ECONOMIC CYCLES AND HOUSING DEMAND

IN RESOURCE COMMUNITIES:

A Case Study of Fort St.John, B.C.

A

A CANADA MORTGAGE AND HOUSING CORPORATION STUDY

CONDUCTED BY

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Fort St. John Area residents hold a high degree of interest in their economy and housing picture, judging by the eagerness of public and business officials to give and receive information about this project.

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1.1 PURPOSE AND CONTEXT

In 1981, most small cities and towns in the British Columbia hinterland began to experience an economic downturn that shows few signs of abating three years later. For many communities, this followed a period of healthy expansion, with low unemployment, positive net migration, and unprecedented residential construction. Of the dozens of non-metropolitan centres conforming to this pattern, nowhere was this change from "boom" to "bust" so sudden and extreme as in the Fort St. John Area of British Columbia's Peace River country.

In 1976, the City of Fort St. John had 9,025 residents living in 2,610 dwelling units. Over the next five years, the City's population grew by an average of 1,000 residents a year to the 13,890 recorded in the June 1981 Census. Over the same period, almost 2,000 new dwelling units were built, including over 1,200 rental apartment units. Based on oil and gas exploration activity, the local economy expanded and market prices for houses, lots, and apartments rose, stimulating building activity.

Population growth and construction statistics permeated the community's psyche and optimistic growth expectations seemed valid. The two sawmills in the area were undergoing expansions. The 160,000 hectares of North Peace farmland under cultivation was being added to at a rate of 6,000 hectares annually. The imminent construction of the Site C dam, six kilometres from Fort St. John, was to bring 6,200 person-years of construction work. The Alaska Highway Pipeline was to use the City as a staging centre. Over 60 oil and gas drilling rigs were in operation, collectively creating hundreds of jobs. Peak construction employment on the Silver-Dahl pipeline north of Fort St. John reached 400. A new shopping mall and six new motor hotels were planned or under construction. The Fort St. John Canada Employment Centre averaged between 250 and 300 placements a month, and some unskilled jobs remained unfilled.

By mid 1981 the situation had reversed. Even though the number of occupied apartment units stayed constant, vacancy rates in Fort St. John rose to over 25% in April 1981 as new units entered the market. Vacancy rates have remained in excess of 25% since that time, and nearly one third of the rental units have or are expected to become claims against the Mortgage Insurance Fund. Hundreds of houses are listed with local realtors and selling prices are well below replacement cost. Indicators suggest that the City's population has declined since 1981.

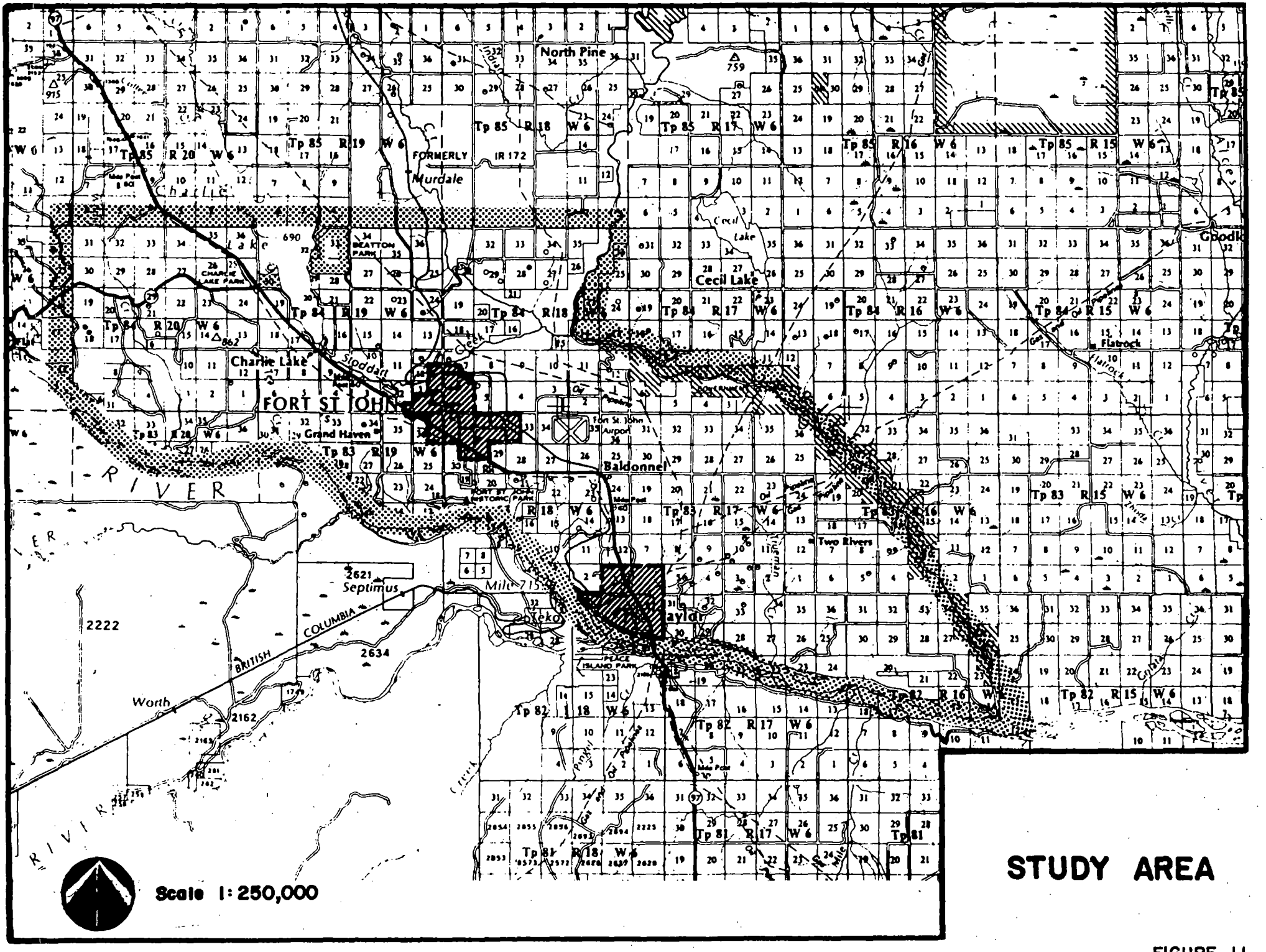
The purpose of this report is to analyse the relationships among economic growth, employment change, population change, and housing demand in the Fort St. John area. While it may be difficult to predict if and when the region will recover from the local recession, it is possible to monitor conditions and indicators that will precede local recovery. Just what major lenders and insurers do with existing vacant residential units will reflect their collective perceptions of the strength and timing of local economic recovery. If prosperity reminiscent of the late 1970's returns, persuading the "once bitten, twice shy" construction industry to respond to demand may well be difficult.

1.1 Purpose and Context (cont'd)

This study attempts to provide the information upon which these types of decisions should be based. It documents past economic and housing cycles and the factors behind their timing and duration. It examines the employment impact of the oil and gas industry and relates the industry's health to local economic cycles. It estimates employment multipliers and develops a series of local indicators of economic health to assist in future population and housing forecasts.

1.2 STUDY AREA

The study area includes the City of Fort St. John, the Village of Taylor (15km southeast) and the unincorporated commuting fringe (Figure 1.1). This rural fringe consists of eight 1981 Census Enumeration Areas for which comparable statistics are available from earlier census years, and includes the rural residential communities of Baldonnel, Grandhaven and Charlie Lake. The non-municipal area conforms to the 1984 boundaries of Electoral Area "C" of the Peace River-Liard Regional District. The two municipalities are inter-dependent: many of Taylor's refinery and sawmill workers live in Fort St. John, while some Taylor residents commute to jobs in Fort St. John. Pursuit of a rural residential lifestyle became popular in the 1970's and the subdivision of rural acreage lots centred on the Charlie Lake and Grandhaven areas. The commuting shed is generally within 25km of the city; outside it there is little pressure to sub-divide agricultural land for rural residential uses. Both Taylor and the rural fringe have experienced Fort St. John's population and housing cycles.



STUDY AREA

FIGURE 1.1

2.1 INTRODUCTION

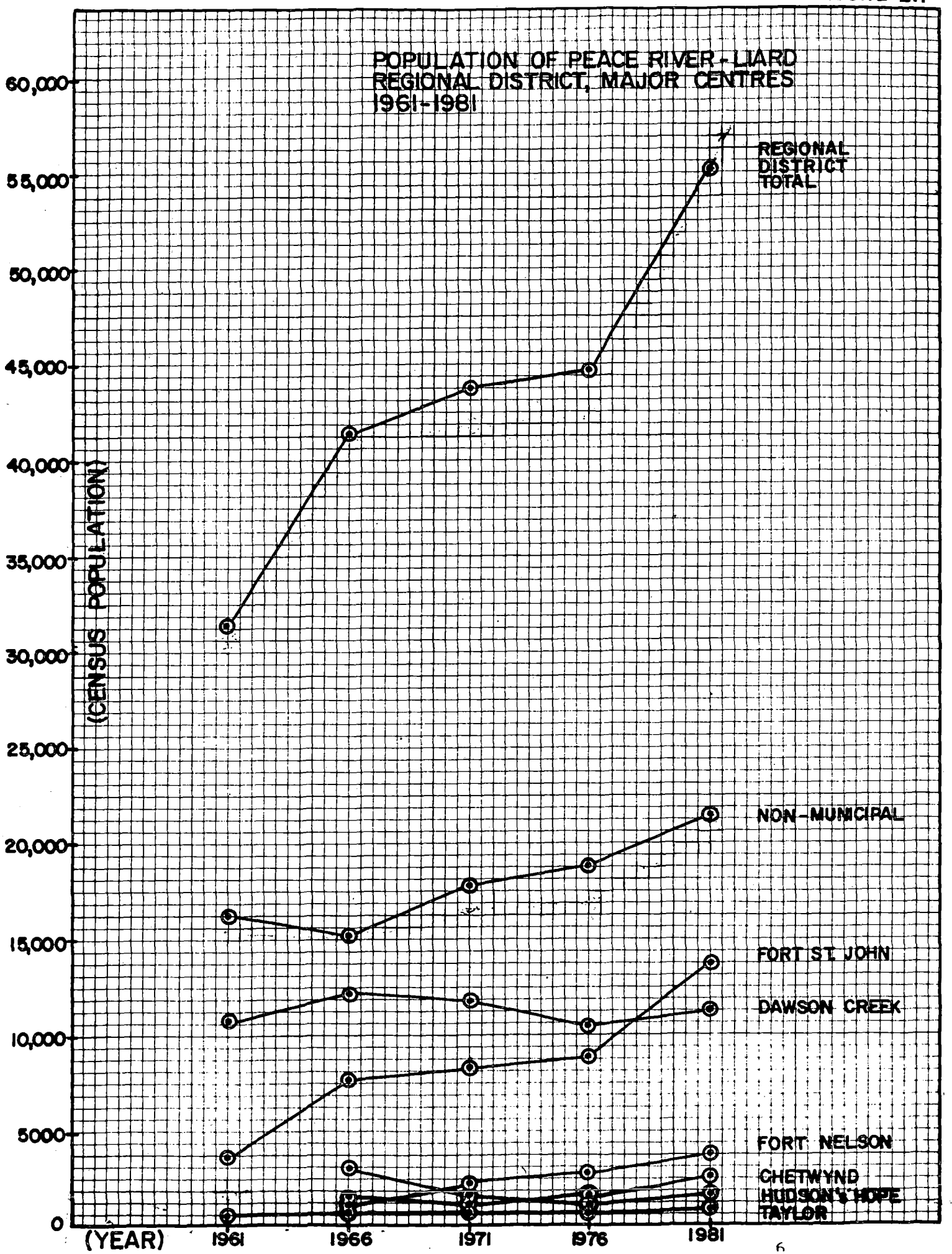
The Peace River Region has experienced a series of economic cycles, based on the extraction and processing of natural resources whose prices are dependent on the vagaries of national and international markets. This has resulted in mobile populations and communities which, as Figure 2.1 shows, do not conform to the typical linear growth patterns of more diversified centres. This section traces the economic history of the Fort St. John area and, more importantly, relates it to employment and population.

2.2. COMPONENTS OF POPULATION CHANGE

At the local level there are only two components which determine population change. Net natural increase is the number of births to residents of the locale over the defined time frame less the number who die. Net natural increase is often expressed as an annual rate per thousand residents. Birth rates in Fort St. John and in School District 60 (which includes Fort St. John, Taylor, Hudson's Hope and rural areas) have slowly declined from very high levels, and death rates remained low and fairly constant, over the past several years:

	1971	1976	1976	1981	1983
	S.D. 60	S.D. 60	Ft. St. John	S.D. 60	Ft. St. John
Birth Rate/1,000/yr	26.0	23.3	22.4	23.3	25.3
Death Rate/1,000/yr	3.7	4.1	5.1	3.4	5.2
Net Natural Increase/ 1,000/yr	22.3	19.2	17.3	19.9	20.1

FIGURE 2.1


POPULATION OF PEACE RIVER - LIARD REGIONAL DISTRICT, MAJOR CENTRES 1961-1981
60,000
55,000
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5000
0
(CENSUS POPULATION)
(YEAR)
1961
1966
1971
1976
1981
REGIONAL DISTRICT TOTAL
NON-MUNICIPAL
FORT ST. JOHN
DAWSON CREEK
FORT NELSON
CHETWYND
HUDSON'S HOPE
TAYLOR

This high birth rate, in combination with a low death rate, gives Fort St. John one of the highest rates of natural increase in the province. This of course is a reflection of the youthful age structure and the tendency of many senior citizens to retire in more amenable places. Nationally, birth rates in 1983 and 1984 are 15.1/1,000/yr and death rates 7.1/1,000/yr. Therefore, in Canada, the net natural increase component of population growth is 0.8% per year. In the Fort St. John area, it traditionally ranges between 1.7 and 2.0% per year.

Net migration is the number of people who move into and stay in Fort St. John from other parts of Canada or the world, minus the number living in Fort St. John who leave town over the time period in question. It is this component of population change that has been subjected to extreme fluctuations.

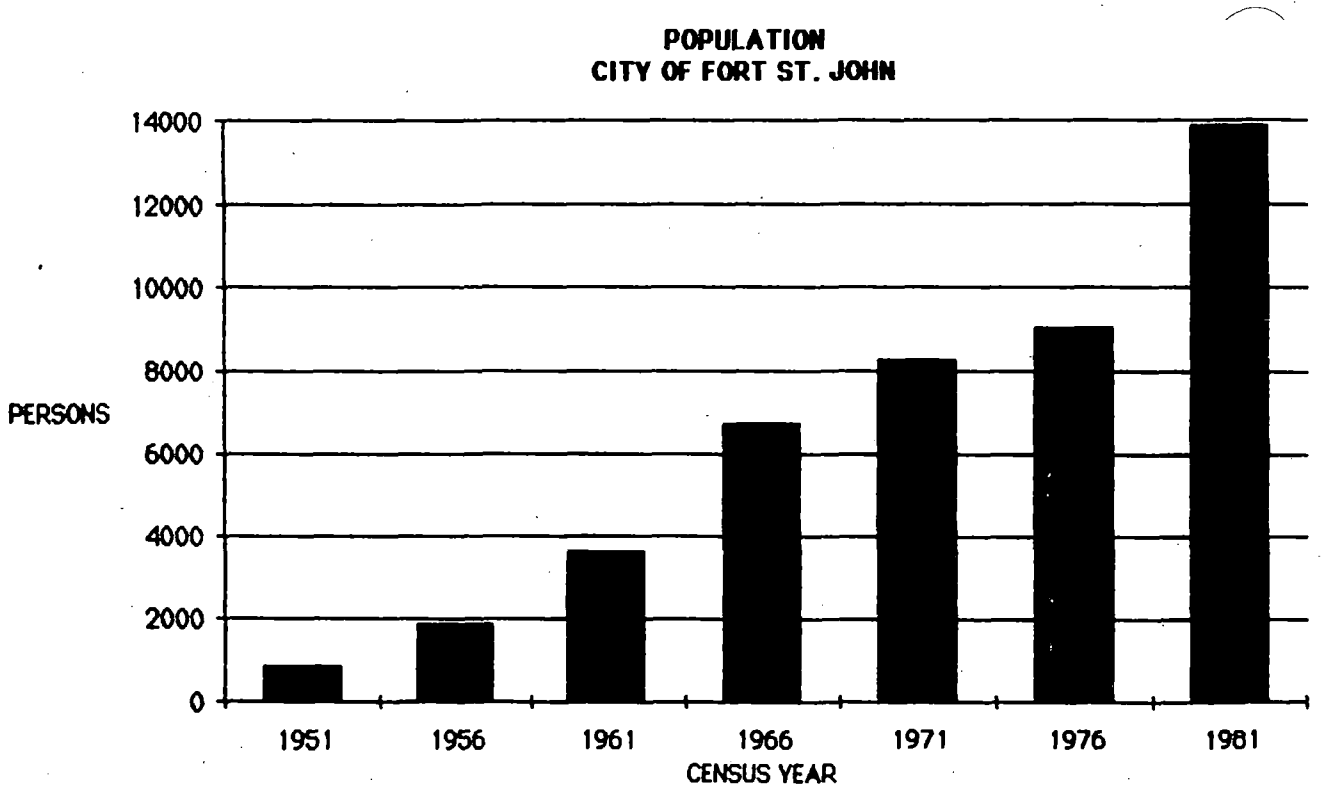
For School District 60, net migration estimates averaged - 12.3/1,000/ year for the 1966-71 period, - 5.4/1,000/year from 1971-76, and became positive again at + 29.5/1,000/year between 1976 and 1981. For the City of Fort St. John, which accounted for 44.2% of S.D. 60's population in 1976 and 51.2% in 1981, net migration was probably much higher. In the 1976-81 period, the city grew by 4,864, or an average of 975 per year, or an average of 9.0% per year. Of these 90 new residents per 1,000 existing ones who arrived every year (i.e. 9% per year), net natural increase was responsible for about 20-25 (i.e. 2.0-2.5% per year). The presence of the remaining 65-70 is attributable to the strong, positive net migration. Expressed in absolute terms, net migration was responsible for about 3,900 of the new residents over the five years; the remaining 1,000 is attributable to natural increase. Table 2.1 shows the census populations, annual rates of change, and net migration estimates in Fort St. John over the 1951-1981 period. Comparable statistics are also given for Dawson Creek and for School District No. 60. Fort St. John's census populations are graphed on Figure 2.2.

TABLE 2.1

CENSUS POPULATIONS AND CHANGE RATES: FORT ST. JOHN, DAWSON CREEK, AND SCHOOL DISTRICT 60

	City of Dawson Creek			City of Fort St. John				School District 60			
	Census Population	Average Annual Intercensal Change No.	Rate	Census Population	Average Annual Intercensal Change No.	Rate	Est. Net Migration	Census Population	Average Annual Intercensal Change No.	Rate	Est. Net Migration
1941	518										
		+310	+21 %								
1951	3589			884							
		+790	+16 %		+205	+17 %	+125/1000/yr				
1956	7531			1908							
		+783	+8 %		+342	+14 %	+100/1000/yr				
1961	10946			3619							
		+290	+2.5 %		+626	+13 %	+100/1000/yr				
1966	12392			6749							
		-100	-0.6 %		+303	+4 %	+18/1000/yr				
1971	11885			8264				19030			
		-270	-2.3 %		+137	+1.6 %	-3/1000/yr		+281	+1.5 %	-5/1000/yr
1976	10528			9027				20435			
		+170	+1.5 %		+975	+9.0 %	+65/1000/yr		+1342	+1.5 %	+30/1000/yr
1981	11373			13891				27145			

FIGURE 2.2



Source: Statistics Canada

2.3 DEVELOPMENT PRIOR TO 1951

Simon Fraser established the first fur trading posts in the interior; among these were Rocky Mountain House (now Hudson's Hope) and Fort St. John in 1805. The first agricultural settlement resulted from the Klondike Gold Rush of 1897. Discouraged in their attempts to reach the Yukon, people were attracted by the agricultural potential of the Peace River area. The semi-open grasslands, black loam soils, and ease of clearing and tilling were factors in favor of settlement; isolation was the chief disadvantage. The first lands north of the Peace River were pre-empted in the decade prior to World War I, but settlement beyond the core area of Dawson Creek was slow. Fewer than 8,500 people lived in the Peace River area of B.C. in 1941. Access to the north bank of the Peace was by ferry and travel was further hindered during break up and freeze up.

World War II had a tremendous impact on the Peace River region, changing the regional economic structure and fostering a new public awareness of the strategic and economic value of the region. The Northwest Staging Route was established to link southern Canada with Alaska and the Soviet Union. This required the construction of airfields at suitable intervals, three of which were Fort St. John, Beatton River, and Fort Nelson. The Alaska Highway was built from Dawson Creek to Fairbanks. The financial costs were borne largely by the U.S. yet both projects provided new sources of wage employment. Fort St. John was incorporated in 1947.

2.4 REGIONAL SPECIALIZATION: 1951-1976

The principal commercial activities in the Fort St. John area have been related to specialized primary resource production, fostered by public sector investment in railways and roads, and a rise in the service sector.

2.4 Regional Specialization: 1951-1976 (cont'd)

In 1951, Fort St. John was an agricultural service centre of 884 people. Although drilling for oil and gas had been carried out as early as the 1920's at Halfway River, the first commercial natural gas well was completed near Fort St. John in 1951. In November of 1951 oil was discovered on a farm near Taylor. Drillers scrambled for leases and land prices skyrocketed.

The first interprovincial road connection with southern B.C. was completed in 1952 with the opening of the John Hart Highway to Prince George. The bridge across the Peace River was completed in 1954 and the Pacific Great Eastern Railway (now the B.C. Railway) reached Fort St. John in 1958. Rail volumes grew steadily, attributable to products from Peace River farms and sawmills. Natural gas exports to the U.S. were approved in 1955 and the Westcoast Transmission Pipeline connection to the U.S. was completed two years later. Oil development was generally slower and little producing capacity was demonstrated until 1959 when the Boundary Lake field east of Fort St. John was discovered. An oil refinery was built at Taylor and the village incorporated in 1958. Fort St. John became British Columbia's oil and gas exploration and well servicing centre.

Additional impetus to the Fort St. John economy was created by the construction of the massive W.A.C. Bennett Dam between 1961 and 1967 west of Hudson's Hope, the installation of generating units, and the construction of the Site One (Peace Canyon) dam and powerhouse in the mid 1970's. These types of "megaprojects", upon which the region has been and will continue to be reliant for rapid growth, are characterized by massive short term construction labour requirements, few long term operating employment requirements, and a huge capital investment for every operational job that is created.

2.4 Regional Specialization: 1951-1976 (cont'd)

By 1976, Fort St. John was a small city of 9,000 people, with an additional 4,900 living in Taylor and adjacent rural areas. Its population had fluctuated with the economic stimuli outlined above (Table 2.1). Between 1951 and 1956, the fledgling oil and gas industry and improved transport linkages resulted in a doubling of the population to 1,900. The town's size doubled again to 3,600 in the five years to 1961 due to rail, pipeline, oil and gas developments. The next five years saw a slight decline in this very rapid growth rate trend, but the absolute yearly increase of over 600 was not to be exceeded until the late 1970's. The completion of major construction projects by the late 1960's resulted in a slowing of the average annual growth rate to 4% per year between 1966 and 1971 and 1.6% per year from 1971 to 1976.

Table 2.2 and Figure 2.1 compare Fort St. John's population changes with those of other municipalities in the region: Taylor is the only municipality whose growth resembles a "normal" linear or exponential growth curve. All except Fort Nelson have experienced intercensal population decline at some time since 1961. Net outmigration from both Fort St. John and the Regional District was strong in the first six years of the last decade.

2.5 RAPID GROWTH: 1976-1981

The Fort St. John Area in 1976 was a prosperous, albeit slow growing area of 13,900 residents, of whom 9,000 lived within the City limits. The area's economy was dependent on agriculture, forestry, and oil and gas exploration, servicing, production, and transmission. The number of oil and gas wells drilled annually was a consistent 175-211 between 1970 and 1976, with the exception of a downturn in 1975. Construction of the Peace Canyon dam was having a mild beneficial effect on the local economy.

TABLE 2.2

POPULATION OF MAJOR CENTRES, PEACE RIVER-LIARD REGIONAL DISTRICT

	1961	1966	1971	1976	1981	% Change 1966-71	% Change 1971-76	% Change 1976-81
Chetwynd	-	1,369	1,260	1,487	2,553	- 8.6%	+ 18.0%	+ 71.1%
Dawson Creek	10,946	12,392	11,885	10,528	11,373	- 4.1%	- 12.9%	+ 8.0%
Fort St. John	3,619	6,749	8,264	8,947	13,891	+ 22.4%	+ 8.2%	+ 53.9%
Fort Nelson	-	954	2,289	2,916	3,724	+140.0%	+ 27.3%	+ 27.7%
Taylor	438	595	658	649	966	+ 10.5%	- 1.4%	+ 48.9%
Hudson's Hope	-	3,068	1,741	1,330	1,365	- 43.3%	- 30.9%	+ 2.6%
Total of Six Municipalities	15,003	25,126	26,097	25,857	33,872	+ 3.9%	- 0.9%	+ 31.0%
Total Regional District	31,352	41,441	43,995	44,842	55,463	+ 6.2%	+ 1.9%	+ 23.4%
Remainder No.	16,349	16,315	17,898	18,985	21,591	+ 9.7%	+ 6.1%	+ 13.7%
Percent	52%	39%	41%	42%	39%			

2.5 Rapid Growth: 1976-1981 (cont'd)

The return of the drilling rigs in 1976 was associated with price increases to producers. Gas producers were receiving $0.10 to $0.14 per thousand cubic feet in 1973; by 1978 this had risen to $0.65 to $0.85. Markets seemed assured. The rapid increase in exploration and production of oil and gas led to another major in-migration of workers. As discussed in greater detail in Chapter 4, the number of wells drilled annually doubled to almost 400 in 1978, 1979, and 1980. In 1978, three major pipeline projects - Silver Dahl, Grizzly Valley, and the Pine River gas plant - were under construction, requiring labour, materials, and equipment. The British Columbia Railway increased its Fort St. John workforce from a few dozen to 180 full time engineers and labourers on a four year project to upgrade the Fort Nelson extension. Many brought spouses and dependents. The Railway also hired 100 more on a temporary, part time basis.

Accommodation shortages of all types were severe enough to create a labour shortage. In 1978, there were 256 motel, motor hotel, and hotel units in the City and occupancies were seldom less than 100%. Over the next three years, six projects valued at $20 million added 590 new motel-hotel units to this inventory. A 18,000m^2 shopping mall, new commercial office and retail complexes, and light industrial parks were built.

The City displayed the usual characteristics of boom towns. In addition to scarce and expensive accommodation, prices of goods and services were high. Streets were busy, filled with transients and oil patch workers on leave. Construction workers occupied the apartments and motel units that they finished, lowering vacancy rates and spurring more construction. Many speakers at a major conference ("Impact 78") organized by the City and Regional District to help residents understand what was and would be happening, suggested that the boom would last indefinitely and become more intense during construction of the Alaska Highway Gas Pipeline, the Site C Dam, and other megaprojects.

Longer term residents of Fort St. John tended to react to the boom with some hesitation. An attitudinal survey, undertaken in 1978 as part of an evaluation of the Alaska Highway Pipeline's impact on northeastern B.C., revealed some interesting and prophetic attitudes towards growth. (These results are highly time specific as Fort St. John was being strained by growth pressures and Fort Nelson was ending a period of uncertainty caused by the threatened closure of the B.C. Railway extension.) Forty eight percent of the Fort St. John sample thought that "this community is growing too fast for my liking"; in Fort Nelson, only 8% agreed or strongly agreed with this statement. However, Fort St. John was viewed by its residents as a liveable place: an overwhelming 93% agreed or strongly agreed with the statement "Generally, I'm happy with this community as a place to live."

Fort St. John residents' sources of community satisfaction and dissatisfaction reveal that most remained largely isolated from the effects of rapid growth. Sources of collective community satisfaction were, in order, the outdoors, the person's job, the pace of life, and the people. Inadequate radio and television headed the list of sources of dissatisfaction, followed by stores and medical facilities. Housing was notable in that it ranked second last, ahead of law and order, on the list of potential sources of dissatisfaction.

As summarized in Table 2.3, the June 1981 Census counted 19,924 residents in the Study Area. 13,891 lived in the City of Fort St. John (an addition of 4,864 or 54% since 1976), 959 in the Village of Taylor (an addition of 310 or 48% since 1976), and 5,074 in the fringe (an addition of 845 or 20% since 1976). Although municipal boundaries of Fort St. John have been extended on several occasions, the land incorporated has generally been vacant or in the process of development for industrial or commercial use. Therefore, the population data for each of these jurisdictions is comparable from one census to the next. The 1976 census figure of 8,945 has been adjusted upward to 9,027 for Fort St. John due to one subsequent boundary change which brought 82 residents into the municipality.

TABLE 2.3

STUDY AREA POPULATION: 1966-81

	Fort St. John	Taylor	Fringe	Total	Av. Annual Change No.	Rate
1966	6749	595	2729	10073		
					635	+5.6%
1971	8264	605	4378	13247		
					130	+1.0%
1976	9027	649	4229	13905		
					1200	+7.5%
1981	13891	959	5074	19924		

2.5 Rapid Growth: 1976-1981 (cont'd)

Population increase alone is not the only indicator of the 1976-1981 period of rapid expansion. Increases in Fort St. John's working age population, its labour force, and its participation rate were even more pronounced. In the Fort St. John Canada Employment Centre area, population rose 40.1% to 27,500 by 1981. The increase in the working age population was 52.3% to 19,600. (The comparable increase for British Columbia was 13.3%.) The number in the labour force (either employed or unemployed) rose by 64.8% to 14,500. This was the largest increase in the province: the equivalent provincial increase was 21.0%. Finally, the Fort St. John's participation rate - the percentage the total labour force forms of the total population fifteen years of age and over - rose 5.4% from 68.2% in 1976 to 73.6% in 1981. In B.C., this participation rate was exceeded only by the smaller municipalities of Fort Nelson, Mackenzie, and Port Hardy. Provincially, the participation rate rose 4.0% to 63.8%. What all these statistics suggest is that Fort St. John's inmigrants were typically of working age, with few dependents, who moved there to start or seek employment. They tended to be one or two person households, requiring housing but not, for example, classrooms.

2.6 RAPID DECLINE: 1981-1984

By late 1980, uncertainties in the pricing and taxation policies for oil and gas created unease in the industry. Drilling activity in 1981 fell to almost half its 1980 levels; in 1982 it was half of the 1981 level. By early 1981, exploration firms were responding to the National Energy Program by removing their drilling equipment from northern B.C. Local construction - whose activities must be viewed as a contributing cause as well as an effect of the boom years - began to decline. Residents, particularly those carrying high mortgage interest rates and principals, curtailed discretionary spending. Also beginning in 1981 the B.C. Railway began transferring, to Tumbler Ridge and Prince George, employees brought in in 1977/78: their Fort St. John workforce declined from 180 in 1979 to 75 in 1984.

2.6 Rapid Decline: 1981-1984 (cont'd)

Events in Fort St. John's service sector pointed to a major retrenchment of its economic base. Occupancy rates in the City's motels and hotels dropped to between 35 and 50% in late 1981, despite the non completion and closure of a 120 room hotel that June. By early 1983, two hundred units in two new complexes were in receivership, and the largest hotel in the City that was able to enjoy the boom years closed. Two automobile dealerships closed in early 1982, as did two real estate firms. An average of one retail business per week ceased operation in 1982 and early 1983. In April 1983, 100 jobs in a transportation firm were lost when the firm went into receivership. The July 1983 provincial budget announced that 25% of provincial government positions would be terminated and education budgets curtailed. This tended to curb the discretionary spending of those who had assumed job security through the recession, including the 330 employed by School District 60, the City's largest single employer.

Population estimates for 1984 suggest a study area population that has declined from 20,000 to 18,000 and a City population of 12,700. These are based on various population indicators discussed in more detail in Section 6. The subsequent chapter focusses on the housing market and the housing industry's response to the Fort St. John Area's economic and population cycles.

3.1 INTRODUCTION

The purpose of this chapter is to trace the reaction of the home-building industry to the growth documented in Chapter Two.

Emphasis is placed on activities in the 1976-1981 period, a time of rapid population growth and declining average household size. Evidence suggests that homebuilders kept pace with demands generated by population growth and declining household size through 1979. However, the amount of oversupply that exists in 1984 was approved and erected in 1980 and early 1981, after the early signs of economic downturn had surfaced. By recognizing and reacting accordingly to these local indicators of economic and population change, it is hoped that these lag times can be minimized in future.

Reliable building statistics are unavailable for the City of Fort St. John prior to 1964 and prior to 1979 for the Village of Taylor and the rural fringe. (Some data gaps can be filled in with census data.) For this reason, the three subareas of the study region are disaggregated, with emphasis being placed on the City of Fort St. John.

Data on new housing that is completely accurate is impossible to secure. Building permits issued are usually a reliable source, but the building inspection function was not introduced until the 1970's in some areas. Building permit records for Fort St. John were checked to remove units which were not actually constructed (eg. MURB foundations in December, 1980) or hotel units which were incorrectly included in residential totals. CMHC construction start data undercounted new dwelling units in Fort St. John as non-NHA starts were not always included. There is no accurate record of demolitions or illegal or legally non conforming two family dwellings.

3.2 1951-1975

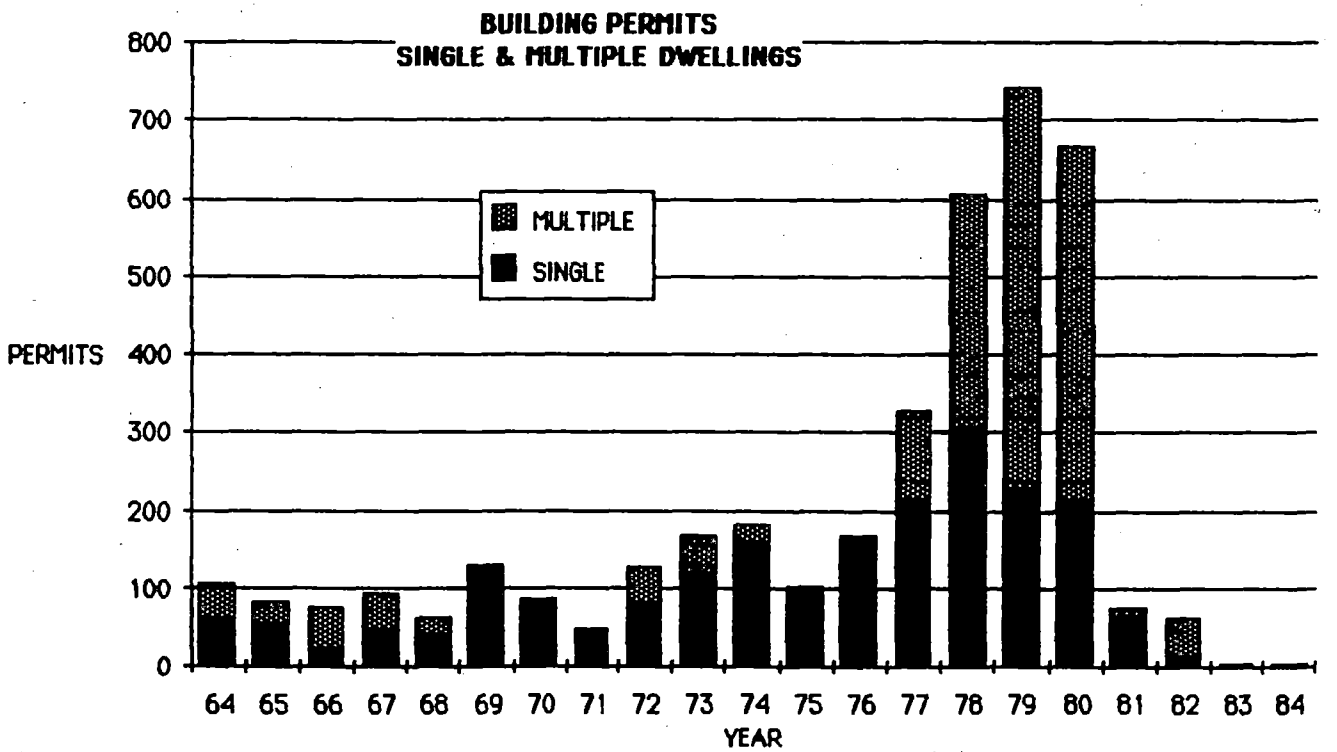
Figure 3.1 traces the number of new dwelling units built, by year and by major type, for the 1964-1984 period in the City of Fort St. John.

Prior to 1964, the City's records on building activity are incomplete. Building permit statistics for the years 1964-1970 inclusive average out to sixty units per year of new single family dwellings and thirty duplex, row, and apartment units. In other words, permits were issued for an average of ninety new dwelling units through the 1960's. Average household sizes at that time were about four. This anticipated level of annual population increase of 360 was consistent with that actually experienced in Fort St. John.

As shown in Table 3.1, the 1971 Census recorded 2,165 occupied private dwellings in Fort St. John. Of these, 70% were conventional single family detached units. There were 3,410 occupied private dwellings in the study area, giving 3.88 persons per occupied dwelling on average for the study area and 3.82 for the city itself.

Table 3.2 shows the additions to housing stock between 1971 and 1984. In the city, an average of 125 new units were being built annually through 1975 for a population that was growing by only 137 annually. Therefore, assuming all else is equal, only about 40 units per year were justified on the basis of population growth. The decline in household size from 3.82 to 3.43 in the city over the 1971-1976 period allowed the absorption of about 50 units per year. Presumably, the discrepancy between the 1976 Census figure for occupied dwellings (2,610) and the incremental building permit total (2,792) is accounted for by the fact that many units were newly completed and unoccupied, or still under construction. With 71% of the 1976 occupied housing stock and over 75% of the new dwellings erected, the conventional detached single family dwelling remained the dominant type of housing in 1976.

FIGURE 3.1



Aource: Building Permit Records, City of Fort St. John (as amended after discussions with Building Inspectors).

TABLE 3.1

OCCUPIED PRIVATE DWELLINGS: STUDY AREA 1971-1981

		Census Population	Single Det.	Duplex & Row	Apts.	Mobile	Total	Persons per Occ. Priv. Dwelling
1971	Fort St. John	8264	1510	265	290	100	2165	3.82
	Fringe	4378					1095	4.00
	Taylor	605					150	4.03
	Total	13247					3410	3.88
1976	Fort St. John	9027	1865	305	325	115	2610	3.43
	Fringe	4229					1128	3.75
	Taylor	649	100	15	5	50	170	3.82
	Total	13905					3908	3.56
1981	Fort St. John	13891	2650	530	890	515	4585	3.04
	Fringe	5074					1498	3.39
	Taylor	959	145	12	41	85	283	3.39
	Total	19924					6366	3.13
Change	1971-76	+ 658					+ 498	down 0.32
	1976-81	+6019					+2458	down 0.43
	1971-81	+6677					+2956	down 0.75

TABLE 3.2

HOUSING STOCK ADDITIONS: FORT ST. JOHN AND AREA, 1971-84

	Fort St. John			Rural Fringe			Taylor			Study Area Total		
	Single Det. & Mobile	Apts, Row Duplex	Total	Single Det.	Mobile	Total	Single Det. & Mobile	Duplex, Apts, Row	Total	Single Det. & Mobile	Apts, Row Duplex	Total
1971	41	8	49	- - - - No records - - - -			- - - - No records - - - - - -					
1972	79	46	125	- - - - No records - - - -			- - - - No records - - - - - -					
1973	116	51	167	- - - - No records - - - -			- - - - No records - - - - - -					
1974	156	26	182	- - - - No records - - - -			- - - - No records - - - - - -					
1975	104	0	104	- - - - No records - - - -			- - - - No records - - - - - -					
1976	156	12	168	- - - - No records - - - -			- - - - No records - - - - - -					
1977	211	117	328	- - - - No records - - - -			- - - - No records - - - - - -					
1978	305	301 (1)	606	- - - - No records - - - -			- - - - No records - - - - - -					
1979	227	515 (2)	742	52	3	55	9	25	34	291	540	831
1980	212	455 (3)	667	77	9	86	10	30	40	308	485	793
1981	63	11 (4)	74	41	7	48	16	0	16	127	11	138
1982	9	54 (5)	63	25	2	27	3	0	3	39	54	91
1983	2	0	2	11	3	14	3	0	3	19	0	19
1984	1	0	1	3	2	5	0	0	0	6	0	6
Total 1971-84	1682	1596	3278									

(1) Excludes 119 hotel units which were included as Multiple Dwellings in Building Permit data.
(2) Includes 50 unit Senior Citizens' housing. Excludes 193 hotel units which were included in permit records.
(3) Excludes 89 MURB units which were permitted but not constructed.
(4) Excludes 50 MURB units which were not constructed.
(5) 54 Units in Senior Citizens' housing.

3.2 1951-1975 (cont'd)

For the study area as a whole, additions to the housing stock in the rural fringe area were few, due to the slight decline in population. Growth in the study area averaged 130 people per year and occupied dwelling additions averaged 100 per year. Population growth accounted for one third of this new housing absorption, the decline in the average persons per occupied dwelling figure accounted for the rest.

3.3 1976-1980

This five year period of rapid population growth in the study area was also one of unprecedented construction activity. The locally domiciled construction industry was too small to undertake the volume of work, necessitating the in-migration of construction workers whose needs for accommodation and other services accentuated the growth that had its origins in the oil and gas industry.

One aspect of this construction boom that is not revealed in the statistics was the extent to which growth pervaded the community's behavioural environment. Building permit statistics made headlines, and Fort St. John's values were presumptuously compared with those of rival Dawson Creek's. Construction values implicitly became an indicator of local quality of life. Comparative statistics showed how much more apartments rented for or how much more a typical house or lot sold for when compared to prices from the previous year. In those times of double digit inflation, some people were induced to buy a house while they could still afford it.

The purpose of reviewing the prices of accommodation in Fort St. John over the late 1970's is to show that most price increases matched or outpaced inflation. Housing shortages further increased prices: in early 1979 new three bedroom detached homes sold in the $50,000 to $55,000 range, an increase in price from $34,000 in September 1976, to $43,000 in September 1977, and to $47,500 in March 1978. Surveys revealed fewer than 100 houses on the market at any one time throughout the late 1970's. Typical serviced lots rose in price from $7,500 in the early 1970's to $15,000 in 1978 to $25,000 in 1980. The upper limit of Assisted Home Ownership (AHOP) units in Fort St. John was $39,000 in 1978, a price at which most builders were unwilling to sell houses because of escalated serviced lot costs. Apartment rents reflected the City's very low vacancy rate, with new units renting in the $450-$500/month range. Many tenants of new apartments were tradesmen, construction, and oil exploration workers who moved out of motels. Unserviced rural two hectare lots marketed for $17,000 in early 1978 and for $25,000 in 1980. The B.C. Housing Management Commission, in early 1978, had a waiting list of 739 qualified families for the limited number of subsidized rental units in Northeastern B.C.

Market prices may have been driven further up by the dominance of two major land development firms in the residential market. Two firms produced the lots on which over 70% of all housing units were built in 1977 through 1979. Unlike most northern B.C. cities, Fort St. John did not actively pursue a policy of municipal land banking. However, the Municipality did ask the B.C. Development Corporation to purchase 59 hectares of raw land for $600,000 which was to be sold to the City for servicing and subdividing if market conditions warranted.

3.3 1976-1980 (cont'd)

Demand for housing, or any other market commodity, is a function of the number of people wanting it and their ability to pay for it. The supply of housing is the amount that producers (in this case lot developers and homebuilders) are willing to sell at a specified price. Supply and demand, in the Fort St. John housing market of the late 1970's, interacted to produce a strong market where prices exceeded replacement costs, stimulating further construction.

Table 3.2 and Figure 3.1 demonstrate the peaking of residential building activity in the 1976-1980 period. Within those five years, 1,400 multiple and duplex units, and 1,111 single family and mobile units, were added to the City's housing stock. If the number of persons per occupied dwelling had remained at 3.43, population growth alone would have absorbed about 1,440 new dwelling units in the 1976-1981 period. However, an additional 520 units are attributable to the decline in this average to 3.04 persons per occupied private dwelling in 1981.

3.4 1981-1984

Although overbuilding in the Fort St. John residential market was a concern mentioned in 1978 in the City's Master Plan, and by C.M.H.C. and B.C. Ministry of Housing officials, it was not until 1980 that the first prolonged signs of a housing market oversupply appeared. Changes in the housing market are evaluated by market component, including the vacant lot inventory, rental apartments, and single family dwellings.

3.4.1 Vacant Residential Lots

One of the first indicators of the shift in the housing market occurred in early 1980, when serviced residential lot market sales tapered off. In March 1980, a local inventory found that 941 serviced lots in eight main areas were vacant. The inventory estimated that another 360 lots in four areas were about to be subdivided. A study undertaken in late 1980 and published by the Ministry of Lands, Parks, and Housing estimated that there were 803 vacant urban lots in Fort St. John and Taylor, including 200 infill sites, plus an additional 196 rural residential lots. The market study further estimated that 400 urban and 182 rural residential lots were proposed at that time, and indicated that there was no shortage of appropriately zoned land with trunk services already installed. In mid 1984 the Regional District inventoried a total of 442 vacant rural lots in the Charlie Lake area.

3.4.2 Rental Apartments

Table 3.3 and Figure 3.2 highlight the sudden and significant rise in the vacancy rate in Fort St. John between October 1980 and April 1981. In addition to C.M.H.C surveys, the local Economic Development Commission surveys help to complete and reinforce the vacancy rate trends over the last few years. The Commission's vacancy rates differ slightly from C.M.H.C.'s, due to differing sampling and surveying techniques.

In the last four months of 1980, an estimated 200 apartment units entered the market. In late 1980, 139 units in four projects were granted building permits and foundations were poured, but construction was deferred due to market uncertainties. Vacancy rates rose in early 1981 as winter oil and gas exploration workers departed and the summer seasonal influx of construction workers did not materialize. In July 1981, C.M.H.C. and the Mortgage Insurance Company of Canada placed apartment buildings in receivership and C.M.H.C. announced that no new rental properties would be insured, given the high vacancy rate and economic prospects. By late 1982 10 of 59 apartment buildings had been placed in receivership, and by April 1983 buildings were selling at 50% of their 1979 market value.

TABLE 3.3

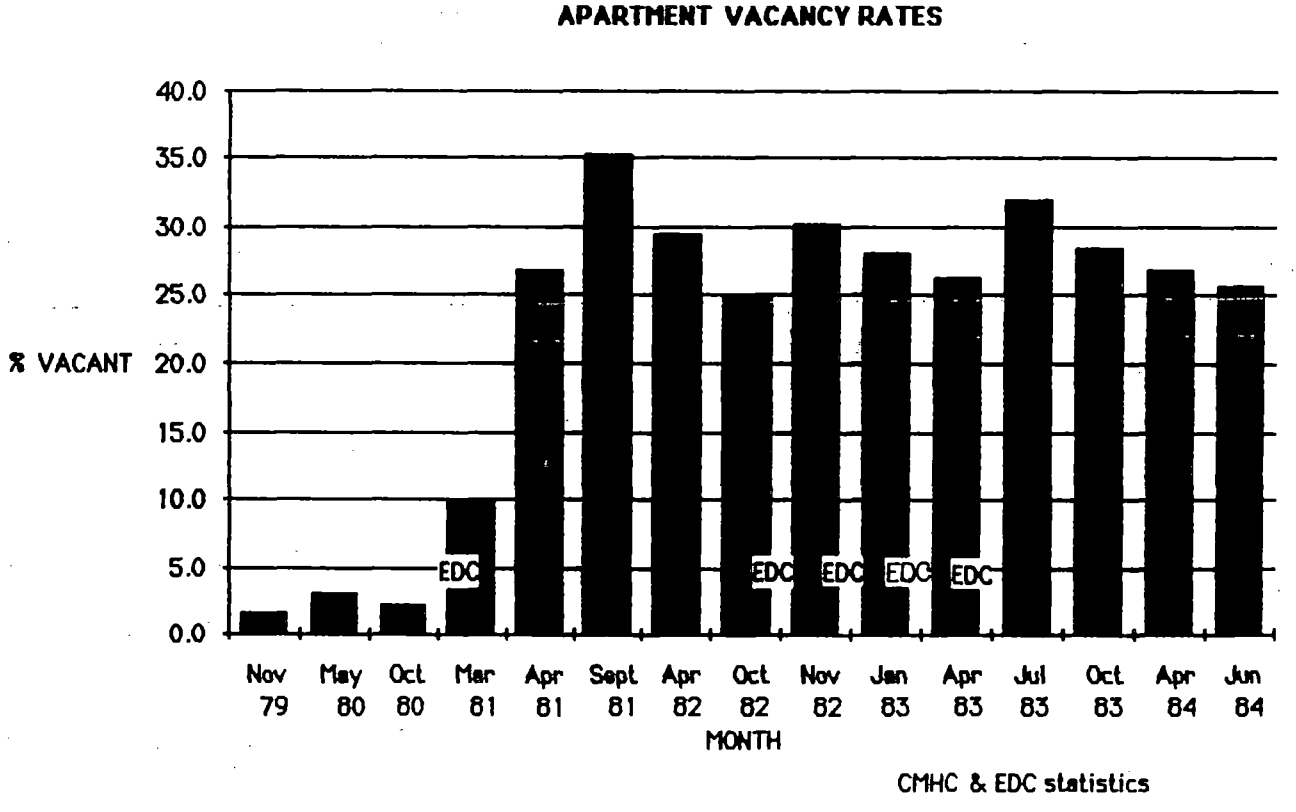
APARTMENT VACANCY STATISTICS 1979-1984

DATE	VACANCY RATE	UNITS SURVEYED	NO. OF UNITS OCCUPIED	SOURCES/NOTES
November 1979	1.3%	469	463	Northern News Agency
May 1980	2.9%	n.a.	n.a.	CMHC Sample
October 1980	2.2%	n.a.	n.a.	CMHC Sample
April 1981	26.8%	n.a.	n.a.	CMHC Sample
September 1981	35.2%	1556	1009	CMHC
April 1982	29.5%	1750	1234	CMHC
October 1982	25.0%	1734	1300	CMHC
November 1982	30.1%	1465*	1024	Econ. Dev. Comm.
January 1983	28 %	n.a.	n.a.	Econ. Dev. Comm.
April 1983	25 %	n.a.	n.a.	Econ. Dev. Comm.
July 1983	32 %	n.a.	n.a.	Econ. Dev. Comm.
October 1983	28.4%	1695	1213	CMHC
April 1984	26.8%	1652**	1209	CMHC
June 1984	25.7%	1656	1230	Econ. Dev. Comm.

* Excludes 486 rental duplex units

** 43 Units in two buildings closed and removed from market between October 1983 and April 1984.

FIGURE 3.2


APARTMENT VACANCY RATES
% VACANT
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
EDC
EDC
EDC
EDC
EDC
Nov 79
May 80
Oct 80
Mar 81
Apr 81
Sept 81
Apr 82
Oct 82
Nov 82
Jan 83
Apr 83
Jul 83
Oct 83
Apr 84
Jun 84
MONTH
CMHC & EDC statistics

3.4.2 Rental Apartments (cont'd)

Owners, managers, and lenders are faced with high vacancy rates, declining rents for those units that are occupied, and high mortgage payments. Buildings are valued on their cash flow: one apartment building sold in 1984 for $10,000 per unit even though its replacement cost was $26,000 per unit. Lenders may not renew apartment owners' mortgages even though the payment record has been good; the owner is unable to find another lender and loses the building. Some landlords are reportedly bleeding projects, pocketing rents and not paying bills as a project moves towards receivership. Receiver managers, anxious to boost occupancies, lower rents and attract tenants from other buildings. Because rents for detached dwellings are low and the supply healthy, apartment tenants are vacating units to live in houses.

Table 3.3 shows the vacancy rates and some occupancy statistics since 1979. Vacancy rates rose from just over 2% to 27% in the six months between October 1980 and April 1981 as new units contributed to a higher inventory; at the same time the number of occupied apartments was declining. The actual number of multiple units occupied rose to 1,300 in October 1982 and decreased slightly to 1,200-1,230 in mid 1984. The rental apartment stock has declined as units have been kept off the market: if the April 1984 occupancy figure (1,209) was applied to the April 1982 unit stock (1,750), the vacancy rate would exceed 30%.

Rents peaked in late 1979 at about $450-$575 per new unit. By mid 1984, they had fallen to between 50 and 70% of 1979 levels. Monthly rents for a typical one bedroom apartment declined to $250 in mid 1984, from $450 in late 1979 and $375 in late 1980.

3.4.3 Single Family Dwellings

In the summer of 1981, there were an estimated 150 houses in the City of Fort St. John that were unoccupied and for sale. Many were the product of 1980 construction activity, when 212 single detached houses were built. (The number of new houses built fell to 63 in 1982 and to 9 in 1983.) By October 1982 the number of vacant houses for sale in the city had increased to 400. At that time mortgage rates had declined to 17%, but Fort St. John lenders were not qualifying applicants whose employment was seasonal. In January 1983, M.I.C.C. announced it would no longer insure mortgages in Northern B.C. By then, many mortgage principals exceeded market values and owners, those without jobs in particular, gave up their houses. The institutions responsible for the respossessed houses tend not to sell for less than the outstanding mortgage, meaning that dozens of houses stand vacant, awaiting increases in selling prices. (C.M.H.C. and most financial institutions will not rent in the meantime, however a credit union is renting 14 repossessed houses in the City.) Prices in mid 1984 are at least 20% below replacement costs. (See Section 6.2).

In order to estimate the number of vacant houses for sale in the city, representatives from Fort St. John's four real estate firms were asked to provide both the number of listings with their firm in this category and their estimate of the number of vacant houses listed for sale with Fort St. John's realtors. The four individual listing numbers totalled 490 and the collective city wide estimates averaged 500. In addition there are an estimated 150-200 vacant detached houses not listed for sale: most are bank repossessions or new units that were never occupied.

3.5 TOTAL AND RESIDUAL HOUSING SUPPLY

From the statistical descriptions presented in the preceding sections, it is important to estimate to what extent the Fort St. John housing market is overbuilt and propose some general conclusions about the housing industry's response to perceived housing demand. The quantitative analysis is restricted to the City of Fort St. John as statistics for Taylor and the fringe are either unavailable or unreliable for portions of the period in question.

In mid 1984 there are about 5,400 dwelling units in the city. The 1971 Census documented 2,165 units and since then there have been 3,278 starts, giving a total of 5,443, not allowing for any demolitions. This figure is compatible with the Census figure of 4,585 occupied dwellings in June 1981, to which are added 547 unoccupied apartments and 150 unoccupied houses at that time, and 140 starts since then, giving a 1984 total of 5,422. Their status is estimated to be as follows:

Occupied detached and modular:	2,540 units
Vacant detached and modular:	700 units
Occupied apartments, row, duplexes:	1,635 units
Vacant apartments, row, duplexes:	425 units
Vacant multiples, off market:	100 units.

Given these and foregoing statistics, several conclusions are reached:

1. The City of Fort St. John is "overbuilt" by about 500 detached units (houses and modular homes) and 510 rental multiple units in mid 1984. This is based on equilibrium conditions of a 5% vacancy rate for rental multiple accommodation (ie. 2,050 of 2,160 units occupied) and 200 single family dwellings for sale, derived from Fort St. John realtors' views of an equilibrium sales market.

3.5 Total and Residual Housing Supply (cont'd)

2. To have avoided overbuilding for the 1984 market, in retrospect, single family construction should have stopped in early 1979 and apartment construction in early 1980. Since January 1980, 807 new dwelling units have been built, excluding 139 M.U.R.B. units which received permits but weren't constructed. Given the fact that the population likely peaked at 14,000 in 1981, construction should have theoretically ended at the end of the 1980 building season.

3. Assuming a constant 3.04 persons per occupied dwelling figure, Fort St. John has a mid-1984 population of 12,700, a decline of 1,200 from the 1981 Census figure.

4. The City of Fort St. John will have to reach a population of 15,800 before the residential housing market returns to equilibrium conditions. This is predicated on the continuance of the 1981 Census' average number of persons per occupied dwelling of 3.04, and no additions to the existing housing stock.

3.6 SUMMARY

Given the detailed descriptions and chronologies of preceding sections, it is appropriate to review population and housing history to derive some insights and generalizations.

1. About 33% of the housing construction activity in the 1971-81 was attributable to declining household size. Between 1971 and 1981, the number of occupied private dwellings in the city rose by 2,420. About 800 new units (33%) were absorbed because the average number of persons per occupied dwelling declined from 3.83 to 3.04. The overall study region experienced a similar decline, from 3.88 to 3.13 persons per occupied dwelling.

2. Net migration in the 1971-81 period was responsible for the construction of about 43% of the occupied dwelling units. Net migration was negative in the 1971-1976 period but was very strong in the subsequent 5 years, resulting in the construction of over 1,000 units.

3. The remaining 24% of the increase in the number of occupied dwelling units in Fort St. John between 1971 and 1981 was attributable to net natural increase. The city's high birth and low death rates, and subsequent new household formation, has absorbed over 500 units in the 1971-81 period.

4. Builders kept pace with demand through the late 1970's but did not react quickly enough to the first signs of local economic downturn. If, in theory, no residential building permits were issued after December 31, 1979--allowing the 1,257 units permitted in 1979 to be erected in the 1980 building season--Fort St. John's 1984 residential market would approach equilibrium conditions.

5. Construction workers moved to Fort St. John for prolonged periods. The regional construction labour force was too small or otherwise engaged to meet demand. The construction boom tended to feed on itself, as subtrades moved to the area to build residential units and then moved, temporarily, into the units they completed.

6. As the local recession deepened, people were motivated to leave the Fort St. John area. Everyone who left had their own reasons, but three characteristics of the area probably enhanced out-migration:

3.6 Summary (cont'd)

a) The 1978 community attitude survey cited earlier ranked one's job as a source of community satisfaction for many in Fort St. John. Conversely, Fort St. John is not a particularly liveable city for the unemployed. Its size limits new job opportunities; for recent arrivals in particular, larger cities in the south offer more leisure and recreation pursuits, a more amenable climate, relatives to assist, and more employment possibilities.

b) Many people were caught in an extreme housing cost-price squeeze, buying houses characterized by high market values, high mortgage principals, and high mortgage rates. As jobs were lost and market values fell well below outstanding principals, many showed little resistance to foreclosure. The June 1981 Census asked respondents to estimate the value of their owner occupied dwelling, which is interesting for comparative purposes if one assumes collective perceptions don't vary from place to place. Other statistics of Table 3.4 show Fort St. John residents were paying more for their accommodation than those in other centres in British Columbia and the proportion whose monthly payments exceeded 25% of their monthly income was higher than in most other centres. Owners' perceived house values were higher than most interior B.C. cities at that time yet actual values have declined more in Fort St. John than in other centres.

TABLE 3.4

RESIDENTS' HOUSING COST AND VALUE : JUNE 1981

	Fort St. John	Taylor	Dawson Creek	Prince George	Greater Vancouver	British Columbia
Average Gross Rent / Mo.	$ 458	$ 445	$ 368	$ 379	$ 412	$ 376
Gross Rent > 25% of Income *	8.5%	3.3%	8.1%	7.4%	6.8%	6.1%
Av. Major Payments for Owners **	$ 516	$ 433	$ 404	$ 495	$ 468	$ 420
Owners Payments > 25% of Income	12.1%	15.0%	8.9%	13.0%	9.8%	10.7%
Value of Owner Occ. Dwellings	$ 71,180	$ 50,634	$ 66,274	$ 80,756	$174,135	$128,081

* Refers to the percentage of all occupied units where gross rents or major payments exceeds 25% of the household's income.

** For one family households in owner occupied non farm dwellings. Major payments include mortgage, tax and utility payment where applicable.

Source: Statistics Canada 1981 Census

c) Apartment and row unit construction has resulted in dwelling type mix where conventional single family dwellings are a mere 50.5% of housing stock, a very low percentage for a small city. Tenants of apartments, duplexes, and row houses, many of whom wanted but couldn't afford to buy a house at the time, are more footloose than owner occupiers. The 1981 Census recorded 1,880 rental units and 2,710 owner occupied units in Fort St. John. Owner occupied units comprised 59% of the city's 1981 occupied housing stock, compared with 67% in 1976. The proportion has the potential to decline even further as the 1981 Census did not include about 550 multiple units which were unoccupied or under construction at that time.

4.1 LABOUR FORCE DESCRIPTION

Job creation and job loss remains the most accurate predictor of migration to and from small cities in the Canadian hinterland. This chapter focuses on the economy of the North Peace in order to explain past employment patterns and to predict future employment trends.

Comparable statistics from the 1971 and 1981 Canada Census are the most recent reliable data available. They are presented in Figure 4.1, which compares Fort St. John's employment pattern with that of the province for 1971 and 1981, and Table 4.1, which gives actual numbers for Fort St. John and Taylor for 1981 and a proportional comparison with Dawson Creek, Prince George, and B.C. for each sector.

The figures underscore the reliance of the Fort St. John and Taylor workforce on resource extractive industries and construction, with proportionately fewer in manufacturing and public administration. The types of jobs that dominate are ones that tend to be seasonal and sensitive to fluctuations in the economy.

In 1981, almost 1,000 residents of Fort St. John and Taylor worked in the construction industry, amounting to 12% of the labour force. The provincial average was 8%. Manufacturing employment, dominated by the Taylor refinery, is underrepresented compared to the provincial norm. The four main categories that comprise the public and private tertiary sector collectively employed only 56% of Fort St. John labour force, compared with 66% for the Dawson Creek, 58% for Prince George, and 61% for the provincial labour force.

TABLE 4.1

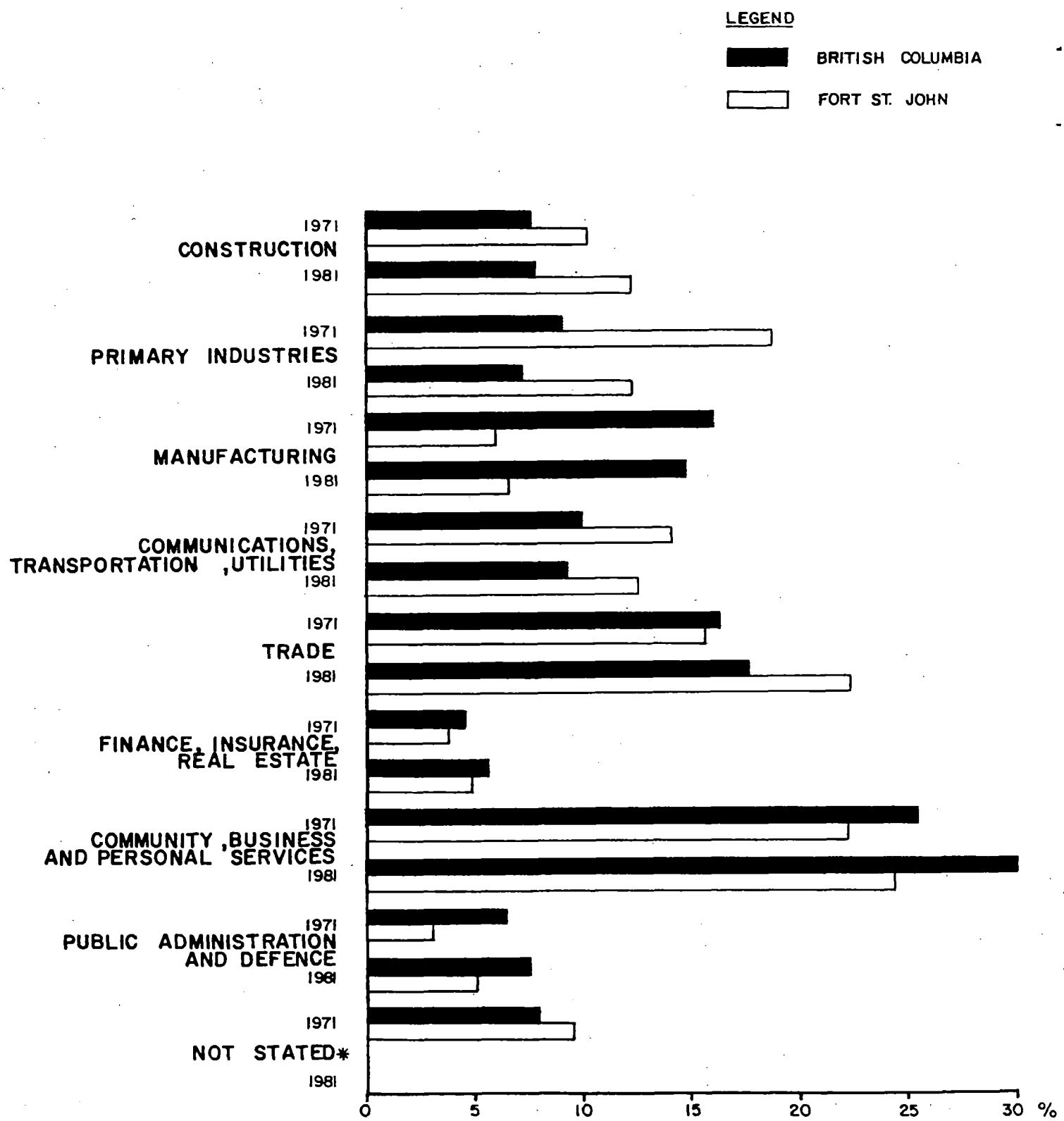
LABOUR FORCE BY INDUSTRY DIVISION:1981

FORT ST. JOHN, TAYLOR, AND SELECTED COMPARISONS

Industry	Fort St. John		Taylor		Dawson Creek	Prince George	British Columbia
	No.	%	No.	%			
Primary *	930	12.3%	50	10.5%	5.3%	4.9%	7.2%
Manufacturing Ind.	495	6.5%	125	26.3%	4.2%	17.2%	14.8%
Construction	905	11.9%	75	15.8%	12.0%	9.1%	7.8%
Transportation, Communication Utilities	945	12.5%	50	10.5%	12.5%	11.3%	9.2%
Trade	1685	22.2%	45	9.5%	24.0%	20.0%	17.6%
Finance, Insurance Real Estate	370	4.9%	5	10.0%	4.9%	4.6%	5.7%
Community, Business, Personal Services	1840	24.3%	115	24.2%	30.3%	27.1%	30.4%
Public Administration, Defense	375	5.0%	10	2.1%	6.7%	5.9%	7.2%

* Includes agriculture, forestry, mining, quarrying, and oil wells.

EXPERIENCED LABOUR FORCE BY INDUSTRY DIVISION, FORT ST. JOHN AND BRITISH COLUMBIA 1971 AND 1981



* IN 1981, INDUSTRY DIVISION TOTALS INCLUDED A COMPUTER ASSIGNMENT OF THIS "NOT STATED" GROUP INTO THE OTHER CATEGORIES.

FIGURE 4.1

4.1 Labour Force Description (cont'd)

In the absence of a manufacturing base aside from the oil refinery, the Fort St. John labour force relies on employment in agriculture, oil and gas exploration and transmission, and forestry. All are specialized primary resource products destined for markets outside the region and all are particularly sensitive to changes in demand and price. Numerous resource-related construction projects have traditionally provided work for the regional construction labour force. The collective changes in the primary and construction labour force induce corresponding changes in the service sector. The balance of this chapter provides a review and outlook for each main sector.

4.2 AGRICULTURE

Agriculture has often been referred to as an economic stabilizer for the Fort St. John area. In common with the rest of the country, North Peace farmers are faced with problems associated with market accessibility, high interest rates, and weather.

The Fort St. John District Office of the provincial Ministry of Agriculture and Food represents 4.2% of the province's agricultural holdings and 15% of its total farm area. Average farm size, at 370 ha, is almost three times the provincial average. Total cultivated acreage has varied between 213,000 and 219,000 ha since 1979; in addition, upwards of 120,000 ha is used as native, community, and semi-improved pasture. This is private land declared by holders of Canadian Wheat Board Permits and doesn't include large cattle spreads. Between 4,300 and 5,500 ha annually of ground has been newly broken over the past few years.

The total estimated North Peace farm income value fluctuates, with $47 million, $50 million, $43 million, $33 million, and $44 million being reported for the 1979-1983 period. Main product types with 1979 values include cereals ($24 million), livestock ($11 million), hay ($5.7 million), forage seed ($3.7 million) and honey ($1 million). While average farm sizes are increasing, the number of farms has declined from just over 1,000 in 1978 to 908 in 1984. 747 of the 908 operators are primarily grain producers, many of whom are diversifying in an attempt to obtain more predictable returns.

In 1977, 77% of the North Peace farmers reported off-farm wages and salaries for off-farm work lasting almost six months a year. Work in logging, trucking, and oil exploration - operations with peak winter employment - are the usual sources. Off farm employment has become increasingly common in the farmer's bid to remain competitive, but the lack of winter employment opportunities has put many in difficulty. Conversely, the Canada Employment Centre reports that there are very few employment opportunities for summer casual farm labour as farmers attempt to do more work themselves. Market prices for good agricultural land have declined, prompting concerns that financial institutions may foreclose on farmers who had used higher land values as collateral. Agricultural economists predict that grain prices will have to rise by 25% before agricultural land prices stabilize, especially where there is no competition for agricultural land from residential users. For farmers with capital reserves, there are expansion opportunities, but most sellers are reluctant to do so at 1984 prices. Fort St. John farm real estate agents report many large farms are for sale but very few are selling.

4.2 Agriculture (cont'd)

The agricultural frontier north of Fort St. John is reaching its physical and institutional limits. Provincial authorities anticipate the development of about 2,800 ha of land to the northeast in the Fontas area and about 8,000 ha in the Kobes area to the west. All remaining Crown land is destined for inclusion in Provincial Forests.

There are two variations to the conventional family farm method of operation which may affect the regional economy. There are about eight agricultural communes north of the study area with about 800 residents in total. Many who live on the communes work elsewhere. Corporate farms, some of which are foreign owned, tend to create a reverse effect: many wage employees work on a farm and live in the city, and rural depopulation is a long term consequence.

Fort St. John's agricultural service role has declined. Over the past several years, an auction yard, an inspected slaughterhouse, feed mill, forage seed cleaning plant, and two implement dealers have ceased operations. Farmers must now travel to Dawson Creek or Alberta for many services once available in Fort St. John.

These problems and changes in the agricultural economy are national ones, replicated in dozens of centres similar to Fort St. John in size and role. At the local level, a return of winter oil and gas related employment opportunities would assist the agricultural sector; nationally, higher prices to producers would help. Given the land use issues, marginal growing conditions, interest rate fluctuations, and transport problems of farmers in the Fort St. John area, it is difficult for local agricultural officials to be optimistic. Developments in agriculture are unlikely to affect the study area's overall employment levels.

4.3 THE FOREST INDUSTRY

The two major sawmills in the Fort St. John area are not immune to the recent problems experienced in the Interior lumber industry. However, technological changes were made prior to the late 1982 decline in the U.S. markets for interior spruce-pine-fir, and neither mill has been shut down for prolonged periods since new owners upgraded or reopened the mills in early 1982.

Peace Wood Products in Taylor was purchased in December 1981 by Balfour Forest Products, a company which also owns three mills in the Prince George area. Previous owners had installed a new kiln and planer mill in 1979. Between August 1981 and April 1982 the mill did not operate and staff were laid off. In mid 1984 Peace Wood Products employed 180-190 hourly and 60 salaried employees. An additional 200-250 logging contractors and truckers find work with the mill. No significant changes to these employment levels are anticipated, although technological change will eliminate two mill positions in late 1984.

Canadian Forest Products (Canfor) Ltd. owns a smaller sawmill in Fort St. John. Its previous owner, Swanson Lumber, had installed a new lumber sorter and planer in 1979 and curtailed operations to one shift per day in 1980, reducing the total work force to 80 from 140. Canfor purchased the mill in 1981, adding a second shift and boosting employment to its mid 1984 level of 135 mill employees and 23 administration staff. Another 150 bush employees of 60 trucking and logging contractors work for Canfor on a casual basis. Logging and trucking are usually winter activities. No changes to these employment levels are expected: even when lumber markets are depressed, the firm finds that fixed costs are such that losses are reduced if it operates two shifts per day.

4.3 The Forest Industry (cont'd)

The future of the forest industry in the Fort St. John region is also dependent on timber supply and management. The Peace Timber Supply area contains about 7.5 million hectares of Crown Land, of which 1.1 million hectares are classed as the net productive forest land base. The Crown commitment to supply timber from the Peace T.S.A. can be maintained at its present level for 60 years; after that time the projected timber supply decreases to 89% of the present Crown commitment level.

Canfor Ltd. has applied for a Tree Farm License (TFL) which it states would provide an opportunity for an increase in the annual allowable cut, to help ameliorate the timber supply shortfall for its Chetwynd and Fort St. John operations. The company states that its Fort St. John mill has an allowable cut representing only 54% of the mill's capacity. A TFL can be entered into under the Forest Act: in exchange for a payment to the province, a management plan, and other criteria, the Crown may grant the exclusive right to harvest timber from the TFL area during the term of the license.

Also concerned about shortages of softwood, Peace Wood Products has been experimenting with aspen and poplar and plans to start regular production of aspen studs. The company is applying for a 90,000 ha Tree Farm License; part of Canfor's proposed 819,000 ha TFL conflicts with 80% of Peace's application. Aspen must be air dried for several months before being kiln dried and its chips may have to be burned because the pulp mills will not accept them. The proposal would encourage year round employment in logging as contractors would be able to log aspen in summer.

4.3 The Forest Industry (cont'd)

The Fort St. John region has been proposed as location for expanded or more integrated forest products operations. The province's Minister of Industry and Small Business Development predicted in August 1984 that a pulp mill using aspen fibre will be under construction at Taylor in mid-1985. Direct employment levels for 250 tonne per day thermo-mechnical mills of this variety range between 50 and 80. A multi-product hardwood, waferboard, or aspenite mill and plant has also been proposed, with direct employment estimates of between 150 and 290. Prior to the recession, Peace Wood Products had considered adding a dimension lumber line, costing $20 million and doubling mill employment.

Fort St. John's two mills have almost completed the technological changes that are still taking place in other locations. Milling and logging activities of both mills employed 440 in 1976 and 500 in 1977. However, for several months in 1981 there were only 80-100 people working in the two mills. This cycle coincided with and therefore aggravated the area's rapid growth and decline phase. The labour force has since increased to 400 mill and administrative employees and 250-300 woods based contract positions. The mills predict that employment will be sustained at this level. The construction and operation of a small pulp mill and/or a hardboard plant are possible; if so, direct employment gains in the local forest sector would be in the 50-300 range.

4.4 MEGAPROJECTS

In mid 1978 there were 800 people working on the Site One dam and powerplant near Hudson's Hope. Six hundred were living in construction camps at the site and the remainder lived in Hudson's Hope. Many anticipated staying in the region, moving on to another "megaproject". If project scheduling allowed some beneficial dovetailing, Fort St. John was to prosper through the 1980's. If the megaprojects were going to be built simultaneously, local officials feared labour shortages, local inflation, and a strain on local infrastructure, housing, and services. Few would have predicted that by the mid 1980's, one megaproject is deferred indefinitely and a second is unlikely to be underway until the next decade.

4.4.1 Alaska Highway Gas Pipeline

The $40 billion Alaska Highway natural gas pipeline is a plan to transport Alaskan natural gas from Prudhoe Bay through Canada to the U.S. midwest. It is to function as a large diameter express pipeline, unconnected to present systems. The pipeline would enter the Fort St. John region north of Prespatou and leave B.C. just north of Boundary Lake. Fort St. John would be the supply and distribution centre for the southern segments of the Northern B.C. route. Construction camps, housing 500-750 workers, would be located at compressor station sites, and pipe stringing crews would be based in the city. Construction employment would peak at over 1,500 workers during the winter and summer months of a two year construction schedule for the B.C. section, falling to zero during breakup and freeze up. Once built, Westcoast Transmission's staff in Fort St. John would be increased by a mere five positions to monitor the pipeline operations. The company in mid 1984 employs 137 in the region.

4.4.1 Alaska Highway Gas Pipeline (cont'd)

The Alaska Highway Pipeline has been deferred indefinitely. By 1982, a glut of natural gas in the U.S., coupled with depressed prices and low demand, forced the major U.S. investor in the Alaska portion of the project, Northwest Energy Co., to withdraw. The Northern Pipeline Agency, the Canadian government agency created to co-ordinate the planning and building of the pipeline, has reduced its staffing complement from 104 to six. The pipeline may never be built, as a 1983 U.S. government report concluded that the majority of the pipeline's sponsors contend the project is too costly for the private sector to finance alone and, if it is ever to resume, it will need federal loan guarantees. The U.S. administration opposes any government financial participation.

4.4.2 Site C Dam

A B.C. Hydro project is proposed for Site C, six km southwest of Fort St. John. The project involves the erection of a 60 metre high, 975 metre long earthfill dam across the Peace River, creating a reservoir extending upstream to Site One. Economic impacts would accrue to the Fort St. John area during the peak construction period.

B.C. Hydro's Energy Project Certificate Application of September 1980 described the project as costing $881.5 million; if interest, overhead, and inflation are included the cost estimate was $1.73 billion. Construction was proposed to begin in September 1981 and in-service dates for the first two units were to be October 1987. Estimated construction manpower requirements are given in Table 4.2 and the dam's impact on the population of the study area is shown in Table 4.3.

TABLE 4.2

SITE C CONSTRUCTION WORK FORCE

ESTIMATED PEAK MANPOWER REQUIREMENTS

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Workers From Region	300	480	745	815	835	155	100
In-Migrant Residents	60	140	230	230	205	115	70
Camp Residents	140	410	930	995	665	205	115
Total	500	1030	1905	2040	1705	475	285

TABLE 4.3

POPULATION WITH THE SITE C PROJECT

IN THE FORT ST. JOHN-TAYLOR REGION

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Population without Site C (Hydro forecast)	25,060	25,630	26,200	26,800	27,360	27,930	28,510
In-Migrant Construction Workers and Families	200	460	750	750	670	460	310
In-Migrant Service Sector Workers and Families	30	70	120	120	110	60	40
Construction Camp Population	140	410	930	995	665	205	110
Total (Percentage increase in population associated with Site C)	25,430 (1.5)	26,570 (3.7)	28,000 (6.9)	28,665 (7.0)	28,805 (5.3)	28,665 (2.6)	28,970 (1.6)

Source: B.C. Hydro and Power Authority, Site C Energy Project Certificate Application.

4.4.2 Site C Dam (cont'd)

Workforce requirements would peak at over 2,000 during the fourth year of construction, which was to be the year 1985 in B.C. Hydro's application. In that year, 815 workers from the Fort St. John region were expected to find work on Site C, 230 would have moved to the region to take up semi-permanent residence to work on Site C, and 995 would be construction workers housed in camps. As shown in Table 4.3, the 230 in-migrant residents would bring 520 dependents to the Fort St. John area. The total population increase during construction would be 1,800 to 1,900 in Years 3 and 4 and about 1,400 in Year 5 (originally 1984, 1985, and 1986).

At the instigation of Fort St. John realtors, B.C. Hydro's project manager for the Site C dam conducted a seminar on the likely implications for real estate. Consistent with the tables, realtors were advised that about 250 in-migrant families would require accommodation in the Fort St. John area because of the project.

Clearly, for over seven years, Site C would have a beneficial impact on the study area's total population and its unemployed construction labour force. In July 1984, 330 people registered as construction workers with the Fort St. John Canada Employment Centre were receiving unemployment insurance benefits. Assuming that B.C. Hydro's economic forecasts are reasonably correct, about 1,000 temporary jobs, both directly and indirectly related to the project, would be created for the region's residents in the peak year of construction. About 815 would be employed on the project and 140 are expected to find work in the local service sector. The peak year housing requirements in the city comprise about 25% of the mid 1984 vacant dwelling inventory that has to be depleted before equilibrium conditions return. The main questions relate to the project's timing.

4.4.2 Site C Dam (cont'd)

B.C. Utilities Commission hearings heard testimony on the project for a full year, ending in November 1982. In 1983, the Commission made its recommendation to the provincial Cabinet, essentially concluding that the dam was acceptable but would not be needed until 1993. In 1980, the provincial government's electricity demand forecasts placed the in-service date for major new B.C. Hydro electrical generating facilities as 1990. As demand projections declined, the provincial government moved this key in-service date ahead to 1994 in its 1981 forecast. The 1984 Energy Demand Report, released in August 1984, forecasts that provincial energy consumption will increase at an average annual rate of 2.4% to 2000 A.D. This advances to 1997 the in-service date for Site C, assuming it remains the preferred priority project in the interim.

A realistic construction start for Site C is therefore 1989 or 1990, which would provide a couple of years' lead time on a 1997 in-service date assuming the schedules of Table 4.2 are adhered to. However, the Provincial Minister of Energy, Mines, and Petroleum Resources has stated he is considering a plan to "prebuild" a dam, likely Site C, to export power to California. Benefits to the province would be job creation and revenue. Main obstacles to a "prebuild and export" policy centre on the customer's need for guaranteed long term sales, the price of the power versus the cost of generating it, the need for supply lines through Oregon and Washington, and the political will to reverse British Columbia's policy of building dams for domestic electrical consumption only.

4.4.3 Northeast Coal

An investment of $1.85 billion was made to permit the mining, processing, and transporting of 7.7 million tonnes of coal per year, and to provide housing and services to employees in the new town of Tumbler Ridge. Two Fort St. John based construction companies received $6 million in contracts for roadwork and installation of services and Fort St. John construction workers received a proportional share of work. Distance to areas of activity from Fort St. John minimized the positive benefits; therefore the adverse affects of completing the construction phase on Fort St. John are equally minimal. The availability and affordability of new housing in Tumbler Ridge was correlated with increases in vacancy rates in Dawson Creek.

The most immediate prospect for additional coal mine development lies with Petrocanada's Monkman Pass deposits, southeast of Tumbler Ridge. Many other coal mine proposals have or are securing B.C. government approvals but await favourable markets, including some projects closer to tidewater such as Crowsnest Resources' deposits near Smithers. One deposit which, if developed as an operating coal mine, would benefit Fort St. John is the Carbon Creek project 50 km west of Hudson's Hope. A provincial Ministry of Industry and Small Business Development impact report predicts that the population impact on Fort St. John of Carbon Creek development would be between 850 and 1,500. While no explanation is given, it would seem that the forecast presupposes a work shift commuting program between Fort St. John and the minesite. The forecast may also be on the optimistic side, as the report predicted a population increase of 300 in Fort St. John in the 1980's that is attributable to northeast coal development. Most officials feel that Tumbler Ridge has a negligible effect on Fort St. John.

4.4.4 Liquified Natural Gas, Ethane/Ethelene Projects

Separated from the subsequent analysis of the oil and natural gas industry is the liquified natural gas (LNG) project, and the less likely possibility of a petrochemical plant.

In 1982, the Province of B.C. selected an application from Dome Petroleum Ltd. and Nissho Iwai Corp. from three competing proposals to build an LNG export facility. The project includes a natural gas liquefaction plant and export terminal north of Prince Rupert and a pipeline, to be constructed and operated by Westcoast Transmission Co. Ltd., from Alberta and northeastern B.C. to the site. The project was originally designed to liquefy up to 13.6 million cubic metres per day of natural gas, with provision made for doubling this daily volume of liquefaction capacity should markets expand.

In April 1984 the Province of B.C. authorized an Energy Removal Certificate, committing 50% of the gas feedstock required by the project. However, the proponents have had considerable difficulty securing Alberta gas and funding for construction. Dome is no longer involved; Nissho Iwai and Union Oil are attempting to find Alberta-based partners who will also be gas producers.

Energy experts suggest a downsized LNG plant to use only B.C. gas is not feasible because of the massive infrastructure still needed. However, as long as a revised and downsized project pays its B.C. royalty, the province is likely to allow it to proceed.

The impact of an LNG project on the Fort St. John focuses on two aspects. Most important is the stimulation of drilling activity. In order to keep reserves at a level where they are not declining because of LNG exports, the provincial Ministry of Energy Mines and Petroleum Resources forecasts that between 120 and 200 new wells per year, attributable to LNG exports, would probably be drilled. The direct employment created by this incremental drilling activity would be between 410 and 680 person-years annually in northeast B.C., assuming 40 operating days per well drilled, 20 employees per rig, and 235 working days per year.

4.4.4 Liquified Natural Gas, Ethane/Ethelene Projects (cont'd)

The other aspect of the project that would create some construction activity is related to gas reservoir storage, used to maximize the amount of gas purchased for the project in the off-peak summer months. The Aitken Creek area, 100km northwest of Fort St. John, has been identified as a preferred location. Preliminary studies estimate that field development and surface facilities would cost $30 to $40 million. The reservoir would be capable of storing 850 million m^3 of gas, with injection rates of up to 5 million m^3 per day and recovery rates of up to 7.8 million m^3 per day. Total facility investment is estimated at $67.7 million, including pipeline looping to the Westcoast system and additional compression. The reservoir project would take less than a year to build and its operational workforce would be small.

A variation on the LNG project, whose chances of proceeding in the Fort St. John area are very remote, is a petrochemical ethelene complex. Prince George and Prince Rupert have been named by the province as preferred locations. Should such a facility ever be built, it would require over 100 megawatts of electric power, two billion m^3 of natural gas feedstock, and between 600 and 1,200 direct operational employees. Economic constraints to development include the pricing and availability of natural gas and the lack of markets.

4.4.5 Natural Gas Liquids Straddle Plant

While it is an exaggeration to refer to the joint Westcoast-Petrocanada Natural Gas Liquids Project at Taylor as a "megaproject", it is the only large industrial construction project underway in the region and it does provide an additional market for natural gas.

4.4.5 Natural Gas Liquids Straddle Plant (cont'd)

The plant will have two components, a straddle or extraction plant for natural gas liquids, and a fractionation plant to separate the liquids into propane, butane, and pentane. Most products will be moved by rail car, although the pentane will also be shipped via Westcoast Petroleums' pipeline and propane will be trucked to local markets. The project's cost estimate is $62 million. Once operational, 26 permanent positions will be created, including 11 or 12 skilled operators and 14-15 maintenance, technical, supervisory, and office support staff. Most positions are expected to be filled by residents of the region.

Final provincial approvals for the plant were received in August 1984 and a contract to level the site was let. Legal survey work is being undertaken by a Fort St. John firm. Normal union hiring practices will be followed but no camp is expected to be provided, suggesting that apartment and motel occupancies will benefit from the presence of out of region construction workers.

4.5 OIL AND GAS INDUSTRY

In order to establish the nature and extent of jobs created in the oil and natural gas industry, it is first necessary to describe the various phases and employment requirements of the industry in the Fort St. John region, including an estimate of recent employment fluctuations. This is followed by a detailed chronology and explanation of events in the industry since the late 1970's. Various statistics and indicators are then summarized in light of past events. An economic and employment outlook for the industry concludes this section.

4.5.1 General Description

Oil and natural gas, since their discovery in the 1950's, have played the major role in the growth of Fort St. John and Fort Nelson. The southern gas and oil fields extend over 150km north of Fort St. John and 150km west from the Alberta border into the foothills. A gathering and delivery pipeline network connects the fields with storage, processing, and pumping facilities at Taylor. Further north in the Fort Nelson area, gas fields began to be brought into production in the early 1960's. Feeder pipelines connect these producing fields to the processing plant near Fort Nelson. The 1984 discovery of the Desan oilfield northeast of Fort Nelson marks a major departure for an area that was thought to be prone only to gas. The Westcoast Transmission Co. Ltd. mainline transmission system delivers processed gas to markets in central and southern B.C. and its petroleum pipeline delivers oil and petroleum liquids to refineries and markets in Prince George and the Lower Mainland.

The gathering and processing phase of the industry in the region is dominated by Petro-Canada and Westcoast, with the latter being 35% owned by Petro-Canada. Short term fluctuations in exploration are not critical to the regional operations of either firm. Petro-Canada in 1984 employs 160 in its Fort St. John Production Division, increasing by 35% between the mid 1970's through 1981 but holding steady since then. Petro-Canada's Refinery Operations employ 230 and Westcoast Transmission employs 137 in the Fort St. John area. No change to any of these three levels is anticipated, with the notable exception of the 26 positions to be created in the new natural gas liquids plant. This steadiness and predictability in employment is by no means characteristic of the exploration phase.

One other point is important to note at this juncture. Natural gas production is determined by market demand and oil production is determined by supply and regulation. Markets and government incentive programs are such that companies can sell all the oil they can produce but the volume of shut in (discovered and capped) gas combined with soft U.S. gas markets means natural gas is much less attractive.

4.5.2 The Nature of the Exploration Industry

Five times a year the Province of B.C. holds lease disposition sales, granting oil companies the right to explore for oil and gas, the rights to which are owned by the Crown. The areas that are up for lease have often received initial attention by the companies which in turn request their inclusion in the sale. At the lease sale, firms submit sealed bids on parcels offered, with the rights going to the highest bidder as long as the province doesn't exercise its right to refuse the bid. The type of lease and the company's obligations vary: a Drilling Reservation or License obligates the leaseholder to drill within a set period, usually two to five years depending on access. Exploration Permits and Petroleum and Natural Gas Leases carry different conditions. In general, if a lease sale gets a poor response, it means that companies aren't interested in exploring. Conversely, high bids mean industry interest and are a precursor to drilling exploration. The value of disposition bonuses in B.C. for recent years is listed in Table 4.4 and portrayed in Figure 4.2.

Another necessary forerunner to drilling is seismic exploration work undertaken by geophysical crews. These crews receive permission to cut seismic lines through the bush to allow equipment in to blast, sending shock waves into the ground which may indicate substrata bearing oil and gas. The number of geophysical crew weeks worked, by year, are recorded in Table 4.5 and graphed in Figure 4.3.

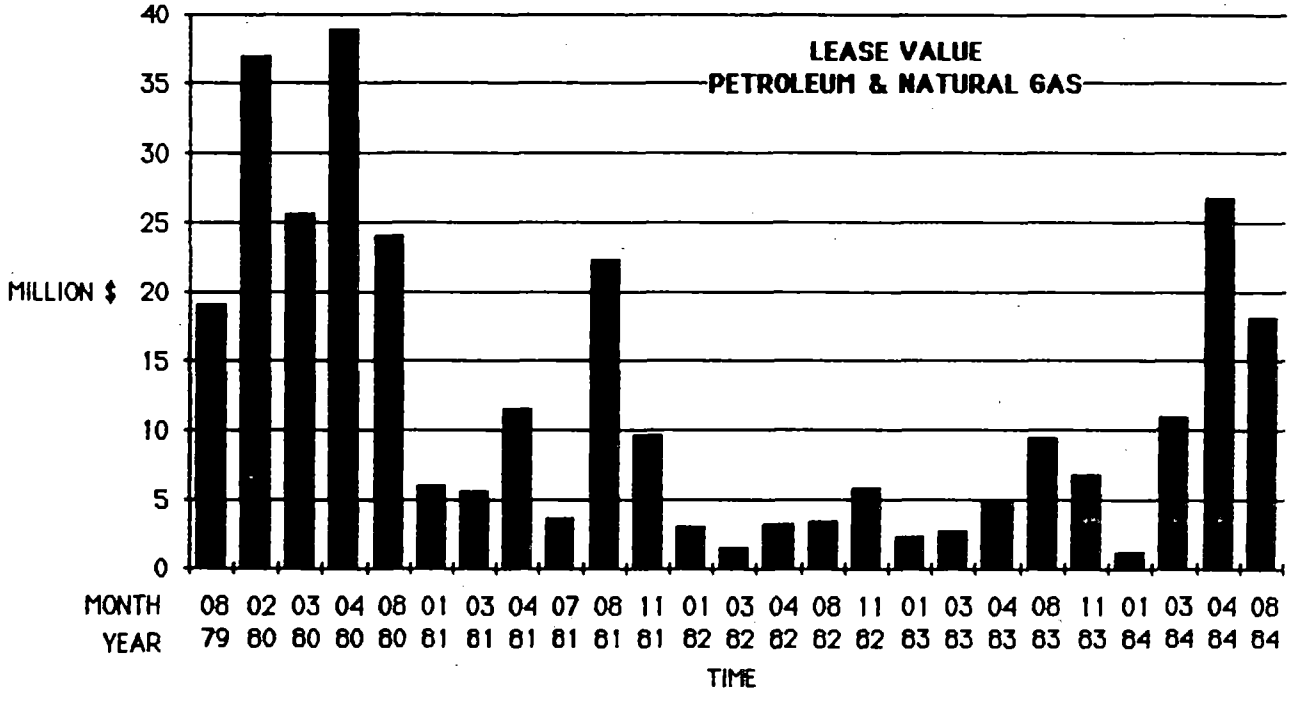
TABLE 4.4

Value of Petroleum and Natural Gas Lease Sales

Date of Sale	Value ($ millions)
Aug. 1979	$ 19.0
Feb. 1980	$ 37.0
Mar. 1980	$ 25.7
April 1980	$ 39.0
Aug. 1980	$ 24.0
Jan. 1981	$ 6.0
Mar. 1981	$ 5.5
April 1981	$ 11.5
July 1981	$ 3.6
Aug. 1981	$ 22.3
Nov. 1981	$ 9.6
Jan. 1982	$ 2.9
Mar. 1982	$ 1.6
April 1982	$ 3.2
Aug. 1982	$ 3.4
Nov. 1982	$ 5.6
Jan. 1983	$ 2.3
Mar. 1983	$ 2.6
April 1983	$ 5.0
Aug. 1983	$ 9.5
Nov. 1983	$ 6.7
Jan. 1984	$ 1.2
Mar. 1984	$ 11.0
April 1984	$ 26.7
Aug. 1984	$ 18.1

SOURCE: Statistics Division, Ministry of Energy Mines and Petroleum Resources, Victoria, B.C.

FIGURE 4.2



Source: Statistics Division, Ministry of Energy, Mines, and Petroleum Resources.

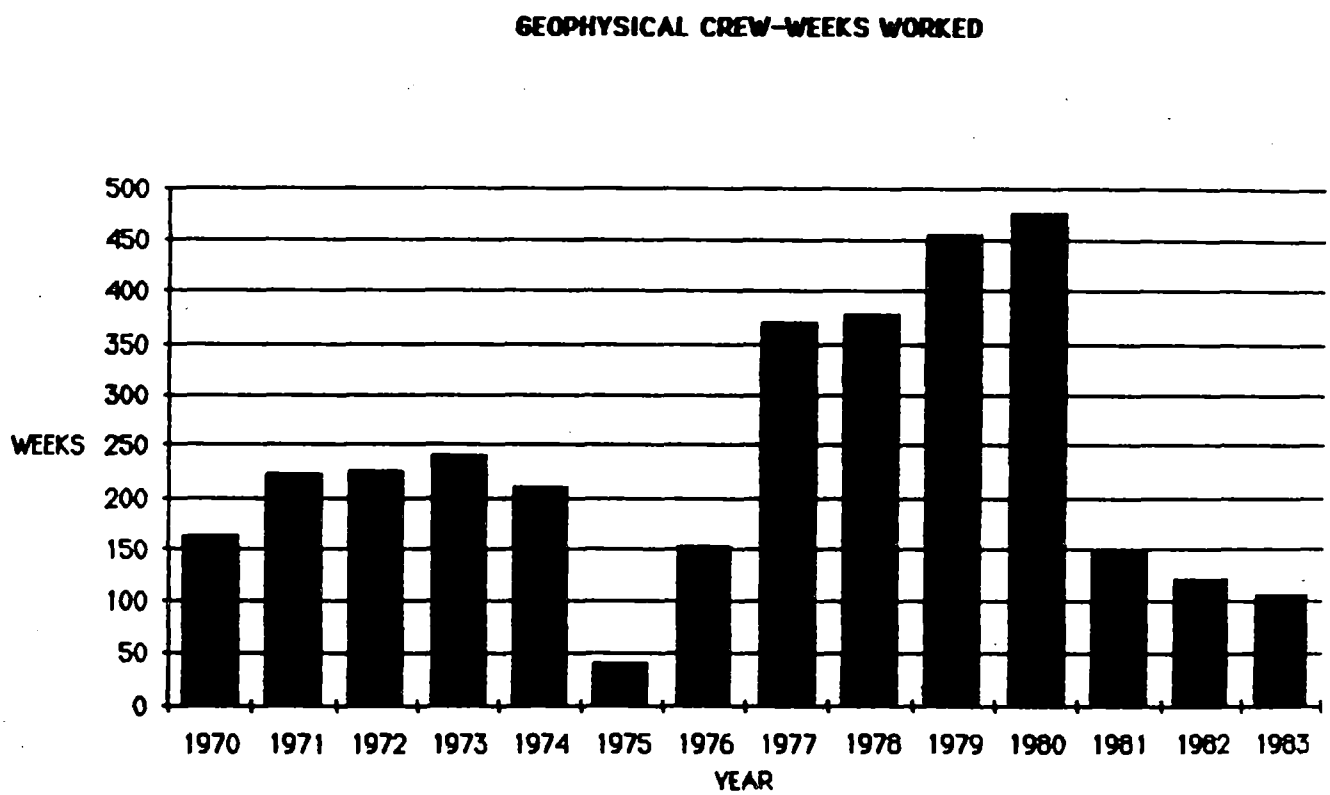
TABLE 4.5

Geophysical Crew Weeks Worked
B.C. 1970-1983

1970	162
1971	223
1972	225
1973	240
1974	210
1975	41
1976	152
1977	369
1978	378
1979	454
1980	467
1981	148
1982	122
1983	106

Source: Statistics Division, Ministry of Energy, Mines, and Petroleum Resources.

FIGURE 4.3



Source: Statistics Division, Ministry of Energy, Mines, and Petroleum Resources.

The decision to drill sets in motion a process in which equipment and workers associated first with drilling a well and then with servicing it are employed. Every well requires cat contractors to construct access to the site and prepare it: sites close to Fort St. John might take two days but foothills sites take upwards of a month. The location of the drilling operation means that food and lodging will be obtained in a community if the site is close; otherwise, camps are hauled to the drill site. On average, each drill rig employs directly:

3 camp catering staff	= 3	employees	= $ 300/day
3, 4 or 5 man crews (8 hrs.ea)	= 15	employees	= $1,955/day
1 tool pusher	= 1	employee	= $ 244/day
1/3 swing tool pusher	=0.33	employee	= $ 81/day

In addition to these 19.33 employees, there is usually a company engineer or geologist on site, who tests the well every five metres.

The oil company hires a drilling contractor to drill a well searching for oil or gas. If oil or gas bearing formations are found, the oil company will test the well to determine if it will produce enough to be viable. If it is economically viable, a drilling rig will usually be moved off the lease and a well servicing rig will be moved into place to prepare the well for eventual production. A typical servicing rig is worth about $750,000 and drilling rigs are valued at $1,500,000 to $8,000,000.

Besides completing wells for production, servicing rigs are used throughout the life of a well doing repair work. Over the well's life, pumps may seize, rods break, tubing corrodes, the well waxes, or production depletes and has to be worked over to maintain viable production. At the well completion stage, servicing rigs are involved in installing blowout prevention stacks, tubing, acidizing, and perforating by shooting bullets through casing to porous and permeable zones to increase flows.

4.5.2 The Nature of the Exploration Industry (cont'd)

In order to complete and service wells, servicing rigs are designed as mobile self propelled units. In late 1981, there were 424 servicing rigs in Western Canada, a decrease of 92 from a year earlier. During April and September, 1981, utilization averaged 40% of capacity. All six of B.C.'s remaining Servicing Rig companies are based in Fort St. John. The actual number of servicing rigs in northeast B.C. is estimated to have declined from 30 in 1979/80 to six in 1984.

The following summarizes the various tasks involved in well completion and workover. After completion, most functions listed below are repeated several times during the life of a well. The man-days listed are for a single performance of a typical completion service, after the drilling contractors have left:

Servicing crew (5 men x 5 days)	= 25 mandays
Well consultant	= 5 mandays
Trucking, water hauling	= 5 mandays
Logging, perforating, testing	= 5 mandays
Acidizing, fracturing, cementing, fishing	= 10 mandays
Directional drilling and surveying	= 1 manday
Administration and supervision	= 5 mandays
Total	= 56 mandays

According to well servicing contractors, these functions can usually be performed over a five day period. Therefore, well completion adds the equivalent of another 11 employees to the 19.33 involved in drilling if the well is being prepared for eventual production. At this point, the labour requirements in the process decline. If the well is brought immediately into production, the gas or oil may be piped directly to the refinery; oil may be trucked to the refinery or piped to a central "battery" or storage facility and trucked from there.

4.5.2 The Nature of the Exploration Industry (cont'd)

Table 4.6 derives an average number of operating days per well drilled by comparing the two sets of data for the six years for which they were available. Therefore, assuming 20 employees per drilling rig and 40 operating days per well drilled and 235 working days comprising a year's employment, each well drilled in B.C. creates 3.4 direct man-years of work at the site. Every 100 wells drilled creates direct employment for 340. Conversely, the decline in wells drilled from 1980 to 1981, and the resultant loss of 9,100 drilling rig operating days, means a loss of 775 jobs was directly attributable to reduced drilling activity in northeast B.C. The total number of wells drilled in B.C. from 1971 through 1983 is shown on Figure 4.4.

4.5.3 Indirect and Induced Employment

Well drilling operations are closely linked with other sectors of the regional economy. These linkages will create indirect employment for firms which sell goods or services to the drill rigs and crews. Examples in Fort St. John include survey companies, government employees of the Petroleum Resources Branch, lease construction, rig movers, well consultants, cement and mud suppliers, coring, safety, pipe inspection, testing, equipment supply and rental, restaurants, hotels, grocery stores, tire shops, and garages. Those employed directly and indirectly by the exploration industry are also consumers who require products and public and private services. Thus, "induced" employment is generated in the service sector. The size of this component is dependent on the degree of income leakage to purchase goods and services in areas outside Fort St. John.

TABLE 4.6

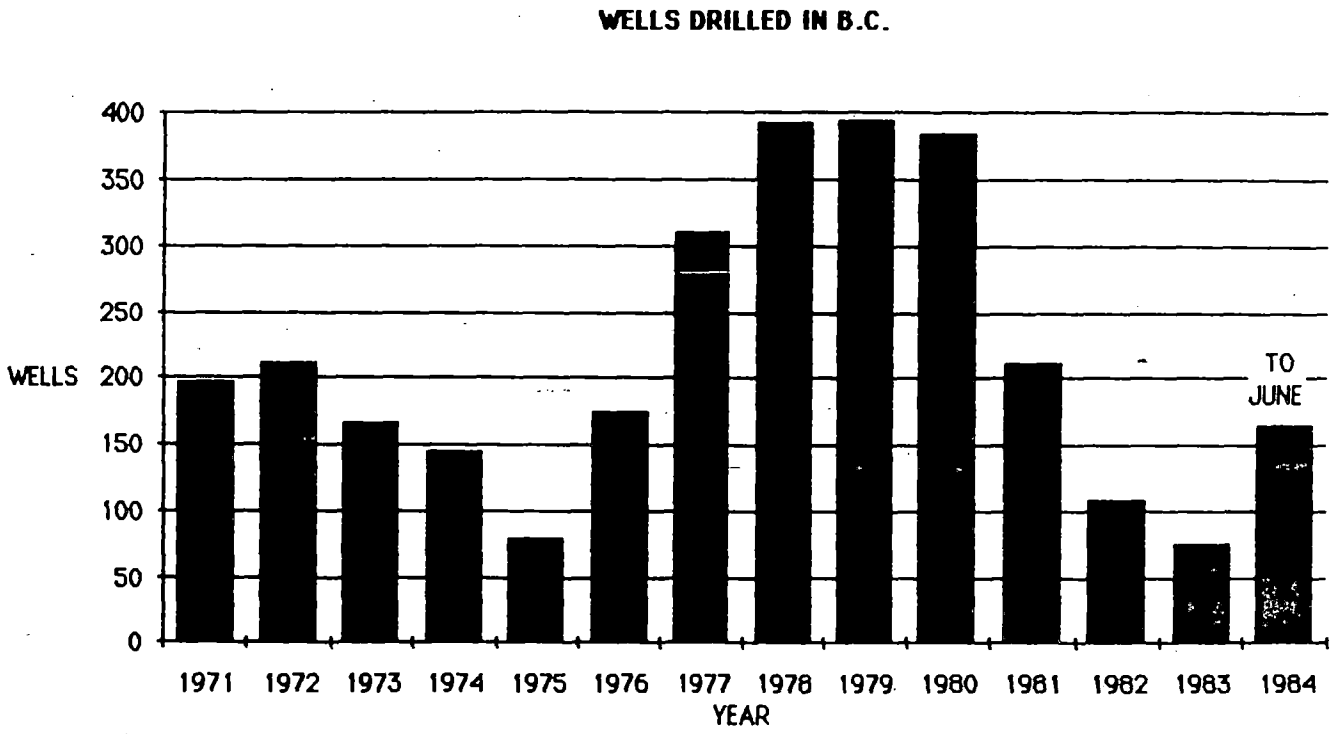
B.C. RIGS OPERATING DAYS AND WELLS DRILLED

1976-1981

Time Period	Operating Days	Wells Drilled	Average Days Per Well
1976	5032	175	29
1977	10953	310	35
1978	13883	393	35
1979	17080	395	43
1980	16097	385	42
1981	7000	212	33

Source: Canadian Association of Oilwell Drilling Contractors.

FIGURE 4.4



Source: Statistics Division, Ministry of Energy, Mines, and Petroleum Resources.

4.5.3 Indirect and Induced Employment (cont'd)

Indirect and induced employment in the northeast oil and gas industry likely exceeds that of direct employment in terms of its importance to the local economy. Many of those working on drilling rigs are seasonal residents who maintain permanent homes elsewhere. Seismic and drilling activity attracts as well the in-migration of the generally dependable, unskilled labour hired on a casual basis. But the servicing rigs and associated indirect services are semi-permanent firms based in Fort St. John. Oilfield service companies are a large, labour intensive group of firms little known outside the oil and gas industry. They expanded rapidly when drilling picked up in 1976; when it declined in 1981 they were left with few rigs to service.

To estimate the extent of decreased activity, "Oilfield Service" listings with Fort St. John phone numbers in the 1980 Peace River telephone directory were compared with listings in the 1983 directory. In 1980 there were 282 oilfield service entries. In 1983, of these 282, 129 were no longer listed. 57 new firms were listed, for a net loss of 72 to a 1983 total of 210. A similar pattern emerges for "Oilfield Equipment", which had 9 listings in 1980 and 5 in 1983. "Oilfield Hauling" had 15 in 1980, losing 8 and gaining 3 for a total of 10 in 1983.

Many of these firms were small one person or even part-time operations. Some were not. Tompkins Contracting Ltd., once the largest oilfield contractor in the northeast with annual sales of $25 million, ceased operations in December 1982 with the loss of 150 jobs. In April 1983, Beaver Transport went into receivership, affecting 100 jobs. Some firms, which set up regional offices in Fort St. John in 1976/77 to service the oil industry, closed them in 1982/83 and transferred some Fort St. John staff to headquarters in Grande Prairie, Calgary, or Edmonton. Schlumberger of Canada employed 70 in Fort St. John; many were moved to Grande Prairie as the downturn in drilling activity prompted the firm to service wells in B.C. from Alberta.

4.5.3 Indirect and Induced Employment (cont'd)

Indirect employment in oil and gas exploration would have peaked in the 1978-1980 period, when almost 400 wells per year were drilled. Direct employment on the rigs would therefore equate to about 1,300 positions, mostly held by skilled workers from out of the region. At that time, the Northern Society of Oilfield Contractors and Service Firms, a group of 30 large firms in Fort St. John collectively employed 1,500. This yields a multiplier of 2.15 (ie. 1,300 + 1,500 ÷ 1,300): for every direct drilling rig employee, there are 1.15 people indirectly selling goods and services. This compares favourably with provincial Ministry estimates of a total regional employment impact of 50 persons per rig (ie. 50 ÷ 19.3 = 2.58). When drilling activity declined, the service firms were able to work for a few months on maintenance, but after that there was little to service aside from the province's 1,200 producing wells.

Total operating hours of servicing rigs in B.C. declined from 82,500 in the year ending May 1, 1980 to 26,000 in the year ending May 1, 1982. Assuming a proportional decline in employment, the indirect employment positions in Fort St. John's oil service industry likely fell to 500 from 1,500 by early 1982. Indeed, in the 12 month period between May 1981 and May 1982, the number of unemployment insurance claimants in Fort St. John Canada Employment Centre rose from 685 to 1,505. Local industry officials tended to confirm this level of decline, most saying the number of oilfield service jobs lost in the Fort St. John area is several hundred and in the range of 40 to 70% of what it was at its peak. This scale of employment loss was experienced in the entire Western Canadian exploration industry. A survey of 100 Alberta based oil service companies showed that 2,000 of 6,040 employees were laid off between January 1980 and June 1981, a time when exploration was declining but had yet to reach its low point. Studies undertaken for the federal Department of Regional Industrial Expansion estimate that Alberta's oilfield employment peaked at 80,000 in 1980 and declined to 38,000 in 1983, and these 38,000 jobs represented over 90% of the Western Canadian oil exploration and servicing jobs.

4.5.3 Indirect and Induced Employment (cont'd)

Finally, there is induced employment created by the consumption spending from the income of those directly and indirectly employed. Empirical studies for Kitimat, a city similar in size and metropolitan area proximity to Fort St. John, obtained an induced income multiplier of 1.24. In other words, in every $100 of local income generated directly and indirectly, an additional $24 of local income is generated by the consumption and local tax expenditures of the recipients of wages paid by the activity and its suppliers. When this spending declines, retailers, businesses, financial and personal services are adversely affected.

To summarize, the oil and gas exploration industry is labour intensive during the drilling and initial completion phases only. Every 100 wells drilled are estimated to require 340 direct jobs. Yet most of Fort St. John's "direct employees" in oil exploration - the well drillers - don't live in the region. Instead, it is the locally domiciled oilfield service firms, which indirectly employ an estimated 1.15 workers for each direct drilling employee, which are affected by the severe fluctuations in drilling. In the late 1970's, indirect employment was available for about 400 in Fort St. John for every 100 wells drilled. If and when drilling again reaches the 300-400 wells per year range, it is unlikely that the indirect employment levels will attain this level of activity as there is some doubt as to whether oilfield service companies will re-establish themselves in Fort St. John.

4.5.4 Pipeline Construction: Direct, Indirect, and Induced Employment

The decision to build a pipeline from a field to a central battery, refinery, scrubbing plant or mainline transmission line is based on market conditions, the volume of gas or oil reserves, and distance. There have been no major lateral pipelines built in the northeast since 1980. In the late 1970's, the Grizzly Valley gas line to Chetwynd, the Junior-Sierra laterals east of Fort Nelson, and the Silver-Dahl lines north of Fort St. John marked the end of a decade of major pipeline construction activity.

On these projects, Westcoast Transmission reported that about 25% of the direct construction workforce were residents of the Peace-Liard region. In March 1978, access to the Grizzly Valley pipeline project was picketed by unemployed residents of Chetwynd when it was apparent that very few people from the immediate area had been hired to work on the project.

Hiring procedures are left to contractors belonging to the Pipeline Contractors Association and the four major unions holding contracts with the Association. In practice, the first priority is the union members residing in the construction region, and the second priority is the union labour supply out of the region. When necessary, in the past, skilled local non-union people were granted permits by the unions to work on pipeline construction projects, but this is unlikely to occur until unemployment drops from 1984 levels.

Depending on the diameter and type of pipeline being laid and the terrain it crosses, direct pipeline construction employment is between two and three man-years per kilometre. Research undertaken for large pipeline proposals in the Arctic and subarctic forecast an employment multiplier during pipeline construction of between 1.2 and 3.6.

4.5.4 Pipeline Construction: Direct, Indirect, and Induced Employment

In the northeast, construction multipliers are towards the low end of this range. A well developed transportation infrastructure in the region obviates the need for extensive infrastructure preparation. The self contained nature of the construction camps means that local catering, supply, and accommodation sectors are usually not called upon and high allocations of income to personal savings and non local consumption occur. A regional pipeline construction employment multiplier of 1.5 (i.e. 0.5 man-years of indirect employment for each man-year of direct construction employment) appears valid.

Once construction is complete, pipelines are extremely low employers of persons per invested capital. Virtually the entire gas pipeline system in the northeast is operated by Westcoast's 137 employees in Fort St. John and 100 employees in Fort Nelson.

4.5.5 Oil and Gas: Prices, Programs, Markets

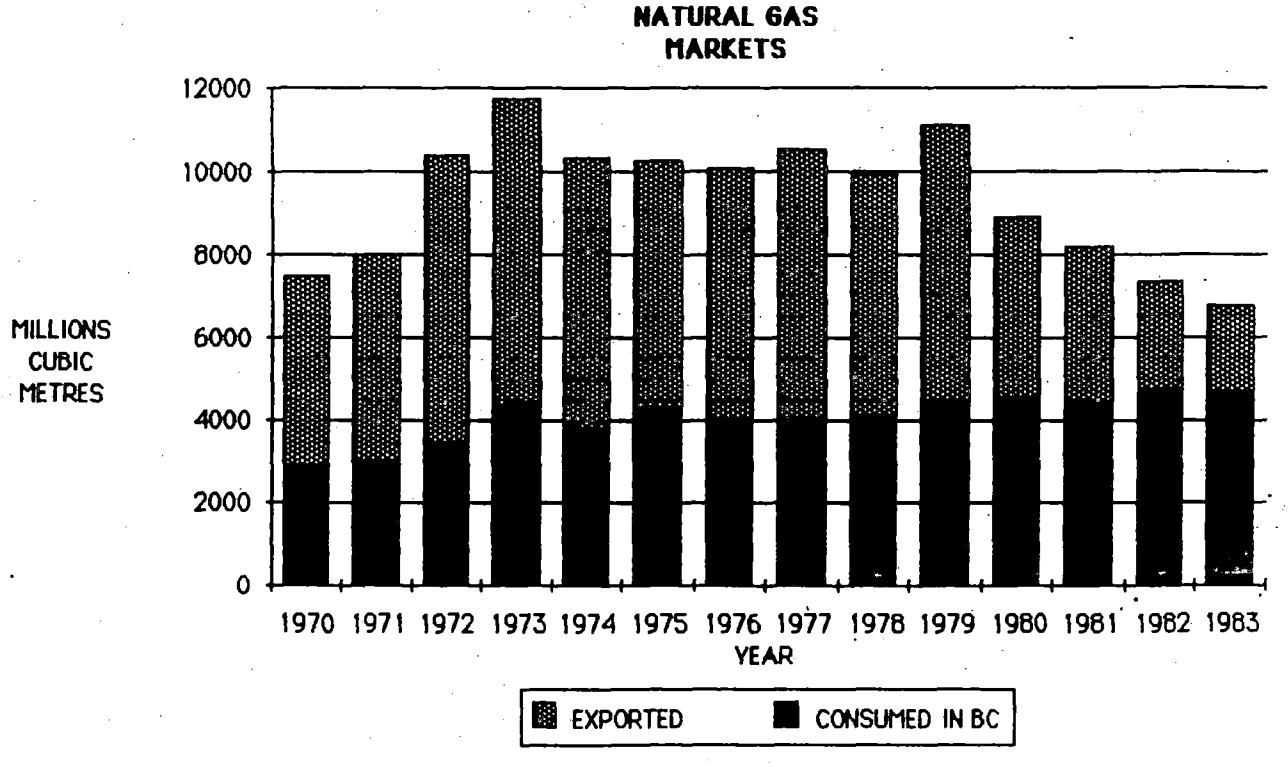
In 1973, the export price of natural gas was $0.75 per thousand cubic feet (mcf) and producers were receiving about $0.30 per mcf. By 1981, the National Energy Board had fixed the price at $4.94 per mcf and producers were receiving between $1.32 and $1.67 per mcf. The product became relatively more expensive than fuel oil and electricity. Industry in the northwestern U.S. switched back to fuel oil leaving B.C. with the domestic space heating market. Consequently, the B.C. Petroleum Corporation couldn't sell gas, wouldn't buy it, and exploration was curtailed. Exploration activity in the 1976-1980 period was stimulated by the need to fill contract commitments to the U.S., specifically a contract with North West Pipelines to import up to 22.9mm m^3 (ie. 22.9 million cubic metres) of gas per day. In 1975 and 1976, B.C. was unable to meet that commitment as almost the entire license allotment was being drawn and buyers had to make up the difference with Alberta gas.

This, in general terms, explains what happened to B.C.'s gas production and export figures, which are portrayed on Figure 4.5. To understand what may happen in future requires a more detailed understanding of pricing and marketing.

Throughout the first half of the 1970's, the number of wells drilled in B.C. ranged from a low of 80 in 1975 to a high of 211 in 1972. Drilling was seasonal, peaking in winter when 15 or 20 rigs were in operation in the northeast. By the winter of 1977/78, over 60 rigs were drilling in the region and summer drilling around Fort St. John helped sustain indirect activity on an annual basis. What began as a period of expansion - predicted by provincial officials in 1978 as a temporary drilling boom that would last till the early 1980's - became accepted as the "norm". In the 1977-1980 period, almost 400 wells were drilled annually, with 100 drilling and 30 service rigs working in the northeast.

Drilling activity in the first few months of 1980 set records and 385 wells were drilled by year's end. In January 1980, as a result of the Canada-Alberta energy agreement which provides for a rise in the price of gas one month after any increase in the price of crude oil, it was announced that the price of Canadian gas would rise from $3.45 (U.S.) to $4.47 (U.S.) per mcf. Price increases stimulated drilling. However, within a few months, industry experts were warning that reserves in northeast B.C. were rising and markets not expanding as quickly as gas was being discovered. Some of B.C.'s export customers, the northwestern U.S. utilities, were not renewing contracts and were switching to oil or domestic U.S. gas. Under deregulation, some U.S. utilities were buying American gas at $2.30 per mcf, compared to $4.47 for B.C.'s. September 1979 exports of gas to the U.S. averaged 600-700 mmcf/day, a year later they were 100-130mmcf/day. Most experts by mid 1980 (ie. before the National Energy Program) recognized that the U.S. gas market was lost, if only temporarily, but felt that the newly announced LNG and methanol projects would continue to stimulate exploration.

FIGURE 4.5



Source: Statistics Division, Ministry of Energy, Mines, and Petroleum Resources.

The National Energy Program was introduced in October 1980. The NEP was to encourage the "Canadianization" of the industry and drilling in the frontier and offshore, through the Petroleum Incentive Program. Predicated on rising oil prices, the NEP was a victim of bad timing. The October 28, 1980 federal budget placed a $0.30 per mcf excise tax on all natural gas sales (foreign and domestic), which was dropped April 1, 1981. On that date, however, the export price rose from $4.47 per mcf to $4.94 mcf. In August 1981, field prices paid by the B.C. Petroleum Corporation to producers rose from $1.17 per mcf to $1.67 per mcf for newly discovered gas and from $0.94 per mcf to $1.32 per mcf for old gas. Wholesale prices paid by utilities (eg. B.C. Hydro, Inland Gas) to Westcoast Transmission Co. Ltd. increased from $1.17 to $1.74 per mcf. The industry generally welcomed these increases. The September 1981 energy agreement between B.C. and Canada, while lowering the tax on the export price, effectively negated the August increases to producers because of higher federal taxes.

Exploration activity began to decline considerably in early 1981, a year after U.S. markets began turning to their own supply sources. The Canadian Association of Oilwell Drilling Contractors, which represents virtually all of the drilling companies operating in Western Canada, collectively operated 467 drilling rigs and 424 servicing rigs in November 1980. The Association estimated that one year later 214 drilling rigs and 92 servicing rigs, valued at over one billion dollars, had been moved out of Canada, and over 8,000 of 26,500 jobs had been lost. It also estimated that 64 rigs left B.C. at the end of winter drilling in 1981.

However, many B.C. companies remained optimistic with the anticipation of an LNG plant: by December 1981 nine proposals for eleven natural gas projects had been received by the province. This situation slowly changed: rigs began to move from B.C. to Alberta where there was the chance of finding oil, which could be sold, as opposed to merely gas in B.C., which at that time had to be capped. Also, the profit margin for newly discovered gas was lower in B.C. than Alberta, making drilling less attractive in B.C.

In late 1981 Westcoast Transmission announced a new sales arrangement whereby North West Pipelines of Salt Lake City would draw up to 869 mmcf/day (24.6mm m^3/day) and that they must "take or pay" 65% of it on an annual basis. ("Take or pay" amounts to prepayment for producers: once the gas is paid for it belongs to the buyer, who, in the case of B.C.P.C. has ten years to recover it.) Some observers felt this would eventually stimulate a major exploration program; others forecast that the "take or pay" clause may be ignored; indeed, in the 1970's, B.C. reneged on export commitments in order to serve provincial customers.

In late 1982, the B.C. government released the Grovier Report, the result of a commission of inquiry into the state of natural gas supplies. It projected a need of up to 300 wells per year in order to satisfy the proposed Dome LNG requirements (3.2mm m^3/day) and Westcoast's average 8.5mm m^3/day sale to North West Pipelines. However, in the industry in late 1982, there was the general view that the low gas sales volumes to the U.S. were not a temporary abberation: a Dome vice-president stated export sales would last for several years at the 1982 volumes, and U.S. federal officials stated that Canada had to lower its $4.94 per mmcf export price to preserve what U.S. market it had left. By April 1983, the B.C. Petroleum Corporation was borrowing millions of dollars to pay for gas it couldn't sell under take or pay agreements with producers.

4.5.6 Indicators of Industry Recovery

In 1982, 109 wells were drilled in B.C.; this declined further to 76 in 1983. During this low point, the first indicators of a turnaround in the industry began to appear.

(i) Export Price Decreases:

In mid 1983, the federal government introduced a volume-related incentive program which allows the price of gas to drop to $3.40 (U.S.) per mcf on any portion of gas sales that exceed 50% of authorized volumes. The $3.40 price could also be applied to any 1983 sales of these exports were below 50% of authorized volume. Westcoast Transmission only exported 30% of its authorized volume in 1982, so that any exports above the 30% level in 1983 could be sold at $3.40. Subsequently, an agreement between Westcoast and North West Pipelines was approved in July 1984, whereby the company would sell 708mm m^3 (25 billion cubic feet) of additional gas at $3.40 per mcf between June and October 1984. Westcoast states that this will retain and regain large volume industrial use customers who would otherwise have switched, or had already switched, to lower priced fuels.

In July 1984, the federal government announced the abolition of the uniform border price for export gas, in effect since 1977. This allows buyers and sellers to negotiate contract prices for new sales as long as they don't fall below the Toronto city gate price, currently $3.15 (U.S.) Czar Resources announced a sale of 0.28mm m^3 of gas per day over one year at this $3.15 price. While these volumes are small compared to daily exports to the U.S. of 23mm m^3 in 1979, they do encourage producers to sell volumes of shut-in gas in B.C.

4.5.6 Indicators of Industry Recovery (cont'd)

(ii) Expansions to Domestic Residential and Industrial Markets:

To place the volumes listed below in perspective, the average daily consumption of B.C. natural gas is listed for 1979 and 1982:

	1979	1982
B.C. Hydro	10.7mm m^3/day	11.3mm m^3/day
Inland Gas	4.5	4.5
Pacific Northern	2.3	2.8
Off-line	0.4	0.4
Exports	22.9	7.1
	40.8mm m^3/day	26.1mm m^3/day

The 40.8mm m^3/day in 1979 kept 100 rigs working in the northeast and the three gas scrubbing plants at Fort Nelson, Taylor, and Pine River running near capacity.

Projects which recently or will shortly become industrial users of B.C. gas are the Ocelot Methanol plant at Kitimat and the Taylor Natural Gas Liquids plant. Ocelot takes 1.1mm m^3 per day, well below its capacity, and has received both reduced royalities and loan guarantees from the province to help keep it operating. The Taylor plant will extract the equivalent of 0.5mm m^3 per day once operational in late 1985.

If the Vancouver Island gas pipeline is built, provincial forecasts estimate new markets for 2.2mm m^3 per day of gas by 1992, and 2.8mm m^3 by 2003, will be found with the island's residents and pulp mills. Most of this would be at the expense of hydroelectric power and fuel oil. However, the pipeline is unlikely to proceed as a subsidy from the federal government, a prerequisite to the project's viability, is not forthcoming at this time.

4.5.6 Indicators of Industry Recovery (cont'd)

An ammonia or fertilizer plant has been proposed for various locations, including Powell River and most recently as an adjunct to the Ocelot methonal plant. Estimates suggest a requirement of 1.8mm m^3 of gas per day.

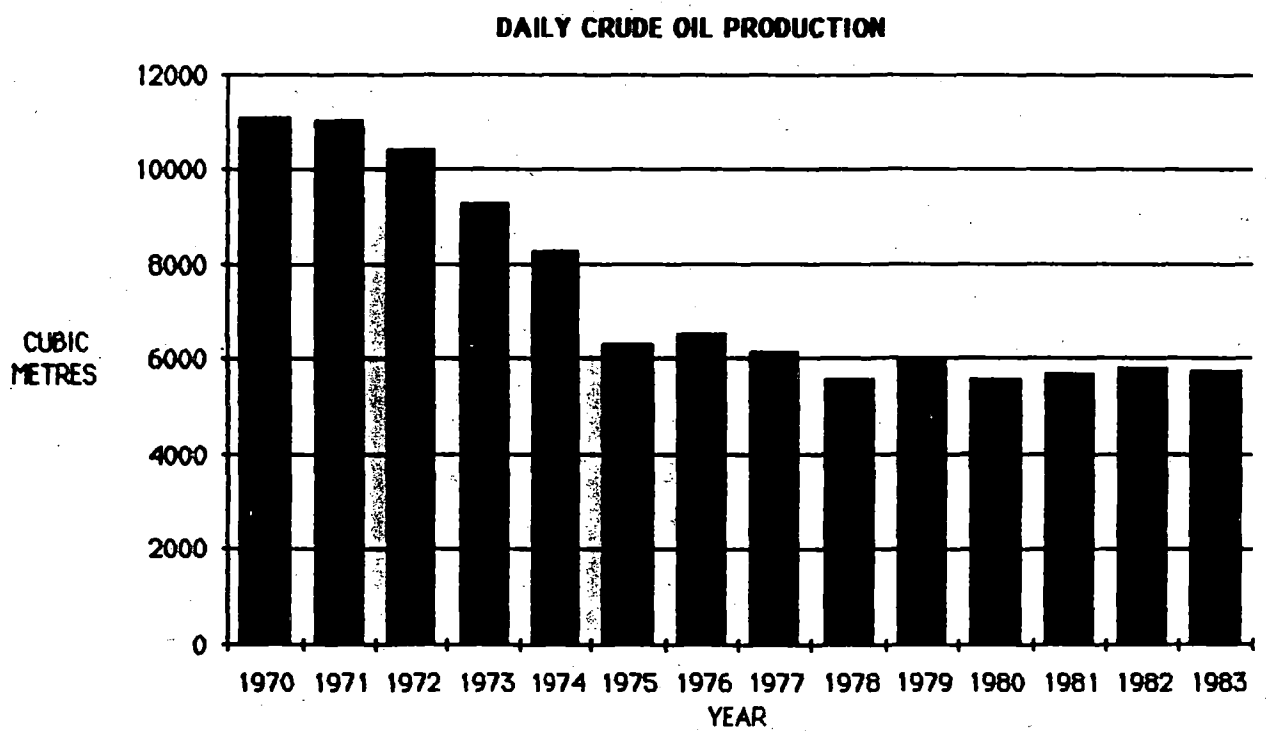
Finally, as discussed in Section 4.4.4, the province has committed 3.2mm m^3 per day to an LNG plant originally proposed by Dome Petroleum Ltd.

Three of these projects may never be built as described. However, the fact remains that domestic industrial uses of natural gas -whether in conversions of pulp mills or in energy industries using natural gas as a raw material to produce petrochemical products - will become an increasingly important supplement to the domestic home heating market for B.C. gas.

(iii) Desan Oil

Oil production in B.C. began in 1961, peaking at 4.05 million m^3 (25.5 million barrels) in 1970. As shown in Figure 4.6, production has declined to 2.10 million m^3 in 1983. This amounts to 25% of B.C.'s market; the other 75% is from Alberta. Until 1983, discoveries had been confined to areas around Fort St. John and most oil analysts felt that the chance of finding major new fields was remote.

FIGURE 4.6



Source: Statistics Division, Ministry of Energy, Mines, and Petroleum Resources.

4.5.6 Indicators of Industry Recovery (cont'd)

In February 1983, Gulf Canada Resources Ltd. drilled a well near the Helmet gas field, 120km northeast of Fort Nelson and 350km due north of Fort St. John, which yielded good quality oil at the rate of 173 barrels a day at a depth of 600 metres. Gulf followed by sending five drilling rigs and four service rigs to the area and established a camp with 200 workers. By early 1984, Gulf had 450 people working at Desan. Three Fort St. John oilfield service companies (trucking, testing, and conductor holes) employed about sixty on the site. By March 1984, 52 wells were drilled and cased at an average cost of $300,000 and completed for an additional $300,000. Adding a camp bill of $100,000 a day, one drilling season was costing $35 million, excluding land leases. By the end of June, 90 of 154 wells drilled in B.C. were at Desan. Lease disposition sales in March, April, and August 1984 were the strongest since 1980, an indication of the success achieved thus far. Based on these sales, Gulf is expected to drill 40 wells, and other lessees (Texaco, Suncor) an additional 65, in the winter of 1984/85. After the August sale, the province announced it would build an all weather road from Desan to Helmet, allowing all year road access from Fort Nelson.

Industry analysts have compared the Desan findings with the Pembina field in Alberta: both are vast, shallow pools having long term potential. Although exciting, Desan is remote and the problems of getting the oil to market are difficult. Oil for testing is trucked via winter roads to Fort Nelson or to Virgo/Zama facilities, 130km east in Alberta. While the companies may find it tempting to build a pipeline due east into Alberta to connect with existing oil pipelines, the Province of B.C. will probably request an "all B.C." route.

4.5.6 Indicators of Industry Recovery (cont'd)

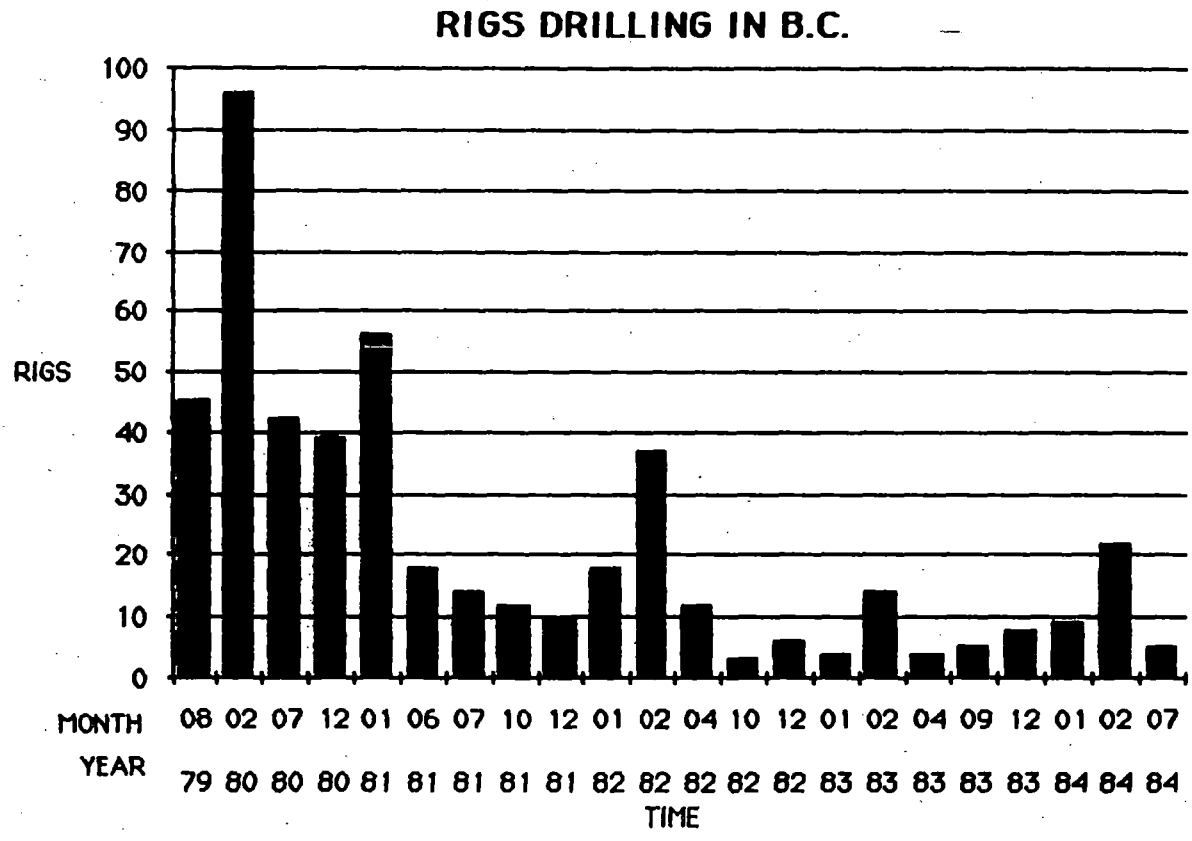
The significance of Desan to Fort St. John lies with the fact that it is providing the local economy with a stimulus that will last two winter drilling seasons at a time when natural gas exploration remains depressed. 1984's well count is expected to be in the 200-230 range, most of which are looking for oil. If, by 1985, Desan reserves justify a pipeline, and if that pipeline is to be built south to the Fort St. John area, construction employment for several hundred could be secured. If Desan production is not viable at that time, or if connections east to Alberta are to be made, the Desan activity will at least have kept many oil service firms occupied while they await natural gas exploration to recover.

4.5.7 Statistical Indicators

Figures 4.2 through 4.6 have been referred to above, describing trends over time in lease bids, geophysical crew weeks worked, natural gas sales, the number of wells drilled, and daily crude oil production. All help to monitor the state of the industry in the northeast.

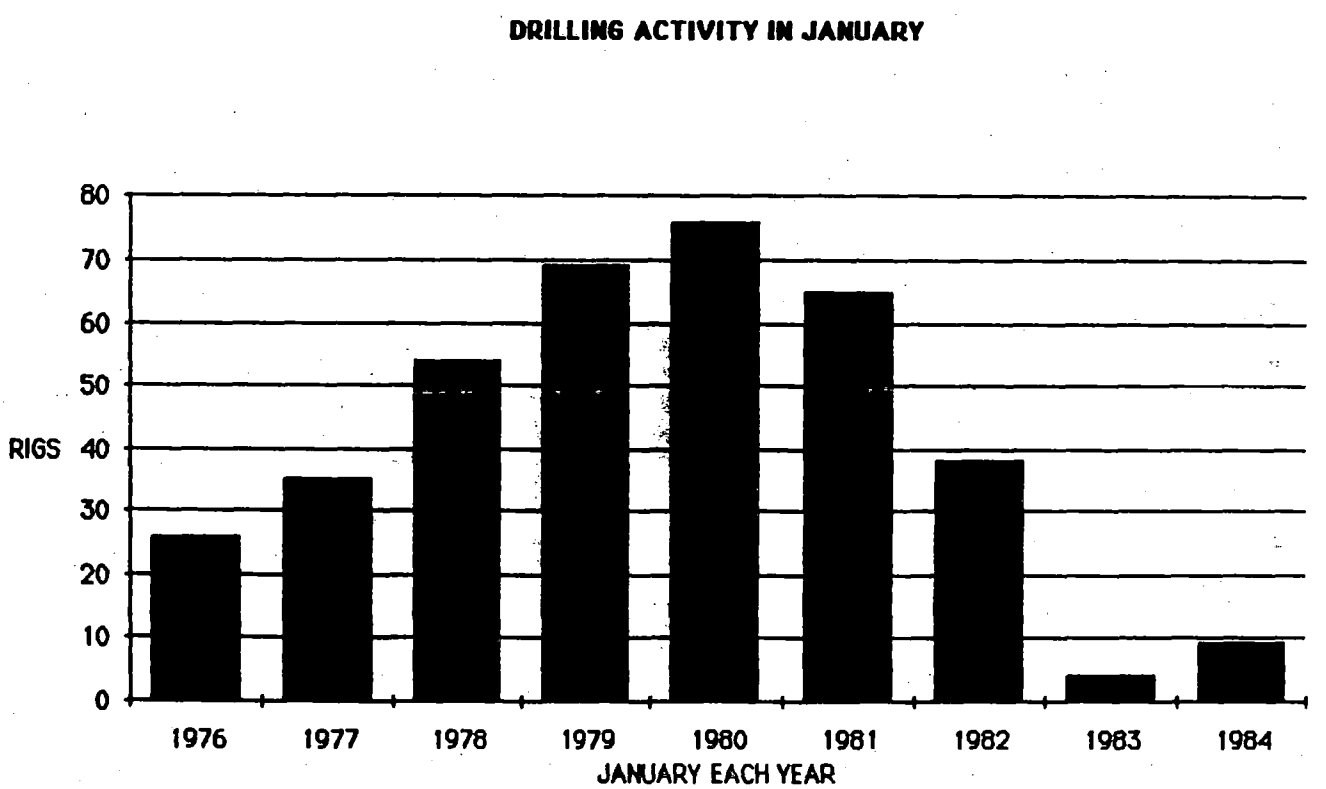
Employment in oil and gas exploration is a direct function of the number of rigs drilling in B.C. (In the past few years, the only areas of drilling interest outside the northeast have been near Fernie, on the Chilcotin Plateau, and on the Queen Charlotte Islands.) Figures 4.7 through 4.10 collectively reveal the annual peaking of drilling in winter, the slow increase in activity from 1976 through 1980, and the subsequent decline.

FIGURE 4.7



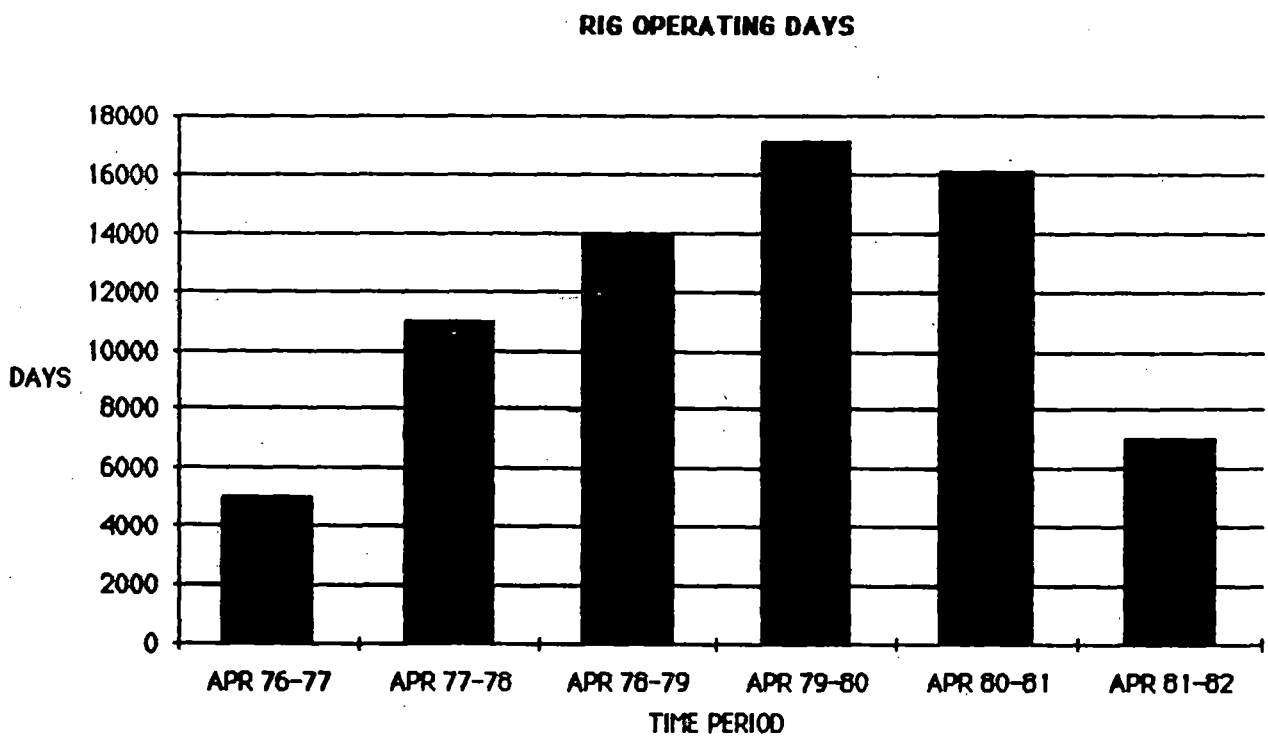
Source: Rig count sheets, Ministry of Energy, Mines, and Petroleum Resources.

FIGURE 4.8



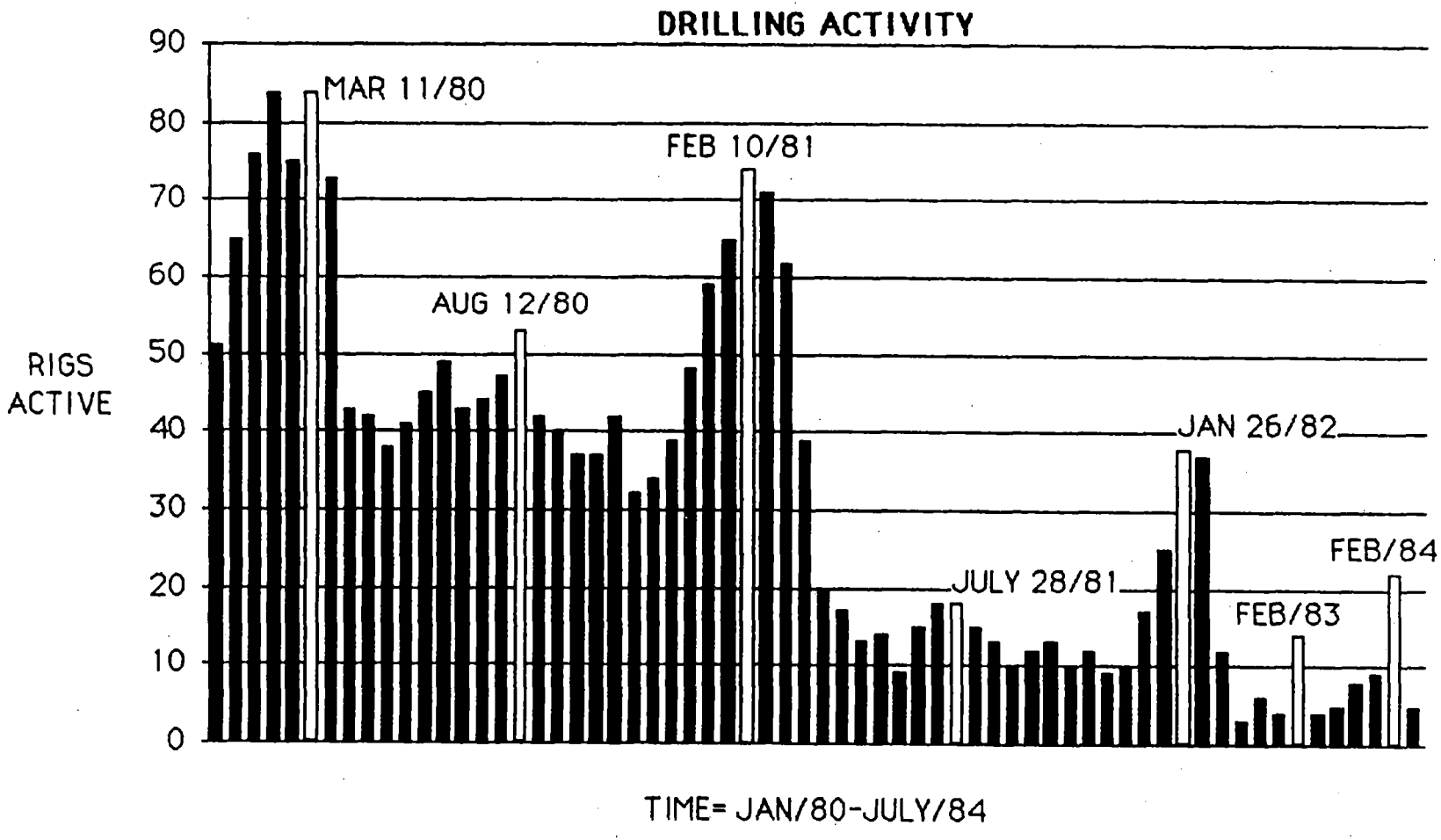
Source: Rig count sheets, Ministry of Energy, Mines, and Petroleum Resources.

FIGURE 4.9



Source: Canadian Association of Oilwell Drilling Contractors.

FIGURE 4.10



Source: Rig count sheets, Ministry of Energy, Mines, and Petroleum Resources.

4.5.7 Statistical Indicators (cont'd)

The best indicator of exploration activity remains the number of wells drilled, (Figure 4.5) a statistic directly dependent on, and more readily available than, drilling rig activity. The number of geophysical crew weeks worked (Figure 4.3) correlates strongly with wells drilled (Figure 4.11) and drilling rig activity (Figure 4.12). If drilling activity in any given year is to be predicted, reasonably accurate advance indicators are the values of Disposition Bonuses (i.e. the lease sale proceeds, shown in Figure 4.2), from the preceding year, and the Drilling Reservations and Licenses component of the Disposition Bonuses, issued in the preceding year. Figures 4.13 and 4.14 show a moderate positive correlation with just over 50% ($r^2 = 0.504$) of the variation in the number of wells drilled being attributable to the value of the Disposition Bonuses from the previous year. Figure 4.15 compares graphically this year to year variance among Disposition Bonuses, Drilling Reservations and Licenses, and the number of wells drilled for the same year.

Activity in the markets for natural gas tends to trigger an immediate response from the exploration industry. Figure 4.7 shows the increased activity in early 1982, attributable to the announcement of a proposed LNG plant. Any announcement that will reverse the trend in declining gas export markets, shown in Figure 4.5, will stimulate exploration. Desan activity provides an obvious example of exploration response to the discovery of new oil resources: Figure 4.6 shows how the province's readily recoverable oil has been depleted. Producers receive incentives to upgrade existing wells to produce "incremental oil", which sells at the new (world) price and is subjected to a reduced provincial royalty.

FIGURE 4.11

GEOPHYSICAL WORK vs. WELLS DRILLED 1975-83

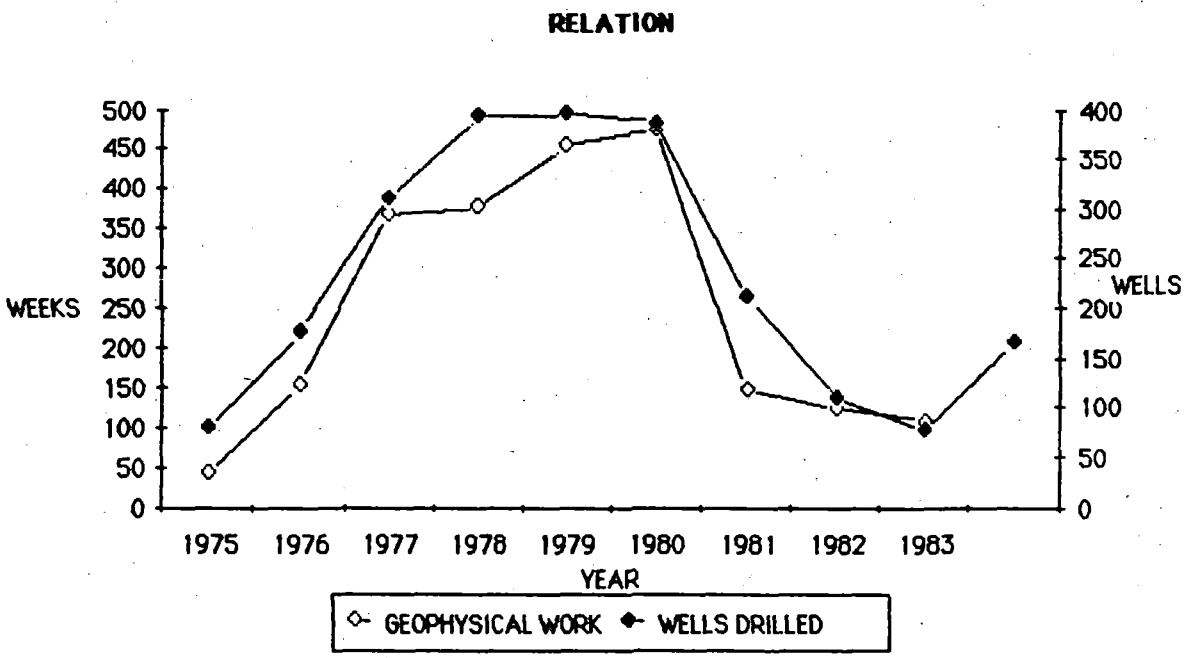


FIGURE 4.12

GEOPHYSICAL WORK vs. DRILLING ACTIVITY 1975-83

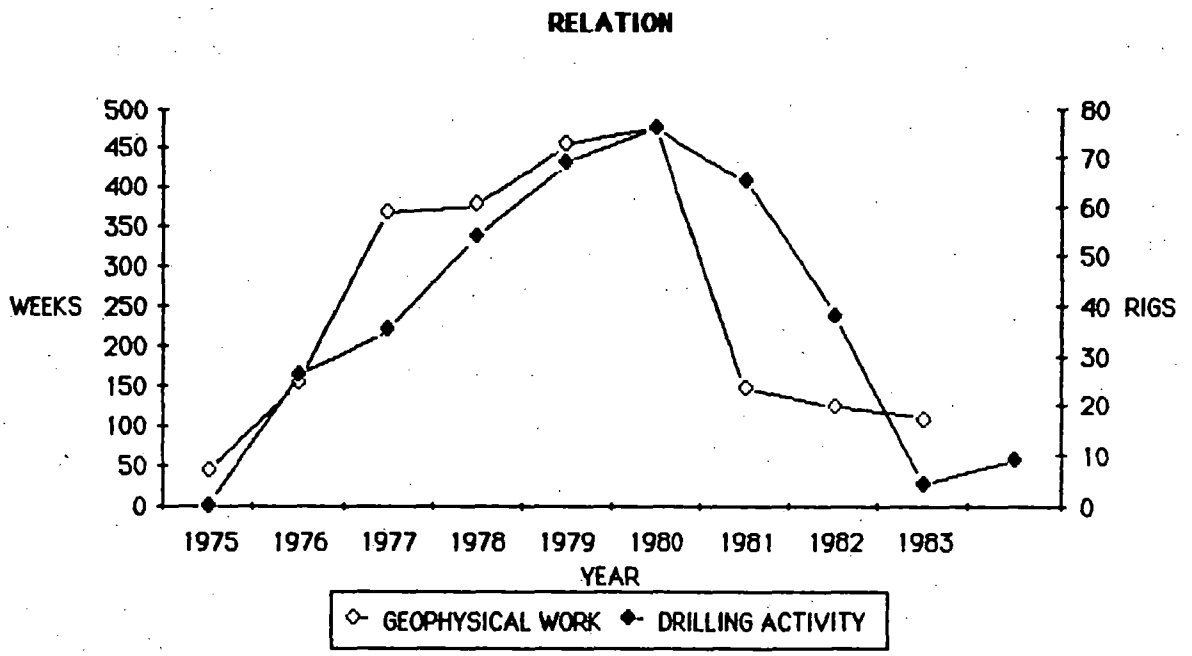


FIGURE 4.13

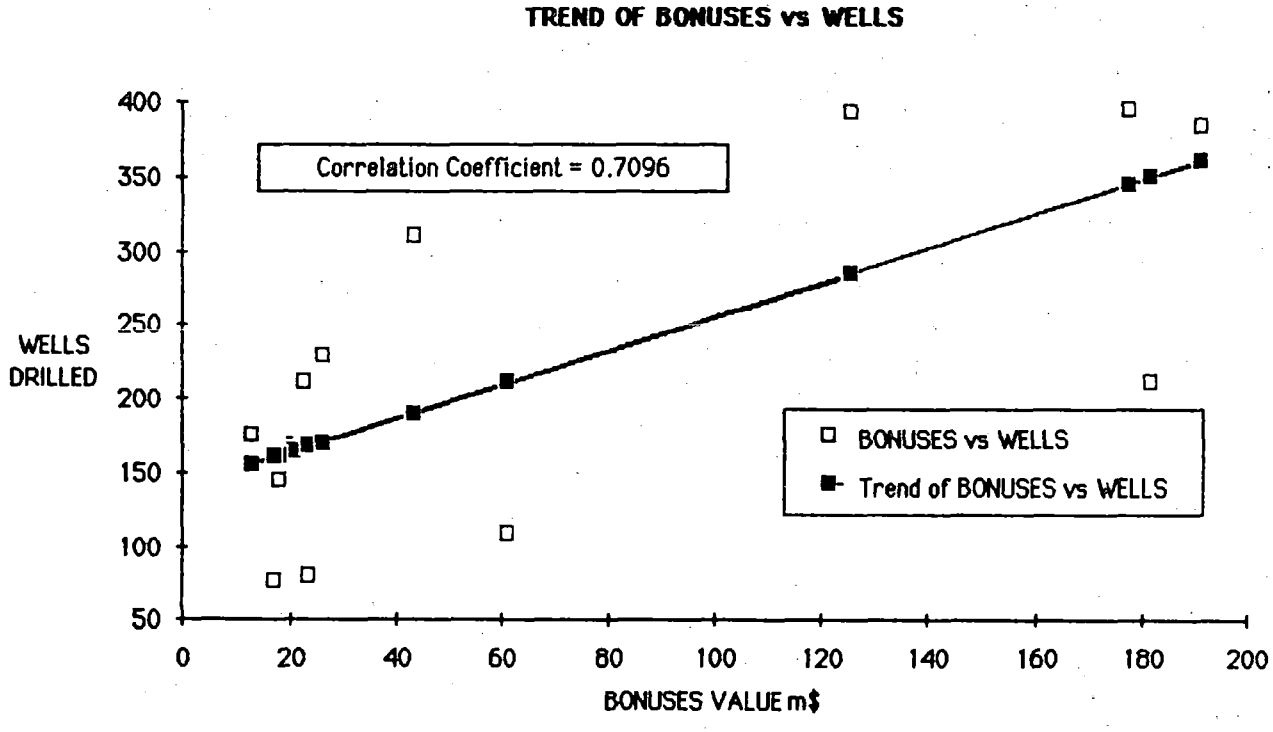

TREND OF BONUSES vs WELLS
Correlation Coefficient = 0.7096
BONUSES vs WELLS
Trend of BONUSES vs WELLS
WELLS DRILLED
400
350
300
250
200
150
100
50
0
20
40
60
80
100
120
140
160
180
200
BONUSES VALUE m$

FIGURE 4.14

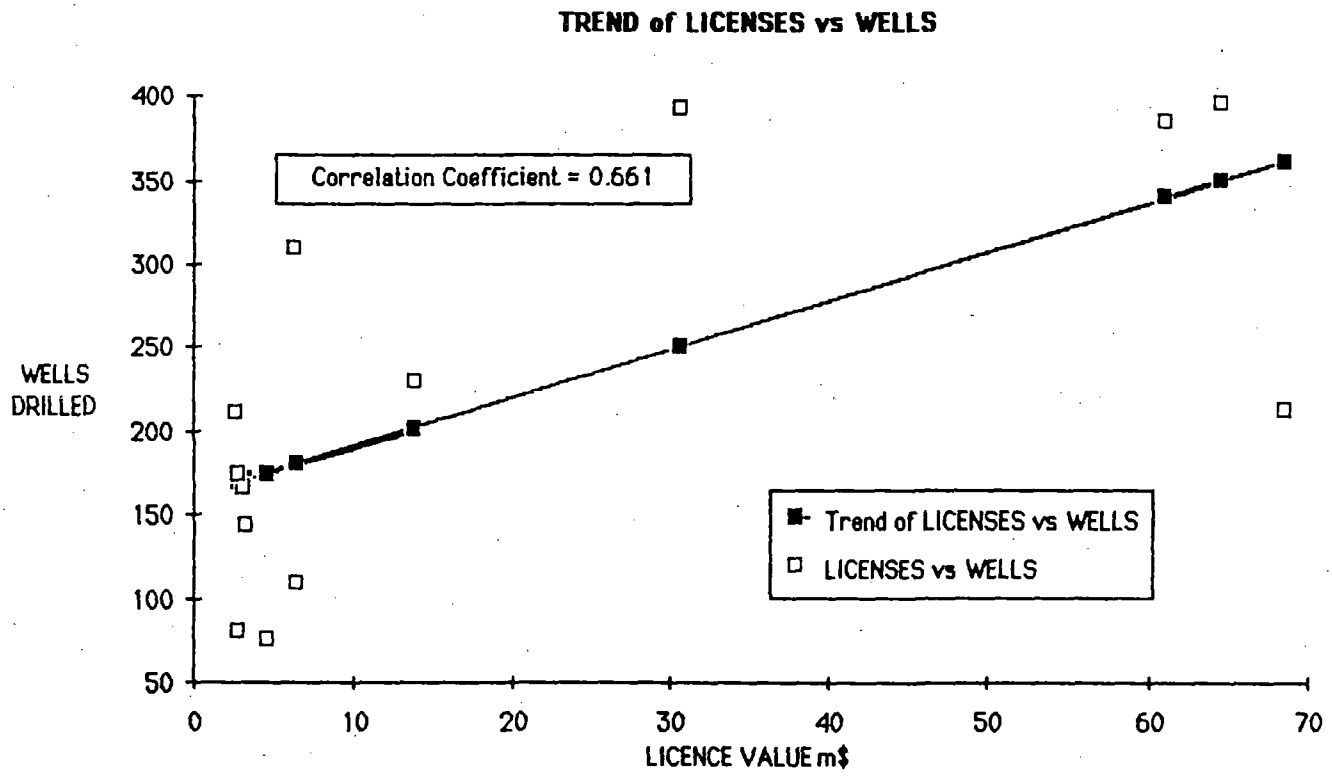
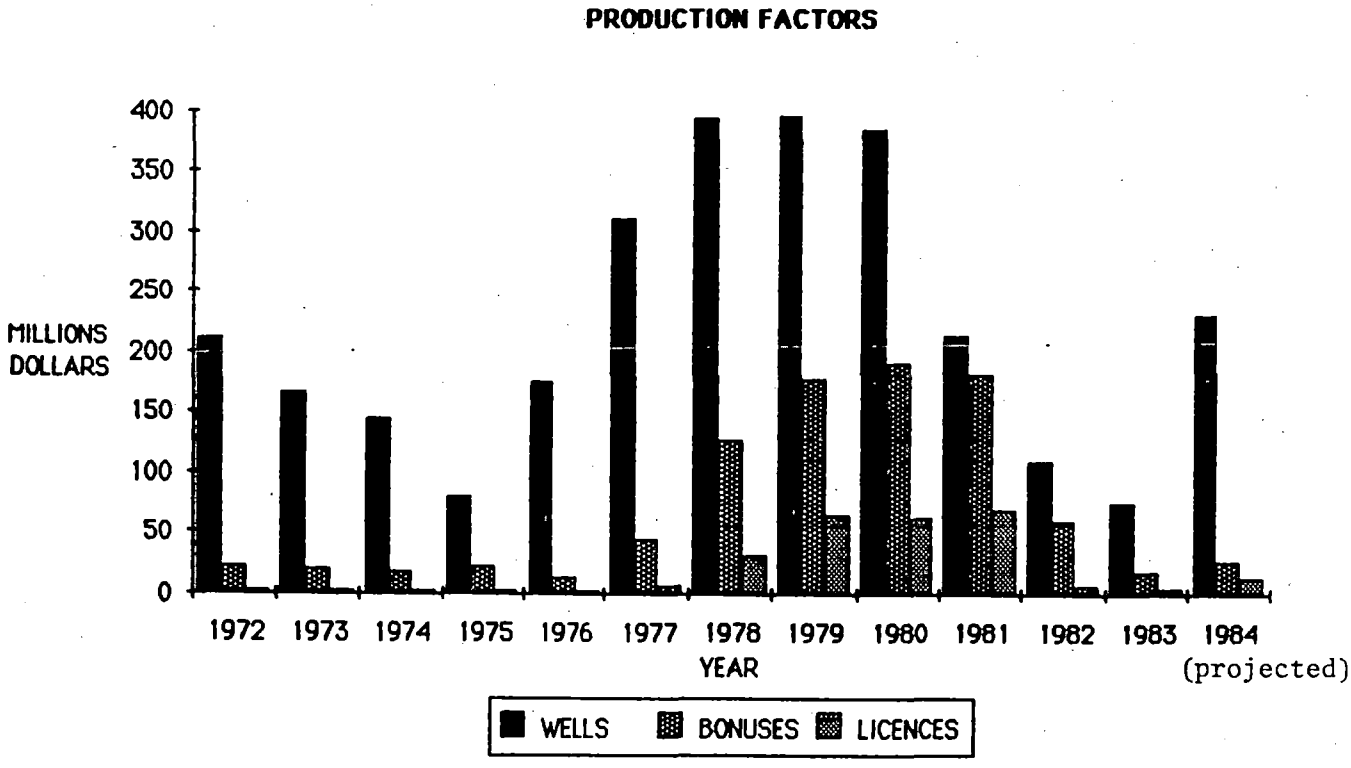

TREND of LICENSES vs WELLS
Correlation Coefficient = 0.661
WELLS DRILLED
400
350
300
250
200
150
100
50
0
10
20
30
40
50
60
70
LICENCE VALUE m$
Trend of LICENSES vs WELLS
LICENSES vs WELLS

FIGURE 4.15


PRODUCTION FACTORS
MILLIONS DOLLARS
400
350
300
250
200
150
100
50
0
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
YEAR
(projected)
WELLS
BONUSES
LICENCES

4.5.8 Economic and Employment Outlook

The drilling of 300 wells per year in B.C. is considered optimal. With this activity, B.C. natural gas reserves can be kept at a level where they are not declining and drilling and service firms would be kept busy. At 300 wells per year, many of the 1,000 indirect positions lost in the 1980-83 period in the exploration industry in the Fort St. John area would return. It is improbable that indirect employment will recover to 1980 levels because service firms which consolidated operations in Grande Prairie or Edmonton are unlikely to decentralize.

Jobs will be generated in Fort St. John but most people who fill them will be temporary residents. The 525 positions in oil and gas transmission and processing, while not affected by the short term fluctuations in exploration levels, would nonetheless benefit over the very long run by a level of exploration which keeps reserves healthy.

Will the exploration industry drill 300 wells per year? The 1982 Grovier Report forecast 100 wells in 1982, 200 in 1983, and 300 in 1984 without an LNG plant or major new exports. In retrospect, the numbers for 1982 and 1983 were 109 and 76, and 230 wells - mostly Desan - are forecast for 1984, contingent on an early start to winter drilling. (To put B.C. activity in a national perspective, in 1984 Alberta will have drilled 4,950 wells, Saskatchewan 2,200, Manitoba 200, Ontario 140, the North 60, and offshore 20.) Ministry of Energy, Mines and Petroleum Resources forecasts in April 1984 predicted 200 wells in 1984, 250 in 1985 and 380 by 1989 without the LNG plant. With LNG, the Ministry forecasts 500 wells per year before the end of the decade.

4.6 CONSTRUCTION AND GROWTH-SERVICING INDUSTRIES

Reference has been made to the fact that "growth bred growth" in Fort St. John through the late 1970's. This is sometimes referred to as "circular and cumulative causation": people find jobs because the local economy is in a state of growth. Engineers, planners, architects, and construction workers all rely on growth to some extent for their livelihood. Conversely, when growth stops, the process reverses and amplifies, decreasing activity in those sectors that supposedly thrive even under "steady state" conditions, until an equilibrium is reached or until growth resumes.

Growth in forestry, petroleum exploration, transportation, and processing, railway upgrading, government and institutional activities starting in the mid 1970's began a period of physical growth that the local construction industry could not meet by itself. Indeed, many tradesmen and labourers found better paying, steady work in the oil and gas industry. In less than five years the Fort St. John area had to accommodate over 6,000 new residents - a construction undertaking and magnitude on par with the construction of an "instant town" like Tumbler Ridge. Between 1976 and 1980, $112 million in building permits were issued by the City of Fort St. John, amounting to $22,500 per new resident over that period. This excludes associated utility and infrastructure work. In contrast the townsite of Tumbler Ridge is estimated to have cost $260 million, including roads and utilities. Most of the construction work in Fort St. John was undertaken by seasonal workers from out of the region, who required accommodation and services. It was apparent that a high proportion of the new houses and apartment units were being occupied by construction workers who remained in Fort St. John only as long as there was work.

In the boom years of 1976-1980, there were approximately 1,000 construction jobs in Fort St. John which do not exist in 1984. Detailed analyses undertaken for Tumbler Ridge construction conclude that 23 man-years of work are created for every $1,000,000 of townsite construction value, including roads and utilities. The construction of one single family dwelling creates approximately two man-years of employment. Using either of these standards, estimates point to a labour force of between 700 and 1,200 for direct on site construction work in the study area needed to meet the housing and infrastructural requirements of the growing population. Once these needs were met, construction activity halted, the construction workers went home and vacancy rates in apartments and motels suddenly increased.

5.1 THE BASIC - NONBASIC CONCEPT

The terms "economic base" and "basic" industry are often used in studies of present and prospective employment and population forecasting. Sometimes the term "economic base" simply stands for "economy" or the term "basic" is used as a synonym for "important". The basic - nonbasic concept of the subregional economy used in this study divides all economic activities into two mutually exclusive categories.

Basic activity in the study area includes those industries and services which produce goods for people living outside the Fort St. John area and which bring in money to pay for the goods and services which the area doesn't produce itself. Nonbasic activity supplies and services the needs of the basic activities. For example, in Fort St. John, very little of the lumber, agricultural products, oil and gas produced is consumed locally, and most of the services (eg. teachers, store clerks) could not be supported without these activities. The population and income involved in such supporting or servicing activities represents a multiplier effect, calculated as the total employment divided by the "basic" employment.

The basic - nonbasic approach has many limitations and is often criticized as too simplistic. Also, data may be difficult to obtain. A functional area's boundaries constitute another set of problems, as does the use of employment vs. income data. Categorization is difficult, particularly for those who derive income from personal wealth, social assistance, or unemployment insurance. If the multiplier is being used to predict the population impact of a new industry, the results may be incorrect if it assumes only frictional unemployment and that in-migrants obtain the new jobs. If the area is experiencing surplus capacity and high unemployment, the impact on the total population numbers may be negligible.

5.1 The Basic - Nonbasic Concept (cont'd)

Detailed debate on the merits and drawbacks of the economic base concept is best left to the academic journals. It does have more meaning and applicability in small and simply structured local economies, such as Fort St. John's, than in metropolitan or national levels of analysis. Multipliers tend to increase with the size and complexity of a local economy because the community becomes more self contained and inter-dependent. In B.C., employment multiplier estimates have been calculated for several forest-based communities: they include Mackenzie (1.6), Port Alberni (1.9), Prince George (2.6) and Nanaimo (2.7). In other words, because income leakage and local infrastructure vary among communities, one new basic job in Mackenzie creates an additional 0.6 nonbasic jobs; in Nanaimo, a new basic job creates 1.7 new non-basic jobs.

5.2 FORT ST. JOHN AREA MULTIPLIER ESTIMATE

A multiplier of 2.1 was estimated within the oil and gas exploration industry in Section 4. For every drilling rig job, an additional 1.1 jobs were created in the region's oilfield service and supply industries. At the geographic, as opposed to sectoral scale of analysis almost all oil and gas exploration, transmission, and processing positions are basic ones because almost all of the product is marketed outside the region.

Taking 95% of all primary and manufacturing jobs, 50% of construction, transportation, and utilities sector jobs, and 80% of the trade, finance, service, and public administration positions in Fort St. John and Taylor from the 1981 Census reveals a basic : nonbasic ratio of 3395 : 4620, or 1 : 1.36. There is a "multiplier effect" of 2.36 calculated: for every basic position in all industries created or lost, 1.36 nonbasic ones are theoretically created or lost. The employment impact of the Taylor NGL plant would therefore be 61 (26 basic and 35 nonbasic) positions.

5.3 UNEMPLOYMENT

The major flaw in applying this multiplier too literally is the fact that the Fort St. John area is experiencing high unemployment despite the net out-migration since 1981. Figure 5.1 shows the number of regular claimants (people available and looking for work) receiving unemployment insurance and reporting to the Fort St. John Canada Employment Centre. Table 5.1 compares August 1977 recipients with those in July 1984 according to major occupational group. (The Canada Employment Centre states that the count is accurate but the statistics undercount the true numbers because the system does not catch new entrants to the labour force, people who have exhausted their benefits, and unemployed people over 65.)

The absolute number of U.I. recipients in the Fort St. John area increased from 502 to 1,781 between mid 1977 and mid 1984, with a doubling of recipients between January 1981 and January 1982, and another doubling between January 1982 and June 1983. Disproportionately severe increases occurred for those in the construction, fabrication, and transportation sector, whose labour force is reliant on oil and gas exploration. In forestry, logging, and processing, totals remain low and didn't increase as quickly over the period. The increase in the claim count in the construction and transportation sectors was responsible for 30% (379 of 1,279) of the increase in the total claim count.

Regional unemployment rates historically follow the provincial trends, as shown in the following statistics which compare average annual provincial unemployment rates with those in Northern B.C.:

UNEMPLOYMENT INSURANCE REGULAR CLAIM COUNT, FORT ST. JOHN CANADA EMPLOYMENT CENTRE

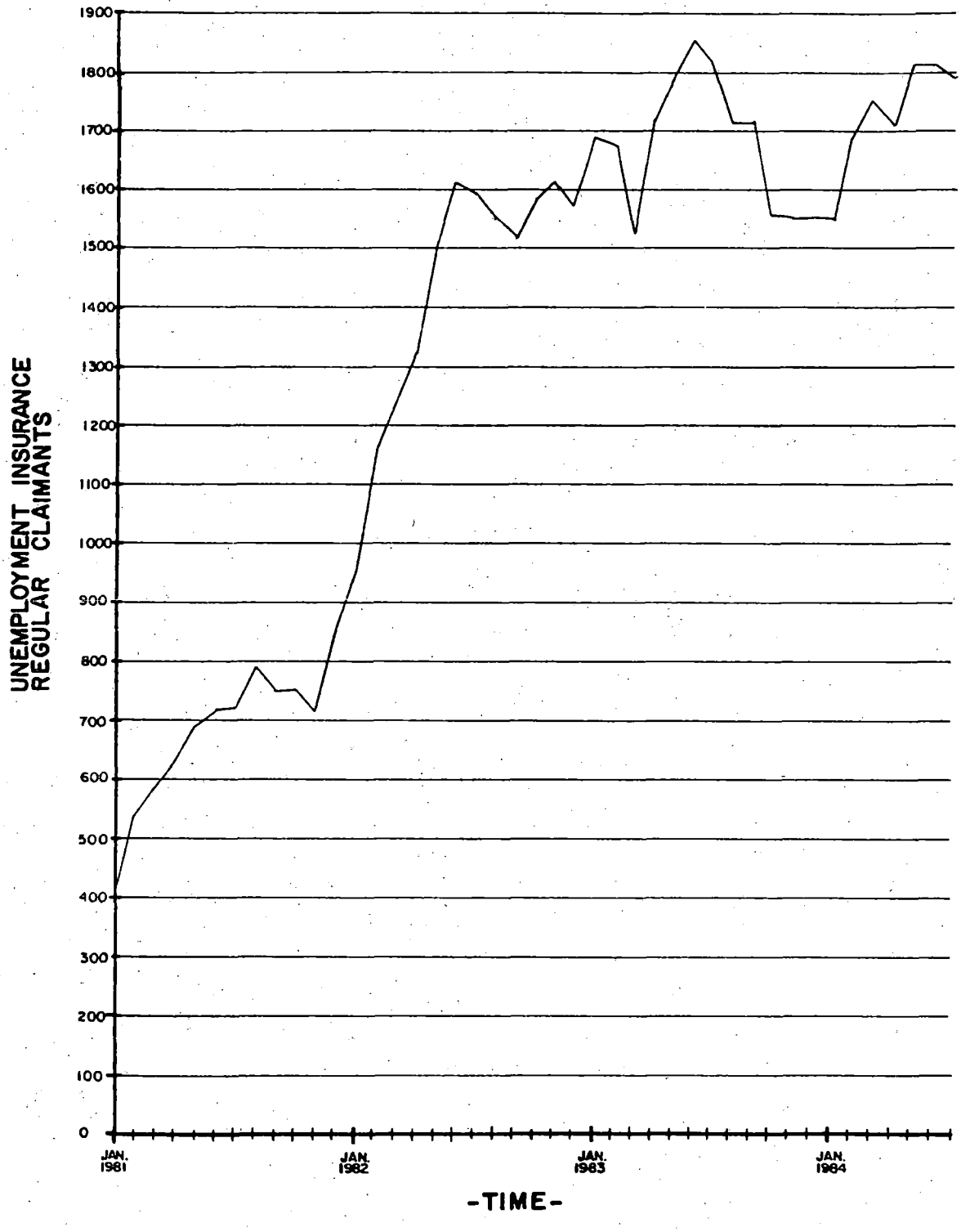


FIGURE 5.1

TABLE 5.1

Major Occupational Grouping of Unemployment
Insurance Recipients
August 1977 and July 1984
Fort St. John CEC Area

	August 1977				July 1984			
	Male	Female	Total	%	Male	Female	Total	%
Managerial Sciences Teaching, Medical, Rec'n	7	24	31	6.2	69	38	107	6.1
Clerical and Related	6	71	77	15.2	13	231	244	13.7
Sales Occupations	6	28	34	6.7	29	54	83	4.7
Service Occupations	17	61	78	15.4	35	148	183	10.3
Farming, Horticulture	8	0	8	1.6	37	5	42	2.4
Foresty, Logging	35	0	35	6.9	64	3	67	3.8
Mining, Quarrying	46	1	47	9.3	147	1	148	8.3
Processing	11	11	22	4.3	19	5	24	1.3
Machining	7	0	7	1.4	37	0	37	2.1
Fabricating	14	1	15	3.0	62	8	70	3.9
Construction	58	2	60	11.8	320	12	332	18.6
Transportation	22	5	27	5.3	139	6	148	8.1
Materials Handling	2	1	3	0.6	13	2	15	0.8
Occupations Not Stated	51	7	58	11.4	237	47	284	15.9
TOTAL	290	212	502	100.0	1221	560	1781	100.0

Source: Canada Employment Centre, Fort St. John and Dawson Creek.

5.3 Unemployment (cont'd)

	B.C.	Northern B.C.
1975	8.5%	10.2%
1976	8.6%	7.3%
1977	8.5%	8.5%
1978	8.3%	6.9%
1979	7.7%	7.2%
1980	6.8%	5.5%
1981	6.7%	6.8%
1982	12.1%	11.4%

In summary, Fort St. John's employment multiplier estimate of 2.36 will have limited predictive applicability until the unemployment picture improves. The presence of a large, skilled, experienced, and unemployed labour force in the Fort St. John area suggests that most new jobs will be filled by existing residents. Given that regional unemployment rates are similar to provincial rates, it is unlikely that people will move to the area to seek work. Conversely, the net out-migration that occurred in the 1982-84 period is likely to slow, as most who decided to leave after losing their jobs would have done so.

5.4 REGIONAL EMPLOYMENT OUTLOOK

Mid 1984 employment levels for Fort St. John's major employers are listed below:

Petro-Canada Refinery	230
Petro-Canada Production	160
Canfor Ltd.	250
Peace Wood Products	158
Logging Contractors	350
B.C. Railway	75
Westcoast Transmission	137
City of Fort St. John	90
School District #60	330

The 1,780 people employed by these nine firms represent over 25% of the city's employed labour force. Very little deviation from these totals is anticipated by these firms throughout the 1980's, with the exception of the additional positions available with the Taylor NGL plant.

It would appear that a continuation of the 1984 "status quo" will provide the most accurate forecast. Most service sector firms and institutions - including the municipal and provincial government and School District 60 - have completed their staff reductions. Any major increases to Fort St. John's employed labour force will come from Site C, an LNG plant, a small pulp mill, and Desan activity.

6.1 THE ROLE AND RELIABILITY OF INDICATORS

There appears to be an increasing interest in Canada in monitoring trends and variations in the economy and society. Growth rates, real output per person employed, consumer price indices, and unemployment rates are examples of measures frequently used to gauge the state of society and its economic well being. The purpose of developing indicators in this study is twofold. The first set of indicators helps to monitor the economic health of the Fort St. John area: these indicators will not necessarily explain the causes or the reasons for economic change, but they do monitor economic change. The second set of indicators monitors intercensal changes in the area's population; with these indicators a better appreciation of housing demand can be gained.

An "indicator" is a statistic which should measure the state of, and changes over time in, major aspects of a community. It should be subject to the interpretation that, if it changes in the "right" direction, things have gotten better or people and their community are "better off". Too often, statistics are labelled as indicators when they really indicate very little. Data that purport to represent the local economy and population must be available, and be sufficiently specific to be reliable. Several indicators of the economy, housing, population, and oil exploration have been referred to in previous sections; here, the most useful ones are presented.

6.2 INDICATORS OF THE FORT ST. JOHN ECONOMY

6.2.1 Oil and Gas Exploration

The province holds lease disposition sales for oil and gas drilling, and the value of the sale is a good indicator of drilling rig activity in future years. Table 4.4 and Figure 4.2 protray these data on a "sale" basis, and Table 6.1 and Figure 5.15 on an annual total basis.

6.2.2 Number of Wells Drilled

The annual number of oil and gas wells drilled indicates the activity of drilling and service rigs. Figure 4.4, Table 4.6, and Table 6.2 present these statistics.

6.2.3 Unemployment Insurance Claimants

The regular claimant count is available monthly from the Fort St. John Canada Employment Centre. In interpreting the statistics, attention should be paid to seasonality, the construction industry component, and the reasons for any decrease. (Is the area experiencing economic recovery or are there more exhaustees?) Tables 5.1, 6.3, and Figure 5.1 show these statistics; a strong correlation with the decline in construction and exploration activity in the winter of 1981/82 is apparent.

6.2.4 Aircraft Movements

Airport activity is directly related to local economic activity. A local recession means people are unwilling or unable to spend discretionary income on air travel, and business travel is curtailed. Seasonal workers in construction and oil and gas exploration rely on air transport to take them to and from their homes and some jobsites.

TABLE 6.1

Annual Value of Lease Disposition Bonuses

Year	Value ($ millions)
1971	$ 22.2
1972	$ 20.5
1973	$ 17.8
1974	$ 23.0
1975	$ 12.7
1976	$ 43.2
1977	$125.5
1978	$177.5
1979	$191.0
1980	$181.3
1981	$ 60.8
1982	$ 16.7
1983	$ 26.0

TABLE 6.2

Annual Number of Wells Drilled

Year	Wells
1970	176
1971	197
1972	211
1973	167
1974	144
1975	80
1976	175
1977	310
1978	393
1979	395
1980	385
1981	212
1982	109
1983	76
To Aug. 1984	165

TABLE 6.3

Unemployment Insurance Recipients, Regular Claim Count, Fort St. John CEC

	1981	1982	1983	1984
Jan.	425	960	1685	1553
Feb.	531	1169	1675	1783
Mar.	582	1236	1531	1754
April	626	1327	1714	1794
May	685	1505	1786	1883
June	716	1608	1857	1808
July	714	1599	1806	1781
Aug.	794	1555	1715	
Sept.	747	1521	1716	
Oct.	755	1573	1565	
Nov.	713	1604	1554	
Dec.	840	1574	1567	

Sources: Employment and Immigration Canada, Target Population Description: CEC Fort St. John; Dawson Creek Canada Employment Centre Regional Office

6.2.4 Aircraft Movements (cont'd)

A preferred indicator would be C.P. Air's passenger enplaning and deplaning statistics for Fort St. John. For example, in 1977, C.P. Air loaded 42,300 passengers and 46,900 passengers disembarked in Fort St. John. C.P. Air is no longer releasing these statistics. Both the number of flights per week to Fort St. John, and the passenger load factor, have declined.

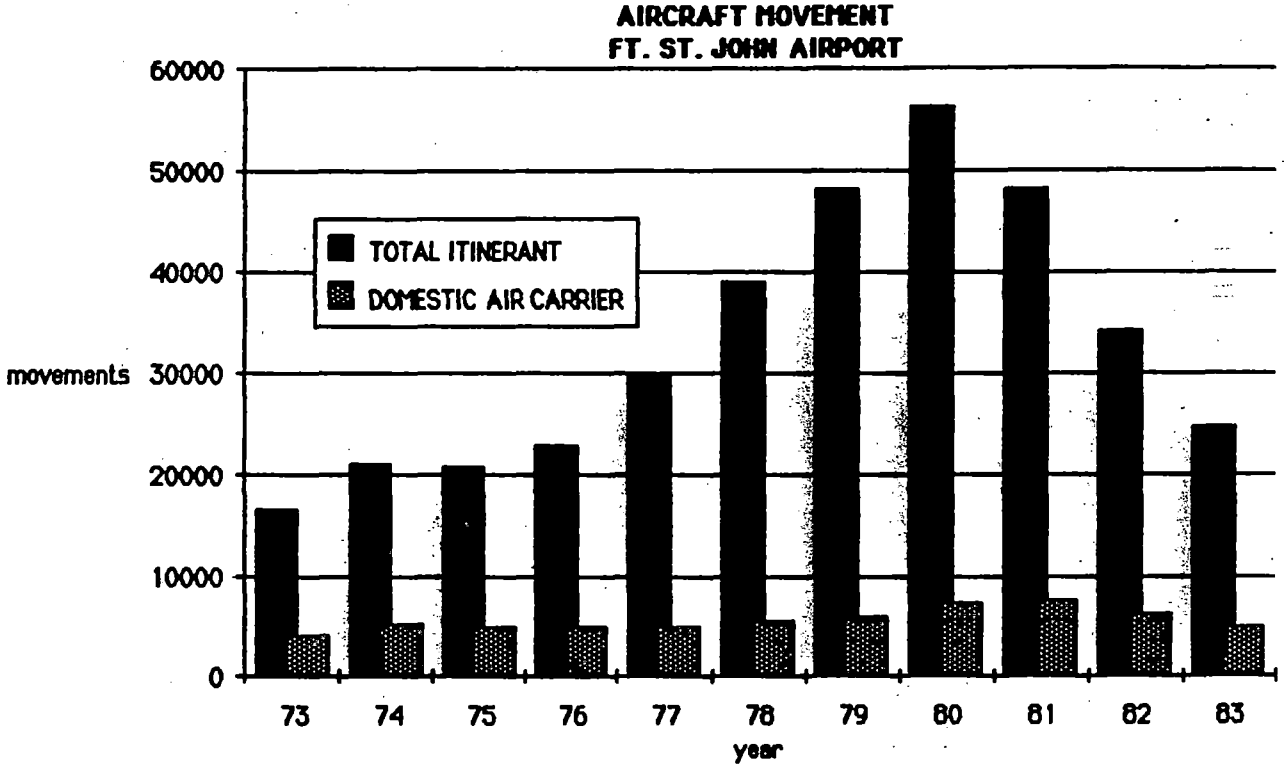
Figure 6.1 shows the total itinerant and domestic air carrier movements at Fort St. John Airport. The statistics are listed in Table 6.4. An itinerant movement is one in which an aircraft enters or leaves the airport tower control zone. After peaking in 1980, both domestic air carrier and total itinerant activity had declined by 1983 to levels experienced in 1976 and 1977. Note that the statistic refers to aircraft, not passengers: in 1983 there were 2,600 fewer landings and takeoffs of scheduled air carriers than in 1981.

6.2.5 Housing Market Indicators

Various statistics monitoring the residential sales market will help to indicate strengthening investor confidence in the Fort St. John area and strengthening demand. Fort St. John's four real estate firms keep statistics on their sales.

New construction will be negligible until selling prices approach replacement costs, with the latter in 1984 being in the \$485-\$540 per m^2 range (\$45-\$50/sq. ft.), excluding land. Selling prices for detached units less than $111m^2$ (1,200 sq.ft.) in 1983 averaged \$380/m^2 (\$35.31/sq.ft.), rising slightly in 1984 to \$387/m^2 (\$35.99/sq. ft.). Average selling prices for detached units greater than $111m^2$ (1,200 sq. ft.) were \$412/m^2 (\$38.31/sq. ft.), and \$436/m^2 (\$40.54/sq. ft.) in 1983 and 1984, excluding land. From these statistics, selling prices remain 20-25% below replacement costs.

FIGURE 6.1



Source: Statistics and Forecasting, Ministry of Transport, Ottawa.

TABLE 6.4

Aircraft Movement: Fort St. John Airport

	Total Itinerant[1]	Domestic Air Carrier[2]	Other Commercial[3]	Private	Government[4]
1973	16,600	4,000	4,900	7,400	200
1974	21,100	5,100	5,600	10,100	300
1975	20,600	4,900	3,900	11,300	400
1976	22,900	4,900	6,300	11,400	400
1977	29,700	4,800	10,100	14,500	300
1978	39,000	5,400	17,800	15,800	400
1979	48,100	6,000	23,300	17,400	1,300
1980	56,300	7,300	29,700	18,900	400
1981	48,200	7,400	23,600	16,600	500
1982	34,300	6,100	15,600	11,900	700
1983	24,600	4,800	9,000	10,300	400

1. An itinerant movement is one in which the aircraft enters or leaves the airport tower control zone. A local movement, in contrast, is one in which the aircraft remains at all times within the tower control zone, such as in circuits around the airport for practice landings and take-offs. Local movements are not included in these figures. Total also includes a small number of international movements.
2. Comprised of unit toll (scheduled) and charter operators. The charter component is a very small portion of the total.
3. Smaller commercial carriers and aerial spraying planes.
4. Civilian or military, federal or provincial aircraft.

Source: Statistics and Forecasting, Ministry of Transport, Ottawa.

6.2.5 Housing Market Indicators (cont'd)

In normal market conditions, Fort St. John's sales to listing ratio is 1:3; for every three detached dwellings listed, one is sold. The sales to listings ratio in 1983 was 1:3.67 and in the first several months of 1984 it was 1:3.96, indicative of continuing weak demand.

Three other statistics which may indicate a trend are the average listing time, the selling versus the asking price, and the actual number of detached dwellings sold by the four real estate firms. The average listing period declined from 4.72 months in 1983 to 4.18 months in 1984. Selling prices were 13.7% below asking prices in 1983; in 1984 they were 11.8% below asking prices. In the first six months of 1983, 180 detached dwellings were sold; in 1984 there were 190 sales. Each of these statistical indicators has its own potential for misinterpretation as individual changes may be caused by factors unrelated to local economic conditions. However, taken together, they are able to provide a collective indicator of the strength of Fort St. John's housing market, and therefore its economy.

6.3 INDICATORS OF POPULATION AND HOUSING DEMAND

Changes in the local population that occur between census years can be estimated by a variety of indicators. These indicators suggest that the non-transient population peaked in 1981, when the census recorded 13,891 in the city and 19,925 in the study region. By mid 1984, these indicators also point to an absolute decline to about 12,700 in the city and to 18,000 in the study region.

6.3.1 Number of Occupied Private Dwellings

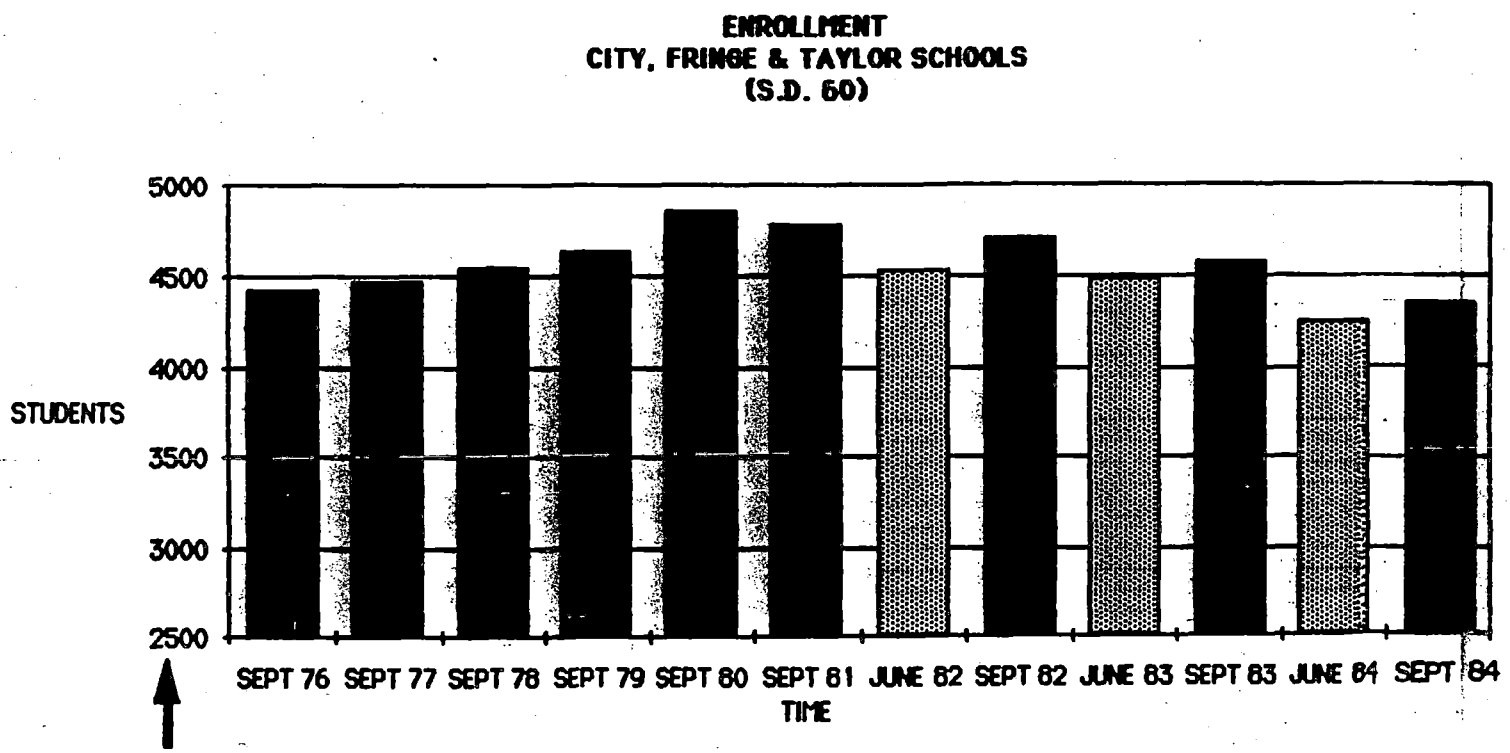
The 1981 Census recorded 4,585 occupied private dwellings in the city. In mid 1984, this number is estimated to have declined to 4,175. If one assumes an unchanged 3.04 persons per unit, the population estimate is 12,700. This assumption should always be explicitly stated: the continued use of high household sizes applied to new housing led to considerable overestimation of municipal populations prior to the 1981 Census.

Housing surveys are time consuming and difficult to undertake with complete accuracy. The rental unit vacancy surveys, performed regularly by C.M.H.C. and the Local Economic Development Commission, provide an "indicator of this indicator". Vacancy rates are graphed on Figure 3.2 and associated statistics listed in Table 3.3. Attention should be paid to the sample universe (i.e. the number of units surveyed), the actual number that are occupied, and the number of units removed from the market because vacancy rates are so high. There has been an estimated 7% decline in the actual number of units occupied between mid 1982 and mid 1984, consistent with the estimate of population decline.

6.3.2 School Enrollments

One of the more remarkable aspects of population growth in the 1976-81 period was the disproportionately large increase in the adult population (age 15 and over) at the expense of the school age population. While the city's population grew by 54%, the adult population grew by 67% and those under fifteeen by 32%. (The demand for new housing, as measured by the number of occupied private dwellings, grew by 75%.) In contrast, the September enrollments in the city's schools increased by a mere 6% between 1976 and 1981.

FIGURE 6.2



Sources: S.D. 60 (Peace River North) Reports on Enrollment, by month and by school.

TABLE 6.5

Enrollment Statistics: Fort St. John City, Fringe, and Taylor Schools

Time	City Schools[1]	Area Schools[2]	Total	% Change	% of S.D. 60	S.D. 60 Total Staff
Sept. 1976	3633	793	4426		77.9%	n.a.
Sept. 1977	3685	788	4473	+1.1%	77.3%	300
Sept. 1978	3761	783	4544	+1.6%	77.5%	315
Sept. 1979	3731	902	4633	+2.0%	77.7%	324
Sept. 1980	3893	965	4858	+4.9%	79.1%	341
Sept. 1981	3842	935	4777[3]	-1.7%	79.7%	n.a.
Sept. 1982	3858	847	4705	-1.5%	79.5%	346
Sept. 1983	3792	789	4581	-2.6%	79.9%	331
Sept. 1984	3667	724	4391	-4.1%	80.4%	
June 1982	3627	905	4532		79.1%	
June 1983	3688	803	4491	-0.1%	79.3%	
June 1984	3499	753	4252	-5.3%	79.8%	

1. Includes North Peace Secondary, Bert Bowes, Kearney, Holland, Ambrose, (burned and rebuilt), Finch, Cran (Opened Sept. 1980), Fort St. John Central, and Ogilvie School.
2. Includes Charlie Lake, Grandhaven, Taylor, and Baldonnel (Opened Sept. 1983, replacing Airport Elem. which closed in June 1983) schools.
3. A 70 pupil private school opened in Sept. 1981.

Sources: S.D. 60 (Peace River North) Reports on Enrollment, by month and by school.

6.3.2 School Enrollments (cont'd)

Table 6.5 and Figure 6.2 show enrollment statistics for all public schools in the study area, including nine city, one Taylor, and three rural schools. After increasing to 4,858 in late 1980, enrollments have declined to 1976 levels. The September 1976 enrollment figure represented over 40% of the June 1976 Census population; by 1981, the September enrollment represented 28% of the city's, and 24% of the study area's population. Assuming these 1981 ratios are maintained in 1984, the city's population would be 13,100 and the study area's would be 18,300. Perhaps more useful is the simple fact that enrollments have consistently declined since 1981, and that the loss of pupils in the 1983/84 and 1984/85 school years was more severe than in previous years. About 15% of the three year enrollment decline is, however, attributable to the opening in September 1981 of a private religious school: most of this institution's 70 pupils would otherwise have been registered in the study area's public school system.

6.3.3 Births to Area Residents

Figure 6.3 and Table 6.6 show the number of live births at the Fort St. John General Hospital as recorded by the Peace River Health Unit. Assuming that infant mortality, home birthing, high risk pregnancies, and the birth rate for the area served are constant from year to year, short term changes in the number of births can be attributed to changes in the regional population. All these assumptions make this "live births" indicator rather suspect if used uncritically by itself; indeed there appeared to be a minor but unexplainable "baby boom" in 1982. The trend established by the data does coincide with population trends and is therefore useful as one of several indicators to estimate population.

FIGURE 6.3

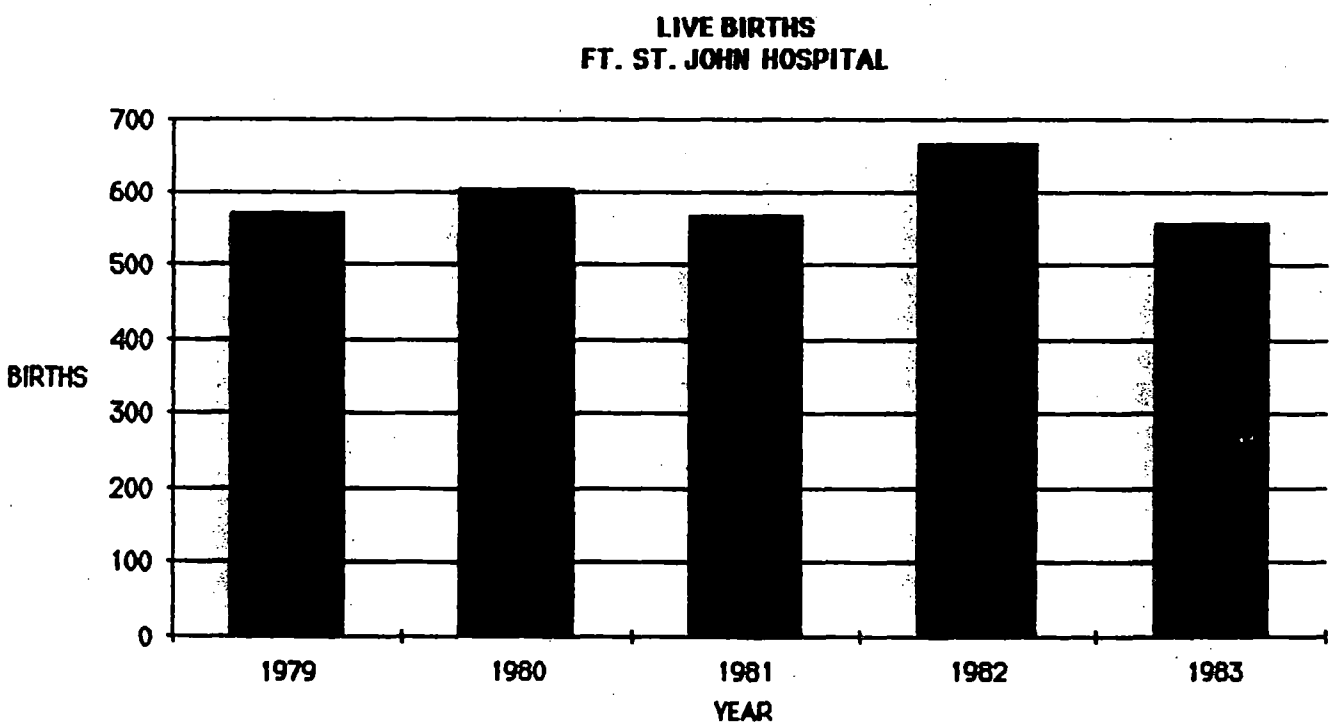

LIVE BIRTHS
FT. ST. JOHN HOSPITAL
BIRTHS
700
600
500
400
300
200
100
0
1979
1980
1981
1982
1983
YEAR

TABLE 6.6

Live Births, Fort St. John General Hospital

Year	No.	% Change
1979	571	
1980	604	+ 5.8%
1981	568	- 6.0%
1982	666	+17.2%
1983	556	-16.5%

Source: Peace River Health Unit, Fort St. John Office

TABLE 6.7

B.C. Hydro Residential Accounts

Time	Fort St. John	Surrounding Area	Taylor
Mar. 1979	3756	2472	n.a.
Aug. 1980	4737	2673	n.a.
May 1981	5498	2741	n.a.
Nov. 1982	5565	2900	n.a.
June 1983	5498	2852	322
June 1984	5478	2843	319

Source: B.C. Hydro, Monthly Billing Revenue and Statistical Statements, Fort St. John City, Fort St. John UN SD60, and Taylor Village

6.3.4 B.C. Hydro Residential Accounts

An indicator of occupied dwelling units is the number of active residential billing accounts recorded by B.C. Hydro in Fort St. John, Taylor, and the surrounding rural area as defined for B.C. Hydro's purposes. Figure 6.4 and Table 6.7 record the data for Fort St. John and the surrounding area; again, the growth trend to a 1981/82 peak and a decline since then is revealed.

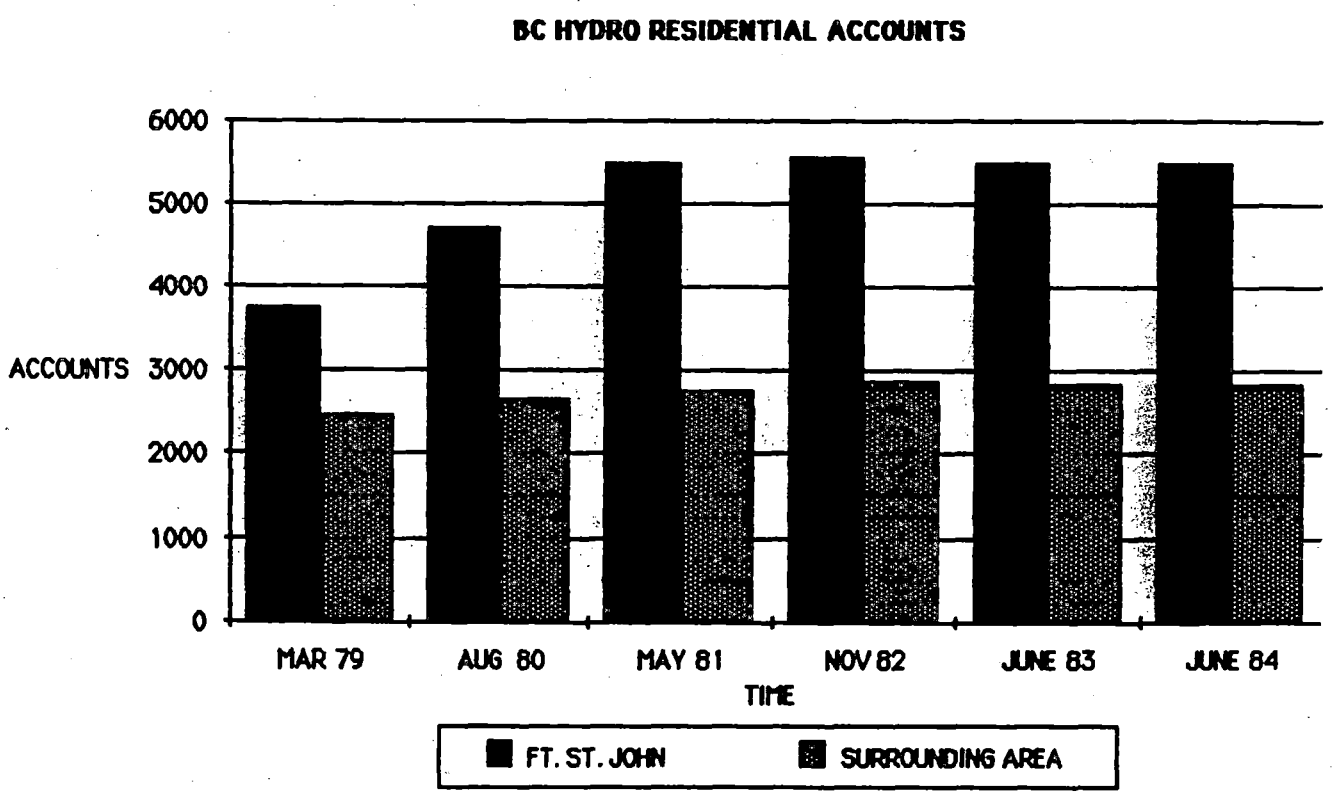
Many of Fort St. John's apartments are not individually metered, meaning that one account may service several units and there is no way to determine from this how many are occupied. Also, owners of vacant dwelling units (electrically heated apartments in particular) may prefer to keep the units connected. As with "live births", this indicator should be used to establish general trends, with little emphasis placed on the actual numbers.

6.3.5 B.C. Telephone Residential Stations

The number of residential main stations (i.e. separate residential telephone numbers) is one of the better indicators of intercensal population change. For example, in Prince George, the number of residential main stations declined by 40 telephones during 1982 for a year end total of 23,793, indicating a stable population in that year.

B.C. Telephone Co. will not release specific data to non-governmental agencies, but the data may be available if a municipality requests it directly. The company's forecasting department did state that the number of residential stations peaked at the beginning of 1982, declined slightly for the rest of that year, experienced a very slight net increase in 1983, and has declined through 1984. (It may be interesting to note that the November 1983 directory of Fort St. John listings has 24 white pages and the November 1980 directory has 23 white pages, but the 1983 directory offers a larger typeface for businesses.)

FIGURE 6.4


BC HYDRO RESIDENTIAL ACCOUNTS
ACCOUNTS
6000
5000
4000
3000
2000
1000
0
MAR 79
AUG 80
MAY 81
NOV 82
JUNE 83
JUNE 84
TIME
FT. ST. JOHN
SURROUNDING AREA

6.3.6 Licensed Vehicles

The year end numbers of passenger vehicles and commercial vehicles licensed in the Fort St. John jurisdiction area of the Ministry of Transportation and Highways is presented in Figure 6.5 and Table 6.8. The jurisdiction area includes Indian Reserve and rural populations beyond the study area.

The trend for both passenger and commercial vehicles is one of slow growth to 1976, a rapid rise to 1980, and a decline to a point where 1983 totals resemble 1978 levels. In 1975/76, there were 3.0 study area residents per licensed passenger vehicle; this declined to 2.8 in 1980/81. Assuming this 2.8 ratio remained unchanged, the December 1983 population estimate for the study region was 17,975 (i.e. 6,419 x 2.8).

The six indicators of intercensal population each have their own drawbacks if used in isolation. Collectively, they are able to provide a reasonable estimate of population numbers and therefore semi-permanent demand for housing. Even more valuable are the trends established when annual data is compared with prior years. With the possible exception of B.C. Telephone Co. data, all the information is available on an annual basis from the sources noted on the tables. The results or effects of local economic recovery on the population of Fort St. John and area can therefore be monitored relatively quickly with these indicators.

FIGURE 6.5

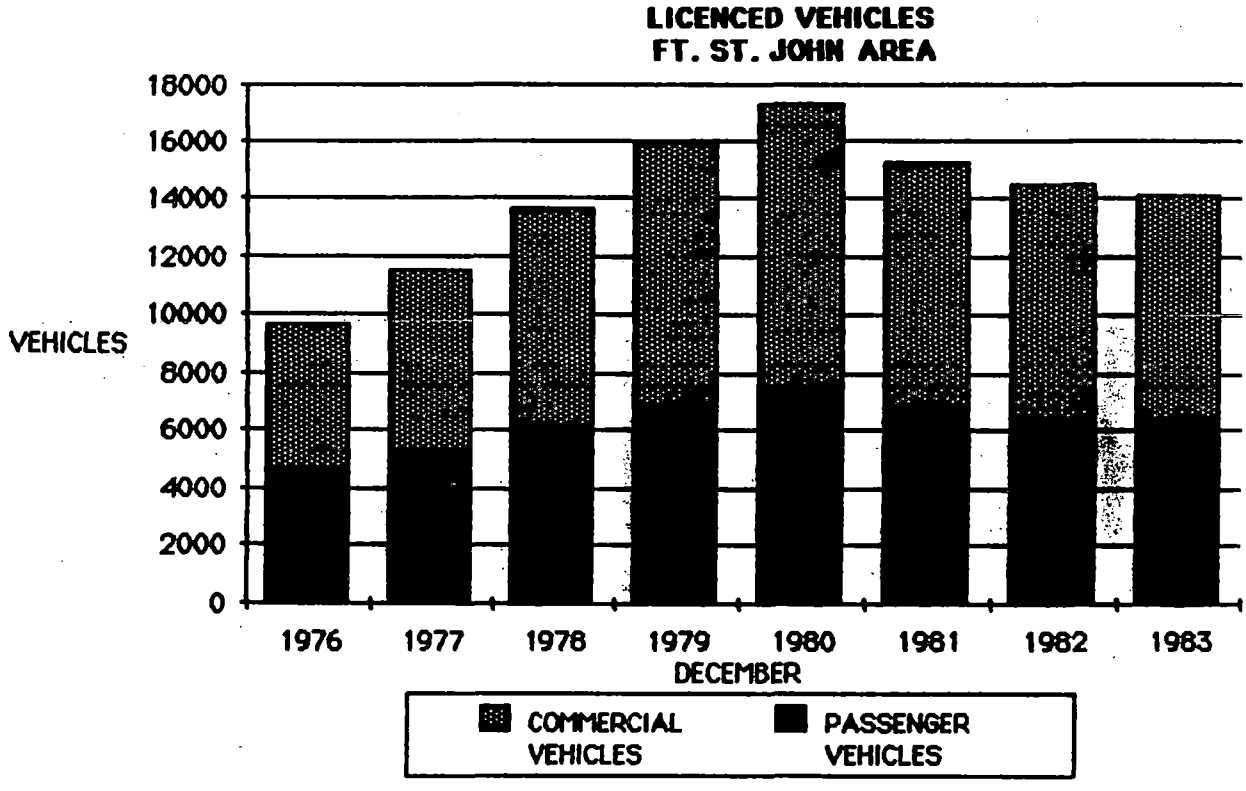

LICENCED VEHICLES
FT. ST. JOHN AREA
VEHICLES
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
1976
1977
1978
1979
1980
1981
1982
1983
DECEMBER
COMMERCIAL VEHICLES
PASSENGER VEHICLES

TABLE 6.8

Vehicles Licensed in Fort St. John Area

1974-1983

Year	Passenger Vehicles	Commercial Vehicles
1974	4591	4262
1975	4571	4394
1976	4628	4992
1977	5244	6233
1978	6109	7575
1979	6886	8986
1980	7485	9815
1981	6886	8406
1982	6405	8056
1983	6419	7705

Jurisdictional area includes Alaska Highway (Mile 49), Altona, Attachie, Baldonnel, Bear Flat, Blueberry, Buick Creek, Cecil Lake, Farrell Creek, Fort St. John, Gold Bar, Grandhaven, Montney, Murdale, North Pine, Prespatou, Rose Prairie, Taylor, Two Rivers, Upper Halfway, Wonowon.

Source: Vehicle License Division, Motor Vehicle Branch, Ministry of Transportation and Highways, Victoria

7.1 PAST PROJECTIONS

Numerous plans, promotional materials, and economic development studies from the past several years projected Fort St. John's population and housing needs. The city's 1969 economic facts book estimated a population of 9,000, a figure not attained until seven years later. The 1970 Fort St. John Town Structure Plan projected an annual population and housing rate of increase of 7% till 1986. B.C. Research's 1974 population forecast averaging 4.1% per year for School District 60 to 1996 was the fourth highest of the province's 75 School Districts: it expected a School District population of 31,027 in 1981. The actual 1981 Census figure was 27,145. B.C. Research's "B.C. Population Projections 1979-2001", released in September 1979, underestimated School District 60's 1981 Census population by 23.2%. Of all the School Districts, only in Peace River South (S.D. 59) was the 1979 projection for 1981 less accurate than Peace River North's, underscoring the difficulty and perhaps the futility of basing population projections in the Peace River Area primarily on past trends.

The 1974 Northeast Report estimated Fort St. John's population at 8,700, prior to the release of the 1976 Census figure of 9,027. In 1978, the Regional District Economic Development Commission estimated a city population of 12,000. The 1978 Official Community Plan was based on an average annual growth of 3.6% to 1988, but declining over that period from 7% to 2.5% per year. (The Plan's 1986 population forecast of 13,810 was actually reached in 1981, yet the projection may still prove to be accurate.) B.C. Research's 1983 set of forecasts for the province's School Districts notes S.D. 60's 1971-1981 average annual population growth of 3.7% ranked 27th of the 75 School Districts

and projects it will rise to over 3.8% per year, ranking it fourth highest in the province, behind Stikine, Abbotsford, Peace River South, and Langley. A January 1981 housing study forecast a need for 400 housing starts in Fort St. John to June 1982; the actual total started was 137.

These forecasts were essentially linear extrapolations of a base population, which are unlikely to be accurate in erratic, cyclical local economies. Growth patterns will be uneven, and uncertainty and error will probably continue to plague forecasts of the area's population and housing needs. Nonetheless, with some understanding of expected changes to the main ingredients of population and housing demand in the Fort St. John area, a long term forecast of semi-permanent population is derived. There is no choice but to ignore random economic interjections.

7.2 PROBABLE TRENDS

7.2.1 Natural Increase and Age Structure

Cohort survival forecasts for School District 60 were generated as part of the 1983 B.C. Research forecasts. Because the Study Area population comprises almost 75% of the School District population, the forecasted birth and death rates, extracted from the raw data, are applicable to this forecast of natural increase:

	1986	1991	1996	2001
Birth Rate/1,000	27.1	25.1	20.1	17.4
Death Rate/1,000	3.3	3.4	4.1	4.9
Net Natural Increase/1,000	23.8	21.7	16.0	12.5

7.2.1 Natural Increase and Age Structure (cont'd)

Natural increase is expected to decrease to 50% of current levels over the next fifteen years, meaning that if net migration is zero, by the turn of the century Fort St. John can expect to grow by 1.2% per year. Across the country, growth rates will continue to decline from the very high levels spurred by the baby boom.

While overall population growth rates will be lower than in the past, some age groups will be growing more quickly or slowly than the overall rate, producing significant changes in housing and public service needs. Five year age group cohort survival forecasts for School District 60 were aggregated to show the reverberations of the post war baby boom and the dynamics of an aging population.

	% of Total Population				
Age Group	1981	1986	1991	1996	2001
0 - 14	29.7%	29.6%	31.0%	30.8%	27.8%
15 - 29	33.7%	32.5%	25.1%	20.2%	21.5%
30 - 64	33.4%	35.0%	40.7%	44.8%	45.8%
over 65	3.2%	2.9%	3.2%	4.2%	4.9%

In the 1981-1996 period, middle aged groups (30-64 years) will grow rapidly in number. This is an affluent group, established in jobs and family, with a preference for single family homes. The number of children will rise in proportion to the population (i.e. about 30%), although far from the rate needed to herald another baby boom. The growth rate of young adults (15-29 years) will be well below average, possibly even declining in number from 4,300 in 1986 to 3,300 in 1996 if the city is to rely solely on natural increase for growth. This will dampen demand for apartment accommodation.

7.2.2 Net Migration

Net migration to British Columbia has been a major element of growth in the Fort St. John area. When employment creation and investment are high, residents migrate to improve their economic circumstances. Two main factors indicate that the level of net migration to the Fort St. John area will be both low and less volatile in future.

Present and future regional economic conditions suggest that the high economic growth rates (relative both to the rest of B.C. and to Canada) which initiated strong, positive net migration are unlikely to be experienced by the region or by the province during the 1980's. Another factor is the aging of the population. The rapid in-migration of the late 1970's coincided with the entrance to the workforce of much of the footloose "baby boom" generation. An increasing proportion of the population is becoming less willing to migrate, as the decision to do so means uprooting a family, severing business and social relationships and selling and buying a house.

Between 1961 and 1981 net migration to British Columbia averaged 35,000 per year. In 1982 this dropped to below 1,000 and in 1983 preliminary estimates of net migration range between 3,000 and 16,000. For both British Columbia and Fort St. John, net migration will probably continue close to zero or even become negative, unless recent forecasts of 10 to 15% unemployment continuing through the 1980's prove to be incorrect.

7.2.3 Household Formation and Size

Demand for housing and other goods and services is driven more by households than by population. The rate of new household formation outpaced even population growth rates in Fort St. John in the 1970's, accentuating the demand for housing. In other centres, such as Dawson Creek, where population growth levelled off, demand for new housing did not abate accordingly. The rate of household formation remained high as a result of the numbers of young adults who formed their own households because of economic prosperity and lifestyle changes, such as an increased divorce rate.

7.2.3 Household Formation and Size (cont'd)

Many housing forecasts based on household formation and headship rate projections have been adjusted downward due to the influence of economic conditions. Also, most of the changes which led to a high household formation rate in the 1961-1981 period have peaked and are stabilizing. These include the formation of independent households among those in their late teens, later marriage, and rates of household breakdown due to separation or divorce.

For these reasons, the growth in households is expected to resemble, but remain slightly higher than, population growth. The downward trend in average household size is also expected to level off during the 1980's and 1990's.

7.3 A POPULATION AND HOUSING FORECAST

Table 7.1 is a forecast of population growth and housing needs for the City of Fort St. John based on the trends described above, with the assumptions explained in the footnotes to the table.

It will take eight years for the present housing stock surplus to be depleted, making no allowance for demolitions, type preferences, or new housing starts in the interim. By 1991, in-migration associated with Site C will stimulate a mild five year cycle of housing starts which will end with dam completion in 1997, and then rebound to equilibrium conditions of 70 to 80 new dwellings per year. Given current housing type preferences, the disproportionate supply of apartment units, and a stable or declining young adult population, the market for detached dwellings will be stronger than that for apartments.

TABLE 7.1

A Population and Housing Forecast: 1984-2001

Year	Population[1] City	Region	Cumulative Population Change (City Only)	Cumulative Units Needed[2]	Units Surplus[3] (City)	Annual New Unit Construction (City)
1984	12,700	18,000			1,010	
1985	13,000	18,430	+ 300	102	908	
1986	13,300	18,875	+ 600	207	803	
1987	13,600	19,290	+ 900	312	698	
1988	13,900	19,715	+1,200	420	590	
1989	14,200	20,150	+1,500	528	482	
1990	14,600	20,820	+1,960	695	315	
1991	15,095	21,575	+2,395	855	155	
1992	15,580	22,250	+2,880	1,029		19
1993	15,820	22,595	+3,120	1,114		85
1994	15,995	22,850	+3,295	1,176		63
1995	16,065	22,945	+3,365	1,202		26
1996	16,200	23,135	+3,500	1,250		48
1997	16,160	23,080	+3,460	1,236	14	
1998	16,360	23,380	+3,660	1,307		57
1999	16,580	23,685	+3,880	1,386		79
2000	16,800	24,000	+4,100	1,464		78
2001	17,000	24,300	+4,300	1,535		71

1. Assumes growth rates (based entirely on projected rates of natural increase) of 2.4% p.a. in 1985 and 1986; 2.2% p.a. 1987-91; 1.6% p.a. 1991-1996, and 1.3% p.a. 1997-2001. Also assumes in migration of Site 'C' workforce and families not residing in camp from Table 4.3 starting in 1990, with 70% residing in City of Fort St. John
2. Assumes decline in average household size from 3.04 in 1981 to 3.0 on 1984, 2.9 in 1986,2.8 in 1991, and constant thereafter.
3. Irrespective of unit type but accounting for equilibrium conditions: see Section 3.5

It is emphasized that this is a long term forecast of semi-permanent (as opposed to transient or temporary) population and housing needs. It is a forecast of what may happen if cyclical variations in the local economy are ignored, and it is based on the mid 1984 city population estimate of 12,700 being the lowest level to which the population will re-equilibrate as a result of the severe local economic downturn. In other words, it is assumed that the 1984 population won't go any lower even if the local economy continues to stagnate.

Beneficial but largely temporary employment effects will be felt in the Fort St. John area if certain projects proceed. The status of the LNG plant, Desan oil exploration and a pipeline, and a small pulp mill are all projects which should be monitored in addition to the economic, population, and housing demand indicators of Section 6. Individually or cumulatively, these projects are unlikely to have much long term effect on the area's population: there are too many skilled, experienced, semi-permanent residents of Fort St. John who are without jobs to trigger a major population influx.

This report has analysed the relationship among economic growth, employment change, population change, and housing demand in the Fort St. John area. By understanding the region's economic base - the oil and gas exploration industry in particular - the indicators that will precede the resumption of a more vibrant local economy can be monitored.

Because the Fort St. John workforce relies on resource extractive industries and construction, employment levels tend to be seasonal and sensitive to fluctuations in the economy. The products of the region's oil and gas exploration and transmission, forestry and agricultural sectors are destined for national and international markets and are subjected to vagaries in demand and price. In the late 1970's, strong demand for its products, combined with a limited domiciled construction workforce and the imminent construction of hydroelectric and pipeline projects, produced a flourishing local economy. As new jobs were generated in its basic (export) sector, public and private service functions expanded according to a regional employment multiplier estimate of 2.35.

At the root of this vibrant economy was the oil and gas exploration industry. The drilling of 100 wells requires about 340 direct man-years of work at the drill sites and indirect employment for another 400 in the oilfield supply and service industry is created. Many drill site positions are filled by workers from out of the region, but Fort St. John quickly reinforced its role as the province's only oilfield supply and service centre. The number of wells drilled anually more than doubled from an average of 165 in the 1970-1976 period to 370 in 1977 through 1980.

Conclusions (cont'd)

By 1983, well drilling activity in B.C. had plummeted to a mere 76 wells. The decline was essentially attributable to the fact that the market was flooded with new gas supply at a time when demand had weakened and the regulated price was rising.

Reverberations were quickly felt in the oil and gas sector and in the regional economy. Upwards of 1,000 jobs in the Fort St. John oil and gas service industries were lost through layoffs, transfers, or corporate receiverships. Coincidentally at that time, the false bouyancy provided to the local economy by the presence of several hundred construction workers came to an abrupt end, both sawmills curtailed operations, and budget restrictions imposed by the municipal and provincial governments and the School District curbed both jobs and the discretionary spending of those who still had jobs.

Through the 1976-1980 period, residential construction activity struggled to keep pace with demand from a housing market that was driven by positive net migration, a decline in the average household size, and a high rate of natural population increase. In retrospect, there was a considerable lag between the time builders "should" have stopped building (in late 1979) and the time when they actually did (in early 1981). There is, in mid 1984, an oversupply of about 500 detached and 510 rental multiple units.

Assuming a municipal population of 12,700 and a growth rate based solely on projected rates of natural increase, the present housing stock surplus will not be fully depleted until 1992. Intercensal population trends can be monitored using rental vacancy rates, school enrollment, birth statistics, hydro and telephone connections, and licensed vehicle statistics. Readily available economic indicators which would affect rates of municipal population change include oil and gas well drilling and lease disposition sales statistics, the monthly regular unemployment insurance claim count, aircraft movements, and housing market statistics such as selling prices compared to replacement costs.

ECONOMIC CYCLES AND HOUSING DEMAND IN RESOURCE COMMUNITIES
A CASE STUDY OF FORT ST. JOHN

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