CONTAINERIZATION OF GRAIN: 
AN EMERGING TREND OR 
WISHFUL THINKING?

“FIELDS ON WHEELS”

Proceedings of the 7th Annual Agribusiness Logistics Conference 
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Foreword

In *The Tipping Point* (2000), Malcolm Gladwell observes that trends build gradually, until they reach some magic moment when suddenly they seem to explode upon society. The “tipping point” is a concept borrowed from epidemiology that describes how small changes can have little or no effect on a system until a critical mass is reached. At this point, growth occurs at an exponential rate. Intermodal container shipping passed the tipping point during the 1990s. Thanks to annual double-digit growth rates, containers are now the largest single source of railway revenue and the principal means of moving international cargo.

The proceedings of the 7th Annual Fields on Wheels conference explore the role of containerization in grain transportation. The containerization of grain has not yet reached its “tipping point”, but the base is expanding. The loss of freight subsides for bulk transportation has made traditional grain exports less attractive since 1995. Higher prices are available for unique export products, like organic grains and pulse crops, but these products are not conducive to bulk handling. Identity preservation (IP) is required in order to maintain the product’s value. Consequently, the demand for IP grain is increasing interest in containerized shipping.

Data support the growth of grain containerization, but the traditional supply chain is still committed to bulk shipping. The cost difference between bulk and containerized grain handling is getting narrower. Jake Kosior, of SISC, points out that total logistics cost really depends on the size of the processing facility. The transportation cost savings of bulk shipping can be offset for smaller processors by the extra cost of storing and financing larger inventories.

Keith Bruch, of Paterson Grain, also sees a role for grain in containers. However, he suggests that containers are a stepping-stone to bulk handling rather than a replacement. For his firm, the net return on export sales still favours bulk shipments. Nevertheless, the use of containers for grain handling is widening. Keith Bruch predicts a doubling or tripling of the current movement of grain in containers. Steve Clapp, of Food Traceability Report, who chaired this session, agrees that it is time to consider containerization of grain as a serious option, rather than a side dish.

The economics of container movements at the macro level is described by David Cardin, of Maersk Canada, Paul Waite, of CN Rail and Barrie Sime, of Terminal Systems Inc. Changes in the scale and scope of containerized intermodal transportation have been rapid, and more growth is expected. It is very apparent that container supply is more than adequate to move a larger volume of North American grain to export markets. Containers are leaving North America empty on both Atlantic and Pacific routes.

Empty containers are a problem for both carriers and port managers. These containers congest the ports, and provide no revenues for the shipping lines. The carriers would like to move grain in these empty containers. The key question is how to make containerized
grain more cost competitive, not only with bulk, but with the opportunity cost faced by the shipping industry.

Several problem areas were identified that still impede the containerization of grain. The lack of tip chassis at the receiving ports is cited as an impediment to gaining foreign customer interest. Cabotage restrictions in Canada make it more expensive to re-position empty containers to the Prairies than would be the case if we adopted rules similar to the United States. The Revenue Cap on rail shipments of grain to export markets is raised as a potential disincentive for the railways to handle grain in containers. Finally, specialized container grain loading facilities on the Prairies are yet to be developed. Although no single problem prevents containers from gaining more than the current 3 to 5 percent of grain exports, these regulatory and physical constraints have combined to make shipping containers back empty a preferable alternative.

The logistics of handling grain in containers has gaps and bottlenecks. Container equipment variations present a problem for installing liners. Rob Oliphant, of Syn-Tex Bag, noted that the internal configuration of container equipment is not standardized with respect to attaching liners and bulkheads. David Spearin, of Logistics Marketing Services, highlighted the mismatch between the availability of 40-foot containers and the demand for 20-foot containers. In addition, competing shipping lines, railways and container ports fragment the market. This impairs the forecasting of container demand on the Prairies, which increases costs and reduces customer service. Incompatible road weight limits, equipment availability, and drayage costs are other areas where logistics could be improved. As Richard Schultz, of Yanke Group, and Carl Neggers, of Saskatchewan Highways and Transportation, observe, these logistical disconnects are a problem in the container supply chain.

Patrick Carruthers, of Deere & Company, brings the demand issues into sharp focus with the observation that three key changes are providing the impetus for a new supply chain. Differentiated food products are here to stay. Consumers are demanding better documentation. Manufacturing processes are being applied to agricultural products. Patrick Carruthers estimates that 25 percent of grain could be shipped as identity preserved products within three years. It is only a matter of time before these demand incentives move containers from serving niche markets to a mainstream service. Containers provide opportunities for all members of a new supply chain.

The challenges facing Canadian farmers and rural society in general form the bookends of the conference. Bob Speller, M.P. led off the conference with some perspectives of the recently completed Task Force on Future Opportunities of Farming. The Task Force heard a broad range of concerns from the economic viability of farming to the sustainability of rural communities. Amongst other things, decisions and actions must be made on rural infrastructure, environmental protection, food safety and security, and value-added diversification opportunities. Distance to markets is a particular economic challenge that farmers face in selling their products profitability in domestic and export markets. Canadian farmers want agricultural policy to move beyond crisis management towards programs that return a larger share of the food dollar to the primary producer.
Lyle Minogue, who served as Rapporteur, sums up the conference with the pragmatic thoughts of a Saskatchewan farmer. In his opinion, the export of traditional crops in hopper cars no longer works in the farmers’ interest. Many grain farmers are struggling to make ends meet and worry about the future of their children and their rural communities. In short, the old model of grain production and handling is broken, and Prairie farmers must adopt a new strategy.

Lyle Minogue observes that Canadian grain farmers are facing new competition in foreign markets from low cost countries like the Ukraine and Brazil. He notes the observation made by Greg Arason, of the CWB, that few means exist to further improve the efficiency of bulk handling, and agrees that the efficiency of other forms of transport must be examined now. Despite the growing impetus for the containerization of grain, important impediments to efficiency remain. Lyle Minogue identifies container cabotage restrictions and the railway revenue cap on grain as two policy issues that deserve further investigation.

The Transport Institute, and our co-hosts WESTAC, wish to thank all the sponsors of the 7th Annual Fields on Wheels, the speakers and the participants for your contributions to the success of this conference. These proceedings are a record of the ideas presented by representatives of the grain industry in 2002. The proceedings from all seven Fields on Wheels are available free of charge on the Transport Institute website: www.umti.ca

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Welcome

Dr. Barry E. Prentice (Morning Chairperson)
Director, Transport Institute
I.H. Asper School of Business University of Manitoba

Good Morning ladies and gentlemen. Welcome to the 7th Annual Fields on Wheels Conference. This conference is titled “Containerization of Grain: An Emerging Trend or Wishful Thinking?” I hope we have some resolution to that question at the end of the day.

My name is Barry Prentice. I am the Director of the Transport Institute. My co-host is David Gardiner, President of WESTAC. David will be the afternoon chairperson, and I am the morning chairperson.

Before we begin, I would like to thank the sponsors of the 7th Annual Fields on Wheels Conference. Thank you to OmniTRAX Canada for sponsoring the continental breakfast; to Aikins, MacAuley, and Thorvaldson for sponsoring the morning and afternoon coffee breaks; and to Canadian National Railway for sponsoring the luncheon. Also, thank you to our general sponsors: Canadian Pacific Railway, Canadian Wheat Board, Terminal Systems Inc., Thunder Bay Port Authority, and the Manitoba Department of Transportation and Government Services. Thank you to our sponsors in kind: again, the Canadian Wheat Board; the Port of Montreal; the Port of Vancouver; the Hotel Fort Garry; WESTAC; MTS; and Clariant.
Opening Keynote Presentation:  
THE FUTURE OF CANADA’S AGRICULTURE INDUSTRY

Mr. Bob Speller  
Member of Parliament  
-and-  
Chair, Prime Minister’s Caucus Task Force on Future Opportunities in Farming  
Government of Canada

It is a real pleasure for me to be with you today. Coming from a heavily agricultural riding, I know first hand how important that industry is in the west. I want to particularly congratulate Barry for getting the agricultural industry together here for the seventh consecutive year. This is quite an accomplishment. It is difficult to draw people together in an industry like agriculture, but it is important that we sit together and talk about the issues of concern. The work that groups like the Transport Institute do goes a long way to helping us within government listen to concerns.

The issues being discussed today such as containerization, the evolution of transportation on the prairies, and how the agricultural industry is changing show that the industry is evolving quickly. The federal government is assisting the industry, particularly rural Canada in meeting these challenges and grasping the opportunities that lie ahead.

The agriculture and agri-food sector, meaning all the economic activity between the farmer’s gate and the consumer’s plate, is a powerful economic engine in rural areas and throughout Canada. Agriculture and agri-food rank up there with some of the leading Canadian economic sectors such as automotive and forestry. Agriculture and agri-food alone account for eight percent of our GDP and contribute one-third of our trade surplus. The success of our nation and of our people is based on the understanding that we need both a strong urban Canada and a strong rural Canada.

Just over a year ago the Prime Minister appointed the Task Force on Future Opportunities in Agriculture. The purpose of the Task Force was to assist in moving the government beyond ad-hoc crisis driven decision-making in agriculture. Last April, we presented our interim report. It was meant to communicate what Task Force members heard while
traveling across the country and outlining some of the structural problems to be resolved before future policy initiatives could be implemented. The final report, which actually will be released in a few weeks, proposed recommendations that focus on long-term solutions and opportunities to ensure that there is a viable agricultural industry in this country. There is a feeling within the farm community that governments have not recognized the struggles of many Canadian farmers, that there have been consecutive bad years, and that agriculture is in a critical situation. In many parts of the country, agricultural stakeholders questioned whether their governments cared about their plight. Some expressed the feeling that the governing parties may be too urban based, thereby lacking a vision for agriculture and not caring enough about the future of rural Canada. We often heard accusations of indifference, of inaction, but with a Task Force Canadians were given a significant hope that governments were finally listening to them.

Generally, Canadian farmers want governments to move agricultural policy beyond crisis management. They want us to develop and articulate a national vision for agriculture that recognizes our inability to feed ourselves, should farmers continue to leave the land. This vision must incorporate the goals of viability, sustainability, stability and predictability. Farmers want programs that will provide them with some of the financial benefits of diversification and of value-added production. Most of all, farmers told us that they want their fair share of the food dollar. In our report we identify some of the challenges currently facing the industry including low commodity prices, distorted global markets, and corporate concentration in the agriculture and agri-food industry. Addressing these challenges and ensuring the full realization of their future opportunities requires action be taken with respect to long-term agricultural policy, safety nets, pesticide registration and particularly cost containment. However, actions must also occur in a number of other areas if we are to safeguard the long-term viability of the industry. Decisions must be made and actions taken regarding a range of international trade issues. Adequate rural infrastructure, environmental protection, food safety and security, transition into and out of the industry, value-added diversification opportunities, and research and development will help to secure the industry’s future.
Despite the serious problems that are occurring in the industry, there is reason for optimism. Farmers by their very nature are optimists always looking for a better year next year. We heard of the challenges and of the need for immediate action to keep the industry afloat. At the same time, we were encouraged by the number of Canadians who came forward with exciting new ideas and proposals outlining opportunities for the future of the industry in this country.

As the nation becomes increasingly urban, fewer Canadians have any personal connection with the farm. Who in urban Canada cares? More and more people are realizing how important our food security is. Canadians from coast to coast told us that agriculture is a critical industry and it is important to the future of our nation. Agriculture’s economic contribution to the country, particularly rural communities, the importance of food safety and security, and its impact on the environment make agriculture very vital.

The opportunities and the responsibilities of being part of this vision lie not only within government or Agriculture and Agri-food Canada, but also within every Canadian. People within your own industry play a very important role in saving and revitalizing the agricultural industry. We will be asking all stakeholders to give us their input into our proposals as we work to develop more concrete policy options through the agricultural policy framework. There is an important role for all of us to ensure that this opportunity does not pass us by. Governments at all levels are asking Canadians where the future of agriculture is and I encourage all of you to take part in these discussions. Canadians feel it is important to have control over the kind of food they eat and how the food is produced, not to rely on farmers from outside our borders to determine what kind of food is available to us. We have just begun the consultations and the journey that will culminate in the final agreement between the federal government and the provinces and territories on an agricultural policy framework.

As important as it is to talk about agriculture, as important as it is to deal with the day-to-day crisis of agriculture, we need to deal with issues particular to rural and remote areas
of this country that are sometimes overlooked. We cannot move forward as a nation with an “either/or” type approach. A strong urban Canada within which there is a weak rural Canada will not be successful, and a weak urban Canada and a strong rural Canada also will not lead to the country’s success. It is absolutely important that as we pursue public policy we ensure that all Canadians, whether they live in urban Canada, whether they live in urban or rural parts of this country, have an opportunity to be successful.

The contribution of rural Canada to the nation is very significant. Ninety-five percent of our natural resources are contained in rural Canada, and 40% of our trade surplus is generated through our natural resource sector. Rural Canada contains 36% of our communities and 31% of our population. Twenty-six percent of our GDP is generated from rural Canada. It does not take long to realize the importance of rural Canada to the wealth and well being of Canada as a whole.

Canada recognizes that the challenges that face the councillors, mayors and reeves from rural Canada are somewhat different than the challenges being faced in urban Canada. Those differences are fairly easily recognizable, particularly in your industry. Look at the issue of geography. Rural Canada is sparsely populated. Many people choose to live in rural Canada simply because of that. When it comes to delivering services, building community cohesion, and moving forward on important initiatives, overcoming geography often requires a different approach than you might have in an urban center. With the issue of low population density in rural Canada, it is difficult to attract investment. What the private sector would be quite willing to do in urban Canada, they are unwilling to do in a rural context. Where public policy may see the private sector operate on its own in a large urban context, in a rural context you will often see a public-private partnership in order to achieve the same objectives.

Look at the issue of distance from markets. The reality is that of new small businesses, 60% are being created in rural Canada. They are having to overcome the issue of distance from markets by how they deliver their services, develop, ship, and send their products to markets overseas and within Canada itself. It is very important for public
policy makers to understand that very often in rural Canada, the nature of economics is different. Rural Canadians’ economies are based on natural resources. Because commodity prices fluctuate, our economies tend to be cyclical in nature. Periods of robust growth and high incomes are often followed by declining growths and lower incomes. Although urban economies must also meet variance in markets, they are often diversified. They either have manufacturing or technology-based economies. They are able to take up the slack in one area over another. The reality in many rural natural resource-based economies is that they are single industry communities. When there is a cyclical down turn, public policy will dictate a different approach than it would in urban Canada.

The impact of many world trends can be quite different in a rural context. Take the issue of demographics; Canada today is aging. As people reach retirement age, they are going to choose to retire away from the urban centers into the smaller rural communities. This is creating a whole new set of challenges in terms of medical care and life-cycle housing as people move through the various stages of their life in rural communities. There are many challenges facing us in rural Canada and what we need to do as governments, and as industry, is to talk and move forward with solutions. Through the agricultural policy framework and through the discussions that will be taking place over the next few months, I encourage each and every one of you to get involved and let your voice be heard. The challenges are tough, but we can and will overcome these if we all work together for the future of this nation. Thank you very much.

Barry Prentice (Morning Chairperson)
Director
Transport Institute
Thank you very much Bob and certainly your ideas of a long-term vision for agriculture are very welcome. The points that you raised in your speech are certainly items that we are going to delve into in greater detail. Part of this conference is about value-added production. Once a product is produced on the farm, how do you get it to the market place and still retain that value? This may mean keeping products separated to preserve value-added. Also your comments about the urban/rural split are very pertinent to
today’s discussions, in part because of this growing suspicion that seems to have invaded urban areas that maybe food is not quite as safe as they would like it to be. Not that there is evidence of that, but just that it is a growing perception. In order to guarantee people that what they are getting is what they think they are getting, you have to be able to trace products back through the system.

Questions
Q: Your report is going to be coming forward. What do you think the significance of this is in terms of setting the stage for educating urban people to the problems of agriculture? Sometimes people feel it is difficult to get that message across.

A: (Bob Speller) In terms of educating urban Canada, as a rural member, I was so pleased by the number of urban Canadians and the number of urban members of parliament who have come forward over the last number of months. They have seen agricultural issues on TV a lot more now with drought or too much rain. There has been more of a TV presence lately and I have had more and more urban members of parliament come forward and ask, what can we do? How can we help? There is a realization across Canada that the problem within the agriculture and agri-food industry is not just a rural problem, it is a national problem. A number of people have asked me to write pieces of information to put in their householder and send out to their constituents. There is a lot of work done by some of the national farm organizations to make urban Canadians more aware of what is going on and that is a good thing.

Session 1:
CONTAINERIZATION OF BULK GRAIN PRODUCTS

Steve Clapp (Moderator)
Managing Editor
Food Traceability Report

Thanks Barry. Food Traceability Report was launched last year after we realized that identity preservation and product tracing were becoming increasingly important in the food industry. From our vantage point, there are really two major trends. One is regulatory traceability and the other is value-added traceability. There is no end of issues in terms of regulatory traceability. Today is Election Day in the United States and in
Oregon voters will be voting on a ballot initiative on mandatory biotech labeling. It was launched by some organic enthusiasts who gathered 10,000 signatures and put it on the ballot. The food industry raised over $5 million to defeat this initiative. In September, 65% of Oregon voters were in favor of the labeling, then the food industry began their campaign and now 65% are against it but we will see how that comes out.

Europe is considering traceability and labeling legislation that the United States is very strongly opposed to. There is a threat of a World Trade Organization complaint, not necessarily on that legislation, but on the moratorium on new biotech approvals that the EU has had in place for four years, which the European Commission itself admits is illegal. In the Kodex Elementarius, the international body, traceability is a major issue that is being debated.

On the positive side, we have all these efforts to add value to products by preserving their valuable trace, whether in the beef industry or the grain industry. Grain containerization and transport is an issue that I certainly follow.

We have some fine speakers today. This panel discussing the pulls and tugs between containerization and bulk shipping will certainly give us all a lot to think about.

**Jake Kosior**  
Principal  
Supply Chains Solutions International  

What I hope to accomplish this morning is to provide the grain industry with background to consider containerized product in addition to bulk as a mainstream service option for customers. While the 2002 harvest is less than ideal, it gives us an opportunity to consider logistics re-engineering for the future. Western Canada always seems to weather the storm and hopefully this year will prove to be no exception. First, I will discuss the pros and cons of containerization and bulk for the benefit of those in the audience who may not be fully familiarized with each. Then I will talk about how my model is formulated. Then I will take a simulation from a real commercial case and show you the results. Finally I will discuss future trends that I see for containerization.
For bulk grain the flow is very simple. The producer takes grain from the farm, loads a truck, and takes it to a primary elevator. Preliminary quality control is done and then it goes by unit train to a terminal elevator then to a vessel. This is highly idealized and is for a direct hit scenario from a single point to a single customer. In actual fact, grain in the bulk system is an A-type flow, meaning it goes from many points to a single point, the port. For example, a 40,000 tonne shipment would require about 1,700 truckloads from farms with about four unit trains of 100 cars at 100 tonnes each from the primary elevators.

In the containerized system the flow is linear. For example, a single 20 tonne container could be loaded at the farm, primary elevator or anywhere you wish. It would go by truck to a container (intermodal) facility. Then it would go by scheduled train, be loaded onto a vessel, and finally leave on a scheduled sailing.

So what are the pros and cons of both these systems? The pros of bulk are easy to identify. It was originally designed to reduce the labor costs of moving a bagged product in the old wooden ships. With the advent of the telegraph, the commodity trading system was borne. You could buy grain sight unseen and with the grading system in place, you knew what you were buying. Bulk is actually a ‘green’ system, as no packaging is needed. The vessels and rail cars act as the packaging. It reduces the problems of regional vagaries from production. This means that by the time grain makes it from the farm to the terminal elevator it is blended into a uniform single grade. Any variances in production from rainfall, etc. blend out in the end.

What are the cons of the bulk system? First, it holds very large inventories in the pipeline capturing volume freight rate discounts but adds inventory cost. It takes long lead times to amass 40,000 or 80,000 tonnes in a bulk grain pipeline. Disconnects between vessel and train require inventory holding points in the form of terminal elevators. The bulk system does not handle small segregations well. The design of any bulk system, regardless of commodity, is for minimum number of grades moving in large volumes. It does not cope well with either small volumes or a proliferation of grades. Finally, bulk
systems require custom built supply chains for each commodity. Terminal and primary elevators are evidence of this. If there is no product moving through the system, you still have to pay for the costs of the infrastructure.

The container system is very speedy compared to bulk. It can handle many different shipments at once because everything is in a steel container. You can move multiple shipments on the same ship and because of that it has enormous back haul potential. But what are the cons of containerization? Because 2,500 kilograms of steel are moving with the cargo, the revenue-bearing cargo weight is reduced. The movement of steel containers between markets results in a build-up of containers in the demand areas and depletion in the supply area, so you have the problem of moving empties back and forth. Finally containers are designed for palletized and bagged freight rather than bulk commodities.

My commercial case study has a Saskatchewan origin. To make a fair comparison between bulk and container systems, I will start at a single point of origin, and go through parallel systems via the same port to the same customer. The comparison examines shipments from western Canada through Vancouver to an Asian destination. The customer was a Chinese miller within 50 kilometers trucking distance from the port. Bulk goes direct from the inland terminal to the port terminal. Containers go from the inland terminal to the Saskatoon intermodal yard. For the container system, an additional drayage charge is incurred because container cars are loaded at inland elevators. I selected elevators within a 75 kilometer radius of cities with container yards to keep drayage to a minimum. The costs are adjusted for volume and tendering. I have factored in a non-capacity constraint because congestion impacts the systems differently and would distort the analysis.

When customers accept a shipload of product delivered through the bulk system, for example, three times a year, costs to physically store and financially hold the product can mount. Scheduled container deliveries reduce this cost considerably. The container system in my model is configured to act like a JIT (Just-In-Time) inventory system with
minimal inventory. It generates a single cost figure as it is coupled directly to the plant production rate. The costs of the bulk system on the other hand can vary with consignment size, and therefore are decoupled or disconnected from the factory. Each increment of volume generates a different or unique cost per tonne. The objective with bulk is to adjust the cargo size to acquire the lowest transport cost, which the industry does. However, this is not always the best from a total supply chain or total cost perspective.

The first part of the supply chain in my comparison involves an inland elevator point within 75 kilometers of one of the five major western Canada container yards (Regina, Saskatoon, Winnipeg, Calgary and Edmonton). In the model it does not have to be a single point source. I can take different combinations. For this particular case, it will go through the Port of Vancouver. For the commercial case, the Chinese ports of Dalian and Schenzen were selected because two customers were within 50 kilometers of the ports. Bulk the product was offloaded to a terminal elevator, stored and trucked as needed. In the case of containers, they sat dockside until used. A total cost comparison cannot neglect the customer’s end of things, so I took the case all the way from the receiving port to the customer’s production floor and examined all the costs that they incur too.

Figure 1 is a logistics map that shows the physical flow of containerized product from the ship to the customer plant. The costing model also accrues costs for customers, the suppliers and government (for example, the CWB).
Figure 2 presents a logistics flow map for the two systems. There are four cost layers in the model: pure logistics costs, pipeline costs, inventory holding costs, and quality control checkpoints and administrative costs. The last step in the modeling process is to turn the map into mathematical equations to generate the supply chain costs.

The output shown in Figure 3 is for a 200 tonne per day plant processing capacity. This represents ten semi-truck loads of bulk, or 10 containers of product per day. Several
freight forwarders quotes were used to calculate the base container rate. The chart shows that for this size customer bulk is competitive against container in the 10,000 to 20,000 tonne shipment size category. However, container carriers and forwarders would begin to offer incentive rates in the range of two to five percent for steady traffic, thus dropping the container system cost. If the incentive is offered, the bulk system would be unable to match container delivery. Bulk costs rise on the right hand of 20,000 tonnes. A 50,000 tonne shipment would take almost three-quarters of a year to consume. Inventory cost from the customer’s perspective can be quite high.

**Figure 3: Container vs. Bulk Costs for Plant Consumption Rate of 200 Tonnes per Day**

![Graph showing container vs. bulk costs](image)

Figure 4 presents a customer with an 800 tonne crush capacity. In this case, the bulk cost curve flattens as shipment size increases. In other words, inventory holding costs become minimal for this customer. For example, it would take this particular customer 50 days to consume a 50,000 tonne shipload. Container rates are shown with and without discounts, and with a built-in repositioning charge as sufficient container supply in western Canada would become an issue. Container carriers would have to offer a shipper a ten percent or greater discount over the forwarder quoted rate to compete for customers of this size.
When plant capacity is less than 400 tonnes per day, containers can compete very well with bulk. For larger customers, however, container lines would have to offer maximum discounts in order to compete against bulk. If a container line offered a ten percent discount, they could compete.

The last one step in the analysis was to compare containerization with ‘grocery boating.’ Two or more shippers or buyers charter a vessel together to reduce ocean freight transport costs. 50,000 tonne Panamax vessels with kobe layering (tarpaulin layers) separating the shipments are only used approximately ten percent of the time. It would be preferable to use a ship with steel partitions between the loads in order to reduce the risk of contamination. As well, if kobe layering is used pneumatic unloaders can suck up the tarp and create equipment damage. However, grocery boating represents the lowest cost configuration assuming these problems do not occur.

How well does containerization compete against this type of shipping? In Figure 5, all buyer supply chains were set to have the same attributes, the only exception being the transportation rate varied according to the number of buyers, as the cost of kobe layering varies based on the number of layers required. For a large number of buyers on the same ship, there is no real cost saving because the cost to provide separation layers mitigates transport savings. The best grocery boat scenario involves five buyers, as only four
layers are required and mutual inventory holding costs are minimized. If you look at the base container rate, and the five and ten percent discount rates, you will see that container systems can compete with grocery boats given the right economic conditions. A container line could compete against grocery boats if, for example, they acquired all the traffic from this particular example.

**Figure 5: Container vs. Bulk Costs for Plant Consumption Rate of 400 Tonnes per Day for Grocery Boat 50,000 Tonne Charter**

As container ships get bigger and material handling with container supply chains improves, there will be greater shift of cargo to intermodal. Currently, 58% of all waterborne trade goes by container. In 20 years, predictions are that all flowable material could go in container, all except perhaps the most specialized bulk cargo. Does this mean bulk is dead? No. There will always be some buyers who want 60,000 tonne boatloads for risk minimization and other policy reasons. For example, Anheuser-Busch maintains one year’s supply of stock for its brewing operations. Given the current drought conditions in America and Australia, this is a prudent decision. The container system can be used to pull out small segregations from the bulk system in order to allow it to operate more efficiently. Over the long-term, the company that uses a menu of logistical and product operations for customers and becomes intimate with the customer’s production line will capture increasing market share.
There are a few people I wish to acknowledge. The first is the Prairie Farm Rehabilitation Administration Branch of Agriculture and Agri-Food Canada. They financially supported the project with a financial grant. But no work evolves in isolation. A large portion of the work was done at UMTI and I wish to acknowledge my colleagues, Dr. Barry Prentice and Erica Vido for their sweat and tears and helping me ride out this project. Finally, a free copy of the master report containing all the things that I talked about this morning in detail with other examples may be found at: 


Thank you.

Keith Bruch
Director of Grain Operations
Paterson Grain

First I will tell you about N. M. Paterson Grain and what we do in the grain business and in agriculture. The company was founded in 1908. It is 100% Canadian owned. We are into third generation family management and ownership. We currently operate about 50 grain elevators across western Canada, primarily in Manitoba and Saskatchewan but we also have a large terminal in Medicine Hat, Alberta. We operate two grain trading operations, one out of Canada and recently we opened an office in Sydney, Australia. It does option origin grains out of Australia around the world. We are also into hog production. Farrow to finish we do about 150,000 market hogs a year and operate a 7,000-sow operation. About a year ago we opened up the largest feedmill in western Canada with a capacity of about 200,000 tonnes a year. We also have flour-milling interests in western Canada and we are the largest exporter of organic grains from Canada.

We do bulk vessel movement into Europe and Asia. We do container shipping into Europe, the Middle East, and Japan. We do ISO containers, which are basically bulk containers used for shipping oil, primarily out of Australia into Asia. We do a considerable amount of rail transportation throughout Canada, the US, and Mexico. We do truck transportation throughout western Canada and into the US.
I would like to talk about the Canadian grain business and historically what the most common type of shipping for it has been. The big six commodities (wheat/durum, canola, barley, peas, oats and flax) have traditionally been shipped in bulk form. Wheat/durum is shipped to probably 100 different countries around the world, and canola is primarily shipped by bulk vessel into Japan and Mexico. Historically Canadian product was going into Europe but with the introduction of genetically modified (GM) product that has stopped. Malt and feed barley, feed and human peas, feed and human oats, and flax have traditionally been shipped in bulk form. The traditional container movement out of Canada in the grain business has been with small segments of the big six commodities. For example, there are specialty wheats, organic wheats, and certain other varieties of wheat that move by container. Some non-GM Canadian canola goes by container. There are also small movements of malt barley that go out. There is quite a significant volume of food pea movement by container, including chickpeas (B-90, kabules, and desis). There is not tremendous container movement of oats, primarily because the bulk of the export movement goes into the US. There are specialty flax markets in Europe that go by container. In addition to those, the traditional specialized crops are generally containerized. These include canary seed, mustard, lentils, soybeans, edible beans, dehydrated alfalfa, hay, and a variety of other commodities.

I want to give you some perspective on the volume of container movement out of Canada, and then focus on the amount of grain that moves by container relative to that which moves by bulk. Total container movement for the Port of Montreal has topped out a bit in the last couple of years and actually declined last year. The Port of Montreal is the major container point going east for Canada. Figure 1 shows grain relative to the movement of other commodities that move by container. Grain is ninth in terms of total commodities, at about 340,000 tonnes by container through the Port of Montreal. This is all dry bulk vessel movement.
Figure 1: Port of Montreal, All Containerized Tonnage (2001)

Figure 2 shows that grain is by far the largest bulk commodity going through Montreal at just under two million tonnes per year. To compare total grain container movement versus grain bulk movement through the Port of Montreal, 1,878,000 tonnes were moved in bulk in 2001 and 339,000 tonnes in container.

Figure 2: Port of Montreal, All Dry Bulk Vessel Cargo (2001)

The Port of Vancouver is a major container point going west for Canada. There was a fairly strong growth in container movement in the late 1990s, but it has leveled out somewhat in the last couple of years. The Port of Vancouver sees quite a fluctuation in volumes of total dry bulk vessels for all commodities, peaking at over 62 million tonnes, which is a significant volume. At around 400,000 tonnes, grain ranks fifth of containerized commodities moving through the Port of Vancouver behind lumber, wood pulp, animal feed, and meat/fish. Figure 3 shows that grain is not the largest dry bulk
commodity moved through the Port of Vancouver. Over the last two years, we have had short crops with about 12 million tonnes export in the year 2000 and about 11 million tonnes in 2001. In 2001, the Port of Vancouver saw 11,265,000 tonnes of bulk grain vessels and 429,000 tonnes of grain in containers.

**Figure 3: Port of Vancouver, All Dry Bulk Vessel Cargo (2000 vs. 2001)**

![Graph showing Port of Vancouver cargo comparison](image)

Across Canada, grain movement in containers for 2001 was approximately 768,000 tonnes, which represents about 3½% of total grain exports out of Canada. In the same year, dry bulk vessel movement was 23,746,219 tonnes. I hope that puts into context the current relative volumes of grain container movement versus bulk movement.

Figure 4 presents a sample ‘workback,’ which is a tool that we use every day to determine how to ship grain. The commodity used in this particular example is flax. The first row is the destination point of CIF ARAG in US dollars per metric tonne. This is cost, insurance, and freight for Amsterdam, Rotterdam, Antwerp, Gent, etc. (northern European ports). As of Thursday the bid price for flax CIF ARAG was $314 US per metric tonne. Our objective as a grain company is obviously to make money and to do that we must have a competitive bid out to the farmer to buy the product. We try to minimize our cost and ship the cheapest way possible in order to make a sale and to buy the product from the farmer. All of the cost components shown in the chart are as of last Thursday. Four different modes of transport are shown, three by water and one by container. On the left are Capesize vessels, which are roughly 120,000 to 130,000 tonne...
vessels, the largest afloat. The next column is Panamax vessels, which are 50,000 to 60,000 metric tonnes. Next, there are Handysize vessels, which are between 25,000 and 30,000 tonnes. The last column is source-loaded containers.

This chart works this price back to a bid farmer level in Regina, Saskatchewan. Working downward, all of our other associated costs are built in. The total costs row shows the price spreads between shipping bulk versus shipping container for this commodity as of last week. The cheapest way to ship flax was by Handysize bulk vessel. This is a “salty” coming into Thunder Bay, loading up and shipping to northern European ports. It is $17.00 cheaper than shipping by source-loaded container. Container and ocean freight rates on vessels will vary, but by and large the relationships run in tandem.

**Figure 4: CIF ARAG Comparison, Bulk Vessel vs. Source-loaded Container**

<table>
<thead>
<tr>
<th>Workback Comparison</th>
<th>Capesize Bulk Vessel</th>
<th>Panamax Bulk Vessel</th>
<th>Handysize Bulk Vessel</th>
<th>Source Loaded Container</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIF ARAG US/mt</td>
<td>$314.00</td>
<td>$314.00</td>
<td>$314.00</td>
<td>$314.00</td>
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<td>Ocean Frt./Ontr. Frt.</td>
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<td>$13.25</td>
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<td>$4.35</td>
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<td>Convert to FST CDN/mt</td>
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<td>$464.28</td>
<td>$446.66</td>
<td>$378.89</td>
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<td>Misc. Charges</td>
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<tr>
<td>Track CDN/mt</td>
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<td>$450.74</td>
<td>$428.66</td>
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<tr>
<td>Rail Frt. (ex: Indian Head)</td>
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<tr>
<td>Country Elevation (tariff rate)</td>
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<tr>
<td>Stuffing/Bulkhead/Scale Ticket</td>
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<td>-</td>
<td>-</td>
<td>$10.00</td>
</tr>
<tr>
<td>Total Costs</td>
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<tr>
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<tr>
<td>Dollar diff./mt over containers</td>
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<td>$8.69</td>
<td>$17.11</td>
<td>-</td>
</tr>
</tbody>
</table>

Next I will talk about what we think the market is going to be doing in the next while and how that might change shipping patterns. In order to do that, you have to talk about the customer. Customers everywhere want convenience, quality, a consistent product, and food safety and they want it to be cheap. Demands are becoming more specific. There is a wide array of increasingly specific food attributes that customers in most economically developed countries are looking for. For example, some markets want high fiber, organic or natural products, non-GM, and some want low fat. As a result, food manufacturers are relaying those consumer demands in the form of what they require in the bulk grain that
they buy from us. Increasingly in addition to asking for the usual of consistency in quality and price, they are also asking for other things. They want specific varieties of grain. They want certain proteins, and they specify at what levels and of what quality. They want gluten characteristics, low fat, high oleic/low linoleic protein profiles, and natural, organic or pesticide free products. They are getting more specific in terms of the color of the grain, and some products are even segregated by taste and smell. Organic flax is a classic example of this; two samples of flax can each have a different taste, and that taste will transpose itself into the end product.

At the same time, the non-specialized food manufacturers will continue to remain and grow. This is a bit of a misnomer but it is a general category that emphasizes the existence of manufacturers of a generic product that represents the bulk of the food demand. Individual flourmills or flour milling companies exist that grind over 300,000 tonnes per year. Oilseed crushers that have individual plants that crush over 400,000 tonnes of soybeans or canola per year exist. There are feed compounders that are making over 300,000 tonnes per year. Canada is just getting into the ethanol plant industry, but it is well developed in the US where the individual plants are processing over 200,000 tonnes a year. My point is that there will be continued demand for a generic product, and in order to supply that you have to be low cost.

I want to talk about the Canadian grain industry and its evolution in positioning to not only continue to serve the bulk demand, but also the generic or more specific quality demand that is emerging. Up to four years ago, there was a wooden elevator about every nine miles. At one point there was probably about 1500 of them. These had storage of anywhere from about 1000 metric tonnes to 7000 tonnes and a car spot of 3 to 35 cars. In the last five or six years, wooden elevators have been replaced by concrete high throughput elevators (HTP elevators) that are geographically located about every 40 to 60 miles. The storage in these facilities ranges from 10,000 to over 40,000 tonnes and they have anywhere from 50 to 100 car spots. The system is focused on volume and throughput, not on segregation. Figure 5 shows one of our facilities. The HTP elevators are large, concrete structures. They have big bins and are made to turn over.
In Canada, grain containers can be loaded at the source or the port. With respect to source-loaded containers, there are throughout western Canada a significant number of small cleaning plants with bulk and bag capacity. These are older plants, which tend to be smaller operations without huge capitalization behind them. They are often family owned businesses. In the last three years, about ten new plants have been built in response to growth in the acreage of special crops. These all have bulk, bag and rail capacity. Most of them have 25 car rail spots. For port-loaded facilities, we have container stuffing facilities in Vancouver and Montreal. These have been around for a while and there has not been a lot of new investment going into these facilities. Figure 6 presents one of the new cleaning plants that have been built in western Canada. It has fairly good bin segregation.
What are the advantages of containers? Small quantities of a specialized product can be shipped, which allows you to do a pure IP capability. As a company we run a number of IP programs. We do organic grains primarily into Europe, but also out of Australia and into Japan and the US. We do a non-GM soybean program primarily into Europe. We do the Warbuton wheat program into the UK. We also do malt barley and three or four other grains. Containers allow you to control the quality very well and reduce the risk of contamination. They also provide more manageable cash flow for buyers. A lot of the buyers in niche markets are smaller and cash flow is a real issue for them. For example, if you do a 5,000 tonne bulk hold for an organic buyer, that is about $2 million US of cash that they have to come up with. If you do containers they need a much smaller amount of money that is much more manageable for them.

There are also some disadvantages to containers. They are expensive relative to bulk. Consistency is a real problem, as each container tends to be different than the one previous or the one subsequent to it. What is critical for any manufacturer is consistency of product and probably the single biggest complaint we hear from our customers that we ship containers to is the variability in the product. Try as we might in the country to blend our grain and be consistent, it is very difficult. The other major problem for source-loaded containers is container supply. Our organic operations are located in Saskatchewan, we come out of the Regina facilities and we see extreme variability in the supply of containers. It is a major problem.

What are the conclusions from this? In the market place, there is increasing demand for specialized IP grain products. There is no doubt in my mind that will continue to grow. However, these currently represent a small percentage of total grain production. It is currently in the range of about three to five percent. The potential might be 10 to 15%. I do not believe it will become mainstream but it will increase. The specialty markets are unlikely to exceed generic commodity demand, at least in the next ten years. The grain handling system that has been built in the last four or five years has been reconstructed to focus on the generic commodity demand with some capability for IP. But the IP capability is limited because of the capital cost of those elevators; you have to turn them
and you cannot do so with IP programs because IP programs by their nature are slow moving. The IP capability is not terrific and certainly the elevators have very limited container loading capacity.

In our view container movement works well at the early growth stage of a product but as volume grows, bulk is likely to displace it. In new product development, the market is new and therefore volumes tend to be low and the margins are probably slightly higher. In this case, shipping by container is affordable in order to maintain the quality control. But as volumes grow and more players get into the market, you are forced to find the cheapest way to ship, and based on the relative cost structure of container versus bulk, that tends to be bulk. In the programs that we do, we have started out shipping containers but we have seen them evolve into a bulk movement. It will not be a vessel movement, it will be part of a hold but it will be bulk.

Questions
Q: Does your bulk versus container cost comparison contain a measure for financing the inventory in transit? Also, how would the addition of customer logistics cost effect your comparison?

A: (Keith Bruch) No, I have not included a cost of carrying in that analysis, but then I also have not included the inward cost at the destination point. The prices I quoted there were all CIF ARAG northern European ports. What we found in the container movement that we have done is significant inward costs at the point of destination. For example, going into the UK there is a shortage of containers. As well, to move a container from the container point to the ultimate destination you need a truck and for the customers we sell to, you need a tip chassis truck. There are only two companies that operate those in the UK, so they are extremely difficult to get and of course the rates that they charge are exorbitant. If you compare that to doing a bulk movement where you can use a regular hopper bottom truck, we see a cost difference of at least $10 US per metric tonne less. Even though I have not used the cost carry in that, we also have not included some other costs that would outweigh the carry cost. The other element on carry that has to be
considered is that a lot of the bulk commodities that are traded are traded off the futures market, and your cost to carry depends on the spreads that you have in the market. It may be possible to recover any carry cost you have on the carry charges that are built into the market.

Q: How is the bulk industry changing in order to meet whatever challenge they feel from the container industry?

A: (Keith Bruch) The elevator system has consolidated substantially. This year there will be at most 200 elevators across western Canada, from a high of about 1500 elevators approximately ten years ago. There has been a dramatic change in the structure in Canada, which has resulted in increased efficiencies; 70% or more of the moves are now in multi-car blocks. There are increased rail and elevator efficiencies, and continued vessel efficiencies.

Session 2:
TRENDS IN INTERNATIONAL CONTAINER SUPPLY, DEMAND, AND PRIORITIES

Dr. Richard Stewart (Moderator)
Associate Professor
-and-
Director of the Transportation and Logistics Research Center
University of Wisconsin - Superior

The Honourable Mr. Speller talked about geography and its impact. Winnipeg is closer to us in Duluth and Superior than is Milwaukee, Wisconsin. Our proximity to Canada provides us with a different perspective than many people in the United States who are not on or near the Canadian border. I want to frame this next discussion before we start because we have two wonderful speakers who are going to address key elements of the supply chain system. I want to tell the audience that we must stay focused on both the nature of bulk and intermodal movements of grain and the fact these are interlocking transportation systems.

The first key point that I think you need to walk away with which has not been discussed yet is that the bulk transportation of grain on the oceans is the most laissez-faire business
in the world. Legal barriers to entering the business are low, vessels can easily change flags, crew costs vary greatly, tremendous competition in the field, and few legal restraints. When we start to introduce intermodalism and containerization as competing modes against a bulk movement of grain by ships on the ocean we enter a different arena than break-bulk ship operations. If the intermodal movement of grain is hampered by cabotage and legal restraints that the bulk movement of grain on the oceans does not have, grain containerization is starting at a competitive disadvantage. Keep in mind that there are at least two governments behind the cabotage laws, the United States and Canada. These governments should regulate grain intermodal system the same way they do the bulk movement of grain on the oceans. However that is not the case.

Rail and marine have several business attributes in common. They are very capital intensive, with enormous sunk costs in rail yards and terminals. They are long-term investors in what has increasingly become a market in whose measures of success can be very short term. In these expensive systems backhauls are critical and they spend all too much time moving air instead of moving revenue generating cargo. For both operators the margins are quite slim and they have extensive customer bases with many requirements.

We are here today talking about shifts in grain transportation and focusing on cultivars. In these products there is indeed a quiet shift in the United States. We now transport all hops exclusively by containerized trade in the United States. As of 1998, we are moving 88% of edible sunflower seeds via containerization, which is up 30% from 1992. There is a shift toward intermodalism across the United States and Canada. According to IANA, the Intermodal Association of North America, lifts have gone up 9% in this year alone. IANA foresees an approximately 6% annual increase in intermodal operations mirroring the rate of growth in international trade. The growth rate is slightly less in domestic intermodalism.

When we talk about geography, we need to keep in mind that 71% of the world is ocean and the rest is beach. When we are talking about a global marketplace with moving grain
around to reach these markets along with the extensive number of customers that both these rail and ocean carriers have to serve then we have to keep in mind that these carriers cannot serve grain at the expense of the rest of the customer base. The customer bases are increasingly asking for ancillary services. They want to have in transit visibility, just-in-time delivery, single through bills of lading, assistance in packaging, and instant delivery, all of which add to the complexity of the service. We are accustomed in the movement of grain to a fairly simple system compared to the movement of miscellaneous products into containers and rail units. Both rail and ocean carriers are driven to cover operating costs. Both are driven not only by fuel costs, but also by costs that we do not normally think of. In the case of the ocean industry these costs include increased toll costs and port fees. An interesting example of the impact labor costs associated moving these containers may be seen with cost of the lockout on the west coast.

I will relate to you an interesting experience. Last week I took my class in port and terminal management on our annual tour through one of the largest grain elevators in the Port of Duluth-Superior. They move about 4 million plus bushels a year of grain products both on rail and by ship. I told the director that I was about to go up to Winnipeg and moderate a panel on the containerization of grain. He looked at me with utter surprise and he said, “What containerization? I’ve never heard of any containerized grain.” After a little more asking around, I found out that most of these terminals know nothing about this process. So, I have to thank Barry Prentice in what he is doing for the educational process through this forum. One of the first steps to move into this next alternative supply chain is to educate the industry that these container opportunities exist, limited though they may be in some areas.

To start off this panel, I would like to introduce David Cardin from Maersk Lines. If you have never looked at load balancing, never looked at the ocean side of how container ships operate, his discussion will be a real eye opener.
Good morning everyone. Thank you for inviting us to be here Barry. We are very honoured. Our market share in this part of the country is relatively small, so we look for opportunities to improve that. The knowledge that I have already seen here is impressive.

In 1999, Maersk Sealand was integrated into the A.P. Møller Group, a shipping company with headquarters in Denmark. The A.P. Møller Fleet comprises more than 250 vessels with a total deadweight of about 12,000,000 tons and includes container vessels, tankers, bulk carriers, supply ships, special vessels and drilling rigs. At the moment, we have about seven vessels under the Canadian flag with Canadian crew. Besides shipping, the A.P. Møller Group has significant activities in oil exploration, production and distribution; shipbuilding; industry; aviation; supermarkets; and IT services.

We have a lot of fixed cost in our business and obtaining an adequate financial return is difficult. Carriers are operating in a highly competitive environment. There is relentless market pressure to reduce prices and the supply-demand cycle fluctuates greatly. Each carrier has tremendous pressure to look for marginal costing on the backhaul as a way to improve the financial return. This is a trap that we have to constantly be aware of because if you are not careful all trades become backhaul trades, and then you are really in a lot of trouble. When I started the business several years ago, I asked what the secret was to good pricing. They told me, “lose money on every box, make it up in volume.” This is what we have done.

There are tremendously complicated patterns involved in shipping. Most of the services are weekly, so a loop in Asia would involve five or six vessels. Those vessels amount to about $100 million a piece on a larger trade, and if you put together the investments in the terminals on both sides you can see the fixed costs that we are referring to. Some of the trades are based on pendulums or round the world services, some are end-to-end, and are pure shuttles between two points such as Hong Kong and Vancouver.
Containers do not move between fixed points; they move between different points that can take them to various parts of the world, sometimes overlapping and sometimes never returning to their origin. Struggling with the forecasting of where containers will be, where they will move next, and their next demand point is a big challenge for carriers today.

An important point to mention is that the trades are very unbalanced. What comes into North America is significantly more than what leaves North America. Container activity in Asia is high because it represents loadings into Europe and North America. The clear driver for container demand has been in Asia.

Trade has been growing steadily with the exception of 2001, during which there was an economic down turn in North America and around the world. In our view, the markets will continue to grow three to five percent per year for the next 10 to 15 years. The Port of Vancouver container exports are up about 13% compared to last year. For the most part that is a recovery from 2001, but it does represent a slight incremental increase from 2000. We expect to see more growth in the future.

To serve the demand, the vessel fleet has had to grow. This happens in terms of number of containers, size of containers, and larger and faster vessels coming into service. This has allowed us to shrink the supply chain by a few days in some cases. For some types of commodities this is a critical factor. Faster service helps us reduce the amount of containers we have in our fleet to cover the flows.

As the fleet is delivered we have experienced tremendous spikes in the way the container capacity comes on line. These periods are especially challenging if, for example, several operators are on the same ordering cycle. The end result is a lot of people that have built for the long-term but capacity is there, it is a fixed cost and there is a tremendous destabilizing effect on the prices in those periods. It is a free market and it is highly competitive. There are virtually no bounds on the arrangements and contracts that can be made between carrier and customer.
There are a tremendous amount of empties that need to be handled. Whether the backhaul leg is loaded or empty, the containers have to go out.

Port development is needed because the bigger larger vessels need to turn around in a rapid manner. If you think of yourselves as an airline passenger, the bigger the plane is and the farther back you are, the longer it takes to get off the plane and get to where you need to go. The same applies to container operations; having a bigger ship means you have to be able to handle it faster. We look at handling in terms of ‘berth productivity,’ which is the number of moves made per hour. It represents the real ability to turn a ship around in a period of time. For example, if 3,000 moves need to take place at a container terminal in Los Angeles and berth productivity is 100 moves an hour, you can calculate how long it will take to complete the moves. Any ability to increase berth productivity is generally tied to the infrastructure, such as the gantry cranes, the transloading containers in the yard, and the intermodal operations that allow the containers to move in and out of the terminal quickly.

The next issue that I would like to discuss is the cost factors for the container fleet. Fleet size is the obvious first point. It is semi-fixed in our point of view. We own containers but we also have the ability to lease containers as we see demand fluctuate. We have to anticipate and place our orders for the leasing operators.

Turnaround times are somewhat controllable. Cost is a function of how long the import sits in a loaded condition once it has arrived at destination. Cost is also a function of how long and how often the boxes remain idle before they are loaded out.

Intercity repositioning is also a cost factor for the container fleet. It may be decided, sometimes in advance, that container flows need to be rebalanced from a point of import demand to an export need. For example, containers are often repositioned from Montreal or Toronto to the prairies. We would rely upon a rail partner such as CN for this, and we must take this cost into account.
An even worse situation would be that the container finds no export use at all in the backhaul leg and we have to move it empty to the evacuation port. This is a pure out of pocket expense, and we try to avoid it at all cost.

Stevedoring is also a cost factor. The empty box must be handled at one or more points until it reaches the final demand point abroad.

In some cases with equipment, the average container weight in North America is significantly heavier than the import cargo. This can cause situations where the vessel cannot be loaded to its nominal capacity so it may be necessary to find other ways to move empties back. This can include slot charter with conventional vessels, bulk vessels and others for deck space or it can mean that we actually have to charter pure container vessels, Ro-Ro vessels, to move empties back to their origin point. All those have costs that have to be assessed somewhere in the pricing calculation.

As far as investment in equipment, the fleet consists of about 15 million TEUs. We use TEUs as a convenient measure of how large a container is, but variations in size and type are quite large. For example, there are the standard 20-foot and 40-foot dry freight containers; specialized refrigerated containers; flat racks; very specialized bulk containers that are used, for example, in grain loading; etc. We try to mitigate the cost of that investment through an ownership split between the operators and the container lesser market. We are currently operating at about 2.75 TEUs per containership slot in the global container fleet. A few years ago this figure was over three TEUs; this change represents a significant increase in efficiency and reduction in capital investment.

Supply chain container inventories (i.e., pools or depots) are maintained at hundreds of locations of varying size. These widely dispersed depots are really the assets supporting intermodalism. Inland pools are a tremendous asset to shippers and importers; the carriers absorb the cost and the responsibility for moving those containers onto their next point so the efficiencies of pricing can be passed onto the customer. If you do not have a
use for that container at that yard, you have a decision to make. You can either wait to
see if a use will arise, in which case you incur storage expenses, or you can move it
empty to the next point. Those costs have to be borne in the calculation, and typically
they are charged in the headhaul leg. To illustrate the turnaround times, I have selected a
few examples but I have not included any numbers (Figure 1). The proportion of empty
days, export days, and import days is shown. These are averages, so they do not apply to
a specific container. Costs all have a per day value to them and we take them into
account in our pricing.

**Figure 1: Container Days**

North America is a consumption-based economy, so far more containers come into North
America than leave. Figure 2 shows the percentages of containers that are repositioned
empty on a port-to-port basis or a continent-to-continent basis. Positioning at inland
depots becomes much more complex. It is important to remember that there are a lot
more reefer containers that go out with products from North America than come in; all of
these reefer containers have to return. For example, although Figure 2 indicates a 55%
imbalance, the absolute imbalance is probably somewhat greater than closer to 58 or
60%. The other regions of the world are similarly imbalanced to some extent.
Next, I have chosen an example of an inbound load that has come into Toronto via Montreal from Europe. We do not distinguish between where a box originates and where it has to go. The general trend is that we need to move boxes empty back to Asia, so this particular box was selected for that. Once it was unloaded in Toronto it was selected to move to Winnipeg where we hoped to attain a load. We quickly realized that there was not one there, so we then moved it to Vancouver. It is currently in Vancouver awaiting export. It will probably be evacuated empty, but we do have an export demand in Vancouver so we may use it. The last time I checked, the box was still there. This illustrates the significance of the effective idle days on our equipment fleet.

When we price import boxes, we try to assess all the costs that we know for a fact, such as the laden legs and related handling costs and spot pricing of an import into North America. We might also take into account the next move, where the container is needed, and assess the repositioning cost to the import leg. The complication of course is that we operate in a competitive marketplace and we have to meet a market price. Cost recovery is not always allowed for. To keep a handle on that and to help us make a pricing decision we use various pricing models. We use a proprietary system. We refer to the operating profit as net-to-vessel (NTV) profitability. The system allows us to make queries that produce a NTV solution. This can be used to assess whether the price you wish to obtain is acceptable for that headhaul. On the backhaul you have a slightly different set of conditions. You probably cannot recover the full costs, so your goal is to
recover the underlying costs of empty handling and the costs to move those boxes back. We try to recover most of those costs on the inbound leg. If this is the case, then we have every opportunity to apply marginal pricing to the backhaul leg.

We do cost recovery in two ways. First, we recover costs on the headhaul (the inward leg). Equipment substitution is one means to do this. I previously mentioned the contrary flows of reefers and dry containers. So in Asia for example, where we have a lot of reefer containers to reposition, we try to provide incentives to our customers to encourage them to use reefers. The stowage of those containers is somewhat less and therefore we have to offer discounts to promote it, but generally this is a tried and true way of accomplishing rebalancing.

Another means of cost recovery on the headhaul is the container leasing market where it is possible to obtain containers in Asia, move them to North America and not be required to move them back. In effect we can under-balance our transcontinental flows.

The import transloading to domestic equipment is something that is currently pursued by many of the major retailers in North America. It takes advantage of the high efficiencies of domestic rail intermodal equipment. There is a much higher capacity and the handling costs are approximately the same. In Vancouver, for example, a significant number of Canadian retailers move their freight out of marine boxes into domestic rail containers, and then the export boxes are hopefully closer to their point of evacuation or export demand. This comes into play with the transloading of grain. For example, if grain were moved in bulk to Vancouver, we would have the equipment needed to load it out.

Pre-planned evacuation occurs when the inbound leg is profitable enough that it covers all costs and we simply send it back when it is empty. Demurrage is a form of cost recovery, primarily on imports, where customers may find it convenient to leave their cargo in our boxes. In this situation, we have a challenge like the car rental companies when we rent from A to B. It is sometimes difficult to make the customer understand that we have an asset that is being utilized and it has a cost per day that we like to recover. So
we use domestic charges not as a revenue source, but as an incentive to encourage faster turn around of equipment.

Yield management is the next step in the costing and pricing systems. We like to think that we know exactly where the next move is. Yield management is done by forecasting the next logical move or set of moves. We like to know whether we should take, for example, a limited number of containers from China and send them to New York, Vancouver, or Europe. We compile the NTV of all the vessels in deciding where to take them. It is a highly complex market, it is an even more complex network that we run, and yield management is a concept that we are striving for. Some of the best logistics engineers in the world are working on it but it is not a science at this point.

We could mitigate the cost of moving containers on the backhaul through several means, two of which I think are relevant here. One is expanding into breakable commodities such as grain, and another is interchanging equipment with competitors. Equipment is generally interchanged with our ocean competitors; they may have a surplus and be able to feed a deficit for us and vice versa. In practice however, global competitors are covering virtually the same markets and the opportunities for interchange are relatively limited.

Equipment substitution is a valid opportunity but it sometimes requires adjustment on the part of the shippers to plan for stowing 40-foot containers in a different manner than they might for 20-foot containers. But there are more 20s coming into North America than leaving and that is the opportunity. In the case of grain, which is a weight-based cargo, 20s are generally utilized, but I think 40s are an opportunity that we should collectively examine. How we might be able to handle this?

Finally, backhaul costs could be mitigated by using marine assets in the domestic freight business. We believe that there are opportunities to do so. It is already being done to a large extent; for example, the railroads participate in this. The cost of positioning a box into an inland point where there is no import market is a significant impediment to pricing an export box out to the final destination. Anyway that we can mitigate that cost
is of great interest to us. I hope through the rest of the day we can have a dialogue about innovative solutions to this opportunity.

The industry is consolidating. It is fragmented and there is very little price leadership. This makes it very difficult for capital investments to be properly returned. Even when you know it is the right thing to do, if you have a tremendous amount of competitors out there willing to protect the market share at all costs, it generally has a very dilatory effect on the results. Therefore, carriers are amalgamating and forming alliances. We expect more of the same in the future.

In conclusion, I want you to remember that our business is highly fixed-cost oriented. It is relatively mature. Those fixed costs are fairly stable over the same size of competitor globally, so our focus is on how to reduce equipment and handling costs. Supplying the agricultural markets is an interesting challenge that we would like to address with you. Thank you very much.

Dr. Richard Stewart (Moderator)  
Associate Professor  
-and-  
Director of the Transportation and Logistics Research Center  
University of Wisconsin - Superior  

It is a wonderful opportunity to have a representative from Maersk Lines here, and I know we have some questions from the audience.

Questions

Q: Is the growth of shipping capacity exceeding the growth of current freight? If so, at what point do the shipping lines begin to solicit grain shipments in an aggressive manner?

A: (David Cardin) Supply is outpacing demand at this time. One of the reasons for this is because shipbuilding has a tremendously long lead-time, two to four years in some cases, and you have to anticipate all the market growth in a ship’s life cycle. So you will always have periods where supply exceeds demand and when you have an economic downturn such as 2001, it is exacerbated. It is difficult, but if you come back to grain
opportunities, we really fight the battle on the headhaul legs where we have to make sure we recover the costs. We are struggling to do so and sometimes we are not even successful in producing any operating margin on the headhaul legs. It is a tremendously depressing business sometimes. As far as the backhaul opportunity for grain, the real issue is that if the grain were in Toronto where the empties are we would be in business, but it is on the prairies. Therefore, there is another transport leg that has to be covered and there are depot costs of maintaining containers so that they can be available on demand. The supply side is really a costly part of it. I hope that covers some of it.

Q: David, where is the container terminal development you discussed located? What was the approximate cost of the investment that your company’s had to make in it?

A: (David Cardin) The development is located in Los Angeles. The consumption market in that area is a major driver for the port developments in some of the US west coast cities. Vancouver is also developing and it will develop more port complexes. The cost of the Los Angeles development is shared, as the city of Los Angeles makes the capital outlay, which is backed by a tremendously expensive and long-term commitment on our part that allows the development to take place. Our commitment is in a long-term rent contract, but there are also costs incurred in the equipment that we purchase. A post-Panamax gantry crane is about $6 to $7 million US and there are about 12 of them on the terminal at the moment. The transloading equipment that takes containers from a shuttle truck which brings them from ship side to the stack or to the rail car can range from $1 to $1½ million each. There are about 30 of those on the terminal right now. There are also the shuttle trucks themselves, and a myriad of other costs that the carrier will put on the property. A tremendous amount of assets are involved, which is why I mentioned earlier that not earning any operating margin is depressing; if you are not earning any operating margin, you are not paying for any of the assets.

Q: Could you talk about some of the changes you have made to improve efficiency over the old terminal?
A: (David Cardin) We look for efficiencies in how fast we can turn containers through the property and how quickly we can move them off a ship to a stack and return the operator to the terminal. So we look at berth productivity, which is how fast we can move the containers away from shipside. We also look at gate productivity, which is how fast we can move containers through the gate if they are moving onward by truck, either to another railhead off dock or to the ultimate consumer. We are investing in yard and gate management systems as well as other physical assets.

Q: In the United States, where this terminal was built, we have TEA21, which is a national initiative at the federal level to encourage the growth of intermodal systems. Are you finding parallel support in Canada at the federal level?

A: (David Cardin) It is difficult to look for support in Canada. Presently, a great part of Canada’s exports are moving in bulk and therefore the support for an intermodal network is probably not driven in the same way that it is in the US. As we move ahead and through symposiums such as this, we should look at building some momentum in that area.

Q: You mentioned that 40-footers could be available for agricultural load out. Would Maersk be willing to price a 40-foot at a 20-foot cost?

A: (David Cardin) Happy about it, no. Willing to do it, probably. You have to remember that what we are really talking about is mitigating the cost of moving an empty back to an overseas point. We are going to expend those costs. It is marginally more expensive to handle a load than an empty and if we can cover those costs you might say that starting point is yes. My return to that would be, are the customers really able to use 40-footers without significant modifications of any kind?

Q: Are more 40-footers than 20-footers being manufactured?
A: (David Cardin) Yes, certainly. Probably less than 15% of the market today is being manufactured as 20-footers.

Q: How does the indented berth at Amsterdam Sersi terminal impact ship turn around?

A: (David Cardin) Well it should, in theory, turn it in half. Basically the indented berth is a finger where the ship barely fits and the port cranes can operate from both sides at once. The cranes operate over more than one bay. Moving the cranes between bays is an operating challenge, but some say it is the wave of the future. It is a tremendous capital investment. At our terminal we chose not to pursue that. We found other ways to address the productivity issues. We think speedy cranes that are capable of lifting two 20-foot containers at a time as opposed to lifting one are very efficient.

Q: Take us through the load balance problem again. Does the percentage shown represent the number of empty containers leaving or the number of loaded containers leaving? Also do we have a load imbalance with Africa? [Referring to Figure 2, “Equipment Flow Imbalance”]

A: (David Cardin) The percentages represent the number of empties. Out of 100 containers moving in from Asia, 55 will go back empty. That might be a little high on average, but it is a snapshot in time that we took. In a peak season that is probably an underestimate. Peak season is the period between June and the end of October where consumption is driven by seasonal retail marketing.

There are some imbalances with Africa, but they are not as significant. It is one of those cases where 20-footers and 40-footers clash – a lot of 40s move into Africa and a lot of 20s come out.

Q: What is the impact of cabotage rules that restrict the movement of containers and their utilization in Canada?
A: (David Cardin) There are limits placed upon marine operators in terms of the use of their international containers. These containers are not duty paid so they are only in Canada on a temporary basis, therefore there are some limits placed upon them. The US allows one year of container use without restriction before it has to leave the country. In Canada there are more restrictions and a significantly shorter time limit. It can be up to be six months but in many cases the limit is 30 days. This definitely limits our ability to interact with domestic freight forwarders and the railroad to move containers. A container need in Regina might be fulfilled by a move to Calgary and a move back to Regina, but this is not possible under present conditions.

Q: How many trips does a container make in a year?

A: (David Cardin) Globally the current figure not specific to Maersk Sealand is about 4.7 trips per year. It has been above five and the opportunities to reduce it are there, but you are really looking at small increments at this point. However, the small increments have a large capital impact. If you have a weekly five ship Pacific service, you need five sets of containers to supply the vessels and you need at least one set on each end, so you need seven sets. The utilization factor is derived based on the number of voyages that they make. Some services between North America and the Caribbean or Central America are very short, run by perhaps two vessels.

Q: Can you comment on the cost of capital booked for Pier 400? For example, how did LA raise funds and was it done on a tax-exempt bond basis?

A: (David Cardin) In LA’s case, if I recall properly, tax-exempt bonds were used for some of the funding but there are other sources. As well, the port itself has generated a lot of retained earnings and they have the ability to go out into the financing markets. A large amount of it was self-financed and, as I mentioned, that is supported by the long-term commitment they have with us and their other tenants.
Q: How do the empty returns for containers either in ratio or percentages worldwide compare to the empty return ratios for bulk vessels that typically carry bulk grain?

A: (David Cardin) I am not a bulk specialist. I will defer to Kevin or someone that might have a better handle on that.

A: Kevin, if you want to speak up, otherwise I will talk about when I ran bulk ships. We averaged if we were lucky ten percent return with the backhaul.

Q: Are there any containers that are signed only to land travel? If not, would that ever make sense in terms of income?

A: (David Cardin) Absolutely. I mentioned the transloading of imports at port of entries primarily on the US west coast but it also takes place on the east coast. We are very much dependent upon the specific purpose North American domestic container or inland transport. It is a 53-foot high cube container. It holds about 15% more than a 40-foot container and except for the cost of the asset itself the cost per tonne is probably similar.

Q: How much repositioning goes on between major US mid-west cities and Winnipeg? For instance, Chicago and Minneapolis - St. Paul?

A: (David Cardin) Currently, very little that I am aware of. Winnipeg itself would not be a high demand domestic or transporter market for inbound freight. Previously I mentioned that we may possibly be looking at moving containers between a US mid-west city and another Canadian city such as Calgary or Edmonton, and then finding another way to move it the last amount of its journey (either empty or using it for freight at a lower cost).

Q: Why not move empties from Chicago rather than Montreal? Is this issue related to the fact that Canadian offices of steamship lines have a responsibility or an incentive to move containers out of Montreal first?
A: (David Cardin) No, there is not an artificial reason why containers are moved out of Montreal first, at least not in our case. Although we are responsible for the flows within Canada, we interact on a daily basis with the centralized North American intermodal planning network and we are constantly challenging them to supply needs in the Canadian prairies and mid-west from Chicago or anywhere else that might make sense. So we are actually pulling the demand up here whenever possible.

Dr. Richard Stewart (Moderator)
Associate Professor
-and-
Director of the Transportation and Logistics Research Center
University of Wisconsin - Superior

I am going to close off questions so that we can move ahead with Paul Waite’s presentation from Canadian National. The steamship lines and the railroads are closely linked, especially in terms of the issue of repositioning containers domestically. I am delighted to have Paul here. After all, CN is Wisconsin’s largest railroad and they have more track than anyone else in our state.

Paul Waite
Assistant Vice President
Canadian National Railways

I would like to thank you for the invitation to be here today. I will skip through the presentation quickly because some of the previous speakers have already covered some of my information, and I think they know a bit more about intermodal than I do, which is saying something because I have been doing this for many years. First, I will give you some background on Canadian National, then specifically talk about some of the investments we are making in intermodal, and trends in international containerization, specifically in terms of grain and grain challenges. We recently extended our reach into the US with the acquisition of the Wisconsin central railroad, which basically runs from Winnipeg into Chicago. We used to call that the missing link. We used to run over the Wisconsin Central and over the BN. Frankly, we could never get it to work the way we wanted it to, so we bought it. A similar argument was made with Illinois Central that we purchased a few years ago. It took us from Chicago down into New Orleans.
CN has a very diversified traffic portfolio. We do not rely on any one commodity to any great extent. Grain comprised 21% of our revenues last year and intermodal was 18%. Intermodal will probably be closer to 20% this year. It has been and continues to be our fastest growing segment, averaging somewhere in the area of eight to nine percent growth rate. Fifty-three percent of our revenue is from U.S. and transborder traffic, 21 per cent from international traffic, and 26 per cent of revenue from Canadian traffic.

Next I will talk about asset utilization. Since Hunter Harrison, our Chief Operating Officer, came on board and CN acquired the Illinois Central, there has been an extreme focus on minimizing dwell-in terminals at customers, minimizing classification yards, shutting down a number of our hump yards, and minimizing the number of blocks we put on trains. Going from unit trains to what we refer to as general-purpose type trains illustrates the whole notion of balance. We are absolutely focused on balancing crews, locomotives, cars, and loads and empties. We are focused on making sure the trains are powered up as needed. Historically, we tended to overpower our trains. This is a huge cost element for us, as car costs and train costs tend to be almost half of our cost. Lastly, the whole notion of smoothing peaks involves starting to look at day of the week pricing. Our terminals are currently designed to handle the peaks. We are clearly going in the direction of yield management and we are going to try a lot of innovative strategies to smooth out the peaks over the next period of time.

CN has 19 intermodal terminals across Canada and the US. We have about 9,000 containers, not including the high number of boxes that we reload for various steamship lines. That program has been growing in leaps and bounds, particularly out of Central Canada over the last four or five years. NACS and EMPU are container pools in the US whose boxes we use for moves into the US. We have 5,700 chassis.

Our retail logistics center is basically a seven day a week, 24 hour a day, customer service center that handles retail intermodal operations, dispatch, etc. Our customer
service center is for our wholesale and carload customers located in Winnipeg. It is also seven days a week, 24 hours a day.

CN is one of the largest truckers in Canada. We have somewhere in the area of 500 tractors and, as I mentioned earlier, 9,000 containers. That makes us a very large trucking company.

We are in the NACS and EMPU programs because we have partnerships with the CSX over Chicago and Buffalo to get us into the northeast and southeast United States. We have alliances with Union Pacific over both Chicago and Memphis to get us into markets in Texas and Mexico. We have an alliance with the BN over Chicago that gives us access to Mexico. Finally, over Jackson we work with the KCS to get us into Dallas, Texas and into Mexico. We have a number of products to get into Mexico, all of which are different in terms of transit times and rates. For shipments to Mexico, I suggest packages that make sense from an intermodal perspective.

As part of CN’s commitment to the intermodal business over the last couple of years we have totally reinvented the way we move out of central Canada to western Canada. We took 24 hours out of the schedule from Toronto into Calgary, Edmonton, and Vancouver. Those in charge of operations told us that it could not be done, but Hunter looked at it and said that we could. Over the course of about a month and a half we totally re-engineered the way we did business. This has allowed us to be single truck driver competitive on our trans-continental route.

This competitiveness has allowed us to grow in the trucking business with the Kleysens and TransX’s of the world. Freight that formerly moved over the roads amounted to approximately $75 million. This was quite a success story for us.

The other thing speed has allowed us to do is move a lot more freight with the same amount of equipment. We have improved equipment velocity, which is absolutely critical in our business.
In terms of new equipment, we have been actively adding to the fleet. As the 48 footers come of age we are replacing them with brand new grey 53 footers. We have been doing that on the dry, heated, and reefer containers. We continue to move towards a totally 53 foot fleet.

We realized that the truckers were far ahead of us in terms of technology. So, now all of our truckers have hand held GPS units. When we put GPS units in our trucks, we centralized all of our dispatch into Toronto, so now we have a far better control over the tractor fleet. We can do PODs on line. Pegasus real time reporting allows us to generate very specific and detailed reports. Before, they had to call in or wait until they returned to the terminal.

Real time reporting is especially beneficial because of the amount of food products and grocery products we move in intermodal. There are a lot of small windows that we have to meet with food wholesalers, and this enhances our ability to do that.

We have implemented Speedgate, at Edmonton and Montreal and plan to implement it across the system. It speeds the gate process at our terminals and also enhances our security. The driver puts his hand in this unit, it identifies his fingerprints, verifies he is allowed to come into our yard, and the whole transaction takes about 40 seconds. Before this was a far longer process. We also have new cranes and the Oasis Yard Inventory Management system, which is implemented in all of our new terminals.

We have done a number of terminal expansions in the last while. Last summer we opened a brand new facility in Edmonton. Tachereau in Montreal was opened this year. We are going to move and expand our Winnipeg terminal in the summer of next year. Recently, Winnipeg has been a bit of a challenge for us in terms of the way we run our train operations. In both Edmonton and Montreal we run our trains right into the terminals. There is no switching; they are straight run through operations, which reduce our costs. What it will allow us to do in Winnipeg is improve our cutoff and arrival
times. The new Winnipeg intermodal terminal will have two 6,000 foot pad tracks which allow us pull trains straight in and strip them to chassis immediately. This is something we currently cannot do. The capital expenditure for this project will be approximately $14 million. The Edmonton terminal cost approximately $17 million.

Current issues, such as regulatory and cost issues effecting supply; trends in containerization growth, supply, and demand; and challenges that we see moving forward, effect what we do with grain. Obviously there are many factors that go into how we view the movement of grain. We look at the type of equipment, the amount of weight in the boxes, who owns the boxes, and where boxes are originating and terminating. We must ensure balance. Are we repositioning empties to get to where we have to go? If I do not go load to load, basically I do not make money. We are obsessed with going load to load and minimizing empty miles.

On the movement of grain, we need to leverage our weight on rail advantage. From my perspective, we want to put as much grain in a hopper car at 90 tonnes, go as far as possible with it, and then blow it into a box, bag it, or whatever needs to be done to it at port. I have been involved with these things in the past when I headed up the petroleum business unit for Canadian National. How do you best move polyethylene from Fort Saskatchewan to Vancouver. You maximize your weight on rail in hopper cars and you blow into a container at the port. We looked at various scenarios in terms of trying to put terminals in Fort Saskatchewan. The economics just did not work because the volume has to be significant to justify a terminal. We understand the flexibility of a 20-foot box or a 40-foot box in terms of product assurance or integrity of the product, product loss, etc. Even in my domestic repositioning program we see that there is a lot of advantages for those smaller shipping lots and they seem to be increasing every day.

We are challenged in terms of getting IMPEX boxes to the appropriate locations to load grain. I move about 2,000 IMPEX boxes a week out of Toronto alone. It is where my customers (freight forwarders), and my trucking partners are shipping. They are shipping to where the highest populations are. This tends to be a challenge because once you get
into extended drays, the cartage from our terminal to the point of loading and off-loading, the economics of rail become less attractive. For example, trucking rates are approximately $1.15 a mile, which makes it expensive to move a box on rail to Winnipeg, a 1,500-mile distance. Like the polyethylene business, what we need to look at is whether there are better ways to load this freight and where they would be best located. Are they best located in our terminals, or just outside our terminals? We are absolutely open to those discussions, and have had a number of these discussions with some industries. We are more than happy to talk to others about doing this.

In terms of specialty crops, we understand that total volumes have increased substantially in the past five years. Identity-preserved products are gaining in popularity. Going forward we need to look at whether these are higher value products, and if indeed they are, are we able to extract additional value. In other words, we need to work together to distribute this value in a way that encourages the flow of 20-foot boxes inland, because the backhaul will not justify that headhaul move. The challenges going forward is that we need cooperation amongst all the stakeholders, including the steamship lines, brokers, freight forwarders, grain folks and the railways to try to find a way to make this work.

I think as we work together we will find a way to do this. In the past, we have come up with innovative solutions to challenges. For example, one of my biggest customers, Wal-Mart, decided to open a distribution warehouse in Cornwall, Ontario, which is not exactly the most desirable place from a railroad perspective. We had to find a creative way to service Cornwall without building a terminal there. We looked at new road railer technology, which is essentially a trailer on rail bogeys. We move a train a day into and out of the Cornwall facility, about 50 to 60 units per day in each direction. This illustrates that there are ways to service more remote locations. This may be an option for grain if there is critical mass in certain areas that are not within a reasonable dray to our terminals. Perhaps we need to focus on the higher value shipments where we can extract that value. Loading sites are going to be critical; how do we best drive costs out of the system to make this move economical? I would like to thank everyone for their
attention. In terms of questions, I know more about the domestic intermodal piece than the steamship side, but I will answer those questions as best I can.

Questions
Q: Are you presently moving any grain intermodally between domestic locations?

A: (Paul Waite) Yes, we move about 860,000 tonnes of grain intermodally between domestic locations, which is about ½ million tonnes in containers.

Q: Why would you switch high yield bulk car grain transportation with low yield intermodal transportation?

A: (Paul Waite) That is a good question, and frankly where we do not have to do that, we do not want to. We need to look for a good fit, where there are higher valued goods, where quality is an issue, or where there are smaller shipping lots. We have to pick our spots.

Q: One of the major issues in railroad operations is maximizing your weight on rail. If you moved more grain intermodally would you plan to use double stacked service?

A: (Paul Waite) Well sure we can do that but what we tend to do because of the weight of grain, you’re moving essentially the best piece of equipment is probably a 20 foot box. We have to put 20 foot boxes in the bottom well because of the weight, so you’re somewhat restricted. You can’t then put a heavy on top of them. So you are limited as to what you can do just because of the physical characteristics of the car and the containers.

Q: In your Wal-Mart example, can you describe once again the technology used to move products to and from Cornwall?

A: (Paul Waite) The technology has been around for a while. It is used by the Norfolk Southern, which we recently partnered with. The initiative is called Triple Crown. We
basically move high volume auto parts from Toronto to Detroit going into GM facilities into the Norfolk Southern network. This technology consists of 53-foot units, 4,100 cubic feet, which are put on rail bogeys. It looks like a trailer on a rail. We hook a locomotive to it and we run the wheels off at the Cornwall every night and then further on to Montreal. Currently, it is limited to the Toronto-Cornwall-Montreal corridor. As of November 1st, we are now working with Triple Crown with the same technology. We are going to be extending it into Detroit, beyond that is uncertain at this time.

Q: Currently Burlington Northern Sante Fe operates a short haul intermodal, short haul being less than 150 miles, to connect with the northwest ports from the Washington agricultural area. Does Canadian National operate any similar short haul intermodals or would they consider moving agricultural products to ports?

A: (Paul Waite) There is no reason why we could not do it, but we have critical mass. In Canada we tend not to have the critical mass that they do in the US, and that has always been our challenge is even in corridors like Toronto-Montreal. Domestic intermodal double stack economics do not work very well. You really have to look at the situation and once again, you have got to balance the cars, it has to go load to load, you have to have backhaul. It is all important.

Q: With this wonderful connection down to Mexico, do you see an increase in the movement of NAFTA grain products along this route?

A: (Paul Waite) Absolutely. That is one of the reasons that we spent a lot of time with Union Pacific to put this program together over Memphis. We have seen a dramatic growth in the last year, particularly on our container side. I think Joan Harding can probably comment on the grain side. I believe we have done fairly well with grain into Mexico, haven’t we Joan?

A: (Joan Hardy) Yes, on the bulk side. I do not know that we have moved a lot of grain in containers. It has been mostly food products and automotive parts.
Q: Paul, you state that the focus should be on higher value shipments. Australian container shippers move standard milling wheat to Europe in containers. Does this low yield but higher volume traffic provide some type of advantage for CN, and is that attractive to you?

A: (Paul Waite) We have to look at the individual economics of it and where it is originating. Without having all the specifics, it is a tough question to answer. It depends on your proximity to our terminal, and on the whole notion of balance. We are open to new opportunities, should the economics be attractive.

Q: Paul and David, could you both outline for us for the record, the other players that you think should be at the table when we do more discussions on containerization.

A: (Paul Waite) For example, Raymond Container in Montreal does the de-stuffing operation for us (they take it out of box car and put it into overseas containers). I think there could be opportunities going forward working with our cargo flow and transload folks. Our wholesale part of the business, my trucking and freight-forwarding partners, is about $300 million of my $700 million. We work with these folks because they have core competence and specialties that we do not and perhaps there is an opportunity to work with them. This is probably an untapped area.

A: (David Cardin) Like Paul, I believe those who handle and stuff the containers, at the ports are critical in this current scenario. As far as finding more efficient and more effective ways to put the containers at inland points, I mentioned domestic freight forwarding activity as a way to move more domestic freight in marine containers. CN does some of that already and still we find it very difficult to compete when we are able to get a free positioning move in. I think the major players continue to be the customers themselves. How we innovate the packaging and loading of the product at source can add value to the entire supply chain and move us away from simply focusing on transport cost.
Dr. Richard Stewart (Moderator)
Associate Professor
-and-
Director of the Transportation and Logistics Research Center
University of Wisconsin - Superior

Thank you very much gentlemen. We have had great presentations from two of the key links in the intermodal movement of grain.

Luncheon Speaker:
THE PRAIRIE GRAIN INDUSTRY – PAST, PRESENT, AND FUTURE

Greg Arason (Keynote Speaker)
President and CEO
Canadian Wheat Board

I am very pleased to address the 7th annual Fields on Wheels Conference. From its inception, this conference has been an opportunity for all stakeholders in the Prairie grain industry to get together and share thoughts on how to deal with our transportation challenges. Most importantly, it has been a forum for seeking creative solutions and for thinking outside the box… or should we say boxcar, given this year’s theme.

I have been asked to address the topic of the Past, Present and Future of the grain industry. It is a topic that I willingly embrace because I have earned my living in this industry for over 30 years now and I have seen it from many different perspectives. It is an industry that has been good to me and to many, many people in Western Canada. It is a cornerstone of our Prairie economy and in spite of the challenges that it faces, it is one that will no doubt survive and thrive for years to come.

In keeping with the saying “You don’t know where you’re going if you don’t know where you’ve been”, I would like to begin by telling you about some of my time in this industry. In preparation for today’s speech, I reviewed several documents and reports to which I have been a party and found a number of references that I would like to share with you.
As noted in the Manitoba Pool Elevators Annual Report for 1971, Greg Arason was hired as a Field Supervisor on February 1 of that year. I was following hard on the heels of Operation LIFT, which had reduced seeded acreage in Western Canada by 10 million acres in the summer of 1970. On the horizon was the Pool’s acquisition of Federal Grain’s assets in early 1972.

On my first day on the job, I was sent into the country to attend meetings where farmers were advised of the closing of 18 Pool elevators by year end… a baptism of fire to say the least! Elevator rationalization and grain transportation would become constants throughout my 27 years at MPE.

Even then, they were not new issues. A letter from George Heffelfinger of National Grain to General Manager Bob Moffat at MPE had suggested a vision of 50 inland terminals strategically located across the Prairies in the late 1960’s. These issues have remained on the table ever since and continue to garner much attention even today.

Some other interesting facts emerge from the ‘71 annual report:

- XCAN, which was owned by the three pools and UGG, began operations in 1970.
- The maximum country elevator tariffs established by the CGC were as follows: $.0375/bushel for wheat and barley and $.06/bushel for rapeseed
- The maximum terminal elevator tariffs: $.04375/bushel for wheat and barley and $.06875/bushel for rapeseed.

The CWB handling allowance for wheat and barley was $.0575/bushel and for oats it was $.045. It was noted that the Pool met with the CWB to request a handling allowance increase of $.0175/bushel. Surprisingly, the request was not granted. Net earnings for the year were $1 million.

The concluding section of that report had some interesting observations and I quote: “In the concluding section of the 1970 Annual Report, the hope was expressed that (...) Manitoba farmers would continue the trend toward a more diversified agriculture – one in which there would be a relative balance between grain, forage and specialized crops.”
It is encouraging to note that this trend has continued, even with the substantial sales of grain during the past crop year. For instance, hogs marketed in Manitoba during the calendar year 1970 amounted to 1,093,000 while the projected number destined for market in 1971 is estimated at 1,400,000 head. A similar trend is noted in the number of beef cattle on farms in Manitoba, which is estimated at 1,000,000 head at the end of 1971 as compared to 900,000 head one year ago.

These figures indicate that the traditional “in and out” pattern of livestock production which has prevailed in this province since the turn of the century appears to now be settling into a more balanced type of agriculture.

New varieties of wheat suitable for production in semi-tropical regions have resulted in a number of developing countries entering the world wheat market. Canada’s share of international wheat sales declined from 23.5 per cent (1964-65) to 18.5 per cent in 1969-70.

With the exception of wheat exports, Canadians have traditionally taken a pessimistic view of international trade opportunities in agricultural products. (...) the world demand for feed grains (including feed wheat) has doubled in the past decade and now totals more than 40 million tons annually. Similarly, vegetable oils, pork and beef demands show good potential.

Western farm organizations, with assistance from the Federal and Provincial Departments of Agriculture and of Trade and Industry, combined with organizations engaged in processing and exporting some of these products, can undoubtedly penetrate a number of potential markets, providing there is a co-ordinated will to do so.”

It is clear from these observations that issues like the need for diversification, value-added processing and the loss of market share in the export trade are not new. Our industry has been grappling with them for a long time.

Some comments from the 1972 annual report are also worth noting and I quote again: “The winter months saw an unusually heavy snowfall in the Rockies, which repeatedly blocked or slowed the western grain movement. The target of 800 cars per day was seldom reached.”
“Commencing in January 1972, a new departure was made from the regular pattern of winter grain movement by using special unit grain trains to carry out direct rail shipments to St. Lawrence ports from Thunder Bay to enable the CWB to make additional export sales in March and April.”

“Another experimental program was launched in the months of June and July in Saskatchewan, in the use of Government owned inland terminals at Moose Jaw and Saskatoon to ship trainloads of feed barley to terminals for export. The barley was moved under Federal Government contract by truck transports from country elevators in a seventy-mile radius of the two terminals. (...) The Federal government assumed all extra costs in this experiment.

Late in the grain year the Government of Canada announced the calling of tenders for 2,000 new hopper grain cars, to be paid for by the Government and managed by the CWB exclusively in the movement of western grain. Your Board had specifically asked the Government of Canada for action of this kind, and in addition has urged that the Government take whatever steps are necessary to assure the kind of rail facilities and services which will provide continued grain movement through the Rockies under adverse conditions such as those experienced this year.”

End of quote. We see from these excerpts that transportation challenges are not new either and that the industry has long been searching for creative solutions.

In 1975-76, the Grain Handling and Transportation Commission, chaired by Justice Hall was touring the Prairies. I assisted local pool committees at a number of locations in preparing their presentations, not very successfully I may add, since the rail lines and elevators at Neelin, Glenora, Snowflake, Purves, Rounthwaite and Wawanesa all disappeared along with many others across the Prairies. The gloomy outlook for farmers in these areas as a result of increased trucking costs, higher road costs, lower tax base, farm consolidation and loss of communities obviously fell on deaf ears. Or perhaps the fate of these facilities was sealed by the fact that they were handling on average 5,000 to 7,000 tonnes and that the lines were low volume and light steel.
In 1982, Dr. Clay Gilson presented his report on western grain transportation to the Honorable Jean-Luc Pépin. The report followed 126 days of debate and negotiations with 16 industry representatives and their legions of advisors, including myself as a representative of Manitoba Pool. The negotiators occupied offices at Portage and Smith in Winnipeg for several months of hot and heavy debate. The term “occupied” had special meaning for us because a group of aboriginals protesting against the Federal Government staked out the same building and we had the benefit of beating war drums to add to the already tense atmosphere of our meetings. The report, of course, led to the creation of the WGTA and the official end to the Crow which was, and in some circles still is, a contentious issue.

I can say that this was an extremely interesting period, with a diverse set of colorful characters at the table. I would not necessarily want to volunteer to repeat such an experience but it did help to shape my career. That report led to the creation of the Western Grain Transportation Act and ultimately to the end of the Crow Rate and direct subsidy payments to the railways.

As a result of the continued consolidation and rationalization in the grain sector and the pressures that were the product thereof, human resource management became a significant challenge. In 1994, the Government of Canada set up a steering committee to undertake a study of the western Canadian grain storage and handling industry. A 100-page report outlining the current state of the industry and some observations about its future was produced. For the record, the collective wisdom of government, labour and industry predicted six years ago that grain production in Western Canada would remain fairly stable at 57 million tonnes through to the 2001 crop. I should acknowledge that I was on the steering committee that authored this report.

Two scenarios for employment in the industry were presented, one attempting to predict the state of the industry in seven to ten years, the other looking even further ahead at possible conditions in 10 to 15 years.
What were the highlights?

- A reduction in country elevators from 1466 at the time of the report to between 400 and 600 in approximately 2005.
- Total employment declining from 8786 to between 8180 and 8780 in the first scenario and falling further to between 7657 and 8257 in the longer term. In short, we foresaw a stable work force with skills to be upgraded to take advantage of new technology in logistics and handling.

And where are we in 2002? My informal survey indicates total employment of approximately 6,000 and about 420 country facilities – a decline of over 1000 facilities and in excess of 2000 fewer employees than projected in the report.

I will not go into the Alberta Wheat Pool / Manitoba Wheat Pool merger, the ultimate formation of Agricore Ltd. and the emergence of new players on the grain industry scene. Although these events have certainly had an impact on where we are today, this is recent history that is still playing itself out. I will say that my move to the CWB in 1998 was a great opportunity and a very challenging position given the changes at the CWB and in the industry.

Now, this “long and winding road” that I have been down, and that I have tried to compress into 10 minutes or so, has taught me a few things that I would like to share with you. Please do not take this to mean that I see myself as the ultimate authority on where the grain industry has been, where it is at and where it has to go. But I hope that what I have said gives you some appreciation for where I am coming from on the comments that I am about to make and the opinions that I hold on the past, present and future of our business.

The Prairie grain industry is a mature industry. By this, I mean that the successful players are well established, that they are extremely efficient and that they deal in large volumes. New entrants face an uphill battle because supply chains are in place, alliances are set, margins are tight and the amount of capital required to get established is huge.
This holds true as much for the farmer as for the grain merchants, the processors and the carriers.

This does not mean that new ways of doing things cannot be found and it does not mean that new companies and new entrepreneurs and new farmers cannot arrive on the scene and make a go of it. There is too much proof to the contrary. I could cite many examples, but let me just mention two: the organic industry and producer car loading facilities. In both cases, people have staked a claim in the grain industry by doing things in new and different ways. The result is much-needed diversity that meets the needs of people in ways that were not happening before.

The strengths of the Prairie grain industry are numerous. I have to begin by talking about the people who work in this industry. From the farmers on up through the chain to elevator staff, grain inspectors, traders, millers and maltsters, railway and marine transport people, they adapt, they compete, they innovate and they are tough. I cannot imagine an industry where negotiators are more hard-nosed than those with whom I have had to deal over the years. Their resiliency brings out the best in you and keeps you on your toes. But it also means that, regardless of what you throw at them, including the summer from Hell that we have just been through, this industry will find a way to maintain its productive capacity. People often ask me why our wheat and durum, for example, are standards for quality the world over. The answer is complex but it boils down to the people, the people who put so much care into growing it, grading it, handling it and selling it.

Next, there are the natural resources with which Western Canada has been blessed – the soil, the climate, and the topography – all of which are well suited to crop production on the scale that is necessary to have a world-class industry. The mix of crops in Western Canada is not a static thing: it changes with prices and cropping practices and available varieties. Certainly, there has been a shift, in recent years, towards more pasture and forage land, especially on marginal soils. And certainly, in areas where special crops like potatoes can be grown, there has been a shift away from more traditional crops. But this
is not something new. In many ways, it is a return to the more diverse type of agriculture that the first settlers practiced, except on a much grander scale. Many of us here have parents and grandparents who grew 10 or 20 acres of potatoes and who milked some cows and raised hogs to supplement income from crops. These sidelines were dropped momentarily in favour of greater specialization, but now diversification is back with a vengeance. This does not spell the end of the grain industry. On the contrary, it augurs well for more sustainable production systems, capable of ensuring the long-term viability of farms and the ongoing productivity of our natural resources. Crops like wheat, barley, oats, flax and canola have a very definite place in these production systems because they are well adapted to Western Canada. They will continue to be produced here in quantities beyond what we can consume.

I also want to talk about the strength in our assets, in the things that, as an industry, we have built. We have modern and efficient distribution and collection systems. We have communications networks that are second to none. We have state-of-the-art storage and processing facilities. Our farmers have built facilities and acquired machinery that allow them to get the job done in just about any kind of weather. We have marketing and grading systems and agencies that cooperate to develop and service new markets the world over. The infrastructure that we have, both physical and intangible, is the envy of the world and, in many respects, has served to offset the geographic disadvantage of being so far from port position.

People, resources and assets … this is a winning combination that the western Canadian grain industry has used to carve out a place for itself on the international stage. It is one that I have no doubt will allow us to continue to assert ourselves and maintain a position of strength in the future. But we should make no mistake. In each of these same areas, we face significant challenges that must be overcome. For, it is one thing to have an industry. It is quite another to have the industry that we want.

As resilient and as innovative as our work force is, it is aging. Many of our active farmers are nothing if not experienced. In the 1996 census, which is the last year for
which this data is available, the average age of a Manitoba farmer was 48 years of age while close to one-third of all farm operators were over the age of 55. This, combined with the fact that average per farm capital in Manitoba is $720,000, means that at some point in time over the next 20 years, over $7 billion in farm assets will have to be transferred from the current generation of farmers to the next in Manitoba alone. Who will fill the large work boots of our retiring generation of farmers? How will they pay their entry dues into a career of farming? Where will the capital come from? Enrollment in our faculties of agriculture is declining. Will this lead to a shortage of “intellectual capital” in agriculture, on farms and in agri-business?

Although farmers are very adept at “making it through a bad year,” the fact remains that, over the long-term, farming has to be profitable enough to not only pay for the original investment that is required to buy into a farm but also to reinvest in it and keep it up. This means not only paying the operating costs, but also servicing the debt and, perhaps most importantly for young families, having something to live on. I am concerned by the shrinking margins that have characterized crop production in Western Canada over the past several years. I am concerned because it impacts on our ability to sustain and renew this industry at the most fundamental level, namely on the farm. Throughout the series of Corporate Accountability Meetings that the CWB held in March of 2002, my fellow directors heard farmers speak passionately of the anguish that they felt at seeing their communities decimated by the exodus of young people, leaving the farm not because they want to but because they have to.

There are no simple solutions to making our farming sector viable and to maintaining the vibrancy and the vitality of our people. The problems are complex and their resolution will challenge us to use all of our resources. But here are a few ideas borne from the experience that I have acquired, both growing up on a farm and working in the industry.

Farmers need to get as much of the consumers’ dollar as they possibly can. They can do so in a number of ways. They can produce food that does not need to be processed and retail it directly to the public. They can grow products for specialty markets.
differentiate their product from everyone else’s and command a premium. They can band together and market as a cartel so that the only way to access their product is by purchasing from them at a price that they have more say in setting. They can establish strategic alliances with processors and retailers or vertically integrate on their own and extract premiums from the marketplace. They can ensure that their suppliers and customers alike have to bid aggressively to do business with them and that competition is used to build a commercial environment at all levels.

The CWB, for which I have worked for the past four years, remains an important element in the toolbox of survival strategies that are available to farmers precisely because it allows them to do many of the things that I have just mentioned. The CWB is a powerful brand that buyers throughout the world recognize as a premium product. It differentiates western Canadian wheat, durum and barley from all of its competitors and does what every marketing expert will tell you to do when you launch a product: it makes our product special. You can charge more for something special and I can assure you, because I see the numbers, that farmers are getting more for their grain because it is sold and backed by the CWB.

The CWB helps not only to capture the benefits of product differentiation but also those that come from selling as a cartel. We have said this repeatedly over the years, but there is a reason why everyone from tractor manufacturers to banks to computer manufacturers to railways wants to eliminate competition from the marketplace. When you are alone, you can charge whatever the market will bear. Now, the CWB is not alone in the international marketplace. But there are markets, like durum and high quality milling wheat where we, and by extension, the farmers of Western Canada, can exercise some influence over what is happening. A case in point is our decision to withdraw from the markets in August of this year. Along with other factors like the drought in Australia, the absence of Prairie wheat from the marketplace did fuel the rally that has given us prices of over $7 per bushel for milling wheat at the farm gate.
The CWB has also been successful, I believe, at ensuring that others compete aggressively for farmers’ business. Tendering, the new car awards program and the various commercial agreements that the CWB has negotiated have all sought to create a more competitive environment for the provision of grain-handling and transportation services. Some may view current circumstances, with 50 percent tendering coinciding with a severely diminished crop, as being so competitive that they will lead inevitably to a loss of the very industry players that farmers need to ensure competition. While all companies will hopefully find a way to cope with today’s challenges, there is no doubt that everyone in the industry, from farmers to grain and rail companies to government, needs to monitor and re-evaluate this situation as it evolves.

I am leaving my position at the CWB at the end of this year so I no longer have to sing the praises of my employer. I make these points, not because I am trying to make converts here but rather because I truly think that the CWB is part of the solution for Western Canada. Selling together, differentiating your product, using your leverage and providing excellent customer service are basic business principles that will never fall out of favour or go out of style. The team that I leave behind at the CWB and indeed the new board of directors that will emerge from this fall’s series of elections will certainly take the organization in new and exciting directions. But there is nothing outdated or hackneyed about what makes the CWB tick: market power is the key to its success.

It is not only up to farmers to make production agriculture an attractive and viable career for the next generation. We must, from a public policy perspective, implement a framework that supports and fosters farmers’ efforts. For example, we must continue to invest in training for young people entering the farming profession. We must find innovative ways to facilitate the transfer of assets from one generation to the next. We must continue to defend our right as Canadians to build and manage our agricultural industry the way we think is best. And we must ensure that our farmers are playing on a level playing field, regardless of who happens to be the opponent.
Leveling the playing field, in the context of agricultural trade, is an issue that will be with us for the foreseeable future. The notion that a day will soon come when all forms of public support for agriculture, in all countries, will be eliminated and that free and open competition will solely determine the production and flow of agricultural commodities is neither realistic nor, quite frankly, desirable. I stated that Canada has a right to manage its agricultural sector as it sees fit. Other countries have the same right. We will never get, nor should we get, all countries to abandon that right. So what we need are clear and fair rules to govern how we trade between sovereign nations. And what we also need is a commitment from governments at all levels to support agriculture in ways that enable us to compete internationally.

Governments can also demonstrate their commitment to the agricultural sector by investing in scientific research. In coming years, we will be facing increasing competition from nations that until recently were either minor exporters or net importers of wheat and barley. In order to remain competitive with these emerging forces, we have to invest in the development of new varieties. These new varieties must have outstanding milling and baking characteristics, improved disease and insect resistance and greater yield potential. They must also fit in with a quality grading system that is the envy of the world. In the short-term, this means respecting kernel visual distinguishability. In the long-term, we need to look at other types of technology but at the moment, we have a system that works and that has enabled us to capture a significant portion of the highest value markets in the world.

There is no doubt in my mind that private research alone will not give us the results that we need to remain competitive. Researchers need public support to tackle the multi-faceted challenges that our industry faces. It gives them the security and the disinterested backing that our industry needs.

We have similar needs for public investment in the renewal of our transportation infrastructure. Our roads, as the municipal officials in attendance today will attest, are taking a beating. Consolidation in the grain industry has lowered system costs from the
elevator to the port but as the CWB and several farm groups have pointed out, there
needs to be an accounting of the costs from the farm to the elevator as well. Roads are
not cheap to build and maintain. Farmers are having to pick up the tab for this through
their property taxes in addition to the capital costs they are facing at home when they
have to reconfigure their yards to accommodate Super-B’s. It would be both fair and
desirable for the burden of keeping our roads in order to be spread out over a wider
population base.

But another way to deal with the wear and tear on our roads and the increased expenses
that farmers are facing is to look at a different model than the efficiency-at-all-costs ideal
that the industry has been aggressively pursuing for the past several years. High
throughput elevators, Super B’s and 100 car spots are wonderful for moving bulk
commodities. But this is not a one-size-fits-all business. We have seen a renewed
interest in producer cars from farmers who are seeking to lower their handling charges
and, I believe, assert their ability to find alternatives to the bulk system. There will be
other such efforts to fill in the void that has been left behind by elevator closings and
branch-line abandonment. I mentioned earlier that product differentiation can be one of
the tools that farmers use to get better returns from the marketplace. Producer cars –
which ultimately bring the producer closer to the buyer – have the potential to facilitate
product differentiation and niche marketing. Perhaps containerization of grain can one
day serve a similar purpose. Our grading system, which is known for its rigorous
standards and its integrity, also gives us a head start on other suppliers who would like to
try their hand at selling highly uniform lots of a very specific commodity. So while the
construction of large concrete facilities have brought a necessary element of efficiency
into the Prairie grain industry, we have to strive to maintain a balance between the need
for efficiency and the flexibility to serve farmers’ needs and smaller markets throughout
the world.

There would be many other features and aspects of our grain industry upon which one
could comment but I have tried to focus on those that are the most relevant.
Now, because I am retiring, I can allow myself to dream a little. Therefore, I would like to share with you a vision for the Prairie grain industry.

In ten years, where should we be?

We should have a robust industry, built on the foundation of a prosperous farming sector, where young people have good reason to pursue the commitment of their parents and grandparents to producing good, wholesome and affordable food. Farmers should be empowered to take command of their financial well being by a system that allows them to come together to exercise clout in the marketplace, to differentiate their production and to get a significant portion of the consumer’s dollar. We should have substantial public support for agriculture in meaningful ways and in sectors like research and infrastructure renewal where the private sector cannot be expected to best serve farmers’ interests. We should have a trade environment where the Prairies are able to fully benefit from the natural advantages that our soils, climate and entrepreneurial spirit confer upon Western Canada. We should be flexible and adaptable so that there is room for the established farmer with 10,000 acres and room for the farmer who is starting out or winding down with three-quarter section. And, perhaps most importantly, we should speak with one clear voice on agricultural issues so that our interests and those of our children are not lost in the horrible din of in-fighting and bickering that far too often characterize our discussions, both with ourselves and with those whose decisions impact our livelihood.

I am proud of my roots in agriculture and consider it a privilege to have worked with farmers throughout my career, even though a few may have tested my diplomatic skills at times. I am especially thankful for the support of co-workers and colleagues and for the many friends that I have made across Canada and around the world.

We live in a volatile industry. Changes can be painfully slow or brutally quick. It has been a great ride for me during the past 32 years and I will be very interested to see the changes that take place after January 1, 2003.
Thank you very much again for the invitation to speak to you today. It has been an honor for me to be selected as your luncheon speaker. I wish you all the best for the rest of the Seventh Annual Fields on Wheels Conference.

David Gardiner (Afternoon Chairperson)  
President  
WESTAC  
As co-chair of the 7th Fields on Wheels Conference, it is my pleasant assignment to thank you for sharing with us 32 years of value in terms of your understanding of the past, present and future of the industry. On behalf of all of us, thank you very much for your presentation here and we wish you well in your retirement.

Session 3:  
EMERGING TRANSPORTATION AND LOGISTICS REQUIREMENTS  

David Gardiner (Afternoon Chairperson)  
President  
WESTAC  
The Western Transportation Advisory Council, WESTAC, is very pleased to continue our collaboration with Barry Prentice and the Transport Institute on establishing the theme and the program content for the 7th Fields on Wheels Conference.

I am struck by two aspects of this conference. One is the number of participants and their diversity in terms of both organizations and experience. Second, I have detected some conspicuous absences. There are certain predominant organizations in the grain trade that could not be with us. My message to them is, the times are changing and the more we can learn about it, the better position we will be in to take care of it. I have been told that the illusive Transport Canada blueprint might be ready by Christmas of 2000. The Canada Marine Act is under review, so it will reflect changes to the Canada Transportation Act. There are a number of upcoming events regarding infrastructure and the transportation system, which are partly in reaction to the changing demands put on the system. In this context, it is important to understand the impact of containerization, particularly in the agri-food business.
The next session will examine emerging transportation and logistics requirements with respect to containerization of bulk commodities. Our moderator for the next session is Brent VanKoughnet who is the owner-manager of Agri-Risk Inc., but is here in his capacity as agent for the Port of Vancouver Authority in Manitoba and in Saskatchewan.

Brent VanKoughnet (Moderator)
President
WESTAC

Thank you David. Any time we talk about change, there are the believers, the non-believers, and everyone else who is a bit confused. We have three gentlemen here who can help sort through some of the confusion. It is easy to talk in theoretical terms about how an industry goes through changes, but the three speakers we will hear from have either participated in the significant growth of container terminals in Vancouver or have been in Saskatchewan working toward containerized shipping and providing the customer service and the infrastructure to make that work. I am pleased to chair a session that involves the practitioners of this industry, and to hear their views on how their organizations work, what their experiences have been, and how we may work through the obstacles and challenges to come to make containerization of grain a reality.

Without any further delay I would like to introduce our first speaker, Mr. Barrie Sime. Recently, he has been appointed into the position of Vice President Operations with overall operation responsibilities for TSI’s two container terminals in Deltaport and Vanterm. Help me welcome Mr. Sime.

Barrie Sime
Vice President, Operations
Terminal Systems Inc.

I appreciate the opportunity to speak to you today about our role in the transportation chain. I will tell you about the significant increases in container traffic through the Port of Vancouver over the last few years. I will also discuss some of the innovations and technology that we have incorporated to enhance our productivity, cost effectiveness and our ability to handle traffic increases as well as current and future challenges.
I would like to tell you about our company. Terminal Systems Inc. (TSI), formerly known as Empire Stevadoring, has operated on the coast of British Columbia for over 100 years. We were nominated as operators of the first container terminal in the Port of Vancouver in 1970. Container volumes in the port increased from 300,000 TEUs in 1990 to 450,000 TEUs in 1992, which is a 50% growth. An extensive market study indicated that container throughput at the Port would exceed 750,000 TEUs by the year 2000 and more than 1.1 million TEUs by the year 2010. It was also determined that the two existing facilities, Vanterm (Figure 1 & left) and Centerm, would be out of capacity at that 600,000 TEU level. Based on that forecast, a partnership involving the Vancouver Port Authority, TSI, Canadian National and Canadian Pacific Railway was formed and Deltaport (Figure 1 & right) was developed and officially opened in June 1997. The 2010 projection for 1.1 million TEUs arrived ten years early. The large size of today’s vessels helped accelerate that growth. The number of foreign containers has grown steadily from 724,154 TEUs in 1997 to an estimated 1,375,000 in 2002.

Figure 1: Vanterm and Deltaport

The next thing I would like to discuss is the role of the marine terminal. We discharge and load vessels. We sort import cargo in the yard for delivery to truck and rail. We sort export cargo in the main yard by vessel, discharge port, weight and booking number. Booking number is a big issue for us on the west coast with the type of export commodities we are shipping. It is not uncommon to get one booking of wood pulp or lumber consisting of 70 or 80 containers, so there is a lot of logic involved in trying to keep that cargo stored together. We also set the temperatures on reefer containers as they
arrive at the terminal. The marine terminal provides electrical power for refrigerated containers and checks their temperatures twice daily. We sort and store empty containers by line, size, type and capacity. We wash and steam clean containers. We brace and secure dimensional cargo on flat racks. We provide minor repairs to containers and we gather dangerous cargo documentation and remove and affix dangerous cargo labels to containers. We provide steamship lines, truckers and railways with daily updates as to container status; cargo available for loading to/from vessel, rail or truck; and we provide the lines with empty inventories.

I spoke earlier of the significant volume increases. I should also mention the four key factors that determine a marine terminal’s capacity. The first one is the berth window, which is our ability at a container terminal to handle the ships on a regular basis. Typically the ships are weekly callers. The terminal pro formas indicate the steamship service lines that are currently calling for each berth. Currently, most vessels that are calling at the terminals require three to five shifts. Because of the lack of available shifts at Deltaport, the ability to grow new business is somewhat limited. Recently, the Vancouver Port Authority made some changes to the berthing guidelines involving the terminal operators, VCR, marine and ourselves. The changes moved us away from the first come, first serve scenario that has been in use for years. Now, we have protected the berth windows for various carriers, so as long as they arrive on time, we guarantee them that we will have a berth for them.

The second component of marine terminal capacity is storage capacity. This is our ability to sort import/export cargo, separate it by vessel, various discharge ports, and booking numbers. The empties have to be separated by size, type, and line.

The third component is the infrastructure, which involves our ability to process trucks through the gate. We introduced a reservation system in conjunction with the terminals a couple of years ago, and that has certainly helped to alleviate the situation. We were trying to eliminate the peaks and valleys and get a more consistent flow through the
terminals. Currently our gates are open only from 7:00 a.m. until 4:30 p.m. Monday to Friday. This capacity could be expanded simply by opening longer hours.

**Figure 2: Gate Capacity**

The fourth and one of the most critical components right now is the intermodal yard capacity. It is dictated by our ability to load and unload trains, the railroad’s ability to move trains in and out, and the support yard infrastructure on the causeway at Robert’s Bank. At this time, we are experiencing growing pains. The trains are getting longer and volumes are increasing. Currently, 70% of our total import volume is moved by rail and future growth will be toward increased the rail traffic. Last month at the Deltaport terminal we did 29,000 rail lifts, which can be equated to almost a million feet (192 miles) of rail cars per month being processed in and out of that terminal.

**Figure 3: Intermodal Yard Capacity**

We are meeting with the Port regarding expansion phases at Vanterm and Deltaport. At Vanterm we would like to remove the shed and the administration building and extend the rail trackage. By doing this, we hope to gain the capacity to handle approximately
another 40,000 to 50,000 throughputs. Within two years of Deltaport’s opening, it was obvious that our limiting growth factor would be storage capacity and rail capacity. There was an additional piece of land adjacent to Deltaport called Pod 3. The first phase consisted of 25 of the 65 acres. Phase 2 involved the completion of the terminal and added approximately 35 acres of storage ability, another gate system, and expanded our rail trackage from 14,000 to 28,000 feet. Typically berth construction is the most expensive element to build and therefore should be the determining factor. At Deltaport we are currently looking at putting in a third berth and some backup land to increase our throughputs by an additional 260,000 lifts. However, these plans take time to become a reality. In addition to design, construction and cost issues, there are also environmental concerns that must be addressed.

The challenge for us as terminal operators is to become more productive and make better use of our existing facilities until expansion projects have been developed. We see one of the big challenges as trying to improve the crane productivity of the berth. A 10% increase in crane production would create a berth window to handle another 45,000 containers. That may not sound that significant, but remember I mentioned Vanterm expansion was going to add 40,000 to 50,000 throughputs at a cost of about $13 million. Two to three more moves per hour out of our crane productivity would certainly increase our opportunities to take on more business.

Dwell times are also a challenge. Dwell time for full containers is 3.7 days, and for empty containers it is 13.1 days. The laden dwell times have dropped from previous levels largely because two years ago the local traffic earliest receiving date was reduced from 10 to 5 working days. It was not very popular at the time, but I think everyone would agree now that it was the best solution to maximize the use of the existing facilities. Local import dwell time is currently 4.89 days and free time is five days. Currently, rail import dwell time is 1.0 day, rail export is 5.14 days, truck import is 3.61 days, and truck export is 5.14 days. It is interesting that local exports are coming from very close distances to the terminal and the rail export is typically coming from eastern Canada and the prairies, yet the dwell time is very similar.
Another challenge is triangulation. For every 100 export containers we receive at our gates, we deliver 74 empties. On the import side it is not very different; for every 100 import containers that leave the terminal, 63 empties are returned. Our challenge is to find a coordination system to arrange for direct delivery of containers between an importer’s warehouse (where the container is unloaded) and an exporter’s warehouse or at least to an off dock facility (where the container is loaded), so they are not returned back to the terminal. Deltaport averages 1,100 transactions per day, of which 41% are empty containers. We believe a coordinated approach would allow a reduction of truck traffic on the roads, reduced line-ups at the marine terminals, reduced trucking costs for the shippers, and increased storage capacity on terminals for loads. We consistently have more empties on the terminal than import and export containers combined.

Another challenge we face is the cost of marine terminal development. The cost per TEU put through the facility is continuing to rise dramatically. In the Canadian system, the Port Authority must be self-sufficient and raise the capital alone to develop these projects. In the US, ports have the ability to assess property taxes on a residence to pay for development. Last year, Seattle collected $35 million from the local population, and they informed us that they have the ability to more than double that to $75 million. Meanwhile, Vancouver Port and terminal tenants paid approximately $40 million in grants and grants in lieu of taxes.

The high cost for on-dock rail operation is also a challenge for us. We have experienced tremendous growth, especially in intermodal rail traffic. We have determined that our cost to handle an intermodal box is approximately three times that of handling a container through the gate. Containers that are delivered by truck are brought by teamster owner-operators who stay in their truck. They deliver the container right to the stack in the yard where it will be off-loaded by one of the ILW operators. In the rail operation, all of the people involved are on our payroll. Typically, a decking gang on an export train is comprised of 16 people. This is a significant issue for us and we have to find ways to deal with it. Increasing productivity is one way of dealing with this issue, but we do not
believe it will be the total solution. Increasing capacity is not simply a function of adding more infrastructure, labor and equipment; technology also plays an important role. For example, to achieve productivity gains we introduced cranes that can do two TEU containers at a time (Figure 4).

We do approximately 28% of lifts for one of our larger customers at Deltaport as double-lifts. This means significantly higher efficiency for us and for our customer. The multi-trailer trains shown in Figure 5 were also designed for Deltaport. The distance from the vessel to the rail yard was too far; so these trains haul three 40-foot containers, three 45-foot containers, or six 20-foot containers at once. They are strictly for the rail operation. Our three rail-mounted gantries are shown in Figure 6. Two more are being constructed as we speak and should be operating later this month. The advantage of these machines is that they can span all of the tracks and can access any one of them. If you are loading for multiple destinations, you can start building trains for various destinations at the same time.

I mentioned earlier that we have to monitor reefer temperatures twice a day. This was a fairly big expense. It was approximately $1 million to put in reefer staging so the ILW checkers can access the containers, which are stacked up to four high. Now they can access the containers using a stairway rather than ladders (someone had to hold the ladders for the ILW checkers).

Figure 4: Double-Lift Cranes  
Figure 5: Multi-Trailer Units
On the rail side, we put in AEI readers at the lead track into Deltaport just past the gate to read these electronic tags on the car. When the railways load the cars in eastern Canada, they advise us ahead of time which containers are on which cars. Also tied into the AEI reader are wheel sensors that tell the system which track the train is being pushed onto. We have four tracks at Deltaport, and will have eight tracks available shortly. We developed a trailer pooling system in-house. In most marine terminals, labor is hired to work for one crane on a ship. We were able to convince the union (with some guarantees on our behalf that we would not diminish the size of the workforce) to allow us to dispatch our tractor trailers in a pool. In other words, if we have three cranes working on a ship, a computer system will dispatch the 18 tractor trailers to whatever operation needs them most. All equipment that handles containers on the terminal is equipped with touch-screens. For example, RTG screens show all the container moves, with “from” indicating actual trucks coming in off the street and “to” indicating the location in the yard where containers are to be placed. This is all done without the intervention of an ILW checker telling the operator what to do with each container; the operator receives that information through the computer system. The PDS system is a series of encoders on our yard cranes that gives us a three-dimensional position of that machine. We know the exact position of containers because we know when the operator physically unloads the container in a stack and unlocks the twist locks.
Information and communication are also an important part of our business. We have been trading information with our customers using Electronic Data Interchange (EDI) since 1992. We currently exchange data with 16 steamship lines, 2 railways, Canada Customs and multiple terminals. As far as in-house communication is concerned, we tried to move away from the standard voice communication and went more to radio data communication when we opened Deltaport. A computer terminal is mounted in all of the pick-up trucks for our checkers and our foremen. It allows them to access various information, such as a list of all the equipment that is working in the yard and up-to-date information on how many moves each piece of equipment has done. The system also creates a log that creates day-end reports. This information is also available to the management team. This information has proved useful to us in making changes in our system.

I hope I have given you some insight into how a marine terminal functions and how technology can assist us in delivering a better product. Although marine terminals vary somewhat from the liner owner terminals in the US west coast to the public user facilities in Vancouver, our roles are similar. We are not warehouses; we are an integral part of the supply pipeline, loading and unloading vessels and expediting those products by truck and by rail throughout Canada and the world. Thank you for your time.

Brent VanKoughnet (Moderator)
President
WESTAC

Thank you Barrie. It becomes obvious that those of us in the traditional agricultural area are not alone in the cost and intelligence that it takes to stay current, and in the investment that is needed to keep the industry growing.

Richard Schultz
Manager
Yanke Group

The Yanke Group is a privately owned transportation company based in Saskatoon that has five operating divisions: the expedited division, which deals almost exclusively in courier loads and other just-in-time freight, the international van division, the intermodal
division, the logistics division, and the group that I represent, Container Port. We have an office in Manitoba, the Container Port of Manitoba, and our head office in Saskatoon, the Container Port of Saskatchewan. We are a full-service freight forwarder. This entails full container load, less than container load, air cargo, project cargo, and ocean rate negotiations with steamship lines. As well, we do a lot of consulting work with different groups in terms of determining the particulars once a contract is in place, or in terms of locating empty containers.

In terms of changing agricultural trends, I will quickly review what other speakers have said. We have seen movement away from traditional crops and toward pulses, forages, oilseeds, and other specialty crops. We expect these trends to continue. As a transportation provider, this means that we have to remain flexible and become more flexible than our competition in terms of our commitment to Saskatchewan, Manitoba, and the agricultural industry as a whole. We found that we have to position ourselves in an interesting way, not only with the producers but also with other forwarders in the business and with the carriers themselves, the steamship lines and ports. Steamship lines have very little representation on the prairies, so we try to position ourselves as being there to assist them, to let them know what some of the issues are on the prairies. A lot of the steamships move containers either through a domestic repositioning program or through speculation that the bookings are actually going to be there. However, if those bookings are not there, these costs have to be paid. The repositioning costs end up in the rate because the export rates do not support moving the equipment around.

To keep on pace with the shift to pulse crops, the need for identity preservation, and GMOs, it is necessary to containerize shipments. If it were based solely on an economic model, all grain shipments would be done in bulk form. However, there are smaller producers that need three or four containers; they do not have the volume to get involved in bulk shipping. They do not have the leverage of the bigger players in the industry in terms of getting access to the hopper car supply, or even the container supply. I have clients that will go through 50 containers in a week. I also have “mom and pop” clients
who are there to make sure the doors are sealed properly and for them it is a real accomplishment to get that one container off.

We are seeing new businesses in western Canada in terms of organic farms and a lot of new seed processing plants, but the volumes are often low. We have a very good cross section of new opportunities developing in Saskatchewan and Manitoba, but each new development puts a new demand onto the transportation system in terms of the kinds of containers that are needed (e.g., food grade containers versus containers that could be filled with liner bags). Along with the new trends in agriculture, there will a lot of demands on the transportation system in terms of how to get the products to market. It is frustrating to see a single 20-foot container going out on a deck from Saskatoon 100 or more miles. To address these issues, we need innovative solutions in terms of that equipment we invest in. Yanke Group has invested in 200 53-foot intermodal containers that will take some of the product to port rather than to the traditional source loading of containers.

Many products that move out of Saskatchewan have associated drayage costs. With the changes in agriculture, our customers need rate requests from us a lot quicker and often they must be much more detailed. We are getting asked a lot more questions about international finance and letters of credit. Cost rates are getting a lot more competitive than they have been in the past, and margins are thin. As an employer, it is difficult to find people in Saskatchewan who have marine experience. So, we constantly have to be educating our people in how to deal with a wide variety of commodities and ever-changing offshore markets. This is the value that we bring to our customers; we are able to advise people who do not know how a port works of the finer points in terms or what they need to do with their product to get it into an offshore location.

From a transportation provider standpoint, to move ourselves into this next phase of the agricultural market we have tried to stay up to date with technology. We have global tracking in all of our trucks and are installing transponders in trailers. We have had
negotiations with companies that are involved with container security, container details, etc., like International Road Dynamics in Saskatoon.

Changing export markets and certain equipment deficits or surpluses around the world impact us in terms of our ability to ship a product to market. For example, India might be a very attractive market to a steamship line one year because they have an equipment deficit and need to move equipment into that region. But, the next year that steamship line might not be interested in India and they will reduce their shipping capacity into that region. As a result, each year there are different ports which can be difficult to move traffic into. In Saskatchewan, we have a few steamship lines that are very dedicated to bringing equipment in for the agriculture industry and for commodities. Other steamship lines take the approach that even if they are uninvolved, the product will come to them in Vancouver or Montreal. Part of my job is to try to promote Saskatchewan and Manitoba, to inform the industry that business exists between Calgary and Thunder Bay.

Super Bs often go into specialty facilities to bag product and load containers rather than doing so at terminals in Vancouver. It would be more efficient if Super Bs pulled into terminals that would then bag product and load it into containers. Some of these terminals could be in Saskatoon or throughout the province. These facilities could serve the need of the steamship lines to store empties. Currently, the capacity to store empties if the bookings are in Saskatchewan is very limited, especially in terms of rail terminals. We need somewhere to clean and repair containers, so an off site facility like this might be able to serve a lot of different needs.

To sum up, we have to look at the solutions rather than the problems. When the agricultural situation in Saskatchewan improves, problems that are lying beneath the surface that have not been addressed will again become apparent – mostly the supply and distribution of empty marine containers. An area that requires improvement is communication; we need better communication between the producers, and between all service providers in the supply chain. Competitiveness requires that rail lines, steamship
lines, forwarders, and producers all work in partnership. This is necessary if small producers are to compete on a worldwide market.

**Brent VanKoughnet (Moderator)**
**President**
**WESTAC**

Rob Oliphant has been involved in designing and selling packaging solutions for many industries including tote bags and ocean container liner bags. He works with the grain industry to find some of the innovative solutions that we may need as this industry emerges.

**Rob Oliphant**
**Packaging Consultant**
**Syn-Tex Bag**

I am here today to speak on current methods of loading and unloading of bulk commodities in containers. First, I will tell you about Syn-Tex Company, then about our container liner systems, product retention methods and container loading and unloading.

Syn-Tex Bag has been around for about 24 years. We are based out of Winnipeg, and our head office is located at 211 Hutchings Street in Inkster Industrial Park. We also have a manufacturing facility in Cordova, Mexico. We have joined with a company in Shandong, China that will help us manufacture supplies and products. One of Syn-Tex’s claims to fame in the Manitoba market was the Flood of the Century in 1997. We joined forces with Kleysen Transport (another Winnipeg-based company). We manufactured bags, and Kleysen filled them and put them into place to build part of the “Z” dike just outside of Winnipeg near Brunkild.

Figure 1 presents some of the products that we manufacture. The first two products on the left are dunnage bags for seething up loads in transport. For example, Figure 1 shows rolls of newsprint that are being shipped to a newspaper. The bag fills up the voids between rolls so that the product is not damaged during transport. Our bulk bags are for packaging and transporting dry flowable materials. The “Q” bag is the Cadillac of regular tote bags. It is a bag that holds its square better.
Figure 1: Syn-Tex bags

![Dunnage Bags, Bulk Bag, “Q” Bag]

Figure 2 compares containers filled with regular tote bags versus “Q” bags. Regular tote bags take on a cylinder shape and leave voids that are not filled with product. The “Q” bag works acts like a belt, it holds the bag square so that more product can be filled into a container.

Figure 2: Containers Filled With Tote Bags vs. “Q” Bags

Next, I will discuss container liners, container liner systems and retention methods. One of the major problems with container interiors is that there is very little consistency as far as the location lashing points or D rings. These are used to hook retainer straps to solidify a load. This lack of consistency makes it difficult to manufacture bags that need to be tied, hooked, or latched.

We also manufacture single trip bags that are made from polyethylene and a hard, thick cardboard bulkhead. The advantage to these bags is that they are low cost to the shippers and are extremely lightweight. Some of the disadvantages to these bags are the added cost of disposal of the bags at the consignee’s end and the bags usually have to be blown up with air before product can be placed inside. This means that there would have to be
power at the site so the bags could be blown up using a leaf blower or Shop Vac.

Another disadvantage of this type of packaging is that some European countries charge environmental levies for imported packaging.

Another type of packaging we produce consists of a disposable or reusable liner with a wooden bulkhead inside the container. The main disadvantage to this is that the consignee has to break down the bulkhead, and either dispose of the lumber or sell it if they can find a market.

Another system we produce uses a reusable or disposable liner with steel rods in the doorway slats to retain the bags. This method requires that the liner either be pinned to the lash points or blown up with air. The advantage to this system is that it is very easy and fast to set up. Another advantage is that the steel bars are reusable. However, in a lot of cases the shipper is unable to get the bars back, or the consignee must collect a lot of bars before shipping them back. In cases where the bag cannot be latched to the container, it would have to blown up as well.

One difficulty that my customers sometimes have is getting reusable bags back. For example, one of my customers that had purchased air bags had a closed loop where the bags were going to their own locations. He called me and said that he was having difficulty getting the bags back. So I drove out to the consignee, who is located in cottage country, and on my way I noticed a group of kids playing on an airbag out on the water. In cases where the liner is disposable, disposal is an issue for the consignee.

Next, I will discuss container bulk load and unload methods. Auger systems are simple, mobile and inexpensive. However, they are extremely slow. While this may be viable for a farm with organic grains, etc., faster methods would definitely be needed for larger volumes. Pneumatic material handling units can blow and suck product into and out of containers very quickly. However, the necessary equipment must be located on site at both ends. An Australian operation is shown in Figure 3. It has overhead hopper bins. Trucks back up onto the cement pad (shown at the bottom of the figure), and the product
is conveyed into the container. This facility can fill four containers per hour, which is quite efficient. Gravity feed systems are mainly used for domestic and inter-terminal grain transfer, but they could also be used for overseas shipments. Inland terminals have the advantage that they provide blending, cleaning, and pest and disease control. A tilt chassis facilitates product discharge out of the container, even with a liner. The problem with tilt equipment is it requires sufficient volume at a port to justify purchase by a carrier.

Figure 3: Australian Containerized Grain Loading Facility

The ultimate container liner has to be lightweight, have a flexible bulk head, be simple to install and uninstall, and be cost-effective. It has to prevent bag slippage; looking at the tilt chassis, it is easy to see why this is important. The liner must be reusable, robust, and easy to pack for return. Finally, it must be possible to use the ultimate liner in all containers, regardless of latching point location. Syn-Tex is has been working toward a container liner that will exceed all these criteria for over two years. I hope I have given you some food for thought regarding the issues and solutions for material handling of containerized grain. If there is a customer who has unique needs and requires innovative solutions, Syn-Tex will find a cost effective way to do so. Thank you.

Questions
Q: Barrie, if there is a single factor that is limiting our ability to achieve another one to three moves per hour at the dock, what might that be and how much would it cost to get it?
A: (Barrie Sime) I do not think it has anything to do with technology. It is a matter of encouraging the work force to do a little more. I can only speak for Vancouver but I know it is similar in other places; we have a history of having a transient workforce. We hire labor from a hiring hall when we need it and we have a complement of regular workforce. It is hard to get the buy in from transient workers. Typically our regular workforce produces quite well but the transient labor from the hall tends to be lower productivity. We are working on these issues and trying to find incentives that will benefit both sides.

Q: Richard, the Port of Brisbon recently had a BAB combos approved for road use. Is there something there that is achievable for Saskatchewan?

A: (Richard Schultz) An off-site container terminal would be able to complete these functions. The commodities would go into the terminal and get bagged and stuffed into marine containers. This will take a lot of coordination and some investment from trucking companies in terms of being able to service that need. The industry needs to look toward solutions outside of just trying to beat the price game. We should get paid for bringing value to the product in terms of charging a higher export price for our commodities to the steamship lines. This would take a lot of money, and coordination from government and the private sector, but I believe it is possible.

Q: Rob, we heard discussion about the need for tip chassis at the receiver end. Do you see that as mandatory? How far can we go with lower cost alternatives at the receiving end?

A: (Rob Oliphant) That is not my area of expertise, but I know there are some portable tilt chassis that can be retrofitted to a regular system available.
Brent VanKoughnet (Moderator)  
President  
WESTAC  
Needless to say, getting the job done in this business is complicated. There are some obstacles to be overcome before agriculture can substantially increase movement via containers. Each of these gentlemen has given their description of the challenges they have overcome to date and those that they still face. Fortunately, they are bright and energetic and I am glad they are working on our behalf. Please join me in thanking the three speakers.

Session 4:  
FEASIBILITY OF PRAIRIE GRAIN CONTAINER PORTS

Bill Mohr (Moderator)  
Account Manager, Specialty Crops North America  
Canadian Pacific Railway Company  
Throughout today’s sessions, presenters have spoken about the logistical chain of moving western Canadian grains to export positions and beyond. We have worked through important components of the chain, such as intermodal terminals, steamships, railways and grain companies. The charge of our group is to examine the feasibility of prairie grain container ports.

David Spearin  
President  
Logistics Marketing Services  
It is a great pleasure to be in Manitoba. I would like to thank Sask Agrivision, CP Rail, the Saskatchewan Container Port and the Province of Saskatchewan for commissioning this research project.

The objective of the Saskatchewan Container Pilot Project is to test whether an improved communication and logistics system among all players (customer back to the producer) can be developed and coordinated through an accurate information management system.
The benefits of increasing container demand and market opportunities will demonstrate Saskatchewan’s ability to get the right product at the right place at the right time with Identity Preserved status and highest integrity of value to the producer.

The first issue for the pilot project involves looking at how we can come up with better forecasting measurement. This is critical in any type of supply chain or logistic approach forecast. How can we increase our utilization of a container and minimize the empty return days? The first step is to determine whether anyone has measured this in the past, so that benchmarks of current days can be developed. As well, we have to develop performance measures. How can we determine the costs of the services? And how can we get any activities that are non-value-added out of the system? Issues involving exports of ag container products include access to markets, timing of crops, and choosing between competing container lines. Booking systems, allocation of containers to shippers, lack of forecasts, tracing, and bills of lading are also issues. There seems to be a lot of mistrust in the system, with people double booking, triple booking, hiding containers, etc.

There are two key points that I would like to make with regard to supply chain management. First, goods are pulled through the system by their flow from raw material into secondary and tertiary manufacturing, to the distributor, to the retailer, and finally to the consumer. As this flow of goods progresses, value-added activity takes place. Second, the flow of information and funds takes place in the opposite direction: from consumer to retailer, to distributor, to the processor/manufacturer, and finally to the producer. The flow of information involves giving accurate forecasts. The flow of funds takes this direction because once the products are delivered, then the bill can be sent.

The motivation behind the container pilot project was primarily that there are a lot of containers that are emptied in the mid-west (i.e., Chicago) marketplace, and CP Rail transports these containers back to the Port of Vancouver; many of these containers are empty as they pass through Saskatchewan. It was estimated that approximately 16,000 containers per year are going through the province via CP Rail empty. We are not sure,
but perhaps CN might send another 12,000 to 20,000 empty containers through
Saskatchewan. In total, approximately 30,000 to 40,000 containers that have gone to the
United States are being returned empty back to Vancouver. The emphasis of our project
was to determine how we can provide enough lead time to all the participants in the
supply chain, such as the railway, container line, freight forwarders, etc., so that some of
those empty containers can be circulated in the province with minimum delay. Is there
enough demand to warrant this? If so, how many containers are in demand?

We carried out a microscopic analysis of all the pulse crops, identity preservation grains,
and organic grains in terms of where they are shipped. We looked at refrigerated demand
for meat products, with a focus on pork and beef. We looked at machinery shipments out
of Saskatchewan. There are quite a few farm ag implement manufacturers in
Saskatchewan that are shipping products to Australia, for example. When we met with
the container lines and railways, we were told that there is a good supply of 40-foot
equipment but that the 20-foot equipment was in short supply. Over the last five years,
the west coast container demand has grown twice as fast as the demand on the east coast.
Another issue that came out in our discussions was that there was a lack of
communications and trust between all parties. The pilot was established to increase
knowledge between the participants.

I attended a Canadian Transportation Research Forum conference in Vancouver. While I
was there, I met with container lines to discuss the rapid growth of markets for the pulse
industry. When I discussed our pilot project with the container lines, I told them that we
need a win-win supply chain approach. We need to establish standards data and service
types. We need to establish benchmark performance measures. What is the logistic
operation from the processor to rail, to the terminal, to the container line? What is the
forecasting demand? Do we need a 30 day forecast or 60 day forecast? How can we
forecast by region of the world? How can we provide a report card back to participants?
How can we establish a link for so that all participants know who is participating, and
who is doing what to who? We established a web portal site on the Internet that lists the
container lines, what services they are offering, and into what markets. This was done in order to enhance communication and knowledge.

An impediment to examining the supply chain performance process is that some of the parties are not set up to measure what they are doing. How do we get that empty container positioned into Saskatchewan? How can we get it from a container port to the Saskatchewan farm to be loaded, then released back to Saskatoon and sent back to the port? If a pulse processor makes a sale on one day, he might spend two or three days selecting the carrier. By day five, he has selected a carrier and by day six he is booking a container. If container repositioning is occurring into central Canada, CP Rail may say that the container will be 15 to 28 days arriving. How can we get it there in seven days instead?

We reviewed both eastbound and westbound container demand. For example, lentils were a big mover at 4,500 TEUs through Vancouver. It was estimated at about 1,500 containers being source-loaded out of Saskatchewan. There were 11,500 TEUs of peas going through the port of Vancouver that same year, which is approximately 4,000 to 5,000 source-loaded containers. The difference (about 10,000 TEUs) is the containers that are stuffed at the port. We did the same calculations for the east coast.

Then, we looked at the pulse industry as a whole because pulse shippers have more than one shipping option. Pulse crops can go by rail in a hopper car and then be bagged and loaded into a container at the port. Alternatively, they can go in a boxcar in bags and then transload the boxcar into containers. Other options are for the crop to go by truck direct, intermodally in domestic containers by CN or CP, or in marine container. Figure 1 shows the number of TEUs demanded per month for pulse crop exports as compared to boxcar, hopper cars and vans. The peak in demand usually occurs in the fall months following harvest.
Figure 1: Pulse Crop Exports by Mode

Figure 2 presents a container report card, which shows the container demand by month. It illustrates the TEUs shipped, the empty movement of containers, and the shortfall. The issue then becomes, how can we capture some of those empty containers and move them out of Saskatchewan full?

Figure 2: Container Report Card, TEU Flow to Ports

As an example of the diversity of pulse exports, in the 1998/99 crop season, a lot of peas went into Europe and India. Lentils were sent primarily to South America, the Mid-East, Algeria, Egypt, and Turkey. Other crops that are of note include mustard, canary, and chickpeas. These markets change each year, which in turn changes the demand for equipment and containers. For example, over the last 4 years lentil exports to Turkey, northern Africa, and Columbia have grown. In terms of monthly export demand, Lentil demand peaks in the fall months following the harvest in Italy, Turkey, France and Spain.
We analyzed market demand for different product lines in this manner for different locations around the world.

In terms of the container lines, we met with Mitsui, Senator, Canada Maritime, Greer Shipping, Cosco, NYC, and Evergreen. We also interviewed freight forwarders. We used this information to look at key markets to determine how many container lines are flowing between them. Part of the pilot project was to educate new pulse processors on exporting rather than trading pulses at Vancouver. We emphasized how to add more value and get more net back. In order to educate “dry-landers,” we have to teach them about containers, water transportation, cartels, and conferences. We came up with a series of maps that indicate the container lines that service ports in different areas of the world, and the number of service days to each port for each container line. Next, we compiled all of the information to determine total service days from producer to destination. We also highlighted area of Saskatchewan by concentration of crop growth.

As I mentioned previously, we created a web portal site as an information exchange to increase the knowledge of the container lines, pulse players, government, and transportation carriers. We have information on the pulse industry in Saskatchewan, and a database of contact names of industry players. There is also contact information for container lines, and information regarding which container lines serve each market. The site also has maps of pulse exports around the world and information on the production of pulses and the changing growth of this industry. There is a glossary of transportation terms and a review of the pilot project on the web site. The web site is accessible via Saskatchewan Agrivision Corporation Inc.’s site, which is http://www.agrivision.sk.ca/. The “documents and projects” section contains a link to the Container Pilot Project web portal.

The project will be beneficial to participants in a variety of ways. We are trying to increase predictability, which will be beneficial to all parties. We hope to reduce in-transit time in Saskatchewan and lessen total transit time. We are trying to increase the utilization of containers and increase sales opportunities by better market forecasting and
anticipating change. We want to increase cash flow and strengthen the supply chain principles to all participants.

There are several elements to examine when looking at where to locate future terminals in Saskatchewan. We completed various network optimization models that examines road networks, (e.g., can 40 versus 20 tonnes be hauled on a road) to production by Rural Municipality. It compares different routes to determine the one with the least running miles. We examined different crops (e.g., chick peas and lentils), and looked at which rural municipalities (RMs) where production is concentrated. What are barriers for developing new sites? When shipping export containers, rail car type must be determined. There are over 20 different rail cars that are used for containers, as the each port terminal has a different rail configuration not all terminals can accept any car. So, it is not as simple one might think; it is not a matter of pick up the box, put it on the train and go. Forecasting, where exports are expected is critical in the exercise; plus which container line is used and which terminal; are also very important factors in determining the type of rail car required.

Next, I will discuss possible future scenarios. If container rates were less than bulk, shippers would have to reexamine their practices. If identity preserved cereal crops became ten percent of all current Canadian Grain exports, what would be the increase in container loads out of Saskatchewan? It could be anywhere from 7,000 to 30,000 containers per year based on a ten percent market share abroad. If identity preserved oilseeds became ten percent of total current Grain exports, there could be an additional 4,000 containers needed. As well, there are other pulses and other organics that could be considered.

In conclusion, we felt that the information system required to run a pilot project of this scope with many diverse participants will be a major undertaking in terms of human resources. What needs to be created is an information system that shares the necessary facts such as booking details, container availability, and drayage requirements. We hope that the pilot project will improve current practices for Saskatchewan producers. We
found that the current system of insuring empty container availability is characterized by present mismanagement, mistrust, and a general lack of information sharing. Our pilot project was designed, how can we address those issues and get everyone there as a win to win.

Carl Neggers  
Assistant Deputy Minister  
Saskatchewan Highways and Transportation

I would like to thank Al Schultz and Red Williams for including the Government of Saskatchewan in this container pilot for a number of reasons. This was important following the Crow Rescue Process, which was a very rigorous process that demanded a lot of emotional effort and intensity, but did not always involve a whole lot of listening. The process revealed that there was a lot of relationship building that needed to occur. The container pilot process was more constructive. We had academics, industry people, shippers, and government all working collaboratively to find solutions that would create greater levels of value for everyone. It was an open dialogue that embodied a spirit of discovery. It was aimed at finding solutions that will work for Saskatchewan and ultimately help our shippers and producers diversify and meet market needs in a cost effective manner. So, kudos to Al and Red. I think this is the kind of forward-looking collaborative thinking that we need throughout our transportation system.

Next I will discuss some of the emerging trends that motivated us to get excited about the container pilot project. A couple of years ago we started to participate more directly in the Canada Transportation Act Review. This participation made it quite apparent that the transportation system needed to rethink itself, and that there were issues regarding the government’s participation in the transportation network that needed to be examined. For example, how had the government supported the movement from a supply-driven process to one that was more demand-oriented and more considerate of the consumer at the other end of the chain?

We also knew that some of our previous regulatory environments were very costly in terms of our ability to be innovative and to be competitive in terms of market
requirements. We needed to move toward a system that reduced cost and increased value for all the participants, not just those who were dominant in the system.

The container pilot process was more about how small entrepreneurs can compete legitimately, not only within the system but also within the global market place. How do they garner a voice? How do they have access to important information that will enable them to be competitive? As well, we are excited about the fact that government could look at itself in a non-confrontational way. We could look at some of the opportunities we provide and also some of the potential barriers. We could examine how we might challenge some of the regulatory frameworks that were not working well and establish policy positions that allowed for vibrant and robust activity within the system.

I have heard a lot today about local challenges. We are very familiar with what happened when we buried that big black bird and the result that ensued in terms of the grain handling and transportation system transformation. Most of us out here in the west realize that consolidation has been occurring for a number of years. However, since 1996 it has rapidly accelerated and the prairie landscape is quite different today than it was six years ago. This is one part of the regulatory transition, but in government we are also realizing that our ability to navigate the established regulatory frameworks is becoming less local and more global.

We need to continually bear in mind that the World Trade Organization establishes rules and requirements to participation. We unto ourselves do not have the ability to set world trade parameters; the best we can do is try to influence them or participate within them in a cooperative manner within the global marketplace. In North America, we have NAFTA. That helps describe some of the conditions that we need to meet, so if we are going to penetrate and continue to maximize our market potential in the US, we cannot be different; we have to be more alike. If we do not concur with set regulatory parameters, we have to voice our opinion. When the rules are set, we must participate in a way that is considerate to the intent of those frameworks.
At the local level, we are seeing significant transformation in the rural parts of western Canada with the transitions that have occurred over the past decade or two. In Saskatchewan, producers are trying to respond in a meaningful way to opportunities to ship their products via container. The container pilot initiative revealed that in some cases, producers do not have access to information and do not have the leverage or voice to articulate their concerns so that they are heard. The container pilot gave us the opportunity to give them some voice and it also gave producers the opportunity to listen to what we could do in terms of helping them in that transition. If producers are willing to take on the bold responsibility of transforming their behavior, it is the duty of good government to participate in a meaningful way so that we may work at breaking down the barriers so that they can compete.

Through the container pilot, it became apparent that one of the major considerations is that diversification in Saskatchewan is still niche in terms of volume. It is not like conventional bulk commodity movements that have critical mass and can be responded to in a significant way. We have to be very strategic in how we respond to emerging niche markets. One of the main difficulties in terms of container movement was that it was difficult to convince railways to move loading facilities out to rural Saskatchewan, as those are very expensive pieces of infrastructure.

So the next alternative is how do we allow shippers participate in the container utilization? How do we allow them greater access to container ports, to position themselves so that they can actually use them in a cost effective way?

The road infrastructure is still predominantly publicly held in Saskatchewan. We have a significant challenge. There are about 200,000 kilometers of road in Saskatchewan; this infrastructure is basically financed by fewer than one million people. It was initially designed for potential growth to 30 million by 1930. This growth did not occur, but we still have that in our sights. We have not lost the vision; we extended the time line. Technology has also allowed us to liberate how we manage the land and how we produce on the land base. In the past, expectations were that we would build a system that would
facilitate the capacity of person power to develop production. Now, technology has allowed us to produce more with less person power.

With the shift in regulatory activity, we have seen a movement from rail to road. The government has had to confront the issue of allowing movements of larger weights and dimensions on systems that were not designed for that. If there is a benefit to the scarcity of resources, it is that it forces one to think differently. It encourages the building of different relationships and forces one to address the fundamental questions in terms of where money is invested. Over the last decade, we have had tight budgets, which have given us the opportunity to rethink how we manage the asset. The significant challenge of road infrastructure is to maximize road carrying capacity, reduce consumption on the asset, and to build roads that are cost effective yet have structural strength. As a province we have approximately 200,000 kilometers of road and we have provincial routes that have aggregated load volumes on them that do not have the structure.

This has encouraged us to look partnering with our rural municipalities. The Federal Government, The Province of Saskatchewan, and SARM were participating in strategic rural routing and prairie grain roads investments. These initiatives were designed to invest in strategic corridors so that the amount of investment in preservation and maintenance can be reduced and the aggregate load volumes on specific routes can be maximized.

There used to be a relationship between producing a product and delivering it to a common point. There has been a transition toward diversified cropping and the grain handling industry trying to meet greater customer expectations for specific types of quality. The call for grain movements is less static and more dynamic. This will be a great challenge in the terms of our road infrastructure handling these movements. The challenge of container movement is not the delivery of containers to specific points throughout rural Saskatchewan when they are empty; the challenge is delivering loaded containers to where they need to be and maximizing the efficiency of that load so that it works for the producer, shipper, and the consumer.
The other challenge is affordability. How do we match the public interest in terms of cost reduction / management, while at the same time maximizing the economics of social benefit to users of the system? The situation in Saskatchewan is a bit unique. We have a dual weight network, a primary weight network, and a secondary weight network. The secondary weight network is 15% lower than primary weights. Our primary weight network consists of about 6,000 kilometers of road; this underscores the significance of the problem when there are 200,000 kilometers of road in total. There is a significant portion of the system that is not structurally set to handle primary weights. There is a significant movement by all shippers to increase weights so that they can maximize efficiency and reduce the number of shipments required. The challenge is how to interface those two systems in a meaningful way.

When containers are loaded, particularly 40-foot containers, they are overweight. The shipper is therefore forced to reduce the size of the load. It is heartbreaking to see a 20-foot container traveling down the road when you know the dimensions allow a 40-foot container, but structurally the road cannot. Part of our weight management involves examining how we can maximize weight efficiency with sustainable management of infrastructure such that we are not spending wildly trying to support infrastructure that has low volumes on it but high requirements for weight carrying capacity.

Though containers are still a growing market, we see the opportunity within them. We are still predominantly focused on bulk commodities, but the world marketplace is asking for differentiation and for specific attributes in consumer products. These attributes are expected and are required if producers are to have a chance at that market. The interface of container movement in rural Saskatchewan must be examined so that we can compete.

Part of the solution is in progress; we have a transportation partnership program. Saskatchewan is a significant shipper of resource bulk commodities (e.g., mining and forestry). A number of years ago we established the Trucking Partnership Program, in which shippers or carriers sign an agreement with us, the transportation infrastructure provider, and we share the consumption cost. They pay us a fee for premature consumption of the asset and we allow them greater weights and dimensions on the
system. The weights and dimensions must still be within the confines of safety parameters because the road system is multi-use and therefore safety must be at the forefront. The program has been very successful because it involves defined routes. Little effort is required to ensure compliance. Corporate audits make it reasonably easy to ensure that we are getting our fair share in terms of consumption activity. We considered this process for containers, but it is more challenging to manage and administer because of non-defined routes. We are currently in the process of reviewing the Trucking Partnership Program so that we can include initiatives such as container movements throughout rural Saskatchewan. Those are some of the things the government is doing locally in terms of responding to the results of the container pilot.

The reality is that although we need to do things locally to connect to our market places, we still need to think globally. Over the past number of years, we have done a significant amount of work in Saskatchewan looking at trade patterns throughout the western region, at our greatest trading potential, and at our market opportunities throughout the globe and particularly within the US. If we position ourselves within that context, Saskatchewan is in the very admirable position of being central in the region and having access to some significant transportation routes within the context of trade corridors. We must maximize our inclusiveness within the context of the regional corridors that run through our province. One of the challenges is harmonization. Travelers and carriers on the corridor system have expectations for continuity, for example in terms of speed, carrying capacity, connectedness to the market place, and safety. There is also an expectation that these trade corridors are highly competitive and have competitive alternatives. It is a significant challenge for us to meet some of these expectations. Participating and being actively involved in the trade corridors is very important for Saskatchewan in terms of the opportunity for business investment and attraction throughout North America and the globe. When we participated in the trade corridor analysis and looked at some of the route requirements, we realized that no government can do it alone. Saskatchewan is part of an inter-jurisdictional set of governments whether international, national, inter-provincial or municipal. It is only through true partnership between the jurisdictions that
we will find that we have our greatest ability to leverage limited public resources in a meaningful way for shippers and producers.

We also realize that we need higher levels of collaboration with industry and research institutes to ensure that we are working together. It is important to take a system wide perspective, rather than looking at systems from a jurisdictional perspective. For example, perhaps investments in the Port of Vancouver are the best investments for Saskatchewan producers and shippers if it reduces the bottleneck. We must look up the transportation stream and see what opportunities exist to reduce costs and increase efficiency. Ultimately, this helps us all put more products on the global grocer’s shelf.

In conclusion, the pilot helped us to become more aware of container movement needs and opportunities throughout the province. It also supported a number of fronts that we were already addressing as a province, such as weight management and how we needed to take a new approach to managing our transportation system. The pilot project helped us to garner a better appreciation for some of the policy frameworks that we need to embody as a province and hopefully as a region. Most importantly, the project helped us to see transportation as more than just moving people and products. How can we have a transportation system that creates value and creates the greatest opportunity for all participants? I need to underscore this because some of our transportation networks preclude inclusiveness of all participants. Those who are dominant are those who are often heard; as a government it is very important that we provide the greatest opportunity for access and for innovative activity to emerge. It is not always within the dominant position that innovation occurs. We are hopeful that pilot projects like the one we have discussed today will continue on different fronts. I would be more than willing to discuss it and hopefully the Government of Saskatchewan can participate. So thank you very much.
Patrick Carruthers  
Project Manager, New Ventures  
Deere and Company

Good afternoon. I want to thank Barry for the opportunity to attend this conference and for the opportunity to share Deere’s perspective on grain containerization. One of the elements that we need to keep in mind as we talk about this is, what is the impact on the producer? Our interest in this conference is, how do we help our current customer base remain profitable and sustain a business model that may change over time in terms of how they deliver on their products?

There are three key agri-food industry changes that provide opportunity for an alternative supply chain. First, in the future relationships between producers and the buyers of their products will be centered on differentiated ag product supply. Another almost more important industry change is that environmental and food safety regulation will result in ag production becoming a permitted and highly documented activity. Finally, production will continue to become increasingly industrialized. I say industrialized in the sense that more manufacturing processes will be applied to the activities in the field.

Differentiated product supply relationships are growing rapidly throughout agriculture. They are driven by demand for consistency, quality, and processor efficiency. This significantly increases information intensity in the agri-food chain, information about product attributes and events and all the processes that lead to that product. Production level data collection and data sharing among those in the supply chain are some key impediments, and yet are also major opportunities. There needs to be an infrastructure and some related services among members in the supply chain that do not exist today. Production via a direct supply relationship has been done in the pork industry quite a bit, at least in the United States, and is increasingly extending itself into grains and oilseeds.

Environmental and food regulation results in ag production becoming a permitted and highly documented activity. There are basically three main categories that impact producers: input and operational practices, environmental management, and food safety. Traceability, transparency and insurance are key deliverables that require high levels of
process control and documentation. Again, current infrastructure to support this is lacking. Over the last several years there has been quite an increase in food safety regulations in the US and even more so in Europe.

Production will become an increasingly industrialized activity. The trend toward fewer and larger professional producers that account for a majority of production will likely continue. In the United States, about 62,000 growers account for over 50% of the production. There is an increasing split between ownership and operation. There are a lot of people retiring who do not have anyone to hand off the farm to and often people who work in urban areas rent that land. There is also widespread use of industrial practices. In the future, there will be more process control applied to agriculture. This does not currently exist in agriculture the way it does, for example, in the manufacture of tractors, combines, etc.

These three forces will produce major changes in ag service industries, including containerization. They are already beginning to change how products are produced and sourced. The whole model in the industry is beginning to shift slowly from a commodity oriented supply base to one that is demand driven and attribute specific. You do not have to look too far to find growers who have experienced this firsthand. This is why we spend a lot of time in Canada learning how to deal with these issues. There will be a business model shift at the producer level, from smaller independent practices to coordination with the buyers in terms of the product’s attributes and how it is produced. All of these forces affect grain storage and handling requirements. The growth of specialty products continues in the US and Canada. The current bulk system requires more and smaller storage facilities. In order to take advantage of specialized attributes, any robust IP system must be able to identify where grain came from, and must be able to track them through storage and handling. The ratio of the value of the product to the volume of the product is going to continue to grow over time.

How do these forces affect the prospects of containerization? There will be tighter relationships between producers and buyers to enable attribute specific purchases. For
example, if a wheat mill wants to purchase a product that has specific ash content, the ability for them to get higher extrusion out of that product due to the ash content will drive the ability of growers to garner a premium based on that attribute.

Security and safety in the food supply has become a big issue in the United States with the prospect of bio-terrorism. Producers and processors are able to identify individual units of production (i.e. a 22 tonne container). The ability to identify the attributes of a product that is in a container will be beneficial to producers. Containers would be useful in terms of identity preservation and traceability between supply chain participants. Traceability and identity preservation require segregation in some fashion from the existing bulk system, whether by container, bin, or individual rail unit train.

Management of food chain information from the producer to the buyer or the processor is a foundation for value creation. The ability to segregate, track, and contain product based on its attributes offers a lot of new revenue opportunities for producers. Containers, in our view, are the physical side of traceability. In the United States, containing contamination risk through segregation is considered to be important particularly for food security. Segregation is also important for any processors who are beginning to source product based on attributes. If you have one detection of non-GMO or whatever the non-desired attribute is, you can have a total loss in the system. Being able to segregate in some quantity allows us to really contain the loss and confine it to a particular lot, reducing the risk of loss to producers and processors.

Today there are some John Deere products that enable producers to gather the information required for identity preservation. We are working on building the ability for the producers to pass that information on to other individuals in the supply chain. In our view, the data that the producer generates based on his field and his operation are his, but there are opportunities for him to get an additional revenue stream from this. We have a software product called JD Office, which is an electronic data collection system that is linked via GPS to a lot of our equipment. There are some common components that transfer between machines. We are able to gather very site-specific information over the course of the year on anything from planters to sprayers to combines. It is a
comprehensive record keeping and farm management system that can serve as a base for provision of information to others in the supply chain.

So finally, is containerization an emerging trend or wishful thinking? The forces that are shaping agriculture today are going to require us to think a little differently than we have in the past. Coordination through the supply chain is absolutely fundamental to making this work. It is important that there be some coordination among various groups, from those at Maersk, CN, and CP all the way down to the logistics providers at the grower level. So the question is, what business models are going to be most effective? Moving two or three containers is rather costly and not very effective. If thousands of containers are moving to a particular geographic region consistently, it helps smooth out supply and demand problems. The opportunity exists for producers to differentiate themselves, to garner another revenue stream, to supply a product that they had not been able to supply in the past. It is not a matter of if, but when containerization transitions from a niche market to a common delivery and segregation alternative. We have done a lot of work to get the product to a state where it is ready for the processor. To be able to track a product’s life through to the processor and the consumer offers a lot of opportunity for everyone in the supply chain. Thank-you for the opportunity to be here.

Questions
Q: Mr. Carruthers, will your software be compatible with other equipment or machinery manufacturers?

A: (Patrick Carruthers) Yes, it is our intent that anything we design in the future will be compatible with as many software packages as possible. Our intent is not to go out and build a lot of software packages, rather we would like to interface with those that exist and are most functional today. We are not fundamentally a software shop so we would like to work with those who are particularly adept at that particular activity.
Bill Mohr (Moderator)
Account Manager, Specialty Crops North America
Canadian Pacific Railway Company

Thank you to the panel. It was very informative.

I guess the final test of all that we have heard and seen over the past day would be to ask a grower. I am going to introduce Lyle Minogue who is a grain farmer at Kyle, Saskatchewan. He is a past chairman of Saskatchewan Pulse Growers and the past chairman of Pulse Canada. He told me last night that that past is important because he will speak from the heart as a farmer without association to agendas. We thought a fitting rapporteur for this session would be to hear his impressions of what he has seen and heard, and maybe what he has not seen or heard. Lyle.

Rapporteur

Lyle Minogue
Farmer

Well thank you. Unfortunately when you have 120 people in a room from different backgrounds and so much information presented in one day, everybody will go home remembering one or two key issues that are important to them, but they will all be different. This is because each person is involved in a certain little area of work, and they tend to see things that they either agree with or disagree with. Those are the things that stick in one’s mind. I am going to try and present what I believe to be the issues from the world that I come from. They may or may not be the same issues that you have but hopefully you can keep my issues in the back of your mind, perhaps when you are looking at your future business models.

First I will explain who I am and where I come from, and why this conference is important to me. I am a grain farmer in west central Saskatchewan. I have a 24 year old son who is coming home to farm with me. I live in an area where we used to have little towns everywhere. Now we travel 25 miles to get a quart of milk. We have towns that are 25 or 30 miles away with 600 people. Those towns will be gone in very few years. I will not get into the details, but for example there are 20 kids in the whole area that are
under school age. You cannot run a school with 20 kids spread over a five-year range. The only way those schools would survive would be if some miracle occurred where you could bring in 100 more students in the next five years. You cannot do it over a ten-year period because the schools will already be closed. Younger people will not have kids yet, and older people already have their families. So to get 100 new students, how many jobs would you have to create? About 200 to 250 jobs would be needed if towns like Kyle, Elrose, and Eston are going to still exist in ten years. You could go on with the nursing homes and other reasons why they will not be there five years from now. The reality is that in rural Saskatchewan and most of rural Manitoba and Alberta those towns will go. This means that the young entrepreneurial people that we want to come in and farm are not going to.

We have had a terrible year in western Canada, terrible two or three years in some areas, with just disastrous crops. There is a financial burden on farms like we have never seen during my farming career. I am hoping that when this is over I still can do things like go buy John Deere machinery or farm input supplies without having to travel 150 miles.

So, what does any of this have to do with the transportation topic today? I think it is very relevant because farmers in western Canada are going to be accepting major changes. I invite anyone to go out and talk to farmers in our area; there are people who are looking at farming double the land base of the previous year, cash renting land, or renting their land out and quitting or doing custom work. They would never have talked about doing these things two years ago. I am not saying that any of this is bad; I am saying it is different. Things change, every industry changes and our industry is going to change in a major way in the next few years. Production patterns and marketing will shift.

Governments no longer pretend that somehow they are going to inject a big bubble of money and solve the problem. They are talking about things like going into value-added. Value-added is great; I am all for it. It creates jobs and it adds value to our economy. It keeps the dollar strong. The reality is that if someone takes the product from my farm and adds value to it, it does not affect the fact that my farm may or may not be profitable.
People say farmers are losing money. They say farmers should get a processing industry on the side and increase the value of their product. This may be true. But would you be so foolish as to set up a processing industry in order to make money so that you could dump it into something that is losing money? Why not get rid of the farm, make money in processing, and put the money in your pocket? A lot of people are doing just that. If the only way traditional grain production works is if you make money with an investment elsewhere or through outside employment, then eventually the economic realities will say that that form of production has to end.

My point today is that traditional production where we grow grain and ship it in hopper cars to the ports is not going to work. It is not working now; it is what put us in the financial mess that we have in rural Saskatchewan. Looking at the competitors that are coming on strong in eastern Europe, South America, and so on, I do not believe that there is a future for me trying to produce bulk commodities cheaply. We will not stop producing those commodities instantly; it will be a gradual process. I am in a good farming area with good land, and I see my neighbors going organic. They are doing this because they could not buy inputs, and going organic for a couple of years cuts their costs. This scares me because I drive through a lot of areas that have much poorer land than we do. I used to be a farm management specialist and I analyzed hundreds, perhaps thousands of farm records, and I know that if I am having trouble producing traditional grains at a profit, those guys cannot do it. This tells me that what we will be shipping in five to ten years time is going to be different.

I came to this meeting today to see whether the transportation system will adapt fast enough to meet the upcoming needs of rural Saskatchewan. The first issue that I saw when I looked at the agenda was that no one was addressing what farmers will be growing in the next ten years. I would think that if I were investing millions of dollars in equipment or studies, the first thing I would examine would be what will be shipped in the future. There is no sense having this great system of concrete terminals and 100 car unit trains for grain that has just been developed if we are not going to grow that. I think history will show that the whole movement to bulk grain shipments was the greatest
mistake in western Canada in the last century. This form of shipping will probably be in
the process of being phased out before the paint is dry on some of those terminals. In
Patrick Carruthers’ presentation, I noticed that John Deere has spent a lot of time looking
at why farmers are switching, what they might be switching to, and what kind of
equipment and programs they could get involved in to help farmers make these changes.
I was glad to see that. If there were a message that I would leave with after watching the
presentations today, it would be to watch the current trends and forecast future ones. Be
prepared for major blips in the trend lines that we would not have predicted ten or even
three years ago. For example, John Deere has predicted that 25% of grains will be
identity preserved by the year 2005; that is only three 3 years from now. Do we have the
facilities in place to ship 25% of grain via containers? We may or we may not.

I noticed that Steve Clapp said that it is time to consider containers as a serious option not
as a side dish, and I agree. Since I began following transportation studies in the 1970s,
containers were never really considered important to the shipment of grains out of
western Canada. A classic example is the Estey Review, which states in paragraph two,
line two that 70% of grain is shipped in bulk. There is never any other reference to the
other 30%. The whole report discussed what could be done to improve the efficiency of
the 70% that is shipped in bulk. Greg Arason commented that we have probably gone as
far as we can in improving the efficiency of bulk movement, and now we must look at the
efficiency of other forms of grain movement. I think that the bulk system is efficient, and
there will always be a place for it, even with higher value products and crops. For
example, bulk may be the better system in cases where the quality is poor or there is a
high volume of a certain quality or class of product. This being said, the time has come
to put our attention and effort into how we can ship identity preserved products.

Related to that issue, if we cannot make the change to get the system to identity preserved
or to a higher value form of product, farmers will face more difficult choices. My farm
currently exists by shipping high quality durum wheat or high quality lentils. If those
markets do not work for me in the future, then either I have to start growing a more
profitable product such as peas for starch for the newsprint industry or something for the
ethanol industry. If that does not work, then the land will be used for feed and we will be shipping beef or pork. If that does not work, we will be making a grassland park and hoping for the tourist industry.

Keith Bruch of Paterson Grain shared some of their cost numbers on bulk grain, and said in the current markets cost savings could range from $7 to $17 per tonne if bulk shipping is used rather than containers. I have no doubt this is true. However, the cost savings will not matter if we cannot get more value into the product that comes back to the farm level. Even with the $7 or $17 per tonne savings, bulk grains will not be shipped because they will not be grown.

I did not feel that enough time was spent addressing the issue of 40-foot versus 20-foot containers. Many statistics were presented on container movement, amount of empties in Canada, and amount of empties that move around the world, but they failed to address the size of the containers. I see trainloads of empty 40-foot containers going through Swift Current, but grain is loaded in 20-foot containers. We either have to come up with an innovative way to put grain in 40-foot containers or get more 20-foot containers into the system. If 40-foot containers were used for grain, it would be necessary to adjust to the rate structure to offset the less efficient use of space on ships as compared to two 20-foot containers. Further analysis is needed on where the 20s are, how many 20s there will be, what products could we ship in 20s, etc.

Timing was another important issue that was raised in terms of the seasonality of shipping. A system cannot be put in place to ship all products at the peak of the market. I have been in the pulse industry for years. We always want ¾ of the pulses to go out October and November. It is not realistic to think that a system can be run for two months of the year and then shut down for the other ten. We have to look at producing products that could be shipped in the off-season, or at providing price discounts as incentives for other shipments to move in the off-season. There is not a quick and easy solution to this problem.
There has been a lot of discussion around improving efficiencies in the rail system, at ports, on ships, etc. I think there is room for improving loading efficiencies. Machines for transferring containers from trucks to rail and vice versa could be used effectively to load ten or 25 car trains in a number of points, thereby cutting down long hauls on the road. This would decrease the cost of road maintenance for the Government of Saskatchewan. For example, containers come from Calgary on a truck that drives beside the train, are loaded in Swift Current, are put it on the truck that again drives beside the train, and are loaded on the train in Calgary. We have to look for innovative and realistic solutions to these problems so containers can be used effectively at processing facilities, value-added plants, and on farms.

Cabotage is an issue that bothers me greatly because it is such a simple thing to remedy. It does not take thousands or millions of dollars to solve a problem like cabotage. Cabotage is a rule that says a container can only be in Canada for 30 days. In the US containers are allowed to remain for one year. Why not simply change the rule? Cabotage places restrictions on moving products within Canada, which are too detailed and complicated for me to address, but these regulations need to be reexamined. Transportation reviews should now be focused on containers rather than bulk so that some of these internal impediments can be eliminated.

The issue of food safety was raised. If a poison were found that had been put into food either accidentally or via terrorists tomorrow, what would our grain industry look like the day after? It is realistic to assume that people would demand a certain level of safety and that precautionary measures be taken. I think that containers are a logical step toward increasing food safety.

It has always bothered me that people say we cannot use containers because we cannot find a load for them going the other way. I have never seen a rail car come into the Cargill plant at Rosetown where I haul my grain that had a load in it. Today I heard that bulk ships return empty 90% of the time. It is a matter of price structure and incentives to move your equipment quickly. I think we can deal with those things. There is a
resistance to switching from bulk to containers. This is because the infrastructure is already in place. Farmers have resisted change because they do not want to change their production practices. Railways and grain companies have elevators and trains that they want to utilize. They do not want to lose this investment in equipment, so it is a struggle to overcome the inherent resistance in the system.

The revenue cap is an impediment. It is far too complicated to discuss in detail, but essentially, the railways have a revenue cap. So how do the railways make money? They must cut costs as much as possible. The best way to do this would be to load at only two places in western Canada and take everything in 100 car unit trains, charging the maximum revenue as per the revenue cap. If containerization is to become as prevalent as has been predicted at this conference, it is necessary to move away from this disincentive.

The issue of regulations for trucking permits across western Canada was raised. I find it irritating that a processing plant near me has to phone to the rural municipality every time they get a container in and get a $10 permit for a truck to travel 12 miles down a grid road. The container is 1000 pounds over the secondary weight. It is ludicrous that a farmer can roll by with 400 bushels in a single axle truck, while a truck with 4 axles with only 10,000 more pounds on it requires a permit. This issue should have been dealt with 20 years ago, but it is still source of irritation; the sooner it is dealt with the better.

I do not know how the final issue I will raise could be dealt with: who determines transportation policy in this country? For as long as I have been farming, I have been attending meetings like this one where we discuss policy and how things should change. However, I believe that policy is determined by the large players who have paid lobbyists in Ottawa working everyday with cabinet, government committees, government officials, etc. The people in this room have to work harder to get their message out to politicians and those who involved with making changes in policy. How do we get a system in place that all people in the industry, from the farmers through to the end transportation providers, will benefit from?
In conclusion, I did not hear of any major obstacles today that cannot be overcome in order to get to a very efficient containerized movement system. I do not think there will be much containerization of straight grain. The form of the grain will be changed, for example to beef, value-added product, identity preserved, food safety certified, or a brand name so that enough value will be added to pay the additional $7 to $17 per tonne to move it via container. There will be a movement away from the bulk or there will not be any farms left. Though I do not see an obstacle that cannot be overcome, will we be able to make the changes fast enough to prevent the complete erosion of farm structure due to the past three bad years and the current disintegration of rural communities?

I appreciate Barry’s invitation to attend this session and voice my thoughts. I really appreciate the efforts of everyone at the Transport Institute and the people in this room for the work they are doing to try to improve our agricultural transportation system. On behalf of all farmers I thank you for doing that.
2002 PARTICIPANTS

SPEAKERS
(in order of appearance)

Barry Prentice  Transport Institute
Bob Speller  Government of Canada
Steve Clapp  Food Traceability Report
Jake Kosior  Supply Chain Solutions International
Keith Bruch  Paterson Grain
Richard Stewart  University of Wisconsin
David R. Cardin  Maersk Canada Ltd.
Paul Waite  CN Rail
Greg Arason  Canadian Wheat Board
Dave Gardiner  WESTAC
Brent Vankoughnet  Port of Vancouver
Barrie Sime  Terminal Systems Inc.
Richard Schultz  Yanke Group
Rob Oliphant  Syntex Canada
Bill Mohr  Canadian Pacific Railway Company
David Spearin  Logistics Marketing Services
Carl Neggers  Saskatchewan Highways and Transportation
Patrick Carruthers  Deere and Company
Lyle Minogue  Farmer

PARTICIPANTS

James Alty  Canadian Foodgrains Bank
Jack Arthur  Vancouver Port Authority
Pat Atkinson  Transport Canada
Brian Bell  Canadian Transportation Agency
Mary Jane Bennett  Canadian Transportation Agency
Hart Berger  Transport Institute
Ray Bisson  FWS Construction Ltd.
Dr. J. B. Bole  Agriculture & Agri-Food Canada
Rachel Bosc  Manitoba Agriculture and Food
Bernie Boucher  OmniTRAX Inc.
Marnie Carey  The Manitoba Agriculture Credit Corp
Claude Carles  Weyburn Inland Terminal
Francois Catellier  Canadian Special Crops Association
Pierre Cécile  The St. Lawrence Seaway Management Corporation
Dean Corbett  Saskatchewan Pulse Growers
John Corey  Canadian Transportation Agency
Jack Craven  Manitoba Transportation &
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**TRANSPORT INSTITUTE**

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Speaker Profiles

Morning Chairperson - Dr. Barry E. Prentice, Transport Institute

Barry E. Prentice is the Director of the Transport Institute and an Associate Professor, in the I.H. Asper School of Business.

Dr. Prentice has held a joint teaching and research appointment at the University of Manitoba since 1985. His major research and teaching interests include logistics, transportation, agribusiness marketing and commercial trade policy.

From 1986-89, he was Professional Associate and Assistant Professor at the University of Manitoba and became Acting Director of the Transport Institute in 1991. He was appointed Director of the Transport Institute in April 1996.

Dr. Prentice has authored or co-authored more than 100 research reports, journal articles and contributions to books. His scholarly work has been recognized for excellence in national paper competitions and awards. In 1999 he was named Manitoba Transportation Person of the Year by National Transportation Week. Barry has participated in task forces, expert committees, and is frequently asked to speak on the topics of trade and transportation.

Opening Keynote Presentation

Mr. Bob Speller, M.P., Haldimand-Norfolk-Brant

From July 1998 until August 2000, Bob was Parliamentary Secretary to the Minister for International Trade.

Bob was first elected to the House of Commons in 1988, then re-elected in 1993, 1997 and 2000. In addition to his constituency responsibilities as Member of Parliament for Haldimand-Norfolk-Brant, Bob is currently a member of the House of Commons Standing Committee on Agriculture and Agri-Food and the Sub-Committee on International Trade, Trade Disputes and Investment and Chair of the Prime Minister's Caucus Task Force on Future Opportunities in Farming.

On March 29, 2001 Bob was appointed Chair of the Prime Minister's Caucus Task Force on Future Opportunities in Farming. The Task Force will consult with and learn from farmers, processors and other stakeholders and experts in studying and assessing the long term opportunities and challenges facing the farm economy. The Task Force will deliver its final report to the Prime Minister by September 2002.

In September 2002 Bob was elected as Chair of the Executive Committee of the Commonwealth Parliamentary Association. The CPA has been in existence since 1911 and is composed of over 16 000 members, in 172 parliaments and legislatures in 51 of the 54 Commonwealth countries. Mr. Speller is the first federal Canadian Parliamentarian to hold the position.
He has previously also been a member of the House of Commons Standing Committee on Foreign Affairs and International Trade. He completed an elected term as Vice-Chair of the Commonwealth Parliamentary Association (CPA) International Executive Committee. In 1997 he was appointed Chair of the Sub-Committee on International Trade, Trade Disputes and Investment. Bob was elected Chair of the Commonwealth Parliamentary Association (Canadian Branch) for two terms, until his appointment as Parliamentary Secretary in 1998. Bob was also Chair of the Liberal Rural Caucus (1989-93,1995-98) and Chair of the House of Commons Standing Committee on Agriculture and Agri-Food (1994-95) and Chair of the Parliamentary Steel Caucus from 1993-97. In Opposition from 1988-1993, Bob was Associate Trade Critic and Youth Critic.

Session 1

Moderator – Steve Clapp, Food Traceability Report

Stephen Clapp brings a diverse background to food policy journalism. A graduate of Harvard College and Columbia Graduate School of Journalism, he served as a Peace Corps volunteer in Nigeria and evaluated antipoverty programs for the ill-fated Office of Economic Opportunity in the 1960s.

In 1971, he was hired to edit Nutrition Week, a newsletter published by the nonprofit Community Nutrition Institute. He later became communications coordinator for Interfaith Action for Economic Justice, an antihunger advocacy organization, before beginning work for Food Chemical News in 1988. When World Food Chemical News was launched in 1993, he served two years in Brussels as European editor.

In recent years, he has reported on international food regulation as senior editor of Food Chemical News, covering the Codex Alimentarius and managing foreign correspondents on five continents. Last year he was also asked to edit Food Traceability Report, a new monthly newsletter that covers emerging issues in food identity preservation and traceback. He has two grown daughters and lives in Reston, Virginia.

Jake Kosior, M.Sc. P.Eng, SISC

Jake M. Kosior is the Principal of Supply Chain Solutions International of Winnipeg, Manitoba since Fall 2001. He was previously the Senior Research Associate of the Transport Institute at the University of Manitoba for six years. Prior to the Institute, Jake served in the transport industry for 10 years with Canadian Pacific Railroad and Reimer Express Lines. Jake’s consulting specialties are: agri-business and international supply chain logistics, grain transportation, containerization, transport and trade policy, and applications of geographical information systems (GIS) for transportation. Jake’s latest passion is mathematical modelling and simulation of logistical systems to assess policy impacts on global supply chain performance.
Mr. Kosior was a sessional lecturer in logistics in the University of Manitoba Transport Institute’s Certificate in Logistics Program. He is a past member of the National Transportation Week Committee, the Canadian Standards Association Committee on Occupational Health and Safety and was a past Chair of the United Way Campaign at Canadian Pacific Railway.

Mr. Kosior is pursuing a PhD in industrial engineering and economics. His dissertation focuses on the economic performance of container supply chains relative to bulk systems for CWB grains.

Jake serves as a hockey convenor with the Pembina Trail Hockey Association, a hockey coach for his son and daughter’s teams and is an avid “old-timer” hockey player himself. Jake resides in Winnipeg with his wife Irene and three children.

Keith Bruch, Paterson Grain

Keith is currently the Director of Operations for N. M. Paterson & Sons Limited. He is responsible for the Country Elevator Division, Marketing and Trading, Transportation, Hog & Feed Divisions and the Australian Trading Operation.

Prior to joining Paterson in 1995, Keith was the Director of Marketing & Transportation for Saskatchewan Wheat Pool in Regina.

Keith has an Undergraduate Degree in Business from the University of Regina, and a Masters Degree in Business from the University of Saskatchewan.

He is married with two children.

Session 2

Moderator - Dr. Richard Stewart, University of Wisconsin-Superior

Richard D. Stewart is an Associate Professor at the University of Wisconsin Superior and the Director of the Transportation and Logistics Research Center. Prior to accepting his appointment at the University of Wisconsin-Superior he was a professor at the United States Merchant Marine Academy and for eight years Head of their Department of Marine Transportation.

He earned his Ph.D. at Rensselaer Polytechnic Institute’s Lalley School of Management, his Masters degree at the University of Wisconsin- Green Bay and his Bachelors at the US Merchant Marine Academy. Dr. Stewart holds a current Unlimited Master’s Ocean license and has commanded oceangoing tankers and freighters. He spent two years in Houston, Texas as the manager of a $300 million dollar fleet of tankers and bulk vessels trading worldwide and for six year he owned a small business.
He is commissioned as a Captain in the US Naval Reserve. He is active in several professional organizations including the Council of Logistics Management, Society of Naval Architects and Marine Engineers, Council of American Master Mariners, International Shipmasters Association and the Duluth Superior Transportation Association.

Dr. Stewart has extensive teaching experience in undergraduate and graduate courses in the US and overseas. His research grants for government and industry have investigated marine, intermodal, rail, planning and logistics issues. His publications include a book chapter and over fifty papers on transportation management, marine environmental management, port operations and transportation education. He consults for law firms, shipping companies and governmental agencies. Dr. Stewart is active in Scouts, community boards, and serves on public advisory committees.

Richard is married to Kathleen Collins and they have four children.

David R. Cardin, Maersk Canada Ltd.

David joined A.P. Moller/Maersk in 1980 in Los Angeles and held sales and management positions prior to transferring to Moller Steamship Co. in New York in 1986. He relocated to A.P. Moller’s corporate headquarters in Copenhagen in 1987, having responsibility for managing the North America/Middle East Liner service, and in 1988 added the newly implemented Transatlantic Service. David returned to the New Jersey regional office in 1989 and established a Capacity Management department; which included implementing the rapid service expansion into Latin America as well as the Pacific and Americas’ Vessel Sharing Agreements with Sea-Land.

A brief time as Director, Central America & Caribbean Services led to appointment as Managing Director, Maersk Mexico S.A. in 1995. In the next four years, growth of the liner business was complemented by expansion into scheduled rail service with leased cars, container terminal/maintenance and repair facilities, and formation of a joint venture trucking company.

David moved to Canada in 1999 and led Maersk Canada in the successful integration of Sea-Land customers and staff into the new Maersk Sealand brand. Expansion into supply chain logistics, trucking, and physical distribution followed and the entry of APM Terminals as a Canadian container terminal operator is underway.

Prior to joining Maersk David worked at Spiegel Catalogue Company, Chicago Illinois, managing their import program.

David is a member of the Boards of Directors of Maersk Canada Inc, Maersk Company Canada, Pacific Rim Transport, Maersk Logistics Canada, Bridge Terminal Transport and Hudd Distribution Canada, the latter three of which he is Chairman. He is also a
member of the Executive Council of the Shipping Federation of Canada and a Patron of Mariners’ House in Montreal.

Raised in Clifton Park, New York, David has family roots in Quebec. He lives in Rockwood Ontario with his wife and three sons, ages 18, 15 and 13. He majored in Transportation and Logistics at the University of Tennessee, Knoxville. He is proficient in Spanish and has working capacity in Danish. A private pilot, David is a lover of the outdoors, both as an active sportsman and a golf enthusiast.

Paul Waite, CN

As Assistant Vice President CN Intermodal, Paul D. Waite directs North American Sales & Marketing efforts for Canadian National’s Intermodal Business Unit. Since his hiring in 1978, Paul has made an impact in many areas of Canadian National including Engineering, Informational Technology Sales, Sales Management, Strategic Planning and Market Management. For the past five years, Intermodal has been Canadian National’s fastest growing segment with revenues exceeding $1.1 billion.

Paul has a BBA from York University in Toronto.

Luncheon Keynote Speaker

Greg Arason, Canadian Wheat Board

Greg Arason was appointed President and Chief Executive Officer (CEO) of the Canadian Wheat Board on December 31, 1998. As President and CEO, Mr. Arason works with a 15-member Board of Directors to plan and implement policy decisions for the Canadian Wheat Board. The Canadian Wheat Board sells western Canadian farmers’ wheat and barley in Canada and to over 70 countries. Last year, sales revenue totaled over $4.5 billion, making the Canadian Wheat Board one of Canada’s largest exporters.

Mr. Arason was formerly CEO of Manitoba Pool Elevators and past director of several grain and food operations including XCAN Grain, Can-Oat Milling and CanAmera Foods Ltd. He has been involved in the western Canadian grain industry for more than 25 years and played a major part in guiding Manitoba Pool Elevators successfully through several years of significant agricultural change. Under his leadership, Manitoba Pool Elevators was named top business in the province of Manitoba in 1998.

Mr. Arason was educated at the University of Manitoba and the Banff School of Advanced Management.
Afternoon Chairperson - David Gardiner, WESTAC

Mr. Gardiner began his career in transportation in 1965 as a Research Analyst with Canadian Pacific. He has held a number of executive positions in various sectors of the transportation industry in Canada, Bermuda and England. From 1979 until 1994, his career centered on the marine industry in Canada, where he served as President of Misener Shipping and subsequently Great Lakes Bulk Carriers. Mr. Gardiner was appointed President of the Western Transportation Advisory Council (WESTAC) in 1994.

WESTAC is a member-based transportation forum supported by senior public and private sector organizations and labour groups throughout Western Canada.

With WESTAC Mr. Gardiner directs the activities of a professional staff managing a comprehensive program of publications, conferences and workshops designed to advance the interests of all participants in the transportation industry in Western Canada.

Mr. Gardiner is the recipient of the National Transportation Week "Award of Achievement" and the Canadian Port and Harbour Association "Medal of Merit". He has been active in several professional associations and coalitions involved with transportation.

Mr. Gardiner holds a Bachelor of Arts Degree (Economics) from Concordia University. He resides in Chilliwack, B.C. with his wife Linda (Kelly) and they have four children and nine grandchildren. His interests include working with youth, travel, and outdoor recreation.

Session 3

Moderator - Brent VanKoughnet, Port of Vancouver

Brent VanKoughnet M.Sc. P.Ag. is Owner / Manager of Agri Skills Inc. a company that specializes in agricultural innovation and human resource development. Through Agri Skills, Brent represents the Vancouver Port Authority as an agent in Manitoba and Saskatchewan. In addition to the VPA representation, Agri Skills presently provides market development consulting services, custom skills development and training programs, and field scale precision trial services to several major manufacturers and retailers in western Canada and the northern United States.

Brent’s career has included; Agricultural Marketing Manager, Canada, Norwest Labs, Winnipeg Manitoba; Agri-Business Instructor and Marketing Coordinator, Assiniboine Community College, Brandon Manitoba; Agronomist, Special Projects and Marketing, Redfern Farm Services, Rivers Manitoba; Grain Merchant, Louis Dreyfus, Winnipeg, Manitoba. He completed a Masters degree in Agricultural Economics from the University of Manitoba in 1992 and manages the family farm in Carman.
Barrie Sime, Terminal Systems, Inc.

Barrie is a graduate of BC Institute of Technology. He joined Terminal Systems Inc. (formally Empire Stevedoring Co. Ltd.) in 1978 as a ship planner. Barrie was promoted to manager, vessel operations in 1988 and was appointed as project leader for TSI for the planning and development of Deltaport (Vancouver Port Authority container terminal) Container Terminal in 1993. The terminal was completed and opened for business in June 1997 and Barrie was named Terminal Manager at that time. He was appointed to the position of Vice President, Operations in 2002 with overall operation responsibilities for TSI’s two container terminals, Deltaport and Vanterm, their cruise ship operations at Canada Place and Ballantyne, and their terminal consulting group.

Russel Marcoux, Yanke Group

Russel Marcoux is Chief Executive Officer of the Yanke Group of Companies, an international transportation company comprised of five separate operating groups: Yanke Expedited Services, International Van Division, Multimodal Division, Logistics and Container Port. He is also actively involved in a grain farming operation at Viscount, Saskatchewan.

Mr. Marcoux graduated in 1973 with a Bachelor of Arts degree from the University of Saskatchewan. He has also taken accredited courses in business law and organization behaviors at the U of S along with various executive training programs.

A member of the Canadian Chamber of Commerce Board of Directors since 2000 and currently Third Vice Chair, Mr. Marcoux also serves as Second Vice Chair for St. Paul’s Hospital and as Director for the Saskatchewan Agrivision Corporation. He is active on various committees for St. Andrews College, and St. Martin’s Church. He is on the Board of Governors for Junior Achievement, is honorary Chairman for the Diabetes Association’s annual fundraising campaign and is a founding member of the Corporate Circle for the Federation of Saskatchewan Indian Nations. Mr. Marcoux was awarded the Commemorative Medal from the Governor General of Canada for significant contribution to compatriots, the community and Canada.

Mr. Marcoux is married to Bonnie, his wife of 28 years. They have three children; Michelle, Brett and Nicole.

Rob Oliphant, Syn-Tex Bag

Rob Oliphant has been with Syn-Tex Bag as a Packaging Consultant for 8 years. He has been involved in designing and selling packaging solutions for many industries. Rob markets tote bags, ocean container liner bags, and dunnage bags (for seizing up loads in transport). He works with the Grain Industry to find ways to ship product effectively and efficiently in the most cost effective way.
**Session 4**

**Moderator - Bill Mohr, Canadian Pacific Railway**

Bill current position is Account Manager Specialty Crops- North America with Canadian Pacific Railway. In his current position he has responsibility for Pulse crops that originate on CPR lines in North America. Through his career at CPR he has had responsibilities in Milling Wheat, Feed Grains, Malt and Malt Barley. Previous to this Bill traded on the Winnipeg Commodity Exchange for Scotia Mcleod.

**David Spearin, Logistics Marketing Services**

LMS Inc. was established by Dave Spearin and has been providing logistic and marketing consulting over the last eight years, to companies in the chemical, fertilizer, forestry, oil & gas, grain, food processing, mining and manufacturing sectors. The firm is experienced in providing customized GIS logistic models and marketing databases. These models are used to evaluate and reduce supply chain costs, enhance customer service and identify market positioning. The databases are linked to computer mapping software to generate qualitative maps that are used in developing market strategies, freight contract negotiations, benchmarking of costs and customer services.

Dave Spearin is a professionally educated Transportation and Logistics Director with diverse career experience throughout North America. He has special expertise in managing transportation services for commodities and environmentally sensitive goods. He is particularly adept in using sophisticated financial analyses to develop cost-effective logistic solutions. He has a strong computer background in applications and system development, and experience in assessing, developing, negotiating, and monitoring complex transportation logistics and contracts. He is also a Marketing Forecaster for processed manufactured products.

Dave Spearin was awarded an honours degree in Geography as scholarship student from Ryerson Polytechnical Institute with specialties in economic, industrial site location and resource geography and statistical modeling. He has completed ongoing professional training and certification in management, computer applications in transportation, distribution, exporting and costing from university and industry-sponsored organizations.

Mr. Spearin is active in several transportation and industry groups, including Canadian Fertilize Institute, Canadian Transportation Research Forum, and Canadian Association of Supply Chain & Logistic Management.

**Carl Neggers, Saskatchewan Highways and Transportation**

Carl is the Assistant Deputy Minister of Policy and Planning with the department. In this role, he provides leadership and direction regarding strategic transportation policy and
planning, and manages the following department initiatives: Sustainable Infrastructure, Research and Planning, Strategic Planning, Transportation, Trade and Logistics, Northern Access, Air and Safety and Organizational Development and Planning.

Carl began his career with the Saskatchewan public service in 1980. Over the past 20 years, Carl and his family have moved throughout the province serving with several departments, specifically - Department of Parks and Renewable Resources, Department of Agriculture and Food, Department of Highways and Transportation, and a crown corporation - Agriculture Credit Corporation (ACS).

Carl holds a Master's Degree in Business Administration from the University of Guelph.

**Patrick Carruthers, Deere and Company**

Mr. Carruthers joined Deere & Company in 2001 after receiving his Masters in Business Administration from the University of Iowa. Prior to joining Deere, Mr. Carruthers spent five years in various international supply management roles for Pioneer Hi-Bred International. During his tenure at Pioneer, Mr. Carruthers spent one and a half years as Production Advisor, Indonesia where he oversaw construction and implementation of Pioneer’s largest production facility in Southeast Asia. Currently, Mr. Carruthers is responsible for business development of various projects in the Agribusiness group. Mr. Carruthers also holds a Bachelor of Science in Agronomy from the University of Minnesota.

**Rapporteur – Lyle Minogue, Farmer**

Lyle Minogue is a Grain farmer at Kyle, Saskatchewan. He is a Past Chairman of Saskatchewan Pulse Growers and Past Chairman of Pulse Canada.
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