A MATERIAL MANAGEMENT AND PHYSICAL DISTRIBUTION STUDY OF C.P. RAIL NORTHLAND'S SERVICE

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SUMMARY OF ECONOMICS

Vancouver	T.L. P & D Savings with owner operated tractors (2)	$25,000
Vancouver	Dock facility changes resulting in stem time reduction and estimated one (1) employee saved	30,000
Vancouver	Greater use of roll Mafi pallet flats 3 per sailing 30 tons each, loading time 10 minutes each versus 5 minutes x 90 unit load cycles = 450 minutes, say 420 minutes saving at $20.00 per hour x 4 x 50 weeks in and out movements (Additional Mafi pallet flats or half height containers could more than double these savings)	28,000
Vancouver	Trailer rental payment reductions due to lower rates improved utilization and conversion to containers	75,000
Vancouver	Trailer length reduction from 45' to 40' (30 trailers a month Northbound = 150 feet or 5 trailers @ $600 x 12)	7,200
Vancouver	Container economy of scale from 12' to 20', saying 2/3 of 15 minutes x 30 containers per month = $27.00 per hour x 5 hours x 12 x 2 = $3,240 (Additional 20' containers, say 30 per week could more triple these savings).	3,300
Kitimat	Same as item 3	28,000
Kitimat	Same as item 6	3,200
Kitimat	Reduced handling and consolidation due to Vancouver direct loading to Kitimat and Terrace	50,000
Kitimat	Reduced highway movement between Kitimat, Terrace and Prince Rupert account economies of scale	67,000
Kitimat	Overtime savings due to later Vancouver departures and Kitimat arrivals plus split barge operation - $185,700 - $10,000 Vancouver extra time & half cost.	165,000
Prince Rupert	Elimination of Lindsay's deconsolidation charge due to direct delivery loading from Vancouver, 20¢ per cwt x	4,800
Prince Rupert - Kitimat	Reduction of Kitimat Prince Rupert Highway service by 1,000 round trips per year due to split barge operations	250,000
Terrace	Reduction of Kitimat-Terrace road trips account economy of scale	5,000
Kitimat-Prince Rupert	Reduction of 2 round trips per week by Lindsay's Cartage	25,000
		$766,500

INTRODUCTION

Northland Navigation originally operated as a heavily subsidized passenger and freight coastal steamship operation. However, in 1976 with the cancellation of the Federal Subsidy it withdrew it's passenger and freight ships and curtailed it's B.C. Coastal Service to a twice weekly tug and barge operation between Vancouver and Kitimat. A connecting highway operation was performed by Skeena Motor Carriers, a subsidiary, mainly between Kitimat, Terrace, Prince Rupert and Stewart.

We have found that the principal operating officers of both Northland and Skeena are steamship orientated with little knowledge in material management and no experience in physical distribution. Further, operating for years under Federal subsidy, they have no appreciation of costs. We have now observed these operations for about six months, cataloguing many of the functions and costing out various alternatives that would effect cost savings and improvements in service. We found that there was plenty of room for economy of scale, improved equipment utilization, elimination of intermediate handling, improved service, preventive maintenance, equipment control and better prices from suppliers.

We will show how these alternatives will reduce present costs and improve service. Over the long term C.P. Rail Coastal Marine Services personnel working together as a team can contribute towards a common goal of greater efficiency which will have a maximum effect on the profitability of these operations.

PRESENT AND PROPOSED
VANCOUVER PICK UP AND DELIVERY

PRESENT OPERATION

The Northland traffic department function is to control barge space allocation, container and trailer equipment distribution. Customer requests are completed either by space allocation when freight is brought to the Vancouver terminal by private carriage,or they give instructions to Wholesale Delivery Service to spot containers and trailers at shipper's premises.

Less than container lot traffic is consolidated in 12' and 13' containers either at W.D.S. premises when picked up by them, or at Northland's Vancouver terminal when brought there by other local cartage or private carriage.

This co-mingling duplication at Northland's facility and W.D.S. in 12' and 13' containers reduces the possibility of assigning specific containers directly to large customers in the North. The present operation causes complete rehandling of practically all L.C.L. shipments at Kitimat. The result is delays, poor cube utilization and additional handling and highway expenses.

In addition to the L.C.L. traffic mentioned, W.D.S. also consolidate L.C.L. for their own specific customers, Simpson-Sears, Malkin-Kelly Douglas, Alcan, Eurocan, Cancel and Granduc Mines. Appendix I shows an analysis of W.D.S. consolidations with Sears traffic at 150,000 lbs. per month, cube 5 lbs. per cu. ft. - all other consolidations 900,000 lbs. per month that cube out at 20 lbs. per cu. ft.

An analysis of container equipment used in Appendix I sheet 4 shows 60 - 12' or 13' containers and 20 - 20' containers are required to fill the partly controlled cycle.

One innovation has been Northland's leasing of a tractor and driver on a weekly basis from W.D.S. The result has been to improve pick-ups by almost one extra load per day for an annual reduction of some $25,000 annually in P & D expense.

P & D statistics show that there is still sufficient additional pick-ups to justify hiring another tractor and driver on the same basis.

DIRECT LOADING FROM VANCOUVER TO CUSTOMERS PREMISES

Our ultimate goal is to co-mingle L.C.L. traffic at one Vancouver location so that we can generate sufficient volumes on Tuesdays and Fridays to permit direct loading of 20' I.S.O. containers from Vancouver for delivery at customers premises at final destinations.

Direct loading program has been set up for designated zones in Kitimat, Terrace and Prince Rupert. Zone 1 applies to town centres, zone 2 industrial parks and zone 3 and 4 major industries or suburban industrial parks.

To date we have been able to implement the dry traffic direct loading program in 20' containers for Terrace and Kitimat. However, due to the present limited supply of 20' containers and no temperature controlled equipment, we have not been able to implement the Prince Rupert direct zones loading, nor Terrace and Kitimat temperature controlled direct loading. Proposed direct loading arrangements are shown in Appendix 2.

Further, it is our aim to have Skeena Motor Carriers take over Lindsay's present contracts to Stewart and Granduc Mines and possibly Cassiar Asbestos. Simpson-Sears consolidations would also be made in 20' containers. An analysis of July, 1977 W.D.S. consolidation cube requirements are shown in Appendix 1, sheet 4. These show that Kitimat, Terrace and Prince Rupert traffic can be handled in 1 - 20' container each on Tuesdays and 2 - 20' containers on Friday. However, if the remaining W.D.S. loose L.C.L. traffic, the cribs for Alcan, Eurocan and Cancel, the Northland 12' and 13' container consolidations and loose traffic at Vancouver dock was included, there would be sufficient traffic to increase the 20' container requirements to about 4 - 20' vans, 2 - 20' CO^2 or N_2 temperature controlled and 6 - 20' half heights on Tuesdays and 8 - 20' vans, 4 - 20' temperature controlled and 4 - 20' half heights on Fridays.

CONTAINER EQUIPMENT

The proposed inventory of about twenty five (20) 20' I.S.O. temperature controlled containers would be used to carry back-haul frozen fish from Prince Rupert. The proposed 20-unit inventory of 20' half heights would permit stowage of palletized

building supplies northbound plus stacking in conjuction with 20' vans and temperature controlled containers on barges 101 and Lakelse with only 13' height clearances. Southbound the half height containers could be used for aluminum ingots to avoid present multiple handling. Initially the proposed 50-unit inventory of 20' I.S.O. van containers is contemplated for L.C.L. requirements. Later when all known handling problems are solved,it is proposed to introduce incentive rates for heavier shipments in 20' I.S.O. containers versus present 24', 27', 40' and 45' trailers (ie. if present 45' trailer round trip rate is $1,400 then the 27' rate would be $650 on 30,000 lb. min. and the 20' I.S.O. container rate on chassis would be $550 on 40,000 lb. min.).

CONTAINER CHASSIS

In order to avoid considerable handling of empty containers at Vancouver, it is proposed that the 20' L.C.L. containers remain on 20' single axle chassis or short second hand single axle flat trailers with pindle hooks while being loaded at W.D.S. and unloaded by Skeena Cartage, etc. It is estimated that approximately 10 - 20' chassis will be required at Vancouver and 20-27' B. Train flats at Kitimat.

PROPOSED OPERATIONAL CHANGES AT
NORTHLAND'S VANCOUVER FACILITY

We now find that Northland's Vancouver property space allocation does not take into account the economics of day-to-day operations. For instance the busiest operation, that of unloading local trucks with L.C.L. for stuffing into outbound containers, is designated at opposite ends of the property. A fork truck stem distance of a minimum of 500 feet (for every single small or multiple shipment) is necessary. The long stem operation is reversed on sailing date when loaded containers are moved from this area to the outbound barge.

Conversely the prime facility location,protected from the elements, is allocated to the fork truck and container maintenance and repair operation where handling movements are limited to one or less per day. Also, which houses the Longshoremen's lunchroom.

Further, with the take-over of purchasing by B.C.C.S. the warehouse space allocated to the Purchasing Department is now surplus. Also the hospital space occupies strategic prime warehouse location.

It is suggested that the west side warehouse 40' x 90' be assigned for the maintenance function of the Vancouver operation,ie.fork truck preventive maintenance and repair, container maintenance and shop. The Longshoremen's lunchroom and the hospital should be located in the present vacant southbound traffic office area.

If these operations were removed from the main warehouse by internal employees, the choice released space could be reassigned for the container stuffing operation placing it within a few feet of the proposed unloading area for L.T.L. trucks. The proposed L.T.L. truck unloading area would be under the canopy directly in front of the main warehouse. This area is now reserved for employee parking which has diminished with the staff reductions that have taken place. L.T.L. traffic would enter the main warehouse by the existing west door and the east door could be opened up to allow empty fork trucks to return to the outside unloading area. Alternatively, we should consider acquiring a portable loading dock or building a permanent wooden dock to allow L.T.L. trucks to back up on to the south side and small fork trucks 5500 lbs. to unload palletized cargo from local trucks and

cross dock it to parked containers on the north side. This would drastically reduce the present stem time and reduce the labour-intensified operation such as attaching chains to pallets and dragging them from the front of trucks to tailgate in order to unload them. The proposed operation should reduce the work force by a minimum of one employee.

Further, it is proposed to relocate the checkers' office from its present location to the present hospital room area, so that they will be closer to the operations and could observe both the warehouse and dock operations.

Finally, all dead storage such as stored handling equipment and salvage should be removed from the active part of the facility and placed at the extreme back end of the main warehouse on pallet racks that are presently in the west side warehouse. Pallet rack spacing should be set up to accommodate the 1200 mm x 1000 mm pallet size now in final stages of acceptance as the predominant C.S.A. Standard.

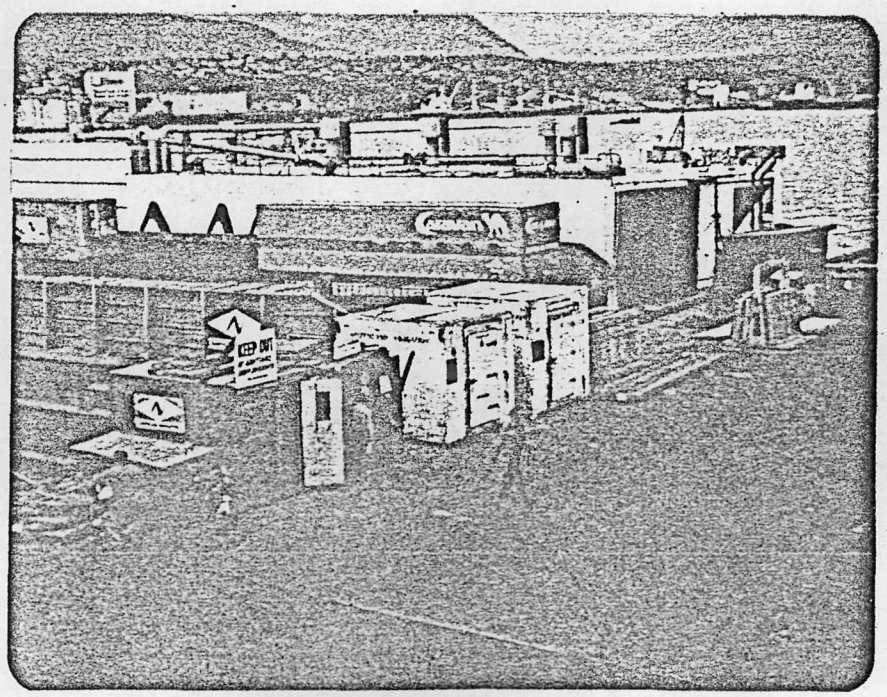
Appendix 3 shows a rough drawing of the proposed relocation of the Vancouver operation.

In order to avoid tying up expensive trailer equipment while L.T.L. 20 foot containers are being direct loaded for Zones in Kitimat, Terrace and Prince Rupert, these containers could be lifted onto less expensive ($400.00) stillages parked alongside the loading platform by the large fork truck. Position of the stillages are shown in Appendix III.

NORTHLAND TRAILER RENTALS

Records show we have about 40 trailers on rental from Caravan, 12 from T.I.P. and 1 or 2 from Gilflex. The daily charge for this equipment is shown in Alpendix IV, Sheet 1 of 4. We find that these trailers when empty are delayed up to two weeks at Kitimat waiting for barge space due to scale southbound unitized cargoes of aluminum ingots, pulp board and canned fish. It is our intention to reduce the number of trailer rentals by investigation possibilities of loading these empty trailers with ingots, pulp board and canned fish. Also we are proposing a more ridgid trailer and container control system. Further lower rental rates have been obtained from the above rental companies by using C.P. Rail's National Account. Finally, we can negotiate even lower rental rates with C.P. Transport on some specific surplus trailers such as their 45' flats and van trailers at about $165.00 per month.

A summary of these alternative leasing arrangements is shown in Appendix VI Sheet and the net result from the best combinations should lower our trailer rental costs by about $75,000 annually.



TRAILER EQUIPMENT

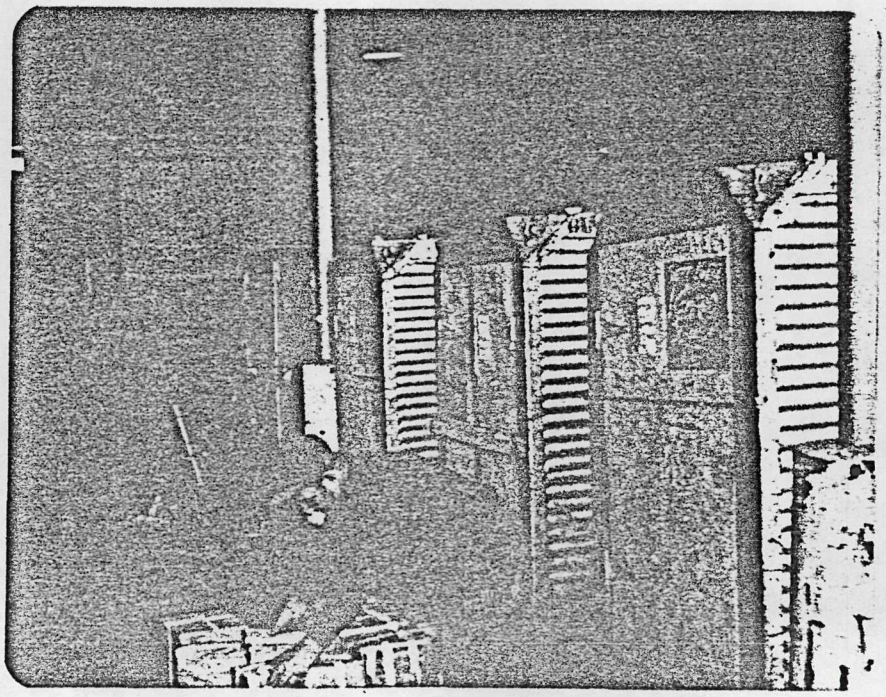
The dry and insulated 26' and 45' vans are in good condition and should be retained. However, the 40-odd leased 40 - 45' van trailers leased from Caravan and TIP should be cancelled. They should be replaced by leasing more 27' vans and less 40 - 45' vans from CP Transport, because the difference in daily rental cost is about $1.50 per day. Similarly the SMC 40' flat trailers are in fair condition with few exceptions and most of them should be retained. The 25-odd leased 40 - 45' flat trailers from Caravan and TIP should be cancelled. They should be replaced by leasing 20' container chassis and 27' flats that could carry both containers and bulk traffic, the 27' particularly between Kitimat and Prince Rupert. The 24' reefer trailers are in poor condition and should be replaced by newer 26' reefers.

CONTAINERS

The 130 - 12' to 13' containers should be run into the ground - in other words no further reconditioning should be undertaken. An attempt should be made to sell this equipment and the funds obtained should be sunk into 20-foot I.S.O. Containers.

The 20 - 4' x 6' containers should be charged exclusively to the Kemano operation.

The 19 - 20' containers should be retained. (I.S.O. Containers)



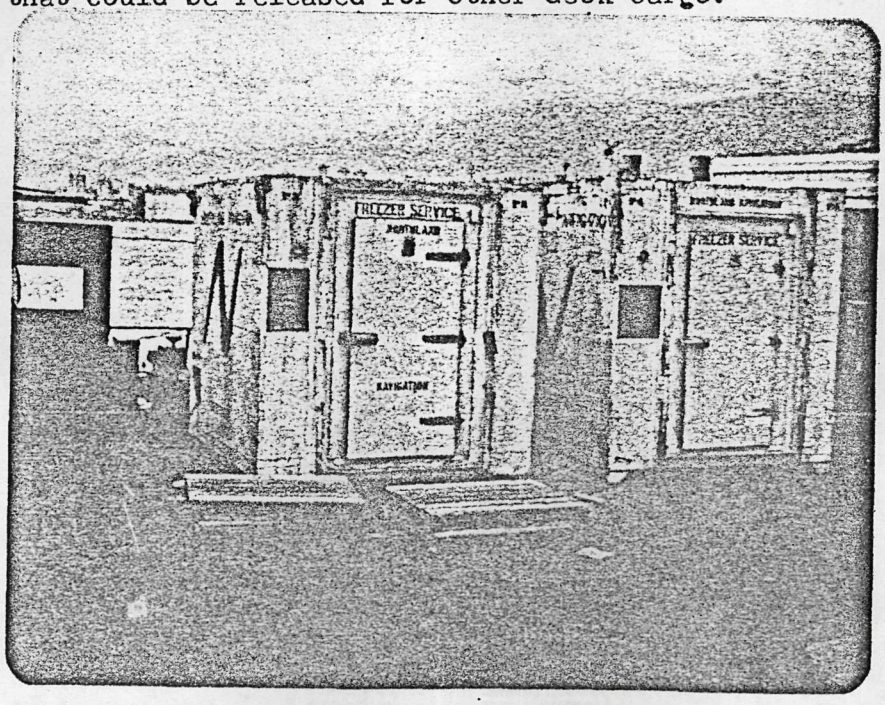
REFRIGERATED CONTAINERS

The present 24 small and 12 large coolers are costly, cumbersome and unreliable and should be disposed of. It is Norm Parham's opinion that there are up to 20 loads a week of frozen fish from Prince Rupert to Vancouver now handled mainly by Motorways. Should Northland be successful in providing suitable equipment for this traffic it would eliminate most of the present empty backhaul. It is proposed that we obtain about 20 Nitrogen clip-on units and an equal number of temperature-controlled 20' I.S.O. containers. Northbound we would carry Prince Rupert's Safeway's groceries, Sears, Kelly Douglas and Malkin's traffic as well as our L.C.L. southbound frozen fish. Further, if large temperature-controlled trailers are required we should investigate acquiring seven CP Transport E.C.R. trailers which are surplus to their requirements. These trailers would require about $2,000 worth of maintenance to bring them up to standard.

ANALYSIS OF MAINTENANCE COSTS FOR NORTHLAND'S EQUIPMENT

	Labour	Materials	Overhead	Units	Cost Per Unit
Containers & Freezers	$18,000)			40	
	)	$ 8,000	$10,000		$ 300
Containers - dry	40,000)			150	
Skeena Trailers	27,000	19,000	7,000	27	2,000

The present six 500-cubic and the one 250-cubic-foot reefers are in fair shape but are not intermodal and are expensive to handle and service. Their retention would require maintaining generators on the barges that now occupy valuable revenue space that could be released for other deck cargo.



CONTAINER AND TRAILER CONTROL

Both Vancouver and Kitimat try to control the present utilization of containers, trailers and mafi roll pallets with the result that they are working at cross purposes.

Experience shows that the control of equipment should be in the hands of the traffic department in Vancouver, where the majority of the traffic is generated.

It is suggested that a master control board be set up in Vancouver, controlled by the Supervisor of Traffic. In order to simplify, readily identify equipment it is suggested that all containers and trailers be numbered using the prescribed I.S.O. identification system as is used by C.P. Rail Intermodal Services and C.P. Ships.

CONTAINER AND TRAILER IDENTIFICATION MARKINGS

Alpha is used for the first three or four identification marks ie. C.P. Rail Northland Services would show as alpha C.P.N. or C.P.N.U.

The first two numbers would identify the length of the equipment.

12 foot containers	CPNU12
20 foot containers	CPNU20
26 foot trailers	CPN 26
40 foot trailers	CPN 40
45 foot trailers	CPN 45

The third numeral, shown below in the box, would identify the type of equipment. The last three numbers would identify the individual unit.

20' dry container	CPNU 2 [1] 000 - 999
20' insulated container	CPNU 2 [2] 000 - 999
20' bulk head flat container	CPNU 2 [3] 000 - 999
20' refrigerated container	CPNU 2 [4] 000 - 999
20' tank container	CPNU 2 [5] 000 - 999
40' dry trailer	CPN 40 [6] 000 - 999
40' insulated trailer	CPN 40 [7] 000 - 999
40' flat trailer	CPN 40 [8] 000 - 999
40' refrigerated trailer	CPN 40 [9] 000 - 999

As an example the present 15 - 20 foot I.S.O. dry containers would be numbered as follows:

C.P.N.U. 2 1 000 to 2 1 014

TRAILER AND CONTAINER CONTROL BOARD

It is our intention to establish a trailer and container control board at Vancouver and Kitimat with Vancouver traffic department controlling all movements.

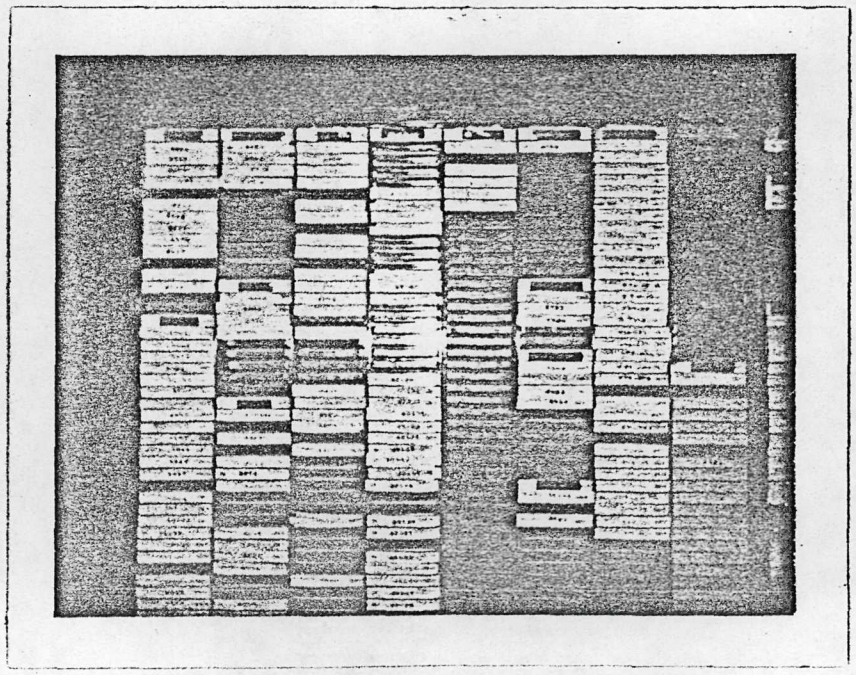
The proposed board will show the number of owned or leased equipment in the system by type, size and disposition. Vancouver will determine its weekly requirements at least one week ahead of time and will advise Kitimat the priority for empty southbound movements with emphasis given to getting leased equipment backquickly so that surplus can be taken off lease.

It is visualized that the container and trailer control board will show the approximate number of containers and trailers by type that will be required for the next sailing.

VANCOUVER			KITIMAT			PRINCE RUPERT	
Southbound Loads Awaiting Delivery	Southbound Empties In Transit	Empties Available for Loading	Northbound Loads Awaiting Dispatch	Loads to be Delivered	Empties Awaiting Dispatch	Loads To Be Delivered	Empties Awaiting Dispatch

The Cardex card could be colour coded white on one side to indicate load and coloured on the other side to indicate empty. These cards would be lined to permit recording days under load and movement and days empty waiting loads, so that when summarized statistics could be developed showing utilization factors and costs.

Postings must be made daily and revisions communicated by telex between Vancouver and Kitimat, with Vancouver advising priorities on all southbound movements.



VANCOUVER EQUIPMENT

FORK TRUCKS

The fork trucks at Vancouver are more than are necessary for the most part of the year. Mr.J. Agar states that a maximum of five fork trucks are manned on a Friday sailing date with the exception of when two barges are loading. Those fork trucks that are mostly used are #4, #57, #8 (8,000 lb. capacity) #36 and #58 (5,000 capacity) and #104 (25,000 lb. capacity) as well as limited use of #103 (30,000 lb. capacity equipped with short forks and a goose-neck attachment for handling roll Mafi flats). This latter machine could be more useful if long forks were acquired and if a goose-neck attachment suitable for the Ottawa tractor was acquired, because there is not enough work for fork truck #103 with short forks.

Observations in the Vancouver shed revealed the eleven additional fork trucks were idle, six were spares and five were awaiting repairs. Discussions with Moe Vaillant, Equipment Supervisor, Casco Terminals Limited, brought the following facts to light.

One spare fork truck for every six working machines is more than adequate, particularly when the machines are operated fully only on sailing days.

Diesel fork trucks should be on a preventive maintenance program that should take place after 200 hours of running. This servicing should take about six hours and could be scheduled for a Monday, Wednesday or Thursday, none of which are sailing days.

Most of Northland's fork trucks are not automatic while most other waterfront fork trucks have automatic transmissions which cuts down on downtime for repairs. Casco originally had Clark fork trucks but found the spare parts costs were too high as compared to other makes and they have now switched to Taylor fork trucks. The Taylor fork truck, custom made, is more manoeuverable and is shorter in length with greater reliability and lower maintenance cost. As an example, Casco have a 52,500 lb. 1973 Taylor fork truck whose maintenance cost in 1977 was only $1,200. The maintenance costs for twelve of Northland's 8,000 lb.

fork trucks range from $1,200 to $7,300 per unit. Maintenance costs for three of the five 25,000 lb. fork trucks are lower from $2,200 to $4,000. These figures show that there is something radically wrong with Northland's 8,000 lb. fork trucks and maintenance expense.

It is recommended that BCCS acquire over the longer term the following fork trucks for the Northland, Vancouver operation:

here. - One 6,000 lb. fork truck diesel solid tire (easy ride or super soft) with side shift, automatic transmission

on way. - Two 12,000 lb. Taylor Diesel solid tire (easy ride or super soft) with side shift, automatic transmission

here - Two 15,000 lb. Taylor Diesel pneumatic, automatic transmission with side shift and side carriage to handle 20-foot empty-full and half-height containers.

1 Kitty

not here - One 52,500 lb. Taylor diesel pneumatic, automatic transmission, with side shift and side carraige to handle 20-foot loaded-full and half-height containers

- One additional Articulated Terminal Dock truck with goose-neck attachment to handle trailer and roll Mafi flats.

Ottawa available. D.F. to let me know arrival.

Additional fork trucks would be rented on a weekly or monthly basis at Vancouver when required during peak traffic periods when two barges are loading on a given day.

KITIMAT EQUIPMENT

FORK TRUCKS

The fork trucks at Kitimat are either too small or too large for the operation. The best fork trucks were sold after the discontinuance of the passenger-freight ships without considering Kitimat local needs. Even now when Kitimat sends a good fork truck to Vancouver for major overhaul they return a less effective unit, i.e. fork truck #57 sent in December - they returned unit #32 which has poor lifting power and is unable to negotiate grades at low tide. Fork truck #2 presently requires engine rebuild - suggest this work be held up until future requirements solidified.

No. 100 - Vancouver. waiting parts. appears to have transmission problems, #32 should be returned to Vancouver. given back to Northland.

Fork truck #101 at Prince Rupert and the Bull Moose at Terrace operated generally by Lindsay's Cartage and others should be removed because of limited use, misuse and high maintenance.

With the introduction of 20' to 27' boxes and chassis between Vancouver and Prince Rupert the need for fork trucks at Prince Rupert practically disappears (from a maximum of 15 lifts per week to possibly one a week). If necessary in the future, lifts could be arranged through Skeena Heavy Lift or Canadian Stevedores at Fairview Dock. Further, the proposed axle scales for Kitimat will eliminate all of the present lifts at Terrace that occur now due to trailer overloads that require shifting by heavy fork trucks.

#57 in. Kity

#4 retained in Vancouver

#38 in Kity.

axle scale.

Kity.

K2

5

yale.

38 Clark.

102.

PROPOSED POSITION OF FORK LIFTS

KITIMAT

(A) 12000 1978 Taylor C.CAB
#5 10000 1974 Clark C.CAB
#(A) 15000 1977 Taylor C.CAB
#20 8000 1973 Clark Open
#K100 25000 1969 Clark Open long forks
K102 25000 1972 Clark Open long forks
K5 4000 1960 Clark Low Mast
K2 8000 1972 Clark Open Kemano

PRINCE RUPERT

101 25000 1971 Clark C.CAB long forks

VANCOUVER

(A) 12000 1978 Taylor Open
#4 8000 1974 Clark Open
#(A) 15000 1977 Taylor Open
#57 8000 1974 Clark Open
#36 5000 1970 ClarkOpen High Mast
#38 6000 1972 Clark Open low mast
#103 30000 1958 Clark Open Long forks 23 yrs. old. 7'-. length forks.
#104 25000 1969 Clark Open long forks
#58 5000 1969 Clark open

Need for Lake else. when going to Prince Rupert.
access to machines in peak periods.

FORK TRUCK AND MATERIAL HANDLING REQUIREMENTS

We find that Northland's fork-truck maintenance is higher than most other waterfront operators. This can be attributed to several factors:

- Average fork truck age ten years
- Under-powered fork trucks for southbound cargoes and containers
- When carying loads up steep ramps at low tide
- Single tire fork trucks unstable when lifting containers
- Driver abuse when manually shifting gears
- Lack of fork truck preventive maintenance program.
- Installing rebuilt engines and transmissions in old fork trucks.
- Spasmodic use of triple mast, low mast and makeshift goose-neck attachment on heavy duty fork truck #103

Immediate recommendations to reduce the present fork truck expense are:

- Do not acquire Northland's sparsely used older trucks, Towmotor #11, 18 and 28, Bullmoose #14 and Clark K7, 17, 27 and 32, thereby reducing average age by at least four years.
- Institute immediately a fork truck preventive maintenance program.
- Purchase one pair of 96" forks for fork truck #103 to increase its utilization, back-up heavy lift fork truck #104, and also purchase a goose-neck and rack for the Ottawa shunter tractor. (now implemented)
- Economically justify future rebuilt engine and transmission installations.
- Rent fork trucks for spasmodic traffic fluctuations,ie. canned fish and empty fish cans volume movements.

Future planning and implementation should include:

- Heavy duty diesel powered, automatic transmission, dual wheeled, side shift fork trucks.
- Replacement of 1969 - 1970 vintage 8,000 lb. fork trucks by new 12,000 to 18,000 lb. Taylor fork trucks to accommodate economy of scale unit loads and empty containers. (We have replaced #3, #6, #8, #10, #22, #16, #19 with two (2) 15,000 lb. and two (2)
- Replacement of 1958 - 1970 vintage 25,000 lb. fork trucks when ramps and barges will support 45,000 - 52,500 lb. Taylor fork trucks to handle 20-foot, 40,000 lb. loaded containers. See Appendix VI

MECHANICAL AIDS AND THEIR POTENTIAL

IN C.P. RAIL COASTAL MARINE

SERVICES (NORTHLAND)

mafi roll pallet flats

There are twelve (12) Mafi roll pallet flats in the present inventory, observations reveal that they are frequently idle at Vancouver and Kitimat with the majority left at the latter point. This can be attributed to non-recognization of their cost savings potential, and improper assignment and control of this equipment.

As an example, loose northbound Alcan traffic is invariably picked up off the Kitimat dock and is loaded into pallet flats for transfer to Alcan receiving facilities. As an alternative, it is suggested that we use more Mafi roll pallet flats for the through movement from Vancouver docks to Alcan facilities in Kitimat. This could be accomplished by assigning an average of three Mafi roll pallet flats to each sailing. The proposed cycle would be inbound at Vancouver and Kitimat Monday and Thursday, outbound Friday and Tuesday. During the port stopover, three days, this equipment could be used to reduce the number of individual unit load stem movements from the front of the Vancouver property to the rear shed and vice versa on sailing days.

By cycling 3 loaded Mafi roll pallet flats on each barge sailing at least a 50% increa in the present mafi pallet utilization would occur. The result could be a reduction of 30 individual unit load handling at least four times. With an average cycle time of ten (10) minutes per unit load into and out of the barge. Savings of 600 minutes or $100.00 per week could occur at Vancouver with two sailings a week.

Further it is suggested that considerable fork truck stem time could be saved if on the recent loading of the Lakelese the barge had been left on the north or west face of the wharf adjacent to the shed for several days, loading had been carried out during this time at nearly even tides a few yards away from the stored fish cans and cartons in the shed.

Another suggestion for reducing fork truck stem time could occur when barges are partially unloaded at Vancouver and Kitimat and when outbound cargos are available. An inbound cargo discharge and an outbound cargo loading could be handled by the same fork truck cycle similar to the procedure used on handling cargo in container vessels. A loaded movement in both directions of the fork truck stem movement would reduce the overall loading and unloading time of barges at Vancouver and Kitimat.

At least 10 mafi roll pallet flats.
Nylon tie downs. what Style Tom King.

Reduced time and motion in barge loading operations by introducing economies of scale.

Observations recorded and traffic analysis indicate that by consolidation of piece meal traffic and increasing unit load sizes it is possible to reduce the number of lifts and moves Northbound by 80% and those southbound by 60%.

First a three (3) to one(1) reduction in handling is visualized in substitution of 12' and 13' containers for 20' containers. Loose items such as drums, bagged material, units of brick, wood sticks, cement blocks and numerous assorted units of say 1 ton each could be reduced between fifteen (15) and twenty (20) to one (1) if loaded in either 20' van or open top containers and/or 20 or 30 Mafi roll pallet flats.

PREVENTIVE MAINTENANCE PROGRAMS

FORK TRUCKS

In order to obtain dependable service from our fork trucks it is essential to obtain fork trucks that have a proven record and dependable service in rugged industrial use.

For this reason, we favour the Taylor fork truck with automatic transmission and side shift. However, no machine will provide satisfactory service unless periodic preventive maintenance, daily inspections, servicing and lubrication are included. Further, it is also necessary for the maintenance people to be fully aware of the functional operation of each control, indicator, switches and components.

The name of the game is to maximize availability of the machine for operational purposes and extend the longtivity of the machine, thereby minimizing the cost of fork truck operation.

It is suggested the C.P. Rail Northland Operations Department have control over the use of Vancouver fork trucks. It would be their responsibility to advise the Maintenance Department when they can release a fork truck for maintenance. Major work should be scheduled for Wednesdays and Thursdays (quiet days for dock operation) with preventive maintenance checks scheduled for Monday. All fork trucks should be in proper working order and available for Operations Department use for Tuesday and Friday sailing days.

A mobile equipment log book for fork trucks should be maintained to include:

- Operator's daily inspection and service record for each fork truck.

- Monthly record of mechanical repairs for each fork truck

- A general information log on unit hours

- Annual availability summary showing % of availability

Fork truck major maintenance should be carefully appraised before work is undertaken to determine all economic factors ie. the age of the machine, it's present suitability for the present working requirements and whether it should be traded in for a more suitable unit. Fork truck rentals should only be considered for spot movements or peak traffic requirements of a short duration. It will be the Operations Department's responsibility to return all rentals to suppliers at their earliest convenience to avoid unnecessary expenses.

Fork truck preventive maintenance by an outside fork truck service shop should be considered when the number of trucks are reduced to a point where we cannot justify our own maintenance facility. See Appendix VII, sheets 1 to 5.

PRESENT BARGE LIMITATIONS

There is no easy solution when one wants to introduce economy of scale into Northland's operations. According to B.C.C.S. Engineering Department the present covered barges, Transporter, #101 and the Lakelse are not constructed sturdy enough to support a 52,000 lb. fork truck (75,000 lbs.) and a maximum allowable fully loaded container (45,000 lbs.). This feature also applies to the Vancouver and Kitimat loading ramps. Further, to make the barge operations economically viable maximization of cube is essential. Certainly ro-ro trailers at present rate levels are not economical in existing barges but 20' containers stacked two high have possibilities. Here again data in Appendix V shows the present covered barges are restrictive. The heights of the Transporter (17 foot) just permits two high stacking of 20' x 8' x 8' containers while the Northland 101 and Lakelse 15' and 13' respectively do not.

Another bad feature of these two barges is the narrow rear door widths. The Northland 101 and the Lakelse are 15 feet. It is proposed for the interim that we acquire 20' van type containers and 20' half height containers for rough freight (C.P. Ships have surplus half height containers at about $600.00 book value). This would enable us to stack a 20' van container and a 20' half height container in the existing barges. Further consideration should be given to acquiring sturdy open barges at least 55 feet wide to permit double stacking of 20' x 8.5' x 8' van type containers. To get around the weight problem on ramps and barges there are two known alternatives. Spread the weight of the loads on the ramps and barges, heavily loaded containers could be moved on to barges by 30 ton roll type Mafi pallet flats or by Steadman swing lift. These heavily loaded containers could be removed from the mafi flats or unloaded by swing lift on the open barges providing feet of space was left in the centre of the barge to permit a Steadman type swing lift machine to operate. This centre section would be filled later by loading highway trailers in this area. The reverse procedure would have to be arranged at the other end of the water movement. There are certain inherent advantages in using the Steadman swing lift, because it's capital cost is about half of that of a 52,500 lb. fork truck. It has a high

reliability factor, it will spread the loads sufficiently to get round major expenditures for beefing up ramps and barges; while slower, it can do everything that a front fork truck loader can do on the dock and more, because if it is licensed, it can deliver 20' foot containers locally and set them at a shippers premises.

This equipment has had a proven record at C.P. Rail Piggyback Services, medium size facilities such as Edmonton and Calgary where the traffic volumes did not justify the double expense of a heavy duty fork truck. The swing lift has another advantage, on deep sea electric reefer containers it permits you to leave the chassis behind because when top lifting, it will not damage containers without fork jackets. Appendix VIIshows specifications of this equipment.

BARGE IN TRANSIT TIMES
NORTHBOUND AND POSSIBLE ALTERNATIVES

During 1977 Northland Navigation operated the Ocean Prince northbound with about 8 single barge tows averaging 54 hours and 42 tandem barge tows averaging 60.5 hours. More than 40% of the Vancouver departures were in excess of one hour. In fact 20% were more than two hours late. In other words, with on-time departures tandem tows could be performed within 60 hours. Tide delays also were recorded on 10% of the voyages.

During the same period the tug Northland Fury went northbound with about 21 single barge tows averaging 46 hours and about 28 tandem barge tows averaging 52.5 hours. Only 10% of the Vancouver departures were more than an hour late. In other words, with on-time departures tandem tows could be performed within 52 hours.

As you are aware, Tuesday sailings are far lighter than those on Friday and in order to improve the mid-week service and try to shift some of the Friday cargo to Tuesday's sailing the following should be considered.

Tuesday pick-up cutoffs to be set back from noon Tuesday to 1600 hours. Longshore crews to be split with four men reporting for duty at 0800 to 1700 hours and four men reporting for duty at 1300 to 2100 hours. Set back Fury's schedule to 2100 hours with ETA Kitimat 2100 hours single and 0200 hours tandem tow.

While it is desirable to set back the Ocean Prince's schedule to 2100 hours also, the ETA Kitimat of 0900 hours tandem would be too late. However, if a larger barge single tow was arranged the Kitimat ETA would also be about 0200 hours which we could live with.

The overall financial effect of this proposal would be less tandem operations on Fridays and less double time for unloading the barges at Kitimat.

Study shows that about half of the 20 tandem barge operations Northbound on Tuesday and Southbound on Friday are questionable because of the combined tonnages handled. Similiarly about a quarter of the 40 tandem barge operations Northbound on Friday are questionable for the same reason. Further in many instances tonnages in excess of a single barge capacity were minimal, some tandem operations were operated to provide extra capacity Southbound to reduce empty equipment inventory at Kitimat.

It is suggested that consideration be given to contract trucking overflow rush loads, from Vancouver if only 1 or 2 rush trailers cannot be handled on a single barge rather than chartering and operating the second barge.

To avoid sending a second barge to bring empties Southbound, measures should be undertaken to try and handle Aluminum, paper and canned fish in empty Southbound trailers. Another idea that will be studied is the feasibility and availability of collapsible 20 foot bulkhead side rack containers.

PROPOSED LATER DEPARTURE FROM VANCOUVER AND SPLIT BARGE OPERATIONS

At the present time 60 per cent of the Stevedore operation at Kitimat is performed at double time, 8 per cent at time-and-a-half and 32 per cent at regular time.

Rescheduling the Vancouver-Kitimat barge operation for departure at 21:00 hours will increase the Vancouver costs by approximately $10,000 (5 men at time-and-a-half for 4 hours, 100 sailings). However if the Kitimat-Prince Rupert operation were separate ports, it would not be necessary to start unloading before 7:00 A.M. at either port. Therefore the 60 per cent double time could be eliminated, first because split barge operations with economy of scale containers would reduce port handling times and secondly a split barge operation should permit unloading and loading within 8 to 10 hours (7:00 hours to 17:00 hours).

The overtime saved would amount to($305,500 divided by 60 per cent)= $185,700. To be conservative, we could assume that the Transporter might be delayed beyond the normal work day when discharging cement, therefore Stevedores could work for about 4 hours at time-and-a-half (say $10,000 annually). The overall savings therefore should be about $175,000 less $10,000 additional at Vancouver or $165,000.

A HYPOTHETICAL SINGLE BARGE OPERATION

TRANSPORTER TYPE

PRESENT OPERATIONS			PROPOSED OPERATIONS		
NORTHBOUND					
Units	Weight Tons	No. of Lifts	Units	Weight Tons	No. of Lifts
20 - 12' & 13' containers-mixed	60	20	7 - 20' van containers	60	7
19 - 40' or 45' trailers	200	19	19 - 40'-45' trailers	200	19
2 - 500 cu. ft. freezers	2	2	2 + 20' reefer containers	2+	2
2 - Automobiles	2	2	1 + Car carrier	2+	1
1 - Mafi rough	10	1	1 + Mafi rough	1+	1
100 - Drums (25 + 4)	12	25	1 - 20' van container	12	1
16 - Pallets bagged Starch	16	16	1 - 20' van container	16	1
4 - Units cement blocks	4	4	.5 - 20' van container	4	.5
6 - Units wood sticks	6	6	.5 - 20' van container	6	.5
32 - Units brick	32	32	2 - 20' 1/2 height containers	32	2
213 - Units mixed	259	123	9 - 20' 1/2 height containers		9
			6 - 20' van containers	259	6
	723	250	50	723	50
SOUTHBOUND					
14 - 12' & 13' empty containers	30	14	5 - 20' van containers	30	5
15 - 40' or 45' empty trailers	70	15	19 - 40'-45' empty trailers	70	19
7 - 40' or 45' loaded trailers	140	7	11 - 20' van containers	140	11
360 - Units of aluminum	360	90	11 - 20' 1/2 height containers	360	11
2 - 500 cu. ft. reefers	1	2	2 - 20' reefer containers	2	2
1 - Mafi rough	1	1	1 + Car carrier		1
			1 - Mafi and other	1	1
	600	130	50	600	50

NORTHLANDS-KITIMAT BARGE UNLOADING & LOADING OPERATIONS

Work Force Present

Manager	2100 hrs. to 2400 hrs. 800 hrs. to 1700 hrs.		
Supervisor	2300 hrs. to 700 hrs.		
Supervisor	600 hrs. to 1700 hrs.		
Checker	2200 hrs. to 1400 hrs.		
Fork truck operators	(2)	(2)	
Warehousemen	(3)	(*1)	
Warehousemen	(4)		
Drivers	(10)	(5) (5)	

Work Force Proposed

700 hrs. to 1700 hrs.

500 hrs. to 1400 hrs.

500 hrs. to 1700 hrs.

500 hrs. to 1700 hrs.

700 hrs. to 1900 hrs.

500 hrs. to 1400 hrs.

1400 hrs. to 2400 hrs.

Fork Trucks Present

(2) 25,000# med. fork trucks
(3) 8,000# small fork trucks
(4) 6,000 lb. small fork trucks

Fork Trucks Proposed

(For Unit Loads) (1) 12,000 lb. fork truck
(For loaded) (1) 52,500 lb. fork truck
(For Empty) (1) 16,000 lb. fork truck
(For Stuffing) (1) 6,000 lb. fork truck
(*) (For dock loading)(1) Steadman Swing Lifter or 1 Dyna lift (2) 10,000 lbs. fork trucks for aluminum.

Equipment Present

(20) Van trailers 24', 26', 40', & 45'
(21) Flat trailers 40' & 45'
(15) Containers 20' ISO
(13) Containers 20' & 24' Non Standard
130) Containers 12' & 13'
(30) Containers 4' & 8'
41) Containers reefer S.M. & L.
(2) Goose Necks
(12) Mafi Flats
(1) Pole Trailer
(1) China top trailers
(65) Trailer stands
(18) Glass Racks

Equipment Proposed

(~~15~~ 20) Reefer Vans 27' & 20' N2 Containers
(10) Dry Vans 27'
(30) Dry Vans 40' & 45'
(50) Van Containers ISO 20'
(20) Half-height Containers ISO 20'
(1) Car Carrier
(7) 250 (1) and 500 (6) cu. ft. freezers
(2) Goose Necks
(20) Mafi Flats
(1) Pole Trailer
(2) China top trailers
(65) Trailer Stands
(10) Glass Racks

PRESENT OPERATION TRANSPORTER		PROPOSED OPERATION TRANSPORTER	
Kitimat Barge Loading & Unloading			
5 lifts per hr. by 7 men at double time = 112 machine hrs. at $10.00 = $1,120.00 Manpower 9 hrs. x 7 x $20.00 = $1,260.00 + 6 x 7 x 15 = $630.00 Cost per lift 470 ÷ 3010 = $ 6.40 Cost per ton 722.7 north 600 tons south = $2.28	$ 3,010.00	8 lifts per hr. by 7 men at double time = 32 machine hrs. at $10.00 = $320.00 Manpower 3 hrs. x 7 men x $20.00 = $420.00 5 x 5 x 15 = $375.00 100 ÷ $11.15 = $1.12 Cost per ton = 722.7 north 600 tons south = $1.00	$1,115.00
Kitimat Shed Unstuffing and Sortation			
11 mixed Containers = 30 tons 2 men x 8 hrs. x $20.00 = $320.00 2 men x 5 hrs. x $15.00 = $150.00 2 men x 8 hrs. x $10.00 = $160.00 26 machine hrs. at $5.00= $130.00 Cost per ton = 760 ÷ 30 tons = $25.30	$ 760.00	1 mixed Container 10 tons 1 man x 8 hrs. x $10.00 = $80.00 8 machine hrs. at $5.00 = $40.00 Cost per ton = 120 ÷ 10 tons= $12.00	$ 120.00
Kitimat Truck Loading			
2 men x 3 hrs. x $15.00 = $90.00 2 machine hrs. at $5.00 = $10.00 Cost per ton = 12 ÷ $1.00 = $8.33	$ 100.00	1 man x 2 hrs. x $7.5 = $15.00 1 machine hr. x $5.00 = $ 5.00 Cost per ton = $10.00 ÷ 20 = $2.00	$ 20.00
TOTAL	$ 3,870.00	**TOTAL**	$1,255.00

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Estimate Barge 101	$2,000.00	$1,000.00
Estimate Lakelse	$1,000.00	$ 750.00
Estimate Packmore	$3,000.00	$1,250.00
Estimate annual savings		-

SKEENA-KITIMAT-PRINCE RUPERT

PRESENT & PROPOSED HIGHWAY OPERATION

ACCOUNT ECONOMY OF SCALE

PRESENT	TRIPS	PROPOSED	TRIPS
Monday and Tuesday			
6 - 12' Container	2	2 - 20' Containers	1
6 - 40'-45' Trailers	6	10 - 27' Trailers	5
4 - 45' Flat Trailers	4	4 - 45' Flat Trailers	4
	12		10
Thursday - Friday			
6 - 12' Containers	2	2 - 20' Containers	1
3 - 45' Trailers	3	5 - 27' Trailers	3
1 - 45' Flat Trailer	1	1 - 45' Flat Trailer	1
Total per week	18		15

	Present	Proposed
281 x .95 per mile x 1000 trips	267,000	
281 x .95 per mile x 750 trips		199,750

Estimated Saving - $67,250.

SUMMARY OF BARGE LOADING AND UNLOADING SAVINGS BY ECONOMY OF SCALE UNIT LOADS

	Present Cost		Proposed Cost	
Transporter				
Vancouver	$2,600 x 50 wk.	= $130,000	$1,000 x 50 wk.	= $50,000
Kitimat	$3,870 x 50 "	= $193,500	$1,450 x 50 "	= $72,500
Barge 101				
Vancouver	$1,300 x 50 wk.	= $ 65,000	$ 500 x 50 "	= $25,000
Kitimat	$2,000 x 50 "	= $100,000	$1,000 x 50 "	= $50,000
Barge Lakelse				
Vancouver	$ 650 x 40 wk.	= $ 16,250	$ 325 x 25 "	= $ 8,125
Kitimat	$1,000 x 40 "	= $ 25,000	$ 750 x 25 "	= $18,750
Packmore				
Vancouver	$2,000 x 15 wk.	= $ 30,000	$1,750 x 15 "	= $16,250
Kitimat	$3,000 x 15 "	= $ 45,000	$1,250 x 15 "	= $18,750
		$604,750		$259,375

SKEENA MOTOR CARRIERS OPERATION

A closer investigation of Skeena Motor Carriers present power equipment shows that it is a mismatch that is inefficient and unsuitable for a planned profitable road transport operation. Therefore it is recommended that we dispose of the present power and acquire more suitable equipment preferably by leasing with full maintenance.

Even the newest Peterbilt tractors that were designed by a computer are unsuitable for the conditions experienced in the present Skeena operations. The 238 HP engines at 2100 RPM downgraded to 1950 RPM with 4.10 ratio were designed for operations at 56 MPH. Observations of Skeena's tachographs show that these tractors are operated at 62 MPH. This kind of abuse can only result in above average problems and higher maintenance. Governors should be applied for maximum speeds of 56 MPH. For some time now we have been experiencing above average rear-end bearing problems with these tractors, so much so that the manufacturer is now supplying replacement parts to try to rectify the situation.

The cab of Tractor 111 that was in an accident is so bad that every time the hood is raised for inspection, difficulty is experienced in trying to get the hood down and locked because it has sprung. Also, front wheels are out of balance and are causing excessive erratic tire wear.

The 1972 White 210V8HP Tractor 106 is an uncommon tractor in this area - problems are continually experienced when trying to obtain parts from White Motors Co.

The 1971 Kenworth 350 HP Tractor 118 is 3,000 lbs. too heavy to handle heavy trailer loads. It is an off-highway tractor with extra heavy transmission and a high 5-wheel that creates problems when hooking up to trailers. It will be expensive to maintain.

The 1959 White Van 603 is seldom used and is supposed to be a service truck.

The 1969 International gas trucks 1802 and 1803 were good units but should be replaced by tractors to provide improved utilization and highway back-up.

The 1971 Kenworth 1805 is also over-designed and should be replaced.

The two Ryder-leased White freightliners are expensive and are over-designed for the job required.

Further, at the present time we are leasing tractors from Lindsay's Cartage to operate the Kitimat - Stewart operation and the overflow on the Kitimat - Prince Rupert operation.

Recommendations

For the next three years we should attempt to lease about eight diesel tractors from one manufacturer, preferably with full maintenance.

The equipment obtained must be proven and specifically designed for the job to

be undertaken so that operating costs will be minimized. It must have fuel-squeezer abilities with automatic transmission, and gear ratios to stay within the legal speed requirements on Highway 16. Local parts availability and service availability is also a must. Radial tubeless tires are a necessity. The lease price must be competitive with option to purchase or renew lease at the end of three years.

Standardization on one type of tractor will keep parts inventory to a minimum.

Other transport equipment essential for good maintenance and operations:

1) A wheel balancer.

2) A set of axle scales.

3) Tire removal equipment. OK.

4) A shed and yard sweeper.

5) Pallet Jacks.

6) Carpet pole fork truck attachment. to look into.

7) Nylon tie-down straps in place of chains. Tom King to check.

New Ramp in Prince Rupert. all same.
Expanded metal mesh.

SKEENA MOTOR CARRIERS POWER

It is generally believed that Skeena Motor Carriers power under the Northland regime was inefficient and improperly specied for the job that it had to do.

The two van trucks had only sufficient work to keep them employed 2 days a week yet while they were idle there was insufficient tractor power available to move all the trailer loads.

Of the six owned tractors, two were old, parts were difficult to obtain and maintenance was costly. The three new Peterbilts were not designed for this particular operation, parts were difficult to obtain and expenses were far greater than we could afford.

Generally, utilization was poor because drivers not only helped to unload the barges but were assigned to a specific tractor or truck and in many instances due to fatigue, slept in their tractors for two to six hours on their second trip to Prince Rupert. Mr. W.D. Hickman, Terminal Supervisor, was asked to come up with a solution to improve tractor utilization, and the following was his answer to this problem.

SUGGESTED PROCEDURE

Barge Arrival - driver helps unload barge for four hours,then goes home for 8 hours sleep. Assign two drivers to each of two tractors.

- First driver takes 1st load 1 hour after barge work starts. Second driver takes 2nd load with same tractor 11 hours after first drivers departure.
- First driver takes 3rd load with same tractor 10 hours after second drivers departure.

Since the release of unwanted Skeena Motor Carriers trucks and tractors to Northland Navigation, we have been supplied by Ryder Leasing, the successful bids, with temporary leased tractor power. Weekly tractor mileages, which is being recorded shows the recent utilization has not yet reached the desired goal. See Appendix IX that shows tractor utilization to date.

SKEENA MOTOR CARRIERS EQUIPMENT MAINTENANCE

Experience shows that preventive maintenance programs for tractors, trailers and fork trucks has been lacking as a result maintenance has been higher than normal, trailers are badly rusted, tires are mismatched which shortens their expected life. In a well-run operation, trailers are greased on a monthly basis and colour coding with a paint brush is used to identify when greasing was last done and when tires were last checked, eg. January red, February blue, March yellow.

With respect to preventive maintenance for tractors and fork trucks, they can be classified as A inspections being 1500 miles for city tractors, every 10,000 miles for highway tractors and 100 hours for fork trucks, B inspections 3,000 miles 15,000 to 20,000 miles and 200 hours respectfully. A check list for vehicle P.M. inspection is shown in Appendix X.

PRESENT ANALYSIS OF SKEENA MOTOR CARRIERS POWER EQUIPMENT

		Present Mileage	Present Annual Cost	Suitability	Recommendations
White	1972 - #106 (210 V-8)	60,000	$18,000	Scarcity of parts	Replace with Tandem Tractor
Kenworth	1971 - #108 (350 HP)*	250,000	25,000	Too heavy Too high	No change
Peterbilt	1976 - #110	160,000	30,000	Heavy maintenance	Replace Tandem tractor
Peterbilt	1976 - #111 *	135,000	33,000	Heavy maintenance	Replace Tandem tractor
Peterbilt	1976 - #112	150,000	26,000	Heavy maintenance	Replace Tandem tractor
White	1959 - #603			Obsolete	Return to Northland
International	1969 - #1802 (345V-8)	65,000	3,000	Replace with Tractor	
International	1969 - #1803 (345V-8)	100,000	5,000	Replace with tractor	Tandem axle tractor
International	1956 - #1804	135,000	1,000	Replace with tractor	
Kenworth	1971 - #1805	155,000	9,000	Spare	No change
Ottawa	1973 - #107	5300 hrs.	8,000	Yes	No change
White Freightliner	35917K 350 HP	75,000		Too expensive over H/P	Tandem tractor
White Freightliner	35912K 350 HP	50,000	83,000	Too expensive over H/P	Tandem tractor
White Freightliner	39406K 350 HP	30,000		Too expensive over H/P	Tandem tractor

The Detroit 671 in line 65 Series engine with Fuller RT 9513 transmission with ratio 4.63 and top speed of 56 miles per hour at 2100 RPM down graded to 1950 RPM is an economical engine for both fuel and maintenance. The shortest possible wheel base, conventional short-nose cab with movable fifth wheel must be considered so that flexibility will permit hook-up of all types of trailers. Radial tubeless tires are recommended.

SKEENA MOTOR CARRIER'S HIGHWAY OPERATION BETWEEN KITIMAT AND PRINCE RUPERT

We now find that Skeena Motor Carriers make about 30 round trips per week between Kitimat and Prince Rupert as per the attached record. Their operation starts about 5:00 a.m. Monday morning after the Prince Rupert trailers have been unloaded from Northland's northbound barge. Monday movements average about 10 round trips between Kitimat and Prince Rupert with the pace diminishing to six on Tuesday, five on Wednesday, four on Thursday and seven on Friday.

In addition, Lindsay's Cartage handle about two round trips per week that could peak to five during the busy season. Further, Lindsay's Cartage spot and pick up all S.M.C. trailers at Prince Rupert commercial establishments.

Analyses attached show that S.M.C. could perform all distribution at Kitimat, Terrace, Prince Rupert and Stewart at lower costs if the present owned and contract operations were replaced with about ten leased S.M.C. operated tractors. (Seven tandem and three single axle tractors would provide adequate coverage and reduce operating expenses about $100,000.) These economies are possible because two straight city trucks are under-utilized and idle when tractor power is in short supply. We propose to lease city tractors to replace these city trucks. Five highway tractors (three Peterbilts owned and two Ryder rentals) are heavy on maintenance or high on rental charges. These should be replaced by five leased medium tandem highway tractors. The present Lindsay contract haulage to Stewart and Prince Rupert and all local Prince Rupert cartage is more costly than what two additional leased tractors manned by S.M.C. drivers will cost.

Split Barge Operation

Should a decision be made to operate a split barge operation to Kitimat and Prince Rupert then the present S.M.C. highway operation between Kitimat and Prince Rupert would be curtailed initially to about ten round trips a week and eventually to about one round trip a week or as traffic warrants. This initial curtailment would reduce S.M.C. operating expenses by about an additional $250,000 and eventually to about $350,000. These savings would be made by reducing the highway tandem tractors from six to two and eventually to one.

The interim highway service would be mainly for Safeway's and Overwaitea's trailers and long construction trailerloads of steel that could not be converted immediately to 20' I.S.O. containers and until the Prince Rupert ro-ro ramp was completed. The proposed S.M.C. interim highway service would commence Sunday evening with one tractor from Prince Rupert and early Monday morning with two tractors from Kitimat. It is visualized that three round trips would be made Monday, two Tuesday, one Wednesday, one Thursday and two Friday. One of the Kitimat-based tractors would make a round trip to Stewart and Granduc mines on Tuesday, returning Wednesday or Thursday. Smithers' trips would be made by the Kitimat tractor after business hours on Monday.

Rupert Split Barge Operation

Records show that during the last twelve months about 60 - 20-foot container equivalents per week moved between Vancouver and Prince Rupert with peaking occurring during the herring and salmon season - lows are experienced immediately before or after national holidays.

Tuesday's sailings account for about 20 - 20-foot equivalents and Friday's sailings for about 40 - 20-foot equivalents. Two-thirds of the present Vancouver northbound movements to Prince Rupert return empty.

Should the direct tug and barge operation commence between Vancouver and Prince Rupert with 20' containers, initially it would be a lift-on lift-off operation at Fairview Dock with handling being performed by Cansco Stevedoring Co. Eventually the loading and unloading would be done at the Fairview ro-ro ramp presently slated for completion this fall.

Initially, due to the possible union conflict, it might be advisable to continue with Lindsay's Cartage for the Prince Rupert P & D because their drivers are members of the Teamsters Union who have a close working arrangement with the Longshoremen's Union.

Prince Rupert direct service, one or two days a week versus Kitimat, How does it stack up?

Water costs increase.

Road Costs decrease.

Owned and leased equipment decreases.

Potential traffic increases

Immediate occupancy - dock - without major Capital outlay.

Prince Rupert traffic available earlier with less delays because of present tractor power shortage and bad road conditions.

COMPARATIVE ANALYSIS OF LEASING TEN TRACTORS
FOR SKEENA MOTOR CARRIERS OPERATIONS AT KITIMAT

Rentway Proposal		Monthly Rate $	Running Costs $	Tires	License $	Insurance $	Road Calls	Total $
Single Axle Tractor -	18,000#	900.00	406.00	-	90.00	60.00	-	1,456.00
-	40,000#	900.00	571.00	-	90.00	60.00	-	1,621.00
Medium Tandem Tractor	75,000#	1180.00	771.00	-	110.00	85.00	-	2,156.00
	100,000#	1180.00	1015.00	-	110.00	85.00	-	2,410.00
Heavy Tandem Tractor	75,000#	1340.00	771.00	-	125.00	100.00	-	2,336.00
	100,000#	1340.00	1015.00	-	125.00	100.00	-	2,580.00
Inland Kenworth								
Single Axle Tractor -		1033.00	474.00	70.00	90.00	60.00	25.00	1,822.00
Medium Tandem Tractor -				120.00	110.00	85.00	25.00	
Heavy Tandem Tractor -		1350.00	1080.00	120.00	125.00	100.00	25.00	2,800.00
Ryder Leasing								
Single Axle Tractor -	40,000#	1350.00	135.00	-	-	-	-	1,485.00
Medium Tandem Tractor	100,000#	1775.00	666.00	-	-	-	-	2,441.00
Heavy Tandem Tractor	100,00#	2070.00	660.00	-	-	-	-	2,736.00

COMPARATIVE ANALYSIS OF LEASING SIX TRACTORS
FOR SKEENA MOTOR CARRIERS OPERATIONS AT KITIMAT

		Monthly Rate $	Running Cost $	Tires $	License $	Insurance $	Road Calls $	Total $
Rentway Proposal								
Single Axle Tractor	- 18,000#	888.00	728.00	-	90.00	60.00	-	1766.00
	- 40,000#	888.00	875.00	-	90.00	60.00	-	1913.00
Medium Tandem Axle	- 75,000#	1316.00	1098.00	-	110.00	85.00	-	2609.00
	- 100,000#	1316.00	1275.00	-	110.00	60.00	-	2786.00
Heavy Tandem Axle	- 75,000#	1340.00	1098.00	-	125.00	100.00	-	2663.00
	- 100,000#	1340.00	1275.00	-	125.00	100.00	-	2840.00
Inland Kenworth								
Single Axle Tractor		1033.00	474.00	70.00	90.00	60.00	25.00	1822.00
Medium Tandem Axle		-	-	-	-	-	-	-
Heavy Tandem Axle		1350.00	1080.00	120.00	125.00	100.00	25.00	2800.00
Ryder Leasing								
Single Axle Tractor	- 40,000#	1344.00	300.00	-	-	-	-	1644.00
Medium Tandem Axle	- 100,000#	1755.00	833.00	-	-	-	-	2588.00
Heavy Tandem Axle		2201.00	833.00	-	-	-	-	3034.00

SKEENA MOTOR CARRIERS

DIRECT DELIVERY

W.D. Hickman, Skeena Motor Carriers Supervisor of Highway Operations, has made a suggestion that both W.D.S. and Northland Dock, Vancouver load 20' containers of L.T.L. in direct delivery order for Kitimat, Terrace and Prince Rupert to avoid rehandling and deconsolidation at Kitimat and Prince Rupert.

Mr. Hickman has divided Kitimat and Terrace into about four zones; but if traffic volumes are less than a 20'foot container he suggests that the four zones be consolidated, with zone 3 and 4 traffic placed in the nose of the container, zone 2 in the centre and zone 1 at the rear, the latter to come off first. He would like a graph diagram of each loaded container plus a customer list with shipment weight in direct loading sequence.

Appended please find Mr. W. Hickman's working papers which also show Kitimat and Terrace customers by zone. This customers list should be given to W.D.S. and Northland's Vancouver loading crews to assist them in loading the 20' containers in the proper sequence. Waybills for each container should be kept together and not mixed with other L.T.L. bills. As a precautionary measure neither Alcan nor Eurocan L.T.L. traffic should be loaded into these containers as these two large companies should be assigned their own 13' or 20' container. This proposal was discussed with Messrs. D. Murray and M. Fallick of Wholesale Delivery Service who both endorse this concept. A trial movement is being set up with Mr. N. Wood on January 20, 1978. At an early date it is visualized that a single axle tractor will be stationed in Terrace to replace the present truck. The proposed tractor will also be available for spotting trailers at industry.

The extension of the proposed direct delivery service to Prince Rupert was discussed with Messrs. N. Parham, D. Murray, N. Woodworth of Lindsay's Cartage, and M. Fallick of W.D.S. and all agreed that this proposal was feasible providing the following directives are adhered to. Prince Rupert Zone 1 would include all Prince Rupert downtown area except the major fish companies, Cancel, and Fairview traffic which would be loaded in a separate 20' container. Again it is visualized that within a short period of time Skeena Motor Carriers would set its own single axle tractor at Prince Rupert and discontinue turning this traffic over to Lindsay's Cartage. Extra P & D tractor requirements would be supplied from Kitimat on a day-to-day basis. Appended herewith please find a map showing the Prince Rupert direct delivery zones. A listing of customers in each zone will be provided by Mr. N. Parham.

FROZEN FISH BACKHAUL

Mr.N. Parham is developing a study showing the potential frozen fish backhaul by type and by season. When these figures are analyzed a proposal will be presented to show how much temperature-controlled equipment will be required, taking into consideration the possibility of obtaining foreign steamship containers for off-shore shipments. These containers will also be used northbound for domestic temperature-controlled traffic.

In order to maximize the Kitimat-Prince Rupert highway operation Skeena Motor Carriers should obtain 27' B train flats with 20' container locking locations so that this equipment can double for both rough freight unitized loads, and containers from 13 to 24 feet, or 20' containers plus cribs or pallets.

The economics of L.T.L. direct delivery to Kitimat, Terrace and Prince Rupert are:

	Estimated Annual Saving
Elimination of Kitimat sortation	50,000
Reduction of Terrace to Kitimat road trips	5,000
Reduction of Kitimat to Prince Rupert road trips	14,000
Elimination of Lindsay's deconsolidation and delivery service	4,800
Additional cost of Skeena Motor Carriers Prince Rupert P & D	-

PROPOSED ADDITIONAL W.D.S. CONSOLIDATION SERVICES AND EXTENSION OF SKEENA MOTOR CARRIERS HIGHWAY OPERATIONS.

Masset

Via Northland to Prince Rupert. Rivtow to Masset distribution by Gordon Feyer.

Stewart

Via Northland to Stewart including Sears, local grocer and hotel, Hyder hotel ex Seattle.

Cassiar

Via Northland to Terrace and Lindsay's distribution beyond (Monday and Tuesday).

Smithers

Via Northland to Smithers. Distribution by Smithers Transport.

Port Robinson, Alice Arm, Kincolith, Greenville

Via Northland to Prince Rupert. Distribution beyond by government nominee.

SKEENA MOTOR CARRIERS RATES

The present rates charged by Skeena Motor Carriers for pick up and delivery are not compensatory nor are the allocations of rates from the parent company on through door-to-door freight. It has been a decade since rate increases were granted by the Rate Bureau due to the reluctance of Northland principals to present Skeena costs to support this action.

Examples of rates in use compared with those of its competitors are:

Kitimat and Terrace P & D Rates

	S.M.C. Rates		Lindsay's Rates	W.D.S. Vancouver Rates	
	Present	Proposed			
	Per Cwt.	Per Cwt.	Per Cwt.		Per Cwt.
Minimum	$4.00	($5.00)	$5.25		$5.50
.1M - .5M	2.32	(3.00)	3.00		3.00
.5M - 1M	1.27	(1.35)	1.35		1.35
1M - 5M	.73	(.85)	.85		.90
5M - 10M	.53	(.70)	.70		.90
10M - 16M	.47	(.57)	.57	10M - 20M	.70
16M - 24M	.40	(.45)	.49		
24M - 30M	.37	(.45)	.45	20M - 30M	.41
30M - 38M	.32	(.30)	.39	30M - 40M	.29
38M - 44M	.29	(.30)	.35	Over 40M	.28
Over 44M	.26	(.30)	.32		

All rates subject to 15 lbs. per cubic foot.

Kitimat - Prince Rupert

From	To	Revenue	Mileage Return	Revenue/ Mile	Estimated Cost
Kitimat	Prince Rupert	$230.00	284	$81	$95 plus $14

Proposed Rates for Drop Trailers - Shippers Load and Count

	20' to 27' Equipment	40' to 45' Equipment
Kitimat	$ 35.00	$ 60.00
Terrace	60.00	100.00
Prince Rupert	150.00	280.00

Because southbound about two-thirds of our container and trailer equipment is empty, we should attempt to fill this equipment by incentive rates from Prince Rupert to Vancouver for the purpose of eliminating backhaul and making a contribution to cover operating expenses. See Appendix VIII, sheet 1 to existing rates.

REVISED LIST OF MATERIAL HANDLING EQUIPMENT

TO BE TAKEN OVER BY

CP RAIL FROM NORTHLAND

At a meeting March 24, 1978 Messrs. V. Jones, T. King, C. Aitken, N. Wood and D.W. Francis reviewed the equipment inventory and the following are their recommendations.

TRAILERS

Take over 6 - IV 4510 Series 1973 Fruehauf Van Trailers (excellent condition)
Take over only 2 of the 10 - 2400 Series 1964 Trailmobile insulated and/or reefer vans (namely 2400 & 2402)*
Take over 5 - 2600 series 1971 Can Car Vans
Take over only 17 of the 18 - 400 & 4501 Series flat deck trailers
Not required is #414, also not required are short flat deck trailers 301 2410 and 2411.
Take over STI low bed and ST2 pole trailer not required is 40' storage vans No. 500

GLASS RACKS

Take over only 10 of the 18 glass racks.

GOOSENECK

Take over the Kitimat gooseneck, replace the Vancouver gooseneck

TRACTORS

Take over 107 Ottawa 1973 S/A tractor; #108 Keniworth 1971 tandem axle tractor; #1805 Keniworth 1971 24' flat deck T/A track; #Y1 Ottawa #30 Hostler at Vancouver; not required are units #104, Chev. 1965, 1802, 1803, 1969 I.H.C. trucks #110, #11, #112 Peterbilt 1976 tandem tractors. Also Y2 white hostler at Vancouver and #106 white 1972 S/A tractor at Kitimat.

CONTAINERS

Take over 50 of the 12' containers that are in good shape, not required are 1227, 1232, 12

Take over 20 of the 4 x 8 600 series containers that are in good shape and charge directly to Alcan account. Take over F & D series 20' I.S.O containers, not required are the 24' F Series.

Take over 6 of the 30 large coolers those with new units #204, #207, #211, #216, #233, and one other.

Take over 6 P-Series large freezers and 1 S Series freezer of Nitrogen Units are not available.

Not required are 100 series small coolers; all 1300 series van containers except cold rolled weld units like 1307 keep if required to supplement 12 footers to the 60 requirements; not require 16 - 40 to 60 Series containers. See Appendix XII sheets.

*Rental replacements required.

COMPARATIVE ANALYSIS OF SKEENA MOTOR CARRIERS OPERATING EXPENSES

Present Operation			Proposed Operation		
Truck (603)	$ 8,603.00		Nil	$ -	
Tractor D106	18,821.00		One Tandem axle Terrace small	21,160.00	✓
Tractor D108	18,443.00		No change (Stewart)	18,442.00	
Tractor D110	32,624.00		One tandem medium	31,060.00	
Tractor D111	29,911.00		One tandem medium	31,060.00	
Tractor D112	23,009.00		One tandem, Prince Rupert small	21,160.00	✓
Truck 1802	2,746.00	2½ days	One tandem Kitimat small	21,160.00	
Truck 1803	3,084.00	2 days			
Truck 1804	1,174.00				
Truck 1805	9,677.00		No Change	9,677.00	
Ottawa 107	8,600.00		No Change	8,600.00	
Misc. Trucks	21,989.00				
Rental Ryder Tractors (2)	67,000.00		Lease tractors	60,300.00	*
	$244,680.00			$222,619.00	

* with direct sailing to Prince Rupert two rental tractors will be returned to Ryder (saving $60,300.00).

COMPARATIVE ECONOMIC ANALYSIS
OF PRESENT AND PROPOSED CONTAINER REQUIREMENTS
NEXT THREE YEARS

Present		Estimated Rental & Repairs	Proposed		Estimated Rental & Repairs
12' Dry Containers	(85)	67,000	20' Dry Containers	(20)	~~36,000~~ 18000
13' Dry Containers	(60)	67,000	20' Dry Containers	(20)	36,000
8' x 9' Dry Containers	(16)	8,000	20' Half-Height Containers	(20)	25,000
Small Cooler Containers	(24)	18,000	N Containers	(50)	15,600
Large Cooler Containers	(12)	31,000	3 large coolers	(3)	8,000 ✓
20' "F" Containers	(4)	2,500	20' "F" Containers	(4)	2,500 ✓
24' "F" Containers	(6)	6,000	-	-	-
20' "D" Containers	(15)	11,000	20' "D" Containers	(15)	11,000 ✓
4' x 6' Containers	(30)	11,000	4' x 6' Containers	(20)	7,000 ✓
500 cu. ft. Freezers	(5)	22,000	500 cu. ft. Freezers T.	(5)	22,000 ✓
250 cu. ft. Freezer	(1)	2,500	20' Nitro Containers	(15)**	114,500
	Say	246,000			262,006
					260,000

COMPARATIVE ECONOMIC ANALYSIS
OF PRESENT AND PROPOSED FORK TRUCK REQUIREMENTS
NEXT THREE YEARS

	3 Years Rentals	3 Years Repairs		3 Years Rentals	3 Years Repairs
#1	3000	335		-	-
#17	3000	4500		-	-
#27	3000	1500		-	-
#38	4000	3500		4000	3500
#58	4000	3000		4000	3000
#32	5347	2648		-	-
#K7	3000	335		-	-
#K5	2050	600		2050	600
#11	500	335		-	-
#18	500	200		-	-
			2-12000 lb. Taylors	80,000	4000
#2	4863	1000		4863	1000
#3	4863	10000		-	-
#4	4863	30000		4863	30000
#5	4863	15000		4863	15000
#6	5347	10000		-	-
#8	5347	11000		-	-
#10	5347	20000		-	-
#20	4863	5300		4863	5300
#22	4863	12000		-	-
#36	3000	8275		3000	8275
			2-15000lb. Taylors	60000	4000
#16	5347	600		-	-
#19	4863	1000		-	-
#57	5347	2300		5347	2300
#14	4863	3500		-	-
#100	10500	2100		10500	2100
#101	10200	15000		10200	15000
#102	10800	3000		10800	3000
#103	10800	7500		10800	7500
#104	10200	9000		10200	9000
	149536	183528	= 333,064	225486	113575 = 339,061

COMPARATIVE ECONOMIC ANALYSIS
OF PRESENT AND PROPOSED TRAILER REQUIREMENTS
NEXT THREE YEARS

Present	Estimated Rental & Repairs	Proposed	Estimated Rental & Repairs
40' flat trailers (16)	100,000	40' flat trailers (13)	81,000
30' flat trailer (1)	5,000	-	-
45' flat trailers (2)	12,000	45' flat trailers (2)	12,000
24' flat trailers (2)	12,000	-	-
1 STL 1 low bed (1)	9,300	-	9,300
1 STL 2 pole trailer (1)	4,500	1 STL 2 pole trailer	4,500
45' insulated trailers (6)	40,000	(6)	40,000
24' insulated trailer (1)	3,500	-	-
26' van trailers (5)	15,000	26' van trailers (5)	15,000
24' reefer trailers (9)	45,000	-	-
40-45' van trailers (leased) (50)	-	(30)	250,000
40-45' flat trailers (leased) (30)	-	(10)	85,000
27' flat & container chassis (Leased)	-	(20)	120,000
30 ton roll mafi flats	-	(4)	28,000
20' container chassis	-	(20)	150,000
40' CPT van trailers leased	-	(15)	90,000
Converters	-	(12)	40,000
27' van trailers (2)	-	(8)	50,000
26' temperature controlled trailers	-	(6)	90,000
Total Leases	866,000		-
	$1,112,300		$1,064,800

COMPARATIVE DAILY COST OF ALTERNATIVE CONTAINER HANDLING EQUIPMENT

	Estimated Initial Cost	Estimated Annual Maintenance	Estimated Daily Fuel Cost	Estimated Daily Ownership Cost	Annual Use	Daily Cost
Side lift	$ 80,000	$2,400	$ 5	$150.00	120 days	$175.00
Tractor	20,000	1,200	15	28.32	240 days	40.00
						215.00
Fork lift truck 52,500 lbs.	160,000	7,500	35	421.40	120 days	519.00
Mobile Crane lift on/lift off operations 130,000 lb.	400,000	10,000	50	750.00	120 days	883.00

Assume 10% interest and 8-year life for each machine with 10% residual value at the end of 8 years.

PROPOSED LABOUR REQUIREMENT FOR PRINCE RUPERT TERMINAL

		Function	Monday	Thursday
Manager	(1)	Liaison between Fairview Terminal and BCCS - Northland operation. Overseer of Skeena Transport Prince Rupert P & D operation.	$ 80	$ 80
Crane Operator	(1)	Lease man and machine from Skeena Heavy Crane Lift at $50/hour.	400	400
Fork Truck Operator	(1)	Lifting loaded containers from dock apron to P & D flats and empties in reverse.	80	80
Stevedores on Barge	(1)	Handling crane spreader lines and hooks and securing them to top corner castings of containers.	80	80
Stevedores on Dock	(1)	Handling crane spreader lines and hooks in removing them from top corner castings.	80	80
Fork Truck Operator Small	(1)	Hoisting dock stevedore on pallet platform from ground to top of container.	80 + 20	80
			$1,000	$1,000
		Inbound	25	15
		Outbound	15	25

Estimated cost $2.00 per ton

Traffic Lane Analysis

Do we know the total cost of various commodities from door-to-door in various types of equipment and handling? Work sampling on a regular basis should provide some of these answers.

One effective method presently employed by C.P. Transport is the daily work card that is filled out by each employee for a week under close supervision, about two or three times a year, or when changes occur in traffic patterns. As an example, a truck driver would fill out his daily work card as follows:

Time punched in, type of work, time work commenced, type and number of items handled by weight group, time each shipment took, when this type of task was completed, stem time to next operation, repeat suceeding tasks, unproductive time is record, ie. coffee, lunch, washroom, etc. and is prorated at end of day over all items handled.

All work cards are summarized daily and averages are calculated for each function. All segments of operation can be analyzed in this manner and complete door-to-door operations can be costed. Supervision, administration, overheads and profit can be added. Appendix IX shows rough samples of commodity costs handled in various types of equipment and the effects that economy of scale have on their profitability.

PROPOSED OPERATION

Product	Direction	Volume	Routing	Weekly	Support	Time	
Frozen Foods	N	2	Prince Rupert via Kitimat	2	29' 11¼" Insulated Vans	Tue. to Thur.	operate in tandem with a 20' ISO Container Kitimat to Prince Rupert
Frozen Fish	S	2	Prince Rupert via Kitimat	2	with nitrogen clipon units	Fri. to Mon.	" " " "
Fresh Produce	N	2	Prince Rupert via Kitimat	2	29' 11¼" Insulated Vans	Tue. to Thur.	" " " "
Fresh Fish	S	2	Prince Rupert via Kitimat	2	with nitrogen clipon units	Fri. to Mon.	" " " "
Gen. Mdse.	N	4	Prince Rupert	4	20' ISO Van	Tue. to Thur.	" " " "
	S	4		4	Containers	Fri. to Mon.	" " " "
Bulk (soda ash chemicals)	N	2	Prince Rupert	2	20' ISO Van	Tue. to Thur.	" " " "
	S			2	Containers	Fri. to Mon.	" " " "
Gen. Mdse.	N	4	Terrace	4	20' ISO Van	Tue. to Thur.	" " to Terrace
	S	-		4	Containers	Fri. to Mon.	" " " "
TL	N	15	Terrace	15	20' ISO Van	Tue. to Thur.	" " " "
	S			25	Containers	Fri. to Mon.	" " " "
TL	N	16	Prince Rupert	16	20' ISO Van	Tue. to Thur.	" " to Prince Rupert
TL	S		Prince Rupert	16	Containers	Fri. to Mon.	" " " "
TL	N	10	Kitimat	10	20' ISO Half-	Tue. to Thur.	
B/B	S	10	"	10	Height 3' Containers	Fri. to Mon.	
B/B	N	10	"	10	Roll Pallets	Tue. to Thur.	
B/B	S	10	"	10	Roll Pallets	Fri. to Mon.	

SIMPSON SEARS CONTAINER MOVEMENTS
EX W.D.S. CONSOLIDATION FOR FOLLOWING DESTINATIONS

	Terrace		Kitimat		Stewart		Prince Rupert	
July 4/77			D-20	5,634 lbs.				
(1500 c.f.)	1294	3,244 lbs.	D-23	2,534 lbs.	-		F-10	5,453 lbs.
July 5/77								
(1200 c.f.)								
July 6/77								
(1200 c.f.)								
July 7/77			1287	1,425 lbs.				
(1600 c.f.)	D-24	5,872 lbs.	D-32	5,623 lbs.	1224	1,127 lbs.	D-27	5,685 lbs.
July 8/77								
(855 c.f.)								
July 11/77							F-1	3,321 lbs.
(1700 c.f.)	D-28	5,006 lbs.	D-26	5,239 lbs.	-		D-22	3,429 lbs.
July 12/77								
(1400 c.f.)								
July 13/77								
(1920 c.f.)	F-4	4,964 lbs.	D-31	5,733 lbs.	-		-	
July 14/77								
(1920 c.f.)	D-20	3,435 lbs.	1286	1,961 lbs.	1299	1,974 lbs.	2405	6,988 lbs.
July 15/77								
(1280 c.f.)								
July 18/77	1360	3,328 lbs.						
(1700 c.f.)	1221	2,645 lbs.	D-130	4,955 lbs.	-		D-23	5,965 lbs.
July 19/77								
(1850 c.f.)								
July 20/77								
(2000 c.f.)								
July 21/77	2600	5,620 lbs.	1309	3,160 lbs.				
(1915 c.f.)	D-24	4,680 lbs.	1337	3,180 lbs.	1260	2,212 lbs.	2408	6,168 lbs.
July 22/77								
(1440 c.f.)								
July 25/77								
(2000 c.f.)	D-27	4,780 lbs.	D-26	5,268 lbs.	1285	1,423 lbs.	D-32	6,850 lbs.
July 26/77								
(1900 c.f.)								
July 27/77								
(2000 c.f.)								
July 28/77							1356	1,810 lbs.
(1200 c.f.)	26V14	9,260 lbs.	D-28	4,966 lbs.	1222	1,023 lbs.	D-22	6,201 lbs.
		53,834 lbs.		48,678 lbs.		7,759 lbs.		46,870 lbs.

5 lbs. per cu. ft.

W.D.S. CONSOLIDATION CONTAINER MOVEMENTS FOR FOLLOWING DESTINATIONS

		Malkins	Kitimat - P.C. & D.		Prince Rupert		Terrace		Granduc	
		Trailer	Container	Lbs.	Container	Lbs.	Container	Lbs.	Trailer	Lbs.
July 5/77	45'	47632	1206	7,150	1 Skid	453	1255	13,400	-	
			1256	5,100	1291	9,255	-		-	
			1 Crib Alcan	1,540	1 Crib Can. Cell.	1,170	-		-	
			1 Crib Eurocan	1,176	1296	13,726	-		-	
July 8/77	45'	47410			1 Skid Can. Cell.	1,468				
			1286	7,610	1210	7,100	1258	12,300	4935	46,513
			1218	8,100	1226	13,700	1263	5,100		
			8 Skids Eurocan	2,407	1292	11,500	1229	10,300		
			1 Crib Alcan	1,167	1225	10,800				
			2 Cribs Eurocan	985	1 Crib Can. Cell.	1,787				
			1295	7,500	1 Crib Can. Cell.	853				
July 12/77	45'	46057	1 Crib Eurocan	1,210	2 Cribs Can. Cell.	4,318	1267A	8,200	4219	47,019
			1323 Eurocan	9,900	1 Skid Can. Cell.	575				
			1 Crib Alcan	1,303	1219	7,500				
			1 Crib Eurocan	85 ✓	1262	13,426				
			1267	11,000						
			1233 Eurocan	8,000						
			1200	9,200						
			1288	7,700						
July 15/77	45'	47507	1343	13,936	24'	6,988	1263	13,192		
	45'	47552	1 Crib Alcan	1,543	1268	9,193	F-4	4,964		
			1 Crib Eurocan	1,252	1269	6,500	D-20	3,435		
			1254	8,700	1213	9,285	1277	12,306		
			1 Crib Eurocan	1,690	1203	8,919				
			1 Crib Eurocan	198	1 Crib Can. Cell.	2,815				
			1 Crib Eurocan	2,937	1 Skid Can. Cell.	925				

W.D.S. CONSOLIDATION CONTAINER MOVEMENTS FOR FOLLOWING DESTINATIONS

PAGE 2

		Malkins	Kitimat - P.C. & D.		Prince Rupert		Terrace		Granduc	
		Trailer	Container	Lbs.	Container	Lbs.	Container	Lbs.	Trailer	Lbs.
July 19/77	45'	47673	1206	6,058	1294	10,710	1366	3,328	4944	49,791
			1 Crib Alcan	1,023	1205	9,505	1216	8,605		
			2 Skids Eurocan	3,002						
			D-130	4,955	D-23	5,965				
			1208	10,606	1 Crib Can. Cell.	1,752				
			3 Cribs Eurocan	5,228						
July 22/77	45'	45000	1316	9,490	1267	7,219	1308	8,535		
			1 Crib Alcan	1,135	1273	11,713	1330	10,197		
	45'	47671	1 Crib Eurocan	1,579	1 Skid Can. Cell.	1,750				
			1 Skid Eurocan	265	1 Crib Can. Cell.	2,235	1322	11,728		
			1345	9,685	1 Showa Container	17,065			2 Cribs	170
July 26/77			2 Skids Eurocan	1,200			1350	14,238	4935	49,457
			1335	11,146	1210	6,749				
					D-32	6,850				

15 lbs. per cu. ft.

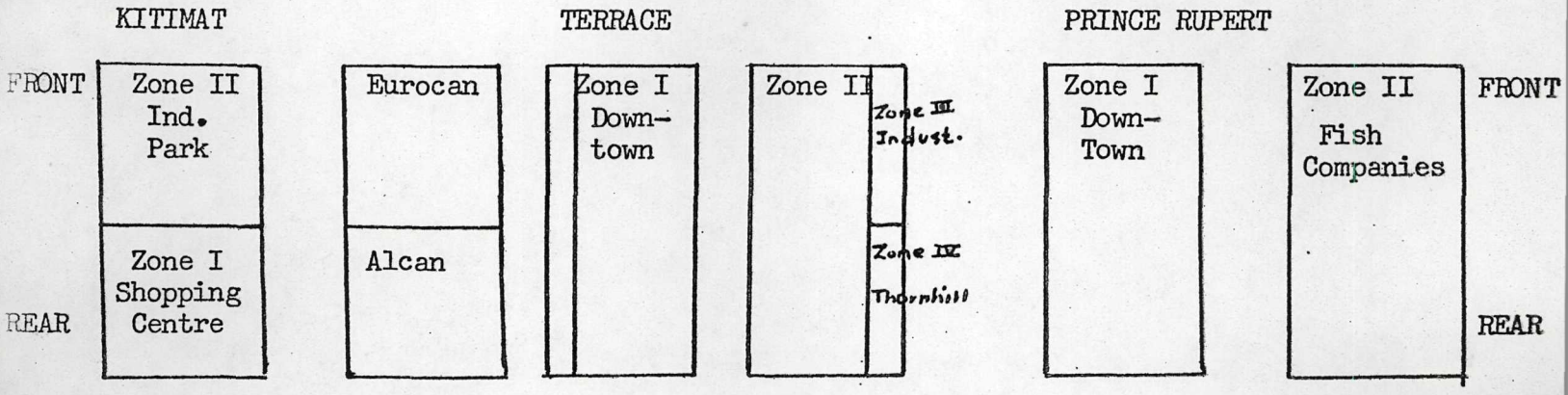
200000 125000 200000 130000 100000

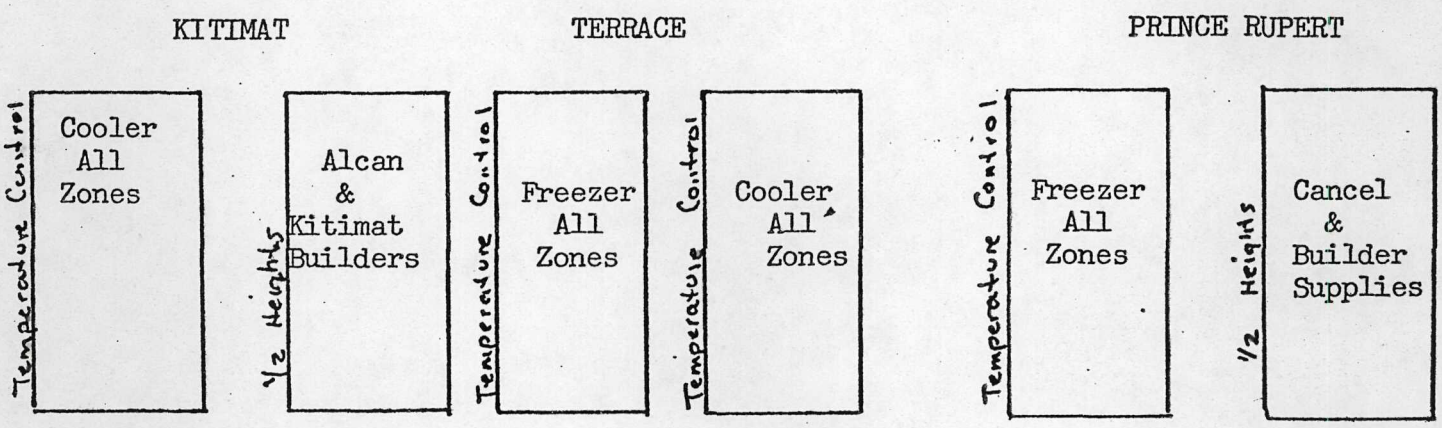
ANALYSIS OF CONTAINER REQUIREMENTS FROM JULY '77 DATA

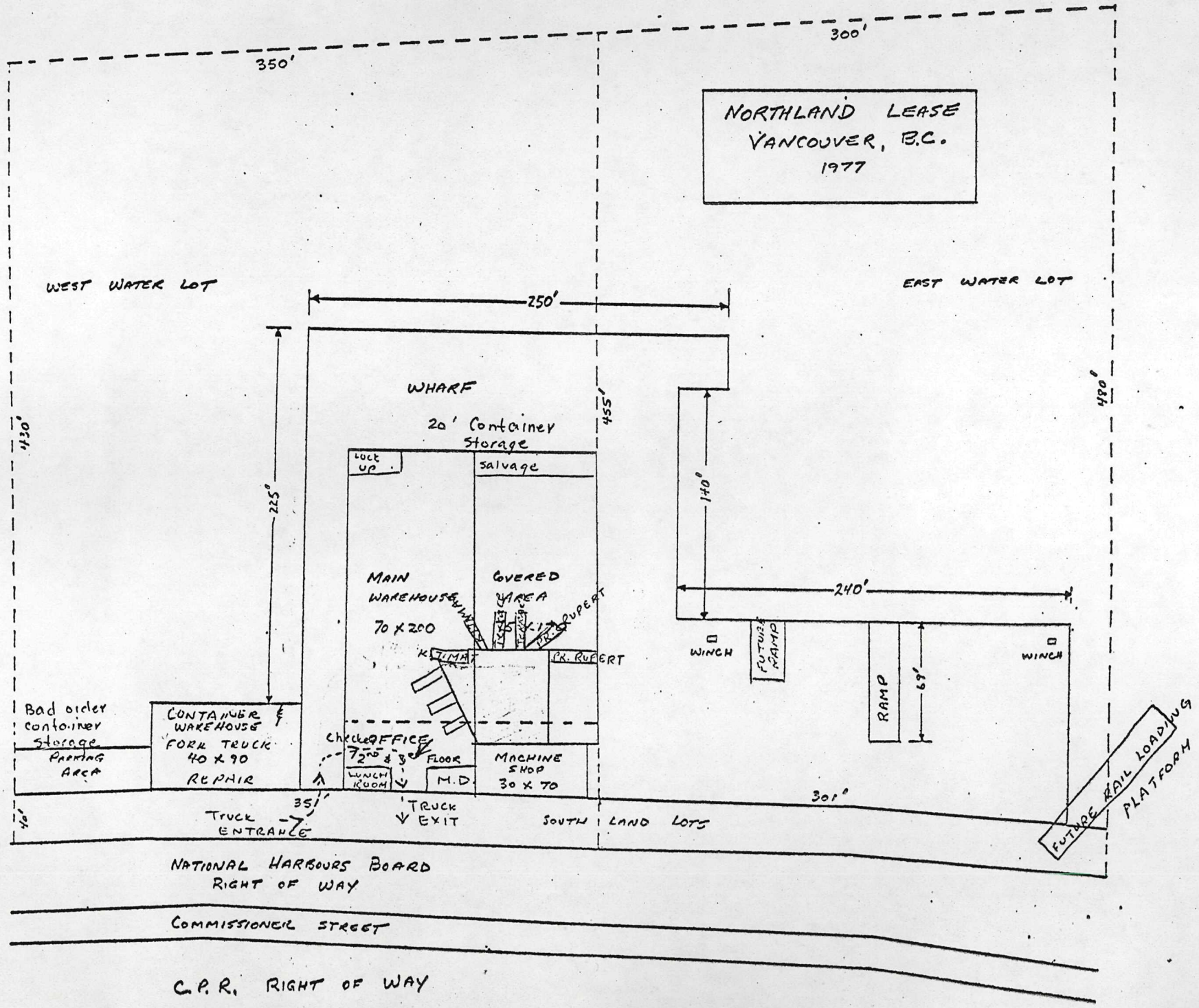
	Kitimat	Prince Rupert		Terrace	Spares and Other Use
July 5	2 - 12'	2 - 12'	(1 - 20')	1 - 12'	
July 8	3 - 12'	4 - 12'	(2 - 20') *	3 - 12'	
July 12	4 - 12'	2 - 12'	(1 - 20') *	1 - 12'	
July 15	3 - 12'	1 - 24' 5 - 12'	(3 - 20') *	2 - 20' 2 - 12'	
July 19	1 - 20' 2 - 12'	1 - 20' 2 - 12'	(2 - 20') *	2 - 12'	
July 22	2 - 12'	2 - 12'	(1 - 20')	3 - 12'	
July 26	1 - 12'	1 - 12' 1 - 20'	(1 - 20')	1 - 12'	
W.D.S.	(8 - 20')	(8 - 20')*		(8 - 20')	
Sears	4 - 20'	6 - 20' *		8 - 20'	
Alcan	4 - 20'**	-		-	
Eurocan	4 - 20'**	-		-	
CanCel	-	4 - 20' *		-	
Super Valu	1 - 20'	-		-	
Western Assembly	-	2 - 20' *		-	
20' Van Containers	13 - 20'	-		16 - 20'	24 - 20' (53)
20' Nitrogen Containers*	-	20 - 20' *		-	5 - 20' * (25)
20' Half-Height Containers **	8 - 20'	-		-	7 - 20'** (15)
Trailers	12 - 45'	24 - 27'		12 - 45'	
Flat Trailers	4 - 45'	8 - 27'		4 - 45'	

20,000 lbs. per 20' container LTL
5,000 lbs. per 20' container Sears

PROPOSED DIRECT LOADING ARRANGEMENT







Appendix III
Sheet 1

Caravan

Transport International

Month	# of Trailers	Amount	Month	# of Trailers	Amount
January	27	481393	January	6	125030
Feb	47	1203860	February	18	184040
March	50	1203281	March	46	752050
April	57	1462867	April	89	731848
May - June	140	3500262	May	110	978573
July	77	1614166	June	102	799084
August	87	1869850	July	45	508196
September	86	1577608	August	149	1308869
October	63	1122965	September	45	395785
November	68	1502227	October	85	736206
December	105	1716227	November	86	700899
			December	88	724068
	807	$ 17254706		919	$ 7944648

Giffex

Month	# of Trailers	Amount
January	15	212731
February	11	249952
March	12	220420
April	18	362088
May	17	268356
June	15	348499
July	39	448116
August	50	888100
September	18	246100
October	8	162854
November	11	145948
December	7	112778
	221	$ 3665942

ANALYSIS OF NORTHLAND'S TRAILER RENTALS

		Present	Proposed Monthly	Proposed 3-Year	Possible Saving
CARAVAN					
40' - 45' vans	(45)	$353.00	$277.50	$230.00	$123.00
40' - 45' flats	(25)	275.00	270.00	225.00	50.00
26' vans			210.00	125.00	
Converter dollies			150.00		75.00
TRANSPORT INTERNATIONAL					
45' vans	(15)	370.00	270.00		
45' flats		315.00	270.00		
26' vans S/A		270.00	240.00		120.00
20' container chassis			240.00		
GILFLEX					
45' vans		240.00	266.00		
45' flats		240.00			
45' drop vans			350.00		
26' vans					
CP TRANSPORT					
40' - 45' vans	($7.70 x 21.5 days)		165.00	165.00	188.00

COMMERCIAL TRAILERS

40-45' Vans

40-45' Vans
26' Van
Converter dollies
26' Flats

MONTHLY TRAILER SUMMARY — MONTH OF FEBRUARY, 1978

COMPANY	TYPE OF UNIT	TOTAL ON RENT	TOTAL TRAILER DAYS	TOTAL TRAILER COSTS
Caravan	45' Vans	22	330	$3,140.40
	26' Vans	-	-	-
	45' Flats	11	133	1,444.00
	40' Flats	2	15	128.00
	Dollys	2	16	80.00
TOTAL		37	494	$4,792.40
T.I.P.	45' Flats	2	56	$ 560.00
	26' Vans	1	28	252.00
TOTAL		3	84	$ 812.00
Gilflex	27' Vans	1	26	$ 240.00
	40' Vans	1	16	120.00
TOTAL		2	42	$ 360.00
Commercial Trailer Rentals	20' Chassis	4	32	$ 192.60
GRAND TOTAL		46	652	$6,157.00

- $10,000.00

Appendix IV
Sheet 3 of 5

MONTHLY TRAILER SUMMARY — MONTH OF JANUARY, 1978

COMPANY	TYPE OF UNIT	TOTAL ON RENT	TOTAL TRAILER DAYS	TOTAL TRAILER COSTS
Caravan	45' Vans	27	478	$4,306.50
	26' Vans	1	8	56.00
	45' Flats	18	338	3,024.00
	40' Flats	3	68	612.00
	Dollys	2	45	225.00
TOTAL		51	937	$8,223.50
T.I.P.	45' Vans	7	87	$1,212.00
	26' Vans	1	26	234.00
	45' Flats	5	126	1,270.00
	40' Flats	-	-	-
	Dollys	-	-	-
TOTAL		13	239	$2,716.00
Gilflex	27' Van	1	26	$ 190.00
GRAND TOTAL		65	1,202	$11,129.50

+ $3,000.00

Appendix IV
Sheet 2 of 5

POSITION OF FORK LIFTS

KITIMAT

					REQUIREMENTS
5	10,000	1974	C. Cab		2 x 10,000 (#4 - 57)
16	8,000	1972	C. Cab		4 x 8,000 (#16-3-57-20)
3	8,000	1974	Open	*	2 x 25,000 (K100 - 102)
K100	25,000	1969	Open		Plus 1 x Low Mast #K5
102	25,000	1972	Open		#32 - 6000 for Barge Kemano
8	10,000	1974	Open		
57	8,000	1973	Open		
20	8,000	1973	Open		
K5	4,000	1960			Low Mast

PRINCE RUPERT

101	25,000	1971	C. Cab		1 x 25,000

TERRACE

	25,000				1 x 25,000

VANCOUVER

6	10,000	1974	Open	*	3 x 8,000
10	10,000	1974	Open	*	3 x 10,000
K2	8,000	1972	Open	*	2 x 30,000
22	8,000	1972	Open	*	2 x High Mast
19	8,000	1974	Open	*	Plus 1 Low Mast
103	30,000	1958	Open	*	Gooseneck (Long Forks Req. $2,000)
104	30,000	1969			Towmotor
4	10,000	1974	Open	*	
36	5,000	1970	Open	*	High Mast
38	6,000	1972	Open		Low Mast

* Available for BCCS Operation.

MONTHLY TRAILER SUMMARY

MONTH OF FEBRUARY, 1978

ADDITIONAL

COMPANY	TYPE OF UNIT	TOTAL ON RENT	TOTAL TRAILER DAYS	TOTAL TRAILER COSTS
Caravan	45' Vans	7	43	$397.75
	26' Vans	1	2	14.00
	45' Flats	3	20	180.00
	40' Flats	-	-	-
GRAND TOTAL		11	65	$591.75

COMPARATIVE COST ANALYSIS OF NORTHLAND'S
KITIMAT-PRINCE RUPERT HIGHWAY HAUL AS PERFORMED
BY SKEENA TRANSPORT VERSUS CP TRANSPORT'S PROPOSED CHARGES
(JULY 15 TO 24, 1977 INCLUSIVE)

	No. of Shipments	Average Weight	Total Weight	Skeena Charge	CPT Rate	CPT Charge	Difference	25 Periods	Annual Difference
0-100	11	246	246	27.08					
101-500	42	246	10355	74.55					
501-1000	16	740	11838	85.23					
1001-5000	37	2163	80042	576.30					
5001-10000	8	7776	62207	447.89					
10001-2000	4	12250	48900	352.08					
20001-3000	2	23500	45000	324.00					
(72¢ per cut)									
Containers									
Minimums									
12 & 13 ft.	12	4500	56279	405.21					
12' ($32.28)	6	4500	27500	194.36					
20' ($115.00)	3			345.00					
13' ($57.50)	5			287.50					
Trailers ($115.00)									
24'-26'	6			690.00					
Trailers ($230.00)									
45'	56			12880.00					
Trailers/Containers 27'-29'	4								
	210								

FORK TRUCK PREVENTIVE MAINTENANCE

OPERATORS/SERVICE RECORD AND

RECORD OF MECHANICAL REPAIRS

BY MACHINE

We find that Northland Machine Shop has no preventive maintenance program for fork trucks. This could be a major contributor to the high maintenance expense presently experienced.

It is normal practice in the industry to follow a preventive maintenance program either in house or by monthly contract to local fork truck repair services.

It is suggested that C.P. Rail Coastal Marine Maintenance Department consider the following appendid preventive maintenance program and keep records of downtime and repair costs for each individual truck as appendid or by some other similar arrangement. In this way we will have a good handle on driver abuse, and above-normal fork truck expense. Therefore, we will be in a better position to adjust any inadequates that occur and to reduce fork truck expenses. See Appendix VII.

MONTH OF _____ 19 _____

HYDRAULIC CONTROL				AVAILABILITY					
OIL				SCHEDULED CLOCK HRS.	CLOCK HRS. NOT WORKED DUE TO			TOTAL CLOCK HRS. WORKED	SIGNATURE
ADDED QTS.	CHNGD. ✓	SAMPLED	FILTER CHNGD. ✓		REPAIRS ON-SHIFT	SERVICE ON-SHIFT	OTHER (EXPLAIN)		

"BARGE DATA"

NORTHLAND 101: (official No. 328960) (Northwest Shipping)

After door width:	15 ft.
After door height:	15 ft.
Total length:	203 ft.
Beam:	52 ft.
Gross Tons:	2468 tons

LAKELSE:

After door width:	15 ft.
After door height:	13 ft.
Total length:	160 ft.
Beam:	48 ft.

KEMANO IV: (official No. 198987) (Northwest Shipping)

After door width:	16 ft.
After door height:	12'10"
Total length:	130 ft.
Beam:	43 ft.
Gross Tons:	1069 tons

NN 106: (official No. 194213) (B.C. Steamship 1962 Ltd.)

Length:	120 ft.
Beam:	38 ft.
Gross Tons:	402 tons

NORTHLAND TRANSPORTER: (official No. 369085) (Northland Navigation)

Length:	255 ft.
Beam:	58 ft.
Depth:	13 ft.
Gross tons:	1806.27 tons
Cost. Lic. No.	4075
Side Door:	16' wide X 17' high
Stern Door:	24' wide X 17' high

YORK 14: (Straits Towing Ltd.)

Reg. No:	311188
Reg. Tonnage:	264 tons
Length:	94 ft.
Value	$200,000.00

NST NO. 1: (Rivtow Marine Ltd.)

Reg. No.	319349
Reg. Tonnage	206 tons
Length:	84 ft.

PRESENT TRACTOR UTILIZATION

	Apr/3/10 Weekly Mileage	Apr/10/15 Weekly Mileage	Average Weekly Mileage	Budget Weekly Mileage		Difference
Ryder 54611 - city	1000	783	900	800	&	100
Ryder 54612 - city	640	53	350	800	&	450
Ryder 54656 - highway	258	537	400	2000	-	1600
Ryder 39809 - highway	582	857	700	2000	-	1300
Ryder 35920 - highway	1219	1434	1300	2000	-	700
Ryder 35917 - highway	810	3084	1950	2000		-
Ryder 39407 - city	1251	-	1250	800	-	350
Ryder 39405 - highway	322	1713	1000	2000	-	1000

~~TRANSPORT~~ - VEHICLE P. M. INSPECTION REPORT

MAINT. 1

Vehicle No. _____ Type of Inspection: A B Date: Mo. _____ Day _____ Year _____

(✓) if okay (O) if adjustments completed (X) if repairs or extensive adjustments required

P & D Trucks:
A - 1500 miles gas; 1500 miles diesel
B - 1500 miles gas; 3000 miles diesel

P & D Tractors:
A - 1500 miles gas; 1500 miles diesel
B - 3000 miles gas; 6000 miles diesel

Forklifts:
A - 100 hours
B - 200 hours

Highway Trucks and Tractors: Naturally Aspirated - A - 10,000 miles; B - 10,000 miles
Blown Cummins - A - 10,000 miles; B - 15,000 miles
1693 Cat - A - 10,000 miles; B - 20,000 miles

B CHECK - DO COMPLETE "A" CHECK PLUS CHANGE OIL AND OIL FILTERS

A CHECK:

EYE LEVEL OUTSIDE CHECK

- [ ] Damage, cabs, hood, fenders
- [ ] Wheel studs and nuts, clamps
- [ ] Tire condition and pressure
- [ ] Fuel tanks, vents, fill cap
- [ ] Chain hooks and tank protector
- [ ] Mud flaps/brackets
- [ ] 5th wheel/slides/pins
- [ ] Deck covers
- [ ] Visable wiring/air lines
- [ ] Frame crossmembers
- [ ] Attach trlr. air lines to blank glad hands
- [ ] Check engine oil level
- [ ] Check rad cap and recovery tank
- [ ] Check for coolant level
- [ ] Exhaust muffler and pipe
- [ ] Drain air tanks

IN-CAB CHECK

- [ ] Brake peddle/park brake
- [ ] Clutch free play
- [ ] Steering for looseness
- [ ] Warning lights/buzzer/flag
- [ ] Water check unit
- [ ] Starter and throttle action
- [ ] Instruments and hand throttle
- [ ] Oil PSI/charge rate
- [ ] Air governor
- [ ] Horn, air/electric
- [ ] Seat, doors/handles, seat belts
- [ ] Cab glass/defroster, heater
- [ ] Air leaks, engine off, brakes applied wiper operation.
- [ ] Apply trlr, air and leave applied (emergency)
- [ ] Check lights
- [ ] Fire extinguisher/flags/flares/first aid kit

ENGINE COMPARTMENT

- [ ] Tighten oil and water hose clamps
- [ ] Check hoses
- [ ] Air cleaner and mounts
- [ ] Check water and oil leaks
- [ ] Air induction piping
- [ ] Warm air diverter
- [ ] All belts
- [ ] Air compressor intake
- [ ] Drain water from fuel filter
- [ ] Activate sentinel manually
- [ ] Check throttle linkage
- [ ] Batteries/box
- [ ] All exposed wiring/batteries/cables/connectors
- [ ] Steering box lube level
- [ ] Check manifolds and attachments
- [ ] Disconnect trlr. emergency line, note action of T.P.V.
- [ ] Check F.W. oil hubs
- [ ] Fill Kysor fluid/alcohol evaporator wiper, motor connection.

UNDER THE VEHICLE

- [ ] Complete lube
- [ ] Check steering/kingpins
- [ ] Front wheel bearing slack
- [ ] Springs/hangers/shocks/rear suspension
- [ ] Check for oil leaks
- [ ] Trans/diff. oil level/vents/plugs
- [ ] Clutch linkage
- [ ] Visible brake lining
- [ ] Drive line and joints
- [ ] Adjust brakes/check spitter valve
- [ ] Air lines
- [ ] Clean and vacuum cab
- [ ] Check block and pan heater a/c draw

COMMENTS ON REVERSE SIDE

Appendix X

NORTHLAND FORK TRUCK MAINTENANCE - 1977

No.	Model	Serial No.	Age	Relative Value	Maintenance	Location	Capacity
100	Clark CY250	18-1906	1968	$5,400	$ 600	Kitimat	25,000
101	" "	47-2141	1970	8,100	4,000	Prince Rupert	25,000
102	" CHY250B	HY1425-31-1166	1970	8,100	-	Kitimat	25,000
103	" CHY300LB	20-351045	1970	8,100	2,200	Vancouver	30,000
104	" CHY250	Y1425-11-1146	1969	6,400	2,800	Vancouver	25,000

COMPARATIVE COST ANALYSIS OF NORTHLANDS VANCOUVER P & D
AS PERFORMED BY WHOLESALE DELIVERY SERVICE VERSUS
CP TRANSPORT'S PROPOSED CHARGES
(July 15 to 26, 1977 inclusive)

	No.of Shpts	Avg. Weight	Total Weight	W.D.S. Charge	CPT Rates	CPT Charge	Difference		26 Periods	Annual Difference
W.D.S. Minimum Shipments $3.80										
0 - 100	5	72	360	$ 19.00	$6.25 6.00	$ 22.50	$ 4.50	x	26	- $117.00
101 - 400	14	231	3238	53.20	1.52 1.65	49.15	4.05	x	26	+ 105.30
W.D.S. Rate 95¢ per 100										
401 - 500	-	-	-	-	1.52 1.25	-	-	x	26	-
501 - 1000	2	737	1473	13.99	.90 .87	13.26	0.73	x	26	+ 7.80
1001 - 5000	2	1955	3910	37.15	.60 .51	23.46	13.69	x	26	+ 355.94
5001 - 10000	1	6752	6752	64.14	.45 .40	30.38	33.76	x	26	+ 877.76
10001 - 20000	1	10500	10500	99.75	.40 .23 .45	39.90	42.00	x	26	+ 1092.00
W.D.S. Rate $1.08 per 100										
401 - 500	3	478	1436	15.50	1.52 1.25	21.83	6.33	x	26	- 164.58
501 - 1000	7	635	4444	48.00	.90	40.00	8.00	x	26	+ 208.00
1001 - 5000	13	1912	24853	268.41	.60	149.12	119.29	x	26	+ 3101.54
5001 - 10000	2	6473	12945	139.81	.45	58.25	81.56	x	26	+ 2120.55
W.D.S. Rate $1.13 per 100										
401 - 500	1	410	410	4.63	1.52 1.25	6.23	1.60	x	26	- 41.60
501 - 1000	4	710	2870	32.43	.90	25.83	6.60	x	26	+ 175.60
1001 - 5000	2	1505	3010	34.01	.60	18.06	15.95	x	26	+ 414.70
5001 - 10000					.45			x	26	
W.D.S. Rate $1.27 per 100										
401 - 500	1	480	480	6.10	1.52	7.30	1.20	x	26	- 31.20
501 - 1000					.90			x	26	
1001 - 5000					.60			x	26	
5001 - 10000					.45			x	26	
										+ $8459.19
										- 354.38
										+ $8104.81

7836.34 58 76681 cwt 1.09 66
209085.0 annual
plus 20% $9,725.77

COMPARATIVE COST ANALYSIS OF NORTHLAND'S
VANCOUVER TRAILER LOAD SERVICE AS PERFORMED
BY WHOLESALE DELIVERY SERVICE VERSUS CP TRANSPORT'S
PROPOSED CHARGES

JULY 15 TO 26, 1977 INCLUSIVE

	No. of Units	Avg. Weight	Total Weight	WDS Charge	CPT Rate	CPT Charge	Difference	25 Periods	Annual Difference
WDS rate zone 1 $68.00	20			$1,360.					
WDS rate Kraft Container @ $75.00	3			225.					
WDS rate (American Can $83.00)	12			996.					
WDS rate Zone 2 $91.00	30			2,730.					
WDS rate Zone 3 $114.00	6			684.					
WDS rate (Clayburn) $140.00	3			420.					
Kelly Douglas Rate $165.00	7			1,155.					
WDS Consolidation Containers $27.50	8			220.					

CP TRANSPORT TRAFFIC LANE ANALYSIS
COSTS FOR VANCOUVER PICK-UP
AND CONSOLIDATION

APRIL 1977

	Adjusted Proposed P & D Charge	Consolidation Charge	P & D + Consolidation
	Basic Profit	Basic Profit	
0-100	$5.9823 + 10% = $6.58	$1.7638 + 10% = $1.94	$8.48
101-500	1.3808 + 10% = 1.52	0.7728 + 10% = .85	2.37
501-1000	.7946 + 10% = 0.87	0.6092 + 10% = .67	1.54
1001-5000	.4663 + 10% = 0.51	0.5543 + 10% = .61	1.12
5001-10000	.3653 + 10% = 0.40	0.5323 + 10% = .59	.99
10001-20000	.2076 + 10% = 0.23	0.5280 + 10% = .58	.81
20001-30000	.3099 + 10% = 0.34		
30001-40000	.2508 + 10% = 0.28		
40001 and over	.1010 + 10% = 0.11		

COMPARATIVE COST ANALYSIS OF NORTHLAND'S
PRINCE RUPERT P & D AND DECONSOLIDATION AS PERFORMED BY
LINDSAY CARTAGE SERVICES VERSUS CP TRANSPORT'S
PROPOSED CHARGES
(JULY 15 TO 26, 1977 INCLUSIVE)

	No. of Shipments	Avg. Weight	Total Weight	Lindsay Charge	CPT Rates	CPT Charges	Difference	25 Periods	Annual Difference
LINDSAY	Minimum	Shipments	$4.00 + 1 cent per 5 lbs.)						
0-100	36	67	2419	$149.04					
Lindsay rate minimum	$4.00 + 2 cents per 5 lbs. = $1.97 per 100.								
101-500	88	267	23473	461.38					
Lindsay rate 92¢ per 100.									
501-1000	32	752	24069	219.70					
Lindsay rate 60¢ per 100.									
1000-5000	44	2366	104091	624.55					
5000-10000	8	7396	59167	355.00					
10001-20000	5	12240	62203	373.22					
20001-30000	2	43750	45750	274.50					
Trailer Spotting	$20.00								
	20			400.00					
Trailer Spotting	37.50								
	2			75.00					
Trailer unloading at industry									
	7			1000.00					
Container unloading (Sears)									
	1			32.40					
Lindsay Highway - Kitimat-Prince Rupert									
	9-12' Cont.			482.62					
	1-24' Trailer			94.31					

COMPARATIVE COST ANALYSIS OF NORTHLAND'S
KITIMAT P. & D. AS PERFORMED BY SKEENA
MOTOR CARRIERS VERSUS C.P. TRANSPORT's
PROPOSED CHARGES (PROFIT 10%)

SKEENA MINIMUM SHIPMENT CHARGE $4.00

	Number of Shipments	Average Weight	Total Weight	Skeena Charge	CPT Rate	CPT Charge	Difference	Paid 26W	Annual Difference
0-100	18	59	1068	$72.00					
101-500	56	277	15537	224.00					
501-590	5	535	2679	20.00					
Alcan Brick* 6.08.5	(2)	(63,500)	(126,920)	108.27					
				SKEENA RATE $0.57 PER 100					
501-1000	3	900	2699	$15.38					
1001-5000	7	1635	11448	65.25					
5001-1000	1*	(8514)	(2514)	(48.53*)					
10001-2000	1	10500	10500	59.85					
20001-3000									
Sears Containers	2	(3163)		(63.26)					
	125			SKEENA RATE $0.74 PER 100					
541-1000	11	737	8107	59.99					
1001-5000	6	1780	10682	79.05					
5001-1000									
10001-2000									
20001-3000									
Trailer	1	(115.00)		(115.00)					
Alcan Ingots	4			(982.24)					
				SKEENA RATE $1.01 PER 100					
501-1000	1	480	480	4.85					
1001-5000	1	2700	2700	27.27					
5001-10000									
10001-20000									
20001-30000									
Container	23	(57.50)		(1322.50)					

COMPARATIVE COST ANALYSIS OF NORTHLAND'S
KITIMAT-STEWART HIGHWAY & DELIVERY COSTS AS PERFORMED BY
LINDSAY CARTAGE SERVICES VERSUS CP TRANSPORT
PROPOSED CHARGES
(July 15 TO 26, 1977 INCLUSIVE)

	No. of Shipments	Avg. Weight	Total Weight	Lindsay Charge	CPT Rates	CPT Charge	Difference	25 Periods	Annual Difference
Lindsay Minimum Charge $5.72									
0-100	9	60	530	$53.48					
Lindsay Rate $4.25									
101-500	14	223	3115	132.51					
Lindsay Rate $3.90									
501-1000	4	807	3220	126.20					
Lindsay Rate $3.17									
1001-5000	3	1829	5448	173.80					
Lindsay Rate $2.00									
5001-10000	1	5800	5800	116.00					
10001-20000	1	12000	12000	240.00					
Sears Containers ($140.00)	5			700.00 ~~140.00~~					
Trailers ($550.00)	3			1650.00					

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COMPARATIVE COST ANALYSIS OF NORTHLAND'S
TERRACE P. & D. AS PERFORMED BY SKEENA
MOTOR CARRIERS VERSUS C.P. TRANSPORT'S
PROPOSED CHARGES (PROFIT 10%)
(JULY 15 TO 26, 1977)

SKEENA MINIMUM SHIPMENTS $4.00

	Number of Shipments	Average Weight	Total Weight	Skeena Charge	CPT Rate	CPT Charge	Difference	Paid 26W	Annual Difference
0-100	29	64	1865	$116.00					
101-500	74	254	18817	296.00					
501-525	4	514	2075	16.00					
			SKEENA RATE 76¢ PER 100						
501-1000	15	757	11357 =	$86.31					
1001-5000	34	1708	58059 =	441.25					
5001-10000*	12	7309	87708 =	666.58					
10001-20000	2	11462	22924 =	174.22					
20001-3000	1	22800	22800 =	173.28					
			SKEENA RATE 95¢ PER 100						
501-1000	9	637	5730	54.44					
1001-5000	4	1650	6600	62.70					
5001-1000									
10001-2000									
Containers	17	57.50		(97.75)					
			SKEENA RATE 113 PER 100						
501-1000	7	609	4266	48.20					
1001-5000	3	1306	3919	44.20					
5001-10000									
CanCel Containers	4	(86.25)		(345.00)					
			SKEENA RATE 208 PER 100						
101-500	3	320	960	13.30					
501-1000	5	534	2672	55.78					
1001-5000	1	2160	2160	44.98					
5001-10000	213								
Trailers	30	(115.00)		($3450.00)					
Trailers LCB	1	(230.00)		(230.00)					

214

SKEENA RATE $0.77 PER 100

1001-5000	2	2031	4062	31.27	
	111 (1.68)		166102	$658.91	= $2.52

COMPARATIVE COST ANALYSIS OF NORTHLANDS VANCOUVER PICK UP AND CONSOLIDATION TRAFFIC
AS PERFORMED BY WHOLESALE DELIVERY SERVICES VERSUS PROPOSED
CP TRANSPORT CHARGES (10% PROFIT)
(Period July 15 to 26, 1977 inclusive)

	No. of Shpts	Avg. Weight	Total Weight		W.D.S. Charge		CPT Rates		CPT Proposed Charge	Difference		26 Periods	Annual Difference
W.D.S. Minimum Shipments $3.80													
0 - 100	47	65	3051	=	$178.60		$8.50 (48)	=	$259.34	$ 80.74	x	26	- $2099.24
101 - 271	66	184	12174	=	250.81	200	2.37	=	288.52	37.71	x	26	- 980.46
W.D.S. Rate $1.40 per 100													
271 - 500	28	341	9550	=	133.70	200	2.37	=	226.34	92.64	x	26	- 2408.64
501 - 1000	12	756	9081	=	127.13	140	1.54	=	139.85	12.72	x	26	- 330.72
1001 - 5000	7	1768	12375	=	173.25	105	1.12	=	138.61	34.64	x	26	+ 900.64
W.D.S. Rate 1.53 per 100													
271 - 500	35	375	13121	=	200.75	200	2.37	=	310.99	110.22	x	26	- 2865.72
501 - 1000	31	680	21092.	=	322.71	140	1.54	=	324.82	2.11	x	26	- 54.86
1001 - 5000	16	1765	28247	=	432.17	105	1.12	=	316.36	115.81	x	26	+ 3011.06
5001 - 10000	1	146	11361	=	165.68		.99	=	112.47	53.21	x	26	+ 1383.46
W.D.S. Rate $1.58 per 100													
271 - 500	2	31	620	=	9.80	200	2.37	=	14.69	5.69	x	26	- 147.94
501 - 1000	4	716	2860	=	45.19	140	1.54	=	44.04	1.86	x	26	+ 308.36
1001 - 5000	3	1438	4315	=	68.18	105	1.12	=	48.33	20.47	x	26	+ 532.22
W.D.S. Rate $1.70 per 100													
271 - 500													
501 - 1000													
1001 - 5000	1	2700	2700	=	45.90		1.12	=	30.24	15.66	x	26	+ 407.16
	253		130,547						22546				+ $6542.90
													- 8887.58
$ 2,107.97													- + $2344.68
$52699. annual			1,61						1,73				

ESTIMATED OPERATING COSTS WITH NORTHLAND'S PRESENT EQUIPMENT & PROPOSED EQUIPMENT

KITIMAT GENERAL MERCHANDISE NORTHBOUND

Door to Door Rate $36.70 (Tonnage 1300 tons)

	WDS	Van. Dock	Water	Kit Dock.	Kit P&D		
P&D Only 12'13'	21.80	12.50	33.00	2.50x	14.00	=	83.80
P&D & Cons.	32.20	2.50	33.00	2.50x	14.00	=	82.20
P&D Only 20'	18.00	10.00	25.00	1.00	12.00	=	66.00
P&D & Cons.	26.00	1.00	25.00	1.00	12.00	=	65.00
P&D Only 27'	14.00	9.00	20.00	1.00	10.00	=	54.00
* Buildings 3030	22.00	1.00	20.00	1.00	10.00	=	54.00

Door to Dock Rate $63.55 (Tonnage 1400)

12'-13'		-	77.80
		-	76.20
20'		-	54.00
		-	53.00
27'	)	-	44.00
*(3200 tons Building 40.40)	)	-	44.00

Dock to Door Rate99.24 (Tonnage 500)

12'-13' -		62.00
20' -		48.00
27' -		40.00

* (8000 tons Building - 1458)

Dock to Dock Rate $44.38 (Tonnage 5000)

	-	48.00
12'-13' -		36.00
20' -		30.00
27'		

*(14,000 tons Building - 1866)

ESTIMATED OPERATING COSTS WITH NORTHLAND'S PRESENT EQUIPMENT & PROPOSED EQUIPMENT

KITIMAT SOUTHBOUND

Door to Door Rate $21.47 (Tonnage 400) (Building 14.29)

	Skeena	Kit. Dock	Water	Van. Dock	WDS	
12' to 13'	$4.00	$2.50	$15.00	$2.50	$8.00	$32.00
20'	3.50	1.00	12.00	1.00	3.00	20.50
27'	2.50	1.00	10.00	1.00	3.00	17.50

Door to Dock Rate $17.10 (Tonnage 3500) (Building $15.44)

12' to 13'	-	$24.00
20'	-	17.50
27'	-	14.50

Dock to Door Rate $25.00 (Tonnage 18) GMD

12' to 13'	$28.00
20'	17.00
27'	15.00

Dock to Dock Rate $11.22 (Tonnage 4000) (Ingots 7.26) 26,000 tons

12' to 13'	$2.50	$15.00	$2.50	-	$20.00
20'	1.00	5.00	1.00	-	7.00
27'	1.00	5.00	1.00	-	7.00

ESTIMATED OPERATING COST WITH NORTHLAND'S
PRESENT & PROPOSED EQUIPMENT

TERRACE GENERAL MERCHANDISE NORTHBOUND

Door to Door Rate $58.13 (Tonnage 20 tons)

		WDS	Van. Dock	Water	Kit. Dock	Kit./Ter. Hwy.	P&D		
P&D Only		21.80	12.50	33.00	2.50	10.00*	8.00	=	87.80
P&D & Cons.	12'-13' Cont.	32.20	2.50	33.00	2.50	10.00	8.00	=	90.20
P&D Only	20'	18.00	10.00	25.00	1.00	5.00	7.00	=	66.00
P&D & Cons.	20'	26.00	1.00	25.00	1.00	5.00	7.00	=	65.00
P&D Only	27'	14.00	9.00	20.00	1.00	3.00	5.00	=	52.00
P&D & Cons.	27'	22.00	1.00	20.00	1.00	3.00	5.00	=	52.00

Door to Dock Rate $130.74 (Tonnage 400) (Our rate $40.44 - 4500 tons)

12'-13'	-	79.80
"	-	82.80
20'	-	59.00
"	-	58.00
27'	-	47.00
"	-	47.00

Dock to Door Rate $87.00 (Tonnage 1700)

12'-13'	-	58.00
20'		41.00
27'		38.00

ESTIMATED OPERATING COSTS WITH NORTHLAND'S
PRESENT EQUIPMENT AND PROPOSED EQUIPMENT

TERRACE SOUTHBOUND

Door to Door Rate $90.12 (Tonnage 120) (Lumber rate $15.60 - 3400 tons)

	Skeena	Ter./Kit.	Kit. Dock	Water	Van. Dock	WDS	
12'-13'	$4.00	$5.00	$2.50	$15.00	$2.50	$8.00	$37.00
20'	3.50	3.50	1.00	12.00	1.00	3.00	23.00
27'	2.50	1.50	1.00	10.00	1.00	3.00	18.50

Door to Dock Rate ? (Lumber Rate $15.38 - 800 tons)

12'-13'						-	$29.00
20'				$5.00		-	20.00
27'						-	15.50

Dock to Door Rate $25.50 (Tonnage 50)

12'-13'	-	$28.00
20'		17.00
27'		14.50

ESTIMATED OPERATING COSTS WITH NORTHLAND'S
PRESENT EQUIPMENT AND PROPOSED EQUIPMENT

TERRACE SOUTHBOUND

Door to Door Rate $90.12 (Tonnage 120) (Lumber rate $15.60 - 3400 tons)

	Skeena	Ter./Kit.	Kit. Dock	Water	Van. Dock	WDS	
12'-13'	$4.00	$5.00	$2.50	$15.00	$2.50	$8.00	$37.00
20'	3.50	3.50	1.00	12.00	1.00	3.00	23.00
27'	2.50	1.50	1.00	10.00	1.00	3.00	18.50

Door to Dock Rate ? (Lumber Rate $15.38 - 800 tons)

12'-13'						-	$29.00
20'				$5.00		-	20.00
27'						-	15.50

Dock to Door Rate $25.50 (Tonnage 50)

12'-13'	-	$28.00
20'		17.00
27'		14.50

ESTIMATED OPERATING COSTS WITH NORTHLAND'S
PRESENT EQUIPMENT & PROPOSED EQUIPMENT

PRINCE RUPERT GENERAL MERCHANDISE NORTHBOUND

Door to Door Rate $99.41 (Tonnage 70)

			WDS	Vanc. Dock	Water	Kit. Dock	Kit-PR Hyw.	Lindsay	
2.5 tons	P & D Only)		21.80	12.50	33.00	2.50	30.00*	8.00	108.00
	P & D & Cons.)		32.20	2.50	33.00	2.50	30.00*	16.00	116.20
5 tons	P & D Only	20'	18.00	10.00	25.00	1.00	23.00	7.00	84.00
	P & D & Cons.		26.00	1.00	25.00	1.00	23.00	13.00	89.00
8.5 tons	P & D Only	27'	14.00	9.00	20.00	1.00	13.50	5.00	62.50
	P & D & Cons.		22.00	1.00	20.00	1.00	13.50	11.00	68.50

Door to Dock Rate $87.01 (Tonnage 500)

(12'-13')							-	100.00
(12'-13')							-	100.20
20'							-	77.00
20'							-	76.00
27'							-	57.50
27'							-	57.00

Door to Door Rate $88.41 (Tonnage 2350)

(12'-13')	-	12.50	33.00	2.50	30.00	8.00	86.20
(12'-13')	-	2.50	33.00	2.50	30.00	16.00	84.00
20'	-	10.00	25.00	1.50	23.00	7.00	66.00
20'	-	2.10	25.00	1.50	23.00	13.00	63.00
27'	-	9.00	20.00	1.40	13.50	5.00	48.50
27'	-	2.00	20.00	1.40	13.50	11.00	46.50

Dock to Dock Rate $74.12 (Tonnage 125)

(12'-13')	-	-	78.20
20'	-	-	59.00
27'	-	-	43.50

ESTIMATED OPERATING COSTS WITH NORTHLAND'S
PRESENT EQUIPMENT & PROPOSED EQUIPMENT

PRINCE RUPERT SOUTHBOUND(Canned Fish)

Door to Door Rate $20.72 (Tonnage 300)

	Lindsay	Kit.P.R. Hwy.	Kit. Dock	Water	Van. Dock	WDS	
12'	4.00	15.00	2.50	15.00x	2.50	8.00	47.00
20'	2.00	7.20	1.00	12.50x	1.00	3.00	26.60
27'	2.00	7.20	1.00	10.00x	1.00	3.00	24.20

Door to Dock Rate $21.97 (Tonnage 4300)

12'-13'						-	39.00
20'						-	23.60
27'						-	21.20

Dock to Door Rate $18.53 (Tonnage 300)

12'-13'	-						43.00
20'	-						24.60
27'	-						22.30

Dock to Dock Rate $18.23 (Tonnage 5000)

12'-13'		2.50	14.00	2.50		-	
20'		1.00	14.00	1.00		-	
27'		1.00	14.00	1.00			

REVISED LIST OF CONTAINERS TO BE TAKEN OVER BY CP RAIL FROM NORTHLAND

Mr. Tom King and myslef examined Northland's containers and agreed that the following containers were uneconomical to maintain and/or were not required for the proposed operations:

The 12' - 50 containers, if required, should be for the most part repaired, however #1227, 1232, 1233 and possibly others not inspected should not be retained. The majority of the 13' containers are in poor condition and (with the exception of the cold rolled welded containers like 1307) should not be retained.

Take over the 20 of 4 x 8 containers that are in good shape and retain for the Kemano Service, maintenance of same should be directly charged to the Alcan account.

About 50% of the 11 "F" Series containers are useable the remainder are junk. F-1 F-3 F-2 and F-4 are in fair shape.

The "D" series 20' I.S.O. Containers are in fair shape and should be retained.

The Series 100 small coolers should not be retained - they are in poor condition and are rarely used.

The Series 200 -300 large coolers are in poor to fair shape and should not be retained because they are rarely used and would be replaced if 20 nitrogen clip-on containers are acquired.

The Series "P1" 500 cubic foot freezers are in good shape and should be retained only for dock-to-dock operations.

PRESENT TRACTOR UTILIZATION

	Apr/3/10 Weekly Mileage	Apr/10/15 Weekly Mileage	Average Weekly Mileage	Budget Weekly Mileage		Difference
Ryder 54611 - city	1000	783	900	800	&	100
Ryder 54612 - city	640	53	350	800	&	450
Ryder 54656 - highway	258	537	400	2000	-	1600
Ryder 39809 - highway	582	857	700	2000	-	1300
Ryder 35920 - highway	1219	1434	1300	2000	-	700
Ryder 35917 - highway	810	3084	1950	2000		-
Ryder 39407 - city	1251	-	1250	800	-	350
Ryder 39405 - highway	322	1713	1000	2000	-	1000

MAINT. 1

TRANSPORT - VEHICLE P. M. INSPECTION REPORT

Vehicle No. _____ Type of Inspection: A B Date: Mo. _____ Day _____ Year _____

(✓) if okay (O) if adjustments completed (X) if repairs or extensive adjustments required

P & D Trucks:
A - 1500 miles gas; 1500 miles diesel
B - 1500 miles gas; 3000 miles diesel

P & D Tractors:
A - 1500 miles gas; 1500 miles diesel
B - 3000 miles gas; 6000 miles diesel

Forklifts:
A - 100 hours
B - 200 hours

Highway Trucks and Tractors: Naturally Aspirated - A - 10,000 miles; B - 10,000 miles
Blown Cummins - A - 10,000 miles; B - 15,000 miles
1693 Cat - A - 10,000 miles; B - 20,000 miles

B CHECK - DO COMPLETE "A" CHECK PLUS CHANGE OIL AND OIL FILTERS

A CHECK:

EYE LEVEL OUTSIDE CHECK
- [ ] Damage, cabs, hook, fenders
- [ ] Wheel studs and nuts, clamps
- [ ] Tire condition and pressure
- [ ] Fuel tanks, vents, fill cap
- [ ] Chain hooks and tank protector
- [ ] Mud flaps/brackets
- [ ] 5th wheel/slides/pins
- [ ] Deck covers
- [ ] Visable wiring/air lines
- [ ] Frame crossmembers
- [ ] Attach trlr. air lines to blank glad hands
- [ ] Check engine oil level
- [ ] Check rad cap and recovery tank
- [ ] Check for coolant level
- [ ] Exhaust muffler and pipe
- [ ] Drain air tanks

IN-CAB CHECK
- [ ] Brake peddle/park brake
- [ ] Clutch free play
- [ ] Steering for looseness
- [ ] Warning lights/buzzer/flag
- [ ] Water check unit
- [ ] Starter and throttle action
- [ ] Instruments and hand throttle
- [ ] Oil PSI/charge rate
- [ ] Air governor
- [ ] Horn, air/electric
- [ ] Seat, doors/handles, seat belts
- [ ] Cab glass/defroster, heater
- [ ] Air leaks, engine off, brakes applied wiper operation.
- [ ] Apply trlr, air and leave applied (emergency)
- [ ] Check lights
- [ ] Fire extinguisher/flags/flares/ first aid kit

ENGINE COMPARTMENT
- [ ] Tighten oil and water hose clamps
- [ ] Check hoses
- [ ] Air cleaner and mounts
- [ ] Check water and oil leaks
- [ ] Air induction piping
- [ ] Warm air diverter
- [ ] All belts
- [ ] Air compressor intake
- [ ] Drain water from fuel filter
- [ ] Activate sentinel manually
- [ ] Check throttle linkage
- [ ] Batteries/box
- [ ] All exposed wiring/batteries/cables/ connectors
- [ ] Steering box lube level
- [ ] Check manifolds and attachments
- [ ] Disconnect trlr. emergency line, note action of T.P.V.
- [ ] Check F.W. oil hubs
- [ ] Fill Kysor fluid/alcohol evaporator wiper, motor connection.

UNDER THE VEHICLE
- [ ] Complete lube
- [ ] Check steering/kingpins
- [ ] Front wheel bearing slack
- [ ] Springs/hangers/shocks/rear suspension
- [ ] Check for oil leaks
- [ ] Trans/diff. oil level/vents/plugs
- [ ] Clutch linkage
- [ ] Visible brake lining
- [ ] Drive line and joints
- [ ] Adjust brakes/check spitter valve
- [ ] Air lines
- [ ] Clean and vacuum cab
- [ ] Check block and pan heater a/c draw

COMMENTS ON REVERSE SIDE

Appendix X

NORTHLAND FORK TRUCK MAINTENANCE - 1977

No.	Model	Serial No.	Age	Relative Value	Maintenance	Location	Capacity
100	Clark CY250	18-1906	1968	$5,400	$ 600	Kitimat	25,000
101	" "	47-2141	1970	8,100	4,000	Prince Rupert	25,000
102	" CHY250B	HY1425-31-1166	1970	8,100	-	Kitimat	25,000
103	" CHY300LB	20-351045	1970	8,100	2,200	Vancouver	30,000
104	" CHY250	Y1425-11-1146	1969	6,400	2,800	Vancouver	25,000

COMPARATIVE COST ANALYSIS OF NORTHLANDS VANCOUVER P & D
AS PERFORMED BY WHOLESALE DELIVERY SERVICE VERSUS
CP TRANSPORT'S PROPOSED CHARGES
(July 15 to 26, 1977 inclusive)

	No.of Shpts	Avg. Weight	Total Weight	W.D.S. Charge	CPT Rates	CPT Charge	Difference		26 Periods	Annual Difference
W.D.S. Minimum Shipments $3.80										
0 - 100	5	72	360	$ 19.00	$6.25 6.00	$ 22.50	$ 4.50	x	26	- $117.00
101 - 400	14	231	3238	53.20	1.52 1.65	49.15	4.05	x	26	+ 105.30
W.D.S. Rate 95¢ per 100										
401 - 500	-	-	-	-	1.52 1.25	-	-	x	26	-
501 - 1000	2	737	1473	13.99	.90 .87	13.26	0.73	x	26	+ 7.80
1001 - 5000	2	1955	3910	37.15	.60 .51	23.46	13.69	x	26	+ 355.94
5001 - 10000	1	6752	6752	64.14	.45 .40	30.38	33.76	x	26	+ 877.76
10001 - 20000	1	10500	10500	99.75	.40 .23 .45	39.90	42.00	x	26	+ 1092.00
W.D.S. Rate $1.08 per 100										
401 - 500	3	478	1436	15.50	1.52 1.25	21.83	6.33	x	26	- 164.58
501 - 1000	7	635	4444	48.00	.90	40.00	8.00	x	26	+ 208.00
1001 - 5000	13	1912	24853	268.41	.60	149.12	119.29	x	26	+ 3101.54
5001 - 10000	2	6473	12945	139.81	.45	58.25	81.56	x	26	+ 2120.55
W.D.S. Rate $1.13 per 100										
401 - 500	1	410	410	4.63	1.52 1.25	6.23	1.60	x	26	- 41.60
501 - 1000	4	710	2870	32.43	.90	25.83	6.60	x	26	+ 175.60
1001 - 5000	2	1505	3010	34.01	.60	18.06	15.95	x	26	+ 414.70
5001 - 10000					.45			x	26	
W.D.S. Rate $1.27 per 100										
401 - 500	1	480	480	6.10	1.52	7.30	1.20	x	26	- 31.20
501 - 1000					.90			x	26	
1001 - 5000					.60			x	26	
5001 - 10000			76681 cwt		.45			x	26	
										+ $8459.19
										- 354.38
										+ $8104.81

$836.34 58 1.09 66

20908.50 annual

plus 20% $9,725.77

Appendix A

COMPARATIVE COST ANALYSIS OF NORTHLAND'S
VANCOUVER TRAILER LOAD SERVICE AS PERFORMED
BY WHOLESALE DELIVERY SERVICE VERSUS CP TRANSPORT'S
PROPOSED CHARGES

JULY 15 TO 26, 1977 INCLUSIVE

	No. of Units	Avg. Weight	Total Weight	WDS Charge	CPT Rate	CPT Charge	Difference	25 Periods	Annual Difference
WDS rate zone 1 $68.00	20			$1,360.					
WDS rate Kraft Container @ $75.00	3			225.					
WDS rate (American Can $83.00)	12			996.					
WDS rate Zone 2 $91.00	30			2,730.					
WDS rate Zone 3 $114.00	6			684.					
WDS rate (Clayburn) $140.00	3			420.					
Kelly Douglas Rate $165.00	7			1,155.					
WDS Consolidation Containers $27.50	8			220.					

COMPARATIVE COST ANALYSIS OF NORTHLAND'S
KITIMAT-STEWART HIGHWAY & DELIVERY COSTS AS PERFORMED BY
LINDSAY CARTAGE SERVICES VERSUS CP TRANSPORT
PROPOSED CHARGES
(July 15 TO 26, 1977 INCLUSIVE)

	No. of Shipments	Avg. Weight	Total Weight	Lindsay Charge	CPT Rates	CPT Charge	Difference	25 Periods	Annual Difference
Lindsay Minimum Charge $5.72									
0-100	9	60	530	$53.48					
Lindsay Rate $4.25									
101-500	14	223	3115	132.51					
Lindsay Rate $3.90									
501-1000	4	807	3220	126.20					
Lindsay Rate $3.17									
1001-5000	3	1829	5448	173.80					
Lindsay Rate $2.00									
5001-10000	1	5800	5800	116.00					
10001-20000	1	12000	12000	240.00					
Sears Containers ($140.00)	5			700.00 ~~140.00~~					
Trailers ($550.00)	3			1650.00					

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COMPARATIVE COST ANALYSIS OF NORTHLAND'S
KITIMAT-PRINCE RUPERT HIGHWAY HAUL AS PERFORMED
BY SKEENA TRANSPORT VERSUS CP TRANSPORT'S PROPOSED CHARGES
(JULY 15 TO 24, 1977 INCLUSIVE)

	No. of Shipments	Average Weight	Total Weight	Skeena Charge	CPT Rate	CPT Charge	Difference	25 Periods	Annual Difference
0-100	11	246	246	27.08					
101-500	42	246	10355	74.55					
501-1000	16	740	11838	85.23					
1001-5000	37	2163	80042	576.30					
5001-10000	8	7776	62207	447.89					
10001-2000	4	12250	48900	352.08					
20001-3000	2	23500	45000	324.00					
(72¢ per cut)									
Containers									
Minimums									
12 & 13 ft.	12	4500	56279	405.21					
12' ($32.28)	6	4500	27500	194.36					
20' ($115.00)	3			345.00					
13' ($57.50)	5			287.50					
Trailers ($115.00)									
24'-26'	6			690.00					
Trailers ($230.00)									
45'	56			12880.00					
Trailers/Containers 27'-29'	4								
	210								

COMPARATIVE COST ANALYSIS OF NORTHLAND'S
TERRACE P. & D. AS PERFORMED BY SKEENA
MOTOR CARRIERS VERSUS C.P. TRANSPORT'S
PROPOSED CHARGES (PROFIT 10%)
(JULY 15 TO 26, 1977)

SKEENA MINIMUM SHIPMENTS $4.00

	Number of Shipments	Average Weight	Total Weight	Skeena Charge	CPT Rate	CPT Charge	Difference	Paid 26W	Annual Difference
0-100	29	64	1865	$116.00					
101-500	74	254	18817	296.00					
501-525	4	514	2075	16.00					
			SKEENA RATE 76¢ PER 100						
501-1000	15	757	11357 =	$86.31					
1001-5000	34	1708	58059 =	441.25					
5001-10000*	12	7309	87708 =	666.58					
10001-20000	2	11462	22924 =	174.22					
20001-3000	1	22800	22800 =	173.28					
			SKEENA RATE 95¢ PER 100						
501-1000	9	637	5730	54.44					
1001-5000	4	1650	6600	62.70					
5001-1000									
10001-2000									
Containers	17	57.50		(97.75)					
			SKEENA RATE 113 PER 100						
501-1000	7	609	4266	48.20					
1001-5000	3	1306	3919	44.20					
5001-10000									
CanCel Containers	4	(86.25)		(345.00)					
			SKEENA RATE 208 PER 100						
101-500	3	320	960	13.30					
501-1000	5	534	2672	55.78					
1001-5000	1	2160	2160	44.98					
5001-10000	213								
Trailers	30	(115.00)		($3450.00)					
Trailers LCB	1	(230.00)		(230.00)					

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COMPARATIVE COST ANALYSIS OF NORTHLAND'S
PRINCE RUPERT P & D AND DECONSOLIDATION AS PERFORMED BY
LINDSAY CARTAGE SERVICES VERSUS CP TRANSPORT'S
PROPOSED CHARGES
(JULY 15 TO 26, 1977 INCLUSIVE)

	No. of Shipments	Avg. Weight	Total Weight	Lindsay Charge	CPT Rates	CPT Charges	Difference	25 Periods	Annual Difference
LINDSAY	Minimum	Shipments	$4.00 + 1 cent per 5 lbs.)						
0-100	36	67	2419	$149.04					
Lindsay rate minimum $4.00 + 2 cents per 5 lbs. = $1.97 per 100.									
101-500	88	267	23473	461.38					
Lindsay rate 92¢ per 100.									
501-1000	32	752	24069	219.70					
Lindsay rate 60¢ per 100.									
1000-5000	44	2366	104091	624.55					
5000-10000	8	7396	59167	355.00					
10001-20000	5	12240	62203	373.22					
20001-30000	2	43750	45750	274.50					
Trailer Spotting	$20.00								
	20			400.00					
Trailer Spotting	37.50								
	2			75.00					
Trailer unloading at industry									
	7			1000.00					
Container unloading (Sears)									
	1			32.40					
Lindsay Highway - Kitimat-Prince Rupert									
	9-12' Cont.			482.62					
	1-24' Trailer			94.31					

CP TRANSPORT TRAFFIC LANE ANALYSIS
COSTS FOR VANCOUVER PICK-UP
AND CONSOLIDATION

APRIL 1977

	Adjusted Proposed P & D Charge	Consolidation Charge	P & D + Consolidation
	Basic Profit	Basic Profit	
0-100	$5.9823 + 10% = $6.58	$1.7638 + 10% = $1.94	$8.48
101-500	1.3808 + 10% = 1.52	0.7728 + 10% = .85	2.37
501-1000	.7946 + 10% = 0.87	0.6092 + 10% = .67	1.54
1001-5000	.4663 + 10% = 0.51	0.5543 + 10% = .61	1.12
5001-10000	.3653 + 10% = 0.40	0.5323 + 10% = .59	.99
10001-20000	.2076 + 10% = 0.23	0.5280 + 10% = .58	.81
20001-30000	.3099 + 10% = 0.34		
30001-40000	.2508 + 10% = 0.28		
40001 and over	.1010 + 10% = 0.11		

COMPARATIVE COST ANALYSIS OF NORTHLAND'S
KITIMAT P. & D. AS PERFORMED BY SKEENA
MOTOR CARRIERS VERSUS C.P. TRANSPORT's
PROPOSED CHARGES (PROFIT 10%)

SKEENA MINIMUM SHIPMENT CHARGE $4.00

	Number of Shipments	Average Weight	Total Weight	Skeena Charge	CPT Rate	CPT Charge	Difference	Paid 26W	Annual Difference
0-100	18	59	1068	$72.00					
101-500	56	277	15537	224.00					
501-590	5	535	2679	20.00					
Alcan Brick* 0.08.5	(2)	(63,500)	(126,920)	108.27					
				SKEENA RATE $0.57 PER 100					
501-1000	3	900	2699	$15.38					
1001-5000	7	1635	11448	65.25					
5001-1000	1*	(8514)	(2514)	(48.53*)					
10001-2000	1	10500	10500	59.85					
20001-3000									
Sears Containers	2	(3163)		(63.26)					
	125			SKEENA RATE $0.74 PER 100					
541-1000	11	737	8107	59.99					
1001-5000	6	1780	10682	79.05					
5001-1000									
10001-2000									
20001-3000									
Trailer	1	(115.00)		(115.00)					
Alcan Ingots	4			(982.24)					
				SKEENA RATE $1.01 PER 100					
501-1000	1	480	480	4.85					
1001-5000	1	2700	2700	27.27					
5001-10000									
10001-20000									
20001-30000									
Container	23	(57.50)		(1322.50)					
Container Super	2	(55.00)		(110.00)					

SKEENA RATE $0.77 PER 100

1001-5000	2	2031	4062	31.27	
	111 (1.68)		166102	$658.91	= $2.52

COMPARATIVE COST ANALYSIS OF NORTHLANDS VANCOUVER PICK UP AND CONSOLIDATION TRAFFIC
AS PERFORMED BY WHOLESALE DELIVERY SERVICES VERSUS PROPOSED
CP TRANSPORT CHARGES (10% PROFIT)
(Period July 15 to 26, 1977 inclusive)

	No.of Shpts	Avg. Weight	Total Weight		W.D.S. Charge		CPT Rates		CPT Proposed Charge	Difference		26 Periods	Annual Difference
W.D.S. Minimum Shipments $3.80													
0 - 100	47	65	3051	=	$178.60		48 $8.50	=	$259.34	$ 80.74	x	26	- $2099.24
101 - 271	66	184	12174	=	250.81	200	2.37	=	288.52	37.71	x	26	- 980.46
W.D.S. Rate $1.40 per 100													
271 - 500	28	341	9550	=	133.70	200	2.37	=	226.34	92.64	x	26	- 2408.64
501 - 1000	12	756	9081	=	127.13	140	1.54	=	139.85	12.72	x	26	- 330.72
1001 - 5000	7	1768	12375	=	173.25	105	1.12	=	138.61	34.64	x	26	+ 900.64
W.D.S. Rate 1.53 per 100													
271 - 500	35	375	13121	=	200.75	200	2.37	=	310.99	110.22	x	26	- 2865.72
501 - 1000	31	680	21092	=	322.71	140	1.54	=	324.82	2.11	x	26	- 54.86
1001 - 5000	16	1765	28247	=	432.17	105	1.12	=	316.36	115.81	x	26	+ 3011.06
5001 - 10000	1	146	11361	=	165.68		.99	=	112.47	53.21	x	26	+ 1383.46
W.D.S. Rate $1.58 per 100													
271 - 500	2	31	620	=	9.80	200	2.37	=	14.69	5.69	x	26	- 147.94
501 - 1000	4	716	2860	=	45.19	140	1.54	=	44.04	1.86	x	26	+ 308.36
1001 - 5000	3	1438	4315	=	68.18	105	1.12	=	48.33	20.47	x	26	+ 532.22
W.D.S. Rate $1.70 per 100													
271 - 500													
501 - 1000													
1001 - 5000	1	2700	2700	=	45.90		1.12	=	30.24	15.66	x	26	+ 407.16
	253		130,547						22546				+ $6542.90
													- 8887.58
													- + $2344.68

$ 2,107.97

$ 52699. annual

1.61

1.73

ESTIMATED OPERATING COSTS WITH NORTHLAND'S PRESENT EQUIPMENT & PROPOSED EQUIPMENT

KITIMAT SOUTHBOUND

Door to Door Rate $21.47 (Tonnage 400) (Building 14.29)

	Skeena	Kit. Dock	Water	Van. Dock	WDS	
12' to 13'	$4.00	$2.50	$15.00	$2.50	$8.00	$32.00
20'	3.50	1.00	12.00	1.00	3.00	20.50
27'	2.50	1.00	10.00	1.00	3.00	17.50

Door to Dock Rate $17.10 (Tonnage 3500) (Building $15.44)

12' to 13'	-	$24.00
20'	-	17.50
27'	-	14.50

Dock to Door Rate $25.00 (Tonnage 18) GMD

12' to 13'	$28.00
20'	17.00
27'	15.00

Dock to Dock Rate $11.22 (Tonnage 4000) (Ingots 7.26) 26,000 tons

12' to 13'	$2.50	$15.00	$2.50	-	$20.00
20'	1.00	5.00	1.00	-	7.00
27'	1.00	5.00	1.00	-	7.00

ESTIMATED OPERATING COSTS WITH NORTHLAND'S PRESENT EQUIPMENT & PROPOSED EQUIPMENT

KITIMAT GENERAL MERCHANDISE NORTHBOUND

Door to Door Rate $36.70 (Tonnage 1300 tons)

	WDS	Van. Dock	Water	Kit Dock.	Kit P&D		
P&D Only 12'13'	21.80	12.50	33.00	2.50x	14.00	=	83.80
P&D & Cons.	32.20	2.50	33.00	2.50x	14.00	=	82.20
P&D Only 20'	18.00	10.00	25.00	1.00	12.00	=	66.00
P&D & Cons.	26.00	1.00	25.00	1.00	12.00	=	65.00
P&D Only 27'	14.00	9.00	20.00	1.00	10.00	=	54.00
* Buildings 3030	22.00	1.00	20.00	1.00	10.00	=	54.00

Door to Dock Rate $63.55 (Tonnage 1400)

12'-13'		-	77.80
		-	76.20
20'		-	54.00
		-	53.00
27'	)	-	44.00
*(3200 tons Building 40.40)	)	-	44.00

Dock to Door Rate99.24 (Tonnage 500)

12'-13' -		62.00
20' -		48.00
27' -		40.00

* (8000 tons Building - 1458)

Dock to Dock Rate $44.38 (Tonnage 5000)

	-	48.00
12'-13' -		36.00
20' -		30.00
27'		

*(14,000 tons Building - 1866)

ESTIMATED OPERATING COSTS WITH NORTHLAND'S
PRESENT EQUIPMENT & PROPOSED EQUIPMENT

PRINCE RUPERT SOUTHBOUND(Canned Fish)

Door to Door Rate $20.72 (Tonnage 300)

	Lindsay	Kit.P.R. Hwy.	Kit. Dock	Water	Van. Dock	WDS	
12'	4.00	15.00	2.50	15.00x	2.50	8.00	47.00
20'	2.00	7.20	1.00	12.50x	1.00	3.00	26.60
27'	2.00	7.20	1.00	10.00x	1.00	3.00	24.20

Door to Dock Rate $21.97 (Tonnage 4300)

12'-13'						-	39.00
20'						-	23.60
27'						-	21.20

Dock to Door Rate $18.53 (Tonnage 300)

12'-13'	-						43.00
20'	-						24.60
27'	-						22.30

Dock to Dock Rate $18.23 (Tonnage 5000)

12'-13'		2.50	14.00	2.50		-	
20'		1.00	14.00	1.00		-	
27'		1.00	14.00	1.00			

ESTIMATED OPERATING COSTS WITH NORTHLAND'S
PRESENT EQUIPMENT & PROPOSED EQUIPMENT

PRINCE RUPERT GENERAL MERCHANDISE NORTHBOUND

Door to Door Rate $99.41 (Tonnage 70)

			WDS	Vanc. Dock	Water	Kit. Dock	Kit-PR Hyw.	Lindsay	
2.5 tons	P & D Only)		21.80	12.50	33.00	2.50	30.00*	8.00	108.00
	P & D & Cons.)		32.20	2.50	33.00	2.50	30.00*	16.00	116.20
5 tons	P & D Only	20'	18.00	10.00	25.00	1.00	23.00	7.00	84.00
	P & D & Cons.		26.00	1.00	25.00	1.00	23.00	13.00	89.00
8.5 tons	P & D Only	27'	14.00	9.00	20.00	1.00	13.50	5.00	62.50
	P & D & Cons.		22.00	1.00	20.00	1.00	13.50	11.00	68.50

Door to Dock Rate $87.01 (Tonnage 500)

(12'-13')							-	100.00
(12'-13')							-	100.20
20'							-	77.00
20'							-	76.00
27'							-	57.50
27'							-	57.00

Door to Door Rate $88.41 (Tonnage 2350)

(12'-13')	-	12.50	33.00	2.50	30.00	8.00	86.20
(12'-13')	-	2.50	33.00	2.50	30.00	16.00	84.00
20'	-	10.00	25.00	1.50	23.00	7.00	66.00
20'	-	2.10	25.00	1.50	23.00	13.00	63.00
27'	-	9.00	20.00	1.40	13.50	5.00	48.50
27'	-	2.00	20.00	1.40	13.50	11.00	46.50

Dock to Dock Rate $74.12 (Tonnage 125)

(12'-13')	-	-	78.20
20'	-	-	59.00
27'	-	-	43.50

ESTIMATED OPERATING COST WITH NORTHLAND'S
PRESENT & PROPOSED EQUIPMENT

TERRACE GENERAL MERCHANDISE NORTHBOUND

Door to Door Rate $58.13 (Tonnage 20 tons)

		WDS	Van. Dock 12/	Water	Kit. Dock	Kit./Ter. Hwy.	P&D		
P&D Only		21.80	12.50	33.00	2.50	10.00*	8.00	=	87.80
P&D & Cons.	12'-13' Cont.	32.20	2.50	33.00	2.50	10.00	8.00	=	90.20
P&D Only	20'	18.00	10.00	25.00	1.00	5.00	7.00	=	66.00
P&D & Cons.	20'	26.00	1.00	25.00	1.00	5.00	7.00	=	65.00
P&D Only	27'	14.00	9.00	20.00	1.00	3.00	5.00	=	52.00
P&D & Cons.	27'	22.00	1.00	20.00	1.00	3.00	5.00	=	52.00

Door to Dock Rate $130.74 (Tonnage 400) (Our rate $40.44 - 4500 tons)

12'-13'	-	79.80
"	-	82.80
20'	-	59.00
"	-	58.00
27'	-	47.00
"	-	47.00

Dock to Door Rate $87.00 (Tonnage 1700)

12'-13' -	58.00
20'	41.00
27'	38.00

MONTHLY TRAILER SUMMARY

MONTH OF MARCH, 1978

COMPANY	TYPE OF UNIT	TOTAL ON RENT	TOTAL TRAILER DAYS	TOTAL TRAILER COSTS
Caravan	45' Vans	20	570	$ 5,309.50
	26' Vans	7	151	1,057.00
	45' Flats	3	116	1,017.00
	40' Flats	-	-	-
	Dollys	-	-	-
TOTAL		30	837	7,383.50
T.I.P.	45' Flats	5	128	1,280.00
	26' Vans	4	81	729.00
	40' Flats	2	2	20.00
TOTAL		11	211	2,029.00
Gilflex	40' Flats	2	32	280.00
	27' Vans	2	23	204.00
	40' Vans	1	31	240.00
	45' Flats	2	27	252.00
TOTAL		7	113	976.00
Commercial Trailer Rentals	20' Chassis	4	124	642.00
	40' Flat	1	2	19.26
TOTAL		5	126	661.26
GRAND TOTAL		53	1,287	$11,049.76

REVISED LIST OF CONTAINERS
TO BE TAKEN OVER BY
CP RAIL FROM NORTHLAND

Mr. Tom King and myslef examined Northland's containers and agreed that the following containers were uneconomical to maintain and/or were not required for the proposed operations:

The 12' - 50 containers, if required, should be for the most part repaired, however #1227, 1232, 1233 and possibly others not inspected should not be retained. The majority of the 13' containers are in poor condition and (with the exception of the cold rolled welded containers like 1307) should not be retained.

Take over the 20 of 4 x 8 containers that are in good shape and retain for the Kemano Service, maintenance of same should be directly charged to the Alcan account.

About 50% of the 11 "F" Series containers are useable the remainder are junk. F-1 F-3 F-2 and F-4 are in fair shape.

The "D" series 20' I.S.O. Containers are in fair shape and should be retained.

The Series 100 small coolers should not be retained - they are in poor condition and are rarely used.

The Series 200 -300 large coolers are in poor to fair shape and should not be retained because they are rarely used and would be replaced if 20 nitrogen clip-on containers are acquired.

The Series "P1" 500 cubic foot freezers are in good shape and should be retained only for dock-to-dock operations.