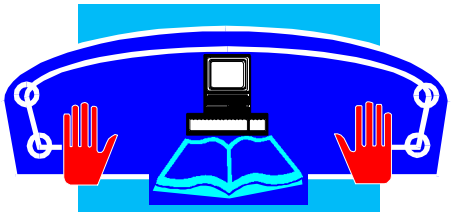

V- Socio-economic And Canada Benefits Revised - Bent Horn Production Project - Application For Development Plan Approval

Date of Report: 1984

Author: Panarctic Oils Ltd.

Catalogue Number: 6-1-44

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V -SOCIO-ECONOMIC AND CANADA BENEFITS
REVISED

BENT HORN PRODUCTION PROJECT
APPLICATION FOR
DEVELOPMENT PLAN APPROVAL

Prepared by
PANARCTIC OILS LTD.
SEPTEMBER 21, 1984

See also Volume I - PROJECT SUMMARY
II - GEOLOGY AND RESERVOIR
III - PRODUCTION FACILITIES
Iv - ENVIRONMENTAL EVALUATION
VI - MARITIME CONTINGENCY PLAN
VII - ONSHORE CONTINGENCY PLANS

SUMMARY

Panarctic Oils Ltd. proposes to develop its oil well, W. Bent Horn A-02 on Cameron Island. The project is small-scale but revenues generated from it will facilitate continuity of Panarctic's exploration program in the Arctic Islands.

Total production from the well is estimated at 320,000 m^3 (2.013 million bbls), which will be extracted over a 9 or 10 year period beginning in late 1985. The oil has a very low sulphur content and a large mid-distillate cut.

Production activities will be located in the southwest portion of Cameron Island, an area where 10 wells have been drilled during the 1970's and early 1980's. An existing airstrip will be used for the project. The development will utilize 16.8 km of lard for access roads, and two aggregate sources. Development facilities will cover approximately 36 ha.

The project is d ivided into two phases. During Phase I, the oil will be extracted and stored on the island in one steel tank. Each sh ipping year, inlate August, the tanker that carries fuel to Rea Point will continue on to Cameron Is lard, load and transport crude oil to a refinery in Eastern Canada in early September. Annual production during this phase will be 16,800 m^3 (106,000 bbls).

In the fourth year of production, annual output will be increased to 67,200 m^3 (423,000 bbls) by the addition of two more storage tanks and more tankers.

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Ice conditions around Cameron Island are such that access may not be possible 1 out of 3 years. Panarctic has based the Bent Horn project on shipping oil 7 years out of a 10 year per iod.

Phase I is scheduled for start-up in June, 1985, and Phase II in May, 1988.

A review of soc io-economic information for the study provides brief community profiles for the four communities likely to be affected by the project (Pond Inlet, Arctic Bay, Grise Fiord and Resolute) . The small scale of the project offers limited employment opportunities in these communities and, there fore , will have minimal impacts.

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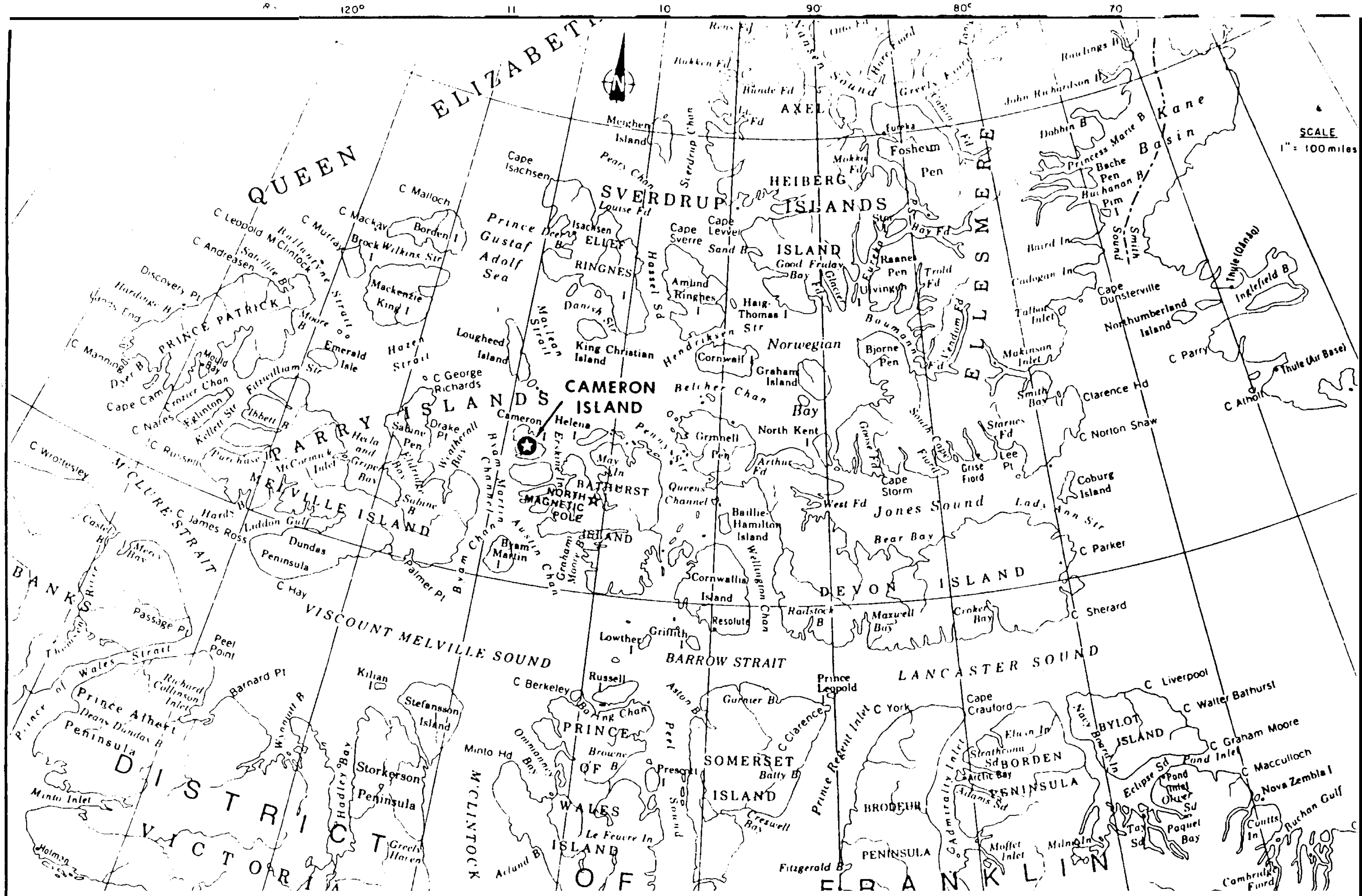
1.0 INTRODUCTION

Panarctic Oils Ltd. (Panarctic) proposes to exploit its oil reserves on Cameron Island, Northwest Territories (Figure 1), shipping the oil via tanker to markets on Canada's east coast. Production will be carried out from the suspended oil well, Panarctic et al. W. Bent Horn A-02. The development of this well, the first in the Arctic Islands, will contr ibute towards Canadian oil self -sufficiency and generate revenue to facilitate continuity of the Company's exploration program in the area.

Panarctic, an industry /government censor tium, is in excess of 50 percent owned by the Government of Canada through Petro-Canada Exploration, Inc. and by 36 largely Canadian corporate or ind ividual shareholders. Panarctic explores for oil and m tura l gas in the Canadian Arctic Islands nor th of the Canadian mainland.

The Bent Horn Production Project is a small scale development and is consistent with the Federal Government's recently espoused "phased development" approach to frontier resources. The proposed volume of crude oil shipped from Cameron Island annually during Phase I of the project is equal to the amount of fuel brought into Rea Point each year. This is an amount equal to only one-sixth the annual volume of fuel sea-lifted to destinations along Davis Strait - Lancaster Sound - Viscount Melville SoUti. During Phase II, the p reposed volume of crude oil shipped is four times the Rea Point re -supp ly and



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LOCATION OF CAMERON ISLAND

Fig 1

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approximately two-thirds the re-supply for Davis Strait-Lancaster Sound-Viscount Melville sound (Table 1 and Figure 2).

Panarctic is committed to ensuring that the Bent Horn Project will take place in an environmentally sound and soc io-economically acceptable reamer, and that benefits to Canadians, as a whole, and Northerners, in particular, will be maximized. This report discusses the SOC io-economic implications of the project and the resulting benefits that will accrue to Canadians. The environmental considerations are addressed in Volume IV of this application.

The report is divided into an Introduction (Section 1.0), Project Description (Section 2.0), Canada Benefits and Soc io-Economic Implications (Section 3 .0), Employment and Training (Section 4.0) , Industrial Benefits (Section 5.0) and a Selected Bibliography (Section 6.0).

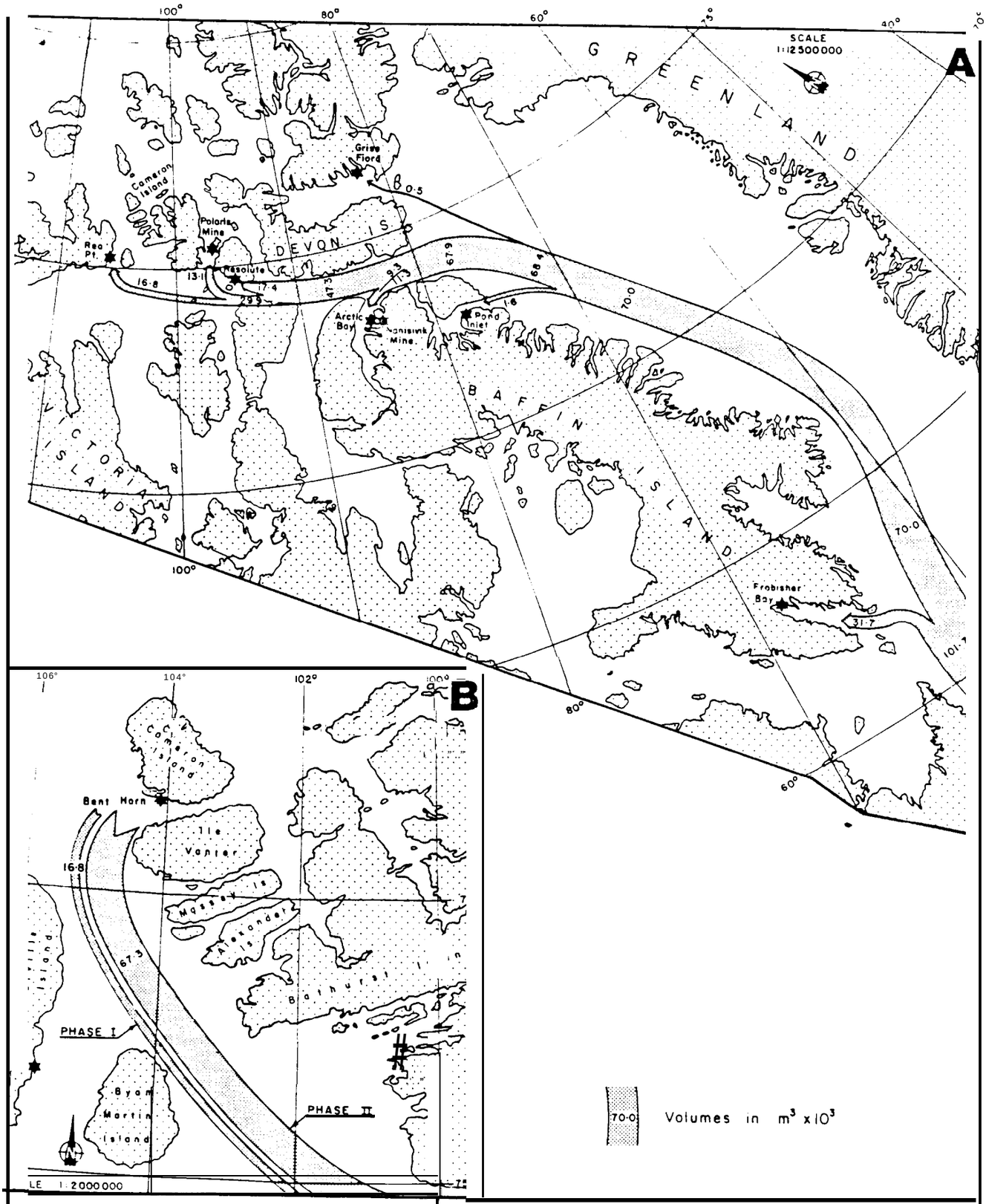
The preparation of this report was managed for Panarctic by Hardy Associates (19 78) Ltd. of Calgary who contracted-Resources Management Consultants (NWT) Ltd. (RMC) of Yellowknife to write Sections 3.0 through 6.0.

TABLE 1

ANNUAL FUEL RESUPPLY FOR THE
DAVIS STRAIT - LANCASTER SOUND - VISCOUNT MELVILLE SOUND AREA

Destination	Resupply (in thousands of m^3)
Frobisher Bay[1]	31.7
Grise Fiord[2]	0.5
Arctic Bay[2]	9.3
Pond Inlet[2]	1.6
Nanisivik Mine[1]	11.3
Resolute[3]	17.4
Polaris Mine[1]	13.1
Rea Point[3]	16.8
TOTAL	101.7

1 Average volumes for the past few years.
2 Based on resupply of 75% of storage capacity.
3 1983 volumes



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A Annual Sealift of Fuel to the Study Area.

B Proposed Volume of Crude Oil to be shipped from Cameron Island.

Fig. 2

2.0 PROJECT DESCRIPTION

This project description is based on information as of May 10, 1984. Sufficient detail is provided to adequately assess the socio-economic and Canada benefits aspects of the project.

2.1 LOCATION AND FIELD DESCRIPTION

The Bent Horn field is located on the southwest side of Cameron Island at approximately 76°20 'N, 104°W (Figure 1) . Petroleum exploration has been carried out on Cameron Island since the early 1970's with 14 wells drilled on the island. Nine were drilled in the Bent Horn area. Sixteen airstrips were constructed on the island to support exploration and drilling activities.

W. Bent Horn A-02, the only production well for this project, was permitted in November, 1975 and drilling was suspended in August, 1976 at a total depth of 3361 m. Recoverable crude oil from the well has been established at 335,000m^3 (2.107 million bbls) . The crude oil has a gravity of 420 API , is waxy, has a very low sulphur content and a large mid-distillate cut. Analyses of the oil and gas from the well are given in Tables 2 and 3.

2.2 PROPOSED PRODUCTION SCENARIO

The Bent Horn Production Project is a small-scale development. Panarctic proposes a planned maximum production flow rate of 550 $m^3 \cdot d^{-1}$ (3500 bbls/day) . Production will take place in two phases. Phase 1, covering the first three years of

TABLE 2

SEPARATOR HYDROCARBON LIQUID ANALYSIS
PANARCTIC W. BENT HORN A-02

Component	Mole Percent	Component	Mole Percent
N_2	0.16	C_{21}	1.16
CO_2	0.15	C_{22}	1.08
H_2S	0.03	C_{23}	0.97
C_1	7.12	C_{24}	0.82
C_2	2.75	C_{25}	0.79
C_3	2.85	C_{26}	0.68
iC_4	1.30	C_{27}	0.65
C_4	3.21	C_{28}	0.63
iC_5	2.28	C_{29}	0.54
C_5	2.91	C_{30+}	5.83
C_6	5.74		
C_7	6.00	Aromatics	
C_8	6.95		
C_9	5.49	C_6H_6	0.08
C_{10}	5.49	C_7H_8	0.29
C_{11}	4.80	C_8H_{10}	0.74
C_{12}	3.78	C_8H_{10}	0.91
C_{13}	3.98	C_9H_{12}	0.45
C_{14}	3.58		
C_{15}	2.65	Napthenes	
C_{16}	2.24		
C_{17}	2.25	C_5H_{10}	0.36
C_{18}	1.91	C_6H_{12}	0.60
C_{19}	1.53	C_6H_{12}	0.64
C_{20}	1.39	C_7H_{14}	2.14

TABLE 3

SEPARATOR GAS ANALYSIS
PANARCTIC
W. BENT HORN A-02

Component	Mole Percent
$'_2$	0.00
He	0.05
N_2	8.87
CO_2	0.95
H_2S	0.00
C_1	79.91
C_2	6.48
C_3	2.07
iC_4	0.41
C_4	0.67
iC_5	0.20
C_5	0.18
C_6	0.13
C_7+	0.08

product ion, has a planned annual production of 16,800 m^3 (106,000 bbls). Phase II, running for the following four years, has a planned annual production of 67,200 m^3 (423,000 bbls).

Figure 3 is a production flow diagram for the project. The sequence of events is as follows:

2.2.1 Phase I

1. Reservoir fluid flows from the wellsite to a separator at the storage site, where the oil, gas, and production water are separated. Produced water is not expected during Phase I and is discussed with Phase II below. Flash gas for the operation is removed and the surplus flows to the burn pit where it is flared. The oil flows into a storage tank.

2. Annually, in late August or early September, the stored crude oil is pumped aboard a tanker and shipped to market in eastern Canada along the shipping route to Rea Point.

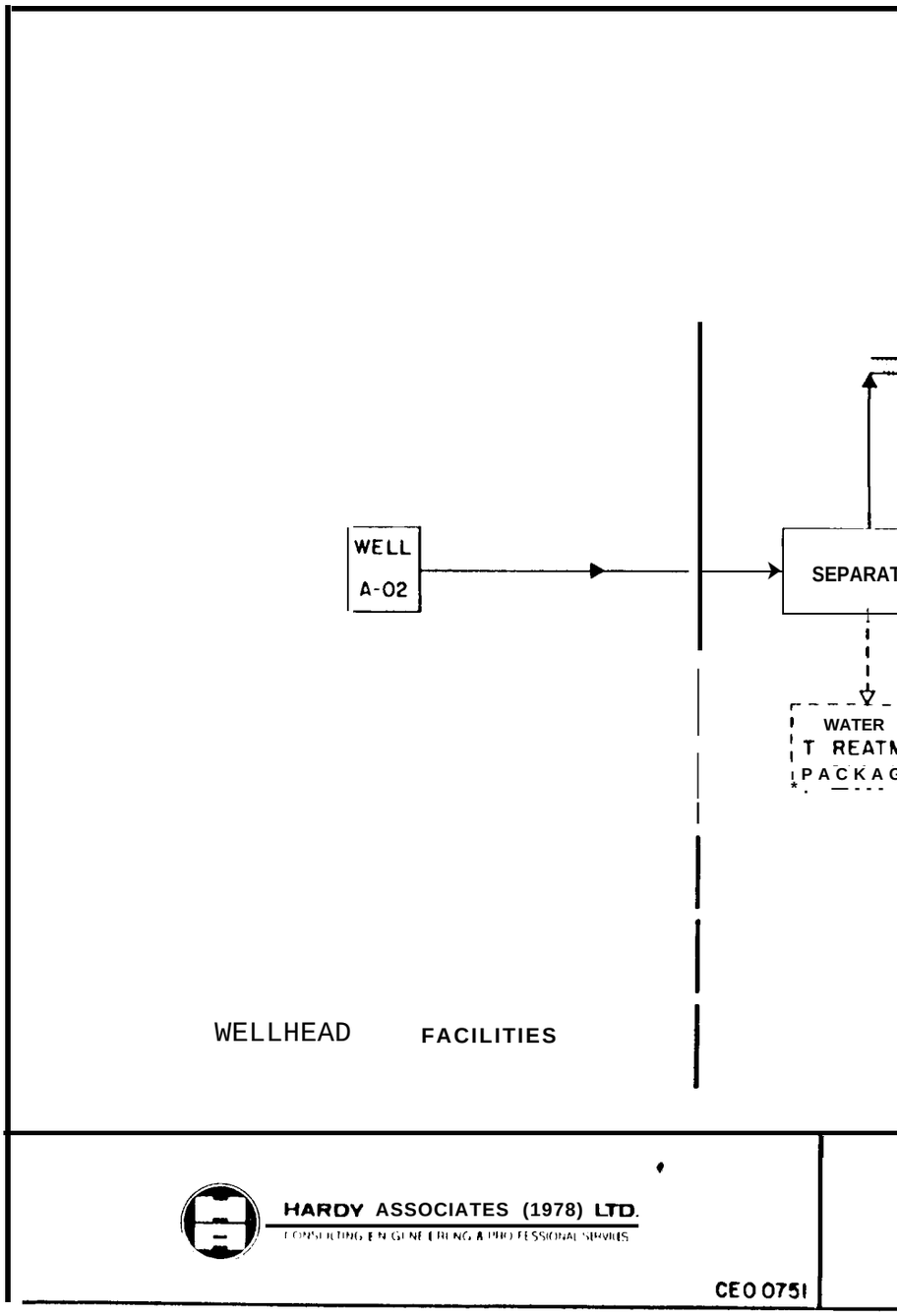
3. The facility is shut down until the following year, when the production period resumes.

2.2.2 Phase II

1. During the fourth year of production, two add it iona 1 tanks are erected. The production period is increased to four months.

2. Crude oil is shipped to market in early September using additional tankers.

3. When the well begins to produce water with the crude oil, a portable water treatment package will be flown onto the site. The treated water will be disposed of in Arnott Strait. Water produced prior to the arrival of the water treatment package will be stored in the tanks. Upon



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arrival of the package, the water will be removed from the bottom of the tanks, treated, ard disposed of.

Unfavorable ice cond it ions are expected to render access to Arnott Strait imprudent one year out of three. If this situation occurs, the facilities will be shut down until the following summer, when approximately two weeks of preparation will be required prior to shipping. The well is planned to be in production for seven years. As the potential exists for unfavorable ice cond it ions 1 year out of 3, the project will likely take place over a 9 or 10 year period.

2.3 FACILITIES

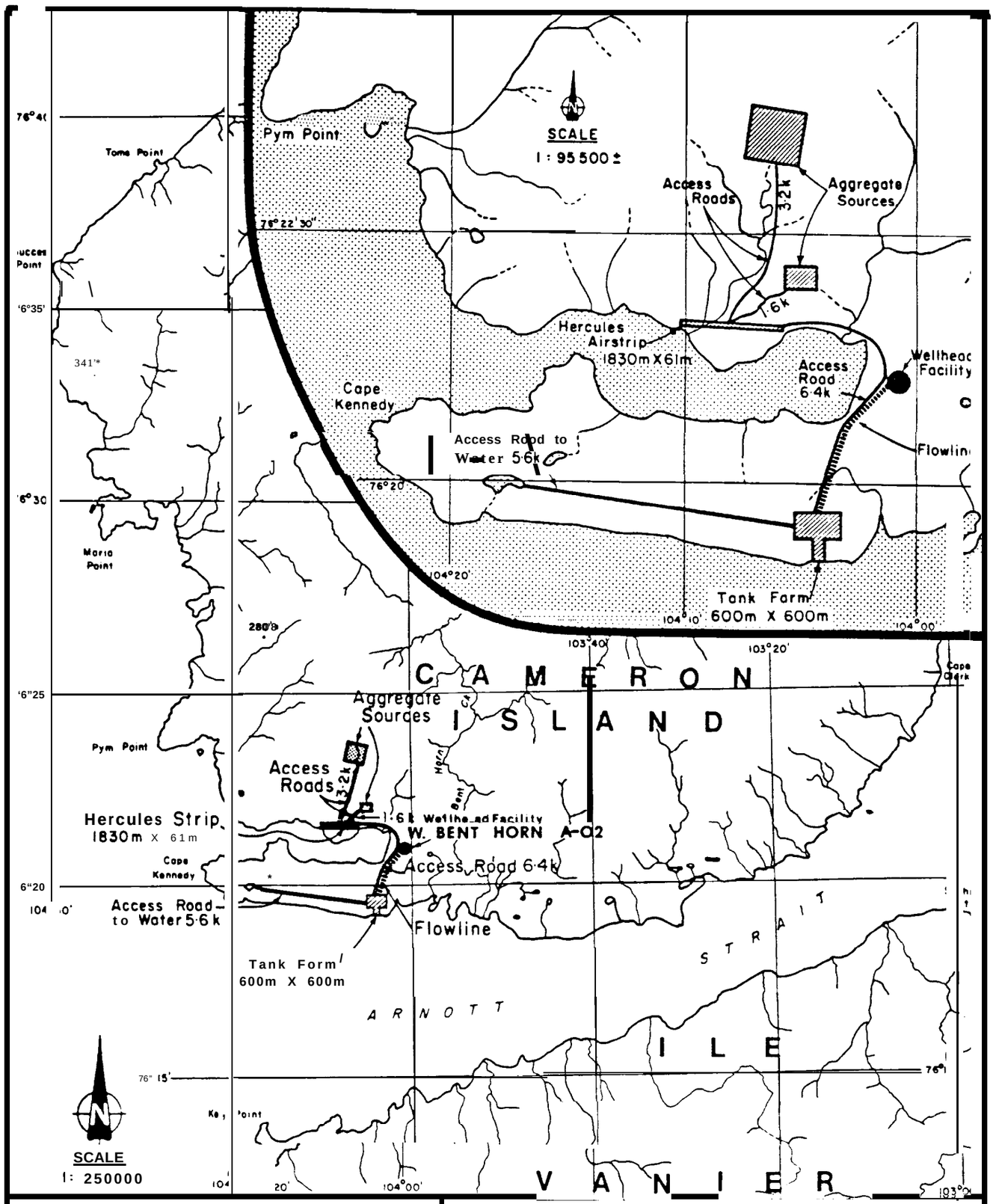
The proposed development will consist of the following components:

- a Hercules a irstr ip;
- two aggregate sources;
- access roads;
- wellhead fac ility;
- a flowline from the wellhead fac ility to the tank farm-loading facility;
- tank farm-loading facility; and
- marine transportation.

The location of these are shown in Figure 4.

2.3.1 Hercules Airstrip

This 1830 mx 61 m existing airstrip will be used for the airlift of equipment and personnel for the construction of the



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LOCATION OF FACILITIES
ON CAMERON ISLAND

Fig 4

product ion facilities, and will be used when surf ace conditions are favorable throughout the life of the project.

2.3.2 Aggregate Sources

Two pits will be used to provide aggregate for the tank bases, berms, pads and service road around the process and loading areas. Approximately 18,000 m^3 of material will be required. Panarctic has carried out quantity and quality assessments of the pits and found them to be adequate for the needs of this project.

2.3.3 Access Roads

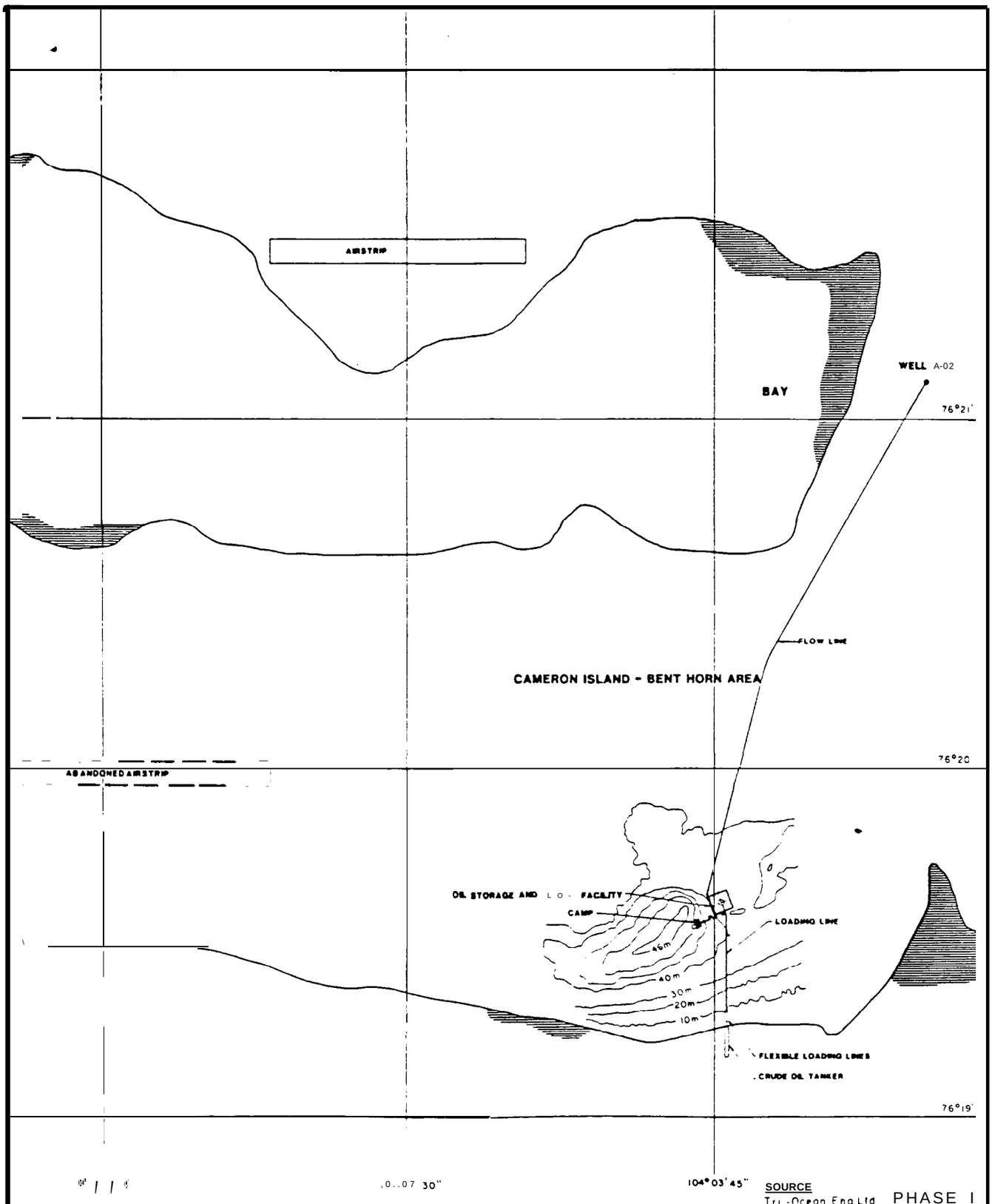
The 16.8 km of roads will provide access from the airstrip to the processing facility, water source, and aggregate sources. These will be winter roads only.

2.3.4 Wellhead Facility

The wellhead facility will consist of the Christmas tree, safety valve, and pig launcher (Figure 5).

2.3.5 Flowline

An elevated 114.3 mm flowline will connect the wellhead facility with the tank farm-loading facility. The flowline route will be approximately 3.2 km long. A pig launcher will be provided in order to launch scraper pigs, as necessary, for paraffin removal. The flowline will be insulated prior to the commencement of Phase II production, because this phase will



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SCHEMATIC OF THE WELLHEAD AND TANK FARM - LOADING FACILITY

Fig 5

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include production during May and early June, when winter conditions are still present on the island.

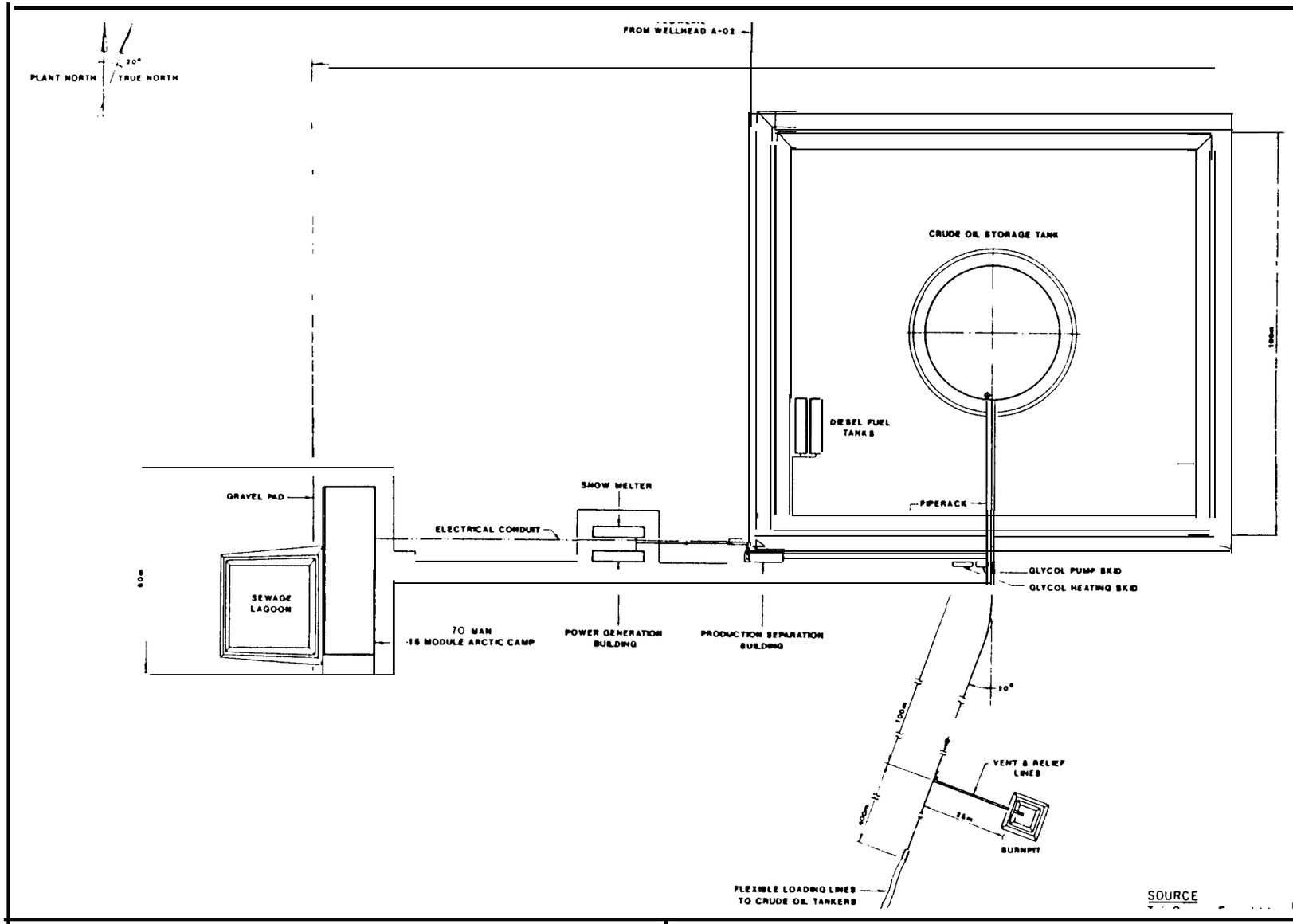
2.3.6 Tank Farm-Loading Facility

The tank farm-loading facility will cover an area of approximately 600 m x600 m and will consist of the separator? storage tanks, flare, burn pit, power generation building, living quarters, and loading lines (Figures 5 and 6).

The storage tanks will be covered steel tanks, bermed and on an insulated gravel base. One 17,300 m^3 capacity tank will be constructed for Phase I. Two additional 27,550 m^3 capacity tanks will be constructed for Phase II, giving a total capacity of 72,400 m^3 for that phase.

During Phase I, gravity will deliver oil from the tank to a 346 mm loading line to the beach. The oil will then be pumped into the tanker through two 152.4 mm diameter floating marine hoses each 180 m long. These hoses are used for off-loading at Rea Point, and will be carried to Cameron Island by the tanker. During Phase II, 346 mm diameter loading lines from the three tanks will carry the oil to a manifold on the beach where 152.4 mm diameter, 180 m long floating marine hoses will transfer the oil to the tankers.

One camp area will be used for the Bent Horn Production Project. During the first part of the construction stage of Phase I (April and May, 1984), a temporary 30-man cat camp will be establish at the airstrip and a permanent 70-man camp will be established for the construction crew. This camp



SOURCE

PHASE

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SCHEMATIC OF

TANK FARM - LOADING FACILITY

Fig. 6

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will remain for use as a production camp. When Phase II construction begins in March, 1988, a temporary 70-man camp will be established for three months. The camps are transportable by helicopter or Hercules aircraft. Both the production camp and Phase II construction camp will be drilling camps available in the area.

Water for use during the construction phase will be trucked from a lake, 5.6 km west of the site. This lake has been used as a water source for previous wells in the area. During the operations phase, freshwater will be extracted from seawater using reverse osmosis. Wastewater and sewage will be disposed into a sump. Garbage will be burned and buried.

2.3.7 Marine Transportation

In Phase I, the total annual crude oil production of the Bent Horn Project will be loaded and transported in a Coast Guard approved tanker in late August and early September. Total loading time will be 36 hours. The ship will be the one used to re-supply Rea Point with fuel. Following off-loading at Rea Point, it will continue on to Cameron Island. Thus, there will be no change in the volume of traffic along the Northwest passage during this phase. In Phase II, additional tankers appropriate to conditions in the area and acceptable to Panarctic and the Federal Ministry of Transport will be used.

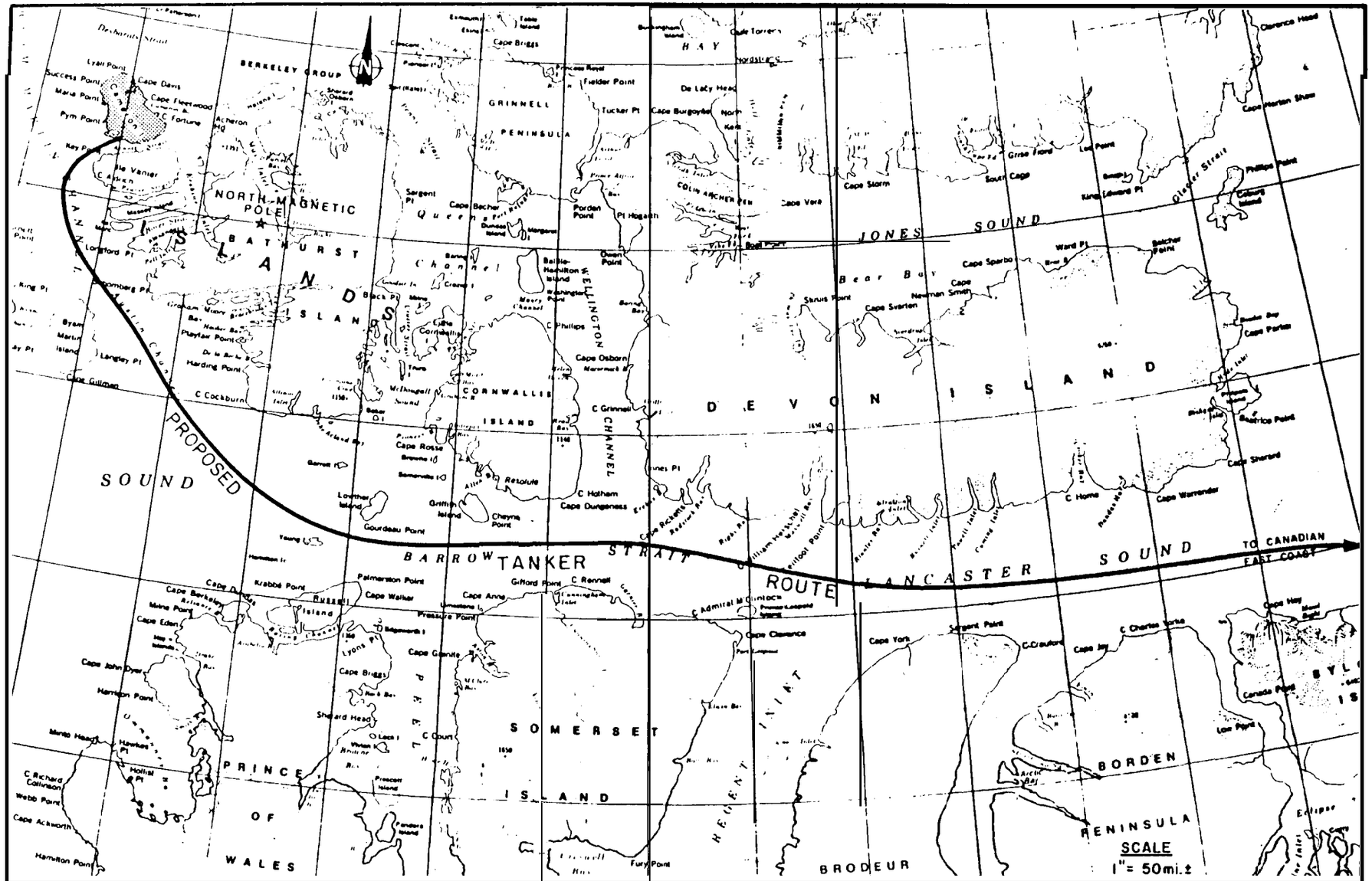
Cameron Islandis located approximately 100 km into Ice Safety Control Zone I. Ice conditions in this zone are more severe than around Rea Point and icebreaker escort from the Canadian Coast Guard is assumed when tankers are present. To ensure

marine safety in this zone, operating speeds will be low and the time spent in the zone will be minimized , the estimated duration being 4 days.

Ice monitoring and forecasting in Zone I will be carried out from a meteorological station at the development site and through aerial reconnaissance. Panarctic proposes to have a helicopter assigned to the tankers to carry out ice monitoring between the tankers and Cameron Island. In addition, either helicopter or fixed-winged aircraft will be used for long-range forecast ing of ice conditions by observations north of Cameron Island.

Communication facilities will enable ship to air, ship to shore, and air to shore contact.

The tankers will transport the crude oil to an eastern Canada re finery along the route shown in Figure 7. Panarctic has been following most of this route for the past 15 years on its annual sea-lift to Rea Point on Melville Island. A number of tanker routes have been examined in Ice Safety Control Zone I (Figure 8) to provide alternatives i f one route is blocked by ice. Should ice conditions be such that all alternative routes are blocked, Panarctic will forego loading oil that year and cease production until the oil in storage can be safely transported. Analysis of ice data over the past 20 years indicates that access to Cameron Island is available, under prudent operating conditions, 2 out of 3 years. Development of the Bent Horn Field is based on transporting crude oil from Cameron Island in seven years during a ten year period.



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PROPOSED TANKER ROUTE

Fig 7

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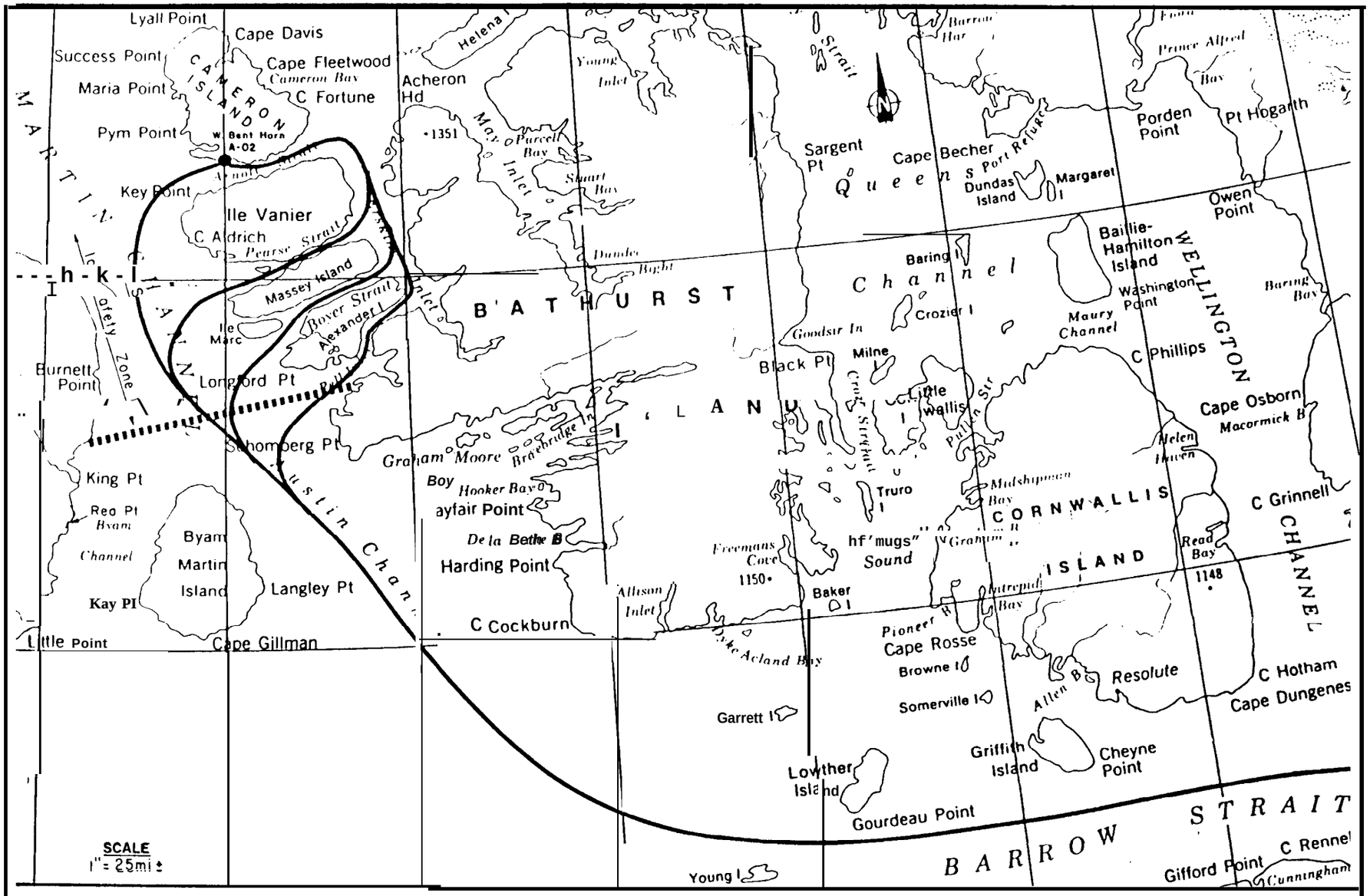

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ALTERNATIVE TANKER ROUTES
TO ACCOMMODATE YEARLY ICE CONDITIONS
IN ICE SAFETY ZONE No.1

Fig 8

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2.4 ALTERNATIVES

Panarctic has considered alternatives for crude oil storage and tanker routing. Storage in a tanker anchored offshore was considered but eliminated because of the increased environmental hazard, the uncertainty of large, thin-hulled tankers obtaining access to Cameron Island, and for economic reasons.

A longer, more northerly tanker route was considered (Figure 9) but eliminated when ice studies showed that the preferred route was open in all years that the alternative was open.

2.5 PROJECT SCHEDULING

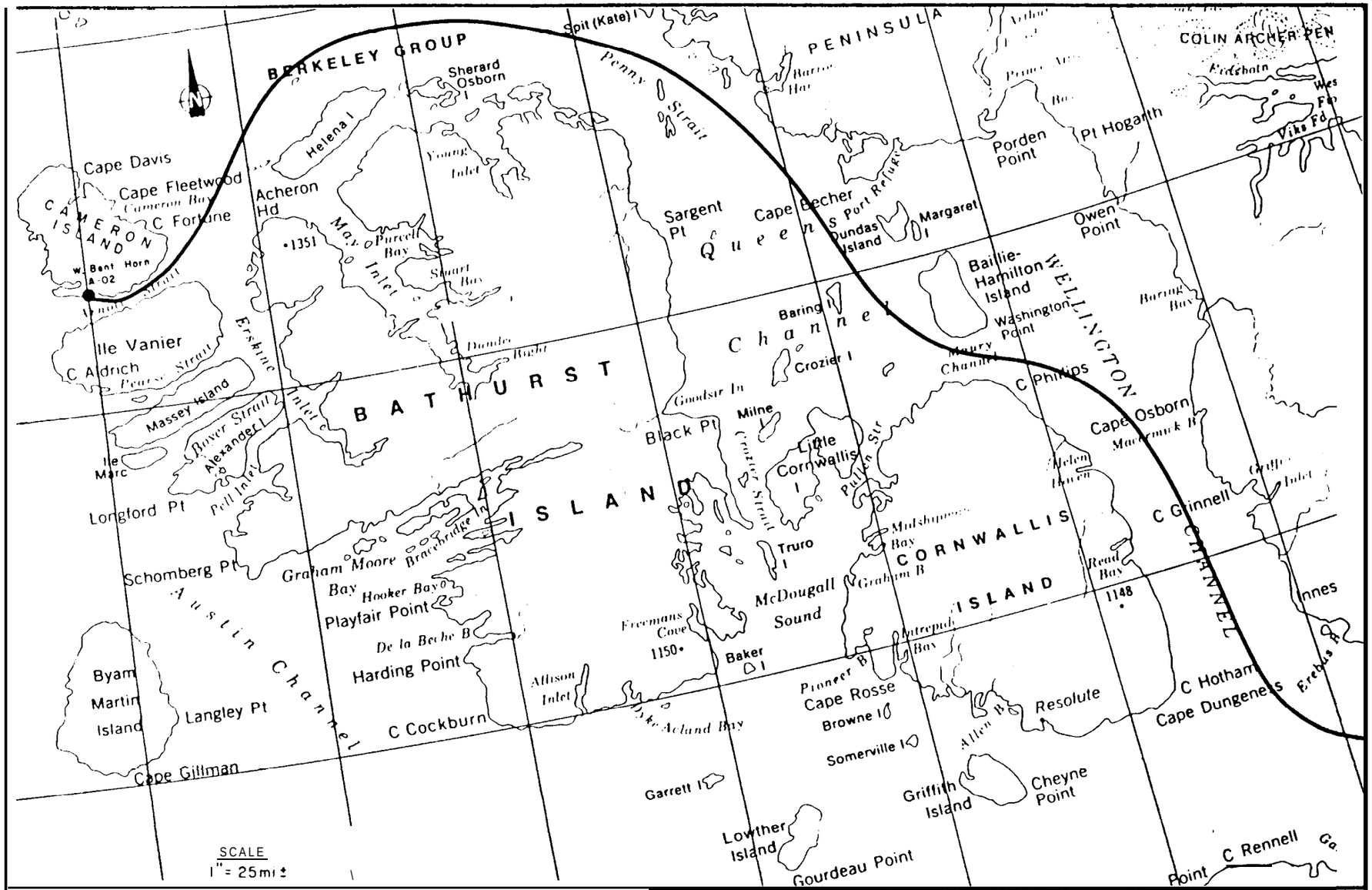
The Bent Horn Production Project is planned to commence in 1984, with crude oil being transported from Cameron Island over the period 1985 to 1994. Figures 10 and 11 give the proposed timetables, divided into Phase I and Phase II.

2.5.1 Phase I

Following government approval, phase I can be broken down into four stages: preconstruction, instruction, testing and startup, and operation and maintenance.

2.5.1.1 Preconstruction

Preconstruction activities began in late April, 1984, with the establishment of a cat camp at the Hercules airstrip. Some



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ELIMINATED TANKER ROUTE ALTERNATIVE

Fig

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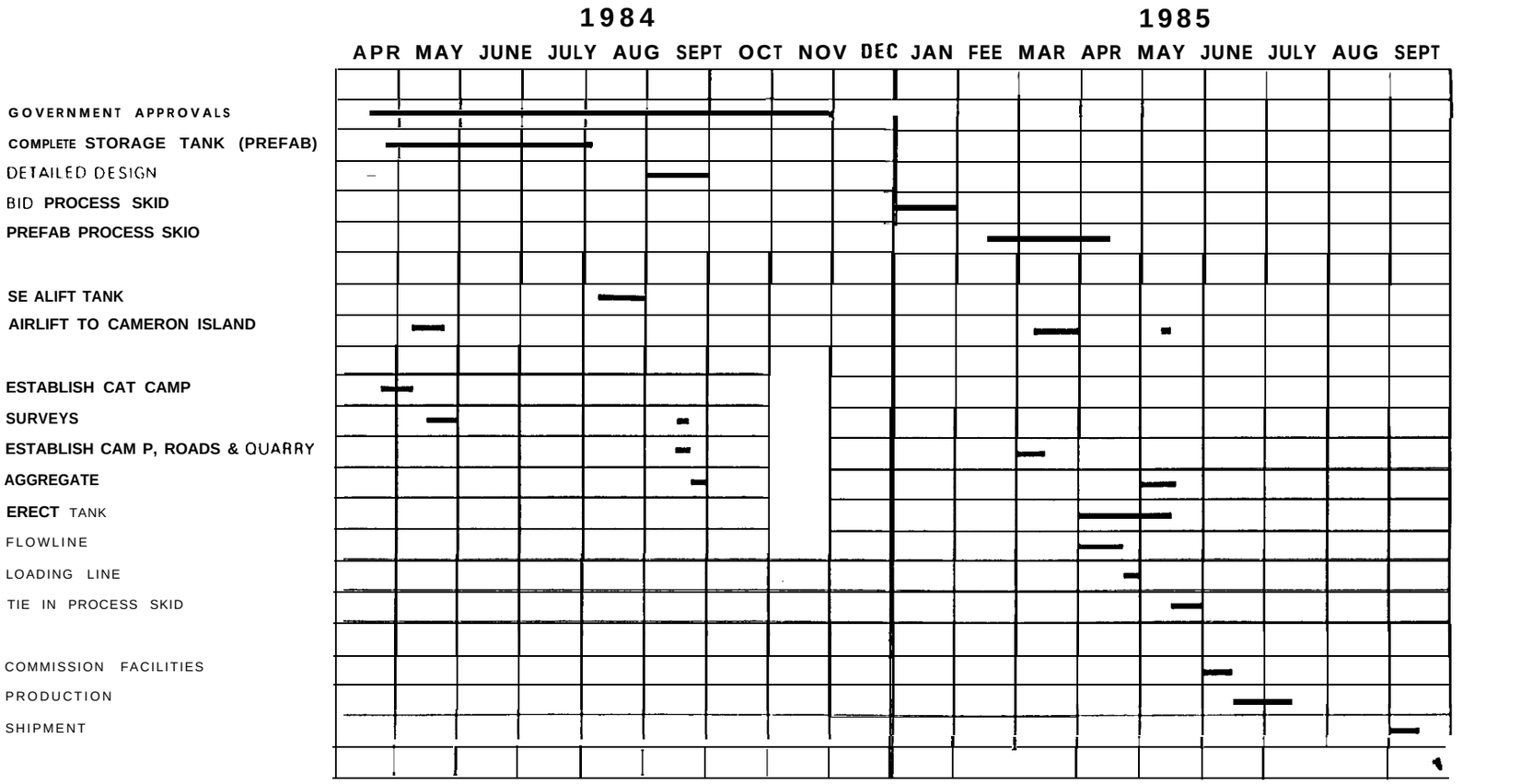

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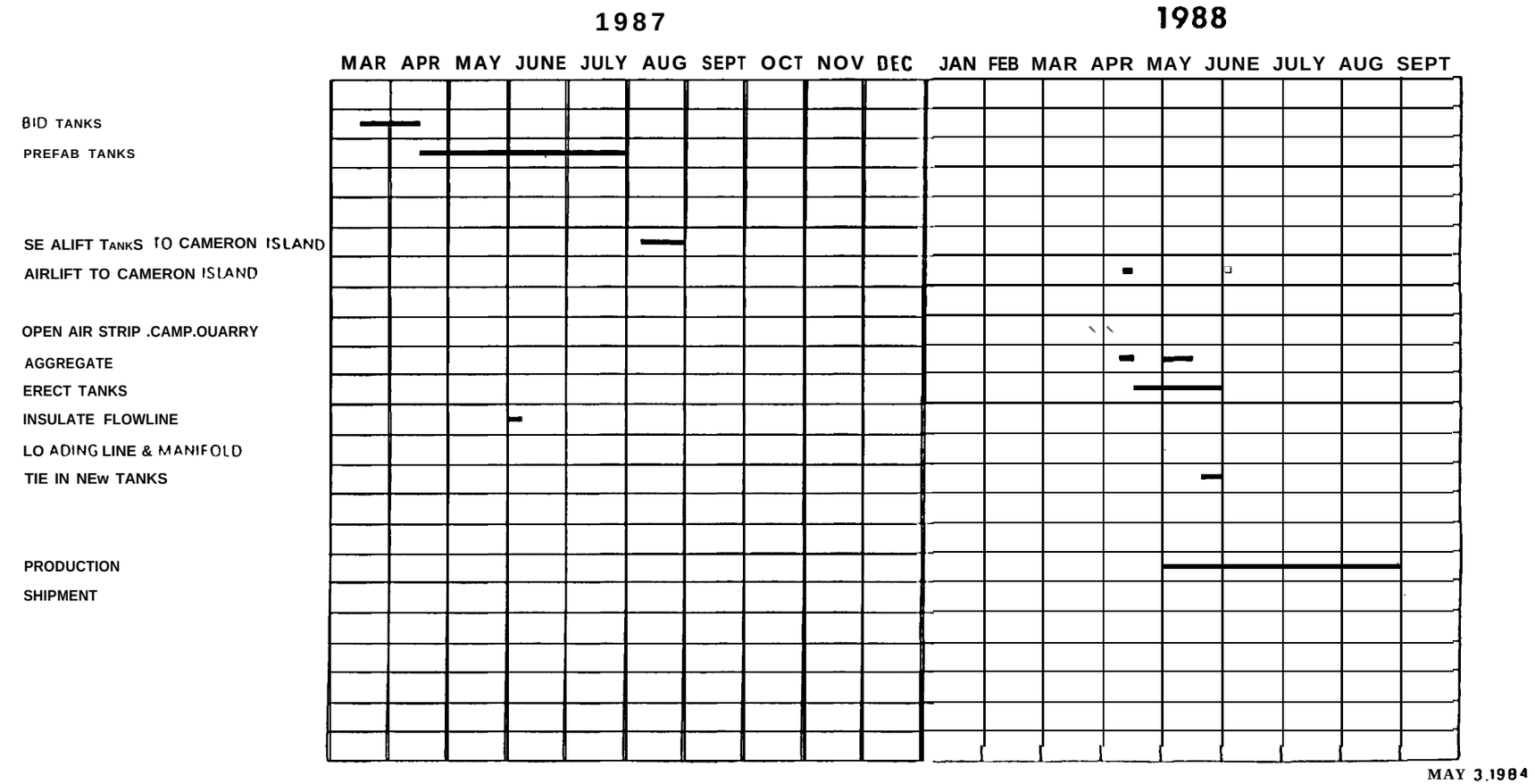
BENT HORN PRODUCTION PROJECT

PROPOSED PROJECT SCHEDULE
PHASE I
16,200 m^3/yr

Fig 10



MAY 3.1984

SOURCE
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BENT HORN PRODUCTION PROJECT

PROPOSED PROJECT SCHEDULE
PHASE II
EXPANSION TO 67,200 m^3/yr

Fig II

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construction equipment will be air-lifted to Cameron Island in mid-May. Bathymetric and site surveys will be completed by late May, at which time, activity on the island will be suspended until mid-September.

During the period mid-May to early September, steel for the storage tank will be transported to Montreal and sea-lifted to Rea Point.

The process skid will be prefabricated between mid-February and mid-April,1985, and airlifted to Cameron Island.

2.5.1.2 Construction

In September, 1984, a construction camp will be established on-sits. Further site surveys, the establishment of the borrow site, and the construction of the tank bases will take place at this time. Between March and June, 1985, site preparation will continue with berm construction, tank erection, construction of the flowline and loading line, and erection of the process skid.

2.5.1.3 Testing and Startup

The testing phase is expected to be minor and consist primarily of equipment testing and nondestructive testing on the tanks welds and flowlines. Startup is projected for June 15, 1985.

2.5.1.4 Operation and Maintenance

The first shipment of crude oil is expected in August or September, 1985. Routine operation and maintenance of the facilities over the life of the project will be carried out by a 7-man crew.

2.5.2 Phase II

Phase II can be divided into five stages: preconstruction, construction, testing, and startup, operation and maintenance, and abandonment and reclamation.

2.5.2.1 Preconstruction

In April, 1987, the third year of Phase I production, work will begin on transporting the steel for the two additional tanks to be used during Phase II to Montreal. The steel will be sea-lifted to Cameron Island in August, 1987.

2.5.2.2 Construction

In June, 1987, the flowline between the wellhead storage facilities will be insulated. In March, 1988, a construction camp will be erected on the island. Aggregate will be extracted for the bases of the new tanks and the tanks will be erected by the end of May. The loading lines will be upgraded with the installation of a manifold, and the new tanks will be tied in during May.

2.5.2.3 Testing and Startup

Testing, consisting of nondestructive testing of the tank welds and manifold, will take place in May, 1988, at which time Phase II production will commence.

2.5.2.4 Operation and Maintenance

The shipment of crude oil for Phase II will commence in September, 1988. Routine operation and maintenance of the facilities will be carried out by a 9-man crew.

2.5.2.5 Abandonment and Reclamation

The abandonment and reclamation procedures will be in accordance with Lard Use requirements in effect at the time of well shut-down. Consideration may be given to maintaining the tanks as fuel storage for Panarctic's or the Canadian Coast Guardvs activities in the area. Panarctic presently stores some of its fuel in rented tanks at Resolute and has a tank farm at Rea Point.

3.0 CANADA BENEFITS AND SOCIO-ECONOMIC IMPLICATIONS

3.1 INTRODUCTION

The purpose of this section of the report is to introduce the reader to the material that comprises the remainder of this volume and which constitutes the Canada benefits and socio-economic analysis for the Bent Horn Project. It should be emphasized that in socio-economic and Canada benefits terms the Bent Horn Project will be accomplished as a logical extension of existing activity. Therefore, Canada benefits undertakings entered into under Panarctic's exploration program are still valid. Where relevant certain of those undertakings, particularly policy statements, are quoted directly from Panarctic's Canada Benefits Plan of October, 1982.

Panarctic will prepare an "Annual Report and Update" prior to the operating season of each year of the production agreement. The annual report and update will specify how the programme outlined in the Canada and Northern Benefits package will be implemented in relation to the work plan for that year. It will be based on consultation with the affected communities and the appropriate Federal and Territorial officials and will be approved by the Minister of DIAND. The annual report and update will assess the results of our Northern Benefits Programme against expectations and stated objectives. This review will report and assess results on an operational year basis and will be submitted by October 30* of each year. In addition, Panarctic is prepared to consult and cooperate fully with the DIAND/COGLA Northern Benefits Committee in the implementation of this policy as it pertains to the Bent Horn Project.

*Revised October 1, 1984

It is recognized that business and job opportunities constitute the major socio-economic benefits to be gained from exploration and development activity, and therefore, these issues will be accorded separate emphasis in sections 4.0 and 5.0 of this report. However, prior to assessing these important implications the remainder of this section will present a brief overview of the regional socio-economic context in which they will occur. This section will also address other socio-economic issues and concerns and will serve to underscore the pre-eminence of the industrial benefits and employment analysis.

3.2 SOCIO-ECONOMIC REVIEW

The socio-economic review has two main objectives:

1. To demonstrate Panarctic's awareness of the socio-economic implications to the region of the proposed Bent Horn Oil Project; and

2. To identify and briefly discuss those socio-economic issues and potential impacts relevant to the Bent Horn Project.

It should be noted this review only focuses on the socio-economic issues considered relevant to this small-scale oil production project. Major northern development issues, including regional autonomy, land claims, revenue sharing, and large scale industrial projects are not addressed in this review.

3.3 STUDY AREA COMMUNITY DESCRIPTIONS

For this review, the study area is defined to include the communities of Pond Inlet, Arctic Bay, Grise Fiord, and Resolute. Two of these communities (Pond Inlet and Arctic Bay) will be affected more than the other two (Grise Fiord and Resolute), and therefore, this analysis will concentrate on the former.

This section briefly describes each of the study area communities and includes recent data available from library sources and Panarctic consultation efforts with the communities themselves. Most of the data in this section has been published in relevant journals and industry documents, specifically, the Beaufort Sea-Mackenzie Delta Environmental Impact Statement, its subsequent Response to Deficiencies - Socio-Economic Issues, and Supplementary Information, Zone Summary - Northwest Passage Region. A listing of available data sources is included in the selected bibliography.

3.3.1 Pond Inlet

3.3.1.1 Overview

The hamlet of Pond Inlet is located on Eclipse Sound on northern Baffin Island, and is the ancestral homeland of the Inuit of the region. The area around it contains many archaeological sites, especially those of the Thule culture. Scottish whalers reached the inlet about 1820, and it was frequently visited by them during the nineteenth century.

The Hudson 's Bay Company opened a trading post at Pond Inlet in 1921, the RCMP arrived in 1922, and Anglican and Roman Catholic missions were establish in 1929. Most Inuit in the area continued to live off the land until the 1960's. In the 1950's, the Federal Government moved a few families to Resolute and Grise Fiord to assist Inuit from northern Quebec in adapting to life in the High Arctic. A school was built in 1959 and a large housing program was carried out in the late 1960's, encouraging most people to leave their traditional camps and move into the community.

The present population is about 700, and over 90 percent are Inuit. In 1980, about 52 percent were males and 48 percent were females. Roughly 53 percent of the population were between 15 and 64 years old, while about 28 percent were between the ages of 5 and 14, and 17 percent were less than 4 years old. The approximate median age was 17. One-hundred and thirty-five students were enrolled in the grades from kindergarten to grade 6, and 55 in grades 7 and up.

In 1978-79, 90 people held General Hunting Licences. Income was $51,000 from the sale of fur and $46,000 from the sale of ivory, for a total of $97,000 cash income from hunting. In 1980-81, Pond Inlet had about 111 active trappers, roughly 36 of whom earned more than $600 each on their fur sales. Altogether, about $58,500 was earned from fur sales in that year. The income from fur sales declined to about $30,500 in 1981-82. There was about 184,000 kg of country food available in the community in 1978-79. It is hard to estimate a monetary value for this food because it is the type of food Inuit prefer instead of store-bought food. In addition, providing this country food for their families is culturally

significant.

Since 1969, men from Pond Inlet have worked on rotation for Panarctic in oil exploration in the High Arctic Islands. This has been popular employment for many men, who can earn salaries while away from home and still have time to hunt during their time off. Few people from Pond Inlet have worked at Nanisivik.

Pond Inlet also has a small but developing tourism industry operated by the local co-operative. In 1978-79, Pond Inlet people earned $2,000,000 from wages and salaries, a much larger amount than was earned from fur and ivory sales.

The Arctic Research Establishment, involved with environmental research programs, is located in Pond Inlet. Considerable significant environmental research has already been carried out using Pond Inlet as the staging area, and several of the community residents have been involved with these programs.

3.3.1.2 Present Conditions

Statistics are available for most commonly accepted socio-economic indicators in Pond Inlet. These include:

* population trends,
* industrial employment,
* wildlife resource harvesting,
* social assistance payments,
* alcohol consumption
* health conditions, and
* illegal behaviour.

Because these statistics have been assembled and analyzed recently in industry's submission to the Beaufort Environmental Assessment Review Panel, they are not presented in this document on an individual-community basis. Instead, selected indicators are tabulated for the main impact communities of the region and are included in Section 3.4.

3.3.2 Arctic Bay

3.3.2.1 Overview

Arctic Bay, which has hamlet status, is located on the north shore of Adams Sound, off Admiralty Inlet.

The permanent settlement of Arctic Bay began with the establishment of a Hudson's Bay Company trading post in 1926. It closed the following year but opened again in 1936. The operation of a Department of Transport weather station from 1942 to 1952 and a Federal school in 1962 provided incentives for year-round settlement living. The development of oil exploration and the nearby lead-zinc mine at Nanisivik in the early 1970's were important in transforming Arctic Bay into the largely wage-employed community it is today.

The current population is just under 400, of which about 97 percent are Inuit. In 1980, about 49 percent of the population were males and 51 percent females. Almost 50 percent of the population were between the ages of 15 and 64, 21 percent were between 5 and 14 years old, and 21 percent were less than 4 years old. The approximate median age was 15. One-hundred and seven students were enrolled in grades

from kindergarten to grade 6, and 12 from grade 7 and up.

During 1980-81, about 70 people were classed as active trappers, of whom 23 made over $600 each on their fur sales. In 1978-79, hunters earned about $30,000 from fur sales and $20,000 from ivory sales, for a total of $100,000 cash income from hunting. This was reduced to about $45,500 for fur only in 1979-80, and to about $18,000 in 1981-82. It is estimated about 61,240 kg of country food was available in 1978-79.

Arctic Bay has had a great deal of experience with wage employment in industry. Since 1969 many men from the community have worked for Panarctic in oil exploration in the High Arctic Islands. They have been employed on rotation schedules which give them enough time off so they are able to continue hunting.

Arctic Bay is located near the Nanisivik Mine where many people from the community are employed. In this connection, the people of Arctic Bay have already had some experience with the ice-strengthened ships which come to the mine site each summer to lead up with ore concentrate. In 1978-79, inhabitants of Arctic Bay earned $1,200,000 from wages and salaries, a much higher amount than was earned from the sale of fur.

3.3.2.2 Present Conditions

Statistics are available for most commonly accepted socio-economic indicators in Arctic Bay. These include:

* population trends,
* industrial employment,
* wildlife resource harvesting,
* social assistance payments,
* alcohol consumption,
* health conditions, and
* illegal behaviour.

Because these statistics have been assembled and analyzed recently in industry's submission to the Beaufort Environmental Assessment Review Panel., they are not presented in this document on an individual-community basis. Instead, selected indicators are tabulated for the main impact communities of the region and are included in Section 3.4.

3.3.3 Resolute

3.3.3.1 Overview

The settlement of Resolute is located on the south coast of Cornwallis Island. The most recent history of Resolute began in 1947 when a joint U.S.-Canadian weather station was established there; two years later, an airfield was built, and Resolute became one of the most easily accessible parts of the Arctic.

In 1953, Inuit from Port Harrison, Quebec and Pond Inlet were relocated to Resolute to take advantage of the area's superior game resources. The move was successful enough that they requested some of their relatives join them, and in 1955, a number of other families were moved in. Resolute continued to develop during the 1960's.

In the 1970's, Resolute was a key transportation, communications and administrative centre as there was a great deal of oil exploration activity in the High Arctic Islands. All indications were this intense level of activity would continue, there fore the Federal Government built a new townsite for Resolute, completed in 1977. By that time, however, exploration in the area had decreased, and Resolute was no longer the busy place it had been. Today, much of the new townsite is unused. With oil and gas exploration in the High Arctic Islands, and the development of Cominco's Polaris Mine on Little Cornwallis Island, the community should continue to maintain its importance as a transportation centre for some time to come.

In 1976, the population was 223, but has since declined, as many people who came from northern Quebec in the 1950's have moved 'back to their communities. This makes it difficult to make any projection about what population Resolute may have in the future.

The current population is about 110. These figures include only the settlement; they do not include the people who live at the "base" area near the airport. No Inuit live at the base. In the village, in 1980, about 95 percent of the people were Inuit. In 1980, the population was made up of 50 percent males and 50 percent females. Fifty-nine percent of the population were between the ages Of 15 and 64, 26 percent were between 5 and 14 years old, and 14 percent were less than 4 years old. The approximate median age was 19. In terms of education, in 1981-82, 36 children were enrolled in grades from kindergarten to grade 6, and 15 from grade 7 and up.

In 1978-79, 36 people held General Hunting Licences and the community earned about $51,000 from the sale of furs and $8,000 from the sale of ivory, for a total of $59,000 as the total income from hunting. During the period 1979-80, Resolute had about 30 trappers. Seventeen of these people earned over $600 each, and the total fur dollars earned that year were about $27,000. In 1981-82, proceeds from the sale of furs were about $55,000. It is estimated, in 1978-79 there was about 17,690 kg of country food available to the community.

Inuit in Resolute have worked in jobs at the base area for many years. For a small community, Resolute has many opportunities for wage employment; many Inuit work for the businesses and government agencies at the base, and others work at Cominco's Polaris Mine on Little Cornwallis Island, not far from the community. In 1970-79, before the star t-up of the mine, Resolute people earned a total of $610,000 from wage employment.

Resolute, including the base, has about 20 local commercial businesses, most of which are related to transportation (especially air services), oil, gas and mineral exploration and exploitation, and associated support services.

3.3.3.2 Present Conditions

Statistics are available for most socio-economic indicators, as reported previously. These are tabulated and discussed, as appropriate, in Section 3.4.

There will likely not be an increase in population in Resolute attributable to the Bent Horn Project, and therefore no socio-economic impact on community services or infrastructure is anticipated. Also, it is unlikely many Resolute residents will be employed by Panarctic on this project. This would tend to eliminate any employment effects, positive or negative, on the community.

There will be some benefit to the community as Panarctic will probably be utilizing a local air charter service to maintain its worker rotation schedule, providing some benefits to local business. Also, Panarctic's crew change schedule supplements the regularly scheduled air service among most of the study area's communities, and, therefore, enhances the regional communications network.

However, it is felt that these benefits will be about the same as has been the recent historical case and that there likely will be no additional social or economic effects in Resolute as a result of the Bent Horn Production Project's business opportunities.

For these reasons, Resolute is judged to be affected minimally, if at all, in terms of socio-economic issues sti, therefore, will not be considered further in this document.

3.3.4 Grise Fiord

3.3.4.1 Overview

The settlement of Grise Fiord, Canada's most northerly community, is located on the southern coast of Ellesmere

Island , roughly 170 km north of Lancaster Sound.

Like Pond Inlet, this area also has evidence of very ancient occupations. The modern settlement dates back to 1953, when the Federal Government moved Inuit from Port Harrison, Quebec and Pond Inlet to Ellesmere Island. Five years later, the RCMP moved their post at Craig Harbour, 48 km west, to Grise Fiord. Grise Fiord is situated in game-rich country from which the residents derive their living.

In 1976, the population was 121, but it has decreased since then because some of the people have moved back to northern Quebec and Pond Inlet.

The current population is about 110 people, of whom about 93 percent are Inuit. In 1981-82, about 26 children were enrolled in the grades from kindergarten to grade 6, while three students were in grade 7 or up.

The major economic activities of the community revolve around hunting, trapping, fishing and tourism. In 1980-81, there were 32 active trappers, 16 of whom earned more than $600 each. The total fur dollars earned that year amounted to about $21,000. In 1978-79, 22 people in Grise Fiord held General Hunting Licences. They earned $43,000 from the sale of fur. It is estimated 28,120 kg of country food were available to the community.

In 1978-79, Grise Fiord people earned $403,000 from wages and salaries, so it can be seen that even in a small community like this, jobs are very important. There are few jobs available in the community. In the last few years some men

have found jobs at the Polaris Mine at Little Cornwallis Island. The local co-operative is also developing a lucrative tourism industry based in the community.

3.3.4.2 Present Conditions

Statistics are available for most socio-economic indicators, as reported previously. However, complete statistics are not presented for this community in the overall summation of the study area's socio-economic circumstances. It is reasoned that Grise Fiord is too far removed geographically from the Bent Horn Project to be considered to be any more than a consultation-level community.

There will be no additional population increase in the community because of the Project, and, therefore, no impact on community infrastructure or services. Also, it is unlikely any Grise Fiord residents will be employed in either the short-term construction or operations phases. This would minimize any positive or negative effects because of project employment. For these reasons, Grise Fiord is judged to be affected minimally, if at all, in terms of socio-economic issues and therefore, will not be considered further in this document.

3.4 SOCIO-ECONOMIC BASELINE DATA

In examining data for the study area, and for those reasons stated previously, Pond Inlet and Arctic Bay were selected for detailed analysis; Resolute and Grise Fiord have received only cursory analysis.

Pond Inlet and Arctic Bay have had much industrial employment for slightly more than a decade, and have had to cope with the positive and negative consequences of this employment. Moreover, both communities have been the object of specific and detailed study (Roberts 1977) .

To assess the capabilities of the study area communities to respond to the Project, a series of tables, covering the following topics, were assembled:

* regional demography,
* regional education,
* industrial employment experience,
* wildlife resource harvesting, and
* social assistance.

3.4.1 Regional Demography

The population figures show Pond Inlet is succeeding in establishing itself as a regional population centre. The reasons for this are not known. The availability of some wage employment may be a factor, but Arctic Bay is better situated in this respect. Indeed, from 1975 to 1978, when the Nanisivik mine was being constructed and going into production, numbers of people with relatives in Arctic Bay and who were interested in the wage employment, moved there. As a result, the population experienced a 55 percent increase between 1971 and 1977, peaking at 414 in 1977. This rate was greater than that of Pond Inlet. Many of the new arrivals, however, found the employment unattractive in the long run (Baffin Region Inuit Association, 1979), or could not get housing; and the population in Arctic Bay has continued to

TABLE 4

POPULATION OF ARCTIC BAY
AND POND INLET, 1971-82

Year	Arctic Bay	Pond Inlet
1971	267	412
1972	292	435
1973	316	459
1974	341	482
1975	366	493
1976	391	504
1977	414	620
1978	403	649
1979	390	668
1980	381	686
1981	375	705
1982	369	725
% increase 1971-1982	38%	76%

NOTES - Sources - 1971, 1976 and 1981 Censuses
- 1972 through 1975 and 1977 through 1980 - data interpolate
- 1982 - data projected

TABLE 5

POPULATION/AGE DISTRIBUTION, ARCTIC BAY AND POND INLET, 1981

Age Group	Arctic Bay	Pond Inlet	Total
0-1	11	19	30
1-4	65	95	160
5-9	67	90	157
10-14	45	103	148
15-19	34	88	122
20-24	37	74	111
25-29	25	52	77
30-34	27	47	74
35-39	16	29	45
40-44	17	28	45
45-49	13	20	33
50-54	7	25	32
55-59	2	7	9
60-64	6	11	17
65+	6	15	21
TOTAL	375	705	1,080

SOURCE : GNWT; Executive Branch - Statistics Section

decline slowly ever since. Table 4, shows the population of Arctic Bay and Pond Inlet for the years 1971 through 1982 and Table 5 shows the population distribution by age for the year 1981.

3.4.2 Regional Education

Secondary education remains a central factor to Panarctic's northern employment programs as it is relevant to supervisory, trade or technical positions. Currently, the drop-out rate is declining at the junior high school level (grades seven to nine). Unfortunately, Inuit students aspiring to gain a higher education than grade nine must leave their community to attend school at larger centres. At this level, the statistics show a large increase in the number of school drop-outs. Table 6 shows school enrollment by sex and age for Arctic Bay and Pond Inlet for the year 1981 and Table 7 breaks the enrollment down by sex and grade.

Panarctic's Northern Co-ordinator includes in his schedule of travel, regular annual visits to the schools of the region for the purposes of discussing the benefits of continuing education and future potential employment opportunities. He has also visited Thebacha College in Fort Smith for similar reasons.

3.4.3 Industrial Employment

Since 1371, both Arctic Bay and Pond Inlet have been continuously and fairly heavily involved in industrial employment, particularly with oil companies (specifically Panarctic), and to a lesser degree, with the Nanisivik Mine.

TABLE 6

SCHOOL ENROLLMENT IN ARCTIC BAY AND POND INLET BY SEX AND AGE, 1981

Age	Arctic Bay		Pond Inlet		Total	
	M	F	M	F	M	F
4	1	1	3	5	4	6
5	5	11	15	7	20	18
6	10	5	12	5	22	10
7	5	6	13	9	18	15
8	4	4	5	7	9	11
9	7	6	5	9	12	15
10	2	4	8	9	10	13
11	8	5	8	9	16	14
12	5	4	10	8	15	12
13	2	6	9	11	11	17
14	6	7	9	6	15	13
15	3		1	4	4	4
16	1	1	-	3	1	4
17						
18						
19						
20+						
		—	—	—		
TOTAL	59	60	98	92	157	152

SOURCE: GNWT - Department of Education

'IABLE 7

SCHOOL ENROLLMENT IN ARCTIC BAY AND POND INLET BY SEX AND GRADE, 1981

Grade	Arctic Bay		Pond Inlet		Total	
	M	F	M	F	M	F
Kindergarten	3	9	14	10	17	19
1	11	10	11	6	22	16
2	9	6	16	9	25	15
3	8	6	10	8	18	14
4	14	13	3	6	17	19
5	7	8	11	11	18	19
6	2	1	7	13	9	14
7		1	9	12	9	13
8	4	3	11	7	15	10
9	1	3	6	10	7	13
10						
11						
12						
TOTAL	59	60	98	92	157	152

SOURCE : GNWT; Department of Education

It is important to emphasize the data available are not as complete as is desirable. Nevertheless, the significance of the data is that both Arctic Bay and Pond Inlet have had substantial experience with wage employment and the effects this employment has already induced.

Table 8 shows the total income derived from industrial employment for the two main communities for the years 1971 through 1982.

3.4.4 Wildlife Resource Harvesting

The information available on subsistence resource harvesting in the region is less than adequate for comparative analysis. For example, until recently, there has been little or no information on the amount of fish or fowl taken, and while information on resource harvesting activity has been collected for the past few years by Baffin Region Inuit Association, these data have only recently been published (November, 1983; February, 1984) and distribute on a restricted basis to study sponsors. Nevertheless, there is no evidence which shows. declining interest in huntingtheseanimalsnoristhere evidence that either Arctic Bay or Pond Inlet have suffered from country food shortages because some of their residents have had industrial employment.

Table 9 shows historical data regarding regional mammal harvest for the years 1973 through 1982.

Information on the values of furs harvested in Pond Inlet and Arctic Bay (Table 10) show these numbers have declined since 1973. The obvious explanation for the recent decline in

TABLE 8

TOTAL INCOME DERIVED PROM
INDUSTRIAL EMPLOYMENT,
ARCTIC BAY AND POND INLET 1971-1982

Year	Arctic Bay	Pond Inlet	Total
1971	$ 175,400	$ 263,100	$ 438,500
1972	175,500	263,800	439,300
1973	215,800	586,600	802,400
1974	195,600	382,100	577,700
1975	323,700	359,400	683,100
1976	355,000	425,200	780,200
1977	365,900	372,400	738,300
1978	367,700	300,500	668,200
1979	338,000	141,000	479,000
1980	357,100	290,100	647,200
1981	481,300	289,600	770,900
1982	602,500	441,000	1,043,500

SOURCE : Reports of the Petroleum Industry Committee on Employment of Northern Residents for the years 1971-78, and data supplied by Panarctic Oils, Dome Petroleum and Strathcona Mineral Services

TABLE 9

REGIONAL MAMMAL HARVEST , - ARCTIC BAY AND POND INLET , 1973-1982

Year	Beluga		Narwhal		Walrus		Caribou		Seals		Polar Bear	
	AB	PI	AB	PI	AB	PI	AB	PI	AB	PI	AB	PI
1973[1]	5	5	180	125	6	3	NA	NA	NA	NA	NA	NA
1974[1]	5	5	180	125	6	3	NA	NA	NA	NA	NA	NA
19751	5	63	180	125	6	3	NA	NA	NA	NA	NA	NA
1976	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1977	0	0	42	107	1	6	NA	NA	NA	NA	NA	NA
1978	NA	NA	65	130	20	90	390	930	2240	2810	27	16
1979	31	2	43	94	7	2	NA[2]	NA[2]	7513	1029[3]	10	15
1980	0	0	100	96	2	3	NA[2]	NA[2]	710[3]	636[3]	6	16
1981	0	0	100	82	0	3	NA[2]	NA[2]	4693	9443	10	9
1982[4]	0	0	84	129	7	13	1034	2009	2051	3679	11	20

SOURCE : GNWT; Wildlife Service

NOTES :
1. Three year average, 1973-75.
2. The Baffin Region Inuit Association (BRIA) collected caribou and seal harvest data under contract, (available on a restricted basis only) .
3. These figures reflect lessened interested in seal hunting during years when the price of seal skins was low.
4. From Baffin Region Inuit Association, 1984. 1982 Harvest Statistics for the Baffin Region, N.W. T.

* AB= Arctic Bay PI = Pond Inlet

TABLE 10

NUMBER OF TRAPPERS AND VALUES OF FURS
SOLD IN ARCTIC BAY AND POND INLET 1973-1982

Year	Arctic Bay		Pond Inlet		Total	
	T	E	T	E	T	E
1973-74	60	$63,357	93	$28,630	153	$ 91,987
1974-75	71	28,153	91	35,141	162	63,294
1975-76	65	66,810	90	45,847	155	112,657
1976-77	73	57,084	100	58,906	173	115,990
1977-78	44	31,381	83	32,237	127	63,618
1978-79	70	79,327	90	45,936	160	125,263
1979-80	64	45,437	109	44,482	173	89,919
1980-81	70	44,155	111	58,509	181	102,664
1981-82	41	18,069	89	30,457	130	48,526

SOURCE : GNWT; Wildlife Service
T = Number of Trappers
E = Earnings

relative value of furs is the massive slump in the prices paid for seal skins due to a severe reduction in the export market. The effects of this slump have been particularly severe in the study area where seal skins normally comprise a high proportion of skins and furs traded. Therefore, it is not possible to arrive at a definitive conclusion concerning the effects of wage employment on hunting and trapping activities in these communities.

3.4.5 Social Assistance Payments

The data in Table 11 on social assistance payments show the funds paid into the communities of Arctic Bay and Pond Inlet have not established a clear trend from 1974-75, through 1978-79. There is an implication that increased industrial employment may be associated with corresponding social assistance payment levels. This can be demonstrated by comparing the recent levels of income derived from industrial employment for Arctic Bay (Table 8) with the recent levels of social assistance payments (Table 11) for the same community.

However, using the same two tables and noting Pond Inlet data, it can be seen that when industrial income levels are favorable, social assistance payment levels have tended to be lower. The reverse can also be demonstrated.

Therefore, we must conclude the limited data do not show a clear, consistently defined relationship between industrial employment and social assistance needs in these two communities.

TABLE 11

SOCIAL ASSISTANCE PAYMENTS
FOR " ECONOMIC NEED" AND
" SUPPLEMENTARY INCOME " IN
ARCTIC BAY AND POND INLET
1970-71 TO 1981-82

Year	Arctic Bay	Pond Inlet
1970-71	$ 7,040	$ 2,664
1971-72	11,689	1,855
1972-73	8,538	3,553
1973-74	2,748	7,818
1974-75	7,059	12,399
1975-76	24,487	9,473
1976-77	11,337	8,859
1977-78	7,872	12,694
1978-79	7,494	62,757
1979-80	9,811	46,491
1980-81	16,467	38,299
1981-82	18,981	16,843

SOURCE : GNWT; Department of Health and Social Development

3.4.6 Other Indicators

Data exists for other socio-economic indicators, for example, physical and mental health conditions, illegal behaviour and alcohol consumption patterns. However, these statistics, analyzed extensively in the literature, represent variables which should not be significantly affected by this proposed development and therefore are not presented in this document.

3.5 SOCIO-ECONOMIC ISSUES

Although the Bent Horn Oil Project is miniscule in comparison with other hydrocarbon development projects recently proposed for the region (such as the Arctic Pilot Project or Beaufort Sea Tanker Project), there are still some socio-economic effects which may be expected to occur.

Normally, in a detailed regional socio-economic impact assessment of a complex hydrocarbon resource extraction development project, a long list of varied topics covering a range of issues and concerns would be addressed. The roster of issues and concerns would include, for example:

- employment and income;
- local business development
  wildlife resource harvesting patterns;
  social assistance payment patterns and services;
- alcohol consumption patterns;
- physical and mental health conditions and services;
  illegal behaviour, criminal trends and law enforcement services;
- regional population distribution;

- transportation and communi cat ions conditions and services;
- education and training conditions and services;
- community and regional infrastructure;
- local housing supply and conditions;
  community water supply and waste disposal;
- fire protection services;
- traditional culture and lifestyle; and
- Native lard claims.

However, Panarctic's Bent Horn Production Project is characterized by simplicity, smallness of scale and shortness of operational time frame. Therefore, a detailed analysis of all the above -listed socio-economic issues is not warranted at this time. If, however, Panarctic were to expand the scale of this project to extend the project life and manpower requirements, then a greater level of effort in socio-economic analysis would be justified

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[1] In fact, a proposal covering oil tanker traffic through the Northwest Passage has been put forth by Dome petroleum Limited, Esso Resources Canada Limited and Gulf Canada Resources Inc. This recent proposal and its resultant socio-economic impact ana lysis (Dome et al. 1982), and the response to deficiencies (Dome et al. 1983) formed the basis for the recently completed Environmental Assessment Review Panel hearings. All of the above-listed socio-economic issues and concerns were addressed and discussed in detail in terms of recent data sources and impact assessment in the aforementioned impact analyses and at the EARP hearings. For a review of what socio-economic impacts might be caused from high-volume oil tanker traffic, the reader is referred to the above-mentioned documents.

3.5.1 Employment and Income

The most significant northern benefit generated by Panarctic's existing activity is the creation of jobs and infusion of income in arctic communities and this will continue to be the case for the Bent Horn Project. Due to its significance it is discussed in detail in a separate Section 4.0 - Employment and Training.

3.5.2 Northern Business Development

The benefits generated by Panarctic's ongoing exploration program for the northern business community are significant. However our analysis shows that the Bent Horn Project will produce only limited additional opportunities. This issue is discussed in more detail in Section 5.0 - Industrial Benefits.

3.5.3 Community Infrastructure and Public Services

As stated in Panarctic's Canada Benefits Plan, the infrastructure of Arctic Bay and Pond Inlet is appropriate to the needs of the residents, but does not have the capacity to provide many services outside the communities.

For the Bent Horn project, as with Panarctic's current operations, paramedical services will be maintained on site, with cases of serious injury or illness transported directly to Edmonton. Given the number of northern employees, it is extremely unlikely this requirement would overtax any nursing station or medical facility in the North.

Panarctic maintains and operates its own communications network, and the Bent Horn Project will not infringe on facilities serving the communities. The company makes use of its own fleet of aircraft in addition to using charter services available regionally. Recently, as a result of this local business opportunity, the charter service grew from a scheduled flight once a week to Resolute, Arctic Bay and Pond Inlet, to three flights per week during the drilling season.

Panarctic will provide complete housing facilities on site; no use will be made of community housing by project personnel, except, of course, for those who are currently residents.

3.5.4 Social and Cultural Considerations

Panarctic recognizes the constraints of wage employment can conflict with traditional cultural practice and has therefore implemented a program of shift exchange or a time-off system to allow northern residents to fulfill their community obligations. This option was introduced to supplement Panarctic's current "two weeks on-one week off" rotation schedule.

In effect, the normal rotation schedule allows time for fulfillment of regular community and family obligations and through the shift exchange, an individual actually can take as much as four consecutive weeks, with no penalty except loss of pay, to persue traditional interests. These time allotments should ensure minimal conflicts. It is interesting to note that in the time this shift exchange option has been in effect, only a few workers have requested it.

3.5.5 Alcohol and Drugs

Company policy prohibits the use of alcohol and/or drugs at any worksites. Periodic baggage searches are conducted at Edmonton, Rea Point, Resolute and Pond Inlet to enforce this policy. Further, Panarctic is prepared to cooperate with the RCMP and other government officials in the matters of alcohol and drug abuse control and education.

3.5.6 Orientation

Through a community-based orientation program conducted during a regularly scheduled community information meeting at the beginning of the annual work season, Panarctic informs workers of: operating conditions, working within a different cultural group, camp regulations, trainee programs, employment qualifications, job commitment, the role of the employee in the overall picture, corporate policy and potential disciplinary measures for non-compliance, and the importance of developing good working relations with fellow employees.

There will be no special cross-cultural orientation for the southern work force. However, prime contractors will be advised that socio-economic aspects of the Canada Benefits agreement will be monitored and that their employees will also be expected to be aware of them. Contractors will be required to meet these conditions.

3.5.7 Renewable Resources

Panarctic is sensitive to the importance of renewable resources to northern communities and conducts all its

activities in such a reamer to minimize environmental impacts. The expected environmental effects of this project are documented in Volume IV.

The Bent Horn Project is located outside the normal range of resource harvesting by regional residents, so there should be little or no conflict.[2] This is reinforced by documentation entitled "Resolute Bay Resource Harvest Study, 1981", published cooperatively by the Resolute Bay Hunters and Trappers Association and the Arctic Pilot Project.

At community consultation meetings at Resolute and Grise Fiord, responses to Panarctic queries regarding local hunting ranges also indicated that Cameron Island was not included in the normal area of use.

Except under the control of the Camp Supervisor, firearms are not allowed on any Panarctic site. The firearms on-site are for protection only. Trapping equipment is not allowed on any operational site.

3.5.8 Community Information and Consultation

Panarctic has formalized its community information and consultation process with a commitment to hold at least three public meetings a year in the main impact communities. The general purpose of all meetings is to inform the communities of Company activities and how they might affect the community.

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[2] Source: Map 40 (Outer Extent of Inuit Lard Use Within Living Memory), p187 in Milton Freeman Research Limited. 1976. Inuit Lard Use and Occupancy Project, Volume one: Land Use and Occupancy.

These meetings also serve as a forum for the entire community to seek additional information or express their concerns about Panarctic's operations.

With respect to the Bent Horn Proposal, Panarctic undertook to supply the regional communities of Arctic Bay, Pond Inlet, Resolute and Grise Fiord with a general information package regarding the project in early December, 1983.

In mid-February, 1984, Panarctic representatives, after extensive telephone communication with the communities, visited each of the communities to discuss the Bent Horn Project specifically and how it relates to Panarctic's current and future operations. At the outset of each meeting, a detailed explanation of the project, including timing, cost, employment, potential environmental effects, logistics, engineering, insurance, compensation, construction and other technical details was given. It was also explained that since 1968, Panarctic has drilled over 165 wells and spent over 400 million dollars in exploration. It was further explained that this project would allow the company to earn some cash to revive waning investor confidence and therefore, allow Panarctic to continue its program in the Arctic Islands.

In each community, it was emphasized that the construction of this project was, in reality, only an extension of Panarctic's work season, and that it would not add a significant number of local jobs, but would protract the time current jobs would be available during the year. It was explained that the short-term production period would likely result in about five more jobs for the region and these would probably be offered to members of Panarctic's current workforce in the area.

The communities raised the issue of a potential oil spill and were informed that, for this project, the tankers would only move oil once a year, during the regular summer shipping season. It was pointed out that an oil spill contingency plan was under review. For comparison, Panarctic pointed out the amount of crude oil coming out of Bent Horn in convoy during one summer shipping sea son was only about me-half the f ue 1 oil and the other petroleum products sea-lifted into the Lancaster Sound area by the government and others, but that for its operation, Panarctic would be using specially designed ice-strengthened tankers.

During the consultation process, statements were tendered by a local representative of the Baffin Region Inuit Association to Panarctic stating that:

a) BRIA favours no development until lard claims have been settled ;
b) Development in the Lancaster Sound should not proceed until the Green Paper on land claims has been signed;
c) Oil companies should state what they will do with respect to oil spills; and
d) EARP hearings should be held before oil is shipped.

Panarctic's response to each generally stated:

a) The company favours speedy resolution of the claims;
b) The company's proposal is basically an extension of their existing work activities in the Arctic Islands and the transportation through Lancaster Sound is, in effect, similar to the regularly scheduled summertime community re-supply of fuel via sea-lift;
c) 'I'he company is currently preparing an oil spill contingency plan; and
d) Other regulatory processes, including studies and hearings, have examined tanker traffic in the Lancaster

Sound in terms of year-round transportation of large volumes of oil; Panarctic is proposing only one trip per year, during the normal summer shipping season, along an establish route.

Support for the Project was solicited from the Councils of each community, and it was pointed out that if Panarctic was unable to get the support of the Inuit communities, the Bent Horn Project would likely not be started this year (1984) . It was explained that Panarctic would prefer to have unanimous support from the communities and that support was needed as soon as possible. It was also explained that this is a small, one-time project and is not on the same scale as the proposed Beau fort Sea Project. If a larger-scale project was considered later, Panarctic would discuss it with the communities. The benefit of the Bent Horn Project is employment, at present, and in the future.

The a foregoing discussion was predicated on the original project concept. The plans, as now described in the project description, have at the time of writing, not been distributed to the communities. However, during the course of Panarctic's regular spring community meeting sessions, the current project description will be circulated and discus sed. Also, the updated project description plus this document, will be forwarded to the Baffin Regional Council, and t!!e Government of the Northwest Territories, simultaneously. Their comments will be considered in project planning.

Panarctic will meet and consult with any properly constituted representative body agreed to by the communities and governments. In the interim, Panarctic will continue its standard practice of consulting frequently with the directly

affected communities. Additional project-specific meetings will be held as required.

As can be appreciated community and government consultation on this project is a dynamic, on-going exercise and results of a particular discussion are rarely conclusive. However, the following is a point form summary of Panarctic's consultation process as of September 20, 1984:

1. January 12 - Panarctic's President, Mr. C.R. Hetherington, wrote a letter to John Parker, Commissioner, Government of the Northwest Territories and the Honorable John Munro explaining Panarctic's proposal and stating that we had been in communication with the communities of Pond Inlet, Arctic Bay, Grise Fiord and Resolute requesting a meeting with them so that Panarctic might explain its proposal to them.

2, February 14, 15 and 16 - Panarctic visited and conducted its first meeting with the communities of Pond Inlet, Resolute Bay, Arctic Bay and Grise Fiord. Prior to those. meetings, material summarizing the project was delivered to these communities.

3. February 26 - Panarctic had its first meeting with a committee of four representatives appointed by Pond Inlet, Resolute Bay, Arctic Bay and Grise Fiord, Mr. Phillip Quamanirq, Chairman.

4. February 29 - Communication with Phillip Quamanirq, Mayor, Arctic Bay thanking him for arranging the meeting and offering ID provide any additional information

required.

5. March 6 - Communication with BRIA advising that Panarctic regularly visits Pond Inlet and Arctic Bay four to six times annually prior to and after the drilling season and advising that BRIA is welcome to attend.

6. March 6 - Communication to Baffin Regional Council forwarding information on the project and requesting an invitation to meet.

7. May 2 - Communication to Baffin Regional Council, attention Mr. Ron Mongeau explaining that Panarctic was not able to attend their April 27 meeting in Frobisher Bay as planned and advising that updated information on the project would be supplied after which Panarctic would like to meet with the Council.

8. May 31 - Final draft of the Project Summary and Socio Economic study and Canada Benefits chapters distribute to Pond Inlet, Arctic By, Resolute Bay and Grise Fiord; Phillip Quamanirq, Mayor of Arctic Bay; Mark Evaluarjuk, MLA Foxe Basin; Ludy Pudluk, MLA High Arctic; Ron Mongeau, Baffin Regional Council; Elijah Erkloo, MLA; GNWT; Chairman, Settlement Council, Grise Fiord; Paniloo Songoya, Mayor of Pond Inlet; Philip Nungak, Chairman Settlement Council, Resolute Bay.

9. May 31 - Panarctic met with BRIA in Frobisher Bay.

10. June 4 - Panarctic provided initial information on the project to Philip Quamanirq of Arctic Bay; Philip Nungak

of Resolute; Gamallicl Akeeagok of Grise Fiord and Paniloo Singoore of Pond Inlet.

11. June 6 - The same information was distributed to the Government of Canada and Northwest Territories and Baffin Regional Council - offering to meet with the four member High Arctic Review Committee.

12. Early June - Met with Jobie Nutarak, Chairman of four member High Arctic Review Committee in Frobisher Bay.

13. June 6 - Letter to Jobie Nutarak requesting an early meeting with the Committee.

14. June 11 - Panarctic met with Hiram Beaubier and staff in Yellowknife.

15. June 11 - Panarctic met with Tagak Curley, Nellie Cournyea and Bruce McLaughlin and several GNWT staff members in Yellowknife.

16. July 11 - Panarctic met with Andy Theriault, INAC in Frobisher Bay.

17. July 13 - Panarctic met with the four member High Arctic Review Committee in Pond Inlet.

18. July 13 and 24 - Distributed *three* additional application volumes to: Ludy Pudluk, MLA Arctic; Elijah Erkloo, MLA Foxe Basin; D. Frith, Minister DIAND; C. Caccia, Minister Environment Canada; G. Black, Regional Director GNWT; Mayor, Pond Inlet; Mayor, Arctic Bay; Chairmen Settlement

Councils of Resolute Bay and Grise Fiord; A. Redshaw, DIAND, Yellowknife, N.W. T.

19. July 18 - Panarctic distribute Maritime Contingency Plan and Onshore Contingency Plan to all communities and the Baffin Regional Council.

20. July 24 - Panarctic distributed Environmental Evaluation volume to all communities and others: Phillip Quamanirq, Mayor, Arctic Bay; Chairman Settlement Count i 1, Grise Fiord; Paniloo Sangoya, Mayo r, Pond Inlet; Ron Mongeau, Baffin Regional Council; Joabie Nutarak, Pond Inlet; David Kalluk, Arctic Bay; Simione Anaurlak, Resolute Bay.

21. July 30 - Invited Elijah Erkloo, MLA Pond Inlet; Ludy Pudluk, MLA Resolute Bay; and Tagak Curley, Minister EMR, GNWT to join Charles Hetherington on a voyage on the MV Lady Franklin from Rea Point to Cameron Island, conditions permitting.

22. August 14 - Met with INAC Regional Environmental Review Committee, Yellowknife.

23. August 23 - Panarctic met with Government of NWT Review Committee, Yellowknife.

In addition to the foregoing meetings and communications by Panarctic's representatives, Mr. C.R. Hetherington, President of Panarctic Oils Ltd. personally had the following meetings and communications:

1. February 10 - Telex sent to Tagak Curley requesting an opportunity to meet and advising that we had been in touch with Mr. Zarwiny of Mr. Curley 's department proposing a meeting after February 22.

2. April 6 and 7 - Met in Ottawa with Peter Ittinuar, MP, Nunatisiaq and John Amagoalik, ITC of Canada.

3. April 19 - Telex sent explaining the scaled down version of the Project. Sent to: Tagak Curley, MLA; GNWT; Peter Ittinuar, MP, Nunatsiaq and other government officials.

4. May 16 - Meeting in Ottawa with Peter Ittinuar, John Hickes of Nunasi Development Corporation and their staff, where it was agreed that Panarctic would improve communication by meeting with a four member High Arctic Review Committee composed of a representative from Pond Inlet, Arctic Bay, Grise Fiord, and Resolute. It was a 1s0 agreed that Panarctic would include Inuit surveillance in their shipping activities and that Inuit. could have equity participation in the project costs on a basis to be agreed upon.

5. May 30 - Communication with John Hickes, President, Nunasi Corporation proposing equity participation.

6. June 21 - Meeting with R. Stockus, Executive Vice President, Nunasi Corporation in Calgary regarding equity participation.

The above information does not include the scores of telephone conversations among community, government and company officials over the past nine months. Many concerns were discussed on the phone, the results of the discussions have been written into numerous draft volumes prior to printing the fiml document on May 14, 1984. This amended copy addresses issues raised since that date.

In addition, Panarctic Oils will meet with COGLA officials in Ottawa on September 26 and discuss tanker selection options and recommendations for amending this chapter. Panarctic Oils will meet with the Baffin Regional Council in Pond Inlet on October 11, 1984 and the High Arctic Development Review Committee on October 12-14 in Resolute Bay, N.W.T.

Reviewers should be aware that concerns expressed at all consultation levels have been considered and our conclusions are reflected in our volumes up to the time they are printed. Further amendments will be presented as addendums as appropriate.

3.5.9 Conclusions

Since the Bent Horn Oil Project will not cause any additional population to move permanently to the study area, there will be no socio-economic impacts on community sizes or services. Therefore, of all previously discussed socio-economic issues and concerns, the ones which are most relevant to the Bent Horn Project are those related to employment and income.

4.0 EMPLOYMENT AND TRAINING

4.1 GENERAL POLICY

Panarctic's staff requirements are directly related to the Company's level of activity in the North. Panarctic is an equa 1 opportunity employer. Pe rsonne 1 are eva lusted on the basis of qualifications and previous work history. To afford oppor tunites for job enh ancement and to p remote occupat iona 1 safety, Panarctic conducts several extensive in-house training programs.

4.1.1 Employment Overview

Panarctic maintains its head office in Calgary, Alberta and a drilling administration office in Nisku, Alberta.

The head office officers and staff perform functions conventional to an oil and gas explora t ion firm. Its corporate structure is comprised of an Executive Division, Operations Div is ion, Exploration Division and Financial" Division.

The Nisku Drilling office staff is principally concerned with directing field supervisors in drilling, construction and support roles.

Through Ardill Personnel Ltd. of Edmonton, Panarctic employs middle and junior field supervisory staff, trades and support staff, drilling crews and construction crews.

Add itiona lly, Panarctic indirectly provides employment for

drilling crews, geophysical crews and catering staff through independent contractors.

Panarctic's workforce is nearly totally Canadian at any given time. The majority is resident in Alberta or the N.W.T., although several workers reside in other western provinces. On occasion, foreign nationals with particular technical skills have worked on Panarctic locations for short periods of time. In each instance where it is necessary to bring in foreign experts, maximum observation of, and training by, the foreign expert is implemented. In this manner, the need for foreign specialists is eliminated at the earliest opportunity, always cognizant that safety and reliability cannot be compromised. Additionally, Canadian employees participate in the assembly and testing of complex equipment prior to its delivery from foreign sources to further minimize requirements for foreign assistance. By operating in the manner here described, Panarctic has developed Canadian technological capability by transfer of expertise from foreign experts to Canadian workers. From this base, Panarctic has proceeded in the generation of unique procedures and methods for exploration and development in Polar regions.

Should Panarctic at some future time find the requirement to employ offshore workers in a manner other than described above, Panarctic would ensure that in doing so a net benefit would accrue to Canada.

4.2 NORTHERN CANADA EMPLOYMENT

Panarctic and its contractors have three distinct categories of employees in the north:

Category A) Full-time Permanent with year-round employment normally based at Rea Point.

Category B) Permanent Part-time; employees hired to perform duties of a seasonal nature (drilling rig, geophysical and construction crews) . These employees are priority re-hires normally based at an operational site.

Category C) Casual Part-time; hired when required and constitutes the entry stream to Category B.

4.2.1 Employment and Income

This section discusses, in more detail, the effects of the Bent Horn Project on Arctic Bay and Pond Inlet in terms of potential employment opportunities and income derived from the Project.

It is Panarctic's policy to offer employment opportunities to Northern residents within its operating region in such a way as to:

a) afford a stable annual employment profile by offering jobs of a 'steady" nature;
b) provide training opportunities in transferable skills, consistent with employees' academic qualifications and ambitions; and
c) develop a skilled workforce within the region.

Historically, Panarctic has employed residents of the region since 1969, and since 1975 it has been the major industrial wage employer. There has been some wage employment at the

TABLE 12

GROSS WAGES PAID TO INUIT EMPLOYEES
BY PANARCTIC OILS LTD.
1975 - 1982 INCLUSIVE

Year	Number of Employees	Gross Wages	Average Wage
1975	102	$486,067	$ 4,765
1976	92	578,944	6,292
1977	85	527,450	6,205
1978	80	449,798	5,622
1979	62	226,649	3,655
1980	78	400,277	5,131
1981	92	563,999	6,130
1982	66	765,000	11,591

SOURCE : Panarctic Oils Ltd., 1982-1983 Canada Benefits Plan, Annual Report.

TABLE 13

STUDY AREA LABOUR FORCE-AGED POPULATION - 1981

	Employed	Unemployed	Not in Labour Force	Total
Arctic Bay	95	5	110	210
Grise Fiord	40	5	30	*7(-J
Pond Inlet	175	20	185	*370
Resolute	55	5	40	*95

1. Aged 15-64, male and female.

* Sums may not add up because of statistical rounding.

SOURCE : 1981 Census of Canada

Nanisivik and Polaris mines, but neither the number of people nor the wage levels have reached those of Panarctic.

Table 12 shows the number of Panarctic employees from regional Communities along with their gross and average wages from 1975 through 1982. It is noteworthy that since 1980, most employees have come from Pond Inlet and Arctic Bay.

Table 13 shows the Study Area labour force-aged population in 1981. In the case of each community, there is a significant number of labour force-aged people who are not included in the labour force. Most of these people are women. There are also some men who have not actively sought employment and are, therefore, not included in either the "employed" or "unemployed" categories. The people in Pond Inlet and Arctic Bay who classified themselves as employed in the 1981 Census of Canada, total about 270. In 1981, Panarctic employed about 70 people from these two communities, representing about one quarter of all persons employed.

As can be seen from Tables 12 and 13, both the numbers of Inuit employees and the gross wages paid have been substantial. This is a significant contribution to the economies of local communities. Most of those employed are men from Arctic Bay and Pond Inlet between the ages of 19 and 40, who constitute about 15 to 20 percent of Panarctic's construction and maintenance workforce. It is Panarctic's experience that the group between the ages of 18 and 40 represents over 90% of the active Inuit labour force.

Over half of the area's workers are involved in skilled positions. It is fair to say Panarctic has been responsible

for upgrading the skills of its Inuit employees from the roustabout level through to equipment operators and apprenticeable trades. The average wage per employee has risen from about $4700 in 1975 to about $11,600 annually in 1982, reflecting the upgraded skills of these employees.

In 1981, Panarctic reorganized its northern hiring system. Prior to the 1981 season, the Company used the labour pool system in Pond Inlet and Arctic Bay. This left the local expediter with the task of choosing the employee, arranging transportation and determining the number of times an employee would work in a season. As a result, Panarctic's foremen were left with some problems, for example:

a) lack of continuity of the Inuit workforce, and therefore, few opportunities to train on the job;
b) lack of opportunity to develop employer/employee relationship on a steady basis; and
c) minimal commitment to the job by many Inuit employees.

In addition, the labour pool system exposed the local expediter to a variety of local pressures thereby affecting his/her decisions.

The name-call system has reduced the influence of the local expediters significantly. The site foremen, after two years of preparing performance apprisals, "mme call" their Inuit workforce each week through Panarctic's labour contractor in Edmonton. The Edmonton contractor phones the names to the local expediter who contacts the name-called persons to ensure availability and arranges transportation. If the name-called person is not available, the contractor and expediter endeavor to send a replacement who has the skills required to do the

TABLE 14

SKILL CATEGORIES OF
REGIONAL LABOUR FORCE,
EMPLOYED BY PANARCTIC, 1982/93
DRILLING SEASON

Category	Number Employed
Equipment Operator, 1 and 2	16
Equipment Operator, Trainee	6
Roustabout	37
Radio Technician	2
Welder Apprentice	1
Aircraft Pilot	1
H.D. Mechanic Apprentice	1
Expediter	2

SOURCE : Panarctic Oils Ltd.,
Canada Benefits Plan
Annual Report, 1983.

TABLE 15

GROSS WAGES PAID BY PANARCTIC
BY SPECIFIC COMMUNITY
1982

Community Wage	Number of Employees	Gross Wages	Average
Arctic Bay	28	$275,000	$ 9,821
Pond Inlet	38	490,000	12,895
	66	$765,000	$11,591

Source: Panarctic Oils Ltd; 1982-1983 Canada
Benefits Plan, Annual Report.

job assignment.

This process has eliminated most of the problems outlined above. In addition, the first line supervisor (site foreman) is involved in all the steps to recruit, build and maintain a steady workforce for his site. The onus is where it should be, at the first line supervisor and employee level.

A major by-product of this system is that site foremen now have an opportunity to spot potential skills in the Inuit workforce and recommend training, through the company or other sources, for future skill upgrading. Panarctic will only offer training to employees who have demonstrated good work habits and interest.

Table 14 shows the skill categories of regiona 1 employees working for Panarctic at the end of the 1982 season. The net turnover rate for this period was 3%. Table 15 shows the gross wages and number of Panarctic employees from Arctic Bay and Pond Inlet for 1982.

The Panarctic work season generally runs from October through May. Inuit employees, as do all employees, work on a rotational schedule of two weeks on the job site, followed by one week at home. This allows the Inuit workers ample time to fulfill their community and family obligations, as well as the traditional pursuits of hunting and trapping for country food which allows them to gain the cultural benefits these pursuits provide.

The 'tin-on-one-off" rotation schedule has another benefit to Panarctic's workers and to the community, namely it requires

TABLE 16

ESTIMATE OF ON-SITE MANPOWER REQUIREMENTS DURING PHASE I CONSTRUCTION OF THE BENT HORN PROJECT

Manpower Category	1985			
	Mar	Apr	May	Jun
Project Engineer		1	1	2
Foreman	1	2	2	1
Truck Driver		10	2	1
Loader Operator		6	4	3
Grader Operator		2	2	1
Cat Skinner	4	4	2	
Radio Operator		2	2	1
Blast er		1		
Surveyor		2	2	
Technician				4
Mechanic		2	2	2
Electr ician			1	1
Roust about	1	8	16	8
Cook	1	2	2	1
Cook's Helper		2	2	1
Camp Attendant		1	2	1
Drill Operator		2	4	
Power Tong Operator			1	
Crane Operator			2	
Welder			12	2
Boilermaker (JRN)			10	
Foreman			1	
Foreman's Assistant			1	
Inspector			2	2
TOTAL	7	47	75	31

Source: Pamarctic Oils Ltd. 1984

Note:

1. Total requirements for the construction phase with a rotation schedule of "2 weeks in - 1 week out", increases manpower requirements by 50%.
2. Manpower numbers are for the maximum number of persons on-site for a given month.

three persons of relatively equivalent skills and experience to fill two on-site job positions. This promotes an expanded skill-level and employment base in the local work force.

During the Phase I construction of the Bent Horn Project, now due to start in March, 1985[3], and continuing in April, May, and June, 1985, some additional personnel may be required to supplement the regular seasonal Panarctic work force. These would be required first to prepare the gravel base for the facilities, and then, during the spring of 1985, to assemble on-site, the pre-fabricated oil storage tank and associated f low line.

The manpower requirements for the Phase I construction of the Bent Horn Project are illustrated in Table 16. Some of these personnel will come from Arctic Bay and Pond Inlet. Exact numbers have not, at this point, been determined. However, 15 to 20 persons will be needed during the March through June, 1985 work period. Most of these positions will be in the equipment operator and roustabout categories. It should be noted this workforce will be an extension of the existing Panarctic work force. 'l'he workers will be doing much the same type of work as they would normally do on their rotational shifts, only on a new work site.

New employees will not be recruited for the Bent Horn Project. Unfor*tuna*tely, we have the opposite problem, an oversupply of skilled employees as a result of the downturn in our drilling operations. We will be offering employment to approximately

[3] It should be noted that the project schedule (Figure 10, Section 2) has not been revised to re f lect this change.

TABLE 17

ESTIMATE OF ON-SITE MANPOWER REQUIREMENTS DURING PHASE I PRODUCTION OF THE BENT HORN PROJECT

Manpower Category	Jun	Jul	Sep
Well Operators	2	2	1
Equipment Operators	1	1	1
Roust abouts	1	1	4
Cook	1	1	1
Helicopter Pilot and Engineer	2	2	-
TOTAL	7	7	7

Source: Panarctic Oils Ltd., 1984

TABLE 18

ESTIMATE OF ON-SITE MANPOWER REQUIREMENTS
DURING PHASE I I CONSTRUCTION OF THE
BENT HORN PROJECT

Manpower Category	1987	1988		
	Jun	Mar	Apr	May
Project Engineer			1	1
Foreman		2	2	2
Truck Driver		10	10	10
Loader Operator		6	6	6
Grader Operator		2	2	2
Cat Skinner		4	4	4
Radio Operator		2	2	2
Blaster		1	1	1
Surveyor		2	2	
Mechanic		2	2	2
Electr ician			1	1
Roustabout	4	8	8	12
Cook		2	4	4
Cook's Helper		1	4	4
Camp Attend ant		1	3	3
Drill Operator		2	2	
Power Tong Operator				2
Crane Operator			5	5
Welder			18	18
Boilermaker (JRN)			36	36
Foreman			1	1
Foreman's Assistant			1	1
Inspector			2	2
TOTAL	4	45	117	119

Source: Panarctic Oils Ltd. 1984

Note:
1. Total requirements for the construction phase with a rotation schedule of "2 weeks in - 1 week out", increases manpower requirements by 50%.
2. Manpower numbers are for the maximum number of persons on-site for a given month.

one half of our regular seasonal employees, both northern and southern. With respect to workforce requirements, the Bent Horn Project will be considered as an extension to our 1984/85 construction year. For the construction period, Inuit employees will be hired for the Project according to skills needed and availability of transportation for rotation. That number will likely be between seven and fourteen according to need. For the short production period it is unlikely that any regional residents will be offered employment. It should clearly be understood the reason for this situation is cost of transportation.

Following completion of construction of Phase I, the Bent Horn Facility will produce for three years (1985, 1986, and 1987), assuming that access to Cameron Island is available for the three consecutive years. For this three year production period, a small crew of seven will be required on-site for the months of June and July for production from the well and filling the storage tank. A small crew will be required for a few days in September to load the tanker. It is likely that a few of the positions required could be filled by regional" community residents. Manpower requirements for Phase I production of the Bent Horn Facility are shown in Table 17.

Phase II of the Bent Horn Project involves expansion of the production storage facility by the erection of two additional tanks and assembly of associated flowlines. This construction is currently scheduled for March, April, and May of 1988. Table 18 shows the manpower required to accomplish the Phase II construction. (It also shows that during June, 1987, a mall crew will be requi.reel to insulate the flowline.) It is estimated that 20 to 25 regional persons would be involved

TABLE 19

ESTIMATE OF ON-SITE MANPOWER REQUIREMENTS
DURING PHASE II PRODUCTION OF THE
BENT HORN PROJECT

Manpower Category	Apr	May	Jun	Jul	Aug	Sep
Well Operators	1	2	2	2	2	1
Equipment Operators	4	2	2	2	2	1
Roustabouts	4	2	2	2	2	4
cook	1	1	1	1	1	1
Camp Attendant		1	1	1	1	-
Radio Operators		1	1	1	1	-
TOTAL	10	9	9	9	9	7

Source: Panarctic Oils Ltd., 1984

TABLE 20

PANARCTIC ' S ESTIMATED TRAINING COSTS, 1982

Training Costs	$161,909	$146,652	$308,561
Travel Costs	33,670	65,340	99,010
TOTAL	$195,579	$211,992	$397,571

on Panarctic's crews during this aspect of the Bent Horn Project. Again, it should be noted that with the exception of specialized members of the crew (welders, boilermakers, etc.), personnel will be a part of Panarctic's regular workforce.

Following completion of the Phase II construction of the tank battery and loading lines, a small contingent of about 9 persons a month for the period April through August will be required on-site yearly to maintain and operate the production facilities. About 7 persons will be needed for a few days each September to load the crude. If the regular crew change-transportation system is operational, approximately one-third Of operations and maintenance positions will be filled by regional community residents.

The manpower requirements for Phase II production are shown in Table 19.

4.2.2 Northerner Training Program

While Panarctic is strongly supportive of skill upgrading for" its Inuit employees, it is recognized that employee ambitions, education and English language fluency are qualifiers to this objective. Furthermore, training presumes more job opportunities and therefore, training will commence when it is expected jobs will be available within a reasonable period following completion.

Panarctic endeavours to attract Northern employees with the education levels to begin a technical and trades training program compatible with Company employment opportunities. These could be in the area of electronics, aircraft

engineering, welding, industrial electrician, heavy-equipment mechanics and other trades, as required. In all cases, appointments to these positions will be subject to Panarctic's current requirements.

The following is an excerpt from Panarctic's October 1982 Canada Benefits plan which describes on-going training practices:

> Beginning in 1982, Panarctic will formalize an evaluation and training programme to assist Inuit employees in job enhancement. This programme will incorporate training systems presently in place under the auspices of the Government of Canada and the Government of the Northwest Territories, conventional trades apprenticeship, and "in house" training-on-the-job.
>
> Panarctic hopes to attract Northern employees with the education levels to begin a technical and trades training programme compatible with Company employment opportunities. These could be in the area of electronics, aircraft engineering, welding, industrial electrician, HE mechanics and other trades as required. In all cases, appointments to these positions will be subject to our current requirements; however, attrition and turnover should provide permanent/part-time employment as training progresses. Entry level education qualifications for trades training are set by government and we would hire only trainees so qualified.
>
> Most often trainees will be identified from the roustabout crews. Employees interested in developing new skills in order to take more responsible jobs will apply through their immediate supervisor. The supervisor will review the applicant's work history and make a recommendation. In most cases, a recommendation not to train would be based on three factors: 1) lack of academic prerequisites; 2) lack of English language comprehension; or, 3) poor work habits. While academic levels play an important role, supervisors will, where possible, take combinations of

experience, academic levels and existing skill into consideration.

Training Categories

1. **Roustabouts**

Panarcticdoes provide training *in* this entry level category. All new hires must come to Panarctic with skills and experience as defined in the job qualifications. Pre-employment training programmed offered by the GNWT and the Government of Canada at Frobisher Bay and Fort Smith should be attended by most native northerners before applying for jobs.

2. Training On-the-Job

When the occ as ion arises and competent instructors/employees are available, Panarctic will d eve lop training on-the-job opportunities for positions that generally do not fit into apprentice or technical training programmed. Panarctic Oils will enter into the Government of Canada Training Programme (CMITP) or Government of the N.W. T. Training On-the-Job (TOJ) contracts and cost share the expenses of such programmed.

3. Equipment Operator Training

Equipment training is available at Thebacha College in For t Smith through the auspices of the Government of the N.W. T. We have reviewed their Heavy Euipment Training Prog ramme outline and conclude that graduates should have adequate training to meet Panarctic requirements. Our process is to encourage potential HE Operators who have demonstrated good work habits to apply for training at Fort Smith through an immed iate supervisor. The supervisor will decide whether or not to support the application based on previous work history. Panarctic will offer a letter of intent to hire any recommended individual who successfully completes the training programme, as work becomes available.

4. Tradesmen (Apprentices)

Panarctic will, as outlined in our train ing

schedule, seek to h ire apprentices in the following categories:

a) Electricians
b) Heavy Equipment Mechanics
c) Electronic Technicians
d) Aircraft Engineers
e) 'Warehousemen
f) Welders

We will use the normal apprentice system of training in cooperation with the Government of the N.W. T. We will employ one apprentice per journeyman on as continuous a basis as possible. All apprentice trainees will be subject to a probation period.

For academically deficient employees desiring job training but lacking English compreh ens ion, conventions 1 training programmed are unavailable and opportunities for advancement are severly restr icted. Formal educational upgrading for many of these individuals is not a practical solution due to age and family commitments. However, in the long term, we believe the problem can be overcome with the co-operation of our bilingual (Inuktitut - English) employees, the Government of the N. W. T., the local education authority, adult educators and Panarctic co-workers as well as commitment from the language deficient employees.

The following steps can be taken:

1. Train several bilingual Inuit at Thebacha College at Fort Smith and on our worksites as Heavy Equipment Opera to rs. Thebacha College will provide basic tra ining and exposure to teach ing methods; Panarctic will finish the training to meet Panarctic standards.

2. When bilingual Inuit employees have become proficient operators, we will develop a training profile for those Inu it who do not possess adequate English language skills and have ind icated they want HEO training. We believe the skill development will proceed at a fair ly rapid pace as our bilingual operators will. be able to offer explanations

and advice in Inuktitut as well as English.

Northern Training Costs

The operator training costs are trainee wages calculated on a 10 week Thebacha College programme plus a 3 shift on-the-job training and evaluation period. If space is not available at Thebacha College or some other training centre in the Northwest Territories, Panarctic will provide an equivalent programme when facilities, equipment and instructors are available during our normal seasonal slowdown. Panarctic would expect normal government assistance with respect to transportation, etc. to be provided to the Company or the trainee.

Table 20 highlights Panarctic's estimated training costs for 1982. Panarctic is prepared to cooperate fully with the Canada Employment and Immigration Commission and the Government of N.W.T. in the implementation of this program as it pertains to the Bent Horn Project.

New training opportunities will not be generated during the Project construction or production periods. The well operator will be a person drawn from our existing staff and seconded to the Project for the production period. The balance of the" requirements will also be drawn from existing staff according to need. Reviewers should be aware that during the summer Panarctic carries a considerable number of employees in excess of our activity requirements. It is this group of existing full time employees that will fill most of the production workforce requirements.

4.2.3 Conclusions

Panarctic recognizes that extended seasonal employment

opportunities are probably the principal source of potential benefit to study area residents from the Bent Horn Oil Production Project. The benefits from employment opportunities are usually seen in increased personal and community disposable incomes and through additional personal skills accrual by job experience and training.

Continued job opportunities are contingent on transition from exploration to production. Normally, hydrocarbon production is a logical consequence of a successful exploration program. Profitable production then stimulates renewed exploration efforts, and theoretically, the cycle revolves.

However, the increased employment opportunities associated with this Project are limited. Therefore, there will not likely be any additional burden placed on the ability of the main impact communities to meet the supply of the slightly increased manpower demand. In fact, for the construction period, the small additional manpower demand (over and above Panarctic's current demand) will not assauge the new additions to the local labour force. For the production periods, the demand will be so slight as to make almost no difference, positive or negative, in the region. In other words, the Bent Horn Project will be no more than a marginal change to existing levels of activity.

The only potential negative impact any additional manpower demand placed on the region's labour force could have, would be to decrease the number of able-bodied skilled persons in the communities who are required to keep the day-to-day community services operating. However, this is not considered to be a significant effect in relation to the small size and

timing of the Bent Horn Project and current levels of unemployment and under-employment in Arctic Bay and Pond Inlet.

Another potential negative impact might be a decrease in the pursuit of traditional activities by community members. However, the additional manpower demand is small and Panarctic has committed to a rotationa 1 employment policy. Both these factors, in addition to Panarctic's shift exchange policy, should reduce concern about impact regarding this issue to nil. There is no evidence during the past 10 years that, in any of the region's communities, wage employment has interfered with the ability of local hunters to provide country food for their families.

In summary, it is reasonable to assume that potential benefits to be derived from the small number of increased employment opportunities will outweigh any potential negative impacts associated wi th employment.

4.3 SOUTHERN CANADA EMPLOYMENT

For the Bent Horn Project, the addition of about 30 welders, pipe fitters, 'boilermakers and other tradesmen will be required for the spring of 1985, and about 65 similar tradesmen during the spring of 1988. It is not yet known whether these will be union or non-union workers.

5.0 INDUSTRIAL BENEFITS

5.1 PROCUREMENT

Panarctic's procurement policy follows our normal business practice of reviewing price, quality, availability, and Canadian content prior to selecting a suitable vendor. All criteria are given approximately the same priority. Benefits to Canada are a key factor in the selection of suppliers where the other listed criteria meet a minimum acceptable level. In addition, because of the remote location of Panarctic's operation, factors such as weight and size, standardization and availability of specialized service personnel are also considered in supplier selection.

The following general principles regarding procurement, as detailed in Panarctic's origins 1 Canada Benefits Plan Agreement (October 21, 1982), are still in effect for the Bent Horn Project:

General Principles

a) More than one supplier will be sought for all material, equipment an services purchased.

b) Whenever feasible, two or more quotations will be secured from reputable suppliers of good financial standing.

c) Bid proposals will be held in confidence unless disclosure is required by and to appropriate government authorities.

d) We will co-operate and consult with governments and their agencies concerning opportunities for the generation of Canadian industrial benefits.

e) Preference will be given to Canadian suppliers who

are competitive given considerations of best values.

f) To further the development of Canadian industrial supply and service capabilities, we will work with and supper t current and prospective Canadian suppliers by:

i) providing qualified Canadian firms with a fair and full opportunity to tender; the Company will debrief unsuccessful Canadian owned /based bidders on request. This will include an outline of the factors and criteria which were used in evaluating bids and the reasons as to why they were not selected.

ii) continuously updating our Cared ian supplier bid lists in conjunction with government and other sources;

iii) obtaining the level of Canadian content of the goods and services being offered ;

iv) ensuring that tender specifications do not restr ict qualified Canadian firms, or preclude development of domestic suppliers;

v) providing appropriate marketing information, advice, and specification communications so as to clearly define requirements.

g) We will select contractors and consultants competitively, giving preference to Canadian companies, taking into account the following factors:

i) the quality and availability of resources, supervision and technical expertise necessary to ensure effective completion of the project.

ii) the level of Canadian content in research, management, engineering and construction; and,

iii) their level of encouragement and support to competitive Canadian firms.

iv) the knowledge and ability to comply with all industrial safety codes/regulations throughout the project life.

v) to effectively maintain a Canadian preference policy, we will continually monitor our purchasing activities and those of our contractors and agents.

5.2 ESTIMATED EXPENDITURES

Tables 21 and 22 show the total estimated expenditures for Phase I and Phase II construction of the Bent Horn Project, including materials, transportation, personnel, logistics, administration, contingency, etc. It allocates estimates of source as Canadian, foreign or unknown. By current estimate, at least 87 percent of the estimated expenditures will be sourced nationally. This advantage is expected to increase when bid and vendor data regarding modules to be manufactured in southern Canada is received. When a final percentage of Canadian content is determined, it will be reported to COGLA.

Table 23 shows the operating cost estimates for Phase I and Phase II, divided into producing and shipping costs. The top part of the table presents the cost estimates for four scenarios:

(1) Production and Shipping - the most common scenario.

(2) Production and No Shipping - the scenario for those years when access to Cameron Island is not possible.

(3) No Production and Shipping - the scenario for the year following a "production and no shipping" year.

(4) No Production and No Shipping - the scenario if access to Cameron Island is not possible two years in a row.

TABLE 23

BENT HORN PRODUCTION PROJECT - ESTIMATED OPERATING EXPENDITURES
(1984 DOLLARS)

Activity	Phase I			Phase II		
	Producing*	Shipping	Tota 1 Operating	Producing*	Shipping[1]	Total Operating
Production and Shipping	497,000	365,000	844,000	1,499,000	2,000,000	3,499,000
Production No Shipping	497,000	100,000	579,000	1,499,000	1,500,000	2,994,000
No Production and Shipping	129,000	365,000	494,000	264,000	2,000,000	2,264,000
No Production No Shipping	129,000	100,000	229,000	264,000	1,500,000	1,764,000

*ESTIMATED PRODUCTION COSTS
(1984 DOLLARS)

	Phase I		Phase II	
	Year Following Shipping	Year Following No Shipping	Year Following Shipping	Year Following No Shipping
Labour	120,000	30,000	360,000	60,000
Air Transportation	125,000	31,000	382,000	96,000
Fuel and Oil	50,000	12,500	153,000	19,000
Administration	100,000	25,000	298,000	50,000
Operating Supplies	18,000	4,500	54,000	7,000
Mobile Equipment	36,000	9,000	108,000	14,000
Camp and Equipment	48,000	17,000	144,000	18,000
TOTAL	497,000	129,000	1,499,000	264,000

1 Assumes 4 tankers.

The bottom portion of the table production costs for a year following no shipping.

Production and shipping costs accrued . . and non-shipping years are due to administration, preps . . . and tanker rental expenditures. In a "no production" year, a short work period is required in August to prepare for shipping. In a "no shipping" year, tanker rental is still required. This cost is less expensive in Phase 1, when a major portion of tanker expense is covered by Rea Point fuel re supply costs, than in Phase II when three tankers must travel to the area empty.

5.3 SUPPLIER DEVELOPMENT

The size of the Bent Horn Project is likely to produce only one opportunity for supplier development as described below in Tanker Charter.

5.3.1 Storage Tank

The storage tank was purchased in 1981 from Horton CBI Limited. It would have been shipped north and used as a storage tank at Rea Point however, and again as a result of the downturn in our drilling program, it was not required. The steel was kept in storage until this shipping year. Tenders for the erection of the tank (subject to Project approval) were distributed to Canadian contractors (including a northern contractor) earlier this year. When the results were assessed , Horton's bid was the lowest. The northern

contractor did not answer the tender even though he was contacted by phone and encouraged to do so.

5.3.2 Skin Modules

When t!!e time comes to purchase the module, Panarctic will inform COGLA of our bidders list for the usual *review process.* With respect to awarding the contract, Panarctic will follow our review process as explained in our policy statement outlined in this volume. As there is no need to seek foreign suppliers for this item, tenders will only be distr ibuted to Canadian contractors.

5.3.3 Tanker Charter

The importance of this major factor in the company and government decisions on the Bent Horn project is recognized. The company has not made any decisions on the matter at this time. We negotiating terms with a Canadian and a foreign shipping company. At this time the situation is very fluid and terms and conditions change day by day. Any narrative in this volume would be quickly out of date therefore it will be necessary to keep officials informed as to the status of our negotiations *on* a regular basis. Although an early decision time is of major importance to the project starting in 1985, every opportunity will be taken to accomodate both shipping companies ' lead time requirements.

5.4 NORTHERN BUS INE SS DEVELOPMENT

In order to assist northern based businesses to participate in the commercial activity generated by the Bent Horn Project,

Panarctic will, through the Business Development Section, Department of Economic Development and Tourism, GNWT and business associations in the N.W.T., inform the Northern business community of the nature of Panarctic's requirements with respect to supply and services.

Panarctic will include northern business on its bidders' lists for those project components it cannot cover in-house. To date, the construction of the oil storage tanks is the only component for which bids have been solicited, and tender documents were supplied to the only northern contractor with the capability to construct these. Following approval of the project, the remaining component parts will be identified and northern businessmen will be notified through the Business Development Section of the Government of the Northwest Territories. Panarctic will also contact other oil companies active in the Northwest Territories for copies of their suppliers' lists.

The involvement of northern businesses in the project will depend at least as much on their initiative as on Panarctic's. To date, few northern businesses have made inquiries regarding the supply of goods and services to Panarctic despite the relatively high profile of this project over the past 4 months. A GNWT Business Development official met with Panarctic representatives in late May to discuss the project.

The Company, consistent with its policies, will support northern business ventures to enable them to participate in the supply of goods and services where required for the work programme.

'IABLE 21

BENT HORN PRODUCTION PROJECT
ESTIMATED EXPENDITURES - PHASE I CONSTRUCTION
(19 84 DOLLARS)

	Total ($)	Canadian ($)	Fore ign ($)	Unknown ($)	Canadian (%)	Foreign (%)	Unknown (%)
Skid Modules[1]	367,000	0	0	367,000	0	0	100
Material, Buildings[2]	630,000	630,000	0	0	100	0	0
Subcontract (Tank)	566,000	566,000	0	0	100	0	0
Transport							
Sea	175,000	156,000	19,000	0	88.9	11.1	0
Air	982,000	977,000	5,000	0	99.5	0.5	0
*Fue 1[2]	474,000	95,000	379,000	0	20	80	0
Contractors' Personnel	1,024,000	1,024,000	0	0	100	0	0
Company[2] Equipment Rental	282,000	282,000	0	0	100	0	0
Catering	169,000	163,000	6,000	0	96.5	3.5	" 0
Logistics Base[2]	662,000	662,000	0	0	100	0	0
Administration and General[2]	504,000	504,000	0	0	100	0	0
Miscellaneous, Insurance, General, Con t ingency	145,000	145,000	0	0	100	0	0
	5,980,000	5,204,000	409,000	367,000	87	7	6

1 Modules to be manufactured in southern Canada - unknown due to bids a nd potential vendor data not yet received.
2 Supplied by Panarctic Oils Ltd. from existing operations, therefore, not new purchase items.
* Includes $173,800 air transportation costs to Cameron Island.

TABLE 22

BENT HORN PRODUCTION PROJECT
ESTIMATED EXPENDITURES - PHASE II CONSTRUCTION
(1984 DOLLARS)

	Total ($)	Canadian ($)	Foreign ($)	Unknown ($)	Canadian (%)	Foreign (%)	Unknown (%)
Material, Buildings/ Skid Modules[1]	500,000	0	0	500,000	0	0	100
Subcontract (Tank)	2,200,000	2,200,000	0	0	100	0	0
Transport							
Sea	441,000	392,000	49,000	0	88.9	11.1	0
Air	1,400,000	1,393,000	7,000	0	99.5	0.5	0
Fuel[2]	385,000	77,000	308,000	0	20	80	0
Contractors' Personnel	764,000	764,000	0	0	100	0	0
Company Equipment Rental[2]	365,000	365,000	0	0	100	0	0
Catering	207,000	200,000	7,000	0	96.5	3.5	0
Logistics Base[2]	497,000	497,000	0	0	100	0	0
Administration and General[2]	683,000	683,000	0	0	100	0	0
Miscellaneous, Insurance, General	333,000	533,000	0	0	100	0	0
Contingency[3]	1,475,000	1,254,000	99,000	132,000	85	6	9
	9,450,000	8,358,000	460,000	632,000	88	5	7

1 Modules to be manufactured in southern Canada - unknown due to bids and potential vendor data not yet received.
2 Supplied by Panarctic Oils Ltd. from existing operations, therefore not new purchase items.
3 Contingency provision allocated pro rata to other categories excluding Subcontract.

In the 1982 calendar year, Panarctic utilized twelve northern businesses in support of our drilling program in the high Arctic islands with total expend itures of $3,352,117. The majority of this business was for exped iting, translation services, aircraft charter and scheduled air services.

We received the GNWT's Northern Business Directory list ing sources of goods a nd service. No new companies were listed. In addition, we informed our impact communities and the GNWT Regiona 1 offices in Frobisher Bay that we would review any proposal for goods or service from those areas very carefully. It should be noted that all bulk goods are shipped from Montreal; all other goods and services are normally expedited through Edmonton.

For the Bent Horn Project, preference will be given to suppliers based in the North where price, delivery capability, and quality are reasonably competitive.

For purposes of this review, the Project is considered separate from all other company activities in the nor th. In reality, the Project is an extension of our activities and existing contractual agreements for the supply of labour and catering services are already in force. With the exception of the tank welding contract (as described in this volume under the head ing "Supplier Development") and the shipping component of the project, no new contracts will be tendered or awarded. The on ly nor them opportunity we can identify is the requirement for a Hercules Aircraft to move the tank steel from Rea Point to the construction site, and estimated amount of approximately $120,000 - $150,000.

5.5 TECHNOLOGICAL DEVELOPMENT POLICY

Panarctic will continue to meet new technological challenges as the Arctic Islands move from the exploratory phase of resource development into production and marketing. It is Panarctic's policy to continue to employ preferentially Canadian sources for operational, engineering and technical expertise to accomplish corporate objectives. Panarctic will continue to encourage and support the development in Canada of technological capability where such capability can reasonably be expected to have commercially viable application.

However, we do not expect this project will promote the opportunity for any new technological development for any component of the project. The technology associated with shipping crude oil out of the north is exactly the same as shipping in refined product which is a normal on-going operation. The production facilities could be termed standard issue, nothing new. The bottom line is there is no requirement for any type of new technology in the Bent Horn Project.

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