Industrial Development Subsidiary Agreement

MARKET ANALYSIS:
MARINE MALL FEASIBILITY STUDY

December 1980

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MARKET ANALYSIS:
MARINE MALL FEASIBILITY STUDY

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The responsibility for the content of this report is the consultant's alone, and the conclusions reached herein do not necessarily reflect the opinions of those who assisted during the course of this investigation or the Federal and Provincial governments which funded the study.

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1.0 INTRODUCTION

The overall purpose of this study is to assess the market potential for a proposed marine repair and maintenance facility in the Prince Rupert-Port Edward area. The study has been prepared in response to a request by the Industrial Development Commission of the Skeena-Queen Charlotte Regional District.

The proposed facility would be based on a marine mall concept. There would be a device for lifting vessels out of the water, a storage area for boats being serviced and facilities for marine oriented businesses such as electronics repair, welding, fibre-glassing and others.

The specific objectives of the study are outlined below:

- to identify the fleets that represent the potential market for study area repair and maintenance facilities;
- to project the market potential by fleet to 1985;
- to assess the capabilities of study area shipyards, and related repair and maintenance services;
- to estimate the market share that might be available to a new marine repair and maintenance facility in the Prince Rupert-Port Edward area;
- to make summary comments upon the feasibility of the proposed facility.

1.1 Methods

In evaluating the market potential for marine repair and maintenance services, a variety of methods was employed to assess secondary data and to conduct original research. First, a literature review was completed and data were assembled to describe the various resident and itinerant fleets in the area. Second, interview questionnaires were developed and administered to shipyard and vessel owners in Prince Rupert-Port Edward and the Queen Charlotte Islands. This field work produced information on both independent and fleet owners' yards, as well as local vessel owners' perceptions of the independent yards' capabilities. In addition, interviews were completed with mid-coastal and southern British Columbia shipyards to determine whether these yards obtain a significant share of business from north coastal vessels. Third,

secondary data and survey results were utilized to describe the existing market in the study area for repair and maintenance services by vessel number, size, type and total expenditures. Fourth, forecasts of potential annual repair and maintenance expenditures by north coast fleets were made to 1985, on the basis of various factors such as probable fleet expansion, regulation and technological change. Finally, estimates were made of the proportion of these total revenues that might be available to the proposed new facility, and some general comments on feasibility were made.

1.2 Limitations

Certain data deficiencies and other constraints encountered during the course of the study should be noted here. For example, secondary sources of information on the fishing fleets in the study area were often incomplete or non-existent and, therefore, these sources were not always useful as a cross-check on field work results. It also became evident, during the course of the study, that there is great variation among vessel owners' (especially fishing vessels) expenditures on repair and maintenance, depending upon vessel type, ownership, hull type, unforeseen breakdowns and the amount of before-tax income available in a given year. By necessity, this study had to develop average yearly expenditure estimates. However, the readers should realize that these averages mask considerable variation from year to year and from boat to boat.

2.0 SUMMARY & CONCLUSIONS

The market for marine repair and maintenance operations in the study area is dominated by the resident fishing fleet. The fleet constitutes close to 1000 vessels, most of which are independently owned. The vast majority of vessels are wooden-hulled and under 40 feet in length. There are a small number of boats over 70 feet, primarily of steel or fiberglass hull construction. Many of the larger vessels use southern maintenance facilities and, on the other hand, local facilities receive considerable business from southern vessels fishing in northern waters.

The second major market for northern yards is the government fleet. Federal, Provincial and Municipal governments operate patrol boats and ferries in the area, and make considerable use of local yards.

The towing industry has an important fleet on the north coast, but local yards receive little business from this industry.

Logging and pleasure craft represent a minor market for shipyards, but provide important sources of income to independent contractors and other marine-related businesses.

There are four independent shipyards within the study area, and a fifth in Bella Bella that reports considerable business from north coast vessels. They have traditionally been wood-hulled boat yards with docking capacity for a maximum 80 foot vessel. Recently, Okabe Shipyard expanded its carriage to accommodate 130 foot boats, and has improved its capabilities for repairing steel and aluminum vessels.

Local fleet owners also have substantial marine repair capabilities with forestry companies, B.C. Packers, Cassiar Packing and Riv Tow Straits undertaking considerable repair work on their vessels.

A number of specialized contractors and equipment distributors also participate in the industry, contracting directly with vessel owners or subcontracting with the yards.

It costs about $13.2 million yearly to maintain the northern fleet. Independent shipyards receive only a portion of these expenditures. Considering normal maintenance expenditures for the northern fleet, spending by southern vessels in northern waters and average insurance work, northern yards receive about $5.5 million annually.

Expansion in the northern fleet is expected to be relatively small, to 1985. The fishing industry should be fairly stable but there will be a few additions to the government and towing fleets. Total revenues, likely to be earned by the local shipyard industry will increase to about $6.0 million, by 1985.

A new marine repair operation, with a Syncrolift type facility and respected management, could probably dominate the local market by 1985. However, it would do so at considerable cost to existing operators. It may be possible, though, to develop a new facility with less significant local disruption by involving an operator with an already captured local market.

3.0 THE CURRENT MARKET FOR MARINE REPAIR AND MAINTENANCE SERVICES

3.1 The Market Area

The market area for this study has been defined as the British Columbia coast north of Bella Bella. This area covers a region in which resident boats would normally consider utilizing the services of a marine repair facility in the Prince Rupert area.

Clearly, the size and mobility of individual vessels determines their particular range. It is unlikely, for example, that pleasure craft resident on the Queen Charlotte Islands would utilize a shipyard in Prince Rupert. However, most fleets in the defined market area would consider the Prince Rupert area accessible for marine services.

3.2 Commercial Fishing Fleet

There are two components of the commercial fishing fleet in the study area: resident and itinerant (visiting) vessels. Resident vessels are those based in home ports within Fisheries Regions that include Queen Charlotte Islands (Statistical Areas 1 and 2), Nass (Area 3) and Skeena (Areas 4 and 5) (see Figure 3.1). (Statistics have not been disaggregated for Statistical Area 6 and are not included here; the number of resident vessels in Area 6 is very small.) Resident vessels provide the major business for local marine repair and maintenance facilities. However, itinerant vessels may require emergency repair or minor maintenance work within the study area.

Due to vessel specialization and the short openings of individual fisheries, vessels tend to spend increasing amounts of time in their home ports. In addition, the mobility of the study area fleet is among the lowest along the B.C. coast,[1] a fact which implies that home port vessels would rely on local shipyards both for running and annual maintenance.

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[1] An Economic Review of British Columbia's Fisheries, by A. Alley for Small Craft Harbours Branch, Fisheries and Oceans, 1979.

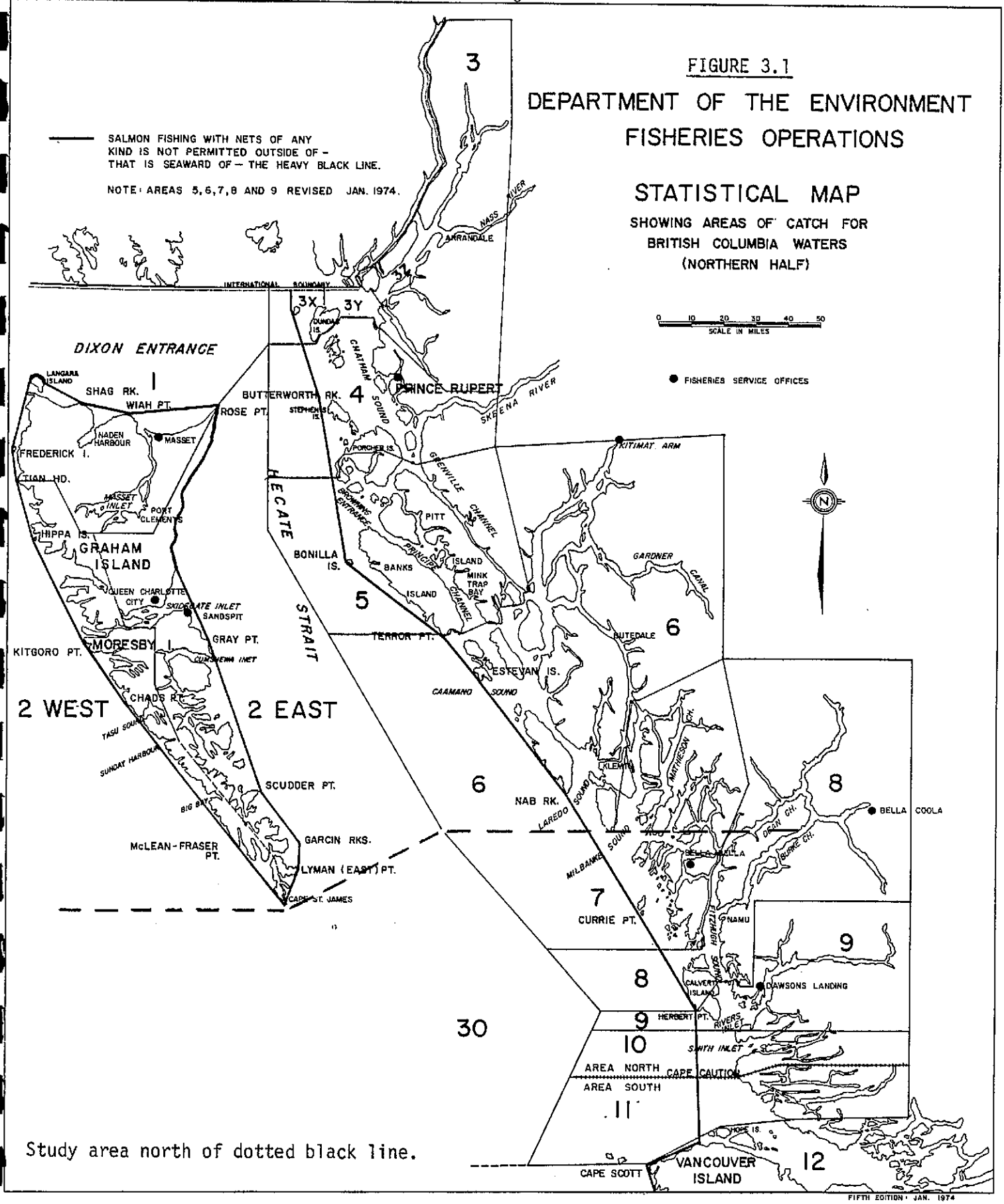
FIGURE 3.1
DEPARTMENT OF THE ENVIRONMENT
FISHERIES OPERATIONS
STATISTICAL MAP
SHOWING AREAS OF CATCH FOR
BRITISH COLUMBIA WATERS
(NORTHERN HALF)
SALMON FISHING WITH NETS OF ANY KIND IS NOT PERMITTED OUTSIDE OF - THAT IS SEAWARD OF - THE HEAVY BLACK LINE.
NOTE: AREAS 5,6,7,8 AND 9 REVISED JAN. 1974.
SCALE IN MILES
FISHERIES SERVICE OFFICES
INTERNATIONAL BOUNDARY
DIXON ENTRANCE
HECATE STRAIT
CAAMAÑO SOUND
GRAHAM ISLAND
MORESBY I.
2 WEST
2 EAST
PRINCE RUPERT
KITIMAT ARM
BELLA COOLA
DAWSONS LANDING
AREA NORTH
AREA SOUTH
CAPE CAUTION
CAPE SCOTT
VANCOUVER ISLAND
Study area north of dotted black line.
FIFTH EDITION - JAN. 1974

3.2.1 Resident Vessels

Table 3.1 indicates that the total number of fishing vessels in the study area increased by 6% between 1977 and 1978, but otherwise remained relatively stable from 1976 to 1979. Detailed data by gear type and length class for the entire study area fleet are available to 1976 only (see Tables 3.2 to 3.4); for the salmon fleet, data are available for 1978.

In 1976, the primary single gear types represented were salmon gillnetters, salmon trollers and herring gillnetters. Multigear combinations represented 42% of the total gear types.

By far the majority of resident vessels are less than 40 feet in length. In 1976, about 82% were under 40 feet, 17% were 40 to 69 feet and 1% were 70 feet or larger. The number of vessels over 70 feet has increased slightly during the last four years. Data from the Prince Rupert Vessels Owners Association[1] and the local shipyard owners suggest a total of 12 to 15 resident vessels in this size category.

Approximately 70% of all vessels, in 1976, were individually owned; company and jointly-owned boats represented a relatively greater proportion of total vessels in the Skeena region, where the major fishing companies are based.

Data comparable to those displayed in Table 3.2 to 3.4 are not available past 1976, however, information is available for the 1978 regional salmon fleet. Since salmon vessels represent 70% of the total B.C. fishing fleet, it is useful to compare the 1978 and 1976 data, to assess whether significant changes in fleet characteristics have occurred.

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[1]Personal communication with G. Olafson, past president of the Prince Rupert Vessel Owners Association, September 1980.

Table 3.1

Commercial Fishing Vessels Resident in the Study Area,[1] 1977 to 1979

	Area 1	Area 2	Area 3	Area 4	Area 5	Total
1976	-	-	-	-	-	944[2]
1977	73	66	79	679	26	923
1978	79	71	84	719	28	979
1979	74	74	75	727	32	982

[1]See map p. 6.

[2]Statistics by region not readily available.

Source: Home Port Statistics 1977 to 1979, Unpublished data, Small Craft Harbours Branch, Fisheries and Oceans

Table 3.2

Vessel Gear Type in the Study Area, 1976

	Queen Charlottes (1 & 2)	Nass (3)	Skeena (4 & 5)
Single Gear[1]			
Salmon SN	-	1	19
Salmon GN	8	5	174
Salmon TR	48	4	95
Herring SN	-	-	-
Herring GN	3	10	82
Longline	8	1	13
Trawl	-	-	-
Other[2]	1	-	1
SubTotal	68	21	390
Multigear	53	47	241
TOTAL	121	68	631

[1]Includes Only Vessels reporting landings.

[2]Packers not included.

Source: Unpublished data, Economics and Statistics Branch, Fisheries & Oceans, 1978

Table 3.3

Vessel Length Classes in the Study Area, 1976

Length Class	Queen Charlotte (1 & 2)		Nass (3)		Skeena (4 & 5)	
	All Vessels	Vessels Which Reported Landings	All Vessels	Vessels Which Reported Landings	All Vessels	Vessels Which Reported Landings
000-019	37	28	3	3	9	3
020-029	30	21	25	10	135	94
030-034	28	26	32	30	242	223
035-039	30	29	24	22	182	171
040-049	13	13	3	3	73	68
050-059	3	3	-	-	39	37
060-069	1	1	-	-	24	24
070-999	-	-	-	-	11	11
TOTAL	142	121	87	68	715	631

Source: Unpublished data, Economics and Statistics Branch, Fisheries and Oceans, 1978.

Table 3.4

Vessel Ownership Classes in the Study Area, 1976

Ownership	Queen Charlotte (1 & 2)		Nass (3)		Skeena (4 & 5)	
	All Vessels	Vessels Which Reported Landings	All Vessels	Vessels Which Reported Landings	All Vessels	Vessels Which Reported Landings
Individual	132	114	68	51	518	444
Company	3	2	15	15	164	161
Joint[1]	6	4	3	1	28	24
Other	1	1	1	1	5	4
Unknown	-	-	-	-	-	-
TOTAL	142	121	87	68	715	633

[1]Include vessels jontly owned by companies and individuals.

Source: Unpublished data, Economics and Statistics Branch, Fisheries and Oceans, 1978.

Table 3.5 shows that there have been small increases in the number of all single gear vessels and slight decreases in multiple gear combinations. In 1978, as Table 3.6 indicates, the percentage of salmon vessels 40 feet and smaller was 83% of the total (a figure which is comparable to length classes for the entire fishing fleet in 1976). Among the remaining vessels, 13% were 40 to 59 feet, 3% were 60 to 69 feet and 1% were over 70 feet in length. Based upon personal interviews with Federal Fisheries personnel, local fishing companies and shipyards, it would appear that these data are representative of the salmon fleet in 1980. One change that has occurred in the rest of the fleet is the addition of 4 or 5 draggers and packers; the majority of these are over 70 feet.

Hull type is an important determinant of annual repair and maintenance expenditures for fishing vessels. Data indicating the hull type of vessels by region are not available from Federal Fisheries statistics. However, Table 3.7 shows what may be considered a representative breakdown for hull types.

Table 3.5

The Salmon Fleet 1976 and 1978

	Region							
	Queen Charlotte Islands		Nass		Skeena		Totals	
Gear Type	1976	1978	1976	1978	1976	1978	1976	1978
1. Single								
Salmon Seine	-	6	1	1	19	18	20	25
Salmon Gillnet	8	11	5	2	174	191	187	204
Salmon Gillnet	48	53	4	3	95	95	147	151
2. Multiple								
Seine Combination	5	-	42	36	45	46	92	82
Gillnet/Troll Combination	46	40	4	4	184	182	234	226

Source: Unpublished data, Economics and Statistics Branch, Fisheries and Oceans, 1978 and 1979.

Table 3.6

Salmon Fleet Vessel Length, 1978

	Queen Charlotte Islands			Nass			Skeena			Total
	Seine	Gillnet	Troll	Seine	Gillnet	Troll	Seine	Gillnet	Troll	Vessels
Length Class										
000-019	Total Vessels = 6[1]	14	8	Total Vessels =1[1]		Total Vessels =3[1]		2		24
020-029		6	4		2			16	5	33
030-034	1	7	16		21			221	24	289
035-039		13	25		18		1	109	40	206
040-049		3	8		1		7	5	43	67
050-059							18		2	20
060-069							22		1	23
070-999							6			6
Total Vessels	6	43	61	1	42	3	54	353	115	668

[1]Due to the small numbers of vessels, detailed breakdowns are not available.

[2]Totals do not include seiners in Queen Charlotte Islands and Nass regions and trollers in Nass region.

Source: Unpublished data, Economics and Statistics Branch, Fisheries and Oceans, 1978.

Table 3.7

Commercial Fishing Vessels
Hull Type, 1980

Hull Type	(% of Vessels)
Wood	64%
Fibreglass	26%
Aluminum	4%
Steel	4%
Other[1]	2%

[1]Includes plywood/fibregass and plywood. These figures compare favourably with estimates provided by fishing company representatives in Prince Rupert.

Source: Pacific Coast Fishermen's Mutual Marine Insurance Company, Unpublished Data 1980

3.2.2 Itinerant Vessels

Commercial fishing vessels, especially salmon vessels, based in south coastal areas demonstrate a relatively high degree of mobility. Interviews with fishing companies in the Prince Rupert-Port Edward area indicated that, during the peak fishing season, as many as 50% of the vessels fishing for these firms in northern waters are based in southern B.C. Table 3.8 shows the number of visiting vessels in the study area during 1978 and 1979. The seasonality of this activity is evident by the relative numbers visiting from February through March (the roe herring fishery), and June through September (halibut and salmon fisheries).

Southern-based vessels do most, if not all, annual maintenance work in southern yards and use study area facilities only for running and emergency repairs. There are no comprehensive data on the proportion of visiting vessels that utilize local facilities during the fishing season. However, shipyard owners in the study area stated that about 15 percent of their fishing season dockings are southern-based. They further stated that the contribution of these (generally) minor repairs to total yard revenues is small, because such vessels are typically on the ways for as short a time as possible, and labour charges are consequently low. Therefore, at the present time, visiting vessels represent a small share of the market for local marine repair and maintenance facilities.

Table 3.8

Number of Visiting CFVs in the Study Area 1978 and 1979[1]

	Queen Charlottes (Areas 1,2)		Nass (Ares 3)		Skeena (Areas 4,5)	
Period	1978	1979	1978	1979	1978	1979
January to March	489	696	292	4	462	411
April to June	1030	1052	1896	774	327	483
July to September	1825	1608	2867	1541	2833	3280
October to December	219	151	26	17	163	201
Total	3563	3507	5081	2336	3785	4375

[1]Includes all visiting vessels reporting landings in these areas.

Source: Small Craft Harbour Reports 1978 and 1979, Unpublished data, Fisheries and Oceans

3.2.3 U.S. Fishing Vessels

Data are not available to indicate the volume of U.S. commercial fishing vessel traffic that passes through study area waters. Major shipyards are available in Ketchikan and Anchorage, and smaller facilities are located in other Alaskan ports, less than 150 kilometres from the study area.

It was indicated by American authorities that U.S. vessels request assistance from Canadian boatyards only in the case of serious emergencies.[1] This observation is supported by comments from study area shipyard owners, who service very few or no American vessels. In fact, U.S. business is not encouraged since, in some cases, it has proven difficult to obtain payment from foreign vessel owners.

3.3 Other Fleets

In addition to the commercial fishing fleet, there are several other fleets stationed in the study area that require regular maintenance and repair work. Within the scope of this study, it was not possible to interview the owners of all such vessels. However, with the assistance of the Skeena-Queen Charlotte Economic Development Commission and other knowledgeable local individuals, the major fleets were identified and representatives of them contacted. Information on vessel numbers, classes, length and hull type (where available) for each fleet is displayed in Table 3.9.

---

[1]Personal communication with J. Richards, National Marine Fisheries Service, Seattle, August 1980.

Table 3.9

Other Vessels in the Study Area

Sector	Boat Type	Length	Hull
Forest Industry[1]			
1. Canadian Cellulose (Pt. Edward)	4 sidewinders	15'	
	1 shallow draft boom	20'	
	1 tug	28'	
	1 tow boat	24'	
2. Silver Grizzly Logging (Prince Rupert)	4 sidewinders	16'-18	
	2 boom boats	18'	
	1 tug	26'	
	1 aluminum boat	30'	
	1 cargo boat	40'	
	3 barges	40' x 140'	
2. McMillan Bloedel (QC Islands)	5 sidewinders	15'	steel
	3 dozers	18'	steel
	1 tug	26'	steel
	2 tugs	22'	steel
	1 crew boat	28'	aluminum
3. Crown Zellerbach (QC Islands)	1 tug	28'	steel
	5 dozers	16'	steel
Government			
5. Federal Fisheries	4 patrol boats	30'-45'	glass
	5 patrol boats	46'-50'	4 wood 1 glass
	7 patrol boats	51'-65'	2 wood 2 glass
6. Coast Guard	Alexander Mackenzie	150'	
	1 catamaran	40'	
	2 work boats	28'	
	1 whaler	16'	
	3 power barges	30'	
7. B.C. Forest Service	1 patrol vessel	50'	wood
	1 patrol vessel	70'	wood
	1 scaler	20'	aluminum
	6 dingies	16'	
	1 barge	35'x55'	steel

[1]Not including the small fleet owned by Western Forest Products Limited (formerly Rayonier Canada Ltd.), based at Sewell on the Queen Charlotte Islands.

Table 3.9 cont'd

Sector	Boat Type	Length	Hull
	Q.C. Islands		
	1 small vessel	16'	
	Kitimat & Bella Coola		
	1 patrol boat	50'	
8. B.C. Department of Highways	ferry (running between Graham and Moresby Islands)	130'x40'	
9. City of Prince Rupert	ferry (running between Digby Island airport and Prince Rupert)	112'x34'	
Towing Cos			
10. Comedina Towing (P. Rupert)	1 boom boat	22'	
	1 sidewinder	20'	
	3 tugs	24',28'	steel &
		30'	aluminum
11. Wainwright Marine	3 tugs	16',28',32'	
	1 skiff	14'	
	1 barge	23'x90'	steel
12. Riv Tow Straits (P. Rupert)	14 tugs	40'-90'	steel
	2+ barges	120'x44'	steel
		130x44'	steel
13. Mitco Marine (Q.C. Islands)	2 tugs	32',40'	steel
	2 water taxis	21'	glass
	1 barge	60'x30'	aluminum
Other			
15. P.R. Yacht and Rowing Club	100 pleasure boats	18' up	primarily wood and glass

Source: Strong Hall & Associates

3.3.1 Forest Industry Fleet

There are four major forestry companies located in the study area; three of them are logging operations while the fourth, Canadian Cellulose Ltd., has a major pulp and paper mill. The fleets operated by these companies total about 34 vessels, and are composed mainly of boom boats (sidewinders and dozers), small tugs, barges and crew or cargo boats. Most vessels are steel or aluminum, and the majority are under 30 feet in length.

3.3.2 Towing Industry Fleet

Five towing companies operating in the study area were interviewed. Four of the companies are relatively small local operators, primarily involved in contract hauling for the forest industry. One of these companies also operates a water taxi service.

The fleets of these local companies total about 20 vessels, and their composition is very similar to those of the forest industry described above.

Riv Tow Straits has the largest towing fleet in the study area, both in the number and size of vessels. Riv Tow has fleets based in Prince Rupert and Kitimat, with two large tugs on contract to Wesfrob Mines Ltd., at Tasu, in the Queen Charlotte Islands.

In total, Riv Tow has 14 tugs based in the study area, and a further 3 vessels per week running between Vancouver, Kitimat and Prince Rupert. About half of their northern fleet are vessels over 50 feet long, with the largest being about 90 feet.

3.3.3 Government Fleet

Federal Fisheries, the Coast Guard, and the British Columbia Forest Service are all based in Prince Rupert. These agencies operate vessels for patrol and rescue purposes, and several of their vessels are over 50 feet long.

In addition, there are two government ferries operating in the study area. The City of Prince Rupert runs a 112 foot ferry between Digby Island and Prince Rupert, and the B.C. Department of Highways maintains a 130 foot vessel between Moresby and Graham Islands, on the Queen Charlotte Islands.

3.3.4 Pleasure Craft

A final category of vessels examined in this study is pleasure craft. Both resident and non-resident boats are included.

a) Resident

It is estimated that there are about 1600 primary recreational boats used in salt water that are owned by residents of the Prince Rupert area. (See Appendix I for an analysis of pleasure boat ownership in the study area). The majority of these vessels are car-top or trailed boats under 20 feet in length, and do not require the services of local shipyards.[1]

In 1980, it is estimated that there are about 260 vessels over 21 feet in length located in the Prince Rupert-Port Edward area. These vessels are mainly wood or fibreglass, and the majority of them (80%) are inboards or inboard-outboards.

b) Visiting Pleasure Craft

A number of vessels originating in southern B.C. and the U.S. cruise in the study area during the summer months. No records are available to indicate volumes of visiting boats, which presently must berth at the government wharf or in vacant spots at the Prince Rupert Yacht Club.

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[1]For the purpose of this study, it is assumed that the size category of 21 feet and over represents a potential market for repair and maintenance facilities.

A recent survey of U.S. boaters, in B.C. waters was completed at various locations in the Strait of Georgia. This study determined that the destination of the majority of these boaters was Desolation Sound and the Gulf Islands; northern destinations including the Queen Charlotte Islands and Alaska were infrequently mentioned.[1] However, local opinion supports the contention that there is a steady volume of U.S. pleasure craft in the study area waters during summer months.

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[1] A General Survey of Non-Resident Boating Populations in the Gulf of Georgia, Allison Rhodes, Department of Fisheries and Oceans, 1979.

4.0 EXISTING MARINE REPAIR AND MAINTENANCE FACILITIES AND SERVICES

4.1 Introduction

The study area operates a wide variety of marine repair facilities servicing both local and visiting fleets. The first part of this section summarizes the capabilities of the private shipyards operating in the study area (see Table 4.1). Next, there is a description of other local firms, such as welding companies and electronics dealers, that contract their services either to individual vessel owners or to the shipyards. The third section outlines the marine repair and maintenance capabilities of the various government agencies and private companies that operate vessels in the study area. Finally, there is a description of local vessel owners' perceptions of existing marine repair and maintenance services in the north coast area.

4.2 Independent Local Shipyards

4.2.1 McLean's Shipyard

McLean's Shipyard, situated in Seal Cove, has been operating in Prince Rupert for several decades. The yard has two carriages, the largest of which can handle vessels up to 80 feet in length and up to 200 tons. A floating barn and grid are used for work that does not require the vessel to be completely removed from the water. There is also a 20 ton crane on the property for placing vessels on blocks. The yard reportedly docks about 400 vessels per year.

Most repair and maintenance work, including carpentry and mechanical jobs, are done in-house by the staff of 25 to 30 employees. Some metal fabricating and sand blasting, plus all electrical and electronics work, is contracted out to local firms. The majority of McLean's business is derived from seiners; the yard services the entire B.C. Packers seine fleet. Other fishing vessels and government vessels provide the remaining business.

Table 4.1

Characteristics of Study Area Shipyards, 1980

Shipyard	Location	Capacity Length	Capacity Tonnage	Number of Employees	Total Vessels[1] Docked	Average Vessel Length	Vessel Origin
North Coast							
McLeans'	P. Rupert	80'	200 ts	25-30	400 (est.)	Ave. 40'-70'	Majority north coast Very few south coast or US Vessels
Okabe	P. Rupert	130'	500 ts	20-22	300	50%- 40' 50%- 80'	50% from south in fish season. 5-7% USA through year
Dodge Cove	P. Rupert	60'	80 ts	2-8	100 (est.)	95%- 50'	10% from south Rarely from USA
Noddins	Masset, QCIs	55'	50 ts	3	40	Ave. 34'-40'	10% from south no US vessels
Mid Coast							
Scotia Marine Way	Pt. Hardy	80'	250 ts		350	Ave. 36'-38'	Most - Gulf of Georgia esp. Campbell River, Powell River, Nanaimo. Occasional US fish boats, some US pleasure boats
Shearwater Marine	Bella Bella	70'	150 ts		300 (est.)	75% - 50'	40% southern B.C.; 10% US; 25% northern B.C.; 25% local

[1]Includes all vessels docked for repair and maintenance services.

Source: Strong Hall & Associates, 1980

McLean's has no immediate plans for expanding or upgrading facilities. The potential for expansion is constrained by the availability of land and, since the yard is situated on land leased from the Canadian National Railway, the owners may be reluctant to make additional investments because they consider their tenure to be somewhat insecure in the long run.

4.2.2 Okabe Shipyards

Okabe Shipyards, situated south of town near the National Harbours Board docks, has recently received Federal Special ARDA (Special Rural Development Agreement) financial assistance for a major expansion. The new, partially covered carriage, which can be split into three parts, can accommodate vessels up to 130 feet in length and up to 500 tons. Two grids, one 65 feet and one 50 feet, are available for repairs which do not require the use of the carriage. Occasional maintenance or repair jobs that can be done with the vessel in the water are completed at the National Harbours Board docks, space permitting.

Okabe Shipyards has been primarily a "wood yard" but, with the recent addition of services such as sandblasting, the yard hopes to attract more steel and aluminum vessels. Okabe currently employs 15 to 22 people who do carpentry, fibreglass and some metal fabricating. Electronics, electrical and some of the mechanical work is contracted out.

About 45% of Okabes' repair and maintenance work is done on privately owned gillnetters and trollers, with seiners, government vessels, tugs and log salvage boats comprising the rest of the business. With the enlarged carriage in operation, the yard anticipates increasing its work on trawlers and packers. Currently, Okabe's is docking about 300 vessels per year.

4.2.3 Dodge Cove Boatyard

Dodge Cove Boatyard, situated on Digby Island, is a specialty yard that concentrates on wooden boat building and repairs, and docks about 100 boats each year. There are no facilities at Dodge Cove for steel or aluminum hull repairs. The yard has one carriage that can accommodate a boat up to 60 feet in length or up to 80 tons. The yard services gillnetters, trollers, log salvage and pleasure craft; however, most jobs are major conversions or lengthy repairs that Okabe's and McLean's do not have time to undertake.

Dodge Cove is considering expanding and rebuilding its yard to handle more vessels, though the emphasis would continue to be work on smaller boats. A new split carriage is another addition being considered.

4.2.4 Noddin's Boatyard

Noddin's Boatyard, in Masset, is the only marine repair and maintenance facility on the Queen Charlotte Islands that has a carriage. The yard employs about 3 people and does some boat building and basic maintenance and repair work. Trollers are the main vessels docked by the facility. Electronics and engine repairs are contracted out to other firms on the Islands.

Noddin's has no plans to expand; its operations are limited due to the small tide change in Masset Inlet. With this constraint, larger boats could not be accommodated even with a bigger carriage in place.

4.3 Mid-Coastal Yards

Major mid-coastal yards were identified to determine whether these facilities were obtaining some share of repair and maintenance business from the fleet based in the study area.

4.3.1 Shearwater Marine

South of the study area, Shearwater Marine, at Bella Bella, is the next available boatyard. This facility can accommodate vessels up to 70 foot on its marine ways and has a grid capable of docking 80 foot barges. Shearwater docks up to 300 vessels each year, the majority of which are trollers, gillnetters and pleasure craft. Up to 50% of the vessels serviced are based in southern B.C. and the U.S., 25% are local and 25% are based on the North Coast.

4.3.2 Scotia Marine Ways

Scotia Marine Ways, in Port Hardy, is equipped with two carriages; one 50 feet and the other 60 feet in length. This yard annually docks up to 350 vessels; mainly gillnetters and trollers, both company and privately owned. Pleasure boats and a few seiners, less than 50 feet in length, are also serviced by the yard.

The majority of vessels that patronize Scotia Marine Ways are based in the Strait of Georgia, at Powell River, Campbell River and the northern Gulf Islands. The boatyard handles a few U.S. fishing vessels and pleasure craft that sustain serious damage.

4.4 Independent Contractors

There is a wide range of marine repair and maintenance services available outside shipyards in Prince Rupert and, to a lesser extent, in the Queen Charlotte Islands. These firms do contract work both for individual vessel owners and local shipyards.

As the number of steel and aluminum hulled vessels is increasing, more local metal fabricators and welders are becoming involved in marine repair work. Broadwater, Certified, and Marinex are three of the most active in this field, undertaking hull repairs as well as some construction of tugs and boom boats.

Electrical work may be done by a number of local firms; a few of these specialize in marine work. Until recently, marine electronics dealers were considered to be in short supply in Prince Rupert; at present, there are five firms available for repair work.

Another major service offered by local companies is engine repair and rebuilding. Caterpiller, Cummins and Volvo have representatives in Prince Rupert, and local firms such as By Town, Johnny's and Matts are also involved.

During interviews conducted for this study, several people mentioned that fibreglassing and sandblasting services were underrepresented in the Prince Rupert area. Until recently for an individual to have sandblasting done on his vessel, he had to find a suitable location for the work, hire a crane and hire a sandblasting contractor. Now the service is available at Okabe Shipyards and it can be more readily done as part of a vessel's annual maintenance.

4.5 Repair and Maintenance Capabilities of Study Area Fleet Owners

Many of the local fishing and forestry companies, as well as government agencies, service their fleets with their own repair and maintenance facilities. For the most part, these facilities are intended to service running maintenance needs or minor repairs that do not require the vessel to go up on ways.

4.5.1 Fishing Industry

B.C. Packers operates by far the biggest company facility, employing from 40 to 65 staff year round. Their yard elevator enables hull repairs on vessels up to 40 feet. B.C. Packers does virtually all repair and maintenance work required on the company-owned gillnet and associated, individually owned fleet (460 vessels), and does a significant amount of above-water work on the seine fleet.

Cassiar Packing Company, at Port Edward, has no means of lifting vessels but undertakes as much above-water repair and maintenance work as possible on their gillnet fleet (over 100 vessels). Cassiar does no work on seiners.

The Pacific North Coast Native Coop at Port Simpson has facilities and services available to its members. Above-water mechanical and welding repairs are completed at the Coop's net loft.

The Prince Rupert Fishermen's Coop has no fleet of its own to maintain but does provide access for its members to four grids; the maximum vessel size that can be accommodated is 36 feet.

4.5.2 Forest Industry

The forestry companies in the study area rely primarily on their own repair and maintenance facilities, due to the isolation of their operations and to the specific requirements of their fleets. Vessels used by logging firms are mainly steel or aluminum hulled and, relative to fishing vessels, need frequent patching and hull repair.

Canadian Cellulose has the workshop, crane and skilled personnel available to service all their vessels. Silver Grizzly Logging attempts to do as much repair and maintenance work as possible in the field, though local contractors and boat yards are occasionally used (except for barges, which are too wide for these yards). Both Macmillan Bloedel and Crown Zellerbach, on the Queen Charlotte Islands, service their own fleets. For major jobs, such as replating the hulls of steel tugs, these firms may hire the services of an outside contractor to supervise the work on site.

4.5.3 Towing Industry

Camedina Towing, and Wainwright Marine do most of the maintenance work on their tugs and boom boats, but rely on local yards for major repairs. Mitco Marine, in Queen Charlotte City, services its own fleet with the assistance of local contractors.

Riv Tow Straits operates a general maintenance yard which has staff capable of handling most in-water work for their local tug fleet (14

vessels). A crane at their Prince Rupert site can lift vessels, up to 40 feet in length, out of the water. Riv Tow employs their own staff and local contractors to maintain and complete minor repairs on vessels; however, the large tugs from Prince Rupert, Tasu and Kitimat undergo annual maintenance work in Vancouver shipyards that are part of the Riv Tow corporate family.

4.5.4 Government

The Coast Guard and Federal Fisheries both have sizeable fleets based in the study area, and have facilities, such as grids and carpentry shops, to undertake basic maintenance work. Major jobs and annual overhauls are completed at local boatyards. The B.C. Forest Service vessels are sent to the agency's Vancouver depot for annual repairs and maintenance; the Forest Service does very little servicing in Prince Rupert.

The two ferrys in the study area are subject to mandatory inspection every four years. The smaller City ferry is handled at Okabe's and the Queen Charlotte Islands ferry, which is too wide for existing local facilities, is sent to Victoria. Minor running repairs and maintenance are done by the ship's engineers.

4.5.6 Pleasure Craft

Resident pleasure craft owners do their own repair and maintenance work, considering this part of the activity of boating. Some jobs, such as engine repairs, however, may be contracted to local firms. The yacht club has a grid available for the use of its members.

4.6 Perceptions of the Capability of Existing Marine Repair and Maintenance Facilities and Services

There is wide a range of opinions among local vessel owners about the capability of existing shipyards and other marine repair services. For the

purposes of this analysis, these opinions are grouped into those expressed by the fishing industry, by owners of large fishing vessels, by other vessel owners and by a major fishing vessel insurance company. To achieve some degree of objectivity, in what is clearly subjective information, only those perceptions expressed by several respondants are identified here.

It should be noted that the interviews for this study were completed in late July 1980, only a brief time after Okabe Shipyards completed a major expansion -increasing the size of its carriage and purchasing sandblasting equipment. Throughout the course of the interviews, it became evident that many local people were unaware of the exact nature of the expansion. Therefore, most opinions expressed below are not based on a knowledge of Okabe's increased capabilities.

4.6.1 The Fishing Industry

Representatives of local fishing companies generally feel that it would be desirable to have larger or additional shipyards in Prince Rupert to accommodate emergency repairs during the fishing season. However, most people recognize that crowding of local yards is a peak season problem and consider that there may be insufficient business to support a third yard. There is a concern that skilled tradespeople are difficult to attract and keep in Prince Rupert. Electronics repair and sandblasting were mentioned as two services in particularly short supply of personnel.

4.6.2 Large Vessel Owners

Perceptions of the twelve to fifteen owners of large (70 to 120 feet), usually steel-hulled vessels based in Prince Rupert are important, since these owners are viewed as one group whose needs are not met by local shipyards. To now, these vessels have been sent to Vancouver yards for major annual repair and maintenance work, as Prince Rupert facilities were not capable of docking them. Vessel owners also consider that prices and workmanship are superior in the south; the ready availability

of parts and access to the original boat builder are further attractive features of doing business in the Vancouver area.

These vessel owners do use Prince Rupert boatyards and local marine repair contractors for emergency or basic above-water jobs. However, there is a common perception among owners that local yards are not skilled at steel work and that they do not have the necessary equipment for handling large-scale machinery and parts. Several vessel owners stated that they would likely continue to go south for annuals, despite the additional time and transit cost, at least until it was clear that they would get equally good workmanship at competitive prices from local yards. Due to the investment these owners have made in their vessels, they are very conscious of obtaining proven service.

4.6.3 Other Vessel Owners

Since the shipyards in the study area have historically catered to commercial fishing vessels, it may be expected that other firms and agencies with vessels stationed in the area feel that their particular maintenance needs are not being fully met. There is a generally held view that everyone would benefit from increased competition posed by another local facility, although there are no significant complaints about the service provided by existing yards (except for the view that it's impossible for non-fishing vessels to be serviced during peak fishing periods). Sandblasters, fibreglassers and mechanics were mentioned as tradesmen in short supply in the study area.

Opinions about the feasibility of a third major marine repair facility in Prince Rupert are mixed. Some people like the concept of a mall, where a complete range of marine repair services would be available. However, others consider that a new facility would initially have a difficult time attracting business, since local vessel owners are loyal to existing boatyards.

5.0 CURRENT MAINTENANCE AND REPAIR EXPENDITURES

This section estimates total repair and maintenance expenditures by fleet, and determines the distribution of expenditures among the various participants in the marine maintenance industry.

Repair and maintenance expenditures are divided into the following classes for estimation purposes:

- annuals
- running maintenance
- disasters.

Annuals refer to the annual overhaul of the vessel. These servicing activities are partly voluntary and partly mandatory. Transport Canada requires all vessels over 15 tons, gross tonnage, to be drydocked and inspected every four years, with the exception of vessels over 150 tons which must be drydocked and inspected every two years.[1] The Department indicates that, "most fishing vessels and tugs are drydocked every year, at the owner's discretion, to inspect the bottom, remove marine growth and apply an antifouling paint."[2]

Marine industry representatives indicated in discussions that these annuals often involve other repair tasks to maintain the vessel for efficient sea duty. In many cases, owners have their vessels on an annual rotating maintenance schedule which spreads mandatory maintenance expenditures more evenly throughout the 2 or 4 year periods and minimizes drydocking time in any given year.

Annual drydockings tend to be highly seasonal for some sectors of the fishing fleet (particularly seiners, trollers and gillnetters). Owners usually wait until their income tax liabilities are known before undertaking maintenance, which results in considerable spring and early summer pressure on the repair industry. Trawlers, packers, tugs and government fleets tend to operate year-round, enabling their annuals to be undertaken whenever it is most convenient.

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[1]Transport Canada, "Hull Inspection Regulations," Queens Printer, Ottawa, 1969.

[2]Ship Safety Branch, Transport Canada, Vancouver, B.C.

Most work related to an annual requires a drydocking facility and is, therefore, performed in a shipyard. Some repairs, however, can be undertaken by either the crew or local contractors while the vessel is in the water.

Running maintenance is on-going during the year or operating season of the boat. Mechanical or electrical malfunctions, gear entanglements and other relatively minor repairs are performed either in or out of the water, depending on the specific problem. These activities usually involve only that work necessary to keep the boat operating. Major repairs, if possible, are reserved for the annual overhaul.

Disaster repairs, for this study, include all work associated with insurance claims. These are usually relatively high cost repairs caused by such factors as collision, groundings, fire, etc.

Most insurance work is performed at a shipyard. The owner, in consultation with the insurance company, selects the appropriate yard based on the:

- nature of the problem,
- size and location of the boat,
- appraised capability and availability of the alternative yards,
- cost, efficiency and turnaround time,
- towing costs.

This work is seldom contracted on a formal competitive bid basis, as speed is usually essential.

Utilizing the above expenditure categories, where applicable, total repair and maintenance estimates are developed by fleet. These expenditures are then allocated among the major participants in the marine operating and repair industry. The participants include:

- owners (including boat crews or company-affiliated repair and maintenance staff)
- independent contractors (including welding shops, machine shops, engine distributors, electronics specialists, etc.)
- independent local shipyards
- southern shipyards.

Historical patterns of service utilization have evolved among fleet and individual boat owners in which some or all of these groups are involved in servicing a given vessel. In some cases, these patterns can be altered by local competitive forces. In other cases, they are determined by corporate or government policies that are based on broader institutional considerations.

The expenditure allocations developed in this chapter reflect these historical forces. A brief summary of each fleet's traditional expenditure pattern is outlined, followed by an estimate of total expenditures and their allocation by participant. Chapter 7.0, Potential Repair and Maintenance Expenditures to 1985, examines the possibility of altering future expenditure patterns.

5.1 Commercial Fishing Fleet

5.1.1 Expenditure Patterns

About 40% of the northern fleet is owned, or partially owned, by companies which have repair and maintenance staff in-house. Essentially all of the maintenance on their smaller vessels (under 40 feet), and much of the in-water work on their larger boats, is done at these facilities. Annuals on their larger vessels are performed at local yards, and local contractors participate both directly and through the yards.

Crews for independent boat owners do a significant amount of work themselves or with the assistance of contractors. They also utilize the yards of the companies they fish for, if available. Most annuals and running maintenance requiring drydocking, are performed at independent yards.

5.1.2 Estimated Expenditures

Yearly running maintenance and annuals expenditures for the fishing fleet were estimated from actual company cost data, from interviews with corporate and individual boat owners, and from discussions with shipyard operators.

Cost data for a major fishing company's seine and packer fleets, ranging in length from about 40 feet to 130 feet, were examined and averaged by gear type and length class. Among our sample of 80 vessels, significant variations in yearly expenditures were determined among different length classes, but variations between gear type were minimal.

For other gear types, no specific vessel cost data could be obtained. Estimates were, therefore, developed from discussions with fishing and maintenance industry representatives.

During the course of the study, it became evident that the major determinants of maintenance costs were:

- age of vessel
- hull type
- length.

While the first two criteria are recognized as important factors, useful cost data could only be developed for the third. The resultant estimates of normal average yearly repair and maintenance costs by length class are presented in Table 5.1.[1]

These estimates reflect the average yearly costs required to maintain a vessel, if all repairs are undertaken in a shipyard or by private contractors. However, these groups do not necessarily receive all this revenue, since some maintenance is performed by boat crews.

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[1]For vessels over 50 feet, our data represents a sufficient sample to be representative of the age class of the total fleet. In terms of hull types, the sample contained about 90% wood.

Table 5.1

Estimated Average Yearly Fishing Fleet Repair and Maintenance Costs by Length Class[1]

Length Class (feet)	Annual Overhauls	Running Maintenanace	Total Yearly
under 40	$ 5,000	$ 1,000	$ 6,000
40-59	$25,000	$ 5,000	$30,000
60-79	$40,000	$10,000	$50,000
more than 79	$55,000	$10,000	$65,000

[1]Does not include disaster costs.

Source: Major fishing company data in 1979 $
Strong Hall & Associates

Utilizing the above average costs per vessel, the total yearly costs of maintaining the study area fishing fleet are shown in Table 5.2. It is estimated that nearly $11 million yearly is required to keep the northern fleet operating. About 80% of the total expenditures are associated with vessels under 60 feet in length. Due to the high costs per vessel, however, boats over 60 feet account for 20% of expenditures, while comprising only 5% of the total fleet.

The majority of expenditures are associated with annual overhauls. Only 17% of total expenditures can be considered running maintenance.

Independent local shipyards in the study area receive only a portion of these expenditures. Fishing company yards, independent local contractors and distributors, and boat crews do a considerable proportion of the work.

On the basis of information obtained directly from fishing companies, their yards are estimated to receive about $4.0 million yearly in annuals and running maintenance revenues. Furthermore, an additional $1.8 million is assumed to be work performed by boat crews or independent contractors working directly for the boat owner.[1] Consequently, local independent shipyards have a potential revenue of about $4.9 million yearly from the northern fleet. However, a number of the larger vessels in the fleet have their annuals performed in the Lower Mainland.

The survey of boat owners indicated that about 10 study area vessels have this work done in the south. Therefore, local yards are losing about $550,000 yearly from the southern exodus of these larger vessels, and gross revenues to local yards are consequently estimated at about $4.4 million yearly. The estimated distribution of study area fishing fleet expenditures among maintenance services is shown in Table 5.3

[1]After discussions with fishing and maintenance industry personnel, it was assumed that 30% of the value of annuals and 70% of running maintenance would be performed by crews or directly by contractors in independently-owned boats.

Table 5.2

Estimated Total Yearly Costs of Maintaining the Study Area Fishing Fleet

Length Class (feet)	Number of Vessels	Annuals (000)	Running Maintenance (000)	Yearly Total (000)
under 40	777	$3,885	$ 775	$ 4,660
40-59	131	$3,275	$ 655	$ 3,930
60-79	30	$1,200	$ 300	$ 1,500
over 79	10	$ 550	$ 100	$ 650
Total	948	$8,910	$1,830	$10,740

Source: Small Craft Harbours Branch, Fisheries & Oceans
Strong Hall & Associates

Table 5.3

Distribution of North Coast Fishing Fleet Maintenance and Repair Expenditures
($000)

Fleet (feet)	Local Company Facilities	Owners Own Work	Direct Local Contractors[1]	Local Shipyards	Southern Shipyards	Total
under 40	$2,940	$ 710		$1,010		$ 4,660
40-59	$ 945	$ 710		$2,275		$ 3,920
60-79	$ 120	$ 350		$1,030		$ 1,500
over 79	$ 15	$ 40		$ 45	$ 550	$ 650
Total	$4,020	$1,810		$4,360	$ 550	$10,740

[1]Direct expenditures from boat owners to local contractors is included in the Owners Own Work.

Source: Strong Hall & Associates

Expenditures for "disasters," associated with insurance claims by the fishing fleet, were estimated from discussions with insurance companies. While both the frequency and value of claims varies considerably from year to year, it is estimated that damages ranging between $300,000 and $400,000 are incurred yearly in northern waters. The shipyards currently available in the study area obtain about $200,000, or 50-65% of this business.

A final source of repair and maintenance revenue in the study area is associated with running maintenance for the southern based fleet fishing in northern waters. According to study area yards, they work on about 175 southern vessels per year. While no actual data are available, yard revenues are estimated on the following basis.

- 80% of the vessels would be in the 40-60 feet range; 20% in the 60-80 feet range
- total average running maintenance per vessel would be about $6000
- about 70% of the expenditure value per vessel would be on own work, direct equipment purchases and direct independent contractors
- about 30% of running maintenance would accrue to shipyards.

Therefore, the average shipyard revenue per vessel would be $1800, resulting in total yearly revenues from 175 boats of $315,000.

In summary, it is estimated that independent study area yards receive about $4.9 million yearly from the fishing industry.[1]

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[1]Represents the sum of northern fishing fleet annuals and running maintenance ($4.4 million) + disasters ($.2 million) + southern vessel running maintenance ($.3 million).

5.2 Forest Industry

5.2.1 Expenditure Patterns

The forest industry employs maintenance crews that perform most of the necessary repair work, either in the field or at their maintenance depots. The survey of logging companies indicated that virtually all repairs are carried out by company personnel. For major work, independent contractors or distributors are brought in to perform specialized tasks.

5.2.2 Estimated Expenditures

Logging companies spend about $500,000 yearly on fleet maintenance and repairs. Table 5.4 shows the distribution of these expenditures.

About 70% of the total is spent by their own crews. Independent study area contractors obtain about 20% of the work and the remainder goes to Vancouver and independent local yards.

5.3 Towing Industry Fleet

5.3.1 Expenditure Patterns

The smaller local companies operating in the industry have the capability to undertake minor repairs internally,but utilize both independent contractors and study area shipyards for major work. Riv Tow Straits can perform much of the running maintenance on its vessels, but also utilizes local independent contractors. Riv Tow, however, sends most of its vessels to Vancouver for drydocking at their company affiliated yard.

5.3.2 Expenditure Estimates

The estimated level and distribution of repair expenditures for the towing industry is shown in Table 5.5.

Table 5.4

Distribution of Forest Industry Fleet Maintenance and Repair Expenditures
($000)

Fleet	Local Company Facilities	Direct Local Contractors	Local Shipyards	Southern Shipyards	Total
34 vessels	$345	$100	$25	$25	$495

Source: Strong Hall & Associates

Table 5.5

Distribution of Towing Industry Fleet Maintenance and Repair Expenditures[1]
($000)

Fleet	Local Company Facilities	Direct Local Contractors	Local Shipyards	Southern Shipyards	Total
28 vessels	$115	$135	$95	$550	$895

[1]Figures do not include barges.

Source: Strong Hall & Associates

The industry spends about $900,000 yearly to maintain its total fleet. Over 60% of these expenditures are made in Vancouver shipyards, and study area yards receive only about 10% of this industry market.

5.4 Government Fleets

5.4.1 Expenditure Patterns

Federal Fisheries Branch and the Coast Guard undertake minor repairs internally, but most of their expenditures go to local yards. A major exception is repairs on the Coast Guard's Alexander MacKenzie: essentially all work on this vessel is performed in Vancouver.

The Provincial Forest Service makes some use of local yards, but does most of its maintenance at government facilities in the Lower Mainland.

The Ministry of Transportation and Highways' ferry is serviced primarily in Victoria, while the City of Prince Rupert's ferry is maintained by an independent study area yard.

5.4.2 Estimated Expenditures

The survey of fleet owners indicates that maintenance expenditures on government vessels average about $1 million yearly. The distribution of total expenditures is shown in Table 5.6.

Local yards and independent contractors are obtaining about 40% of government's expenditures. A further 40% is going to southern yards and the remaining 20% is spent internally.

More than one-third of the southern expenditures are on vessels too large for Prince Rupert yards to service: the 150-foot Alexander MacKenzie and the Ministry of Transportation and Highways' ferry. However, the remainder are either contracts on which southern yards outbid local yards, or they are in-house repairs at government depots in the south.

Table 5.6

Distribution of Government Fleet Maintenance and Repair Expenditures
($000)

Fleet	Local Company Facilities	Direct Local Contractors[2]	Local Shipyards[1]	Southern Shipyards	Total
31 vessels	$195	-	$420	$400	$1,015

[1]Includes an unidentified portion to local independent contractors.

[2]Direct local contractors could not be separated from local shipyards.

Source: Strong Hall & Associates

5.5 Pleasure Craft

5.5.1 Expenditure Patterns

By far the majority of maintenance and repair work on these craft is undertaken by the owners themselves or by local marine repair contractors.

5.5.2 Estimated Expenditures

Estimates of pleasure boat owners' annual expenditures on vessel repair and maintenance are based upon data utilized for Harrison's study, Resident Boating in Georgia Strait.[1] Annual average costs by vessel type and length are shown in Table 5.7.[2] Multiplying these by the number of vessels in each of the fleet categories results in estimates of the total study area fleets expenditures, displayed in Table 5.8.

Interviews with local shipyard owners suggest that recreational vessel repair and maintenance represents a very small percentage (less than 5) of their business, since it is only serious hull or engine damage that would require the use of marine ways. Local marine repair contractors likely receive the major share of this market.

It is estimated that recreational vessel owners in the study area spend roughly $70,000 yearly on repair and maintenance. About 70% ($50,000) of this total accrues to local contractors and 30% ($20,000) to local shipyards.

5.6 Maintenance Expenditure Summary

It is estimated that the northern fleets spend about $13.2 million annually on repairs and maintenance. The distribution of total expenditures by fleet is summarized in Table 5.9.

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[1] Resident Boating in Georgia Strait, 1979 Update, by M.C. Harrison, Fisheries and Oceans.

[2] Does not include the cost of owner's labour.

Table 5.7

Average Repair and Maintenance Expenditures per Vessel by Large Pleasure Craft Owners in the Study Area

Vessel Type	Vessel Length 21-30'	31' plus
Sail with auxiliary	$160	$500
Inboard and Inboard/ Outboard	$270	$330

Source: Harrison 1979, Crosstabulations performed on original data.

Table 5.8

Estimated Total Expenditures in the Study Area by Owners of Large Pleasure Craft, 1979

Vessel Type	Vessel Length 21-30'	31' plus	Total
Sail with auxiliary	$ 7,000	$ 3,000	$10,000
Inboard and Inboard/	$49,000	$ 9,000	$58,000
Totals	$56,000	$12,000	$68,000

Source: Strong Hall & Associates

Table 5.9

Summary Distribution of Repair and Maintenance Expenditures
by Study Area Fleets
($000)

Fleet	Local Company Facilities	Owners Own Work	Direct Local Contractors	Local Shipyards	Southern Shipyards	Total ($)	Total (%)
Fishing	$4,020	$1,810	-[1]	$4,360	$ 550	$10,740	81%
Forestry	$ 345	-	$ 100	$ 25	$ 25	$ 495	4%
Towing	$ 115	-	$ 135	$ 95	$ 550	$ 895	7%
Government	$ 195	-	-[2]	$ 420	$ 400	$ 1,015	8%
Pleasure	-	-	$ 50	$ 20	-	$ 70	-
Total ($)	$4,675	$1,810	$ 285	$4,920	$1,525	$13,215	100%
(%)	35%	14%	2%	37%	12%	100%	

[1]A portion of owners own work would go directly to local contractors, but this has not been separated.

[2]A portion of local shipyards' work would actually go directly to local contractors, but this could not be determined in the survey interviews.

Source: Strong Hall & Associates

The fishing fleet dominates the market, accounting for about 81% of total expenditures. The government fleet is the only other market segment spending over $1 million annually.

Local shipyards and company maintenance facilities receive the majority of repair revenues, dividing 70% of the market about equally. Local contractors are indicated to receive only 2% of the market directly from fleet owners, however, for both fishing and government vessels, their share of direct expenditures could not be identified. Furthermore, since contractors are often required to perform specific repair tasks on drydocked vessels, they would receive a significant share of gross shipyard revenues.

The table also shows that about $1.5 million is spent yearly in southern shipyards by northern vessel owners. The fishing and towing fleets each contribute about 35% of this southern volume, while the remainder is primarily spent on government vessels.

With the recent expansion of Okabe's ways, less than $400,000 of the $1.5 million total cannot be physically accommodated in Prince Rupert. The existing facilities are now capable of accommodating over $1.1 million yearly that is presently escaping to the south. This leakage is the result of government policy, corporate policies, owner's perceptions of workmanship quality and price differences, plus the availability of parts, equipment and specialist tradesmen in Vancouver.

In addition to the normal expenditures of all northern fleets ($4,920,000), revenues accrue to the study area marine repair and maintenance industry from running maintenance on southern vessels fishing in the area, and from insurance work. Southern fishing vessels are estimated to spend about $315,000 yearly in study area yards, and insurance jobs provide a further $200,000. In summary, revenues to independent study area shipyards from all repair and maintenance sources are estimated to total about $5.5 million yearly.

6.0 THE REPAIR AND MAINTENANCE MARKET TO 1985

6.1 Introduction

The purpose of this section is to estimate changes in the marine repair and maintenance market that will likely occur in the study area to 1985. Considerable detail is provided on those factors which will affect the future fishing fleet, since it is the major component in the local marine repair market. In addition, information about the planned expansions of other fleets is included in conjunction with a brief comment on the implications of the potential development of Prince Rupert as a major port.

6.2 Commercial Fishing Fleet

Institutional and economic factors will be the main determinants of the size and structure of the study area fishing fleet by 1985. Federal Fisheries regulations, the Salmonid Enhancement Program and the extension of Canadian jurisdiction to the 200 Mile Limit are reviewed below, and provide the basis for conclusions on the size and characteristics of the future fleet.

6.2.1 Regulations Governing the Harvesting Sector[1]

Federal regulations limiting entry into the harvesting sector were first imposed in 1969, and have been systematically applied since, in order to restrict investment in vessels in most fisheries.

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[1]Information in this section is derived from An Economic Review of British Columbia's Fisheries by A. Alley for Small Craft Harbours Branch, December 1979.

Salmon Fishery Regulations

The restrictions placed on the salmon fleet have a major effect on the entire fleet, since two-thirds of the roe herring seine fleet and half the ground fish trawlers are licensed to fish salmon. In 1970 and 1972, regulations were developed stating that replacement vessels could not be larger in capacity or longer than the original vessel. The response to these conditions was a reduction in the total number of vessels, but an increase in the number of large vessels, especially single gear and combination gear seiners. (This was accompanied through consolidating licences or modification of non-salmon vessels.) To control this development, moratoriums were placed on the transfer of gillnet and troll licences to seine vessels, and upon the combining of "A" licences for vessels under 50 feet for placement on a vessel over 50 feet.

In the absence of additional or more restrictive regulations on salmon vessels, both government and the fishing industry expect the number and size of vessels in this fleet to stabilize over the next five years. The Federal Government recently announced its intention of reinstating the buy-back program, which will eventually retire a total of $10 million worth of vessels. However, licence limitation has not yet curtailed excessive investment in individual vessels, as vessel owners continue to improve equipment or add additional gear types.

Herring Fishery Regulations

Herring stocks currently support fisheries for roe herring, food and bait, and spawn-on-kelp. Since its opening in 1972, and the imposition of a licence limitation in 1974, landings in the roe herring fishery have generally decreased while landed values have experienced a great increase. However, by 1980, it became clear that the market for roe herring was quite volatile and it is expected that economic uncertainty and reduced stocks will act to limit fleet expansion.

To now, there has been no licence limitation in the food fishery; rather there are certain standards for fish storage that vessels must meet. It is possible that the existing state of the roe market may cause a shift toward food fishing, but this will have no appreciable effect upon the seine and trawler fleets which dominate this fishery.

Groundfish and Halibut Fisheries Regulations

Limited entry is in effect for the halibut, groundfish trawl, and black cod trap and longline fisheries. There is sufficient capacity available in the existing fleets to harvest any anticipated increase in landings, and the number and size of vessels is expected to remain stable. There is a possibility that the fleet may be upgraded through the transfer of licences which could result in increased investment per vessel.

Packer Regulations

Federal Fisheries has placed virtually no restrictions on the size and capacity of the packer fleet. Since 1974, the number of D licences issued to packers has almost doubled, indicating rapid entry into the fleet in response to the roe herring fishery.

It is felt that excess capacity exists in the present packer fleet and, considering the fluctuations in the roe herring fishery, it is likely that the fleet will be capable of handling anticipated demands to 1985. A factor which could actually reduce the need for packer vessels over time is technological innovation (such as the so-called "champagne" method), which enables vessels to store their own catch for longer periods.

6.2.2 The Salmonid Enhancement Program

The Salmonid Enhancement Program, which came into effect in 1977, is a federally funded program designed to increase salmonid production by up to 190 million pounds per year (ie. to double current production).[1] Under current plans, enhancement of stocks spawning in the south coast and west coast of Vancouver Island is favoured relative to the north and central coast regions.

The net effect of doubling production may be a slight increase in fishing activity, as well as an increase in fishermen's incomes. Assuming that increased activity results in vessels fishing for longer periods, repair and maintenance needs, both for local and visiting vessels, could increase. Rising incomes for fishermen could benefit boatyards through increased spending on repair and maintenance or on new vessel construction. Furthermore, individual vessel owners will likely continue to invest in their boats, provided technology is available to increase catching capabilities. Overall, it is anticipated that the present fleet already has the capability of catching the quantities of fish available after enhancement, and no changes are expected in current regulations governing the entry of new vessels or replacement of existing ones.

6.2.3 Extended Jurisdiction

In January 1977, the Territorial Sea and Fishing Act extended Canada's jurisdiction over fishing to the 200 mile limit. At that time, all ground fish stocks that were previously harvested by foreign countries came under Canadian control. However, groundfish landings have been relatively constant since 1977.

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[1] The Salmonid Enhancement Program, Fisheries and Environment Canada, (no date).

Two factors will affect the future characteristics of the groundfish fleet. First, a number of species, such as pacific and ling cod and several sole species, are considered fully or over-exploited; therefore, there are no prospects for increasing landings, at least in the short term, until the stocks recover. Second, although there is a potential to increase landings of non-traditional species, which were formerly harvested by foreign vessels, the existing trawl fleet has excess capacity for handling these additional species.

6.2.4 Other Factors

After the poor salmon and herring seasons in 1980, a number of people involved in the fishing industry are predicting a slight, short term recession.[1] Since repair and maintenance expenditures on individually-owned fishing vessels are directly related to income from fishing, it is likely that only expenditures for basic work will be made for the next few years. There is also a possibility that companies may restrict spending on their own vessels. It may be expected, in addition, that new boat construction will be reduced when fishing revenues are relatively low, causing a further short term reduction in shipyard revenues.

There are other trends emerging in the characteristics of the commercial fishing fleet and these may have implications for future long term expenditures. First, although no definitive time series data are available, steel, aluminum and, to a lesser extent fibreglass, are reportedly replacing wood as hull material. As a result, metal fabrication and repair is becoming a larger component of shipyard operations, and maintenance requirements for these hulls are lower than for wooden vessels. Second, vessel owners are investing increasing amounts in electronics equipment, a specialized aspect of marine repair that most boatyards must currently contract to outside firms.

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[1]Information based on the opinions of several respondants interviewed for this study.

A third factor which could affect the total volume of business available to study area boatyards, is any alterations that might occur in the number of company-owned gillnetters. B.C. Packers and Cassiar Packing Company do repair and maintenance on their gillnet fleets in their own yards. Therefore, any future changes in ownership patterns would likely alter revenues to local independent yards.

6.2.5 Conclusions

On the basis of available data, it is not possible to determine precisely the total number or mix of commercial fishing vessels that will be resident in the study area in 1985. Small variations in this population will no doubt occur from year to year. At present, Federal Fisheries supports the continuation of its licensing program and regulations and, possibly, of even more controls upon investment in individual vessels, since there is concern that several West Coast fisheries cannot withstand additional fishing pressure.[1] As a result of these views, and barring changes in existing regulations, the total number of vessels and their relative length distributions are expected to remain essentially stable over the next five years.

In the longer term, Federal Fisheries is considering certain policy measures which could shift the coast-wide distribution of fishing activity. For example, there is a proposal to institute a North-South "coast-split" whereby fishermen would be licenced for fisheries either north or south of Cape Caution. If this coast-split proposal were to be applied to the salmon fishery, it is possible that some south coast fishermen would elect to relocate in northern waters, since fishing has been relatively more lucrative in this area. Therefore, the population of resident fishing vessels could increase in the study area in the long term.

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[1]Personal communication with Federal Fisheries personnel, Prince Rupert, September 1980.

6.3 Forest Industry Fleet

The forest industry is unlikely to experience significant marine-related expansion in the study area during the next five years. The companies currently operating in the area expect little substantive change in their fleets. A few additional vessels are planned but, for the most part, any fleet additions will be balanced by deletions of other vessels.

6.4 Towing Industry Fleet

The major potential factor affecting long term changes in the towing fleet is the planned development of Prince Rupert as a major bulk cargo port. At present, the city is designated as a National Harbours Board port, with Fairview Terminal functioning as the main transhipment point, mainly for lumber and mineral concentrates. Assuming that agreement can be reached between the various development parties, Ridley Island will become the site for a number of grain terminals and docking facilities. The construction of road and rail access, and utilities systems required for this development, could further promote port activities and could lead to the development of a terminal for coal mined in northeastern B.C.

The direct implication of port expansion for the marine repair industry is an increase in the number of locally-based tugs and increased tug traffic from Vancouver during port construction. During the next five years, however, little fleet expansion is expected.

Riv Tow Straits will have a new 65 foot vessel operating from Prince Rupert by the end of 1980. Depending on the scale of port expansion, the company indicates a possible need for another 1 to 2 vessels over the next decade.

6.5 Government Fleet

The only government agencies based in the study area that indicated a possible expansion of their fleets,within the next five years, are the Coast Guard and the B.C. Forest Service. These agencies are considering the addition of one and three vessels, respectively, in the 60-70 foot length class.

The B.C. Ferry Corporation has initiated ferry service between Prince Rupert and the Queen Charlotte Islands. However, the vessel employed (The Queen of Prince Rupert) will be serviced in southern yards.

6.6 Pleasure Craft

By 1985, the resident pleasure craft population in the study area is expected to be about 1670 vessels, an increase of 4.4% over the 1980 population (see Appendix 1). However, assuming a continuation of present boat ownership trends, the number of large-sized vessels (21 feet plus) is estimated to grow from 260 in 1980 to 330 in 1985. The increase in the large vessel population has implications for study area marine repair and maintenance services, since these boats represent the bulk of the pleasure craft market for such services.

There may also be some growth in non-resident recreational boating activity, which could result in occasional emergency repair jobs for local boatyards or related services.

7.0 POTENTIAL INCREMENTAL FLEET EXPENDITURES AND YARD REVENUES FOR REPAIR AND MAINTENANCE TO 1985

The previous chapter predicted very little expansion in the northern fleet during the next five years. The commercial fishing fleet is likely to remain stable, a few vessels will be added to the towing and government fleets, and a minor increment will occur in the number of large pleasure craft. The chapter further concluded that on-going changes are occurring in the hull composition of the fishing fleet.

Future short term changes in repair and maintenance expenditures for the northern fleet will be primarily affected by changes in the number of vessels. While alterations in hull composition could have important long term expenditure implications, their effects in the short term will be relatively minor.

On the basis of these projections, repair and maintenance expenditures for the northern fleet are estimated below, to 1985. Expenditure values are estimated in 1979 dollars, as it is reasonable to assume that shipyard costs will escalate at the same rate as revenues (ie., maintenance expenditures). No adjustments to future expenditures have been made, therefore, to account for inflation.

In addition, potential revenues to 1985, are estimated for existing study area shipyards. Each of the following sources of revenue is identified and forecast:

- revenues from the expanded northern fleets,
- revenues from recaptured southern leakages of northern fleet expenditures,
- revenues from itinerant vessels.

7.1 Incremental Northern Fleet Expenditures

7.1.1 Commercial Fishing Fleet

The commercial fishing fleet is expected to remain fairly stable over the next five years. While there may be slight annual variations, there is an equal probability that these variations may reflect marginal expansion or contraction of the total fleet. Furthermore, virtually no change in relative numbers by length class is expected.

The 1980 expenditure estimate of $10.7 million yearly is expected to hold steady over the next five years.[1] In the longer run, the effects of area licencing may result in an expansion of the northern fleet and its total local expenditures. On the other hand, trends toward the increased use of aluminum, fiberglass and steel for hull material, will both lower and alter the composition of fishing fleet maintenance expenditures.

7.1.2 Forest Industry Fleet

No significant alteration is expected in forest industry repair and maintenance expenditures over the next five years. Total expenditures of about $500,000 yearly are expected to be maintained.

7.1.3 Towing Industry Fleet

The only expansion expected in the towing fleet is an additional 65 foot vessel for Riv Tow Straits, scheduled to be in service by the end of 1980. After the first few years of operation, this tug will require the expenditure of about $40,000 yearly on annuals, and a further $15,000 yearly on running maintenance. Therefore, by 1985, the towing fleet will spend about $950,000 yearly, compared to $895,000 at the present time.

7.1.4 Government Fleet

The most significant change identified in the northern fleet will likely occur among government vessels. One vessel will be added to the Coast Guard and three vessels to the B.C. Forest Service fleet by 1985. Each of these ships will be in the 60-70 foot range.

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[1]The possible short run recession in the fishing industry, predicted by some, is not included in this estimate.

For these vessels, yearly maintenance expenditures should amount to about $40,000 each for annuals, and $10,000 each for running maintenance. Total expenditures would amount to $200,000 yearly, raising maintenance costs for the government fleet from $1.0 million to $1.2 million by 1985.

7.1.5 Pleasure Craft

From 1980 to 1985, it is anticipated that the number of resident pleasure craft 21 feet and larger will increase from 260 to 330 boats. This will result in an incremental increase in expenditures of roughly $26,000; the majority of this amount will accrue to local marine repair contractors, rather than shipyards.

The relatively small expansion predicted in the northern fleet is expected to result in total incremental expenditures of about $280,000 yearly, in real terms, over the next five years. This increment would raise total expenditures from the current level of $13.2 million (Table 5.9) to about $13.5 million in 1985.

7.2 Potential Revenues for Existing Study Area Shipyards to 1985

The total projected incremental expenditures of the northern fleet will not accrue entirely to independent study area shipyards. Riv Tow Straits will make some expenditures locally, either using its own facilities or local contractors, but the majority of its expenditures will be made in affiliated southern yards. The B.C. Forest Service will use some local contractors, but most work will be performed at southern depots. The pleasure craft fleet will primarily use local independent contractors and suppliers. Only the Coast Guard will contribute significantly to local yards.

Of the $270,000 in incremental expenditures projected above, about $100,000 will likely be spent in the study area, but independent local shipyards can expect only about $50,000 in gross revenues. Most of this incremental revenue will be associated with annuals on the new Coast Guard vessel.

While this total is insignificant, in terms of the 1979 estimated revenues of $5.5 million for local yards, other potential revenue additions may be more substantial.

At the present time, approximately $1.5 million, spent yearly on the northern fleet, leaks from the study area to southern yards. While nearly half of these potential local shipyard revenues are lost due to corporate or government affilitiations with southern facilities, and a further 20% are associated with vessels that are too large for servicing in the study area, nearly one-third of the total leakage could be returned to existing local facilities through more aggressive marketing and improved workmanship.

In addition, some insurance work has been lost from the area, as claims adjusters felt the facilities in Prince Rupert were incapable of handling the job. With the expansion of Okabe's yard, they concede there is no justification for taking a vessel south, assuming price and workmanship are competitive. Additional insurance work could add between $75,000 and $150,000 annually to local yard revenues.

The final source of incremental revenues would be additional running repairs for southern fishing vessels. While it does not appear likely that the southern fleet will alter significantly in the next five years, greater revenues might accrue to local yards from the existing southern fleet fishing in northern waters, if docking capacity was previously considered a constraint by a significant number of vessels.

Given the scope of this study, it was not possible to obtain a representative cost or opinion sample from large southern boat owners. However, discussions with fishing industry representatives in Vancouver suggest that the potential increment from this source is likely to be small. Annuals will continue to be done at the vessel's home port. Some additional running maintenance that requires docking might be done in Prince Rupert but, on average, this is not likely to be substantial.

In summary, the existing facilities in the study area are reportedly capable of handling vessels up to 130 feet in length. With this capability, plus agressive marketing, quality workmanship and competitive pricing, they might expect incremental revenues of about $500,000 annually, in 1980 dollars, by 1985.

8.0 POTENTIAL REVENUES AND VIABILITY FOR A PROPOSED NEW MARINE REPAIR FACILITY IN THE PRINCE RUPERT-PORT EDWARD AREA

8.1 Potential Revenues and Competitive Implications

The previous chapter estimated that about $500,000 of additional revenues might be available to existing study area yards by 1985, under certain conditions. This would result in total independent shipyard revenues of $6.0 million yearly; an increase of 9% over current levels. These total revenues are divided in an undetermined proportion among the five yards in the study area, but it is believed that the three Prince Rupert area yards obtain about 90% of the total business. Also, the estimated increment to 1985 would likely accrue only to Prince Rupert area yards.

A fundamental objective of this study is to estimate the potential revenue for a new marine repair and maintenance facility, to be located in this same area.

The proposed facility would have:

- a syncrolift or other similar facility capable of docking vessels up to 130 feet in length
- storage capacity on shore for a number of vessels, located in such a manner that individual boats could be docked or returned to water without affecting other stored vessels.

The proposed facility is based on an industrial mall concept, which suggests that a variety of independent contractors would be located at the facility and be available to provide repair services.

When considering the market potential for this new facility, it is useful to first review the main factors that would determine its advantages in relation to the needs of fleet owners and to their perceived inadequacies with the present facilities.

Fleet owners utilizing independent yards in the study area were primarily interested in receiving:

- quality workmanship
- quick turnaround time
- competitive prices.

The inadequacies they perceived in the present local service centred on:

- inadequate docking capacity for larger vessels[1]
- insufficient docking capacity during peak periods
- inadequate electronics and sandblasting services
- time delays in obtaining parts from the south

Vessel owners using unaffiliated southern yards indicated their decision was based on:

- inadequate docking capacity for large vessels in northern yards.
- better workmanship
- lower prices
- greater availability of parts and specialty services.

Few of these owners were aware of Okabe's expansion either.

Vessel owners using affiliated yards located in the south, do so primarily as a result of institutional policy.

A final consideration in assessing a new facility's potential would be the reputation of the operator(s). Many fleet owners indicated that confidence in the yard was an important factor in their yard selection. One must assume in this exercise that the new facility would be capably managed, but an operator with an established reputation would certainly find entry easier than one without.

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[1]Obviously many fleet owners were not aware of Okabe's expansion.

Determining the share of the $6.0 million market that a new entrant might obtain by 1985, cannot be neatly estimated by statistical manipulation. Most fleet owners interviewed during our survey indicated there was need of an additional facility. All yard owners argued there was not. As Okabe can now accommodate vessels up to 130 feet in length, the most compelling argument for a new facility would be its ability to speed service during peak fishing season.

The present facilities can dock between 7 and 9 medium sized (50') vessels at one time. But, utilizing carriage systems, scheduling boats on and off the carriages during peak periods can result in considerable inefficiencies. The proposed facility would substantially eliminate these inefficiencies. With this advantage alone, a facility of the nature and capacity proposed, assuming capable and aggressive management, would inevitably make significant inroads into the present market.

A respected repair industry representative suggested that the proposed facility could dominate the local market within a few years. In the judgement of the study team, an aggressively operated facility, providing quality service with proven, respected management could probably achieve this position. A market penetration of 40-50% within five years would not be unreasonable to expect. It would do so because the concept meets a perceived need in the study area market - a need expressed by most of the fleet owners interviewed.

However, it would achieve this position at the expense of the existing yards in Prince Rupert-Port Edward. There is no indication that the current yards are earning excess profits from the estimated $5.5 million in gross revenues currently being received, and the facility is unlikely to be viable on simply the incremental $500,000 in gross revenues projected in market expansion over the next five years. Revenues required to support a new facility would significantly jeopardize the existing industry in the Prince Rupert-Port Edward area, at least in the short term. While there may be long term expansion in the local fishing fleet, its realization is too uncertain to predict at this time.

In our judgement, Okabe's yard would be particularly vulnerable to this competition. McLean's has a well established position with B.C. Packers and would likely continue to service most of their seine and packer fleets. Furthermore, McLean's has a well established reputation in the industry, and would tend to retain many of his steady customers. Okabe is relatively new in his operation, and his emerging emphasis on steel, fiberglass and aluminum vessels would likely run head-on into the primary market sought by the proposed new facility.

In spite of the above conclusions, which were based on high quality but neutral management/ownership, there may be opportunities to create a viable facility with less harm to the existing industry. This might be achieved by involving one or more of the current participants in the study area marine repair industry. The most likely candidates would be:

- Okabe Shipyards (at a new location)
- Riv Tow Straits
- B.C. Packers.

Each of these organizations are heavily involved in the repair and maintenance industry. Their involvement in the proposed facility might be founded on the continuation of their own activities as the core of the operation, but with the capability to accommodate marginal overflows during peak fishing seasons, recapture current leakages from the study area, and compete for the future market growth. The involvement of a firm like Riv Tow, for example, would provide immediate access to about $550,000 in tug repairs currently leaving the area, and would prevent future leakages that would otherwise occur from growth in their fleet. Okabe, if involved, would be better able to handle overflow business, and would be in a stronger position to recapture the current fishing industry leakages to the south.

B.C. Packers might be the least desireable alternative presented. While they are a dominant factor in the repair industry at the moment, any expansion to handle larger vessels would likely affect McLean's operation by reducing or eliminating his seiner and packer business.

A new facility, whatever the ownership, would inevitably draw from one or more of the existing yards. However, where the owner already has a "captured" market, its need to penetrate the present operators' markets is lessened.

8.2 Additional Comments on Viability

While there is every indication that a marine repair facility with the capabilities described above would obtain substantial gross revenues in the study area market, notwithstanding the disruption that it might cause to the existing industry, its revenue generating capability is only one side of its potential viability. Furthermore, the revenues estimated apply to a shipyard type facility which would generate revenues from docking, repair labour, materials markups and subcontractor markups. The exact nature, and distribution of revenues in an industrial mall concept are not so clear.

To obtain the revenue estimated, the facility would have to have the flexibility provided by a Syncrolift-type facility, and be able to capture most of the area's large vessel market. The only lift facilities that were identified during the course of the study were:

- Syncrolift
- Travelift

Travelift is a type of crane-on-wheels that can lift a vessel, walk it to its storage area, and place it on blocks. It works on an open ended pier and has some tidal restrictions. Suppliers report that the largest Travelift can lift about a 250 ton (approximately 100 foot) vessel. Assembled cost of this machinery is about $750,000, including pier installation.

A Syncrolift can be described as a barge-type elevator with a railyard. The elevator raises a vessel to ground level where it is transferred to small, railed dollies for transport on rails to its storage location. Syncrolift can raise larger vessels than the Travelift, but suppliers indicate the cost for a facility capable of handling 250 ton vessels is about $4 million.

It would appear that between these two facilities, the Travelift would preclude the new facility from accommodating the largest vessels in the market (probably 5-6 boats), while the Syncrolift would accommodate these vessels but at significantly higher cost.

While an assessment of financial feasibility is beyond the scope of this study, industry spokesmen have suggested that a traditional shipyard facility might be able to generate sufficient funds to cover capital investments for a Travelift from $2.5 to $3.0 million annual gross maintenance revenues. How an industrial mall facility would generate sufficient revenues in an equitable fashion to recover these costs, is not as readily apparent.

Most industry people interviewed, whether or not they felt Prince Rupert needed a new facility, were dubious of the financial feasibility of a Syncrolift, due to its relatively high capital cost. Analysis of the less versatile but less costly Travelift should probably receive priority if further studies are undertaken. Further study would also be required to define the most workable operating structure for the proposed industrial mall concept.

APPENDICES

APPENDIX 1
ANALYSIS OF THE PLEASURE BOAT POPULATION

INTRODUCTION

No data are available to indicate the specific characteristics of the pleasure craft fleet in the study area. There is a yacht club in Prince Rupert which accommodates approximately 100 boats; however, many other boats are docked at government wharves, other private floats or stored on land.

A number of studies have been completed on boat ownership patterns in the Strait of Georgia and the West Coast of Vancouver Island.[1] These studies established by survey a boat ownership rate per household for a large number of coastal communities. In order to estimate a boat ownership rate for the study area, Campbell River and Powell River were used as "proxy" communities. These were the most similar to Prince Rupert in terms of the number of households and income levels - two important determinants of boat ownership. Therefore, all information described below on boat ownership, boat type and length and expenditures on repair and maintenance is based on the characteristics of the recreational vessel fleet in these communities (see Harrison, 1974 and 1979 for details).

The Pleasure Boat Fleet in 1980

For the purposes of assessing whether pleasure craft represent a potential market for local shipyard services, it was determined that only vessels located in the Prince Rupert-Port Edward area, rather than the entire study area, should be included for two reasons. First, about 80% of the study area population, and therefore most of the pleasure craft, are resident in Prince Rupert. Second, it is clear that residents of the Queen Charlotte Islands would very rarely utilize a boatyard on the Mainland.

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[1]Resident Boating in Georgia Strait (1974), Resident Boating on the West and Northeast Coasts of Vancouver Island (1975), Resident Boating in Georgia Strait, 1979, Update by M.C. Harrison, Fisheries and Oceans, Environment Canada.

In 1980, some 42 percent of the households in Prince Rupert owned one or more recreational boats; this results in a population of 1600 primary boats used in salt water. By far the majority of these are under 20 feet in length and are not considered as potential clients of shipyards. The characteristics of the large vessel fleet (roughly 260 boats in total), derived from those fleets in Campbell River and Powell River, are displayed in Table 1.1.

The Pleasure Boat Fleet in 1985

There are several factors, including rising fuel prices and increasing household income, that may alter the characteristics of the study area pleasure boat population by 1985. However, the number of households in a given area is one of the most important variables affecting total numbers of pleasure craft and it will be used here to describe the study area fleet in 1985.

It is estimated that there will be some 5,210 households resident in the Prince Rupert area by 1985 (see Tables 1.2 and 1.3). This figure is based on projections calculated for the entire Regional District and does not account for additional increases that might occur as a result of the proposed development of Prince Rupert as a major port.

It is difficult to project the boat ownership rate for the Prince Rupert area in 1985. Throughout Georgia Strait communities, between 1973 and 1978, the boat ownership rate actually decreased by 1%, though the proportion of large vessels (21 feet plus) increased. For Prince Rupert, it is reasonable to decrease the rate by another one percent to 1985. This would result in a boat ownership rate of 41%; there would be a total of 1,670 primary vessels used in salt water.

It may be expected that the trend toward owning larger vessels will continue and that about 20% (relative to 16% in 1980) of all vessels will be 21 feet or longer by 1985. Therefore, there will be approximately 330 large size recreational craft in Prince Rupert in 1985. Although there may be changes in the number and size of these vessels to 1980, it is impossible to predict these. Therefore, the fleet characteristics displayed in Table 1.4 are based on 1980 data.

Appendix Table 1.1

Characteristics of the 21' plus Pleasure Craft Fleet in 1980[1]

Vessel Type	Length 21'-30'	31' plus
Sail with auxiliary	44	6
Inboard/Inboard Outboard	182	28

[1]Estimates based on Harrison, 1979

Source: Strong Hall & Associates

Appendix Table 1.2

Estimate of Total Households in the Prince Rupert Market Area

	Total Population in SQCRD[1]	Average No. of persons/households	Total Households in SQCRD	Total Holdholds in Prince Rupert area
1966	21,425	3.6	5,950	NA
1971	22,325	3.6	6,200	NA
1976	22,580	3.4	6,640	5,046
1980	21,801	3.4[2]	6,410	4,870[3]
1985	22,624	3.3[2]	6,860	5,210[3]

[1]Projections derived from B.C. Research Population Projections

[2]Estimates based on the projected decrease in the average number of persons/B.C. household, See Table 1.3.

[3]Estimate based on the proportion of population resident in Prince Rupert in 1976.

Source: B.C. Research Population Projections
Strong Hall & Associates

Appendix Table 1.3

Persons Per Household
SQCRD and Province of B.C.
1966, 1971, 1976

	Skeena Queen-Charlotte Regional District	Province of B.C.
1966	3.6[1]	3.3
1971	3.6	3.2
1976	3.4	2.9

[1]Based on number of households in Prince Rupert; no figure available for Regional District.

Source: Statistics Canada

Appendix Table 1.4

Characteristics of the 21' plus Pleasure Craft Fleet in 1985

Vessel Type	Vessel Length 21'-30'	31' plus
Sail with auxiliary	45	8
Inboard and Inboard/Outboard	222	42

Source: Strong Hall & Associates

APPENDIX 2
REPAIR AND MAINTENANCE DISTRIBUTION BY TYPE OF EXPENDITURE

The terms of reference require the estimation of fleet expenditures by major repair and maintenance category. While the research into this aspect of the industry produced some results, the specificity of the data and its relative importance to the task of estimating market potential suggests it be presented in an appendix, rather than in the body of the text.

During the survey of fleet owners and shipyards, data was requested on the breakdown of repair and maintenance expenditures by major expense category. However, for the most part, owners did not keep this type of data and shipyards worked on such a variety of vessels, that the limited "guesstimates" received were of little use.

Actual cost data was obtained, however, for a limited sample of seiners and packers, reflecting a high proportion of wooden hulled vessels. These data were then reviewed by a specialist in tug fleet repairs (representing steel hulled vessels), who was able to indicate, generally, the relative differences that might occur between the two fleets. The results are shown in Table Appendix 2.1.

Appendix Table 2.1

Distribution of Repair and Maintenance Expenditures by Type of Expenditures

	Seiners/Packers	Tugs
Carpentry	14%	3%
Mechanical	43%	50%
Electrical	7%	16%
Electronics	13%	13%
Labourers and Helpers	23%	18%
Total	100%	100%

Source: B.C. Packers Ltd.; Riv Tow Straits Ltd.; Strong Hall & Associates

The aggregated categories in the table contain the following detailed repair tasks.

Carpentry

Hull
Planking & Ribs
Bulkheads
Caulking
Fish-Hold & Hatches
Guards & Bulwarks
Shaft Log/Keel/Bow
Deck
Deck Equipment
House
Galley Equipment
Windows
Masts & Booms
Trolling Poles & Davits
Shrimp Poles

Mechanical

Engine Room
Main Engine
Cooling System (Engine Room)
Power Take-off
Reduction Gear
Fuel System
Exhaust System
Lube System
Batteries
Auxiliary Engine
Hydraulic System
Pneumatic System
Steering Gear/Controls
Controls (Engine)
Refrigeration System (Brine)
Brine Tanks
Bilge System
Domestic System
Sanitary System
Heating System
Galley Stove
Ventilation Fans/Ducts
Domestic Refrigeration
Underwater System
Cooling System (Underwater)
Propeller
Tail Shaft/Stern Bearing/Packing Gland
Intermediate Shaft/Bearings
Rudder & Shoe Iron
Net Guard

Line Shafts/Chains/Sprockets/Bearings
Boom Winches/Topping Winches
Gurdies
Drum Assemblies/Motors
Spool Assembly
Conveyor/Dump/Siphon/Fish Pumps
Anchor Winch/Motors/Drives
Seine Winch/Deck Winches
Stern Rollers
Bow Rollers/Fairleads

Electrical

Electrical System
C.B./A.M. Radios
Antenna/Aerials
Cabin & Deck Wiring
Engine Electrical Systems

Electronics

S.S.B. Radio
V.H.F. Radio (B.C. Tel)
Sounder
Radar
Sonar
Loran
Automatic Pilot

Labourers and Helpers

Scaffolding
Painting & Washing
Docking & Launching
Draining & Stripping
Pumping Bilges
Outfitting
Rigging
Winterizing
Change-overs
Miscellaneous
Salvaging
Fire & Safety Equipment
Moving Boats

Costs could not be obtained for the detailed categories.

APPENDIX 3
LIST OF CONTACTS (within the study area unless otherwise indicated)

Fishing Companies

1. B.C. Packers:
   - Mr. Gene Simpson
   - Mr. Jack Rowbottom
   - Mr. Dave Mayne (Vancouver)
2. Cassiar Packing Company: Mr. Don McLean
3. J.S. McMillan Fisheries: Mr. Gordon Lindguist
4. Pacific Northcoast Native Coop: Mr. Arnold Sankey
5. Prince Rupert Fishermen's Coop:
   - Mr. Robert Strand
   - Mr. A. Laing
   - Mr. J. Wray

Shipyards

1. Dodge Cove Boatyard: Mr. Alec Spiller
2. McLean's Shipyard: Mr. Ken McLean
3. Noddin's Boatyard: Mr. Jack Noddin
4. Okabe Shipyard: Mr. Alan Okabe
5. Scotia Marine Way (Port Hardy): Mr. Bud Masales
6. Shearwater Marine: Mr. Craig Widsten

Towing Companies

1. Comedina Towing: Mrs. S. Comedina
2. Mitco Marine: Mr. G. Abermath
3. Macmillan Bloedel: Mr. Brian Laroch
4. Silver Grizzly Logging: Mr. Frank Schroff

Government Agencies

1. Federal Coast Guard:
   Mr. Ed Harris
   Mr. M. Ball (Vancouver)
2. Fisheries and Oceans:
   Captain Lloyd
   Ms. M. Hobbs (Vancouver)
   Mr. Trevor Proverbs (Vancouver)
   Mr. Rob Morley (Vancouver)
3. United States National Marine Fisheries Service:
   Mr. Jack Richards (Seattle)

Provincial

1. Forest Service:
   Mr. Jack Bickert
   Mr. Gary Ward
2. Transportation and Highways: Mr. Doug Lamb

Municipal

1. City of Prince Rupert: Mr. Gordon Howie

Miscellaneious

1. Certified Welding: Mr. Neil Foreman
2. Cooperative Fishermen's Guild: Mr. Sid Dickens
3. Prince Rupert Vessel Owners' Association:
   Mr. George Olafson
   Mr. Randy Pilford
4. Northern Trollers' Association: Mrs. L. Bullen
5. Pacific Coast Fishermen's Mutual Marine Insurance Co. (Vancouver):
   Mr. Sweri Meyer
6. Rico Equipment Ltd. (Vancouver): Mr. R. Sunderland