

Manly Terminal: A Global Transportation Hub in Rural Iowa

Scenario

Midwest Ag Processing (MAP) is a relatively small corn and soybean processor located in Southeastern Iowa. Stanley, the company's founder, opened MAP 35 years ago and carved out a niche in the processed corn and soybean products market. As a chemist, Stanley developed small-batch processing techniques that enable MAP to offer superior quality standards in high fructose corn syrup, corn starch, and soybean oils that large processors cannot match.

Over the years, Stanley has learned a great deal about adapting to changing business conditions, including favorable rate changes associated with deregulation of transportation. Now MAP's transportation system seems to be changing again. Single railcar shipping rates are as costly as truckload shipments, and international shipping prices by container are escalating, in part because of increased demand for containers, higher fuel costs, and "slow steaming". Even more disturbing to Stanley is the abrupt decline in on-time transportation service. MAP's demand management program is falling apart. Last month, Stanley received multiple calls from customers complaining about late shipments caused by both truck and rail delays. The delays were measured in days, not hours. Railcar delivery windows increased from two to seven days, and overall truckload service levels fell to less than 85 percent on-time. Two international intermodal shipments even missed trains for the West Coast and ultimately missed their steamship connections. This caused a mess of paperwork, not to mention some extremely upset Chinese customers. Then, just last week MAP's largest domestic customer demanded that MAP either place supplier-owned inventory in a nearby storage facility or lose 100 percent of its business. Inventory was quickly placed in a nearby public warehouse, but to Stanley this is not a reasonable long-term solution.

Stanley decides to re-evaluate MAP's transportation network, including modal options of truck and rail. Believing that a service-cost balance must exist, Stanley asks his sales manager, Mark, and supply chain manager, Mary, to be part of the project. As a first step, he asks them to attend the Midwest Transportation Symposium to learn about current transportation issues and return with suggestions. Ultimately, Stanley hopes to share their recommendations with his customers, much like he did with the demand management program in the 90s.

Two weeks later, Stanley meets with Mary and Mark to discuss the symposium and next steps. Mark believes that serving MAP's customers in the future will likely depend on strategically positioning inventory around the globe because increased truck and rail congestion will continue to raise transportation costs, reduce service and force additional single railcar rate increases.

Mary looks at Stanley and says, "I agree that transportation congestion will be a major issue for the future, but renting warehouse space and increasing inventories must be a last resort." She continues, explaining that even a 10 percent increase in inventory levels would reduce ROA levels from 13.7 to 9.1 percent. MAP's inventory investment is 22 percent of total assets and inventory carrying costs are nearing 27 percent of inventory value, both of which are consistent with manufacturing industry norms.

Mary has Stanley's attention. She suggests that MAP should team with other Midwest shippers to better utilize the existing transportation infrastructure. Mary adds that she has already spoken with several local manufacturers and shippers, and all are interested in collaborating on potential logistics solutions. After the symposium, Mary met several other Midwestern shippers and learned that, although their businesses are different, all were experiencing similar transportation cost and service issues. Mary tells Stanley and Mark about one ethanol shipper from Iowa who shared how Manly Terminal LLC had helped them reduce transportation costs and improve service. The shipper later e-mailed Mary an article about Manly Terminal. Mary hands a copy of the article to Stanley and Mark. Stanley agrees to read the article and suggests a future meeting.

Manly Terminal: Developing Ethanol's Supply Chain

Manly is a small farming town in North Central Iowa with a population less than 1,500. For Manly residents, the rapid expansion of ethanol production that began in 2002 was a sign of new hope. But, little did they realize just how the location might shape the community's future and the biofuels supply chain. Fortunately, a few Iowa business leaders recognized Manly as the perfect spot for a regional transportation hub.

During biofuel's rapid expansion, ethanol plants were built throughout the Corn Belt. The plants were near ethanol's single most important raw material, corn, but far from ethanol markets. Little attention was given to ethanol's byproduct, dried distillers grains with solubles (DDGS). In the early days of ethanol's expansion, most DDGS was trucked to local feedlots. However, with the rapid expansion in capacity, local feed markets soon became saturated. Today, the ethanol industry is plagued with supply chain inefficiencies and transportation bottlenecks.

To service the supply chain needs of the ethanol industry, the partnership formed Manly Terminal LLC and broke ground on an ethanol and DDGS storage and reload facility on October 27, 2006. Today, Manly Terminal LLC operates with 20 million gallons of liquid ethanol storage capacity and unit train loading capabilities on 100 acres. It plans to be "the premier hub for storage, marketing, distribution and trading of ethanol in the United States." This is a lofty goal, but the terminal's location might be perfect to make the goal a reality.

Manly Terminal's Location

Manly Terminal LLC was strategically placed in North Central Iowa for two reasons. First, it is in the midst of the Corn Belt where 97 percent of total ethanol production capacity is located. A second factor that makes Manly, Iowa an outstanding location is service by the Iowa Northern Railway Company, which enables direct tariff access to the Union Pacific, Canadian National, Cedar Rapids & Iowa City, and Iowa, Chicago & Eastern railroads. Via trackage rights, it is also connected to the Burlington Northern Santa Fe, Kansas City Southern, CSXT, Norfolk Southern and Canadian Pacific railroads. Competitively shipping to all U.S. markets by rail lowers the cost paid by individual ethanol shippers by five to 10 cents per gallon.

Creating a More Efficient Biofuels Supply Chain

Manly Terminal's business model strives to reduce shipping costs and improve market access for its customers. Four factors allow it to cut ethanol and DDGS shipping costs. These include

shifting from truck to rail, unit train pricing, better railcar asset utilization, and access to all seven Class I railroads for competitive rates and timely shipments.

First, Manly Terminal LLC enables modal shifts from more expensive truck transportation to less expensive rail transportation. Shifting modes from truck to rail can reduce ethanol and DDGS transportation costs as much as 50 percent.

Trucks are typically used to haul ethanol short distances (less than 250 miles), beyond which truck transportation becomes cost prohibitive. Manly Terminal LLC offers customers opportunities to shift from truck to rail modes, both at the terminal and at rail sidings along the Iowa Northern Railway Company's 163 miles of track.

Second, Manly Terminal LLC allows shippers to utilize lower-cost unit train shipments. Since deregulation, the industry has encouraged trainload consignments of 80–100 cars, called unit trains. Unit train quantities allow the industry to be more productive, reduce stops and car switches and improve reliability. On a per-ton basis, cost savings for a unit train shipment are at least 25 percent less than the cost of shipping a single railcar. Therefore, shippers have a significant incentive to ship in unit train quantities.

Although unit train pricing encourages shippers to ship unit train quantities, economies of size and storage requirement at ethanol plants often prohibit full unit train shipments. In 2007, the average ethanol plant capacity was 59 million gallons per year (Renewable Fuels Association, 2008). This equates to roughly 35 rail tanker carloads of ethanol and 36 jumbo hopper carloads of DDGS per week. It also suggests that plants would need three weeks of stored ethanol and DDGS production to fill a unit train if the plant shipped all of its production by rail. Many ethanol plants cannot afford to build adequate storage to fill unit trains. Others need to sell product as it is produced to meet cash flow requirements.

At Manly Terminal LLC, ethanol plants collectively fill unit trains, reaping the benefits of reduced transportation costs, while keeping production inventories low. Ethanol plants ship truckloads of production to Manly Terminal LLC where storage capacity and trans-loading facilities are utilized to create unit train shipments. The Iowa Northern Railway Company also picks up single railcars from plants along its railway and consolidates the single cars into unit train shipments for Class I shipping discounts.

Third, Manly Terminal has access to all regions of the United States and all major U.S. water ports for export. Access to all seven U.S. Class I railroads encourages rate competition and helps shippers avoid traffic congestion or regional bottlenecks. In turn, this assures deliveries are made in a timely fashion, ultimately increasing customer service for ethanol and DDGS markets.

Finally, railcar asset utilization is improved. Manly Terminal LLC is able to build timely unit trains and manage connections with Class I railroad carriers. This gives Manly Terminal the ability to better manage railcar utilization, which could otherwise be as low as 12 turns per year. Manly Terminal LLC works with railroad car leasing companies to maintain an efficient

inventory of tank cars. This high level of asset utilization and management ultimately reduces shipping costs.

Manly Terminal LLC can also improve marketing opportunities for ethanol and DDGS by allowing producers to store product and capitalize on inter-regional price fluctuations. It also operates a trading floor that acts as a safety valve for portions of ethanol supply otherwise subject to significant buyer discounts. Manly Terminal LLC's ability to store large volumes of ethanol creates enough liquidity for a trading market to operate, with the terminal becoming the single delivery and clearing point for futures trading. Therefore, ethanol can be purchased, sold and traded while it's in holding tanks. The terminal's operators plan to have the trading floor operational soon.

Next Steps

Stanley wonders if a solution such as Manly Terminal would help with his transportation problems. It offers ethanol producers opportunities to better utilize a highly congested transportation system, even in a newly developed industry. Stanley knows there must be opportunities for MAP to do the same, ultimately keeping costs low and service levels high.

1. Help MAP understand their current situation by providing the following in your presentation:
 - Identify root causes, KPIs, define the method for problem solving - model for business/process improvement and solution.
 - How should the MAP's supply chain be redefined based on the information in this case?
2. Agricultural commodities and products from the Midwest are shipped to locations around the globe. If global demand continues to grow, how will different transportation modes (rail, truck, and barge) be affected? How will these changes impact MAP's current supply chain strategies and what are some ways they can mitigate risk and cost?
3. Many factors influence location decisions. If MAP were to relocate a facility today, describe the most important determining factors MAP needs to focus on. Are they currently in a practical location or is there a potential business growth/improvement and profit and cost saving to relocate? Does MAP's current location decision limit or enable their future opportunities? Would your answer change if MAP was a large multi-national corporation; if yes, explain your proposal?
4. Manly Terminal LLC successfully enables modal shifts from truck to rail transportation, and specifically to unit-train pricing, for ethanol shippers producing single carload shipment sizes. What prevents MAP from realizing these same rate advantages? How can MAP overcome these challenges?
5. Manly Terminal LLC appears to offer the ethanol industry exciting supply chain solutions. If your team believes that Manly Terminal is an achievable solution for MAP while considering the commodity differences, provide evidence and reasoning for the possible implementation. Or, explain the reasoning if your team believes they should revamp their supply chain in another way, provide details on the redesign and implementation include any potential cost saving or risk mitigation for going this route.

Presentation: 30 minutes, please include time for questions from judges.