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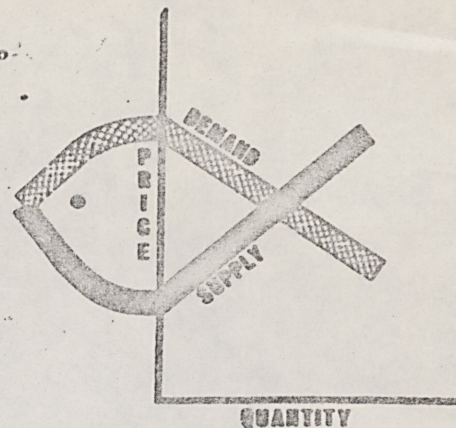
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ECONOMICS OF TRAWLER OPERATIONS

OUT OF PUGET SOUND PORTS

By

Bruno G. Noetzel

File Manuscript No. 176

October 13, 1973

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NATIONAL MARINE FISHERIES SERVICE  
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Economics of Trawler Operations  
out of Puget Sound Ports

by

Bruno G. Noetzel

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### Abstract

This study explores the economics of trawler operations in the Pacific groundfish fishery along the coasts of Washington and British Columbia. The fleet is composed of small druggers (mean length 56 feet), based in Puget Sound ports. These vessels earned an average 3.5 thousand dollars before taxes, per year, in 1968 and 1969. Linear regression analysis has been applied to measure the dependence of revenues, costs, and crew earnings on vessel characteristics and annual fishing activity. An additional trip during a year would add about 3.3 thousand dollars to vessel earnings before taxes. The average crew earnings of \$13,312 per man would be increased by 8.5 percent.

## Preface

The report in its present form is a revised version of a previous report that was prepared in December 1970 at the request and for specific purposes of the Fishermen's Marketing Association of Washington, Inc., Seattle, Washington. It is realized that in the meantime there have been changes in the fishery analyzed here. These changes include diversified vessels entering this fishery, increases in fish prices, and lifting of landing restrictions. Nevertheless it is felt that despite those changes, and despite the cost and earnings data not being current, some useful information can be obtained from this analysis for the purpose of managing a fishing firm, or for broader fishery management purposes.

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## 1. Introduction

The Puget Sound area plays a major role in the fisheries of the State of Washington. In 1971, \$20.3 million was paid to fishermen for fish and shellfish landed in ports of that area. This amount constituted 63 percent of the total value of landings in the State. Among the various fishing fleets of the Puget Sound area the otter trawlers ranked second in value of landings. It is this fleet that is the subject of the present analysis.

The study is restricted to some of the economic aspects of this fishery. It is intended primarily to evaluate the level of returns to capital and labor from trawler operations, and also to determine the degree of dependence of revenues and costs on fishing intensity and vessel size. Further consideration is given to the effects of changed fishing effort and fish prices on profits and crew earnings.

For this study, the Fishermen's Marketing Association of Washington, Inc. (Association), Seattle, Washington, provided cost and earnings, and other pertinent data on operations of 13 otter trawlers for the years 1968 and 1969. The sample vessels caught 44 percent of all groundfish landed by otter trawlers in the Puget Sound area (48 percent of total value).

## 2. The Fishery

The otter trawl fleet is engaged in fishing for Pacific groundfish (cod, flounder, lingcod, perch, rockfish, soles, and a few other species) on the Continental Shelf along the coast of Washington and Vancouver Island, as far north as Queen Charlotte Islands.

Over the past 15 years the number of vessels decreased by 30 percent, from an average of 119 trawlers in 1958-1960 to an average of 84 trawlers in 1970-1972. However, the average size of a vessel (measured in gross tonnage) increased from 50 to 57 GRT over the same time span. The crew numbers 3-4 men. Average annual landings of groundfish for the last 5 years (45 million pounds) are approximately at the same level as they were 15 years ago. A slight increase was recorded for the middle 1960's with a peak in 1966 (55 million pounds). The average value of these landings increased by 28 percent in current dollars, but adjusted for inflation it is the same in recent years as it was 15 years earlier (\$2.5 million, in 1967 dollars).

It should be noted that many of these trawlers are equipped, in addition to trawl gear, with some other type of gear, which enables them to be operated in different fisheries (e.g., salmon, albacore tuna, halibut, shrimp). The extent of these multi-gear operations can be approximated with comparable figures related to the entire Northwest region and taken from a recent study on U.S. fishing vessels. <sup>1/</sup> In Oregon and Washington, in 1969, out of 137 vessels registered for groundfish trawling (of these, 89 vessels from Puget Sound ports), 53 vessels (or 39 percent) were equipped with otter trawl only, 62 vessels (or 45 percent) were equipped with one additional type of gear (mainly salmon purse seines), and 22 vessels (or 16 percent) with two additional types of gear. It can thus be assumed that the total catch of the Puget Sound otter trawl fleet (i.e. including other than groundfish species) exceeds the values presented above.

<sup>1/</sup> Vessels in U. S. Fisheries, by Gear Type, 1969 (by Bruno G. Noetzel and William M. Gaynor). National Marine Fisheries Service, Economic Research Division, File Manuscript No. 147, March 1973.

In 1968-1969, landings of cod, lingcod, Pacific perch, rockfish, and flounder (i.e., the lower valued species) made up approximately 78 percent of total groundfish landings in the Puget Sound area. Soles constituted 16 percent, and all the remaining species 6 percent of total.

### 3. Characteristics of Vessels in the Sample

The sample comprises 13 vessels, of wooden construction, fishing exclusively for groundfish with bottom trawl (no additional activity).

The main characteristics of these vessels are as follows:

	Sample	Vessels	Fleet
	mean	range: from to	mean
register length (in feet)	67	58 78	56
gross tonnage (GRT)	82	55 114	55
net tonnage (NRT)	51	28 74	36
horsepower of main engine (hp)	245	90 460	195
age at the end of 1969 (years)	30	4 45	35

The crew on these vessels consists of four men (captain included).

Compared to the entire trawler fleet in the area (last column), the sample vessels are above average. In general, 2 years of operation were analyzed, with 11 vessels in each of those years.

### 4. Gross Revenues

#### a. Fishing Effort and Landings

As per mutual agreement between vessel owners and fish processors, the vessels were allowed to make one trip every 2 weeks. <sup>2/</sup> The vessels were at sea for 9-10 days, with 5-6 days of actual fishing, per trip. The average vessel landed 932 tons of fish from approximately 100 days of fishing per year, with a value of \$115,000 (Table 1). Analysis of data on individual vessels from our sample revealed that aside from time spent fishing, two more

<sup>2/</sup> At present there are no restrictions on landings

factors, the size of a vessel and the horsepower of its main engine, are significant in explaining the variance in annual production. <sup>3/</sup> These three factors explain 67 percent of the variance, while the remaining 33 percent may be ascribed to factors not accounted for in this regression analysis (e.g., age of the vessel, electronic equipment, crew skills, luck).

b. Exvessel Prices

Gross revenue from trawler operations is determined by the quantities of fish landed and by prices in effect at the time of landing. Prices for various species are negotiated at the beginning of a year by the Association and fish processors (dealers). Appendix I and Appendix II are two examples of negotiated price lists. It should be mentioned that these price lists serve also as a basis for computation of minimum crew wages, as guaranteed in Section 21 of the Working

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<sup>3/</sup> The multiple regression is of the form:

$$Y = -1792.19 + 12.98X_1 + 17.20X_2 + 1.08X_3$$

(5.70)                      (3.14)                      (2.46)

where: Y = annual catch per vessel, in tons

X<sub>1</sub> = number of days fishing

X<sub>2</sub> = length of vessel, in feet

X<sub>3</sub> = horsepower of the main engine

t-values for the regression coefficients are shown in parentheses;

R<sup>2</sup> = .67;

F = 13.44 with (3, 20) degrees of freedom.

Agreement between the Association, representing the vessel owners, and the Otter Trawl Branch of Alaska Fishermen's Union, representing the crews (see Appendix III).

The average price realized by the sample vessels over the 2-year period, 1968-1969, was 6.2 cents per pound (Table 1). For comparison, the average price for all otter trawlers' landings in Seattle and other ports in the Puget Sound area was: in 1968, 6.0 cents; in 1969, 6.1 cents; in 1970, 6.6 cents; in 1971, 6.9 cents. <sup>4/</sup>

## 5. Costs of Operations

### a. Cost Structure

Payments to the crew constitute the largest expense in vessel operations. Together with the commission paid to the captain in addition to his regular crew share, these payments amounted to 50 percent of the gross proceeds from fishing (Table 2).

Trip expenses are cost items which enter into the settlement of proceeds from each fishing trip, as per agreement (see Appendix III). These amounted to 17.2 percent of gross proceeds. Other more important cash expenditures include (in order by amounts paid): repairs, insurance, gear and supplies, and interest. Allowance for depreciation accounted for approximately 9 percent of gross proceeds. In the following analysis, the cost items from Table 2 are grouped into two broad categories: variable costs, and fixed costs.

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<sup>4/</sup> Source: National Marine Fisheries Service Statistics and Market News Division. Monthly and Annual Reports from Seattle, Washington.

b. Variable Costs

Included in this category are costs which depend on the extent of fishing activity: trip expenses (i.e., fuel, ice, groceries, association assessments, and other trip expenses), gear and supplies, payroll taxes, <sup>5/</sup> and labor costs (crew shares and captain's commission). The latter, because of their dependence on other than primary input factors, will be analyzed separately.

(1) Non-labor Costs

Trip expenses plus gear and supplies costs and payroll taxes amounted to \$25,920 for the average vessel. These costs vary extensively from vessel to vessel, ranging from \$17,418 to \$37,779. The number of days fishing, the size of a vessel (length or gross tonnage), and horsepower of the main engine, are the most important factors which explain the variance in costs (75 percent of total variance is explained by these three factors). <sup>6/</sup>

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<sup>5/</sup> Vessel operator's share in Social Security and unemployment taxes.

<sup>6/</sup> The regression is of the form:

$$Y = -41.0165 + \frac{.2292X_1}{(4.14)} + \frac{.5956X_2}{(5.70)} + \frac{.0162X_3}{(2.07)}$$

where: Y = variable costs (annual in 1000 dollars)

X<sub>1</sub> = number of days fishing

X<sub>2</sub> = length of the vessel (in feet)

X<sub>3</sub> = horsepower of main engine

t-values for regression coefficients are shown in parentheses;

$$R^2 = .75$$

F = 19.77 with (3, 20) degrees of freedom.

(2) Labor Costs

Crew shares and captain's commission comprise the total labor cost, which amounted to \$57,500 per year for the average vessel (for a crew of four).

A share system, which is set up by agreement between vessel owners and fishermen, forms the basis for calculation of crew earnings. As provided by the Working Agreement of February 24, 1967 (see Appendix III), every dollar of gross revenue from a trip in excess of trip expenses (referred to as gross stock deductions) is distributed in the following way:

- . 40 cents to 43 cents (depending on the type of trawler) goes to the vessel owner; of this amount, 4 cents to 4.3 cents is paid as commission to the captain, leaving the vessel owner with 36 cents to 38.7 cents;
- . 57 cents to 60 cents goes to the crew; from this amount the food bill (and eventually some other small charges) is paid, the balance being divided among the crew members (net crew share).

Settlement sheets of the type presented in Appendix IV are completed after each trip.

In our data, the cost of food is combined with fuel and ice costs (i.e., gross stock deductions). This fact complicates the calculation of net stock and crew shares for the purposes of this analysis. Since crew shares are mainly dependent on the amount of gross revenue, this correlation was used as a substitute for calculation of payments to labor under various situations (discussed below). For this correlation

analysis, actual net payments to crews (i.e., net of the food bill), were utilized. 7/

The captain's commission, 10 percent of the boat share, 8/ may also be estimated by means of a regression equation, 9/ based on actual data from our sample vessels.

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7/ The correlation is of the form:

$$Y = -355.3416 + \frac{.1189X}{(32.96)}$$

where: Y = annual crew share (per man, in dollars)

X = annual gross revenue of the vessel (in dollars)

t-value is given in parentheses;

$$r^2 = .98$$

8/ Boat share is defined in Section 5 of the Agreement (see Appendix III).

9/ This regression is of the form:

$$Y = -244.9157 + \frac{.0394X}{(56.46)}$$

where: Y = captain's commission per year (in dollars)

X = annual gross revenue of the vessel (in dollars)

t-value given in parentheses;

$$r^2 = .99$$



c. Fixed Costs

This category contains the following cost items: repairs and maintenance, insurance, interest, depreciation, and miscellaneous. These costs, in general, are incurred irrespective of the rate of utilization. They are not related directly to the productive activity of a vessel.

Fixed costs were assumed to be linearly correlated with the size of a vessel. Our data indicate a significant correlation with gross tonnage of the vessels. <sup>10/</sup>

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<sup>10/</sup>The regression is of the form:

$$Y = -10.3099 + .4480X$$

(5.40)

where: Y = annual fixed costs (in 1000 dollars)

X = size of the vessel (gross tonnage)

t-value is given in parentheses:

$$r^2 = .56$$

## 6. Income Analysis

### a. Return on Invested Capital

The Association provided information on acquisition cost and market value of the vessels in our sample. Of these two, the latter has been chosen as the measure of capital investment. The average market value of a fully equipped vessel was \$105,000. Based on this value, the average income before taxes of \$3,555 (from Table 2) represents a 3.4 percent rate of return on investment. This rate ranges from negative 7.3 percent to positive 14.9 percent for individual vessels in the group.

As mentioned before, the vessels in this fishery are very old. Over the past 15 years only nine new vessels were added to this trawler fleet. This is far below the replacement needs for keeping the fishing capacity at least at the same level. The low rate of return is undoubtedly a major factor in preventing the inflow of capital.

### b. Marginal Revenue and Costs

The regression equation in Section 4 (see footnote 3) indicates that for vessels in our sample the addition of one day of fishing during a year resulted on the average in approximately 13 tons of fish added to the annual catch. In other words, the marginal productivity of one day of fishing is 13 tons of fish (as indicated by regression coefficient for  $X_1$  in the equation, which is 12.98). At the average exvessel price of 6.16 cents per pound of fish (from Table 2)

the additional catch adds \$1,600 to the annual gross revenue figure (marginal revenue = \$1,600).

On the cost side, the additional variable costs associated with the increment of one fishing day (i.e., the marginal variable costs) amount to \$1,052. This includes \$229 as additional non-labor costs (based on equation in footnote 6), \$760 as additional crew share (based on equation in footnote 7), and \$63 as additional captain's commission (based on equation in footnote 9). Fixed costs are assumed to remain unchanged.

The balance of \$548 (i.e., \$1,600 - \$1,052) is the taxable income to the vessel owner, which results from the addition of one day to the fishing operations. The net result of an additional trip during a year, with 6 days of fishing, may thus be estimated at \$3,288 of income before taxes, i.e., a 92 percent increase for the average vessel.

c. Income at Various Levels of Effort and Prices

The size of a vessel, horsepower of its main engine, the extent of fishing activity (days fishing), and the average price received for landed fish--all these were found to be the most significant factors determining the annual amount of gross revenue and the costs of operations of vessels in our sample. In this section it will be demonstrated how income (before taxes) from operation of vessels of different sizes and engine horsepower will vary with changes in fishing activity and in fish prices.

For this presentation two vessel sizes were arbitrarily chosen, 65 feet and 75 feet in length, each with either a 200, 250, or 300 horsepower engine. The fishing activity ranges from 95 to 125 days (with 5-day intervals), and prices are set at 6 cents, 7 cents, and 8 cents per pound of fish.

Income before taxes, resulting from operations under conditions listed above, is presented in Table 3. Figures in the body of this table represent the difference between gross revenue and the sum of variable costs (labor cost included) and fixed costs. Regression equations described in preceding sections were used to estimate gross revenue, variable costs and fixed costs under varying conditions. Estimates of gross revenue, variable costs (non-labor), crew shares, and captain's commission are shown separately in Appendix V, Table A-D, respectively. Fixed costs were estimated at \$23,290 for the 65 foot vessel, and at \$36,506 for the 75 foot vessel. <sup>11/</sup>

The significantly higher fixed costs of the larger vessel (by \$13,200 or 56 percent) are only in part offset by its greater revenue generating power. The difference in income, at the same level of fishing activity for both vessels, decreases with raised prices for fish. As can be observed, only deductions allowable for income tax purposes have been made to arrive at income figures presented above. This, however, is an incomplete picture of the

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<sup>11/</sup> The following relationship between gross tonnage and length of a vessel was used:  $GRT = -115.98 + 2.94L$ , where L is the register length in feet.

economics involved in vessel operations. Besides the actual costs (variable and fixed) accounted for in our computations, there are some imputed charges (or opportunity costs) which are omitted because of lack of information on the magnitude of these costs. One is the opportunity cost of equity capital, i.e., the amount of money that could be earned by investing this capital in some other business, or in securities. Another one is the opportunity cost of management, i.e., the amount of money the vessel owner could earn in some other occupation, instead of managing his own fishing business. These costs, whatever the amount may be in a particular situation, must be taken into account in any business evaluation.

#### 7. Returns to Labor

As mentioned before, payments to labor in the form of regular crew shares and captain's commission constitute the highest cost item of all cost involved in operating these vessels. Each crewman, including the captain, is paid an equal amount from the total allotted to the crew in settlement of proceeds from each trip. The average earnings per year and job site in our sample were \$13,312, ranging from \$8,351 (on vessel with lowest crew earnings) to \$22,110 (on vessel with highest crew earnings).

Two out of every three vessels show crew earnings lower than this mean value. It should be added that these are net payments to the crew, after the cost of food has been deducted from the gross crew share. The food cost is included in trip expenses.

Appendix V - Table C illustrates how crew earnings on a vessel with given characteristics (length and horsepower) vary with changes in fishing activity (days fishing) and with changes in fish price. Earnings of the same magnitude may result from many combinations of these variables.

For example, on the 65 ft. and 200 hp. vessel \$65,028 are earned by the crew from 125 days fishing and at a price of 6 cents. The same amount can be earned from 115 days fishing, but at a higher price of 6.75 cents; or from 110 days and 7.2 cents; or from 102 days and 8.07 cents, and so on.

The increment in price, which is needed to offset the effect of one day's fishing on crew earnings (i.e., the marginal rate of substitution) varies, depending on the level of fishing activity. In the example shown above, this rate is 1.12 percent of the price at the 125 days level, and it increased with decreasing number of days fishing. The marginal rate of substitution can be calculated for any other level of crew earnings.

The commission, which is paid to the captain out of the boat share and in addition to his regular crew share, amounted on the average to \$4,285, ranging from \$2,609 to \$7,156. The sample distribution of these payments is similar to that of crew shares.

#### 8. Ways of Increasing Income

Two ways of increasing income from operations of vessels in this fishery have already been discussed. One is the added fishing effort <sup>12/</sup> resulting in a marginal income of \$548 to the vessel owner and \$823 to the crew (see Section 6b), the other is an increase in fish price (see Section 6c), resulting in a relatively high increase

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<sup>12/</sup> With the assumption that the resource can support the expanded effort without drop in yield.

in taxable income. For example, the 65-foot vessel with a 200 horsepower engine would gain over \$3,700 in taxable income from a 0.5 cent per pound increment in fish price, at the effort level of 95 fishing days. This gain increases with more fishing effort, and with the size of the vessel and the horsepower of its engine (see Table 3).

Another way that might be considered is to cut down the cost of operations, both variable and fixed costs. While the vessel operator has no control over prices of materials used, he is in a position--through proper management of his business--to reduce the quantities of materials used. Proper maintenance of the vessel with all the machinery and equipment will cut down the incidents of major breakdowns and thus diminish the repair bill. Because of its high share in total costs, the cost of labor should have top priority in any considerations of efforts aimed at cost reduction. If through some technological improvements or changes in work arrangements the size of the crew could be reduced to three men, then a revised lay system could provide for a total crew share smaller than the one presently in existence, but one with higher individual member shares (because of fewer men to share). This would give the vessel owner an increased share (boat share), to compensate for the costs of improvements and provide additional income. Both the vessel owner and the crew would then benefit from these improvements.

It is a well-known fact that many vessels in this fishery are equipped with gear used in fishing for salmon, halibut, tuna, or shrimp, in addition to the main trawl gear. As mentioned before, vessels that fished for groundfish only were included in our sample. Thus for these vessels there is the possibility of extending operations to other fisheries during some parts of the year. It is beyond the scope of this report to analyze in detail all the possibilities open to the groundfish trawlers. Let it be mentioned only, that these additional fishing operations will be justified from an economic standpoint as long as the expected value of fish to be landed (gross revenue) is at least as high as the variable costs involved in those operations. Whenever the excess of expected revenue over variable costs from other than groundfish fishing is greater than that from groundfish trawling, these other operations should be chosen.



Table 1.--Fishing effort, production, and prices: average values per vessel per year

Item	Unit	Average	Range	
			from	to
Days fishing	number	99.8	70	120
Quantities of fish landed	short tons	932	554	1575
Value of fish landed	1000 dollars	114.9	73.4	187.2
Average price of fish landed	¢/pound	6.16	5.74	6.82

Table 2.--Average gross receipts, costs, and income before taxes, per vessel per year

Item	Value in dollars	Percent
1. Gross receipts	114,924	100
2. Costs of operation :		
a. Trip expenses:		
(1) Fuel, ice, groceries	15,335	13.34
(2) Unloading	528	0.46
(3) Association assessments	3,733	3.25
(4) Telephone	123	0.11
Total trip expenses	19,719	17.16
b. Crew shares	53,247	46.33
c. Captain's commission	4,285	3.73
d. Gear and supplies	4,178	3.64
e. Repairs and maintenance	8,587	7.47
f. Insurance	4,784	4.16
g. Payroll taxes	2,015	1.75
h. Miscellaneous	1,514	1.32
Subtotal (a through h)	98,329	85.56
i. Interest	2,869	2.50
j. Depreciation	10,171	8.85
Total costs	111,369	96.91
3. Income before taxes	3,555	3.09

Table 3.--Simulated income before taxes, at various levels of effort and prices

Size of vessel (length)	Number of days fishing	Main engine 200 horsepower			Main engine 250 horsepower			Main engine 300 horsepower		
		Average price per pound of fish			Average price per pound of fish			Average price per pound of fish		
		6¢	7¢	8¢	6¢	7¢	8¢	6¢	7¢	8¢
-----Dollars-----			-----Dollars-----			-----Dollars-----				
65 feet	95	763	8,280	15,797	3,096	11,137	19,177	5,429	13,993	22,557
	100	3,394	11,541	19,687	5,727	14,398	23,067	8,061	17,254	26,448
	105	6,026	14,802	23,578	8,358	17,658	26,957	10,692	20,515	30,338
	110	8,657	18,063	27,468	10,989	20,919	30,848	13,323	23,775	34,228
	115	11,288	21,324	31,358	13,620	24,180	34,738	15,954	27,036	38,119
	120	13,919	24,584	35,247	16,252	27,440	38,629	18,585	30,297	42,009
	125	16,550	27,845	39,137	18,883	30,701	42,519	21,217	33,558	45,900
75 feet	95	-8,398	787	9,972	-6,065	3,644	13,352	-3,733	6,500	16,733
	100	-5,767	4,048	13,863	-3,434	6,904	17,242	-1,101	9,761	20,623
	105	-3,136	7,308	17,752	-803	10,165	21,133	1,530	13,021	24,513
	110	-504	10,569	21,642	1,828	13,426	25,023	4,159	16,280	28,402
	115	2,127	13,830	25,533	4,459	16,686	28,913	6,792	19,543	32,293
	120	4,758	17,090	29,423	7,090	19,947	32,804	9,423	22,803	36,183
	125	7,389	20,351	33,313	9,722	23,208	36,693	12,054	26,064	40,074

PRICE LIST

Schedule "A" of the continuing agreement between Fishermen's Marketing Association of Washington, Inc. therein referred to as Employer and the Otter Trawl Branch of the Alaska Fishermen's Union, therein referred to as Union.

This schedule of Prices referred to as Schedule "A" shall be a continuing agreement. Any of its terms shall be subject to re-negotiation after December 24, 1968, but only if the procedure for re-negotiation as prescribed in paragraph 24 is followed.

For purposes of this agreement it is understood that winter refers to prices for the periods January 1 to March 31 and October 1 to December 31 and summer refers to prices for the period April 1 to September 30. Where not specified there will be no summer price differential.

PRICES FOR YEAR 1967 ONLY

				Cents per Pound
Petrals Sole ...	Summer - 10000#	.11, all over	.10	..... Winter ... .12
Sand Sole .....	Summer -	.11		..... Winter ... .12
English Sole ....	11 1/2 inches and over			..... .085
English Sole ....	Specified size			..... .095
Dover Sole .....	14 inches and over - 3% slime allowance			..... .0675
Rock Sole .....	13 inches and over			..... .07
Rex Sole .....				..... .065
Rock Cod .....	Ocean Run	Summer	.0525	..... Winter ... .06
Rock Cod .....	Specified	Summer	.06	..... Winter ... .065
Rose Fish .....		Summer	.0525	..... Winter ... .06
Ocean Perch .....		Summer	.0525	..... Winter ... .06
Flounders .....				..... .05
Black Cod - Dressed - Small, 3# to 5#		.10	Large 5# and Up	..... .15
Black Cod - Round - Small, legal size		.06	Large 9# and Up	..... .09
Ling Cod - Dressed				..... .14
True Cod - Dressed				..... .12
Ling Cod - Round ...	Jan 1 to Mar 31, 1967	.055	April to July 31, 1967..	.05
	Aug 1 to Sep 30, 1967	.055	Oct 1 to Dec 31, 1967..	.06
True Cod - Round ...	Jan 1 to Mar 31, 1967	.055	Apr 1 to July 31, 1967..	.05
	Aug 1 to Sep 30, 1967	.055	Oct 1 to Dec 31, 1967..	.06
Sturgeon - Round ..	.065		dressed, head off	..... .11
Perch - inside, white, etc.				..... .11
Octopus, round		.09	Dressed	..... .12
Mink Feed				..... .03
Turbot ...	When used for food fish			..... .05
Bellingham Sole ...	When used for food fish			..... .05

Minor species, such as skate, etc. are to be handled on a local basis, but no species less than five cents per pound.

Appendix I (continued)

PRICES FOR YEAR 1968

Prices for the year 1968 will be determined by the Bureau of Labor Statistics wholesale price index for processed foods applied as a percentage, using as a basis the above prices for 1967 and it being agreed that the basic prices for ling cod round and true cod round will be in cents per pound.. .055 for the summer and .06 for the winter. Using these basic prices as set forth above prices for the year 1968 will be increased or decreased percentage wise in accordance with the percentage change in the national average wholesale price index for processed foods taken as an average for the year 1967.

For convenience, prices by species for the year 1968 will be rounded to the nearest four digits as for example stated in cents per pound of .0552 or .1238.

Signed at Seattle, Washington this \_\_\_\_\_ day of \_\_\_\_\_, 1967.

OTTER TRAWL BRANCH of  
Alaska Fishermen's Union  
5215 Ballard Avenue N.W.  
Seattle, Washington  
SU 3-2430

FISHERMEN'S MARKETING ASSOCIATION  
OF WASHINGTON, INC.  
3603 Gilman Avenue W.  
Seattle, Washington  
AT 4-4160

\_\_\_\_\_  
By

\_\_\_\_\_  
By

Appendix II

PRICE LIST

For Period from January 1 through December 31, 1971\*

DELIVERIES PER POUND

	Period 1/1/71 Thru 3/31/71	Period 4/1/71 Thru 9/30/71	Period 10/1/71 Thru 12/31/71
Petrале Sole .....	.14	.1250	.1312
Sand Sole .....	.14	.1250	.1312
English Sole-11 1/2" & over .....	.1008	.09	.0945
English Sole-Specified size .....	.112	.10	.1050
Dover Sole-14" & over-3% slime allowance	.084	.075	.0788
Rock Sole-13" & over .....	.0896	.08	.0840
Rex Sole .....	.084	.075	.0787
Rock Cod - Ocean Run .....	.0672	.06	.0630
Rock Cod - Specified Red .....	.0784	.07	.0735
Rose Fish .....	.0728	.0650	.0682
Ocean Perch .....	.0728	.0650	.0682
Flounders .....	.0672	.06	.0630
Black Cod - Dressed-Small, 3# to 5#	.1456	.13	.1365
Black Cod - Dressed-Large, 5# & up	.1848	.165	.1733
Black Cod - Round-Small, legal size	.0784	.07	.0735
Black Cod - Round-Large, 8# & up	.1176	.105	.1103
Ling Cod - Dressed .....	.168	.15	.1575
True Cod - Dressed .....	.168	.15	.1575
Ling Cod - Round .....	.0728	.065	.0683
True Cod - Round .....	.0728	.065	.0683
Sturgeon - Round .....	.0784	.07	.0735
Sturgeon - Dressed, head off .....	.1344	.12	.1260
Perch - Inside, White, etc.....	.1232	.11	.1155
Octopus - Round .....	.112	.10	.1050
Octopus - Dressed .....	.1456	.13	.1365
Mink Feed .....	.0336	.03	.0315
Turbot .....	.0672	.06	.0630
Bellingham Sole. When used for food fish	.0672	.06	.0630

Minor species, such as skate, etc. are to be handled on a local basis but no species less than .06 per pound.

\* The price list above set forth is subject to the option of Association as herein set forth. If the Association, at its option, desires to open for renegotiation the prices for 1971 for all periods after April 1, 1971, it may do so by giving Dealer written notice addressed to its business address and mailed by United States mails on or before March 19, 1971. Upon the giving of such notice, the prices for the periods in 1971 after April 1, 1971 above set forth will no longer be in effect, subject to the provision that at any time the Association at its option can unilaterally terminate negotiations (even after a period of halted deliveries) and the prices set forth for the

Appendix II (continued)

period from April 1 through September 30 will automatically be in effect for the entire period of 1971 after April 1, which price is regarded by all concerned as a minimum guaranteed price. If negotiations are started and new prices bilaterally agreed to, said new prices instead of ones herein set forth will be in effect for 1971 after April 1. If the option herein granted is not exercised, the prices above set forth will remain in effect for the entire year without change or alteration. The option herein granted to the Association is a special, additional one and except for this option, the terms of Paragraph 12 of the contract to which this is a schedule, remain in full force and effect.

Schedule A to the continuing agreement dated \_\_\_\_\_ between FISHERMEN'S MARKETING ASSOCIATION OF WASHINGTON, INC. therein and herein referred to as Association, and \_\_\_\_\_ therein and herein referred to as Dealer.

SIGNED at \_\_\_\_\_, Washington, this \_\_\_\_\_ day of February, 1971

\_\_\_\_\_

FISHERMEN'S MARKETING ASSOCIATION  
of WASHINGTON, INC.

By \_\_\_\_\_

By \_\_\_\_\_

1967 - 1968

Working Agreement

OTTER TRAWL BRANCH  
Washington

This AGREEMENT, made and entered into this 24 day of February, 1967, by and between the FISHERMEN'S MARKETING ASSOCIATION OF WASHINGTON, INC., herein called the Employer, and the OTTER TRAWL BRANCH of the Alaska Fishermen's Union, hereinafter referred to as the Union, states and sets forth that:

SECTION 1 --- SOLE BARGAINING AGENCY

The Union is hereby recognized as the sole and exclusive bargaining agency for the crews on board trawl vessels of the Employer. All present employees covered by this Agreement shall become members of the Union not later than thirty (30) days following its effective date and shall remain members in good standing as a condition precedent to continued employment. This shall apply to newly hired employees thirty (30) days from the date of their employment with the Employer.

SECTION 2 --- DISCRIMINATION

A. No member of the Union shall be discriminated against in any manner whatsoever because of his union activities or for his union affiliations.

B. It shall be the policy of the Employer and the Union that equal employment opportunity shall be given to all persons without regard to race, color, creed, sex, age, or national origin.

SECTION 3 --- UNION DELEGATE

A delegate shall be elected on board each vessel. He shall check on union books and see to it that all members of the crew are members in good standing in the Union, per SECTION 1. He shall check food bills, oil bills, and other bills pertaining to Gross Stock and crew expenses. All bills are to be itemized.

SECTION 4 --- GROSS STOCK DEDUCTIONS

The following gross stock expenses shall be deducted from the gross proceeds of the catch:

diesel oil, gasoline, lube oil, grease, freight, custom fees, spraying and salting of fish holds, phone calls of mutual benefit, and ice.



Appendix III (continued)

If a charge is made for settlement, maximum for each settlement of trip is to be no more than five (\$5.00) dollars. The settlement sheet shall be typewritten or legible and readable. Reference is also made to SECTIONS 10, 13, 15, 22 and 23, with regard to deductions from gross stock expense. After these deductions have been made, the remainder shall be called net stock.

SECTION 5 --- BOAT SHARE

Boat share shall be 40% on standard trawl boats; 41% on reel trawlers driven by mechanical means or other than hydraulic; and 43% for reel trawlers equipped with hydraulic reels specifically built for trawling.

SECTION 6 --- NET STOCK DEDUCTIONS

When Boat Share has been deducted, the following items shall be deducted from Net Stock:

Food bills, replacement of galley utensils and supplies, such as: tablecloths, dishtowels, knives, forks, spoons, mugs, cups, dishes, pots, pans, steel salt and pepper shakers, can openers, floor mats, mops, dustpan, draw buckets, and broom. These deductions shall be allowed if the galley of the vessel was fully equipped with proper utensils at the start of the trip.

SECTION 7 --- FIRST-AID KIT

A fully equipped first-aid kit shall be furnished by the vessel. Fully equipped shall mean everything necessary for first aid. The kit shall be maintained by the crew; the delegate shall determine what is needed each trip.

SECTION 8 --- LIFE-SAVING EQUIPMENT

Each vessel shall be equipped with a life-raft which shall be clear of fishing equipment and in good, usable condition and capable of carrying a minimum of six (6) persons. The vessel shall also carry necessary life preservers plus necessary distress equipment. Crew members shall cooperate fully in inspecting life-saving equipment.

SECTION 9 --- FILLING OIL TANKS

The vessel shall fill its oil tanks at the start and end of each trip. If any member of the crew quits for any reason, or is fired, tanks shall be filled in order to determine the amount of oils used so that a just and proper settlement can be made. A crew member shall be present when oil is taken aboard. In case of emergency, it is agreed that an estimate on oil can be given.

SECTION 10 --- PROCEDURE FOR UNLOADING OF CATCH

A. Commencing January 1, 1968, one man (if available) shall be hired for unloading purposes, providing the catch exceeds 60,000 pounds. Wages for man so employed shall be taken from Gross Stock. The unloader hired shall be a substitute for a crew member. Rotation shall be on a basis mutually agreed to among crew members aboard the vessel.

Appendix III (continued)

1. There shall be no discrimination against a crew member who hires his own substitute for unloading, providing such substitute is acceptable to the rest of the crew.

B. Any discrepancies in quality of fish must be called to the attention of the crew and a decision shall be made regarding such fish.

C. The Business Agent of the OTTER TRAWL BRANCH of the Alaska Fishermen's Union shall be permitted at all times to go aboard the vessel for purposes of checking that the crew consists of members of the Union, and also on violations of the contract; PROVIDED, however, the Union agrees to accept all liability for such boardings and shall hold the Employer free of liability.

SECTION 11 -- SETTLEMENT

Settlement shall be made between the Captain and/or his agent and/or owners and the crew within twenty-four (24) hours after the termination of each trip, after net and gear work is done, except in cases when the vessel leaves for the fishing grounds on the day of unloading. In such cases, the vessel owner agrees to an advance or draw. The Union delegate shall be furnished a duplicate copy of the weighing and settlement sheets within three (3) days of the termination of each trip.

SECTION 12 -- NON-COLLECTIBLE HOLE BILLS

If a hole bill is made, such bill shall be collected by the Union through any other vessel on which the member may ship for otter trawling. Hole bills are NOT collectible on the following:

- 1) When vessel goes into other types of fishing, or on charter, immediately after such hole bill is made;
- 2) When men are discharged through no fault of their own;
- 3) When vessel is a total wreck;
- 4) When repairs are needed after an accident, and the men are not wanted back after such repairs are completed. For the purpose of this paragraph, such repairs shall not exceed one week.
- 5) When a crewman is forced to quit because of an accident, hospitalization, or an illness definitely established as such by a physician.

Appendix III (continued)

SECTION 13 --- NET AND GEAR WORK

A. The crew shall build and repair nets during the fishing season and perform such work as is necessary for the upkeep and preservation of the fishing gear, without compensation. The captain shall at all times supervise and otherwise do everything possible to expedite necessary work to get the boat ready for fishing. If any member of the crew does not fulfill his obligation under this contract or has not provided for a replacement, he shall be charged for such work at the rate of three dollars fifty cents (\$3.50) per hour, such money to be divided among the men who do the work on the gear during such absence.

1. Nets Furnished by Vessel

The vessel shall be required to furnish all nets. At least two nets must be aboard, mended and in serviceable condition. The crew is to keep up repairs, labor only.

2. New Trawls

Where new trawls are built as replacement by other than the crew, the labor cost shall be taken off the Gross Stock; such labor cost shall not exceed \$155.00.

3. Performance of Gear Work

The gear shall be put away within three (3) days after fishing season is over, or when fishing boat arrives in port, weather permitting. Any man not performing his share in cleaning the boat and putting away the gear shall be charged three dollars fifty cents (\$3.50) per hour, which shall be paid to the man taking his place. If no man takes his place, this sum, when collected, shall be divided among crew members. The captain shall be considered a member of the crew and abide by the same rules.

SECTION 14 -- TIME-OFF FOR COOK AND ENGINEER

The cook shall be exempted from gear work for one-half (1/2) day so he can attend to the ordering of groceries, meat, etc. Time taken off over and in addition to the above stipulated time shall be paid for at the rate set forth in Section 13. The engineer is to be exempt from gear work while performing routine maintenance on the engine.

SECTION 15 - CREW'S RESPONSIBILITIES

A. The crewmen shall keep their living quarters clean and in sanitary condition. They shall keep paintwork clean, washing same with soap and water. (Paintwork means: pilot house, inside railings, and outside railings down to the guard.) The cook shall keep the galley clean and keep all cooking equipment clean and in sanitary condition.

Appendix III (continued)

1. Annual Cleanup

One dollar (\$1.00) per trip per man, including the captain, shall be collected for general cleanup until a maximum of eighty dollars (\$80.00) per year has been reached for each vessel. There will be no further collection after such maximum has been reached. The maximum will also include boats engaged in halibut fishing and seining. This money is to be left at place of settlement, to be properly disposed of at the end of the fishing season.

- (a) The captain and/or owner shall make an accounting, upon demand, of the moneys spent and the manner in which spent. If any moneys remain, such shall be returned to the contributors.

SECTION 16 -- VALID DISCHARGE, QUITTING

If the captain decides to discharge a crew member for a valid reason, such must be done at the time of settlement. If a crew member decides to quit the vessel, notification must be given by crew member at the time of settlement; provided, however, that should a crew member fail to show up after having received proper notice relative the time of departure of vessel for the fishing grounds, such absence shall constitute valid reason for discharge, after approval of the delegate.

SECTION 17 -- SETTLEMENT OF DISPUTES

All disputes between the captain and crewmen which cannot be settled on board the vessel shall be referred to the Union immediately upon arrival in port.

SECTION 18 -- LEVYING DEDUCTIONS

A. No deductions, percentages or assessments shall be levied or imposed for any purpose whatsoever by the Employer unless agreed to by the Union. No Union member shall be charged for any item not mentioned in this agreement until such item has been approved by the Union.

SECTION 19 -- TOWING

The crewmen shall not pay any part of any tow bills. Any money collected from such towing is to be added to the Gross. Proper claims for such tow charges must be submitted by the captain and/or owner as soon as possible after towing has been completed.

SECTION 20 -- FISH TICKET

The captain must sign the State of Washington FISH TICKET and bring his copy of same on board the vessel for examination by the delegate or crewmen. The crewmen may refuse to accept settlement until copy of Fish Ticket has been produced.

Appendix III (continued)

SECTION 21 --- MINIMUM WAGE

Crew members' shares or wages shall be computed upon the basis of the price received for the fish by the Employer, with a minimum as set forth in the attached list. The Employer may sell for less or for more, but in no event shall the crew members' earnings be computed on a price of less than the attached list.

SECTION 22 --- WEIGHING FUND

The Employer and the Union hereby agree there shall be a deduction from the Gross Stock of each Association boat of \$2.00 per 1,000 pounds of fish unloaded on each trip. The moneys deducted from the Association boats and crew members of said boats shall be deposited in a fund to be known as the "Weighing Fund." Checks to be drawn on this Weighing Fund shall be signed by the Manager of the Association. There moneys shall be used by the Association to employ bonded weighers. The balance of the Fund, after providing for the employment of bonded weighers, shall be distributed as follows:

1. The Association shall receive a proportionate share equivalent to the boats' share and the captains' share.
2. The remainder of the moneys shall be paid to the Union as payment of the employees dues to the OTTER TRAWL BRANCH of the Alaska Fishermen's Union pursuant to written dues assignment authorization which conforms to Section 302 of the Labor Management Relations Act as amended.

SECTION 23 --- LIFE INSURANCE, SICK AND DISABILITY COVERAGE

It is agreed that there shall be a deduction of fifty (\$50.00) dollars from the Gross Stock of each boat. Such deduction is to be made from the first trip, and only once per year from each boat. Moneys so deducted are for Life Insurance, sick and disability coverages, and shall be paid into a Trust Fund which shall comply with the applicable Federal and State laws.

SECTION 24 --- POSTING OF AGREEMENT, TERMINATION

This Agreement shall be posted, or available, on board each vessel. This shall be a continuing agreement, and shall be subject to renegotiation after Dec. 24, 1968. The attached fish price list shall be part of the agreement and the prices stipulated therein shall be subject to renegotiations after Dec. 24, 1968, but only if the procedure for renegotiation prescribed herein is followed. If either party desires to renegotiate, they may do so by giving not less than thirty (30) days written notice prior to December 24 of the calendar year in question, to the other party by certified mail, specifying in said written notice the terms of this agreement which are to be renegotiated. The terms which are to be the subject matter of renegotiation shall be considered cancelled and of no further force and effect as of December 24 of the year in which timely notice of desire to renegotiate is given. Any terms not the subject of renegotiation pursuant to the procedure herein specified will be continued and binding, subject only to renegotiation effective from December 24 of the following year as herein provided.

OTTER TRAWL BRANCH OF  
ALASKA FISHERMEN'S UNION

FISHERMEN'S MARKET ASSOCIATION OF  
WASHINGTON, INC.

Settlement Sheet

Date \_\_\_\_\_ Settlement No. \_\_\_\_\_  
 Boat \_\_\_\_\_ Captain \_\_\_\_\_  
 Period \_\_\_\_\_ to \_\_\_\_\_ Days Out \_\_\_\_\_

Gross Stock Expenses:			
Ice			
Oil			
Telephone			
Gear			
Association dues			
Total			
Crew Expenses:			
Grub			
Meat			
Washing			
Galley utensils and supplies			
Total			
Amount for FICA & Employment Security:			
Captain Share			
Man Share			
Days Out			
Total for FICA & Emp. Sec.			

Gross Stock:	
_____	
_____	
Total Gross Stock	
Less Gross Stock Expense	
Balance for Boat Share (Net stock)	
Gross Boat Share	
Balance After Boat Share	
Less Crew Expenses	
Balance for Shares	
Share per Man	
Gross Boat Share	
Less Boat Bills:	
Captain 10%	
Employer FICA	
Employment Sec.	
Total Boat Bills	
Net Boat Share	

Name	Gross Share	FICA	W/H Tax	Store	Other	Net

## Appendix V

Table A.--Simulated gross revenue at various levels of effort and prices

Size of vessel (length)	Number of days fishing	Main engine 200 horsepower			Main engine 250 horsepower			Main engine 300 horsepower		
		Average price per pound of fish			Average price per pound of fish			Average price per pound of fish		
		6¢	7¢	8¢	6¢	7¢	8¢	6¢	7¢	8¢
		-----Dollars-----			-----Dollars-----			-----Dollars-----		
65 feet	95	92,988	108,486	123,984	99,468	116,046	132,624	105,948	123,606	141,264
	100	100,776	117,572	134,368	107,256	125,132	143,008	113,736	132,692	151,648
	105	108,564	126,658	144,752	115,044	134,218	153,392	121,524	141,778	162,032
	110	116,352	135,744	155,136	122,832	143,304	163,776	129,312	150,864	172,416
	115	124,140	144,830	165,520	130,620	152,390	174,160	137,100	159,950	182,800
	120	131,928	153,916	175,904	138,408	161,476	184,544	144,888	169,036	193,184
	125	139,716	163,002	186,288	146,196	170,562	194,928	152,676	178,122	203,568
75 feet	95	113,628	132,566	151,504	120,108	140,126	160,144	126,588	147,686	168,784
	100	121,416	141,652	161,888	127,896	149,212	170,528	134,376	156,772	179,168
	105	129,204	150,738	172,272	135,684	158,298	180,912	142,164	165,858	189,552
	110	136,992	159,824	182,656	143,472	167,384	191,296	149,952	174,944	199,936
	115	144,780	168,910	193,040	151,260	176,470	201,680	157,740	184,030	210,320
	120	152,568	177,996	203,424	159,048	185,556	212,064	165,528	193,116	220,704
	125	160,356	187,082	213,808	166,836	194,642	222,448	173,316	202,202	231,088

Appendix V

Table B.--Simulated variable non-labor costs at various levels of effort

Size of vessel (length)	Number of days fishing	Main engine 200 horsepower Dollars	Main engine 250 horsepower Dollars	Main engine 300 horsepower Dollars
65 feet	95	22,712	23,522	24,332
	100	23,858	24,668	25,478
	105	25,004	25,814	26,624
	110	26,150	26,960	27,770
	115	27,296	28,106	28,916
	120	28,442	29,252	30,062
	125	29,588	30,398	31,208
75 feet	95	28,668	29,478	30,288
	100	29,814	30,624	31,434
	105	30,960	31,770	32,580
	110	32,106	32,916	33,728
	115	33,252	34,062	34,872
	120	34,398	35,208	36,018
	125	35,544	36,354	37,164



## Appendix V

Table C.--Simulated labor costs (net crew shares) at various levels of effort and prices

Size of vessel (length)	Number of days fishing	Main engine 200 horsepower			Main engine 250 horsepower			Main engine 300 horsepower		
		Average price per pound of fish			Average price per pound of fish			Average price per pound of fish		
		6¢	7¢	8¢	6¢	7¢	8¢	6¢	7¢	8¢
-----Dollars-----			-----Dollars-----			-----Dollars-----				
65 feet	95	42,804	50,175	57,545	45,886	53,770	61,655	48,968	57,366	65,764
	100	46,508	54,496	62,484	49,590	58,091	66,593	52,671	61,687	70,702
	105	50,212	58,817	67,422	53,294	62,413	71,532	56,375	66,008	75,641
	110	53,916	63,138	72,361	56,998	66,734	76,470	60,079	70,330	80,580
	115	57,620	67,459	77,300	60,702	71,055	81,409	63,783	74,651	85,518
	120	61,324	71,781	82,239	64,406	75,377	86,347	67,487	78,972	90,457
	125	65,028	76,102	87,178	68,110	79,698	91,286	71,191	83,293	95,396
75 feet	95	52,620	61,627	70,634	55,702	65,222	74,743	58,784	68,818	78,852
	100	56,324	65,948	75,572	59,406	69,544	79,682	62,488	73,139	83,791
	105	60,028	70,270	80,511	63,110	73,865	84,620	66,192	77,461	88,730
	110	63,732	74,591	85,450	66,814	78,186	89,559	69,896	81,782	93,668
	115	67,436	78,912	90,388	70,518	82,508	94,498	73,600	86,103	98,607
	120	71,140	83,234	95,327	74,222	86,829	99,436	77,304	90,425	103,546
	125	74,844	87,555	100,266	77,926	91,150	104,375	81,008	94,746	108,484

Appendix V

Table D.--Simulated captain's commission at various levels of effort and prices

Size of vessel (length)	Number of days fishing	Main engine 200 horsepower			Main engine 250 horsepower			Main engine 300 horsepower		
		Average price per pound of fish			Average price per pound of fish			Average price per pound of fish		
		6¢	7¢	8¢	6¢	7¢	8¢	6¢	7¢	8¢
-----Dollars-----			-----Dollars-----			-----Dollars-----				
65 feet	95	3,419	4,029	4,640	3,674	4,327	4,980	3,929	4,625	5,321
	100	3,726	4,387	5,049	3,981	4,685	5,390	4,236	4,983	5,730
	105	4,032	4,745	5,458	4,288	5,043	5,799	4,543	5,341	6,139
	110	4,339	5,103	5,867	4,595	5,401	6,208	4,850	5,699	6,548
	115	4,646	5,461	6,276	4,902	5,759	6,617	5,157	6,057	6,957
	120	4,953	5,819	6,686	5,208	6,117	7,026	5,464	6,415	7,366
	125	5,260	6,177	7,095	5,515	6,475	7,435	5,770	6,773	7,776
75 feet	95	4,232	4,978	5,724	4,487	5,276	6,065	4,743	5,574	6,405
	100	4,539	5,336	6,133	4,794	5,634	6,474	5,049	5,932	6,814
	105	4,846	5,694	6,543	5,101	5,992	6,883	5,356	6,290	7,223
	110	5,152	6,052	6,952	5,408	6,350	7,292	5,663	6,648	7,632
	115	5,459	6,410	7,361	5,715	6,708	7,701	5,970	7,006	8,042
	120	5,766	6,768	7,770	6,022	7,066	8,110	6,277	7,364	8,451
	125	6,073	7,126	8,179	6,328	7,424	8,520	6,584	7,722	8,860

