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Institutional Constraints on the Movement of Canadian Grain to Export by Alternative Routes

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I. INTRODUCTION

Numerous routes exist for the movement of Canadian grain from the prairies to export destination. Currently all this grain moves by domestic routes to seaboard. These routes include movement by rail to Vancouver/Prince Rupert for transfer to ocean vessel, movement to Thunder Bay by rail for transfer to laker and ultimate transfer to ocean vessel at ports on the lower St. Lawrence, direct rail movement to eastern ports for transfer to ocean vesel, limited ocean vessel pickup at Thunder Bay and movement by rail to Churchill for transfer to ocean vessel. Transfer between modes is accomplished through use of terminal and transfer elevators.

Research by Fruin at the University of Minnesota and by Miller at the University of Mabitoba showing the economic potential for use of routes through the United States has stimulated interested in using such routes. This interest has been sharpened by the desire to circumvent the effects of interruptions on current routes such as those arising from strikes and lockouts of elevator employees or longshoremen in port areas, accidents on the St. Lawrence Seaway, and strikes or lockouts of sailors staffing lake vesels on the Seaway. Potential routes for the movement of prairie grain through the United States include: direct rail movement from the prairies to Duluth or ports on the eastern seaboard; direct rail movement to ports on the Gulf of Mexico and to ports in the Pacific Northwest; and a combination of rail and barge movement to ports on the Gulf.

Before routes through the United States can be utilized, several institutional constraints need to be overcome. These constraints take several forms and reflect the regulation put in place with producer support to overcome some perceived problem in the marketing of grain. As a result of this regulation movement through the United States is made more complex than would otherwise be the case.

The constraints affecting movement by U.S. routes include certain aspects of the grading system, the location of cleaning, segregation of grain enroute, inspection of grain at export position, and issuance of the Certificate Final. Other potential constraints include restriction on the use of Canadian government hopper cars, use of the U.S. handling and transportation system in periods of heavy domestic use and the need for the movement of Canadian grain in bond through the United States. In addition, the current definition of "export" under the *Western Grain Transportation Act* precludes eligibility for subsidy on movements to the United States. Opposition from Canadian owners of handling and transportation facilities to any diversion of grain can be expected, particularly when these facilities remain underutilized.

II. HISTORY OF GRAIN MOVEMENTS THROUGH THE UNITED STATES

Movement of Canadian grain through the United States would not be a new development. Canadian grain has moved through that country in significant volumes in the past. In each instance this movement occurred more in response to a limitation of the Canadian system than from the competitiveness of the U.S. system.

Substantial volumes of Canadian grain moved through U.S. ports in the early years of this century. This movement peaked in the early 1920's when up to 50% of Canadian grain moved through Portland, Maine and Buffalo, New York, Table I. U.S. facilities were used since they provided an economic outlet for large volumes of grain. Some grain moved to the U.S. for consumption in that country during the war years. During the period 1946/47 to 52/53 significant volumes of wheat moved through U.S. ports, Duluth in particular, Table II. Canadian terminal elevators at Thunder Bay had insufficient available storage capacity to expedite shipment. This situation was exacerbated in 1951/52 by a low grade wheat crop, 40 per cent of which was harvested tough or damp. During this period Canadian wheat moved in rail cars in bond to Duluth where it was cleaned and stored in sealed bins, storage facilities being leased so the grain could be stored in these binds. Canadian Grain Commission inspectors were stationed at Duluth, the grain being transshipped by lakers to ports on the lower St. Lawrence. The following year a significant volume, 3.7 million bushels, was re-exported through U.S. Atlantic ports. The competitiveness of this U.S. route remained such that the Federal Government deemed necessary the establishment of the At and East (of Buffalo) rates, rail rates from Georgian Bay ports and those on Lake Erie and Lake Ontario to ports on the St. Lawrence and also to Halifax and St. John, which were competitive with U.S. rail rates at and east of Buffalo.

U.S. grain continues to flow through Canadian facilities on the Lower St. Lawrence. U.S. grain is allowed to occupy 40 per cent of the space in the transfer elevators at these ports, this grain moving to these elevators by vessel from ports on the Great Lakes. In order to ensure the American grain is up to standard upon export an office of the U.S. Federal Grain Inspection Service is maintained in Montreal. The Inspection Service posts inspectors in these

TABLE I

Comparative Exports of Canadian Grain Via Domestic and United States Ports by Crop Year 1918 to 1937

Crop Year	Volume of Exports Domestic Ports	Volume of Exports U.S. Ports	Proportion of Exports Domestic Ports	Proportion of Exports U.S. Ports
	thousand tonnes		per cent	
1918/19	960.5	519.9	64.9	35.1
1919/20	1316.7	354.4	78.8	21.2
1920/21	891.8	1474.9	37.7	62.3
1921/22	1158.6	2721.8	29.9	70.1
1922/23	2364.3	3534.5	40.1	59.9
1923/24	3450.6	3839.5	47.3	52.7
1924/25	1870.1	2043.1	47.8	52.2
1925/26	3345.3	3869.3	46.4	53.6
1926/27	2922.9	3707.9	44.1	55.9
1927/28	3924.6	3699.4	51.5	48.5
1928/29	5179.9	4192.1	55.3	44.7
1929/30	2147.4	1893.0	53.1	46.9
1930/31	3557.7	2441.9	59.3	40.7
1931/32	3528.2	1325.2	72.7	27.3
1932/33	5035.7	1491.4	77.1	22.9
1933/34	3411.0	1216.0	73.7	26.3
1934/35	2465.2	1053.7	70.1	29.9
1935/36	3524.3	1998.8	63.8	36.2
1936/37	3287.1	1067.0	75.5	24.5
1937/38	1713.5	325.2	84.0	16.0

SOURCE: Processed from Grain Trade of Canada, Crop Years 1918/19 to 1937/38 inclusive.

TABLE II

Overseas Clearance of Canadian Grains Via United States Ports by Crop Year, 1946 to 1956

Crop Year	Volume of Exports Wheat	Oats	Barley	Rye	Proportion of Exports Wheat	Oats	Barley	Rye
	thousand tonnes				per cent			
1946/47	325.1	19.6	61.9	18.4	7.3	5.8	41.2	13.8
1947/48	428.0	0.4	4.1	33.4	11.8	0.5	7.0	12.8
1948/49	266.5	-	20.0	-	5.3	-	4.2	-
1949/50	3.9	-	-	-	0.1	-	-	-
1950/51	43.1	-	-	77.3	0.8	-	-	32.5
1951/52	108.5	22.1	15.6	21.7	1.3	2.1	1.0	12.5
1952/53	102.0	-	-	2.4	1.1	-	-	1.1
1953/54	3.5	-	-	-	0.1	-	-	-
1954/55	1.0	-	-	29.5	1/	-	-	12.5
1955/56	6.4	-	-	-	0.1	-	-	-
1956/57	13.4	-	-	-	0.2	-	-	-

1/ less than 0.05

SOURCE: Processed from Canadian Grain Exports, Crop Years 1946/47 to 1955/56 inclusive.

Canadian transfer elevators for the purpose of overseeing weighing, grading and the issuance of a certificate final upon export.

Use of the handling facilities of each country has been supplementary to the movement of the host country's grain. In general such movements have been jointly advantageous. The experience gained from these precedents could well be beneficial to any future large volume movement of Canadian grain through U.S. ports.

III. INSTITUTIONAL RESTRAINTS AND THE MOVEMENT OF CANADIAN GRAIN

Before proceeding to an assessment of the potential for the various institutional constraints deterring the movement of Canadian grain by U.S. routes, reference to the means used to guarantee uniformity of this grain should be made. This will enable some of the constraints to be placed in perspective. A rigorous grading system has evolved for Canadian grain. Rigid grade specifications are in place for each class or type of grain. Varietal standards exist for most of the classes. Any new variety to be accepted must meet as a minimum the characteristics of the standard variety. The requirement for cleanliness in the grain usually far exceeds that of the grain as received from producers necessitating that the grain be cleaned, this usually being accomplished in the terminal elevators. The grain from many areas is melded when it flows into the terminal elevators. There it is officially graded and weighed by inspectors of the Canadian Grain Commission. Upon export a Certificate Final identifying the weight and grade of the grain is issued by the Commission. Upon export a Certificate Final identifying the weight and grade of the grain is issued by the Commission. The melding and cleaning of the grain results in a high degree of uniformity within grades, this being a characteristic sought after by buyers and one on which Canada capitalizes when merchandising. The Canadian Wheat Board is responsible for the marketing of wheat, oats and barley for export and for domestic human consumption. Other grains are marketed by private traders. The movement of grain from the Canadian prairies to Thunder Bay and Vancouver/Prince Rupert for "export" falls under the *Western Grain Transportation Act*. The Federal Government is committed under the *Act* to pay a significant share of the cost of the movement to the railways with the shipper paying the remainder. The Grain Transportation Agency, established by the *Act*, performs a general administrative role while exercising a degree of control over the allocation of railway rolling stock to the movement.

Each of the constraints identified is discussed below:

1. Grain Cleaning

Cleaning is one of the constraints affecting movement of Canadian grain through the United States. Cleaning, to be economic, must be done in volume, both from a physical standpoint and also to enable development of a market for the screenings. The majority of the cleaning capacity has therefore been installed at terminal elevators, the screenings having a ready demand in both the domestic and export markets. Cleaning becomes a major profit centre for the terminals, a cleaning charge being imposed at the primary elevator level and the screenings becoming the property of the grain company upon payment of the shippers freight rate to the terminal. Grain diverted to U.S. routes will not pass through these terminals but take a more direct route to seaboard. Terminal elevators in the United States, in general, have only limited and rudimentary cleaning capability. This reflects the approach of that country to dockage in grain. The cleaning requirement for Canadian grain moving through the U.S. must therefore be met within the local areas of production. On the prairies relatively few elevators, including the "interior terminals," have the ability to clean grain to the standard required upon export. Consequently before grain could move in volume within prairie cleaning facilities would have to be expanded and upgraded.

2. Segregation of Grain Enroute Through the United States

In order for Canadian grain to be segregated from U.S. grain enroute, shipments must be made in volume. This is particularly so in the case of combination rail/barge movement when one barge has the capacity of several railway cars. Essentially, the grain should move in trainload lots. Relatively few delivery points on the prairies can support unit train movements of grain. This follows from the current organization of the primary elevator collection system which reflects transportation costs related to distance rather than cost on other than a collective basis.

Currently, Canadian National has applied, along with several grain companies, for rates $1.50 per tonne lower than those applicable on a system basis for shipments of a minimum of 18 cars from a single origin to a single destination. The impact of this, even though approved by the Canadian Transport Commission, is by no means certain. The tendency will no doubt be, however, towards further consolidation of the railway/elevators network thereby rendering more feasible volume shipments. This consolidation would result in the cleaning of grain on the prairies becoming more economic.

3. Movement in Bond

Canadian grain moving for export through the U.S. must travel in bond through that country. Such segregation is feasible in the case of sealed railway cars which travel directly to seaboard. A different situation exists where trans shipment occurs as would be the case for barge movements. Transfer facilities from rail to barge would also have to be segregated—sealed bins for the Canadian grain being one alternative. In all cases, the grain would have to be segregated at the seaboard terminal to maintain its identity and ensure that no diversion occurs within the United States.

4. Inspection of Grain at Export Position

In order to ensure the grain exported conforms to the grade indicated, the grain would have to be inspected. In the past, Canadian Grain Commis-

sion inspectors have been located at U.S. elevators for grading purposes. This procedure can be expensive in relation to the volume of grain shipped. A feasible alternative would be for the Canadian Grain Commission to reach a reciprocal agreement with the Federal Grain Inspection Service whereby Commission inspectors would grade U.S. grain according to that country's specifications when that grain moved through Canada while the Inspection Service inspectors would grade Canadian grain by Canadian standards as that grain passed through the United States. This would enable each country's grain to be exported under its own Certificate Final.

5. Use of Canadian Government Hopper Cars

Prairies grain moves to Thunder Bay and Vancouver/Prince Rupert largely in government-owned hopper cars. The degree of use of these cars is reflected in the rate charged shippers for the movement of grain. These cars have been dedicated to shipment to these ports. While this restriction has recently been relaxed to allow their use in the movement of prairie grain beyond Thunder Bay, close control is maintained over these cars. Further relaxation of the restriction would be required for movements through the United States. While such cars would be ideal for unit train movement, extreme care would have to be exercised to ensure these cars were returned promptly and not diverted into the U.S. system. The additional hauling distance to the Gulf could result in a longer average turnaround time with an attendant increase in the number of hopper cars required, these having to be supplied by the railways and thus impadcting further on rail rates.

6. Definition of Export

"Export" as defined under the *Western Grain Transportation Act* in respect to grain "means shipment by vessel within the meaning of the *Canadian Shipping Act* to any destination outside Canada and shipment by any other mode of transport to the United States for use of the grain in that country and not for shipment out of that country."

This definition essentially removes any possibilities for grain moving for export through the U.S. from qualifying for the rates under the *Act*. Attempts to have this restriction removed have no as yet met with success. For the rail link between Canada and the United States, the grain, therefore, would move at commercial rates. Discussions with the major railway companies who would be involved in the movement indicate their willingness to quote through unit train rates for the entire journey, any increase in the rates from those under the *Act* adversely affecting movement through the United States.

7. Access to the United States System

In previous periods the comparatively limited flow of Canadian grain through the U.S. system posed few problems. The latter system was not operating at maximum capacity. The same situation applies today since U.S. export shipments of grain have fallen from a peak of 5042.4 million bushels in 1981 to 3017.7 million bushels in 1986. Decline in exports by route in millions of bushels are as follows: Great Lakes 1978 to 1986, 555.0 to 193.8; Atlantic 1982 to 1986, 606.4 to 168.0; Gulf 1982 to 1986, 3119.3 to 2057.8; Pacific 1984 to 1986, 925.1 to 545.8, Table III. It is apparent that a substantial volume

TABLE III

United States Grain Exports by Port Area

Year	Great Lakes	Atlantic	Gulf	Pacific	Total[1]
		million bushels			
1978	555.0	507.8	2617.3	517.1	4197.2
1979	510.5	585.8	2779.7	689.1	4565.1
1980	476.9	528.8	2909.6	917.9	4951.7
1981	491.7	516.6	3034.4	898.2	5042.4[2]
1982	391.2	606.4	3119.3	628.3	4757.9[2]
1983	296.9	367.4	2928.6	760.3	4454.9[2]
1984	336.4	342.3	2887.8	925.1	4576.8[2]
1985	218.9	349.2	2249.6	658.4	3551.8[2]
1986	193.8	168.0	2057.8	545.8	3017.7[2]

[1] Includes interior exports
[2] Includes sunflower seeds

SOURCE: Processed from Grain Transportation Situation, March 9, 1987.

of capacity remains unused at the present time in all transportation modes. Canadian grain moving to export is welcome in the United States at this time, some terminal elevators being used for storge rather than throughput. Large numbers of barges on the Mississippi remain idle and the potential revenue from Canadian grain would be of assistance to the river traffic. There is no guarantee, however, that this situation will persist indefinitely. With parts of the U.S. system (the river development projects in particular) constructed at public expense for strategic purposes, domestic users can be expected to have priority in periods when the capacity of the system is under pressure. Any diversion of Canadian grain through the U.S. system, therefore, involves a degree of risk. While U.S. grain is guaranteed access to Canadian transfer elevators, no reciprocal arrangements are in place since movement of Canadian grain through the U.S. has not occurred in recent years. A regular movement would require access to the U.S. system to be guaranteed, either by ownership of facilities or by other arrangements which may be easy to obtain if the present bilateral free trade negotiations are successful.

8. Pricing of Grain for Export

At the present time Canadian grain is exported under Canadian standards, identity of the grain being maintained to port of import. The grain is priced basis of port of export from Canada. Exports through the United States would require grain to be priced at point of export from that country. For Canadian Wheat Board grain this would essentially require the grain to be forwarded as agency stocks when in the United States. Since the Canadian Wheat Board has the right to price grain on a C.I.F. (cost, insurance and freight) basis at the import destination, it would seem reasonable to expect that the Board would price grain at U.S. ports. This price would incorporate the cost of movement from the prairies. This would represent an extension of present procedures though in a different country. Certain complexities would be introduced in that the cost of movement through the U.S. system varies over time and according to the volume shipped.

9. Underutilization of the Canadian Transportation System for Export Grain

The Canadian grain handling and movement system for export grain has benefitted from significant infusions of government funds accomplished by a variety of means, whether for the construction of elevators, increasing the lake fleet or the development of the St. Lawrence Seaway. The system, therefore, represents a complex combination of government and private funding and initiative. The whole is bound together by various labour and other agreements. Any diversion of Canadian grain through the U.S. system will reduce volume through a presently underutilized system further raising unit costs. The political fall out from such a diversion could be such as to give rise to Canadian restrictions on movement through the United States.

IV. ACTION ON THE CONSTRAINTS

Each of the constraints identified can be overcome. For some constraints this can be achieved collectively while others must be handled on an individual basis. Problems arising from the grain cleaning and segregation constraints can be jointly dealt with. The volumes required for grain cleaning and for proper segregation can be accumulated by further centralization of the handling and transportation system, a process which is on-going. Fewer delivery points result in a greater volume for each point rendering in-house cleaning more economic and enabling shipments to be made in volume. Relatively few delivery points at present are capable of sustaining large volume movements but the number can be expected to incresae progressively in accordance with the economics of the handling and transportation system, such being made apparent by release of data on the cost of maintaining certain branch lines and the savings attainable by volume movements. In addition, increased sophistication of equipment renders cleaning to export standard at other than terminal elevators feasible. Volume movement assists in the segregation of grain. Unit trains segregate grain from origin to destination, which could be from the point of shipment to point of export from the United States. For movements involving transfers from train to barge, large volumes would also assist in segregation since a unit train of grain will fill about six barges.

Administration of grain movements in bond is made easier where many cars are moved at one time notwithstanding that each car will be sealed. Barges can also be sealed upon transfer, car seals being relinquished for the barge seals. Inspection of grain to ensure grade is up to standard at point of export by Canadian Grain Commission inspectors becomes economically feasible with large volume movements. A reciprocal arrangement between Commission inspectors and those of the Federal Grain Inspection Service (F.G.I.S.) appears nonetheless to hold many potential advantages.

While use of Canadian Government hopper cars should result in lower rail rates on movement through the U.S. this is not a necessary condition for the movement. Substantial numbers of presently underutilized railway hopper cars are available, the supply far exceeding prospective demand. Backhauls would be available for a number of these cars on their return journey, for example, clay, salt and phosphate from New Orleans. This would also avoid the Government cars being diverted into U.S. traffic.

Guaranteed access to U.S. handling and transportation capacity could perhaps be accomplished by reciprocal arrangements covering U.S. movements using Canadian facilities. There would also be merit in the lease of U.S. elevator space so that access would be guaranteed, such space being available at the present time. No problem is foreseen in pricing Canadian grain at U.S. ports. For C.W.B. grains, it would merely involve incorporating the handling and transportation costs beyond the prairie interior elevator while making an adjustment for the transportation cost to the appropriate export position in

Canada. The diversion of grain through the U.S. system can be expected to result in opposition from principals in the Canadian movement system, primarily concerning underutilization and, therefore, reduced earnings. This opposition, on the other hand, should be offset, at least in part, by any additional producer net returns arising from use of the U.S. system. Furthermore, in many cases a different arm of the same firm may be involved in the movement as in the case of the railways. Indeed, if ore and grain traffic again expands to test the capacity of the St. Lawrence Seaway, any diversion of grain will delay or negate any need for extensive investment of additional capital in the Seaway plant.

Each of the constraints identified on movement of Canadian grain through the U.S. can be overcome. This will only be accomplished, however, if there is the will and initiative to seek out and use the alternatives available and to introduce new procedures by which the marketing of Canadian grain can be expedited. The economics of movement are rendering changes essential to the welfare of grain producers. The marketing system has shown the ability to adapt in the past. Consequently the constraints identified can be expected to be overcome as movement through the U.S. is demonstrated to be a viable economic alternative.

REFERENCES

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ENDNOTE

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