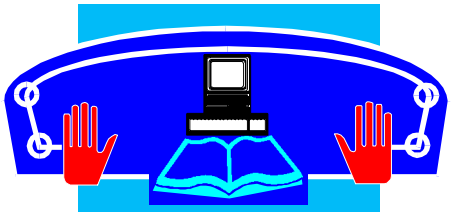

Study Of The Potential For A Kiln And Planer Facility

Type of Study: Processing/manufacturing Forestry, Standards For Lumber Production

Date of Report: 1982

Author: Gnwt-ed&t

Catalogue Number: 4-9-6

The attached discussion paper is an outline of.the NWT lumber industry as it now stands followed by analysis of and options for a proposed project the thrust of which is to strengthen the industry and its markets. To be discussed at the conference to be held in Hay River on June 4, the paper desribes options with respect to industry structure, pricing scenarios, and supportive government policies.

The project, which would create a central drying facility for the industry, would benefit existing mills be increasing throughput (say by 2 000 MBFM), by improving markets while reducing the marketing effort, by guaranteeing regular cash flow (all winter harvests could be processed by September end), by reducing transportation costs, and by facilitating expansion of the industry. Benefits to the NWT include that Northerners will be better able to support Northern firms and their products, increased employment for Northerners, and increased GNP. The GNWT would reduce transfer payments to both individuals and companies while having a larger tax base.

For continued "government support to be a reality, industry agreement must be reached on the following points:

1) The extent to which mills will agree to air dry (e.g. 35%, 30%, 25%);

2) Location of a kiln (e.g. Patterson's, Hay River Reserve);

3) Industry structure (ownership of kiln);

,4) Downgrading considerations;

5) Pricing structure;

6) Required government policy/legislation.

Introduction

Northwest Territories white spruce is perhaps the finest white spruce in North America. Dense because of slow growth, it is a stronger wood than its southern counterparts. The denseness and dry climate combine to make the wood naturally drier.

At present there are six sawmills operating commercially, all of them in the southern half of the Mackenzie District. The approved annual cut totals 26.355 million board feet, apportioned as follows:

District	Area's Established Sawmills .	Approved Annual Cut
Mol	Slave River Sawmill, Plamondon, W.C., Logging	5,250,000
X02	Kovatch, Patterson	Z ,625,000
M03	Kovatch	175,000
M04	Anderson	17,500,000
Mlo		525,000
All Others		280,000

Yet the combined production from all sawmills has never exceeded 8 million board feet in one year. .

While there are uncontrollable problems associated with climatic conditions which make it difficult to. operate more than seven months a year, there have been other problems related to quality which this maturing industry has been overcoming. Partly because southern markets are weak as well as expensive to reach, and partly because a large portion of the northern market requires lumber that has been dried, viable markets is the single most difficult controllable problem left for the industry to overcome. It is this problem, then, that this paper attempts to address.

Drying lumber offers two advantages to a sawmill. Firstly, the weight of the lumber is reduced and ,so, therefore, is the cost of shipping and ultimately the required selling price of the product. Secondly, those markets,- which require by law (or whatever) their lumber to be dried, are accessible. Since the demand in the western NWT ranges between 15 and 30 million board feet per year, the majority of which is dry, it behooves the industry to engage in the drying process.

. . . / 2

There are essentially two means of drying lumber applicable to the North one by mtural ventilation (air-drying), the other by controlled abnosphere heating (kiln-drying). To bring the moisture content to the acceptable level of drying by ventilation will take at least four weeks in the June to August period. Traditionally, the best markets are between May and July. Air-dWing, then, could cause much of the industry's production to miss optimum markets. Add to that the cost of financing inventory and air drying can be seen as a questionable solution financially. Finally, the specifications on many lumber contracts stipulate 'kiln dried". Regardless of moisture content, for these-contracts, air drying will not suffice.

A kiln offers all of the advantages of drying - access to more and better markets, an ability to capitalize on opportunities, and reduced inventory costs. Kilns, which represent the ability to dry quickly, are an essential part of virtually all North American lumber industries. To be competitive andstrongin our own back yard, then, it is imperative that the NWT lumber industry have this capability to dry its product quickly.

The ideal solution, the one which best suits the independent nature of the NWT sawmills, wouldbe to have one kiln at each site. In that way, the individual operators would have control over and responsibility for their final product, its quality and selling price. And it would offer more variety to the workplace.

But is the ideal solution also an economic solution? Examining the anticipated revenues and the associated costs provides the answer. Appendix V - Break Even Analysis of a Kiln Operation shows that the breakeven point for a kiln implanted in an existing operation is 5.074 MBFM per year. As no s,ingle operation commands that much throughput; then'some sort of joint effort must be considered.

There are two distinct possibilities here. Firstly, the industry might agree to allow one of its present members to act as their "drying agent". Such an arrangement would have the advantages of limited capital outlay (only, the kiln facility need be established) and a management component which is experienced in the lumber industry. The disadvantages to this arrangement include the lack of control suppliers (sawmills) would have over their product (ownership, scheduling, pricing, cash flow), increased administrative responsibilities for one sawmill,

. . . /3

and deciding who should act as the drying agent a decision which could seriously fracture the NWT lumber industry.

Secondly, the industry might agree to establish a central facility outside the control of any single sawmill. (Such a facility would require the inclusion of a planer to finish the product). The advantages of this arrangement are that each sawmill would have similar levels of control, the facility could be located centrally (near transportation infrastructure and marketing concerns), scheduling problems would be reduced as drying would be the first priority of the facility, and, given certain parameters, various funding and tax options may appear which would positively affect the whole industry. The disadvantages are increased capital outlay and the requirement for administrative/managerial training.

Project

Since it is agreed that the primary problem facing the NWT lumber industry to&y is one of markets, and since that problem can be lessened or eradicated through drying, the GNWT has priorized the resolution of this problem and, as such, has identified, the acquisition and operation of a kiln(s) as an essential project toward that end.

Analysis appended to'this discussion paper (Appendix V) indicates the imperative of having one kiln to dry all that is presently produced in the NWT. Assuming that supplying mills suffer the transportation cost to the mill (as they do, directly or indirectly, for their present buyers), the best location for the kiln would be Hay River (see Appendix I). Other advantages for Hay River relate to proximity to major trade routes, major markets, and heavy equipment, fuel and other suppliers.

There are two major options to consider based on Hay River as the central point. The first, hereinafter called "Option 1", based on the assumption that the present industry structure is proper aand adequate for the task, would be to appoint Patterson Sawmills Ltd., as the "drying agency". The second, hereinafter called "option 2", based on the assumption that all active mills should have the right to participate in the control and profits of the central facility, would be to establish a kiln and planer facility on the Hay River Reserve. (A third option, based on the control and "profits assumption, would be to establish

. . . /4

the central facility in Hay River, but not On the Reserve. *ecause of the municipal and personal tax advantages accruable to an operation on the Reserve, this third option may be seen as similar to Option 2, except for higher costs and therefore lower profits.)

Industry Structure

Option 1, offers no real industry structure change. Rather, it offers a procedural change, wherein mills would sell their product to one buyer instead of the several they now seek. To the extent that the various mills could sell their product locally, there would be an additional transpiration cost incurred if all products were to be sent to Hay River. Although this cost is apparent in both options, Option 2 could offer the opportunity to recoup this expense through shared profits.

There are three industry structure possibilities under Option 2. One, full ownership and control by the Hay River Dene Band,could be seen initially as the same as Option 1 with different players. Two, partial ownership and control through the purchase of the facility's common shares by the various mills would be one way for all industry members to participate in the control and profits of the operation. Three, partial ownership through the purchase of the facility's preferred shares would be one way to share in the profit without sharing ir.the headaches.

Marketing Strategy

Locating markets for K-D lumber is much easier than for green lumber. Reducing the marketing effort from six sawmills to one central facility is a concept supported on various occasions by all mills. Marketing probes by the Department of Economic Development and Tourism indicate a tacit agreement by Northern retailers to guarantee sales for all that the industry can presently produce/dry and that these sales would be effectuated by the end of September each year. This guarantee for markets, when formalized, will improve cash flow and bank creditability for most mills. (This arrangement should apply to Cption 1 or Option 2 but has only been discussed/offered with respect *to* Option 2). There may be some questions, then as to the desirability to compete for business outside a "guarantees" arrangement,' as this kind of competitiveness may seriously jeopardize

. . . /5

that arrangement. While greater returns may be made on some successful. bids, secure markets may be a more meaningful business proposition at this time,

Several price structure scenarios could apply to either Option 1 or Option 2. One such structure would have northern mills selling to the kiln for applicable southern prices plus 25% or $48 per MBFM. These numbers would be an effort to cover the transportation charges from southern markets. The kiln operators would sell the final product for whatever they could. Another possible pricing scemrio would allow the kiln operator $55/MBFM while participating mills would receive the rest as their selling price.

A third scenario would see the kiln operator getting a percentage (e.g. 20%) of final selling price while mills received the rest.

A final pricing scenario would combine one of the above with a transportation allowance (e.g. $.05 per ton-mile) as an inducement or equalization payment based on the central facility.

Any pricing arrangement finally agreed to should include a downgrading arrangement (mills responsible for any pre-drying down grade, while the kiln operator would be responsible for post-drying downgrades) and a stacking-for-kiln use arrangement (e.g. $5 to $10 per MBFM).

Examples of the effects of each scenario are shown in Appendix III.

Manpower:

Depending on the workload for any given day, there would. be a need for between 6 and 20 people to operate the kiln and planer aspects of finishing the lumber. Because of the elasticity of the requirement for labour, most operating functions will have to be known by all employees. As most of the functions require unskilled or semi-skilled labour, such cross-training should not only be easy but also desirable as it relieves boredom from the workplace. A brief product walk-through related to a kiln and a planer will serve to outline various positions and functions.

Assuming that each mill does its own strip-piling and, therefore, initial drying (to do otherwise creates inefficiencies due to extra handling),

. . . . /6

lumber arriving at the central facility will be fork-lifted from the truck, tallied, signed for, and placed on trollies on the rails outside the kiln, When a full charge is prepared (160,000 ft. to 200,00 bd. ft. in a Moore kiln), a forklift is required to pushall trollies into the kiln. Various gauges.are used to determine inside temperature and dryness. (Tables are available to help, decide optimum temperature settings). Once the lumber is dried to the desired moisture content, the kiln is then cooled and the trollies pushed outside to a cooling area.

Having been transported by forklift to the planer, the lumber piles must be stripped (the strips piled) and then fed into the planer. There must be a planerman to supervise this operation - ensuring the size is set properly, ensuring the knives are kept sharp. The rough ends are trimmed after planing and the final product graded. As many as four people may man the planer chain, piling, painting ends, and binding. The piles are then moved to the shipping area.

Appendix II looks at various positions, number Of employees required to process 75,000 bd. ft. per day, and hourly wages for both Option 1 and Option 2.

As none of the skilled labour requirements is now available in the NWT, much training will be required. Whereas LEAP funds might be available through either option to offset this start-up costs, Option 2 may have other training fund possibilities (through DIAND) not accessible if Option 1 were followed.

Due to the southern soft market conditions, there are many individuals with "hands on" knowledge of drying and planing, who may be available to the central facility on a short-term basis. With respect to adequate management " training, an exchange program might be worked out wherein that person selected to be the NWT manager would be trained and employed at a British Columbia, Manitoba " or an Alberta company while a manager from that company would train, cross-train, and manage the NWT facility. . Suchan exchange might last a year.

Supportive Government Policy

There are many ways in which the Government of the Northwest Territories couldbe supportive of an ongoing drying and planing function/facility. The obvious

. . . / 7

support, already in.place is the Northern Purchasing Policy which allows northern concerns to win contracts" even though their price m-ight exceed others by as much as 10%. Supplemental to this would be a policy stating that all tenders to the GWT which involve dimension lumber must show a quote including lumber from the central facility.

The price support concept is not unfamiliar to the CWT. Givenan accepted formula to define Northern fair market value (e.g. southern prices plus 25%), a price support mechanism might work in one of the following ways:

1) The GNWT would guarantee the central facility a final price of $255/MBFM (this could be across the board or in slight variations depending on the dimension).

2) The" GNWT would guarantee the central facility $55/MBFM for drying and planing and the mills $200/MBFM.

The difference between these two is that the GNWT would assume responsibility}' for ensuring that the mills received price support (cashflow) if the second version were adopted. Meanwhile, the central facility could select from the option of selling immediately, bidding on future contracts, or waiting for markets to improve.

3) The G!WT would pay the mills $X/MBFM in general support (a similar arrangement might be made for the central facility).

The major disadvantage of this last is that decision on support level would have to be made on an ad hoc basis. It would be simpler and less time consuming to have a policy which includes agreed upon limits.

A price floor scheme could be cumbersome to administer and would most likely be negatively controversial. It would involve passing legislation dictating the minimum price to be paid by anyone buying lumber directly from a producer. (norther or not)

Finally, the GWT might be enticed into supporting an arrangement which restricts entry into the marketplace (sawmills, kilns, wholesalers, and retailers). ,Aworking example of this concept can be found in the Nova Scotia - Government of

Canada 'Forestry Subsidiary Agreement, although it only applies to sawmills. Any person or company wanting to enter the industry (whether purchasing or establishing a facility) must receive approval of the NS Sawmill Committee. That committee is representative of business and government.

Financial Aspects

Appendix Iv shows projected capital costs for both options. While Option 2 requires 1.7 times Option 1, the possibilities for finding funding are greater as the Western Indian Economic Development Fund or Dene Native funds might be tapped.

Appendix VI shows projected operating costs. Option 2 fares better as it would be unnecessary to pay the same wages on the Hay River Reserve as Natives need not pay taxes when employed by concerns on the Reserve.

Appendix VII shows projected profit and loss statements.

Appendix VIII analyzes direct costs and benefits to the-NWT (GNWT not included) of a central kiln and planer facility.

Appendix IX analyzes-costs and benefits for the industry depending on ownership. Two examples are shown - 0% control and 40% control.

Other Considerations

Employment benefits/costs can be summed up very quickly. While mills will reduce the amount of planing they do, employment related thereto will be pickedup by the central facility. To the extent that throughput can be increased by the various mills (and those yet to be developed in the Liard Valley) then employment will increase (generally at the rate of 6 man years per MMBFM), and assuming a 10 MMBFM throughput at the kiln, an extra 3 man years will be created by this project,

The social benefits attributable to the expansion of this industry are great as it provides jobs for unskilled and semi-skilled labourers at a time when such jobs are increasingly difficult to find. Should Option 2 be selected, the Hay River Dene Band will own (at least in part) and operate a viable business

concern that directly relates to the wealth of the land they have inhabited for years. The Band's pride and its members self-esteem will be greatly enhanced.

And last, but not least; the industry will provide its fellow Northerners with the best white spruce money can buy.

APPENDIX I .

DEFINING CENTRAL PT. - FREIGHT IN

PRESENT MILL SITES	DISTANCE	PRODUCTION (,000)	BD. FT. MILES (,000)
FT. SMITH	Fort Res. - 150 mi.	4 000	600 000
	Hay River - 1S0 mi.	2 500	375 000
	Enterprise -.180 mi.	500	90 000
	Ft. Simp. - 425 mi.	500	212 500
	Ft. Smith -O mi.	500	---
			1 277 500
FORT RESOLUTION	Ft. Res. - 0	4 000	---
	Hay River - IOOmi.	2 500	250 000
	Enterprise - 130 mi.	500	65 000
	Ft. Simp. - 375 mi.	500	187 500
	Ft. Smith - 150 mi.	500	75 000
			577 500
I-W RIVER	Ft. Res. - 100 mi.	4 000	400 000
	Hay River - 0 mi.	2 Soo	---
	Enterprise - 30mi.	500	15 000
	Ft. Simp. - 275mi.	500	137 500
	Ft. Smith - 150 mi.	Soo	75 000
			627 500
ENTERPRISE	Ft. Res. - 130 mi.	4 000	520 000
	Hay River - 30 mi.	2 500	75 000
	Enterprise - 0 mi.	500	---
	Ft. Simp. 305 mi.	500	152 500
	Ft. Smith - 180 mi.	500	90 000
			837 500
FORT SIMPSON	Ft. Res. - 375.mi.	4 000	1,500 000
	Hay River - 275 mi.	,2 500	687 500
	Enterprise - 305 mi.	500	152 500
	Ft. Simp. - ---	500	---
	Ft. Smith - 425 mi.	500	212 500
			2,552 500

Using most recent production levels, it can be readily seen that either ,Fort Resolution or Hay River is the best site from a "transportatiOn in" point of view. But since no major market is closer to Fort Resolution than Hay River, a central facility in Fort Resolution is impractical. (Returning the product to Hay River adds 800,000,000 bd. ft. miles to the total). If it is further assumed that any major production increases will occur in one of the other four milling centres, then Hay River gains attractiveness as the number one option. Hay River remains attractive even when it is assumed that a kiln would be part of any major Liard Valley development"

APPENDIX II

LABOUR COMPONENT OF KILN AND PLANER

BASED ON 50 M8FM 1x4 PER DAY OR 75 MBFM OF 2x4 PER DAY

POSITION	TASKS	HOURLY WAGE OPTION 1	HOURLY WAGE OPTION 2
CLERK	Records Shipments in and out; accts. payable and receivable; bookkeeping	8	
FORKLIFT OPERATOR	Tallies shipments; loads charges; transports to planer and to shipping/area	10	8
KILN OPERATOR	Heats and controls kiln; samples	12	
STRIP PILER	Removes strips as lumber fed to planer; binds strips for return to mills	8	
PLANER FEEDER	Sets planer to size; feeds	9	
PLANER MAN	Supervises planer operation; sharpens-knives; general maintenance; fill-in; trainer	14	10
TRIMMERMAN I	Trims rough-ends	9	7
TRIMMERMAN II	Trims rough ends; grades	10	8
PLANER CHAIN (3)	Pile by grade marks	8	6
END PAINTER/ BINDER -	Paints ends by grade; Binds for shipping	9	7
	COST PER DAY	904	688
	COST PER MBFM (2x4)	12	9
	COST PER MBFM (1x4)	18	14

APPENDIX III

NWT LUMBER INDUSTRY-PRICING SCENARIOS FOR SELLING TO CENTRAL FACILITY

SCENARIO 1 - SOUTHERN PLUS 25%

	A.	B.	C.
Southern Green Price	160	200	240
Partial Air Dry (to 25%)	8	8	8
Transportation Eq@ization (25%)	42	52	62
Northern Sawmill! 1 Selling Price .	210	260	310

SCENARIO 2 - SOUTHERN PLUS $48/MBFM ($2/~ - HIGH LEVEL)

Southern Green Price	160	200	240
Partial Air Dry (to 25%)	8	8	8
Transportation Equalization ($48/MBFM)	48	48	48
Northern Sawmill Selling Price	216	256	296

SCENARIO 3 - KILN DRYING AND PLANING = $55/MBFM

Final Product Selling Price	350	300	250
Kiln Drying and Planing	55	55	55
Northern Sawmill	295	245	195

SCENARIO 4 - KILN DRYING AND PLANING = 20% OF FINAL PRICE

Final Product Selling Price	350	300 "	2s0 "
Kiln Drying and Planing (20%)	70	60	50
Nortihem Sawmill Selling Price	280"	240	200

SCENARIO 5 (continued on next page)

. . /2

SCENARIO 5 - TRANSPORATION ASSISTANCE ($.05/tonne mile)

		A	B	C
FOrt Smith to Hay River	(1)	220	270	320
	(2)	226	266	306
	(3)	305	255	205
	(4)	290	250	210
Fort Res. to Hay River	(1)	217	267	317
	(2)	223	263	303
	(3)	302	252	202
	(4)	287	247	207
Enterprise to Hay River	(1)	212	262	312
	(2)	218	258	298
	(3)	297	247	262
	(4)	282	242	2S7
Fort Simpson to Hay River	(1)	227	277	327
	(2)	233	273	313
	(3)	312	262	212
	(4)	297	257	217

APPENDIX IV

CAPITAL COSTS

WITAL COSTS OF KILN FACILITY .

A)	Kiln (one used Moore, landed in Hay River)	$30000
B)	Kiln building (new, cement, insulated)	100 000
c)	Kiln installation	50 000
D)	Heating Unit '(waste fuel)	70 000
E)	Yard preparation (grading, services)	25 000
F)	Office, Lunch Room, Wash Room	25 000
G)	Shop and Garage	15 000
H)	Fork Lift (used)	25 000
I)	Miscellaneous (5%)	17 000
		$357000

CkPITAL COSTS OF PLANER FACILITY

A)	Resaw and Planer Mill Building (3 500 sq. ft.)	70 000
B)	Sorting Table (50' x 80')	40 000
c)	Planer (A20 + infeed + blower - all used)	50 000
D)	Resaw (54" Tilt Roll)	25 000
E)	2-Saw Trim	10 000
F)	Grinding Equipment and Stripper	15 000
G)	Fork Lift	25 000
H)	Transportation in (items C-G) "	2 500
I)	Miscellaneous (5%)	12 000
		249 500

CAPITAL COST OF OPTION 1	$357000
CAPITAL COST OF OPTION 2	606 500

APPENDIX V .

BREAK-EVEN ANALYSIS

OPTION 1- (KILN ONLY REQUIRED AS PATTERSON HAS PLANING CAPABILITY)

Capital Costs .	$357000
Operating Costs - Per MBFM	
Maintenance	1
- Fuel"	4
Forklift Operation	2
Electricity	1
Labour	3
General Administration	1.5

Annual costs

- Capital Cost Recovery @ 18% over 5 years	114 160
- Operating 'Costs $/MBFM	12.5

Annual Revenues

Marginal increase for kiln operation $/MBFM	3 5
Break-even Point	5 074 MBFM

OPTION 2 - (KILN AND PLANER)"

Capital Costs $606,500

OPERATING COSTS - PER MBFM	KILN ($)	PLANER ($)		TOTAL ($)	HAY RIVER RESERVE TOTAL ($)
Maintenance ,	1	2		3	3
Fuel "	4			4	4
Forklift Operation	2	2		4	4
Electricity	1	2		3	3
Labour	3	1	0	13	10
General Administration	1.5	2		..3.5	2.5
	12.5	18		30.5	26.5

Annual costs

Capital Cost Recovery @ 18% over 5 years $193,945

- Operating Costs ($/MBFM) " 26.5

Annual Revenues

Marginal increase for kiln and planer operations ($/MBFM) 55

Break-even Point (Hay River Reserve "Total) ($/MBFM) 6,805

Assuming a 50% Capital Cost injection,

Annual costs

Capital Cost Recover @,18% over 5 years 97,000

- Operating Costs ($/MBFM) 26.5

Annual Revenues

Marginal Increase for Kiln and Planer operations ($/MBFM) 55

Break-Even Point($/MBFM) 3 404

APPENDIX VI

-OPERATING COSTS - KILN AND PLANER

	OPTION 1		OPTION 2	
	Kiln	Planer	Kiln	Planer
Maintenance - Belts, pipes, - knives, replacement - supplies	1	2	1	2
Fuel - waste	4	0	4	0
Forklift operation - gas, oil, mtce.	2	2	2	2
Electricity - motors, lights, planer	1	2	1	2
Labour (See Appendix 11]	3	10	2	8
General Administration	1.5	2	1	1.5
Cost/MBFM	12.5	18	11 "	15.5

Total - Option 1	30.5
Total - Option 2	26.5
Marginal Difference	4 /MBFM

APPENDIX VII

PROJECTED PROFIT AND LOSS STATEMENT

	OPTION 1	OPTION 2	OPTION 2 with 50% Capital Cost Grant
Revenues - 9 000 MBFM @ $55 (Option l-incremental)	495 000	495 000	495 000
costs - Capital - 18%/5 years	114 000	193000	97 000
- Operating - 9 000 MBFM @ $30.5	274 500		
- 9 000 M8FM @ $26.5		238 S00	238 500
EarningS Before Taxes	106 500	63500	159 500
Taxes (50%)	53 250	31 750	79 750
Earnings	53 250	31 750	79 750

APPENDIX VIII

NWT COSTS/BENEFITS (EX-GNWT)

NWT COSTS		NWT BENEFITS	
Planer Jobs (Present Industry)		Kiln/Planer Jobs (Central Facility)	
10 Man Years @ $15 000	150 000	14 Man Years @ $15 000	210 000
		Value Added"(7 000 MBFM at $35) - kiln only	245 000
		Reduced Transpiration Costs - South of 60°	75 000
		Increased Throughput - (9 000 MBFM - 7000 MBFM) @ $275 min./MBFM	S50 000

NET BENEFIT = $930000