be examined against each of the factors identified in the tables in Annex A. Annex C provides a list of definitions for the terms used in describing the defect factors.

7.0 Definition of Defective Fish

A fish shall be classified as defective when it fails to meet the designated grade of the lot.

8.0 Lot Acceptance

A lot will fail the requirements of the designated grade as follows:

Grade "A":

- (a) the number of defective fish exceeds the acceptance number of the appropriate plan; or
- (b) one or more utility or reject fish are encountered in the sample; or

"Standard":

- (a) the number of defective grade fish exceeds the acceptance number of the appropriate plan; or
- (b) one or more reject fish are encountered in the sample; or

"Utility"

- (a) the number of defective grade or reject fish exceed the acceptance number of the appropriate plan.

Lots not meeting the above lot acceptance criteria may be re-graded and offered for reinspection under Level II inspection.

Lots having any single instance of critical matters such as fuel oil or solvent contamination are not acceptable for any grade and cannot be offered for re-inspection.

ANNEX "A"

GRADE "A" GRADING CRITERIA

a) External Appearance Grading Criteria

1. No cuts or breaks in the covering skin of the edible portion of the fish. One well healed scar up to 6 sq. cm (1 sq. inch) will be permitted.
2. Good skin colour (as typical of the species), slight dulling or water-marking may be apparent on up to 50% of the dorsal surface.
3. No cherry belly (reddening of skin caused by broken blood vessels on ventral surface) except for very faint reddening near anal and pectoral fins.
4. Nil to slight scale lose (less than 20%).
5. Clear slime.
6. Net marks will not indent, perforate nor soften flesh.

FROZEN CHARACTERISTICS

Fish shall be protected by a complete glaze of ice or by a tightly wrapped membrane with no holes nor tears. There will be no evidence of dehydration or freezer burn on the external surface and gut cavity of the fish. Individually frozen fish will be minimally distorted. There will be no oil migration (rust) on the surface of the fish.

b) Internal Appearance of the Belly Cavity Grading Criteria

1. No belly burn; peritoneal lining intact (very slight blush may be permitted).
2. Small clean cuts or breaks in the belly cavity upto 2.4 cm. (1 inch) in total length. No protruding ribs.
3. Good flesh colour relative to sea-run species; not bleached looking.
4. Thorough cleaning (complete removal of blood, kidney, heart, gills, and esophagus). Reasonably free from residual blood.
5. No bruises nor dark blood discoloration are permitted.

c) Flesh Texture and Odour

Firm resilient flesh which does not leave impression when depressed. No flesh separation observed in belly cavity. The odour shall be fresh with no abnormal odours.

d) Sexual Maturity

Colour typical of the species (back may be somewhat faded, but predominant appearance will show dark above and silvery-white below). Water marks and distinctive bars on chums may be evident but red, brown or green tints have not developed. Pinks may start to show slight humping. Slight hooking of the nose may be present. Belly wall thickness will be consistent with the species.

"Standard" Grading Criteria

a) External Appearance Grading Criteria

1. Small clean cuts or breaks in skin, including pugh or gaff marks. One well healed scar permitted which may exceed 6 sq. cm. (1 square inch).
2. Dulling of skin colour (no longer characteristic of prime sea-run fish), dividing line between dark dorsal and light ventral less distinct.
3. Moderate cherry belly along lower ventral surface only.
4. Moderate to heavy scale loss (20% to 75%).
5. Dull slime; thickening, cloudy.
6. Net marks may indent and soften flesh.

Frozen Characteristics

Fish shall be protected by a complete glaze of ice or by a tightly wrapped membrane with no holes nor tears. Fish with slight freezer burn, less than 1 mm in depth, or slight oil migration must be reconditioned by trimming and/or washing to remove all traces. No traces of rancidity in the flesh will be permitted. Individually frozen fish may be moderately distorted.

b) Internal Appearance of the Belly Cavity Grading Criteria

1. Belly burn may be obvious (reddening of cavity with up to 25% of the peritoneal lining broken).
2. Cuts and breaks up to 5 cm (2 inches) in total length in belly cavity. Up to 10% of ribs may protrude, not more than 1 bruise up to 6 sq. cm (1 sq. inch) permitted.
3. Good to fair flesh colour (red and pink flesh may appear more bleached than in prime fish).
4. Cleaning should ensure that the gut cavity is reasonably free from blood, kidney, heart, gills and esophagus. Reasonably free from residual blood.

c) Flesh Texture and Odour

1. Flesh may have lost most of its resilience (impression remains when flesh is depressed, fish appears limp). No flesh separation observed in belly cavity.
2. No sour rancid nor abnormal odours.

d) Sexual Maturity

Moderate sexual development may be present, such as the loss of the distinct dividing line between the dark of the top and white bottom as the dorsal colour fades and the ventral surface darkens. Colour or colours may begin to show on the skin and prominent barring may be present in chums. The nose may be characteristically hooked along with other physical changes such as development of a distinct hump as in pink salmon. Belly walls may be thin.

"Utility" Grade Criteria

a) External Appearance Grading Criteria

1. Clean cuts or breaks in skin from any source.
2. Dull skin colour (or change in colour).
3. Extreme cherry belly may be evident.
4. Heavy to extreme scale loss (up to 100%).
5. Slime may be very thick, dull and in copious amounts.
6. Net marks may indent, perforate and soften flesh.

Frozen Characteristics

Fish showing dehydration, glaze damage. Moderate rust or freezer burn is present. Fish may be miss-shaped or distorted. Moderate "rust" or oil migration may be evidenced by several yellow spots penetrating the glaze.

b) Internal Appearance of the Belly Cavity Grading Criteria

1. Moderate to extreme belly burn (breakdown of muscle tissue in extreme cases which results in protruding ribs).
2. Clean cuts or tears in skin and belly cavity.
3. Noticeable loss of flesh colours (obvious bleached appearance).
4. Bruises permitted.
5. Cleaning should ensure that the gut cavity is reasonably free from blood, kidney, heart, gills and esophagus.

c) Flesh Texture and Odour

1. Fish may appear very soft (limp). Flesh separation may be obvious in belly cavity.
2. Slight abnormal odours.
3. There may be considerable odour associated with "late" fish.

d) Sexual Maturity

Moderate to advanced sexual maturity which may be evidenced by:

1. The predominate silver and blue-green sheen may be entirely lost and be replaced by one or more of the following colours; red, brown, black and yellow, depending on the sex and species.
2. Body shape may be grossly distorted as exemplified by the grotesque hook on the nose or exaggerated hump on the back.
3. Belly walls may be very thin.
4. Flesh colour may be bleached out and there may be some honeycombing of the flesh (usually observed only in frozen fish).

ANNEX B
Sampling Plan I

(Inspection Level I, AQL = 6.5)

Average net weight is equal to or less than 1 kg (2.2 lb)

Lot Size (N) # of fish	Sample Size (n)	Acceptance No. (c)
4,800 or less	6	1 (0)*
4,801-24,000	13	2 (1)
24,001-48,000	21	3 (2)
48,001-84,000	29	4 (3)
84,001-144,000	48	6 (4)
144,001-240,000	84	9 (6)
more than 240,000	126	13 (9)

Average net weight is greater than 1 kg (2.2 lb) but no more than 4.5 kg (10 lb)

Lot Size (N) # of fish	Sample Size (n)	Acceptance No. (c)
2,400 or less	6	1 (0)*
2,401-15,000	13	2 (1)
15,001-24,000	21	3 (2)
24,001-42,000	29	4 (3)
42,001-72,000	48	6 (4)
72,001-120,000	84	9 (6)
more than 120,000	126	13 (9)

Average Net weight is greater than 4.5 kg (10 lb)

Lot Size (N) # of fish	Sample Size (n)	Acceptance No. (c)
600 or less	6	1 (0)*
601-2,000	13	2 (1)
2,001-7,200	21	3 (2)
7,201-15,000	29	4 (3)
15,001-24,000	48	6 (4)
24,001-42,000	84	9 (6)
more than 42,000	126	13 (9)

*The figure in brackets under the Acceptance Number (c) indicates the acceptance number for decomposition.

ANNEX B
Sampling Plan II

(Inspection Level II, AQL = 6.5)

Average net weight is equal to or less than 1 kg (2.2 lb)

Lot Size (N)	Sample Size (n)	Acceptance No. (c)
# of fish		
4,800 or less	13	2 (1)*
4,801-24,000	21	3 (2)
24,001-48,000	29	4 (3)
48,001-84,000	48	6 (4)
84,001-144,000	84	9 (6)
144,001-240,000	126	13 (9)
more than 240,000	200	19 (13)

Average net weight is greater than 1 kg (2.2 lb) but not more than 4.5 (10 lb)

Lot Size (N)	Sample Size (n)	Acceptance No. (c)
# of fish		
2,400 or less	13	2 (1)*
2,401-15,000	21	3 (2)
15,001-24,000	29	4 (3)
24,001-42,000	48	6 (4)
42,001-72,000	84	9 (6)
72,001-120,000	126	13 (9)
more than 120,000	200	19 (13)

Average net weight is greater than 4.5 kg (10 lb)

Lot Size (N)	Sample Size (n)	Acceptance No. (c)
# of fish		
600 or less	13	2 (1)*
601-2,000	21	3 (2)
2,001-7,200	29	4 (3)
7,201-15,000	48	6 (4)
15,001-24,000	84	9 (6)
24,001-42,000	126	13 (9)
more than 42,000	200	19 (13)

*The figure in brackets under the Acceptance Number (c) indicates the acceptance number for decomposition.

ANNEX C

GLOSSARY OF TERMS USED TO DESCRIBE
GRADING CRITERIA

a) External Surface

1. Discoloured skin: readily discernible deviation from the normal characteristic colour of the species concerned.
2. Cherry belly: reddening of the skin caused by broken blood vessels on the ventral surface of the fish.
3. Net Marks: marks or abrasions that indent, perforate or soften the flesh caused by fish nets.
4. Cuts, scars and punctures: readily discernible damage to the skin.
5. Slime: a natural substance on the fish exterior which becomes thick, copious and cloudy as sexual maturity of the fish and/or decomposition progresses.
6. Scale loss: associated with flesh softening.

Defects in Frozen Fish

1. Damage to the protective coating:
voids in the ice glaze or tears in the covering membrane.
2. Dehydration or freezer burn:
loss of moisture from the surface tissue resulting in a dry, porous or spongy condition.

3. Body distortion: distortion or bending of the body during the freezing operation.
4. Oil migration: the movement of fish oil to the surface glaze due to prolonged cold storage or storage at elevated cold storage temperatures.

b) Internal Grading Criteria

1. Flesh colour: the loss of colour or bleaching due to advancing sexual maturity.
2. Belly burn: the reddening and eventual breakdown of the peritoneal lining in the gut cavity due to enzymatic action.
3. Cuts, tears and bruises: cuts and tears associated with evisceration of the fish and readily discernible localized discolouration caused by diffusion of blood into the flesh.
4. Improper washing: inadequate removal of slime, blood and bits of viscera from the surface of the fish and from the body cavity.

c) Texture and Odour

1. Flesh softening and separation: flesh softening and separation due to advancing sexual maturity and or spoilage.
2. Odour: sour, stale and late odours associated with advancing sexual maturity and/or spoilage.

d) Sexual Maturity

The onset of skin colour changes (red, brown or green tints), barring on chums, hooked nose, distinct back humping and thinning of belly walls associated with advancing maturity leading to spawning.

GLOSSARY OF GENERAL TERMS

Container	Any type of receptacle, package, wrapper or confining band used in packing or marketing fish.
Decomposed:	Fish that has offensive or objectionable odour, colour, texture or substance associated with spoilage.
Eviscerated:	Fish which has been gutted by cutting from the collar through the centre of the belly to the anal opening and removing the contents of the belly cavity.
Fresh:	Natural raw fish which has not been changed to any other state by freezing, cooking, curing, etc.
Frozen:	Fish that has been changed from the natural (fresh) state to that in which the thermal center of the product has been frozen to a temperature of -21 degrees celsius or colder, and the fish is maintained at a temperature of -26 degrees celsius or colder.
Rancid:	A pungent, sharp odour typical of oxidized oil, or an oil such as linseed oil.
Sour Odour:	An odour associated with such products as vinegar or acids or having an odour similar to sour milk.
Tainted:	Fish that is rancid or has abnormal odours.
Unwholesome:	Fish that has in or upon it bacteria of public health significance or substances toxic or aesthetically offensive to man.

HB

544

PUBLIC OPINION MESSAGE

DEAR: REPRESENTATIVE DAVIDSON

NAME: ROBERT & JESSICA BITTNER
TITLE:
ADDRESS: 366 SHEREN STREET
CITY: FAIRBANKS ZIP: 99712
PHONE: 488-6529
BILL NO: HB 544
SUBJECT: APPROP: SEED POTATO RESEARCH
MESSAGE: AS FAIRBANKS FARMERS AND EX-PRESIDENT OF FARMERS MARKET, WE ARE CONCERNED WITH CONTROL OF NATIVE AND IMPORTED PLANT DISEASES. WE SUPPORT HB 544, RESEARCH ON DISEASE FREE SEED POTATOES. A LAND GRANT COLLEGE UNIVERSITY OF ALASKA SHOULD BE MANDATED TO SPONSOR THIS AGRICULTURAL RESEARCH. THANK YOU. EOM/CLS

POHID: .7093450
DATE: 92/03/12
TIME: 09:34:50
LIONAME: FAIRBANKS LIO

COPIES: REPRESENTATIVES

CARNEY
FINKELSTEIN
HUDSON
IVAN
LEMAN
LINCOLN
MOYER
ZAWACKI

H. Cliff Davidson

HB 544

Research for Disease-free Certification of Potatoes

The following bill calls for \$375,000 to be spent on a major research project to develop virus and disease-free potatoes, in order that Alaska may continue to produce healthy potatoes for local and export market.

The Potato is a proven crop in Alaska, and a number of farmers are looking for ways of expanding their markets throughout Alaska, and establishing a thriving export market. This can be a solid revenue source, if we can insure the reputation of our product. There are diseases, such as Bacterial Ring Rot, for which there is no tolerance in the certification standards. These diseases need to be identified, methods of disease-free cultivation established, and varieties developed that are disease resistant.

On the cutting edge of world research, there are some very exciting research developments in bioengineering of disease resistant plants. Techniques are being developed to insert disease-resistant genes into a high-yielding crop cultivar. There are some fascinating developments in biocontrol, using beneficial microorganisms to kill disease organisms. This type of control would avoid some of the poisonous fungicides.

The University of Alaska at Fairbanks has begun research in this direction, and would be in position to have a team of plant pathologists, genetic engineer, tissue culturist, biocontrol specialist, and student assistants come up with an excellent program. As a land-grant university, it has the obligation to conduct research that will better Alaskan agriculture.

There is only one suggestion I would offer, as a grower of many different crops. I would included in this bill a specification that 25% of the research be spent on general disease diagnosis and control analysis of current problems that arise on any crop on Alaskan farms.

This bill will be reviewed by the House Natural Resources Committee on March 15. Please have your comments into the Legislative Information Office, 452-4448, addressed to the Committee members and your representatives before that date.

Thank you,

Jessica Bittner
South Slope Greenhouses
366 Sweren St. Fairbanks, Ak. 99712

November 19, 1991
Jessica Bittner
366 Sweren St.
Fairbanks.99712

Re: Plant Disease Diagnostician
Fairbanks, Alaska

There is a critical need for a plant disease specialist to work in Fairbanks. We have native diseases that are tough as only winter survivors can be, and there are unlimited new species being introduced under our noses in shipments of seeds, rooted cuttings, nursery stock, bulbs, potato stock.

My husband and I have operated a truck farm and greenhouse range for ten years. We have enjoyed the long days of summer, and the surprisingly wide variety of vegetables, flowers, and nursery stock that thrive in this climate. Nonetheless, we have been struck disastrously by water molds, greenhouse and field fungi and bacteria. We asked for help from the Cooperative Extension and the University, but these agencies, although sympathetic, had not the time nor the expertise to help us with identification, nor the correct practices to deal properly with these problems. The necessary information came from sales representatives from the Northwest, hit-or-miss search through trade journals, and finally taking time away from farming to attend Plant Pathology courses.

As retail growers, we are frequently asked about plant problems. Information for insect control is fairly accessible, but microorganisms remain much more of a mystery. Because fungicides are so toxic, control measures need to stress clean up, clean stock, ventilation, etc., the less toxic copper and sulfur compounds, and the new field of biological control (microorganism antagonism, suppressive soils, etc.).

If Alaska is to have a future in Agriculture, particularly if we intend to export potatoes or certified seed of any variety, we will need to institute certification programs. Precise knowledge of diseases must be available to any grower. Our isolation can be an advantage, limiting disease spread, but we can ruin the advantage of virgin lands through ignorance.

The job of disease diagnostician, accompanied by a small lab for culturing and identification, could be under the aegis of either the University's Plant Pathology section or the the Cooperative Extension Service, whichever agency would commit to supporting Alaska's agriculture, and obtaining the necessary funding.

There are three great elements of American Agriculture -the Farmers, the Cooperative Extension, and the University. The more we can work together, the greater we can be.

Alaska State Legislature
Representative Niilo Koponen


Pouch V
Juneau, Alaska 99811
(907) 465-4992

House District 21

119 N. Cushman, Suite 207
Fairbanks, Alaska 99701
(907) 456-8172

M E M O R A N D U M

TO: Representative Cliff Davidson, Co-Chair Resources
Representative Georgianna Lincoln, Co-Chair Resources

FROM: Representative Niilo Koponen 

RE: Additional Information Requested of HB 544

DATE: March 16, 1992

Because research is laborious and requires repeated trials and probing, and because there are hundreds of diseases afflicting potatoes, Dr. McBeath has delineated and prioritized four separate potato diseases that will require up to 10 years of research. The four diseases, in order of importance, are 1) Bacterial Ring Rot (BRR) 2) Bacterial Scab 3) Black Scurf 4) Soft Rot.

The research positions proposed will also allow for certification and diagnosis of potatoes under research. Each associate, assistant and aide will rotate the responsibilities of certification and diagnosis of potatoes. Currently, the Department of Natural Resources, Division of Agriculture/Plant Materials Center employs one diagnostician/certificatory of potatoes and other agriculture for the entire state. This person is expected to locate (visually) diseased seed potatoes entering Alaska. As we don't have a research lab for diagnosing diseased seed potatoes, it is necessary for this employee to send samples of suspicious potatoes to labs outside, each test averaging \$100.00. It is estimated that the State of Alaska Department of Natural Resources spends thousands of dollars each year on outside diagnosis labs for diseased potato research alone. It will be necessary to employ an additional diagnostician/certificatory when research is completed, especially after potato production increases.

Dr. McBeath has attempted to attain funding from the Alaska Science & Technology Institute three separate times, and has been routinely denied as ASTI believes agriculture in Alaska is a fruitless business. Also, ASTI prefers to fund research that is considered

Co-Chairs, Resources
Page Two
March 17, 1992

applicable, not basic (as they consider Dr. McBeath's proposed research). She has also sought United States Division of Agriculture-State Cooperative Research Program funding (USDA-SCRIP) for three consecutive years, but was denied because Alaska does not have a Federal USDA-SCRIP consulate. Also, they don't fund states such as Alaska, whom they don't consider to be potato productive.

**You Say Potato,
I Say Vital Supply
Of Plant Germplasm**

**At the Potato Center in Peru,
Old Varieties Are Guarded
And New Ones Invented**

By THOMAS KAMM

Staff Reporter of THE WALL STREET JOURNAL

LIMA, Peru—Of the many episodes of high drama in the annals of seed banks, not least was what happened at the Peruvian village of Huancapi, high in the Andes.

In 1984, groups of armed men swept through the town, murdering dozens of its inhabitants. The survivors fled, abandoning their potato crop. The Huancapi potatoes—diverse, resistant to pests and disease, and delicious—were a genetic treasure. Now they would be lost forever, and with it another increment of the world's biodiversity.

Four years later, when the villagers of Huancapi returned to their abandoned farms and wrecked homes, they contacted the Centro Internacional de la Papa (CIP), or International Potato Center here. Agents of the CIP earlier had collected seeds from the village and stored them away as part of its world potato collection (300 different species, 4,500 different varieties). They were able to restore many of Huancapi's unique potatoes to cultivation.

When we last visited the CIP 15 years ago, the center was busy preparing for just such a genetic crisis. Carlos Ochoa, potato hunter, was trekking all over South America at considerable personal risk to gather as many potato varieties as possible before they were lost to disease, development or desertification.

'Catch Him Alive!'

On one expedition, Mr. Ochoa was collecting wild potatoes in the mountains of Northern Peru when he says he suddenly heard someone scream from above: "Catch him alive!" Mr. Ochoa fired shots into the air. The attackers responded by rolling rocks down the mountain, but Mr. Ochoa managed to hide in a trench and then ran away. "They must have thought I was a treasure hunter," says Mr. Ochoa. "And they were right. Potatoes are much more precious than a jewel."

It is the same spirit that has animated many of history's seed bank guardians, from the swashbuckling plant explorers of the 1920s to the heroic scientists of Leningrad's Institute of Plant Industry—who, under Hitler's siege, starved to death one by one rather than eat any of the samples of rice, peas, corn and wheat that guaranteed their countrymen's postwar food supply.

By now the CIP has collected most of the known potato species (three of them, or about 1% of the world's potatoes, are named after Mr. Ochoa), and the center is turning its attention to the production of new strains to fend off the threat of large-scale famine as the globe's population increases.

A Potato That Fights Back

Perhaps the most exciting potato in the CIP at the moment is the "hairy potato." By cross-breeding domestic varieties with a wild Bolivian potato species called *Solanum berthaultii*, which is inedible and has hairy foliage, the CIP—working jointly with Cornell University—has come up with an edible potato that is resistant to all major potato pests and costs less to produce. "Insects get trapped in the hair and die," explains Dr. Ali Golmirzaie, a geneticist here who works on the project. "The hairy potato saves costs by reducing the need for pesticides."

"You should make clear that the hair isn't on the potatoes," says K.V. Raman, a CIP entomologist. "It's on the foliage."

While it works within the Consultative
Please Turn to Page A6, Column 1

Alaska State Legislature
Representative Niilo Koponen

Pouch V
Juneau, Alaska 99811
(907) 465-4992

House District 21

119 N. Cushman, Suite 207
Fairbanks, Alaska 99701
(907) 456-8172

Position Paper for SSHB 544

Currently, Alaska remains virus free, due to strict interception of those in the Division of Agriculture/Plant Materials Center, Potato Disease Control Program. However, afflicted with a bacterial disease that is known to have existed in America since 1931, Alaska's potato farms are becoming hosts of Bacterial Ring Rot (BRR). This highly contagious disease makes the potato inedible and unsightly and is rated zero-tolerance. In other words, if one plant in a field of seed potatoes is found to have the disease, the entire field cannot be sold. To destroy the bacteria, highly toxic chemical herbicides are used that are environmentally destructive and costly to boot. Aside from having to rid the field of every potato for sterilization, it is necessary to grow grasses in the field up to four years before the field can be guaranteed BRR-free.

States such as Washington and Idaho are currently experiencing difficulty with vending their seed-potatoes due to buyers' fear of purchasing either viral or bacterial infected seed potatoes. Idaho has been experiencing a 25% rejection rate of their seed-potatoes.

Made illegal in the United States in 1937, BRR has been and continues to be the catalyst of many law-suits and unnecessary expenditures of time and money. If Alaska could guarantee it's seed-potatoes to be free of BRR and other diseases, the result would be a highly lucrative renewable resource.

The recently discovered fungus 'Trichoderma' has proven to be effective in destroying the fungus "Black Scurf", infecting potatoes and other tubers. Further research of the fungus may provide answers to an absolute cure for BRR and other diseases.

Alaska State Legislature
Representative Niilo Koponen

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Juneau, Alaska 99811
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House District 21

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(907) 456-8172

M E M O R A N D U M

TO: Rep. Cliff Davidson, Co-Chair Resources
Rep. Georgianna Lincoln, Co-Chair Resources

FROM: Representative Niilo Koponen *NK*

RE: Amending SSHB 544

DATE: March 12, 1992

Please amend Line 1 to read "An Act making a special appropriation to the Department of Natural Resources to fund research at the University of Alaska into the...". Additionally, the same changes must be done to Line 5, Section 1 "The sum of \$375,000 is appropriated from the general fund to the Department of Natural Resources to fund research at the University of Alaska into the...". Thank you for your consideration.

DIAGNOSES AND CONTROL OF POTATO DISEASES IN ALASKA

Potatoes grow and produce well in Alaska; they are the most important agricultural crop in the state. One of the major advantages the Alaska potato industry has, is the absence of potato virus disease in the state. Growers can produce virus-free seed potatoes easily and cheaply.

The world seed potato market is valued at \$5 billion per year. Virus diseases are the most serious problems of seed potato industries in the US, Canada and other countries. For instance, Shepody, the potato favored by McDonalds, Wendy's, and other fast-food chains for making french fries, is grown extensively in the Pacific Northwest and Canada. Potato growers in the State of Washington now are planning to stop producing Shepody seed potatoes due to the prevalence of the virus diseases and the high costs of disease control. Growers are looking for new sources of seed potatoes.

The virus problems in Washington and other states would provide an opportunity for the Alaska potato industry to develop and market virus-free seed potatoes, if the bacterial ring rot (BRR) problem in the state was solved. In 1990, over 200 acres of potatoes in Alaska were not harvested due to BRR, representing 20 percent of the total acreage in the state. This disease causes rot in potatoes and makes them inedible. This disease is highly contagious and very hard to control; it is spread through diseased tubers, plants and through contaminated tools, storage bins, sacks, clothing, etc.

Bacterial ring rot is quarantined in Europe. It is the only disease in US and Canada with a "zero tolerance" regulation: the entire field of seed potatoes is rejected based on a single find of the diseased plant. To potato seed growers, BRR usually means loss of the crop and possible legal entanglement. This disease is extremely difficult to diagnose through visual observation, because diseased plants may appear to be healthy under certain conditions. For reliable diagnosis, highly sophisticated laboratory tests are essential. Unless proper diagnosis and adequate control are established, there is no future for the development of Alaska potatoes industry.

In recognition of this serious situation, the Alaska Farmer/Stock Growers' Association unanimously passed resolutions in 1991 and 1992 to support the establishment of a Potato Station. The functions of this station would include diagnoses of bacterial ring rot, scab (another major disease on potatoes in the state), and other diseases on seed potatoes as well as research on disease control, and improvement of germplasms through biotechnology.

An increment from the State Legislature would establish a diagnostic clinic at UAF for regular tests of potato diseases. The causes of bacterial ring rot and other important potato diseases would be investigated. Research would focus on non-chemical means of disease control such as biological control and plant transformation. The increment would fund 3.0 FTE research associates, 2.0 FTE research assistants, pool for lab assistants, equipment, supplies and travel.

The increment will cost \$370,000.

APPROACHES:

1) Bacterial Ring Rot Diagnosis

A diagnostic clinic will be established on the Fairbanks campus. A close working relationship will be established among the PI, diagnostician, and manager of the Potato Program, at the Plant Materials Center for the coordination of potato sampling methods and laboratory tests. A vigorous regimen of diagnostic tests--such as indirect fluorescent antibody stain, enzyme-linked immunosorbent assay (ELISA), gel diffusion tests, Gram stain and DNA fingerprinting--will be developed and implemented. Samples will be tested for BRR as well as viruses. Negative results from these diagnostic tests will provide Alaska seed growers with evidence they require to market potatoes in and out of state. Diagnostic results also will make their case more defensible in legal disputes.

2) Potato Disease Research

Research will be designed to learn about the cause of bacterial ring rot, scab, soft rot, black scurf, and other potato diseases. How do these pathogens cause diseases? What strains are primary? and what differences are there between Alaska pathogens and those of other states? This research will complement the disease diagnosis to improve its accuracy. Findings on weakness of pathogens will also be of assistance in the development of disease control. Research priority will be given to BRR and potato scab, because there is no effective method to control or manage them. Scab is the major cause of unmarketable potatoes in Alaska.

3) Potato Disease Control and Germplasm Improvement

Because diseases such as bacterial ring rot and scab do not respond to conventional means of control (chemical control), non-traditional methods of biological control and plant transformation are the focus of this proposal. Natural enemies of bacterial ring rot and scab will be found, manipulated, and tested for their ability in protecting plants and tubers against these diseases. Anti-bacterial genes from exotic sources (silkworm, bacteria, fungi, etc.) will be inserted into potato plants using genetic engineering and plant tissue culture techniques. Disease resistant properties of the transgenic plant will be tested and selected. Other useful characteristics e.g., frost resistance, early maturing, etc. can also be introduced into potato plants for the purpose of germplasm improvement.

EQUIPMENT JUSTIFICATION

A refrigerated high speed centrifuge, UV fluorescent microscope, UV spectrophotometer, ELISA plate reader, incubators, shaker, electrophoresis apparatus, gel dryer, etc. are needed to equip the diagnostic clinic. A potato planter, a hiller and a digger are needed for research conducted in the field.

BUDGET (yearly):

Personnel (salary + benefits):

Research Associate (diagnosis)	\$52,000
Research Associate (plant genetic engineering)	\$52,000
Research Associate (biological control)	\$52,000
Research Assistant (plant tissue culture)	\$39,000
Research Assistant (potato pathology)	\$39,000
2 Laboratory Aides, @ \$13,000 each (students)	\$26,000
2 Agricultural Helpers, @ \$6,500 each (students)	\$13,000
Equipment	\$60,000
Materials	\$25,000
Travel	<u>\$12,000</u>
Total	<u>\$370,000</u>

BALCHA FARMS
P.O. BOX 0019
SALCHA. AK. 99714

TO
NILLO KAPONEN
JUNEAU, ALASKA

20 FEB 1992

DEAR SIR; IT HAS BEEN AT LEAST 4 YEARS SINCE WE HAD A RING ROT INVASION. AT THAT TIME CANADA WAS WELL ON ITS WAY TO SET UP TESTING STATIONS. I'M AFRAID THAT WE ARE TOO LATE TO BREAK INTO AN OVERSEAS MARKET. POSSIBLY IN THE FUTURE RUSSIA MAY BE OPEN TO OUR POTATO SEED PRODUCTION. I KNOW WE HAVE SEVERAL VARIETIES THAT WOULD BE PRODUCTIVE IN THEIR LATITUDE.

BILL CAMPBELL OF THE ALASKA HAS DONE AN OUTSTANDING JOB OF INSPECTION AND SUPPLYING US WITH DISEASE FREE PLANTLETS. I AM ENCLOSED A COPY OF A LETTER HE WROTE TO MR SIBERT LAST YEAR WHEN WE WERE ATTEMPTING TO FUND JENNIFER'S PROPOSAL THROUGH A GRANT FROM THE SCIENCE AND TECHNOLOGY FOUNDATION. HE EXPLAINS THE PROBLEM FROM THE INSPECTOR'S VIEWPOINT.

SEED POTATO GROWERS LOCATED IN THE INTERIOR HAVE SEVERAL ADVANTAGES, FIRST WE HAVE LARGE ACRES AVAILABLE THAT HAVE NEVER BEEN PLANTED TO POTATOES. THEREFORE NEVER EXPOSED TO SOIL-BORNE DISEASES. SECONDLY OUR DRY COLD MITIGATES THE CARRY-OVER OF A NUMBER OF POTATO DISEASES. OUR DISADVANTAGES, IN ADDITION TO THE MORE OBVIOUS CLIMATIC LIMITATION, IS THAT DISEASES SUCH AS BACTERIAL RING ROT DO NOT DEVELOP TO A RECOGNIZABLE POINT DURING MOST SEASONS. THEREFORE A GROWER RAISING SEED IN THE INTERIOR AND CERTIFYING SAME TO BE DISEASE FREE IS TEMPTING FATE. WITH THIS IN MIND AND IN ANTICIPATION OF FUTURE FOREIGN MARKETS OPENING UP I APPROACHED DR. JAMES DREW AND DR. JENIFER MCBEATH WITH THE PROBLEM, HOPING THAT A SERVICE STATION FOR SEED GROWERS COULD BE ESTABLISHED THAT WOULD GIVE CREDENCE TO OUR CERTIFICATION.

YOURS TRULY

KEITH V PRICE

Milo Koponen

November 19, 1991
Jessica Bittner
366 Sweren St.
Fairbanks, 99712

Re: Plant Disease Diagnostician
Fairbanks, Alaska

There is a critical need for a plant disease specialist to work in Fairbanks. We have native diseases that are tough as only winter survivors can be, and there are unlimited new species being introduced under our noses in shipments of seeds, rooted cuttings, nursery stock, bulbs, potato stock.

My husband and I have operated a truck farm and greenhouse range for ten years. We have enjoyed the long days of summer, and the surprisingly wide variety of vegetables, flowers, and nursery stock that thrive in this climate. Nonetheless, we have been struck disastrously by water molds, greenhouse and field fungi and bacteria. We asked for help from the Cooperative Extension and the University, but these agencies, although sympathetic, had not the time nor the expertise to help us with identification, nor the correct practices to deal properly with these problems. The necessary information came from sales representatives from the Northwest, hit-or-miss search through trade journals, and finally taking time away from farming to attend Plant Pathology courses.

As retail growers, we are frequently asked about plant problems. Information for insect control is fairly accessible, but microorganisms remain much more of a mystery. Because fungicides are so toxic, control measures need to stress clean up, clean stock, ventilation, etc., the less toxic copper and sulfur compounds, and the new field of biological control (microorganism antagonism, suppressive soils, etc.).

If Alaska is to have a future in Agriculture, particularly if we intend to export potatoes or certified seed of any variety, we will need to institute certification programs. Precise knowledge of diseases must be available to any grower. Our isolation can be an advantage, limiting disease spread, but we can ruin the advantage of virgin lands through ignorance.

The job of disease diagnostician, accompanied by a small lab for culturing and identification, could be under the aegis of either the University's Plant Pathology section or the the Cooperative Extension Service, whichever agency would commit to supporting Alaska's agriculture, and obtaining the necessary funding.

There are three great elements of American Agriculture -the Farmers, the Cooperative Extension, and the University. The more we can work together, the greater we can be.

STATE OF ALASKA

WALTER J. HICKEL, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF AGRICULTURE/PLANT MATERIALS CENTER
... PRACTICAL PLANT TECHNOLOGY FOR THE NORTH

HC 03, BOX 7440
PALMER, ALASKA 99648
PHONE: (907) 748-4400

August 7, 1991

Dr. John Sibert
Alaska Science & Technology
Institute
550 W 7th Avenue Suite 360
Anchorage AK 99501-3555

Dear Dr. Sibert:

The disease Bacterial Ring Rot (BRR) of potatoes is a major concern to the North American industry. It is one of the most serious diseases of potato because of the ease and rapidity with which it can spread. The occurrence of this disease in potatoes grown in North America is often cited as the principal reason fresh potatoes are prohibited entry into Europe and Asia. Regions where the disease is said not to occur do not want this problem introduced, and, thus the disease is a trade barrier.

Ring Rot was first reported in North America in 1931. Potato certification agencies quickly adopted a zero tolerance for the disease in seed potato fields believing that this would lead to the elimination of this disease, but Ring Rot is still a major cause of the rejection of seed fields. Certification agencies and seed growers have been the targets of multi-million dollar law suits over this disease during the last several years.

Seed potato inspectors look for symptoms of the disease while walking seed fields. The symptoms that the inspectors are seeking can be masked. Symptom expression is affected by various factors. The cultivar will have its own reaction dictated by its genetic makeup and its physiological age. Symptom expression is affected by the environment due to variations in air and soil temperature, soil moisture and fertility, and the length of the photo period. The inoculum concentration in an infected seed piece will also affect symptom expression. Typically, 25% of the plants derived from inoculated tubers used in research plots, develop symptoms under ideal conditions. An acre planted to potatoes has a population near 15,000 plants. If there is a 1% infection level with 25% expression rate, only 38 plants will be showing symptoms. The dilemma facing the field inspector is obvious, but could be greatly improved if a systematic sampling procedure was coupled with a detection method independent of symptom expression. The Canadian Certified Seed Program has begun to test seed lots for Ring Rot with such a system, but the serological detection methods they are using are expensive and the probability of erroneous conclusions is high.

Dr. John Sibert
August 7, 1991
Page 2

The detection method proposed by Dr. Jenifer McBeath would not necessarily reduce the cost of testing, but could reduce the probability of error to more acceptable levels.

The project proposed by Dr. McBeath would directly and immediately benefit Alaska's potato growers. The fact that Ring Rot occurs in Alaska reduces the potential of exporting seed potatoes to near zero, even though the disease is not presently found in the seed. Pin pointing the diseased lots would help identify probable inoculum sources and aid in its elimination. There is no facility within Alaska that has the capability to sero-diagnose suspect plants. ~~The most exact methods need to be used because of the~~ economic implications of the disease. Suspect material is sent out of state for confirmation, but this takes a week or more. Funding of this proposal would give Alaska's potato growers a readily available diagnostic service.

Sincerely,



William L. Campbell
Potato Disease Control Program

WLC/ds

cc: Dr. Jenifer McBeath
Keith Price ✓
Paul Huppert



Fairbanks North Star Borough

25th Silver Anniversary

February 25, 1992

Hon. Nilo Koponen
AK House of Representatives
State Capitol Building
PO Box V
Juneau, AK 99811

Dear Representative Koponen:

The Fairbanks North Star Borough Agricultural Commission supports your bill to provide funding for potato disease research by the University of Alaska Agriculture and Forestry Experiment Station.

Table stock potatoes have historically been a successful and reliable crop for Interior Alaska, and the seed potato industry has great potential for expansion. The increasing prevalence of certain potato diseases in traditional seed-producing regions of the lower 48 represents an opportunity for growers in our state with regard to the export market. Since many of these diseases persist in the soil for years, there will be a growing shortage of "clean" tubers for both table stock producers as well as certified seed farmers throughout the Northwest. However, this "niche" market can only be exploited if Alaskans can keep our potato growing areas free of these diseases.

Seed potatoes currently imported into our state constitute a grave threat to a potential export industry built on disease-free certification. Specifically, while no outbreaks of viral potato diseases have been documented in our state, several instances of bacterial ring rot disease have been identified, which led to the total loss of income from those fields to the producer. This disease can be extremely difficult to identify in the field and requires specialized laboratory equipment to verify suspected outbreaks.

We must isolate and prevent any spread of this disease in our limited agricultural land base. A potato testing facility is needed to rigorously inspect incoming seed as well as to certify an export crop. This type of testing should not be conducted at the Palmer Plant Materials Center because of the danger of contaminating the foundation seed potato propagation program currently conducted there.

Due to the extremely regional nature of this project, it has been unable to attract outside (Federal) funding. In the absence of established commodity growers' associations in this state (which are renowned for their lobbying influence with their respective lower 48 Congressional delegations) the FNSB Agricultural Commission believes that it is the State government's role to fund projects such as this which have immediate relevance to Alaskan agriculture. Self-sufficiency and "value-added products" are the espoused goals for our policies regarding natural resources; this project is an attempt to fulfill them for the agricultural sector of our economy.

In addition, a project of this type points out the need for our State to establish a permanent source of funding for Alaska-specific (and hence nationally non-competitive) ag research.

Sincerely,

Gena M. Delucchi

Gena M. Delucchi, Chair
FNSB Agricultural Commission

cc: FNSB Mayor Sampson
Dr. Jennifer McBeath
AK Farmers and Stockgrowers

Alaska Farmers & Stockgrowers

Association, Inc.

"THE ALASKA FARM BUREAU"

February 20, 1992

To: Representative Niilo Koponen
House of Representatives
P.O. Box V
Juneau, Alaska 99811

From: Robert Franklin, President
Alaska Farmers and Stockgrowers Association
P.O. Box 75184
Fairbanks, Alaska 99707

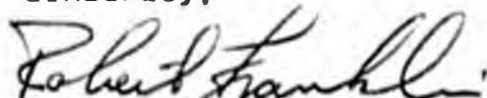
Dear Representative Koponen,

We understand you will be introducing a bill to establish a state-wide bacterial ring rot inspection station, located in the interior, to be used in Alaska seed potato production. Equipment used for ring rot detection will also detect other bacterial diseases. The resolution platform of the AF/SA calls for strong support of this measure. We will support you, and the bill you introduce to the utmost.

I'm sure you know that bacterial ring rot is a serious problem in many agricultural areas of the lower 48 states. Alaska, on the other hand, has no significant infestation of this bacteria. It is in the best interest of the Alaskan potato producers to maintain disease-free seed in order to prevent this bacteria from posing a major threat to crops. An inspection station such as the one you are proposing will provide the essential screening needed to eliminate contaminated seed from entering Alaska and to locate any sources of the bacteria which may already exist here.

It is extremely important that this legislation be implemented as quickly as possible in order to protect Alaskan crops before ring rot infestation occurs. We trust you will introduce legislation as soon as possible. Passage of a bill establishing this inspection station during this legislative session would be highly desirable.

Sincerely,


Robert Franklin

Rep. Koponen

January 10, 1992

Dear Jay:

I would like you to consider the following important issues for the potato industry in Alaska.

The potato has been profitably grown on a commercial scale in Alaska since the turn of the century. The annual cash value of the Alaskan potato crop has exceeded \$3,000,000 in recent years and has averaged well over \$2,000,000 through the last decade. Alaskan potatoes now consistently command more than 60% of the in-state fresh market and are occasionally exported to Seattle. Thus, they compete quite successfully in both quality and price with imports from other states.

The commercial stability of this crop is due largely to Alaska's relative isolation from diseases and pests. These maladies require expensive chemical control in other potato growing areas. Alaska is by no means immune from the importation of potato diseases, however. At times, significant quantities of the local crop have been left unharvested because of disease problems typically acquired through purchase of infected seed from lower 48 sources. Keeping disease problems at a minimum is thus a key factor in keeping the industry commercially profitable. This effort starts with a source of seed potatoes free of diseases, coupled with a seed certification program that minimizes reinfection during seed production. The next step requires growers to incorporate the clean seed and necessary sanitation practices into their management scheme.

The Potato Disease Control Program operated by the Alaska Plant Materials Center has given the Alaskan growers the opportunity to do just this. The program is basic to the health of the potato industry and is one of the few state successes in it's effort to stimulate agriculture in Alaska. It has been patterned after similar programs in the lower 48 and Canada, but it has been designed specifically to fit Alaska's needs. Laboratory-grown, disease-free seed potatoes produced by the PMC have enabled farmers to replace their diseased seed and clean up their farms without relying on out-of-state imports. On-farm testing of new varieties can now be accomplished without the fear of introducing diseases not now found in Alaska. This on-farm testing has clearly demonstrated the potential of producing russet and red-skinned, as well as white, varieties in Alaska that can compete with the imported potatoes now filling these market niches.

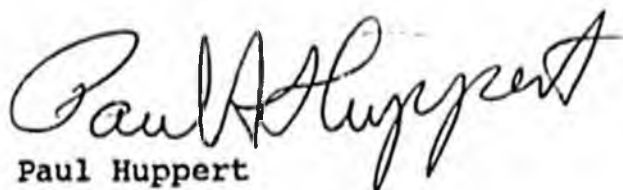
The Potato Disease Control Program further assists the industry through monitoring the health of the certified seed crop and the table potatoes, diagnosing diseased plants, recommending control strategies, and through various demonstration projects designed for educational value. The close ties the industry has to the PMC have come about largely due to the quick response the program has given to individual grower problems.

The foundation the industry requires for future growth depends upon this type of government support. Already we have seen progress in disease loss reduction, increase of finished product quality, and inroads to niche markets with russet and red potatoes. Long-term needs include the continuation of programs that have clearly demonstrated their value. It is important the technical personnel that the industry relies on are able to keep current with innovative developments through attending scientific meetings and training programs outside the state.

Technological innovations can be adapted to Alaskan conditions only if someone with our needs in mind attends these meetings. The industry needs to identify and reduce production costs which would enhance the possibility of producing potatoes for processing. Foreign markets need to be explored, especially for seed potatoes, to utilize our advantages of disease freedom and geographic location.

Thank you.

Sincerely,

A handwritten signature in cursive script that reads "Paul Huppert". The signature is written in dark ink and is positioned above the printed name.

Paul Huppert

cc: Ron Larson

Researcher gains ground in plant war

By JOSE LAMBIET
Staff Writer

A general in what she calls "microbial warfare," Jennifer McBeath throws her hordes of good fungus against bands of bad fungus that cause diseases in plants.

In her laboratory, the outcome of the battles—fought at a scale visible only through electronic microscopes—almost always goes the way of the good fungus, which she discovered five years ago within Alaska's frozen soil.

Yet McBeath, a University of Alaska Fairbanks researcher, said she is still a few years away from winning her war.

Once she does, the state's farmers and casual gardeners alike will be able to fight fungous diseases in their plants and crops with natural means instead of chemical ones.

"Chemical fungicides are a health hazard," said the researcher.

FUNGUS: UAF research

(Continued from Page A-1)
ments in our ground."

An associate professor in plant pathology and biotechnology at the UAF School of Agriculture, McBeath discovered in 1986 a particularly strong strain of microbial mold that fed on disease-causing fungi. Although the use of biological means to fight disease-causing fungi is nothing new, McBeath's discovery—called cold-tolerant Trichoderma—is more effective than most Trichoderma previously discovered. It also was the first found in Alaska.

Alaska's Trichoderma, which she found in the soil of UAF's experimental farm as well as near Chena Hot Springs, near Delta and near Palmer, works well in cold temperatures.

"One of the advantages of our Trichoderma," said McBeath, "is that it is active at low temperatures, grows fast and can be used in a wide variety of soils and environmental conditions."

Other types of Trichoderma discovered elsewhere in the country can only be used in greenhouses and need warm temperatures to thrive, which prohibited their use in Alaska. Now, McBeath's discovery can be used outdoors even in the northern regions when plants and crops need it the most: in the colder temperatures of the spring.

Disease-causing fungi attach themselves to seeds, roots or the

plants themselves, and feed on them. While feeding and multiplying, they damage the plants, leaving brown spots on leaves or spuds and even killing some mature plants. Fungi often look like cobwebs.

McBeath's Trichoderma, however, annihilates the bad fungi by eating it. When the bad fungus has disappeared, the Trichoderma dies off or looks for more "food" elsewhere.

"Fungus causes more diseases in plants than anything else," said McBeath, who has been using a \$61,000-a-year grant from the UAF Natural Resources Fund to conduct her experiments.

So far, McBeath and her staff of eight have conducted most of her experiments at UAF on potatoes, which are prone to fungi attacks. The data she collected indicate the Trichoderma works well, but she still has to figure out a way to commercialize the product.

"I think this product will give people an alternative," said McBeath, who was born in China and has worked at UAF since 1977. "They will not have to use chemicals anymore."

And that's good news for people like Jessica Bittner, the owner of South Slope Greenhouses on Chena Hot Springs Road.

"I tried some of the Trichoderma in my greenhouse and it works great," said Bittner.

CLOSEUP—The fungus's Trichoderma as viewed through an electron microscope. Early tests at UAF show that the fungus may be as effective as chemical agents now used to fight plant disease.



UAF photo

cher. "They pollute the environment and contaminate the water. The fungus I discovered is a natural way to fight disease in plants grown commercially on farms or in greenhouses."

McBeath said she still has several years of testing to conduct before the product can be commercialized, but four multi-national companies have recently signed a con-

fidential agreement with UAF to test the fungus in their laboratories and on fields.

"When people think of Alaska's resources, they think about gold, oil and game," McBeath said. "They don't know a real treasure in the state is the microbial life in Alaska's soil, such as these fungi. We have some unique, untapped elements." (See FUNGUS, Page A-7)

Miss K. Jensen

THE COUNTRY COUSIN IS BLOSSOMING, TOO

Roger H. Salquist, chief executive of Calgene Inc., can smile as he tours his greenhouses in Davis, Calif. In a few months, he hopes to market the world's first genetically engineered, good-tasting tomato. The yellow flowers blooming in his hothouses are a treasure, too: The plants produce canola, which can be used to make non-polluting industrial lubricants, healthier cooking oils, and cheaper cosmetics ingredients. It's exciting stuff. Yet Calgene's market value of \$180 million trails that of many biomedical companies. "Everybody assumes if you can spell 'gene' you can cure Alzheimer's," says Salquist. "I've got to bury a guy in 50 pounds of oil before they believe me."

Calgene, two dozen other small companies, and several research efforts inside the likes of Monsanto Co. and Ciba-Geigy Ltd. are the ugly ducklings of biotech. A decade ago, they, too, embraced genetic engineering. But they took the road less traveled—into agriculture and industrial processes. So far, the payoff has been small: James McCamant, editor of the *AgBiotech Stock Letter*, says that less than \$200 million worth of ag biotech products are sold worldwide each year.

LEANER MEAT. That number should soon start to grow. This year, the industry could receive two key product approvals from the Food & Drug Administration. One is Calgene's tomato. The other, sold by Monsanto, American Cyanamid Co., and others, is called BST. It's a growth hormone that increases milk output in cows. Meanwhile, Celgene Corp. in Warren, N.J., has just won a contract from General Electric Co. for eight "bioreactors," the first such plants in the U.S. They use microbes to break down cancer-causing methylene chloride, an industrial solvent.

Ag biotech's weakness hasn't been a lack of markets: Total agribusiness revenues in the U.S. top \$1 trillion a year. Companies such as Biotechnica International, DNA Plant Technology,

Escagenetics, IDEXX, and Belgium's Plant Genetic Systems, have a roster of exciting projects: disease- and pest-resistant crops, alternatives to petrochemicals, animal drugs and vaccines, food safety tests, and ways to grow livestock with leaner meat. Companies such as Mycogen Corp. and Ecogen Inc. are replacing chemical pesticides with safer, less polluting "biopesti-

churn out a single protein to use in a drug. And the industry is constrained by other forces of nature. "There is only one summer [a year]," notes Peter S. Carlson, chief scientist at Crop Genetics International Corp. in Hanover, Md., which is developing pesticide-producing bacteria that live inside corn plants. Researchers have to wait for growing seasons or for gestation cycles in animals to see if their experiments work.

BLUE YONDER. Even more frustrating is that while Wall Street cheers medical companies as if they were prizefighters, ag biotech companies are dodging bullets. Opponents such as gadfly Jeremy Rifkin and the Environmental Defense Fund argue that the long-term effects of genetic tinkering are unknowable, potentially dangerous, and not worth the risk. Their protests have delayed initial field trials of some ag biotech products.

It hasn't helped that the industry has been caught in regulatory never-never land. The FDA, the Agriculture Dept., and the Environmental Protection Agency haven't written final regulations governing the industry, in part because of an internal Administration battle over how to regulate ag biotech products. The industry is lobbying to break the logjam. But if the resulting regulations are seen as lax, says Margaret G. Mellon, the National Wildlife Federation's biotech expert, "environmental groups will generate opposition as never before."

A lot rides on Calgene's Flavr Savr tomato. Calgene's technology blocks genes in tomato cells from making an enzyme that triggers rot. The tomatoes can be picked riper, so they taste better and still withstand shipping. Salquist hopes the Flavr Savr will have a market of \$150 million annually by the late '90s. If it's a hit, it might dispel fears of ag biotech and grease the regulatory wheels—even without Calgene's fancy oils.

By Joan O'Connell in Davis, Calif., with John Carrey in Washington and Julia Flynn Siler in Chicago



BIOTECH ON THE FARM

Product	Developers	Anticipated approval	Market potential Millions*
ROT-RESISTANT TOMATO	Calgene, DNA Plant, ICI	1992	\$150
BST (MILK-PRODUCTION HORMONE)	Monsanto, American Cyanamid, Upjohn, Eli Lilly	1992	300
INSECT-HERBICIDE-RESISTANT CORN	Crop Genetics, Pioneer Seed, DuPont	1994	1,000
PST (LEAN PORK HORMONE)	Monsanto, American Cyanamid, SmithKline	mid-1990s	500
INSECT-HERBICIDE-RESISTANT COTTON	Monsanto, Calgene	1993	200

* Annual sales

DATA: AGRIBIOTECH STOCK LETTER, COMPANY REPORTS

cides" that use microbes, not chemicals, to fight pests. Still others are developing microbes that eat pollution. Monsanto alone has spent about \$1 billion in the past decade on ag biotech.

The problem is, none of this happens fast. Ag biotech lags behind biomedical companies in basic research, partly because altering whole plants and animals is trickier than making cells

H B

5 5 7

A M E N D M E N T

OFFERED IN THE HOUSE

TO: Draft CSHB 557()

Page 1, lines 1 and 2:

Delete all material and insert:

""An Act exempting production facilities and terminal facilities that are used solely for production, compression, transportation, or storage of natural gas from regulation for purposes of preparation of discharge prevention and contingency plans and compliance with financial responsibility requirements, and defining 'natural gas'. ""



Alaska State Legislature

REPRESENTATIVE BILL HUDSON

March 10, 1992

State Capitol
Juneau, Alaska
99801-1182
(907)465-3744 or 4991

COMMITTEES

CHAIR
House Special Committee
on Oil & Gas
MEMBER
Resources
Transportation
International Trade & Tourism

FINANCE SUBCOMMITTEE

Department of Transportation
and Public Facilities

Representative Cliff Davidson,
Chair - House Resources Committee
Alaska State Legislature
Juneau, Alaska

Dear Representative Davidson:

On Friday, March 6, the House Special Committee on Oil and Gas considered HB 557, relating to the regulation and conservation of natural gas and liquefied natural gas, and to the status of exploration and production facilities for purposes of oil and hazardous substance pollution control. The bill was reported out of committee, with all members present signing "do pass."

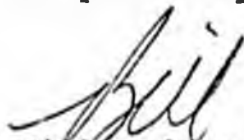
This legislation clarifies our statutory and regulatory controls on oil and natural gas, two very different substances. The intent is to lift the financial accountability and contingency plan and inspection requirements only for gas production facilities, which already undergo stringent separate federal and state agency review. It leaves in place the contingency plan and inspection requirements for gas exploration facilities.

It would be very much appreciated if you would place this House Special Committee on Oil and Gas legislation on the Resources Committee calendar for consideration, at the earliest possible time.

I have attached a copy of HB 557, a copy of the fiscal note, a copy of a legal memorandum prepared by Jack Chenoweth, Legislative Counsel, as well as an issue paper entitled "Liquefied Natural Gas."

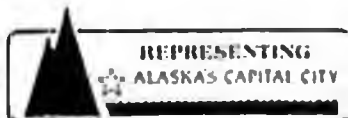
If you have questions, or if you need further information, please do not hesitate to contact me.

Respectfully,


Bill Hudson

BH:lh

Attachments



FISCAL NOTE

STATE OF ALASKA
1992 LEGISLATIVE SESSION

BILL NO. HB 557

Revision Date: _____
Title: Relating to natural gas
Sponsor: House Oil and Gas
Requestor: House Oil and Gas

Department Affected: Environmental Conservation
BRU: Spill Prevention and Response
Component: Spill Prevention, Planning and Management

COMPONENT SERIAL NO.

1	4	3	0
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EXPENDITURES/REVENUES: (Thousands of Dollars)

OPERATING	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98
PERSONAL SERVICES	0.0	0.0	0.0	0.0	0.0	0.0
TRAVEL						
CONTRACTUAL						
SUPPLIES						
EQUIPMENT						
LAND & STRUCTURES						
GRANTS, CLAIMS						
MISCELLANEOUS						
TOTAL OPERATING	0.0	0.0	0.0	0.0	0.0	0.0

CAPITAL						
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REVENUE FUND SOURCE:						
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FUNDING: (Thousands of Dollars)

GENERAL FUND	0.0	0.0	0.0	0.0	0.0	0.0
FEDERAL FUNDS						
OTHER FUND SOURCE:						
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0

POSITIONS:

FULL-TIME	0	0	0	0	0	0
PART-TIME						
TEMPORARY						

Estimate of current year impact: none

ANALYSIS: (Attach a separate page if necessary.)

Prepared by: Janice Adair
Division: Commissioner's Office

Phone: 465-5010
Date: 3/5/92

Approved by Commissioner: Janice Adair for John Sander
Agency: Environmental Conservation

Date: 3/5/92

Distribution (by preparer): Legislative Finance, Legislative Sponsor, Requestor, OMB, & Impacted Agency(ies).

DIVISION OF LEGAL SERVICES

**LEGISLATIVE AFFAIRS AGENCY
STATE OF ALASKA**

(907) 465-3867 or 465-2450
FAX (907) 465-2029
Mail Stop 3101

240 Main Street, Suite 500
Juneau, Alaska 99801-2101

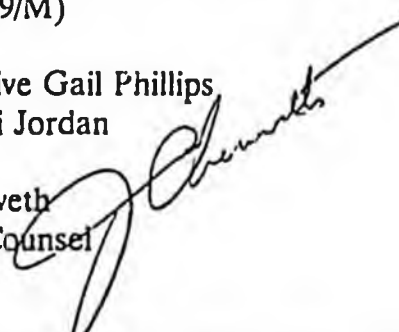
MEMORANDUM

February 21, 1992

SUBJECT: Treatment, for purposes of regulation and conservation, of natural gas and liquefied natural gas and of facilities related to their production -- sectional analysis of draft bill (Work Order No. 7-LS1919/M)

TO: Representative Gail Phillips
ATTN: Judi Jordan

FROM: Jack Chenoweth
Legislative Counsel



AS 46.04 generally addresses the subject of pollution attributable to oil and hazardous substances. In that chapter, under current law, liquefied natural gas--natural gas that is converted to liquid form by pressure and cooling--and the related gaseous hydrocarbons of "butane" and "propane" ^{1/} have been included within the definition of "oil" under AS 46.04.900:

(9) "oil" means oil of any kind and in any form, whether crude, refined, or a petroleum by-product, including but not limited to petroleum, fuel oil, gasoline, lubricating oils, oily sludge, oil refuse, oil mixed with other wastes, crude oils, liquefied natural gas, propane, butane, or other liquid hydrocarbons regardless of specific gravity;

Hence, these substances have been subject to regulation in the same manner as oil. Because of their inclusion in the definition of the term "oil," facilities for the production of natural gas are generally subject to the same requirements as are applicable to those producing crude oil.

^{1/} The terms "butane" and "propane" appear in the definition of "oil," AS 46.04.900(9), and nowhere else in that chapter. Standard reference works identify these two substances as hydrocarbons associated with oil that, under normal conditions of temperature and pressure, appear in gaseous form but are readily converted to and handled in liquid state. In that sense, then, they are not unlike liquefied natural gas and are treated like it in this measure.

This measure changes the status of natural gas and liquefied natural gas by deleting them from the definition of "oil" in order to alter in part the regulatory treatment applicable under AS 46.04 of natural gas production facilities.

*

The deletion of the reference to "liquefied natural gas," "propane," and "butane" from the definition of "oil" in AS 46.04.900 is made by bill section 3. Since the remaining portion of the definition includes some potentially ambiguous references under which natural gas might continue to be regulated, as a drafting matter I opted to set out in the definition of the term "oil" a new subparagraph, subparagraph (B), to make sure that natural gas and liquefied natural gas would be wholly excluded from the regulation.

*

The remaining bill sections, with one exception, consider the status of facilities.

Under AS 46.04.050, certain key sections of AS 46.04 are explicitly made inapplicable to certain facilities. Under current law, small oil terminal facilities only are exempt from the provisions of AS 46.04.030 (requirement of preparation of oil discharge prevention contingency plans), AS 46.04.040 (demonstration of proof of financial responsibility for operation of oil terminal facilities, exploration and production facilities, pipelines, and tank vessels), and AS 46.04.060 (state's right to inspect these facilities at reasonable times and without facility owner's prior consent).^{2/} The addition of a new paragraph made in bill section 1 adds natural gas production facilities to the exemptions and provides a definition for that term.^{3/}

^{2/} The exemption provided for small oil terminal facilities is expressed in terms of barrels of crude or refined product. There is no equivalent threshold for hydrocarbon products extracted as natural gas and converted to liquid form. It is not clear to me that defining the exemption in this manner (that is, in terms of "barrels," extends the exemption to a small facility that transfers, processes, or stores natural gas product in liquid form.

^{3/} Inclusion of natural gas production facilities within the inspection exemption of AS 46.04.060 does not necessarily mean that inspections of these facilities by personnel of the Department of Environmental Conservation will cease. Under AS 46.03.020(6):

Sec. 46.03.020. POWERS OF THE DEPARTMENT. The department may

...

(6) at reasonable times enter and inspect with the consent of the owner or occupier any property or premises to investigate either actual or suspected sources of pollution or contamination or to ascertain

(continued...)

These changes in the definition of the term "production facility" as it relates to gas have significant legal consequences involving natural gas production facilities. First, natural gas production facilities are exempted from the spill prevention and contingency requirements imposed by AS 46.04.030(b) and 46.04.030(k)(2). Second, natural gas production facilities are exempted from the proof of financial responsibility provisions of AS 46.04.040(b), currently set at \$20,000,000. Finally, natural gas production facilities are exempted from inspection under AS 46.04.060.

AS 46.04 differentiates between various kinds of facilities. In bill section 2, in order to make sure that the exemption provided by bill section 1 is not applicable to natural gas exploration facilities, the definition of the term "exploration facility" is amended to incorporate an explicit reference to natural gas.

Bill section 4 amends the definition of the term "production facility," to facilities that are used for "crude oil and associated liquid hydrocarbons," thereby omitting from the definition of production facility those that treat with hydrocarbons in gaseous form.

Bill section 5 supplies a definition for the term "natural gas."

JBC:plm:gc
92-120.plm

3/ (...continued)

compliance or noncompliance with a regulation that may be adopted under AS 46.03.020 - 46.03.040; information relating to secret processes or methods of manufacture discovered during investigation is confidential;

There are also "inspection" references in AS 46.04.020(c)(3) and 46.08.040(a)(2)(C), though these are arguably of no substantive significance in the context of this measure and may be ignored.

At best the treatment given the subject of inspection exemption by this version of the bill creates an ambiguity. To assure a total exemption from inspection, additional language should be added on page 1, line 8, after "facility;" to say:

"a natural gas facility is also exempt from inspection under AS 46.03.020;"

LIQUEFIED NATURAL GAS

Liquefied natural gas ("LNG") is manufactured from natural gas at the Kenai LNG Plant, which is jointly owned by Phillips Alaska Natural Gas Company and Marathon Oil Company.

The LNG manufacturing process begins with additional purification over that required for pipeline transport and sale of natural gas in its gaseous state. That is, the natural gas, which is predominately methane, undergoes the removal of contaminants such as carbon dioxide and water. The natural gas is then liquefied by a refrigeration process that lowers its temperature to -240 deg. F (-151 deg. C). The pressure of the LNG is then reduced to slightly over atmospheric pressure, which further cools it to -259 deg. F (-161 deg. C) and allows the removal of inert nitrogen gas. The LNG is now at 1/600th of its original volume and at low pressure, which makes long-distance shipping feasible. The LNG is stored at the receiving terminal as a liquid and is vaporized as needed for use as a high-quality fuel.

Liquefied natural gas is half as dense as water, is colorless, odorless, nontoxic, and sulfur-free. If exposed to ambient conditions, LNG quickly warms and evaporates, leaving no sheen or residue.

"Liquefied natural gas" is defined as "oil" with regards to "oil pollution control" in AS 46.04.900 (9). Oil discharge prevention and contingency plans are intended to portray that an applicant "has access to sufficient resources to protect environmentally sensitive areas and to contain, clean up, and mitigate oil discharges from the facility or vessel within the shortest possible time". It is difficult to envisage the utility of including LNG in the definition of oil under the context of oil pollution control.





ALASKA STATE LEGISLATURE

Representative Gail Phillips

TO: Member of the House Special Committee on Oil and Gas

FROM: Representative Gail Phillips

DATE: February 24, 1992

RE: AS 46.04

I am pleased today to offer this proposed legislation which clarifies our statutory and regulatory controls on oil and natural gas.

Prior to this proposal, the definition of oil in Title 46 also encompassed natural gas, liquified natural gas, and related gases. This is simply inappropriate for the intended purpose of Title 46, which is to ensure the prevention or cleanup of spills of oil and "other hazardous substances".

Most of us are aware of the basic chemical differences between oil and gas; and, having closely observed the effects of the two most recent oil spills in our state, we are all too aware of the nature of oil for purposes of clean up.

Had these spills been spills of gas in equivalent volumes, our state, our people, and our natural resources would not have undergone the catastrophe we experienced in 1989. This is because gas dissipates into the atmosphere, leaving no residue, no sheen, no by-product to harm the environment.

I feel we have an obligation to impose statutory controls that recognize these differences and present an even-handed approach to environmental protection.

That is not to say that we are proposing to ignore regulatory controls on all gas operations. This legislation would lift the financial accountability and contingency plan and inspection requirements only for gas production facilities, which already undergo stringent separate reviews by DOT, OSHA, and EPA. But it leaves in place those requirements for exploration facilities, where either oil or gas may be discovered.

I urge the committee to support the introduction of this legislation, and I would invite the committee to visit, if possible, the facilities in my district such as the Phillips Petroleum LNG plant at Nikiski to get a first-hand look at a natural gas production facility.

Let me now introduce Mr. Roy Lyoris and Mr. Larry Porter of Phillips Petroleum who can further clarify this issue and answer any technical questions you may have.

Thank you Mr. Chairman.

CS FOR HOUSE BILL NO. 557 ()
IN THE LEGISLATURE OF THE STATE OF ALASKA
SEVENTEENTH LEGISLATURE - SECOND SESSION

BY

Offered:
Referred:

Sponsor(s): HOUSE SPECIAL COMMITTEE ON OIL AND GAS

A BILL

FOR AN ACT ENTITLED

1 "An Act relating to the status of natural gas production and terminal facilities for
2 purposes of oil and hazardous substance pollution control."

3 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

4 * Section 1. AS 46.04.050 is amended by adding a new subsection to read:

5 (b) The provisions of AS 46.04.030 and 46.04.040 do not apply to a natural gas
6 production facility and a natural gas terminal facility; for purposes of this subsection the terms
7 "natural gas production facility" and "natural gas terminal facility"

8 (1) mean a platform, facility, or structure that is used solely for the production,
9 compression, storage, or transport of natural gas;

10 (2) do not include a platform, facility, or structure that produces, stores, or
11 transports natural gas in combination with oil.

12 * Sec. 2. AS 46.04.900 is amended by adding a new paragraph to read:

13 (22) "natural gas"

14 (A) means a hydrocarbon that at 70 degrees Fahrenheit and atmospheric

- 1 pressure is in a gaseous state;
- 2 (B) includes liquefied natural gas or ~~other~~ of natural gas that has
- 3 been converted to a liquid state by pressure or cooling that at 70 degrees Fahrenheit and
- 4 atmospheric pressure reverts to a gaseous state.

H B

5 6 0

FISCAL NOTE

STATE OF ALASKA
1992 LEGISLATIVE SESSION

BILL NO. HB 560

Revision Date: _____

Department Affected: Commerce & Econ. Dev.

Title: Transfer of entry permit on execution

BRU: Investments

Component: _____

Sponsor: House Rules by Request of Governor

Requestor: Resources

COMPONENT SERIAL NO.

0	3	8	4
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EXPENDITURES/REVENUES: (Thousands of Dollars)

OPERATING	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98
PERSONAL SERVICES						
TRAVEL						
CONTRACTUAL						
SUPPLIES						
EQUIPMENT						
LAND & STRUCTURES						
GRANTS, CLAIMS						
MISCELLANEOUS						
TOTAL OPERATING	0	0	0	0	0	0
CAPITAL	0	0	0	0	0	0
REVENUE FUND RESOURCE:	0	0	0	0	0	0

FUNDING: (Thousands of Dollars)

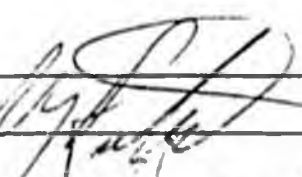
GENERAL FUND						
FEDERAL FUNDS						
OTHER FUND SOURCE:						
TOTAL	0	0	0	0	0	0

POSITIONS:

FULL-TIME	0	0	0	0	0	0
PART-TIME						
TEMPORARY						

Estimate of current year impact: 0

ANALYSIS (Attach a separate page if necessary.)

Prepared By: Martin J. Richard, Director  Phone: 465-2510

Division: Investments Date: 3/27/92

Approved by Commissioner: Glenn A. Olds 

Agency: Department of Commerce & Economic Development Date: 3/24/92

Distribution (by preparer): Leg. Fin., Legislative Sponsor, Requestor, OMB/DBR, Gov. Legis. Ofc., and Impacted Agency(ies).

HB 560: "Transfer of entry permit on execution."

Since enactment of AS 16.43.150(g), which protected limited entry permits from execution by creditors, the courts have nonetheless ruled in two cases that a permit holder's interest in a permit may be executed upon to satisfy a third party claim. Under Alaska law, only the Commercial Fisheries Entry Commission (CFEC) is authorized to transfer title to a permit. Currently, the CFEC's statutes do not provide for transfers in the case of execution by creditors. This bill is intended to address this deficiency.

Subsections 2 and 3 of the bill addresses the situation where a permit is collateral for a loan through the Department of Commerce and Economic Development or the Commercial Fishing and Agriculture Bank (CFAB). CFEC currently denies requests for the transfer of entry permits under this situation and this legislation incorporates the same requirement with respect to requests for the transfer of entry permits made in connection with a valid execution.

The department supports this legislation but recommends the following amendments:

Amend Section 1 of the bill as follows:

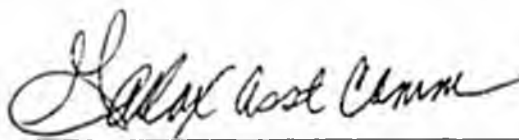
AS 16.43.150(g) should include a reference to AS 16.10.338. This section allows the department to use a limited entry permit as collateral for loans made under AS 16.10.310(a). AS 16.10.333 only relates to limited entry permits that were purchased with loan proceeds.

Amend Section 2 of the bill as follows:

AS 16.43.170(b) should also include a reference to AS 16.10.338 for the same reasons as explained above.

Amend Section 3 of the bill as follows:

AS 16.43.170(g)(4) should also include a reference to AS 16.10.338 for the same reasons as explained above.



Glenn A. Olds, Commissioner

Date: 3.24.92

FISCAL NOTE

No. 4
 Bill Version: HB 560
 (H) Publish Date: 3-16-92

STATE OF ALASKA
 1992 LEGISLATIVE SESSION

Revision Date: _____
 Title: Regulate transfer of limited entry permits due
to execution
 Sponsor: Governor
 Requestor: _____

Department Affected: Revenue
 BRU: Revenue Operations
 Component: _____

Component Serial No.

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Expenditures/Revenues: (Thousands of Dollars)

OPERATING	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98
PERSONAL SERVICES						
TRAVEL						
CONTRACTUAL						
SUPPLIES						
EQUIPMENT						
LAND & STRUCTURES						
GRANTS, CLAIMS						
MISCELLANEOUS						
TOTAL OPERATING	0	0	0	0	0	0

CAPITAL						
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REVENUE FUND SOURCE						
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FUNDING: (Thousands of Dollars)

GENERAL FUND						
FEDERAL FUNDS						
OTHER FUND SOURCE						
TOTAL	0	0	0	0	0	0

POSITIONS:

FULL-TIME						
PART-TIME						
TEMPORARY						

Estimate of current year impact: _____

ANALYSIS: The Department of Revenue is unaffected by this legislation.

Prepared by: Rod Mourant *Rod Mourant* Phone: 465-2300
 Division: Commissioner's Office Date: March 12, 1992
 Approved by Commissioner: Darrel J. Rexwinkel *Darrel J. Rexwinkel*
 Agency: Revenue

Distribution (by preparer): Legislative Finance, Legislative Sponsor, Requestor, OMB, & Impacted Agency(ies).

FISCAL NOTE

No. 3

STATE OF ALASKA
1992 LEGISLATIVE SESSION

Bill Version: HB 560

(H) Publish Date: 3-16-92

Revision Date: _____

Department Affected: Fish and Game

Title: Regulate the transfer of limited entry fishing permits

BRU: Commercial Fisheries Entry Commission

Component: Limited Entry Program Administration

Sponsor: Rules Committee

Requestor: Governor

COMPONENT SERIAL NO.

	4	7	1
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EXPENDITURES/REVENUES: (Thousands of Dollars)

OPERATING	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98
PERSONAL SERVICES						
TRAVEL						
CONTRACTUAL						
SUPPLIES						
EQUIPMENT						
LAND & STRUCTURES						
GRANTS, CLAIMS						
MISCELLANEOUS						
TOTAL OPERATING	0.0	0.0	0.0	0.0	0.0	0.0

CAPITAL						
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REVENUE						
FUND SOURCE:						

FUNDING: (Thousands of Dollars)

GENERAL FUND						
FEDERAL FUNDS						
OTHER FUND SOURCE:						
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0

POSITIONS:

FULL-TIME						
PART-TIME						
TEMPORARY						

Estimate of current year impact: _____

ANALYSIS: (Attach a separate page if necessary.)

Prepared By: Roger Kolden

Phone: 789-6160

Division: Commercial Fisheries Entry Commission

Date: 03/11/92

Approved by Commissioner: _____

Agency: CFEC

Date: 3/11/92

Distribution (by preparer): Leg. Fin., Legislative Sponsor, Requestor, OMB/OBR, Gov. Legis. Ofc., & Impacted Agency(ies).

FISCAL NOTE

STATE OF ALASKA
 1992 LEGISLATIVE SESSION

Revision Date: 3/12/92

Department Affected: Fish and Game

Title: Transfer of limited entry permits

BRU: Commercial Fisheries

Component: Commercial Fisheries

Sponsor: Rules Committee by Governor

Requestor: _____ COMPONENT SERIAL NO.

4	5	9
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 Expenditures/Revenues: (Thousands of Dollars)

OPERATING	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98
PERSONAL SERVICES	0	0	0	0	0	0
TRAVEL	0	0	0	0	0	0
CONTRACTUAL	0	0	0	0	0	0
SUPPLIES	0	0	0	0	0	0
EQUIPMENT	0	0	0	0	0	0
LAND & STRUCTURES	0	0	0	0	0	0
GRANTS, CLAIMS	0	0	0	0	0	0
MISCELLANEOUS	0	0	0	0	0	0
TOTAL OPERATING	0.0	0.0	0.0	0.0	0.0	0.0

CAPITAL	0	0	0	0	0	0
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REVENUE FUND SOURCE:	0	0	0	0	0	0
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FUNDING: (Thousands of Dollars)

GENERAL FUND	0	0	0	0	0	0
FEDERAL FUNDS	0	0	0	0	0	0
OTHER FUND SOURCE:	0	0	0	0	0	0
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0

POSITIONS:

FULL-TIME	0	0	0	0	0	0
PART-TIME	0	0	0	0	0	0
TEMPORARY	0	0	0	0	0	0

Estimate of current year impact: None

ANALYSIS: (Attach a separate page if necessary.)

Prepared By: Geron Bruce G.B. Phone: 465-4100

Division: Commissioner's Office Date: 3/12/92

Approved by Commissioner: [Signature]

Agency: Department of Fish and Game Date: 3/13/92

FISCAL NOTE

No. 1
 L Version: HB 560
 (H) Publish Date: 3-16-92

STATE OF ALASKA
 1992 LEGISLATIVE SESSION

Revision Date: _____
 Title: Draft bill establishing procedures to
govern transfers of entry permits
 Sponsor: _____
 Requestor: _____

Department Affected: Commerce & Econ. Dev.
 BRU: Investments
 Component: _____

COMPONENT SERIAL NO.

0	3	8	4
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EXPENDITURES/REVENUES: (Thousands of Dollars)

OPERATING	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98
PERSONAL SERVICES						
TRAVEL						
CONTRACTUAL						
SUPPLIES						
EQUIPMENT						
LAND & STRUCTURES						
GRANTS, CLAIMS						
MISCELLANEOUS						
TOTAL OPERATING	0	0	0	0	0	0
CAPITAL	0	0	0	0	0	0
REVENUE FUND RESOURCE:	0	0	0	0	0	0

FUNDING: (Thousands of Dollars)

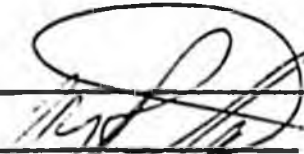
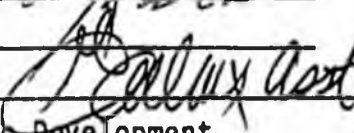
GENERAL FUND						
FEDERAL FUNDS						
OTHER						
FUND SOURCE:						
TOTAL	0	0	0	0	0	0

POSITIONS:

FULL-TIME	0	0	0	0	0	0
PART-TIME						
TEMPORARY						

Estimate of current year impact: 0

ANALYSIS (Attach a separate page if necessary.)

Prepared By: Marti J. Richard, Director  Phone: 465-2510
 Division: Investments Date: 3/13/92
 Approved by Commissioner: Glenn A. Olds 
 Agency: Department of Commerce & Economic Development Date: 3-18-92

Distribution (by preparer): Leg. Fin., Legislative Sponsor, Requestor, OMB/DBR, Gov. Legis. Ofc., and Impacted Agency(ies).

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5 6 6



Alaska State Legislature

Please enter into the record my testimony to the House Resources
committee name

committee on HB# 566, dated 3/26/92
bill/subject

per item (c) Administrative expenses of the
Foundation shall be paid from the income of the
endowment. IF this is the established "Foundation"
THAT is ALREADY giving out grants. Would or will you
Establish that only administrative expenses for each grant
given under this LAW

Also could grants be given for mariculture research
projects such as: oyster remote site settings
oyster harvi project such as
AT SEWARD

Signed: *Lawrence McCubbins*
Testifier Lawrence McCubbins

Representing (Optional)
P.O. Box 1656 Homer AK 99603-1656
Address
235 5346
Phone No.

7-LS2188D
Lauterbach
3/31/92

CS FOR HOUSE BILL NO. 566 (RESOURCES)
IN THE LEGISLATURE OF THE STATE OF ALASKA
SEVENTEENTH LEGISLATURE - SECOND SESSION

BY THE HOUSE RESOURCES COMMITTEE

Offered:
Referred:

Sponsor(s): HOUSE RESOURCES COMMITTEE

A BILL

FOR AN ACT ENTITLED

1 "An Act establishing an endowment in the Alaska Science and Technology Foundation to
2 fund grants for educational, public affairs, and tourism purposes related to the Exxon
3 Valdez oil spill, to promote environmental monitoring through increased public awareness,
4 and for related marine pollution and coastal habitat education; and providing for an
5 effective date."

6 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

7 * Section 1. AS 37.17.010(b) is amended to read:

8 (b) The purpose of the foundation is to

9 (1) administer the Alaska science and technology endowment under
10 AS 37.17.020 -37.17.030 and 37.17.090 to promote and enhance, through basic and applied
11 research, [:] economic development and technological innovation in Alaska, [:] public health, [:]
12 telecommunications, [:] and sustained growth and development of Alaskan scientific and
13 engineering capabilities; and

1 (2) administer the Exxon Valdez oil spill endowment under AS 37.17.200 -
2 37.17.290 in order to make grants for educational, public affairs, and tourism purposes
3 related to the Exxon Valdez oil spill, to promote environmental monitoring through
4 increased public awareness, and for related marine pollution and coastal habitat education.

5 * Sec. 2. AS 37.17 is amended by adding new sections to read:

6 ARTICLE 2. EXXON VALDEZ OIL SPILL ENDOWMENT.

7 Sec. 37.17.200. ENDOWMENT ESTABLISHED. (a) The Exxon Valdez oil spill
8 endowment is established in the Alaska Science and Technology Foundation. It consists of

9 (1) money appropriated to it by the legislature from money received by the state
10 as remedial and compensatory payments under the criminal plea agreement between the United
11 States and Exxon Shipping Company and Exxon Corporation in United States of America v.
12 Exxon Corporation and Exxon Shipping Company, United States District Court, District of
13 Alaska, No. A90-015 CR;

14 (2) other money appropriated to it by the legislature; and

15 (3) gifts, grants, and other aid received by the foundation under AS 37.17.210(b).

16 (b) Notwithstanding other provisions of AS 37.17.200 - 37.17.290, money appropriated
17 to the fund under (a)(1) of this section is restricted to uses consistent with restrictions placed on
18 use of the money by the federal court that approved the plea agreement described in (a)(1) of this
19 section. To the extent that a provision of AS 37.17.200 - 37.17.290 violates the restrictions of
20 the federal court, the provision is superseded by the federal court restriction.

21 (c) The endowment shall be held and invested by the Alaska Permanent Fund
22 Corporation subject to AS 37.13.120; however, net income from the endowment shall be
23 distributed under AS 37.17.200 - 37.17.290. Net income from the endowment may not be
24 included in the computation of net income available for distribution under AS 37.13.140.

25 Sec. 37.17.210. ENDOWMENT INCOME AND EXPENSES. (a) The distribution of
26 the income and realized capital gains of the endowment is subject to AS 37.07. The net annual
27 realized capital gains of the endowment may be equally divided between the income and the
28 principal of the endowment. Upon application of the foundation's board of directors or its
29 authorized representative, after authorization under AS 37.07, the Alaska Permanent Fund
30 Corporation shall pay to the foundation the income appropriated.

31 (b) In addition to endowment income, the foundation may receive gifts, grants, and other

1 aid. The foundation may accumulate income, gifts, grants, and other aid from any one year and
2 distribute them in a later year.

3 (c) The administrative expenses of the foundation are subject to AS 37.07 and shall be
4 paid from the income of the endowment.

5 (d) The board shall distribute the income of the endowment through competitive grants
6 under AS 37.17.220. The board may disburse money that is received by the foundation for
7 special or general purposes.

8 (e) Subject to AS 37.07, the board may pay into the principal of the endowment any part
9 of the endowment income. Money paid to the principal under this subsection may not later be
10 withdrawn by the board.

11 Sec. 37.17.220. GRANT PROGRAM. (a) Subject to AS 37.17.200(b) and terms and
12 conditions set by the board, the board shall make grants from the income of the endowment for
13 educational, public affairs, and tourism purposes related to the Exxon Valdez oil spill, to promote
14 environmental monitoring through increased public awareness, and for related marine pollution
15 and coastal habitat education. Educational projects funded by a grant may include youth
16 education, adult education, tourism-related education, and other public education and information.

17 (b) The board shall provide adequate and appropriate notice of all solicitations for grant
18 proposals throughout the area of the Exxon Valdez oil spill of March 1989 at least once a year.
19 The board shall attempt to distribute grants so that projects throughout the spill area are funded.

20 (c) The board may not give one recipient more than 30 percent of the funds available for
21 grants in a year.

22 (d) The board may establish volunteer advisory committees to review, screen, and
23 recommend grant proposals for funding by the board. The presiding officers of the advisory
24 committees may participate in discussions by the board when grantees are selected under this
25 section.

26 (e) The grant program under AS 37.17.200 - 37.17.290 is not subject to AS 37.17.090.

27 Sec. 37.17.290. DEFINITIONS. In AS 37.17.200 - 37.17.290,

28 (1) "board" means the board of directors of the Alaska Science and Technology
29 Foundation;

30 (2) "endowment" means the Exxon Valdez oil spill endowment established under
31 AS 37.17.200;

- 1 (3) "foundation" means the Alaska Science and Technology Foundation.
- 2 * Sec. 3. This Act takes effect immediately under AS 01.10.070(c).