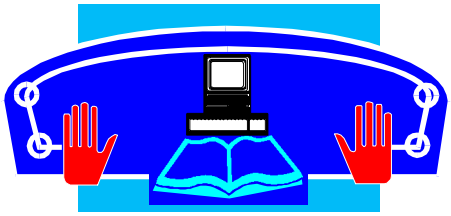


Economic Feasibility Study Of A Proposed Cold-storage Plant At Hay River, Nwt

Date of Report: 1983

Author: University Of Alberta

Catalogue Number: 3-13-4

I. INTRODUCTION AND APPRAISAL OF THE CONDITIONS OF FEASIBILITY .,

The purpose of this, report is to, assess the economic feasibility of a cold storage plant to be located at Hay River, , Northwest Territories.

Such a plant, because of its ability to provide kinds of benefits, must be assessed as to feasibility in a number of ways.

Firstly, the proposed piant must be capable of increasing financial returns to fishermen on Great Slave Lake, related lakes and other freshwater fisheries in the Northwest Territories. These financial gains could evidence themselves through higher prices to the fishermen, reduced costs of production, and through increased volumes of catch. Direct impact on price could come about from quality improvements in the product because of the freezer facility at Hay River. Lower costs to the fishermen could come about from reduced transport costs, and avoidance of labour costs associated with duplicative unpacking, re-icing of the product, and box losses associated with the present transport system oriented to Winnipeg, Manitoba.

The possibility of expanding output in the freshwater fisheries of the Northwest Territories because of the presence of a cold storage plant at Hay River requires special consideration. The cold storage facility could increase output in the four following ways:

1. Cold storage facilities could allow utilization of fish from the smaller lakes related to Great Slave Lake. These lakes are known to contain fish that are too heavily infested with parasites to allow their use either in the fresh or frozen form. However, if these fish were filleted and candled, they could be marketable. The prerequisite to such filleting is the presence of a cold storage facility to preserve the fillets.

2. Cold storage facilities could increase the volume caught of what are presently termed 'coarse' fish, i.e.; unmarketable species. If a cold storage plant were available, these coarse fish could be processed into raw materials for fish weiners and sausages, or mink food. A large Canadian packing house is presently seriously assessing the marketability of these weiners and sausages products, while a large potential for mink feed sales is present at Lesser Slave Lake, Alberta.

3. The cold storage plant could allow a season extension into the month of April, a period when potential catch could be high. Presently, fishing ceases during this potentially productive month because road bans in the Province of Alberta prevent large-scale shipping of fish caught during this period.

4. Price increases resulting from quality improvement and rationalization of transport, both which apparently require the presence of a cold storage plant at Hay River, could stimulate more fishing activity in the industry, thus expanding output.

The expansionary effect on output in the fishery as a result of the cold-storage plant could have two effects above and beyond the economic benefit to the present members of the fishery.

First, the expansion could contribute to the long-run economic growth and development of the Northwest Territories in a substantial manner and, furthermore, the cold storage facilit would undoubtedly provide the necessary condition for the Territor . avoiding a chronic problem associated with relatively under-developed regions, that is, the exportation of raw materials that have undergone little in the way of local processing.

Secondly, the possible expansion of output from the fishery, and the provision of future possibilities in processing of the fish could increase employment opportunities substantially in the Territories. In particular, the possible utilization" in large numbers of indigenous peoples in a form of economic activity for which they are equipped by tradition and skill, must be a very important consideration in this examination of feasibility.

It must be emphasized that the ability of the cold-storage plant to provide these aforementioned various benefits is based on the necessary condition that it can operate on a 'break-even' financial basis, so as to be able to offer freezer charges to fishermen that do not offset financial gains obtained through quality improvement of the fish product, and rationalized transport to southern Canada.

It is the purpose and intention of this report then, to assess and evaluate the degree to which the cold-storage plant proposed for Hay River, Northwest Territories can meet the feasibility conditions specified in the foregoing paragraphs.

However, before proceeding to the feasibility analysis itself, another subsidiary question requires examination; namely, why should Hay River, as opposed to some other centre in the Territories be selected as the location of the plant? Insofar as Hay River has traditionally and effectively served as the entrepot for the fish output of the Territories to southern markets, there is no reason to assume it cannot effectively continue this role. Also, the configuration of Territorial water, road and rail transport systems clearly indicate the advantages of this port as the location of the facility under. consideration in this study. Moreover, because' Hay River has served as a port facility not only for the Great Slave Lake fishery, but for the entire McKenzie River basin, it can most readily fulfill a function associated with a port; namely, ports are locations of trans-shipment, and it is these points, for purposes of minimizing transport costs, which best serve as centers for servicing and processing of products, and whic frequently develop an infrastructure of secondary manufacturing and tertiary service industries.

The first section of this report to follow the preliminary remarks and perspectives contained above, will be a feasibility analysis vis-a-vis the ability of the cold storage facility to operate within a realistic cost structure. This requirement must be met in order to avoid losses of an order that would require the levying of exhorbitant tariffs to users.

Integral with this portion of the analyses, will be an assessment of the plants' ability to bring about the rationalization of the transport system now existing from Hay River to Winnipeg, in order to significantly reduce costs to the fisherman.

The second and third sections in the feasibility study will attempt to assess feasibility in the somewhat broader terms of reference of possible Territorial employment effects, and growth and development effects.

11. INTERNAL FINANCIAL FEASIBILITY OF THE PROPOSED COLD-STORAGE PLANT

A. Size of Plant Required

The requirements for the facility under consideration here would consist of three major sub-plants:

1. A pre-cooling area.
2. A blast-freezer.
3. A cold-storage area.

The question is that requires answering here is, what capacity. should the individual units possess?

Three basic strategies can be utilized for the selection of plant size. First, the plant could be designed to meet the requirements of the fishing industry only, with no consideration given to the industry expanding output in the future. Secondly, the plant size could be a function of future expected catch in the fishery, ignoring all other possible uses to the community and region. Thirdly, the plant could be of a size to cope with expected increased future fish catches in the fishery industry, as well as to satisfy community and regional cold-storage services.

The investment strategy adopted in this study is the last mentioned: a cold-storage plant size based upon future expected fish catch in the Northwest Territories, as well as providing specified community and regional services. These aforementioned- services would be facilities for commercial meat

imports, fruit and vegetable, dairy and bakery products, private freezer lockers, and facilities for possible exports of buffalo and cariboo meat, and Arctic Char fish.

A number of comments might indicate the considerations required to relate fish volume in particular, to individual sub-plant size.

In the case of the pre-cooling area, the peak volume of fish arriving at the wharf will be the major determinant of size. This peak period usually occurs during a number of times in the summer and winter fishery.

The size of the blast-freezer plant is largely determined by the peak 'volume of fish delivered from boats per time period, which again occurs at the beginning and start of each season. Also, the possible filleting of fish, fish blocks, and mink , food influence plant size, and have been given consideration. Obviously, the size of the two aforementioned plants are not unrelated, with the pre-cooling area's ability to hold inventory the most important parameter.

The size of the cold storage plant again is related to the overall volume of fish produced by the industry. 'However, this plants" size is substantially a function of desired volume of inventory holding, for purposes of optimizing transport usage to the south, as well as optimizing market sales opportunities.

Moreover, as has been mentioned, consideration in this study has been given to the possibility of providing facilities for private freezer lockers, incoming meat products from the south, and fruits and vegetables cooling, etc.

The following Charts and Tables itemizes the various components of the proposed plant, as obtained from a refrigeration equipment supplier who served as a consultant. Tables I, II and III, indicate the components, capacities, and. costs of the" required" buildings, refrigeration equipment and adjunct equipment, respectively.

TABLE I

COMPONENTS, AND COST OF BUILDING FACILITY, HAY RIVER COLD STORAGE PLANT

Pre-cooler area	100,00 lb. holding
Blast-freezer area	30,000 lbs./day
Cold--storage 'area	1,000,000 lbs.
Meat storage freezer	100,000 lbs.
Vegetable, fruit cooler	
Equipment room	
Office	
Washrooms	
General work area	
cost	$242,000

TABLE II

COMPONENTS, HORSEPOWER REQUIREMENTS, AND COST OF REFRIGERATION EQUIPMENT, PROPOSED HAY RIVER COLD-STORAGE PLANT

	Connected H.P.
Blast freezer No. 1	
1. Compressor motor"	50
2.. Evaporator	10
3. Air condensor	2
Blast Freezer No. 2	50
[same as No. 1]	10
	2

Storage Freezer No. 1	
1. Compressor	25
2. Evaporator	5
3. Air condensor	1
Storage freezer No. 2	
[same as No. 1]	25
	5
	1
Meat freezer	
1. Compressor	15
2. Evaporator	3
3. Air condensor	1
Pre-cooler	
1. Compressor	15
2. Evaporator	5
3. Air condensor	1.5
Vegetable & fruit cooler	
1. Compressor, evaporator, condensor	" 4.3
Cooling tower ,	
1. Fan	1
2. Pump	3
Flake ice machine	10

Total cost installed refrigeration equipment including switchgear

$164,875

TABLE III

COMPONENTS AND COSTS OF ADJUNCT EQUIPMENT, PROPOSED HAY RIVER COLD-STORAGE PLANT

Trays

Pallets

Carts, fork, lift, conveyor belts

Glazing tank, winch

Steam cleaner, water services

Power installation

CHART I – GENERAL LAYOUT OF COLD STORAGE PLANT

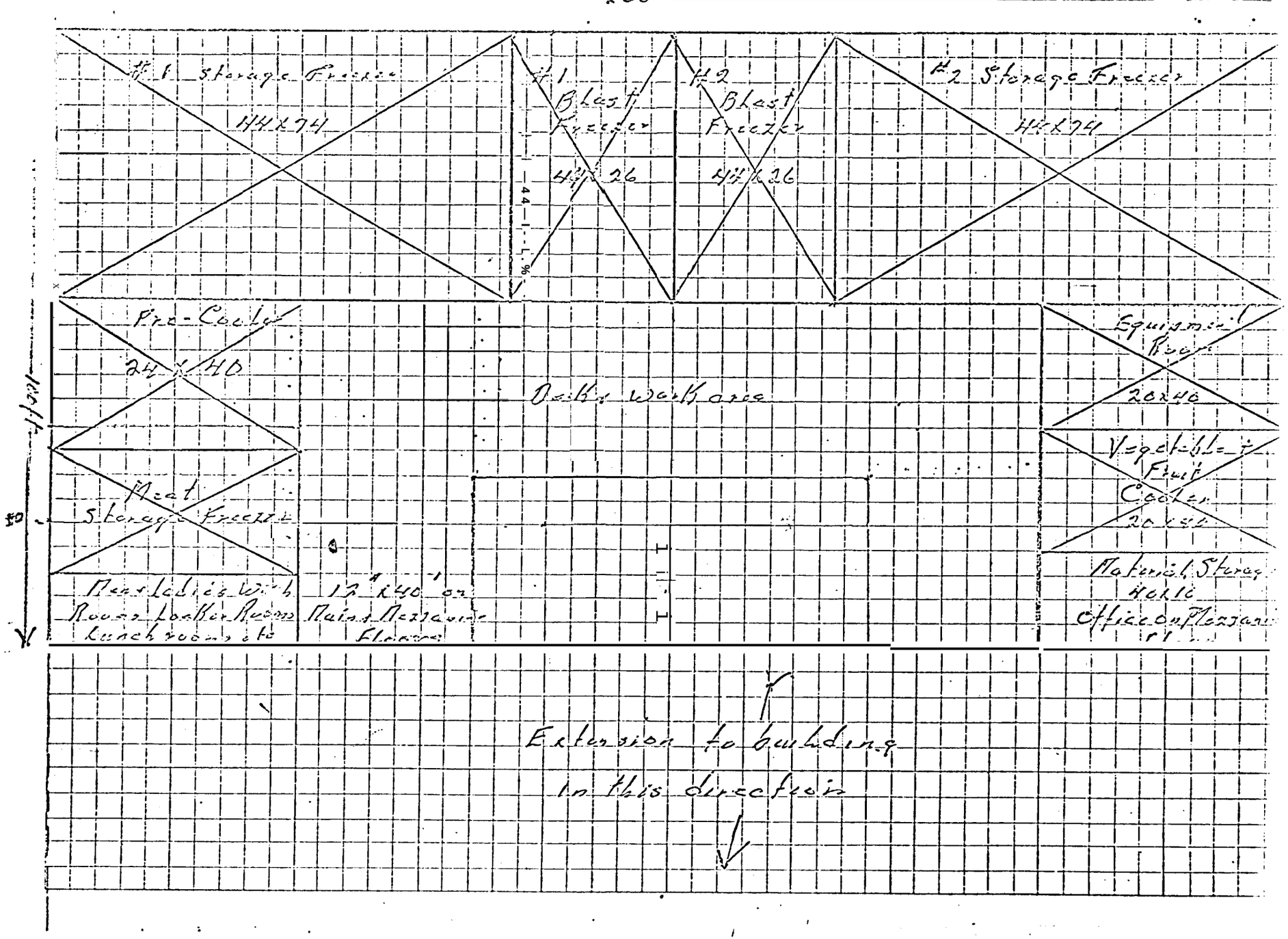


CHART II-GENERAL LAYOUT OF BLAST FREEZER

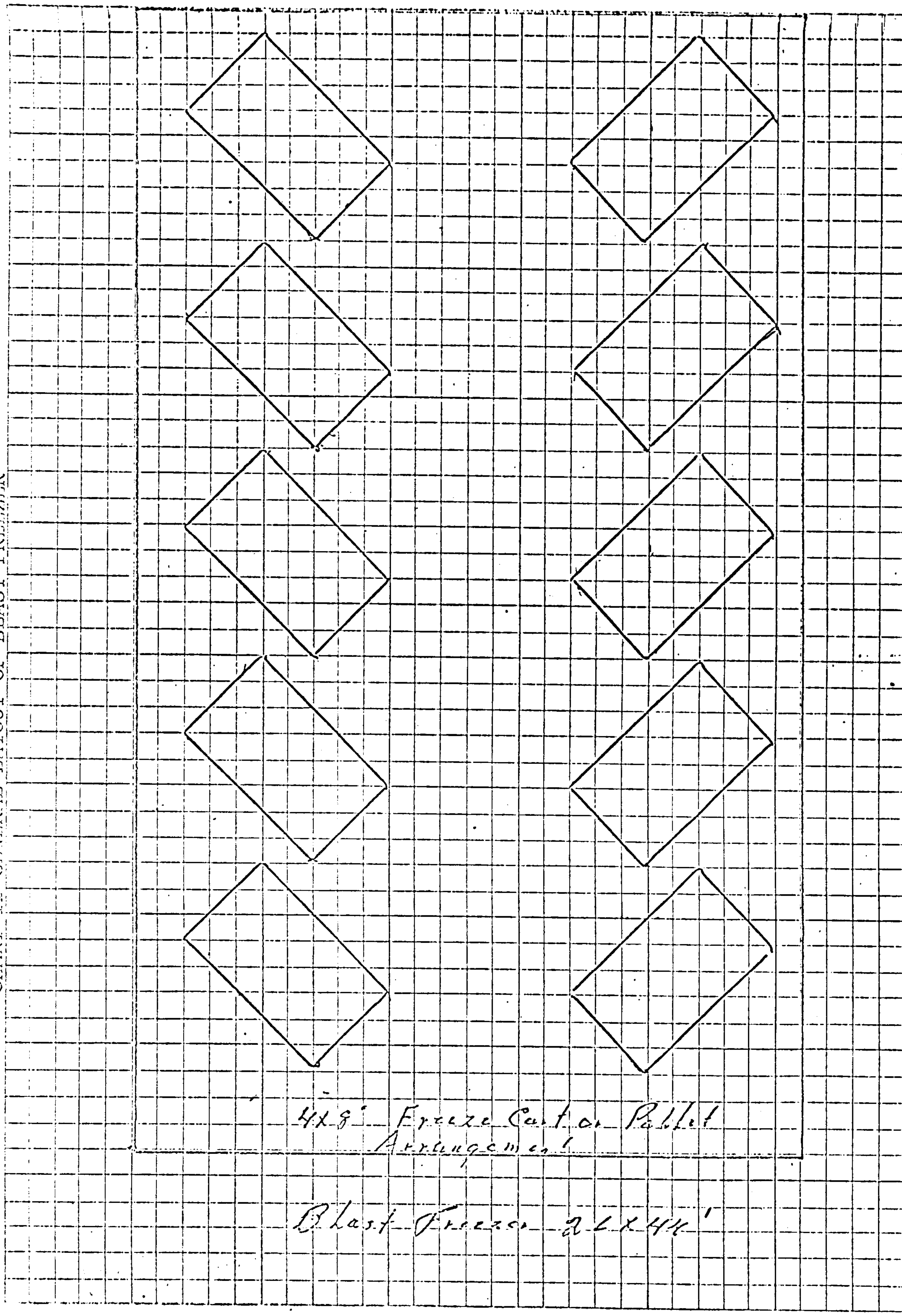
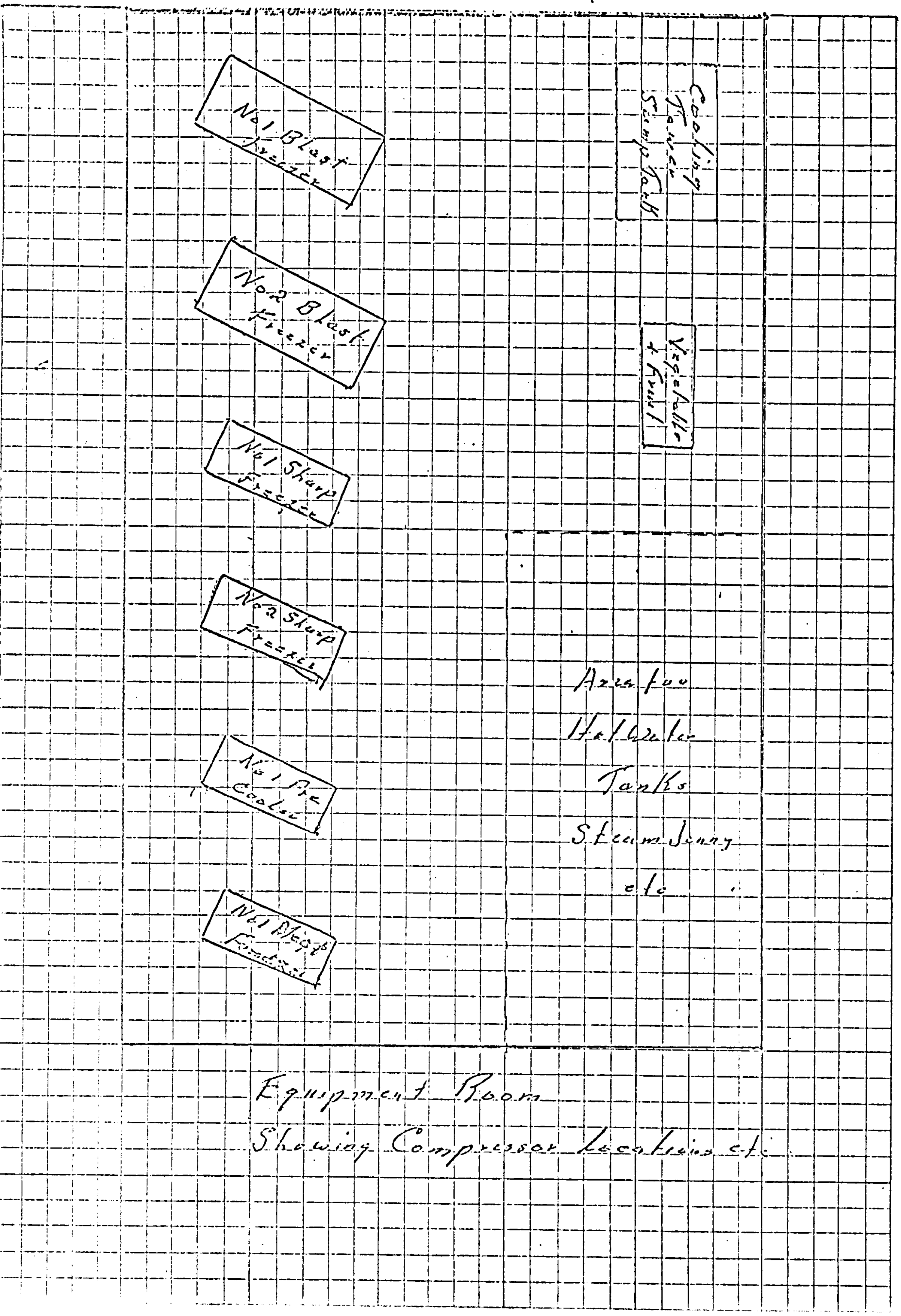


CHART III - GENERAL LAYOUT OF COMPRESSOR ROOM



The combined cost of all requirements for the proposed plant therefore are $436, 575, with a connected electrical load of 245 H.P.

B. Treatment of Costs

From the capital costs derived from the above estimates, overhead costs of operation can be calculated. Also, given the power, and labour costs related to such a plant, variable costs can be calculated. Combining these two costs provide the necessary operating cost estimates. If these operating cost estimates are then divided by the known or expected poundage of fish that will utilize the plants' facilities, costs on a per pound basis can be derived. It is these operating costs on a per-pound basis that will determine if the plant is internally financially feasible; that is, if costs' are at a level that " will allow the striking of a tariff to users that is not exorbitant, as compared to rates charged by similar facilities in southern Canada.

The following Tables indicate the nature of overhead and variable costs, their method of calculation, and comparative sizes.

TABLE IV

CALCULATIONS OF TOTAL OVERHEAD COSTS PER ANNUM, PROPOSED COLD STORAGE PLANT, HAY RIVER, NORTHWEST TERRITORIES

1.	Depreciation	
	(a) Building	$\frac{\$242,000}{40}$ = $ 6,000
	(b) Machinery and equipment	$\frac{\$194,575}{20}$ = $ 9,729
2.	Interest on investment	$436,575 ... $51,367
3.	Taxes on property	$436,575 x 66.6% .007 = $2,035
4.	Fire insurance	$35.00 per $1,000.0 $15,280
5.	Water consumption	$90 per month. $ 1,080
	Total Overhead Costs Per Year	$85,491

[1]Department of Business Administration, University of Alberta, based upon 40 year life for buildings and 20 year life for machinery equipment.

[2]Loan Officers, chartered banks in Edmonton, Alberta. This covers principal repayment on a eight per cent loan, 25 year mortgage *on* building, 10 year repayment period on machinery and equipment.

[3]*City* Hall, Hay River, Northwest Territories

[4]Canadian Underwriters Association, Edmonton, Alberta

[5]City Hall, *Hay* River, Northwest Territories.

Total overhead costs per annum total $85,491 ; these costs, unlike variable costs as presented in a following table, do not vary with output.

Insofar as variable costs do vary with output, assumptions have to be made regarding the quantity of fish entering the cold-storage facility.

In order to obtain realistic fish input figures, a number of examples were drawn from data on the Northwest Territories annual fish catch. These, annual catches from Great Slave and related lakes are as follows:

ANNUAL CATCH GREAT. SLAVE AND RELATED LAKES ; BY SPECIE,
1962 - 1968

Specie	Pounds Per Year						
	1962	1963	1964	1965	1966	1967	1968
Whitefish	4,486,860	4,281,360	4,3.25 161	3,641,744	2<574,374	2,281,074	**3,135,7**
Trout	1,156,122	6,832,280	674 833	**808,549**	581,149	658,497	**262,5**
Inconnu	287,128	321,692	299 256	304,612	212,479	234,439	**174,0**
Pike	316,587	255,581	197,685	255,214	458,681	412,276"	'24,4(
Pickerel	11,254	13,385	231,140	30,766	**32,081**	35,067	262,01
Other	52		11,094		3,400	21,286	
Mullet S					57,501	17,138	
TOTAL	6,254,004		5,336,169	5,040,915	3,919,665	3,659,776	3,863,7:
Plus Related Lakes				**460,000**	500,000	300,000	**120,0**
GRAND TOTAL	6,254,004:	5,355,766	5,336,169	5,500,915	4,419,665	3,959,776	3.983,7:

In order to indicate the total variable cost per annum associated with various outputs, a number of fish poundage figures were selected for representativeness. These poundage figures are assumed to contain no fresh fish; the reason for this assumption is for purposes of simplification and because market trends for frozen fish are such that most, if not all the 'catch can be sold in this form.

TABLE VI

CASE #1 - CALCULATIONS OF TOTAL VARIABLE COSTS PER ANNUM, PROPOSED COLD STORAGE PLANT, HAY RIVER, NORTHWEST TERRITORIES" *ON* BASIS OF 1968 POUNDAGE OF CATCH[1]

1.	Labour	
	(a) Six labourers @$5,000	$30,000
	(b) Supervisor @$7,500	$ 7,500
2.	Electrical consumption[2]	$25,000
3.	Repairs and maintenance. $436,575 @ 2%	$ 8,731
	TOTAL VARIABLE COSTS PER YEAR	$71,231

[1] 3,863,727 pounds.

[2] Northland Utilities, Edmonton, Alberta; this calculation is based on Rate Schedule No. 33.1 at peak load factor of 171 " connected horsepower.

TABLE VII

CASE #2 - CALCULATION OF TOTAL VARIABLE COSTS PER ANNUM, PROPOSED COED-STORAGE PLANT, HAY RIVER, NORTHWEST TERRITORIES, ON BASIS OF FIVE YEAR AVERAGE POUNDAGE OF CATCH[1]

1.	Labour	
	(a) Eight labourers @$5,000	$40,000
	(b) Supervisor	$ 7,500
2.	Electrical consumption	$30,000
3.	Repairs and maintenance	$ 9,822
	TOTAL VARIABLE COSTS	$87,322

[1] 4,640,050 pounds.

TABLE VIII

CASE #3 - CALCULATION OF TOTAL VARIABLE COSTS OR PROPOSED COLD STORAGE PLANT AT HAY RIVER, NORTHWEST TERRITORIES ON BASIS OF EXPECTED CATCH AFTER PLANT INSTALLATION[1]

1.	Labour	
	(a) Ten labourers @ $5,0000 ....;	$ so, 000
	(b) Supervisor @ $7,500..	$ 7,500
2.	Electrical consumption	$ 42,000
3.	Repair and maintenance	$ 10,914
	TOTAL VARIABLE COSTS	$110,414

[1] 5,363,727 pounds. This figure was obtained by assuming that the cold storage plant would expand output by 500,000 pounds due to season extension, 1,000,000 pounds 02 new coarse fish, and 1,000,000 pounds from related lakes. Factors'are then applied assuming 50% weight loss in filleting, 70% weight loss in coarse fish reduction.

These figures were selected on the basis of their representativeness of inputs into the proposed plant. It should be clearly understood that Cases #1 and #2 represent serious under-utilization of the plant, while Case #3 is utilizing the plant as planned in this study, at a more optimum level.

c. Calculations of Operating Costs Per pound

With the three cases selected as above providing the annual poundages of inputs and total variable costs, the overall operating costs per pound can be calculated in order to specify whether the proposed plant is economically feasible in terms of its cost structure. The "three separate calculations are as follows:

CASE 1

Total overhead costs per annum	85,491
Total variable costs per annum	$ 71,231
Total operating costs per annum	$ 156,722
Total poundage per annum	3,863,727
TOTAL OPERATING COSTS PER POUND	4.06¢

CASE 2

Total overhead costs per annum. . . . . $ 85,491

Total variable costs per annum. . . . . $ 87,322

Total operating costs per annum. . . . . $ 172,813

Total poundage per annum. 4,640,050

TOTAL OPERATING COSTS PER POUND 3.724

CASE 3

Total overhead costs per annum. . . . . $ 85,491

Total variable costs per annum. . . . . $ 110,414

Total operating costs per annum. . . . . $ 195,905

Total poundage per annum. 5,363,727

TOTAL OPERATING COSTS PER POUND 3.654

D. Evaluation

The present cost of storing fish at the Winnipeg cold storage plant is on the order of 1¢ to 2¢ per pound, depending on length of storage. On this basis, Case #1

as estimated here, 4.064 per pound, does not appear competitively economical, but it must be emphasized again that this case represents a very serious under-utilization of the plant as planned in this report. Case #2 appears competitive at 3.72¢ per pound, when it is, realized that above computations for the Hay River Plant specify that the entire cost of numerous stages of treatment are covered.

Case 3, with 3.65¢ per pound cost, is a reflection of near optimum use of the plant; is clearly competitive, again considering that the Hay River costs cover all activities in the plant; and further, no allowance has been included for the revenue to be derived from the meat, vegetable, , dairy and meat freezer facilities.

While it can be stated that comparisons of operating , costs per pound of input between other freezing plants and the proposed plant at Hay River compare favorably, i.e., the plant is feasible from an internal financial standpoint, another major consideration must be dealt with.

That is, would the resultant tariff levied on the fishermen to utilize the plant offset "the savings the plant may generate through providing a method of transport rationalization?

In order to provide this important information, the sources of savings and their expected amounts must be specified as a result of the transport rationalization.

111. SOURCES AND AMOUNTS OF SAVING FROM TRANSPORT RATIONALIZATION

A. Introduction

The computations just provided indicate the ability of the proposed plant to operate at reasonable costs, thus avoiding significant losses or subsidies. However, an extremely important contribution of the plant, and the major reason for its existence is to increase economic returns to the fishermen on Great Slave Lake, related lakes, and other freshwater fisheries in the Northwest Territories.

The presence of a cold storage facility in Hay River presents such an opportunity because of its ability to reduce transport costs to southern Canada. This reduction in transport costs can be accounted for largely by the fact that frozen fish cost much less to transport as compared to fresh fish on a per pound basis. Moreover, there are a number of other savings made by shipping in the frozen forms that will be specified in this study.

Therefore, it is the purpose of this section of the study to carefully specify and quantify where possible, the savings and hence increased returns to fishermen on Great Slave Lake and related lakes through the freezer facilities' impact on the present transport system now existing.

B. Analysis

The present transport system consists of freezer trucks which remove fish from Hay River in a 'fresh' state, i.e., packed in ice boxes. These iced boxes of fish are transported to Winnipeg, Manitoba to a cold storage plant located there, and then are distributed to their final market place's in North America and Europe. The reason that the fish are transported to Winnipeg is not based upon the location of Winnipeg as an ideal distributional point, but because it possesses the nearest freezing plant of sufficient capacity to satisfy the needs of the Great Slave Lake industry. Indeed, there is little question that Edmonton would as well serve the purpose as the major distributional point.

Thus, a freezer facility at Hay River would reduce transport costs 'by allowing fish to be shipped frozen and not fresh, the latter method being approximately twice as expensive on[a]

[a] Per pound basis.

A number of other savings would be obtained through a programme such as this: the following itemization will clarify and enumerate these major and subsidiary savings.

TABLE VII

SAVINGS DERIVED FROM TRANSPORTING FROZEN VERSUS FRESH FISH FROM HAY RIVER, NORTI-IWEST TERRITORIES

Fresh Fish	Frozen Fish	Saving "Per Pound
1. Cost of shipping fresh fish from Hay River, Northwest Territories to Winnipeg, Manitoba ....64 per lb.	1. Cost of-shipping frozen fish, Hay River, Northwest Territories to Winnipeg, Manitoba ..... 3¢ per lb.	3¢
2. Extra labour costs engendered by having to unpack and re-ice fish at Winnipeg, Manitoba		2¢
3. Extra costs of ice Hay River and to re-ice at Winnipeg, Manitoba		1¢
4. Cost of ice box for fish per pound.. . .....3¢	4. Cost of frozen fish carton per pound.. . .1½¢	1½¢
5.	5. Increased price of fish due to quality improvement in frozen fish.	2¢
TOTAL SAVING		9½¢

The apparent savings from rationalization of the transport mode and system from Hay River to the southern market are estimated at 9½¢ per pound.

Consultation with a number of individuals closely related to the fish industry suggest that the savings would be in a range from 8 to 10¢ per lb. The assessment made here appears to hear this out. Furthermore, it has been suggested that transport costs could be reduced even further from Hay River because a frozen inventory of fish would allow whole car-load-lots to be shipped at reduced rates; also filleted fish, as a product of the cold storage plant, could be transported at a lower cost per sale value of the final product.

c. Evaluation

The above analysis indicates that the gross increase in returns to the fishermen on Great Slave Lake would be on the order of 9½¢ per pound upon realization of the rationalization of the transport mode and system from Hay River. However, it, must be remembered that costs exacted through a tariff would be paid by these fishermen to utilize the cold freezer and storage facility at Hay River. If this amounted to 4¢ per pound, the net gain per pound of fish after the required reduction of 2¢ per pound paid at Winnipeg, wouldbe approximately 7½¢ per pound. Moreover, this net gain in price per pound of landed fish' would be accumulated over a much larger catch, as a result of the presence of the storage facility.

Assuming that an increasein price of 7½¢ per pound of landed fish occurred, and that the new total volume of fish were on the order of 5 million pounds, the net overall return to fishermen would be approximately $375,000 per annum. Also an allowance of say 201$ per pound as an average price, for all species (white,trout and rough) on the increased volume of &.5 million pounds would return a further $300,000 per annum to the fishermen.

D. Summary

The major conclusion in this study as to economic feasibility are to be found 'in the transport saving just analyzed; it is upon these savings that the economic viability of the freezer and storage plant rests. These savings based

upon the current catch, and based upon expected expanded catch indicate that large increases in returns can be obtained by fishermen, while at the same time the source of these increased returns, the freezer and cold storage plant, is a viable economic activity.

IV. EMPLOYMENT AND OTHER ECONOMIC EFFECTS

A. Employment Effects

It was indicated in the introduction to this paper, that in a broader sense, employment effects generated by the proposed cold-storage complex at Hay River, are a consideration of feasibility.

The employment effects of such a plant can be examined under two categories. Firstly, there will be direct employment effects from the plant; and there will be secondary employment effects.

The direct employment effects will arise because of the need for labour services within the plant itself. The secondary employment impact stems from two major sources. First, the expected expansion of fish catch will increase the employment of individuals in the fishery itself: and, also employment can increase if the storage complex results in further processing of the fish. Employment that could arise in the community because of the increased numbers of workers in these aforementioned lines of work expending their incomes is more difficult to trace and quantify, but may be just as significant in the long-run.

It has been mentioned earlier that expansion in fish Output because of the storage complex provides a very real opportunity to employ the "indigenous peoples of the Territories. These peoples frequently possess the fund of skills to carry on this form of economic activity, with particular reference to the development of the smaller lake

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fisheries. Also, should filleting of fish develop as a secondary industry, a female labour force derived from the indigenous peoples could develop. In a situation where many industries now appearing in the Northwest Territories require skills not possessed by the native. labour force, this particular industry can provide gainful employment in an industry which is currently experiencing rapid growth rates, with labour force participants receiving higher rates of return. These returns could increase to the native population if they could further increase their skills in this activity by attending fishery schools located in southern Canada.

B. Other Economic Benefits

A number of other economic benefits could be derived from the cold storage plant such as reduced prices of imported meats, higher quality fruits and vegetables, better grade diary products, and availability of fresh or frozen fish to Territorial residents from their own fishery. In strictly economic terms, these benefits are ones that make more favorable the 'terms of trade' to Territorial citizens. These more favorable terms of trade not only increase the populations' standard of living, but also can be significant in stimulating economic growth.

The cold-storage facility can also provide a 'convenience' service in terms of private freezer lockers, storage of native peoples' and tourist sportsmen' fish and meat products, and storage of dog foods.

V. PLANT EXTERNALITIES, AND TERRITORIAL GROWTH AND DEVELOPMENT

A. The Concept of Externalities

An important consideration in evaluating the economic benefits of what economists term 'social overload capital', investment, as opposed to direct productive capital investment, is the concept of 'externalities'. The impact of external economies on a developing, growing economy' that characterizes", the Northwest Territories is in fact more real than apparent.

' Economic externalities, elated as they frequently are to overhead capital, evidence themselves in providing profitable environments for other 'enterprises, distinct from the original investment, even though the direct profitability, " ' of the overhead investment itself may be small or negative. An example of this kind of overhead capital providing externalities is the Great Slave Lake Railway, which has provided profit-making opportunities not other wise present, for example, to mining companies, sawmills, farmers, hotel owners, etc. The point to be made here is that the cold storage complex dealt with in this report can indeed be viewed in the same manner, if it is the broader economic implications that are relevant in making decisions of economic feasibility.

In short, for decision-makers who are operating in an environment characterized by these broader, long-run economic implications, the concept of externalities is a significant and realistic frame of reference.

B. Externalities and Economic Growth

If economic externalities are of large size and number in terms of creating profitable environments for growth and development in other enterprises, the resultant impact can affect the entire economic growth rate of a region. This growth occurs because firms can now create or expand new sales opportunities for themselves, due to decreased costs of production, or improved products.

This report submits that the freezing facility dealt with in this study does provide sufficient externalities to impact regional growth and development rates. This statement is based upon the freezing plant's ability to substantially reduce costs of production to the fisherman (frozen versus fresh fish exported from Hay River) and through its ability to allow increased exploitation of hitherto unfished small lakes, hitherto unutilized rough fish, and season extension.

c. Hay River Freezer Plant and Territorial Economic Growth

Therefore, another criteria relevant to evaluating the feasibility of the plant is the extent to which the facility under consideration enhances or detracts from the growth and development goals of the Northwest Territories.

In order to evaluate the extent to which the freezer plant does enhance or detract from Territorial growth and development, a simple economic model that economists agree is realistic and possesses excellent explanatory powers will be used.

This model simply postulates that regional economic growth and development is fundamentally a function of the ability of the region $0 export goods and services to external markets. These exports in turn generate employment and growth in the region.

To the extent that a region can expand its exports either by increased volume, or by increased prices over a given volume, it enhances its ability to grow and develop.

Viewing the facility under consideration in this study in these terms, and assuming that the Territorial fishery exports are of a sufficient size to have growth effects, as indeed they are, the relationship between the development of a freezing plant and regional economic growth in the Territories is a significant one.

It might be argued that compared to the export base to be found in mining, or perhaps in the future in tourism, the fishery export base possibilities are hot significant. However, in a region such as the Territories, presently characterized as it is by limited profitable industrial developments, an industry of the relative size of the Great Slave Lake fishery.. cannot be ignored, and more so, if the fishery possesses further potential for expansion. This report has previously indicated the potential for expansion in the industry. When this situation is related to the fact that the fishery is the last large source of freshwater fish in the North American market, its significance as an important future export growth base should not be underestimated.