

## **SIG Meet in Duluth Minnesota**

The meet in Duluth is now history and it was a great one. I never realized how many ore docks they have in Duluth and that is with some of them now gone. Our first day on the road, Thursday, took us north of Duluth. The first tour was the Cliffs Northshore Mining pellet plant, dock and tailings basin at Silver Bay. The taconite processing plant was interesting and we got to follow the whole process all the way to the ore dock and even the ship loading. Taconite is a low-grade iron ore. When the high-grade natural iron ore was plentiful, taconite was considered a waste rock and not used. But as the supply of high-grade natural ore decreased, largely from the demands of WWII, the industry turned to taconite. A process was developed to create taconite pellets. NSM was opened in 1955 as Reserve Mining, jointly owned by Republic Steel and Armco. Reserve was the first of the taconite plants to go on-line. At the processing plant, the taconite is crushed into very small pieces by rock crushing machines. The crushers keep crushing the rock until it is the size of a marble. The rock is mixed with water and ground in rotating rod and ball mills until it is as fine as talcum powder. The magnetite iron ore is separated from the other rock using magnets. The remaining rock (mostly silica) is waste material and is taken to the tailings basin (seven miles away) on unit trains of side dump cars, or pumped there via 16 inch pipes. The taconite powder with the iron in it is called concentrate. The wet concentrate is rolled with bentonite clay inside large rotating cylinders. (We were to encounter bentonite the next day.) The cylinders cause the powder to roll into marble-sized balls. The balls are then dried and heated until they are white hot. The balls become hard as they cool. The finished product is taconite pellets, those purple-brown marbles most of us are familiar with. One of the things we learned is that the company's side dump cars used for waste rock are wearing out and it seems nobody makes affordable replacements.

Our next tour was the Minnesota Power Taconite Harbor Energy Center in Schroeder, MN. The 225 megawatt power plant was originally constructed by Erie Mining Company to generate electricity for its mine, pellet plant and dock. The plant was sold to Minnesota Power by Erie successor LTV Steel upon that firm's bankruptcy in 2001. The plant burns Western coal that is delivered by lake boat. Adjacent to the power plant is the dormant LTV (Erie Mining) ore dock that is now owned by Cleveland-Cliffs. The conveyor loader on the dock can load an ore boat in about six hours versus 12 to 16 hours for most other docks, and Cliffs hopes to reopen the dock in the future-(subject of the Pentrex video, "LTV Mining" which we watched on the bus.)

Friday was spent in and around the Duluth/Superior port. Our first tour Friday was the Duluth Port Terminal. The Port Authority primarily provides administrative coordination and economic development support to the private operators of the various dock facilities. The harbor was originally seven feet deep but has been dredged to 28 feet. One point of interest here was the world's largest Schnabel rail car. The huge cars carry the largest train loads. The car

was sitting in two parts, because it blocks too much space when it is in one piece. The port also has two fully-renovated wide-vision cabooses that provide accommodations for crewpersons that travel with the Schnabel car. Another point of interest were the parts for dozens of giant wind turbines awaiting shipment to both North Dakota and Buffalo. Each blade of the wind turbine weighs 27,000 pounds.

We then visited the Cargill grain elevator. They have one hopper dumper and two boxcar dumpers. They have not dumped boxcars since 1978. (Those who attended the 2000 meeting in Baltimore may remember the derelict boxcar dumper at the Locust Pt. grain elevator.) They dump up to 12 or 13 hoppers per hour. We later learned that each terminal in the port seems to have its own specialty. At Cargill the grain they handle is mostly malting barley, plus some wheat and oats. Cargill has the fastest shiploader in the Twin Ports.

Next was two terminals operated by the Hallett Dock. Co. Hallett loads and unloads various bulk commodities that other piers don't deal with for various reasons. At one of the Hallett docks we inspected an open-air storage facility served by a bottom hopper dump house. One of the cargoes handled here is the bentonite clay used in taconite pellets. It has to be kept dry, as once it gets wet it expands to four times its dry volume and gets extremely slippery as those of us who happened to step in some of spilled material discovered (it was raining during our visit).

After visiting another of Hallett Dock Co's. piers where two of their antique locomotives were photographed in the rain, we then went to the Midwest Energy Resources Company (MERC) - Superior Midwest Energy Terminal. This is part of the Detroit Edison empire and receives Powder River Basin coal by train via BNSF & UP. Coal hoppers are dumped in their rotary dumper facility then moved by conveyor to adjacent coal piles. They dump more cars per hour than any competitor. Large bulldozers level and compact the coal on top of the piles. An auger system removes coal from under the piles, blending from different piles per customer requirements (they get 8 types of coal from different mines), and places the coal on a long conveyor which moves the coal to the dock. They receive low sulfur coal from Wyoming and Montana. While most of the coal is shipped out by boat to lower lakes power plants, they can also load trucks. MERC is the largest shipper in the Twin Ports.

The next tour was the BNSF taconite facility. They have acres of ore piles and two belt systems, one 1 ½ miles long and the other 2 ½ miles long leading to the docks. These belts pass through numerous transfer point buildings where the ore is transferred to a different belt. The ore comes in unit trains via the BNSF (previously Great Northern) and is stockpiled on the site of the old ore classification yard. We also visited the BNSF ore dock, where Canada Steamship Lines' Frontenac was loading ore for Hamilton, ON.

Saturday morning we had a rail tour on the North Shore Scenic Railway. Our train consisted of excellently restored equipment, an ex-Soo GP30, two

passenger cars in great Northern colors and a postal baggage car for food service. It was a 6 hour round trip from the Duluth station to Two harbors and back. In Two harbors we toured the steam tug formerly used by the DM&IR to dock ore boats, *Edna G*, the station museum, a lighthouse and the original headquarters of 3M Corporation (this was referred to as the sandpaper museum as sandpaper was the first product of 3M). We were also treated to viewing the famed steamer Arthur M. Anderson, which had just finished loading blast furnace trim on the north side of Dock #1. On the way back to Duluth everyone got a brief cab ride.

Saturday afternoon we had a private tour of the harbor industries on a Vista Fleet tour boat. We were able to get right up to the ore docks and even see several ore boats loading. This was an opportunity to see the water side of the facilities we had visited or driven by earlier.

Saturday evening we had a private banquet in the Duluth station museum among the preserved rail equipment.

Each evening was devoted to railroad industry and modeling clinics by the members of our group, as well as a few local historians.

Separate from the formal meet was a tour of the retired U.S. Steel Great Lakes Fleet ore boat William A. Irvin. (These guys are real original; they named the ore boat for a U.S. Steel president, and used the same name for the rolling mill south of Pittsburgh.) It is in great shape and outfitted almost the way it was when it sailed. I did not realize some of the boats carried passengers. The Irvin was the flagship of US Steel fleet in it's heyday (until it succeeded by the Roger Blough) and most of the passengers were guests of the company. There was an ex ore boat sailor on my tour and he said the crews did not like working the Irvin because they had to dress and act very properly at all times due to the US Steel guests.

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