


During 1966, on-line shipper J.C. Campbell approached DM&IR about the movement of wood chips from their facility at Waldo, to Kaukauna, Wisconsin. Not rostering suitable equipment for this movement, DM&IR purchased secondhand from Chicago Freight Car Co. 20 former ACL Class O-22 automobile cars, had them rebuilt from 14-ft. double doors to 10-ft. single doors and placed them in Class P3 5900–5919. (D.P. Holbrook collection)

to side doors on 120 interchange boxcars.

Declining merchandise shipments caused DM&IR to not purchase any additional box cars until 1966.

During 1966 the J.C. Campbell Co. lumber mill began to ship wood chips from their plant at Waldo, Minnesota to Kaukauna, Wisconsin. To prevent loss of lading, the wood chips were being loaded in box cars. The Waldo facility did not have any storage capacity and DM&IR was forced to request cars from connecting carriers. When cars were in short supply this caused the plant to either shut down or divert wood chips to a waste burner. This meant the loss of product for shipment. DM&IR did not have suitable box cars for this service and AFE 10139 was approved on March 3, 1966, to purchased 20 Class P3 55-ton 50-foot secondhand box cars 5900–5919 from Chicago Freight Car Co. These were former ACL Class O-22 Furniture-Automobile boxcars 14100–14199 built in 1941 by Mt. Vernon Car Co. with 5/4 square corner-post dreadnaught ends, panel roof, 4,680 cu. ft. capacity with National B-Trucks. AFE 10140 was approved on March 3, 1966, for modification by Chicago Freight car of the 14-foot double door opening with a new 10-foot door and additional side sheathing modifications to the carbody to center the door on the rebuilt car. Also included was the elimination of running boards, revision of ladders and installation of stabilized plain journal bearings. The financial evaluation also identified that these cars would be used for interline forwarded movement of: sulphate of ammonium, bagged cement, and wire and nails from U.S. Steel Duluth Works. Cars were purchased and rebuilt for $121,800. Received in late 1966, the DM&IR rostered these cars until 1980.

## DM&IR ORE CARS

At the time of the merger the D&IR had 3470 50-ton ore cars and no 70-ton ore cars. DM&N had 7145 50-ton ore cars and 1809 80-ton to 95-ton ore cars for a combined roster of 10625 ore cars. Standardization of the ore car fleet had begun with the DM&N order for 1000 Class U17 cars. Not seeing an operating advantages to the 70-ton to 95-ton cars, DM&IR standardized on a 70-ton capacity ore car for all future orders. The appearance of classes U17 through U31 would remain basically the same with very small variations. The side sheet bottom was raised 3-inches on the Class U19 through Class U22 built in 1942 and 1943 to cut the amount of steel required for the side sheet during World War II. This design change gave the side sheet a small 6-foot long fishbelly appearance in the middle of the car. Similar GN cars built during the war had this design modification. Once the war was over, the side sheet was extended back to its original design.

The first cars purchased by the merged


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company were 25 Class U17 70-ton 22-foot ore cars 23975–23999 built by Pullman Standard on Lot #5583 in 1938. These were an add-on order to the 1000 DM&N U17 cars 24000–24999 built in 1937. It is unclear why only 25 cars were ordered.

The outbreak of World War II caused a surge in iron ore demand. The aging fleet of ore cars was insufficient to cover this demand and the War Production Board determined that the steel required for building ore cars was necessary to provide the transportation of ore for the war effort. The car builders were not able to meet the demand on an individual basis and the 2,000 ore cars were split equally between Pullman Standard, General American Car, Pressed Steel Car and American Car and Foundry. These orders were all placed on April 6, 1942. Initially this order was for 1,500 cars approved on AFE M4878 on June 4, 1942, for the Pullman, GATC and ACF orders. The Pressed Steel car order was approved on AFE M4946 on November 6, 1942.




An outside car shop repaired and repainted DM&IR 24054 causing this distinctive paint job. Proctor, September 1974. (Doug Buell)

The 500 Class U19 70-ton 21-foot 6-inch ore cars 25500–25999 were built by Pullman Standard on Lot #5723 during September and October 1942. Cars had 1,000 cu. ft. capacity and were equipped with Buckeye trucks.

The 500 Class U20 70-ton 21-foot 6-inch ore cars 26000–26499 were built by General American Car during 1942. Cars had 1,000 cu.ft. capacity. The first 250 cars 26000–26249 were equipped with ASF trucks and the last 250 cars, 26250–26499, were equipped with National trucks. The first Class U20 cars were






Pullman-Standard builder photo DMIR 25561, (Class U19 25500–25999) and B-end, right. (Pullman-Standard photos, Jim Kinkaid collection)



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Class U21 26532 is at Mitchell, Minnesota, on May 11, 1960, showing off the distinctive World War II-era side sheet construction, causing the car to have a fishbelly type drop in the side sheet in the middle of the car. (Bruce Meyer)




Class U21 DM&IR 26599 showing Railroad Roman type lettering applied on the right side of car. (American Car & Foundry Collection, John W. Barriger III National Railroad Library at UMSL)

received from Soo Line at Ambridge, Wisconsin, on September 29, 1942, and the final 15 cars received from CMO at South Itasca on November 17, 1942.

The 500 Class U21 70-ton 21-foot 6-inch ore cars 26500–26999 were built by American Car & Foundry on Lot 2513 in 1942. Cars had 1,000 cu. ft. capacity and were equipped with ASF trucks.

The 500 Class U22 70-ton 21-foot 6-inch ore cars 27000–27499 were built by Pressed Steel Car in early in 1943. Cars had 1,000 cu. ft. capacity and were equipped with ASF trucks.

This influx of 2,000 70-ton cars was the key element in DM&IR's ability to handle war tonnages during World War II. At the start of 1946 DM&IR rostered 10,153 50-ton and 3914 larger-capacity ore cars. The 50-ton cars had soldiered on during ther war but all were at the end of their useful lives in 1946




Class U22 27196 and Class U28 30593 loaded with iron ore at Proctor in 1957. Compare the World War II car body on 27196 with the post-WWII car body on 30593. This reduction in side sheet height saved steel during the war years. (D.P. Holbrook collection)


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The lack of a "stencil group" on the side sill indicates this photo was made before 1952. Class U-23 27772 and Class U-24 28004 are at Proctor. The letter "C" next to the class number indicates these cars have been inspected and are "clean and tight" allowing them to be used for washed iron ore. Note the "mine card" bracket on both cars had the cardboard "mine waybill tag" inserted. (D.P. Holbrook collection)




Class U-23 27760 was part of 500 cars 27500–27999 built by Pullman Standard Car Co. in 1948. Note attached to the left truck directly below the sill step is the empty-load air brake sensor. Mitchell, Minnesota, May 11, 1960. (Bruce Meyer)




Class U24 28190 is at Duluth, July 3, 1955 with stencil group B applied during winter 1953-1954 shopping season is barely visible showing how quickly ore dust covered the lettering on ore cars. (Bruce Meyer)

with most needing to have K-brakes replaced with AB brakes. AFE 5769 was approved on April 3, 1946, for the purchase of 3,500 70-ton steel ore cars. Car builders lacked the steel and the capacity to build cars after the war and this AFE was cancelled. The aging 50-ton cars were in dire need of replacement after the war and the effort to replace them began in 1947.

During June 1947 DM&IR approved AFE 6069 on June 7, 1947, to order 3,000 70-ton ore cars split between Pullman Standard Car Co., 1500 cars, American Car and Foundry Co., 500 cars, Pressed Steel Car Co., 500 cars and General American Car Co., 500 cars.

The first group of 500 Class U23 70-ton 21-foot 6-inch ore cars 27500–27999 were built by Pullman Standard Car Co. on Lot #5903 between February and May, 1948. Cars had 1,000 cu. ft. capacity and were equipped with ASF A3 Ride Control trucks.

The next group of 500 Class U24 70-ton 21-foot 6-inch ore cars 28000–28499 were built by American Car & Foundry on Lot #3285 at the Berwick, Pennsylvania, plant during 1948. Cars had 1,000 cu. ft capacity and were equipped with ASF A3 Ride Control trucks.

Pressed Steel Car delivered the next group of 500 Class U25 70-ton 21-foot 6-inch ore cars 28500–28999 during 1948. Cars had 1,000 cu. ft. capacity and were equipped with ASF A3 Ride Control trucks. Correspondence with Pressed Steel Car on February 20, 1948,



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General American Car Corp. built 50 Class U26 70-ton ore cars 29000–29499 in 1948. (GATC Photo, D.P. Holbrook collection)

advised them to deliver cars in 25-car lots to B&O via P&LE to Demmler Transfer, Pennsylvania for loading. Once empty, cars were to be routed B&O-EJE-Barrington, IL-CNW-CMO-Duluth-DM&IR. It was also noted that when necessary, cars were to be delivered to PRR via P&LE to Scully, Pennsylvania, for loading. Once empty, cars were to be routed PRR-Clark, IN-EJE-Barrington, IL-CNW-CMO-Duluth-DM&IR. Because cars were not needed during the winter months on DM&IR this allowed DM&IR to earn a little per-diem before they were delivered.




Class U26 29278 at Conneaut, Ohio, on lease to B&LE April 7, 1968. (Bob's Photo collection)




The heaped iron ore created the appearance of an overloaded car. Class U28 30547 is at Proctor, June 16, 1959. Note: car had previously had a different stencil group C which was painted out and new D stencil applied when air brakes were tested outside of the normal shopping plan. (Bruce Meyer)


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Class U27 29555 has had letters X placed on either side of the monogram for testing paint used on the "X" stenciling when exposed to heat in the infrared ore thawing sheds. Car originally had a stencil group of D but was placed in stencil group A when it was shopped on Jan 15, 1956. (Basgen photo. D.P. Holbrook collection)

The last group of 500 Class U26 70-ton 21-foot 6-inch ore cars 29000–29499 were built by General American Car during 1948 on Order #3003. Cars had 1,000 cu. ft. capacity and were equipped with ASF A3 Ride Control trucks.

Even before these four groups of cars were delivered AFE 6184 was approved on December 12, 1947, for an additional 1500 70-ton ore cars for delivery during 1949. Pullman Standard was chosen to build 1,000 cars and General American Car to build the remaining 500 cars. Delivered during 1949 the PS built Class U27 70-ton 21-foot 6-inch ore cars 29500–30499 were built under Lot #5921. The GATC built Class U28 70-ton 21-foot 6-inch ore cars 30500–30999. All had 1,000 cu. ft. capacity and were equipped with ASF A3 Ride Control trucks.

By 1950 the DMIR rostered 5621 50-ton and 7372 70-ton ore cars. Many of the remaining 50-ton cars were equipped with K-brakes which were in the process of being outlawed. Iron ore traffic remained heavy and car shortages during the summer shipping season caused the DMIR to start equipping many of the remaining serviceable 50-ton ore cars with AB brakes. Additional 70-ton ore cars were ordered in January 1951 to assist with tonnage and allow continued retirement of some of the remaining 50-ton ore cars.

The 1500 Class U29 70-ton 21-foot 6-inch




Photographed from the highway bridge at the north end of Proctor on June 16, 1959, we see Class U30 32903 and Class U20 26110. Note the side sheet differences. Cars built during World War II were modified to allow the bottom of the side sheet to be a little higher, reducing the necessary steel for construction. These gave the WWII-built cars a distinctive drop in the middle of the side sheets. (Bruce Meyer)



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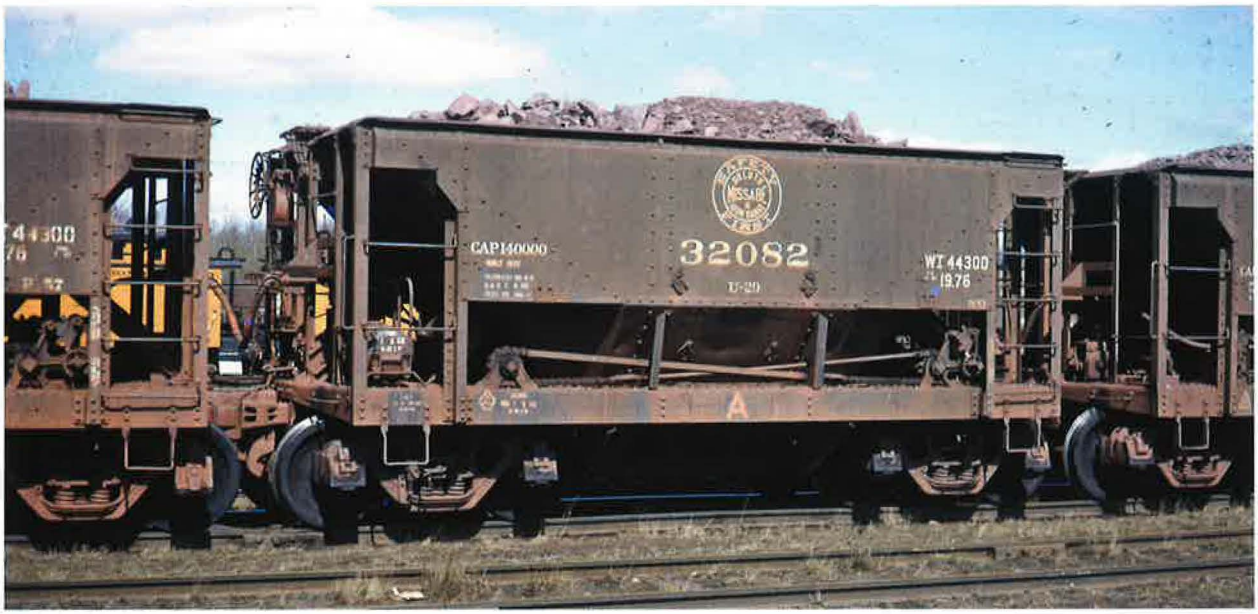



Pullman Standard builder photo of Class U29 31016. (Pullman-Standard photo, Jim Kinkaid collection)

ore cars 31000–32499 were ordered from Pullman Standard under Lot No. 8041 and built at their Michigan City, Indiana, plant. AFE 6944 was approved for this purchased on January 29, 1951. All were delivered in 1952. When ordered all cars were to be built of riveted construction, have 1000 cu. ft. capacity and ride on ASF A3 Ride Control trucks. Pullman asked the DM&IR for permission to build the last car 32499 as an all-welded car for testing future car designs which was approved. Pullman, yearly sent an inspector from their Michigan City plant to perform an inspection of the




Class U29 31854 is at Mitchell, Minnesota, May 11, 1960. (Bruce Meyer)




Pullman-Standard delivered 1500 Class U29 70-ton ore cars 31000–32499 in 1952. DM&IR 32082 at Proctor, April 1963. (D. Repetsky)


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Elimination of K-brakes and 50-ton ore cars caused DM&IR to place multiple orders for 70-ton ore cars during the 1950s. DM&IR 32887, one of 500 32500–32999 Class U30 70-ton ore cars built by Pullman-Standard in 1953, is shown in a PS builder photo. (Jim Kinkaid collection)

car. When delivered in 1952, 32499 was stenciled "For Use between Mitchell and Steelton Only." Correspondence indicated this was for the movement of ore from the Godfrey Mine to AS&W at Steelton. Every attempt was made to keep this car in service year around, even when the shipping season was over. The Superintendent directed yardmasters to make sure this car was expedited whenever possible. During the December 15, 1959, inspection showed longitudinal welds of the striker wing assembly were fractured at four locations. PS recommended repairs when practical and for car to remain in service. These inspections continued up until the mid-1960s. It was rebuilt to scale test car W32499 on May 10, 1985, and then quickly renumbered 132499 a few months later and is still in service.

During September 1952, the DM&IR placed an additional order for 500 identical Class U30 70-ton 21-foot 6-inch ore cars 32500–32999 of riveted construction, from Pullman Standard under Lot No. 8125 and built at their Michigan City plant. All had 1,000 cu. ft. capacity and rode on ASF A3 Ride Control trucks.

Four years would pass before one last order of 70-ton 21-foot 6-inch ore cars would be




The final order of 70-ton ore cars, 500 Class U31 33300–33499, would be constructed by ACF in 1957. The majority of these cars would be rebuilt to taconite service during the late 1960s and early 70s. DM&IR 33199 would be rebuilt to DM&IR 53199 in November, 1967 with the addition of 19-inch high-side extensions. The hi-side extension would be cut down to 9½-inch mini hi-side extensions on May 19, 1972. ACF Builders photo. (Jim Kinkaid collection)



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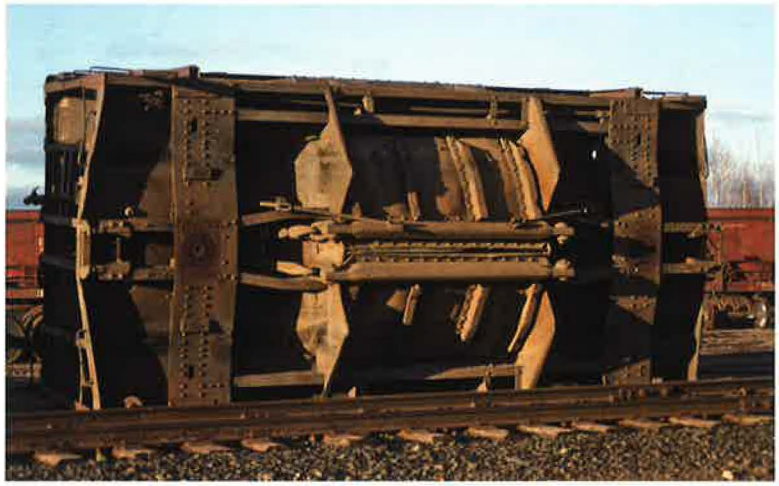
placed. The final order was for 500 Class U31 70-ton 21-foot 6-inch ore cars 33000–33499, ordered on October 23, 1956 on AFE 8133 for $47,625. All were of riveted construction, 1,000 cu. ft. capacity and rode on ASF A3 Ride Control trucks.

At the time the order was placed, further development in AB brake systems was under way. The updated AB control valve was introduced in 1955, and classified as an "AC" brake system. The AC system incorporated diaphragm-operated piston, rubber "O" rings and spool valves that replaced slide valves wherever possible. All 500 cars were delivered with AC brakes. (See section C, air brakes, appendix, for more about AC brakes.) Prior to this order all ore cars had been painted ore car brown, but AC brake systems had not been approved for interchange, so all Class U31 cars, when delivered, were painted black to allow easy identification of their non-interchange status.

The U31 order would close out the 70-ton ore car roster on the DM&IR. A total of 9515 ore cars between Class U17 through U31 created a standardized roster. All of the cars, with very minor detail variations, were identical.

A shortage of serviceable open hopper cars caused DM&IR to lease a number of open hoppers and ore cars for coal service during 1974. DMIR 20001–21000 were 77-ton 27-foot 2-inch ore cars B&LE 20000–20700 Class HMA1 built by Greenville on Order No. O.O.603 in 1952 with 1,085 cu. ft. capacity. A total of 61 cars with random numbers were leased. Cars retained their former B&LE numbers but were re-stencilled with DM&IR reporting marks to assure if they got off-line that they would be returned to DM&IR and not B&LE. The 27-foot 2-inch outside length of these cars was longer than the 22-foot standard DM&IR ore car length making them unsuitable for ore service. Cars were on roster during 1974 and 1975.

U.S. Steel built their pre-taconite mine, called Pilotac at Mt. Iron and the processing plant called Extaca at Virginia during 1958.



Detail photo of 70-ton ore car underframe. Proctor, April 22, 1996 (D.P. Holbrook)




Class U31 33363 has had test paint and lettering applied in this 1959 photo. The X on either side of the monogram was painted with two different manufacturers paint to test longevity when exposed to heat in the infrared thawing sheds. Note the "Test car do not touch up or paint this car until Jan. 1960" in the upper left corner of side sheet. (Basgen Photo)

DM&IR was requested to supply ore cars assigned to this service. Some 75 70-ton ore cars were initially assigned in 1958, with cars being stenciled "For Pilotac Service Only." Retirements caused DM&IR in February 1961 to assign 125 Class U11 50-ton ore cars to this service, which allowed the 70-ton cars to be placed in regular ore service. The same stenciling was applied to these cars and removed from the 70-ton cars at this time. Once they were placed in this service it was determined


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A shortage of coal hoppers caused DM&IR to lease open hoppers and ore cars during 1974 and 1975. A total of 61 B&LE 27-foot ore cars in 20000–20700 series were leased and reporting marks changed to DM&IR. Cars could not be mixed with DM&IR ore cars because B&LE cars were longer cars which would have caused spacing issues on the ore docks when unloading. Biwabik, November, 1974 with load of coal for Minnesota Power & Lite plant at Colby. (Doug Buell)

that the wooden poking platforms on each end of the 50-ton cars created a slipping hazard from spilled concentrate. By September 1961 all 125 cars had had the wooden end platforms replaced with Apex steel-grid platforms.

Coal hoppers were always in short supply during the late 1950s and many of the 50- ton ore cars were downgrade to coal, ballast and aggregate service. One hundred and fifty Class U10 ore cars were placed in coal service during April and May 1960. These cars had eight-inch "COAL" lettering applied to indicate their service. By 1951, 199 Class E7 and U7 50-ton ore cars, of the poorest condition, were assigned to Arcturus mine service. Early in 1952 Oliver Iron Mining (OIM) requested that these cars be replaced. Initially 200 Class E8 and E11 50-ton ore cars were selected as replacements. Additional correspondence indicated that 200 Class E7 and U7 cars would be selected and sent to Coleraine.

Ore shipments continued to decline in the 1960s. On September 21, 1962, a decision was made to store 800 70-ton ore cars for the 1963 season. Two hundred cars from each stencil group were chosen. This was further increased to 1,000 70-ton ore cars on December 13, 1962, split evenly within stencil groups. Per D.J. Smith, president of DM&IR, none were to be returned to service without his approval.

Declining ore shipments in 1963 caused 1,100 70-ton ore cars to be held in dead storage. Four hundred 70-ton ore cars were assigned to hauling coal between Duluth and Minnesota Power and Light at Colby, and 300 ore cars were assigned to shuttle service hauling crude ore between Rust Crusher and Fraser yards and the Sherman Mine concentrator.

Effective with the April 30, 1975, DM&IR Equipment list, 70-ton ore cars began to be listed as: Regulars, Mini Hi-Sides, Shaker Pocket Hi-Sides and ballast. This was at the recommendation of R.A. Huttely, manager industrial engineering, to R.L. Wagner, superintendent, in a written memo during March 1975. Prior to this time ore cars were tracked as 50-ton and 70-ton ore cars. After this date non-taconite service ore cars were referred to as "regulars" in correspondence and radio conversations.

AFE 11071 was made out on September 15, 1976, for the retirement of 133 50-ton 4-door ore cars that had been placed in ballast service. It also authorized the conversion of 66 regular ore cars with modified Morrison Knudson (MK) ballast doors and 14-inch side extensions. Numbered 1404–1469, all were painted yellow with maroon lettering. Rebuilding started in November 1977 and was completed on July 21, 1978. Prior to this, regular ore cars 24100, 24350, 32675 and 32880 had been equipped with MK ballast doors in 1972, the first two with no side extensions and the last two with 9¾-inch side extensions. Side extensions were added to 24100 and 24350 in 1975. These four cars were renumbered 1400–1403 in 1976. An additional 34 cars identical ballast cars, 1470–1503 were rebuilt and released for service on November 14, 1979. None of this group was repainted.

Expanding taconite tonnage and lack of



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DM&IR 1483 was one of 34 ore cars converted to ballast cars 1470–1503 in 1985. Unlike earlier conversions none of these cars was repainted yellow with maroon lettering. Biwabik, September 22, 1986. (D.P. Holbrook)

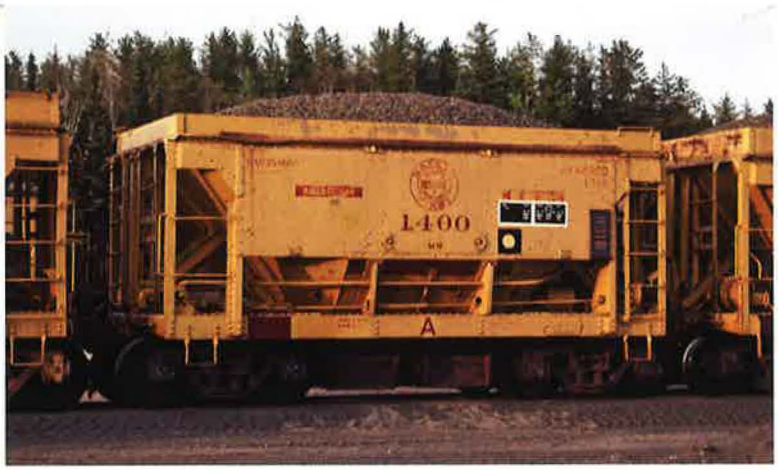



Declining natural ore shipments and increasing taconite pellet production caused DM&IR to rebuild and renumber 224 regular ore cars starting on January 19, 1981. Renumbered from 27000–33000 series ore cars and renumbered into 60000 series, they were rebuilt with angle iron reinforcing to keep pellets from leaking out the bottom of the cars. The series would eventually expand to 1143 cars numbered 60000–61142. DMIR 60080, former DM&IR 29453, Forbes, October 2, 1999. (D.P. Holbrook)

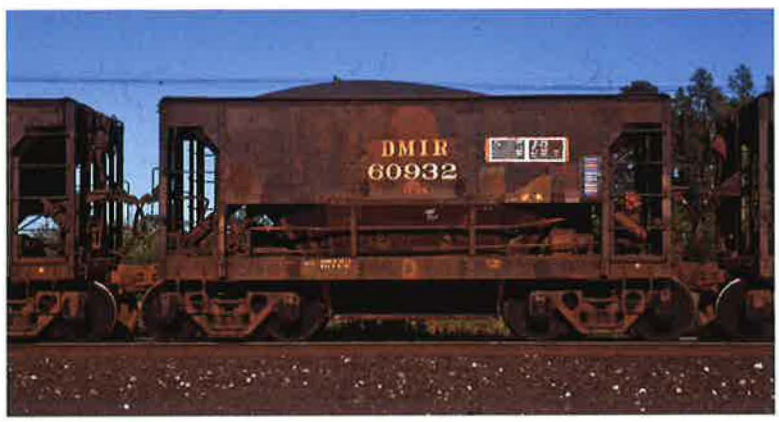
mini-quads to handle the additional tonnage caused the 70-ton "regulars" to be pressed into taconite service in 1980. An immediate problem was that the doors on most of these cars did not close enough to prevent leakage of the taconite pellets. Prior to 1980, a number of low-side ore cars had been maintained for pellet service and called "clean and tights." These had "CT" stenciled on the side for easy identification but having random numbers became




Prior to 1972, ore cars and 30 Rogers ballast cars built in 1941, W1300–W1329, were used in ballast service. Four 70-ton ore cars were rebuilt with Morrison-Knudsen patented ballast doors in 1972. Renumbered in 1978 to 1400–1403, they were joined by an additional 100 cars 1404–1503 in 1978. DM&IR 1431 Proctor April 21, 1980 (S.D. Lorenz)

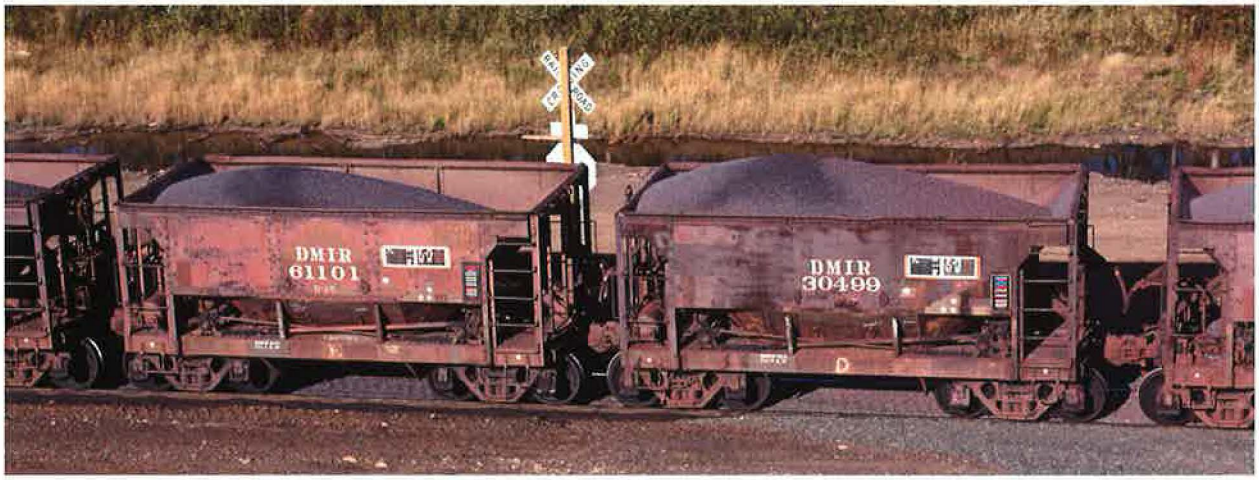



The first two Morrison-Knudsen patent ballast door conversions, 24100 and 24350, renumbered to 1400 and 1401 in 1977, had no side extensions when built. Later 9¾-inch side extensions were added. All additional ballast car conversions would have a standard 14-inch side extensions. Keenan, Minnesota, May 28, 1983. (D.P. Holbrook)




DM&IR 60932 Alborn, Minnesota, September 27, 2001 (D.P. Holbrook)


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Repainting of ore cars, except taconite service cars, was discontinued in 1966. By September 22, 1999, these two cars are typical of paint on the remaining "regular" ore cars. (D.P. Holbrook)




Many ore cars reached the 50-year overage rule in the 1990s. To identify FRA mandated inspections DM&IR painted a white star on the ore cars and added a star each year when car was inspected beyond the 50-year rule. DM&IR 60036 is a former Class U26 29383 built in 1948. Keenan, Minnesota, October 2, 1999. (S.D. Lorenz)

a problem. Beginning January 19, 1981, 224 regular ore cars were shopped at Proctor and additional angle iron reinforcing was placed on the bottom doors to prevent this leakage making the cars clean and tight for pellet, flue dust or, if needed, natural ore loading. As cars were shopped they were renumbered into the 60000 series. By March 27, 1981, 465 cars had been renumbered: two Class U21, 130 Class U23, 172 Class U24, 79 Class U25 and 82 Class U26 to 60000–60464 series. Renumbering allowed the rebuilt cars to be more easily identified. This number series eventually expanded to 1143 cars numbered 60000–61142.

## TACONITE AND T-BIRD CARS

Two World Wars and the Korean conflict caused large amounts of natural ore to be mined and shipped from the Missabe and Vermillion Ranges. By the early 1950s steel companies were looking for new sources—both foreign and domestic—to satisfy the need for raw materials. Taconite, a low-grade ore, was available in large amounts in Northeast Minnesota, but had always been passed over for the higher iron content of natural ore. Early attempts at commercial taconite processing took place at the Mesabi Iron Co. plant at Babbitt in 1922, which closed in 1924.

Not until some tax law changes in 1940 did any of the steel companies act. Pickands Mather formed Erie Mining Co. in 1940 and Oglebay Norton formed Reserve Mining in 1939 to make sure when the high-grade natural ore was depleted there would be another source of iron for steelmaking. Edward W. Davis, working at the University of Minnesota Mines Experiment Station, became the "Father of Taconite." Processes he developed would finally allow large-scale commercial development of taconite. Erie and Reserve would



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both build their own railroads to haul taconite. U.S. Steel built its experimental taconite processing plant in 1953 but it would be 1967 before large-scale taconite production would begin at the Minntac Plant in Mt. Iron.

DM&IR did not have equipment at the time to handle the processed taconite. The 70-ton ore cars could not be filled to capacity unless side extensions were applied to the cars. A non-sideboard equipped ore car could only handle 61.8 gross tons, but with sideboards this increased to 74 gross tons. The economic downturn in the early 1960s forced DM&IR to store many of the 70-ton ore cars. Because of the new nature of taconite it was felt rebuilding old equipment instead of buying new would be the most economical way of providing cars for taconite service. A number of heights of extensions were applied to ore cars including, 33-inch, 27½-inch, 19½-inch and eventually 9¾-inch became the standard.

During 1961 27½ inch sideboard extensions were applied to five 70 ton Class U-31 ore cars 33002, 33073, 33098, 33106 and 33143 for hauling agglomerates from the U.S. Steel Extaca pilot taconite plant located at Virginia. To make it easier to track these cars the number "5" was added to the original car number; 33002 became the 533002, and so on. During 1962 an economic study was done to determine the costs and benefits associated with the use of these cars after one year of utilization. Two different designs of high sideboards for 70-ton ore cars were designed to increase loading capacity for sintered and taconite pellet shipments. Based on this study the original cars were rebuilt again in 1964 by replacing the 27½-inch extensions with 33-inch extensions for hauling bulk material (limestone and coal) from Hallett Dock at West Duluth to UAC and AS&W at Steelton. The other proposed side board height was 20-inches for handling of the taconite pellets.

Once the issues with processing taconite were solved, it fell to DM&IR to handle the crude and processed taconite. Over 1,000 70-ton ore cars were in storage in 1964 account declining natural ore shipments. The total fleet of ore cars was more than sufficient to handle natural ore and rather than purchase new




Crude taconite and taconite pellets required side extensions. Beginning during May 1964 with 69 cars, 19½-inch sideboard extensions with shaker pockets were applied to crude taconite service. Taconite pellet service cars would receive the same style extensions without the shaker pockets. Overloading of taconite pellet cars caused the side extensions to be reduced to 9½ inches in 1971. The fleet of taconite cars would eventually surpass 1500 cars. T-Bird service DM&IR 50031 at Virginia, July 27, 1969 (Owen Leander)


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equipment the choice was made to modify existing ore cars for both crude and processed taconite service. A plan was developed to equip 400 70-ton ore cars with both heights of sideboards to increase capacity, one for crude taconite and one for processed taconite pellets. The newest Class U31 ore cars 33000–33499 built in 1957 were selected to be rebuilt with sideboards. While this was going on, the first taconite plant, Eveleth Taconite Co. was preparing plans for construction of their pellet plant at Forbes, Minnesota, and the crude taconite loading pocket, T-Bird, at Virginia.




DM&IR 53400, a T-Bird crude taconite service ore car, at DM&IR Rainy Jct. Yard, Virginia, July 27, 1969. Built as 33400, it was renumbered 533400 in 1964 when high sides were added, to 53400 August 2, 1967, and finally 40226 on October 15, 1976, when repainted into T-Bird paint scheme. (Owen Leander)




DM&IR 53000, a T-Bird crude taconite service ore car, at DM&IR Rainy Jct. Yard, Virginia, July 27, 1969. The X on the side sill is the "stencil group" car was placed in to identify air brake testing years. Built as 33000, it was renumbered 533000 in 1964 when high sides were added, to 53000 August 2, 1967, and finally 40233 on October 18, 1976 when repainted into T-Bird paint scheme. (Owen Leander)

AFE 9753-2 was approved in May 1964 for the purchase and application of high sideboards to 69 70-ton ore cars. Per letter of September 14, 1964, from E.J. Bosmeny, general supervisor revenue accounting, to R.M. Seitz, chief mechanical officer, all rebuilt side board-equipped ore cars were to be renumbered by adding the number "5" in front of the present car number. Work was programed for October through December 1964. By October 28, 1964, 19½-inch sideboards had been completed on 56 cars with the 13-car balance to be completed the following week. Cars were completed by November 1, 1964, and were to be used in initial crude ore service between Eveleth Taconites T-Bird mine and Fairlane pellet plant at Forbes. Cars selected were: 14 Class U27 29500–30499, 2 Class U28 30500–30999, 19 Class U30 32500–32999 and 34 Class U31 33000–33499. Because cars were completed before the first taconite plant was in operation, a study was made to determine benefits of using the sideboard-equipped car in Missabe Jct.-to-Steelton limestone service. On April 5, 1965, the 69 original high-side ore cars were placed in service for loading of limestone from Hallett Dock to AS&W Duluth Works and UAC plant. This released regular 70-ton ore cars for ore service. Cars remained in this service until Eveleth Taconite was opened on December 10, 1965, at which time they were placed in shuttle train service between the T-Bird mine and Fairlane taconite pellet plant at Forbes.

A new series of car numbers was adopted for these cars and the new numbers appeared in the next issue of the *Official Railway Equipment Register* with the new AAR designation of "HMAS" rather than the standard 70-ton ore car "HMA" designation, the "S" standing



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for "special equipment." The 1965 capital expenditure forecast included the application of an additional 465 car sets of sideboards scheduled for application beginning in March and continuing through October. In connection with this program, an investigation was being made of semi-automatic welding equipment to be used at Proctor shops to speed up the application process.

On Jan 6, 1965, a Major Methods Project (MMP) was completed on the economic benefits of application of sideboards to 216 Class U31 33000–33499 ore cars for the first phase of Minntac and Eveleth Taconite pellet movement in 100-car trains. AFE 9941 was approved on March 26, 1965, for the initial application of 108 cars for Minntac and 108 cars for Eveleth taconite service. This was later increased by two cars to allow nine additional cars in each service to protect bad orders and routine maintenance. Economic benefits of application of sideboards to ore cars for use in AS&W-UAC stone movement and benefits of roller bearings were also assessed. Sideboards for the cars were manufactured by Marine Iron and Ship Building Co., Duluth, and then hauled by truck to Proctor. Once the sideboards arrived it was anticipated that 15 cars per week could be done and installation was completed by November.

The 1965 application of high-sides to 216 Class U31 cars 33000–33499 was begun with a sample car on September 10th. Work on the remaining 215 cars began on September 27th, working 3 cars per day. On November 3rd, 91 of the 216 cars were completed and by December 19th, 184 cars had been completed. It was decided to complete the remaining 32 cars in the spring bcause of a ventilation problem at the Proctor shops. Poke holes (steaming holes) on these cars were tack-welded shut. Through December 14th, 109 high-side cars were cleaned of snow and ice, reweighed, restenciled and had ACI labels corrected to reflect new information. Before the rebuilding project was complete it was determined that the 4-inch channel used as a top chord member would create a potential hazard, allowing taconite pellets to accumulate and subsequently fall off cars while in motion. A modification from channel to angle iron top chords was approved on March 17, 1966. Angles were applied to the top sides of 102 high-side ore cars with the remaining channel equipped cars sent back through the shops for modification. Triangular holes near the top sides of high-side ore cars had to be closed by welding a triangular plate to prevent leakage of pellets. Welding of plates took place at Proctor rip track and roundhouse. Testing of modified high-side cars showed pellets were leaking out the car bottoms. Six high-side ore cars were modified late in 1965 to eliminate spillage onto dock during unloading, and once tested and approved the remaining cars were also modified. By the end of 1965, 260 70-ton ore cars were equipped with 19½-inch sideboards for taconite pellet service.

During the DM&IR board meeting on September 22, 1965, discussion took place about the original five high-side ore cars that were equipped with 33-inch sideboards. These cars had been found to be extremely difficult to load using front-end loaders. It was recommended that they be cut down to a 19½-inch height. Chairman D.B. Shank recommended instead of going to the expense of cutting the cars down, consideration should be given to consigning them to the NP for sugar beet movement along with other cars to fill their lease request for 1965. It was noted at the board meeting that as DM&IR handled more taconite, the car requirements would drop and the winter car repair program could perhaps be handled on a 12-month basis instead of seasonally. This arrangement was later adopted and had a significant impact: lower manpower needs and higher utilization of shop capacity.

During 1966 engineering work on taconite ore "super cars" of 140- to 150-long ton capacity were in progress. Various alternative car designs were considered including 3-axle trucks on each end of a car, articulated ore cars, and


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drawbar couplings of longer and larger capacity cars. Many new innovations in car design, air brake arrangement, and train operation were incorporated in the study. Further engineering and financial evaluations were conducted on the three most promising designs but no further action took place. DM&IR elected to continue to rebuild 70-ton ore cars.

Per letter from R.M. Seitz, chief mechanical officer, on May 4, 1966, all 293 taconite cars with 6 digit numbers 529615–529991(four cars) 530031–533499(289 cars) were to be renumbered to 5-digit numbers by moving the "5" in position 1 to be in position 2; 530031 would become 50031. Eighty of these cars were equipped with shaker pocket side extensions and were assigned to T-Bird loading. All cars were renumbered by January 1, 1967.

Approved in spring 1966, sideboards were applied to an additional 34 70-ton ore cars during summer 1966. Painting of additional high-side ore cars began on June 13th and by July 29th 127 cars had been completed. Painting requirement on crude ore high-side cars remained high because of the need to use flame throwers for unfreezing the crude ore. It was felt that car shakers could possibly eliminate the problem. Application of high-sides to 34 additional ore cars was started on July 13th and completed August 1st, with all cars being repainted maroon and gold. The remaining five 33-inch side board cars were shopped starting on July 13th and completed on August 9, 1966, to lower them to the standard 19½-inch side-boards. Cars for crude taconite service had shaker pockets and cars for taconite pellet service did not

August 21, 1967, found DM&IR with 293 high-side ore cars, with 70 cars assigned to Eveleth Taconite T-Bird crude ore service and the remaining 216 cars assigned equally to Minntac and Eveleth Taconite for taconite pellet service. At the time, unit pellet trains with 96 cars and two 1750/1800 hp locomotives were considered the standard operating requirement. Data from Minntac in August, 1967 indicated production would increase from 4.25 million tons to 5.1 million tons in 1968, which would require 104 additional ore cars to be modified with high-sides for taconite loading. AFE 10273 was approved August 23, 1967, and all 104 Class U31 cars 33000–33499 were modified during November and December 1967 and renumbered by changing first digit from 3 to 5. Eight of these cars, 53041, 53086, 53114, 53172, 53200, 53244, 53265 and 53371, had shaker pocket high-sides applied for use in T-Bird crude taconite loading. All of these cars were painted when rebuilt.

Cost Authority C-6005 was requested on August 2, 1967, and approved on October 20, 1967, for the application of "Orinoco-type" retainers to 220 high-side ore cars 50031–59991(various numbers) and associated control equipment on five RS Class SD9 locomotives. The Orinoco variable retainer control, also called "straight air" by DM&IR, was a secondary air line that required the train brakes to be applied first with the automatic brake. Once that was done the Orinoco brake valve would be set to maintain the approximate pressure the automatic application produced. Then the automatic brake would be released.

The Orinoco straight air pipe could then be raised or lowered a few pounds to maintain exact speed going down grades. This eliminated the need to stop a train at Proctor or Two Harbors to manually walk the entire train and set retaining valves on each car. This project was initiated because of the unit train operations agreement that allowed DM&IR to have train crews operate direct from the ore docks in Duluth to iron range taconite plants and return with a train to the docks. Normally this operation would have involved one crew to handle the train from the ore docks to Proctor, a road crew from Proctor to the taconite plants and return and another crew to handle the train from Proctor to the ore docks. The project was completed on August 22, 1968. The Orinoco braking system was originally developed for use on U.S. Steel's Orinoco iron ore operations



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Starting in 1961 DM&IR began testing various heights of sideboard extensions on ore cars for loading taconite. A standard 19½-inch sideboard was established in 1964 and by early 1970, 388 cars had been converted. Overloading of these cars became a problem and in November, 1971 the sideboards began to be cut in half to 9¾-inch with the top half used to equip additional taconite cars. A decision was made in 1972 to drawbar-couple these cars in four-car sets called "mini-quads." DM&IR 51062, former Class U29 31062 is outside Proctor shops during July, 1976. Note the lack of stencil group. It will be stenciled with a mini-quad "set" number on the side sill for computer tracking of the car sets. (Bob's Photo collection)

in Venezuela which involved heavy grades and utilized all ABEL-equipped cars.

On December 31, 1968, AFE 10386 was approved for application of high-sides, drop door seals and Orinoco-type air brakes to 30 Class U31 33000–33499 ore cars to replaced 30 high-sides destroyed in the July 27, 1968, Mt. Iron wreck. Once rebuilt the first number was changed from 3 to 5. One car from this group, 53144 was equipped with shaker pockets on the high-sides. By August 1, 1970, a total of 388 high-side ore cars 50031–59991(various numbers) were in service. An additional 108 Class U31 cars 33000–33499 were to be equipped with high-sides during the 1970-71 winter shopping. This request was made to allow three taconite trains to be operated in an eight-hour period during the winter months and in theory would only require one dock switch crew for one shift to dump the trains.

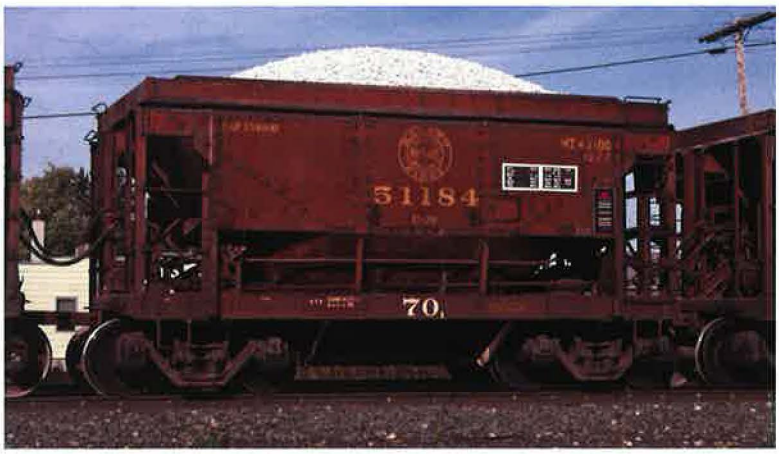
Early in 1971 it was found that the 19½-inch high-side cars were a problem. The high sideboards caused taconite mine operators to overload the cars. Minntac was producing 6 million tons of pellets and expected this to expand to 12 million tons by mid-1972. Increased shipping of Minntac pellets caused DM&IR to temporarily place both regular and hi-side ore cars in taconite service between the plant and the ports of Duluth and Two Harbors. Solving this problem became a priority.

During June 1971, B.E. Lewis superintendent of motive power & cars, proposed, on Cost Authority C-6013. that the 19½-inch sideboard cars be cut down. This would be accomplished by cutting off the top half of the 268 current hi-side taconite cars and placing this half on 268 regular ore cars. This would increase the fleet of taconite cars to 536 cars with 9¾-inch sideboards, creating a "mini high-side." The conversion also involved applying straight air brake retainer equipment (Orinoco), type E couplers and removal of AC and application of AB brakes on all cars in

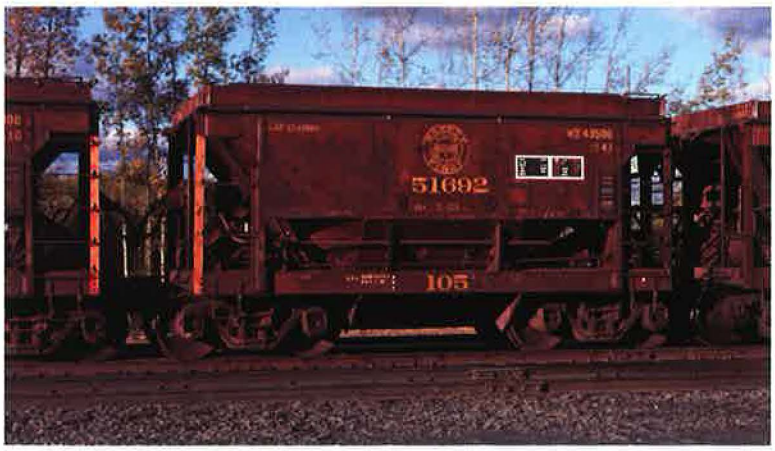

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Class U31. Cutting off of the tops of existing cars was a significant cost savings because no new material was required and the only cost was labor to accomplish the rebuilding. Crude taconite service cars would continue to have 19½-inch side extensions.

Prior to the taconite plants being built, iron ore was shipped from April to November because of the problems with ore freezing in the cars. Year-round operation of the taconite trains caused the DM&IR to experience new problems in train operation. Snow, ice and cold temperatures created their own problems. The most severe was maintaining air pressure in the brake systems. The best way to solve this problem was to eliminate as many connections between cars as possible.




DM&IR 51184 one of four cars in mini-quad set 70-1 is shown at Proctor, October 4, 1998. Set 70-1 consists of 51184, 51800, 52361, 52380. (D.P. Holbrook)




DM&IR 51692, former 31692 at Forbes, October 2, 1999. Mini-quad set 105-2 includes: 51206, 51692, 51872, 52234. Note the "blaze orange" corner post indicating the location of couplers on mini-quad sets. (D.P. Holbrook)

By November 1971, the first two hi-side taconite cars were converted to "mini hi-sides." DMIR 53151 was one of the first two cars converted. Cars were equipped with a one-piece air hose, standard couplers between the two cars and released from Proctor Shops late in January 1972. The uncoupling levers were made inoperative to prevent tearing the air hose connection apart and all four corner posts on the ends of the pair of cars were painted blaze orange to call attention to the location of uncoupling levers. These cars had 9¾-inch sideboard heights, which would become the DM&IR standard for taconite pellet service cars. Crude taconite cars in T-Bird service would continue to have the 19½-inch sideboards with shaker pockets.

Starting in May 1971 until early 1972 DM&IR had hi-side, mini-hi-sides and regular ore cars in taconite pellet service. By January 1972, 28 hi-side taconite cars had been converted to mini hi-sides. During summer and fall of 1972, modifications to 268 hi-side taconite cars were completed.

Once testing of the first pair of cars was completed the mechanical department's innovate solution was to use three solid drawbars between four cars, creating a "mini-quad" set of the now-standard 9½-inch sideboard taconite cars. This eliminated three-fourths of the glad hands by connecting the cars with solid one-piece hoses between the cars. The standard E-type couplers on each end were replaced with F-type interlocking couplers to help cars stay in-line with track in case of a possible derailment. All of this was possible because of cars being in assigned taconite service so there was no need to switch individual cars. Threaded pipe fittings were eliminated and replaced with welded ones to eliminate another leakage point in the brake system. Added during the shopping was an additional straight air retain-



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Eliminating air hose glad hands and couplers, DM&IR created "mini-quads" in 1972. These were 9½-inch sideboard equipped taconite cars with drawbars connecting the first through the fourth car and air hoses without glad hands between these cars. Stencil groups were eliminated and each four-car set was assigned a set number. Set 92-3 is shown at Allen Jct. Minnesota May 3, 1986. The smaller number was used to identify air brake testing years. Mini-quads had accelerated testing and maintenance account their high utilization and mileage. DM&IR 51494, part of a mini-quad set exhibits blaze orange corner posts so crews can identify locations of couplers instead of drawbars between cars. (Doug Buell)

er system (Orinoco) in addition to standard AB systems. When released from the shop, the cars were painted in DM&IR maroon with blaze orange corner posts on the ends of the cars that retained couplers. This allowed easy identification of the coupler ends of each set of cars.

The first 4-car set consisted of cars 52619, 52589, 52915 and 52856 which were released from Proctor Car Shop at 10:30 a.m., Friday July 14, 1972. Each car retained its individual car number but each set was assigned a "mini-quad" set number that was painted in the center of the side-sill (see photos). At the time the first "mini-quad" set was released a total of 356 high-side ore cars had been converted to Mini hi-sides. A total of 171 hi-side cars remained to be converted to mini hi-sides. Maintenance shopping on an annual basis was established with a 42-week shopping period. This allowed for shopping 12 cars per week. (See mini-quad roster for set and car numbers.) This was also done for computer tracking of the sets of cars. Before the project was completed both Minntac and Eveleth Taconite requested additional cars, Minntac for movement of pellets to Two Harbors for loading in newer wide-beam Great Lakes boats and Eveleth Taconite for additional crude cars. Authority was requested on AFE 10712 approved September 13, 1972 for purchasing mini-hi-side extensions for an additional 266 cars. Cars were rebuilt from various cars in classes U28, U29, U30 and U31

*-continued on page 222*


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# Duluth Missabe & Iron Range Railway – Mini-Quad set High-Sides by group, January 15, 1982

| Group/ Unit | Car 1 | Car 2 | Car 3 | Car 4 |
|---|---|---|---|---|
| 1-1 | 52517 | 52548 | 52779 | 52959 |
| 1-2 | 53013 | 53020 | 53026 | 53040 |
| 1-3 | 52558 | 52644 | 52851 | 52924 |
| 2-1 | 52519 | 52541 | 52643 | 52914 |
| 2-2 | 52601 | 52651 | 52804 | 52994 |
| 2-3 | 52703 | 52837 | 52894 | 52972 |
| 3-1 | 52770 | 52869 | 52925 | 52979 |
| 3-2 | 52534 | 52543 | 52838 | 52920 |
| 3-3 | 52821 | 52862 | 52890 | 52981 |
| 4-1 | 52572 | 52575 | 52616 | 52875 |
| 4-2 | 52598 | 52619 | 52856 | 52915 |
| 4-3 | 52743 | 52781 | 52917 | 52947 |
| 5-1 | 52556 | 52622 | 52807 | 52936 |
| 5-2 | 52586 | 52625 | 52887 | 52973 |
| 5-3 | 52621 | 52762 | 52763 | 52861 |
| 6-1 | 52501 | 52759 | 52963 | 52975 |
| 6-2 | 52505 | 52606 | 52700 | 52950 |
| 6-3 | 52515 | 52640 | 52736 | 52941 |
| 7-1 | 52551 | 52614 | 52784 | 52906 |
| 7-2 | 52661 | 52673 | 52693 | 52930 |
| 7-3 | 52655 | 52772 | 52727 | 52960 |
| 8-1 | 52646 | 52767 | 52867 | 52901 |
| 8-2 | 52522 | 52639 | 52749 | 52811 |
| 8-3 | 52734 | 52921 | 52955 | 52967 |
| 9-1 | 53006 | 53069 | 53079 | 53112 |
| 9-2 | 52612 | 52683 | 52750 | 52818 |
| 9-3 | 52532 | 52657 | 52933 | 52998 |
| 10-1 | 52537 | 52746 | 52777 | 52952 |
| 10-2 | 52504 | 52853 | 52857 | 52992 |
| 10-3 | 52752 | 52929 | 52953 | 52983 |
| 11-1 | 53011 | 53060 | 53090 | 53156 |
| 11-2 | 53017 | 53059 | 53130 | 53139 |
| 11-3 | 53028 | 53035 | 53045 | 53142 |
| 12-1 | 52597 | 52610 | 52653 | 52937 |
| 12-2 | 52538 | 52645 | 52713 | 52956 |
| 12-3 | 52630 | 52690 | 52738 | 52974 |
| 13-1 | 53066 | 53080 | 53083 | 53126 |
| 13-2 | 52502 | 52780 | 52940 | 52996 |
| 13-3 | 53027 | 53036 | 53100 | 53138 |
| 14-1 | 52500 | 52626 | 52712 | 52949 |
| 14-2 | 52628 | 52635 | 52694 | 52868 |
| 14-3 | 52629 | 52918 | 52971 | 52993 |
| 15-1 | 52632 | 52735 | 52910 | 52990 |
| 15-2 | 53014 | 53122 | 53335 | 53342 |
| 15-3 | 53075 | 53109 | 53116 | 53159 |
| 16-1 | 52724 | 52834 | 52902 | 52977 |
| 16-2 | 52523 | 52557 | 52714 | 52866 |
| 16-3 | 53033 | 53107 | 53150 | 53151 |
| 17-1 | 53029 | 53153 | 53199 | 53461 |
| 17-2 | 52595 | 52793 | 52886 | 52978 |
| 17-3 | 52528 | 52559 | 52765 | 52942 |
| 18-1 | 53121 | 53141 | 53149 | 53203 |
| 18-2 | 53008 | 53022 | 53060 | 53162 |
| 18-3 | 53051 | 53054 | 53125 | 53426 |
| 19-1 | 53009 | 53049 | 53084 | 53091 |
| 19-2 | 53046 | 53056 | 53089 | 53098 |
| 19-3 | 53023 | 53039 | 53044 | 53082 |
| 20-1 | 53015 | 53016 | 53101 | 53124 |
| 20-2 | 53047 | 53058 | 53076 | 53111 |
| 20-3 | 53005 | 53093 | 53094 | 53132 |
| 21-1 | 53002 | 53053 | 53087 | 53464 |
| 21-2 | 53074 | 53127 | 53140 | 53283 |
| 21-3 | 53032 | 53102 | 53123 | 53136 |
| 22-1 | 53004 | 53106 | 53117 | 53469 |
| 22-2 | 53034 | 53072 | 53096 | 53166 |
| 22-3 | 53007 | 53031 | 53042 | 53145 |
| 23-1 | 53071 | 53081 | 53135 | 53176 |
| 23-2 | 53024 | 53103 | 53118 | 53218 |
| 23-3 | 53158 | 53167 | 53219 | 53259 |
| 24-1 | 53070 | 53110 | 53298 | 53328 |
| 24-2 | 53078 | 53212 | 53266 | 53273 |
| 24-3 | 52544 | 52568 | 52658 | 52832 |
| 25-1 | 53038 | 53052 | 53184 | 53488 |
| 25-2 | 53168 | 53303 | 53322 | 53331 |
| 25-3 | 53189 | 53522 | 53315 | 53483 |
| 26-1 | 53179 | 53290 | 53415 | 53473 |
| 26-2 | 53133 | 53210 | 53268 | 53280 |
| 26-3 | 53063 | 53099 | 53161 | 53453 |
| 27-1 | 53227 | 53255 | 53330 | 53341 |
| 27-2 | 53195 | 53332 | 53413 | 53489 |
| 27-3 | 53205 | 53357 | 53378 | 53450 |
| 28-1 | 53282 | 53365 | 53456 | 53462 |
| 28-2 | 53143 | 53163 | 53183 | 53206 |
| 28-3 | 53204 | 53232 | 53237 | 53264 |
| 29-1 | 53231 | 53304 | 53310 | 53327 |
| 29-2 | 53010 | 53320 | 53460 | 53495 |
| 29-3 | 53170 | 53171 | 53197 | 53377 |
| 30-1 | 53152 | 53178 | 53207 | 53409 |
| 30-2 | 53271 | 53289 | 53308 | 53366 |
| 30-3 | 53105 | 53129 | 53246 | 53480 |
| 31-1 | 53030 | 53073 | 53454 | 53478 |
| 31-2 | 53085 | 53104 | 53414 | 53451 |
| 31-3 | 53165 | 53329 | 53395 | 53434 |
| 32-1 | 53177 | 53190 | 53360 | 53411 |
| 32-2 | 53217 | 53286 | 53291 | 53446 |
| 32-3 | 53088 | 53297 | 53314 | 53370 |
| 33-1 | 53182 | 53221 | 53245 | 53367 |
| 33-2 | 53001 | 53144 | 53316 | 53402 |
| 33-3 | 53252 | 53344 | 53422 | 53498 |
| 34-1 | 53336 | 53350 | 53369 | 53390 |
| 34-2 | 53326 | 53338 | 53410 | 53487 |
| 34-3 | 53192 | 53249 | 53375 | 53436 |
| 35-1 | 53241 | 53261 | 53263 | 53427 |
| 35-2 | 53119 | 53169 | 53346 | 53349 |
| 35-3 | 53269 | 53299 | 53359 | 53390 |
| 36-1 | 53154 | 53404 | 53412 | 53440 |
| 36-2 | 53389 | 53394 | 53401 | 53471 |
| 36-3 | 53260 | 53288 | 53393 | 53486 |
| 37-1 | 53223 | 53229 | 53447 | 53481 |
| 37-2 | 53134 | 53191 | 53239 | 53416 |
| 37-3 | 53230 | 53285 | 53379 | 53465 |
| 38-1 | 53194 | 53301 | 53312 | 53439 |
| 38-2 | 53185 | 53224 | 53381 | 53397 |
| 38-3 | 53155 | 53302 | 53339 | 53467 |
| 39-1 | 53202 | 53281 | 53318 | 53470 |
| 39-2 | 53146 | 53262 | 53323 | 53348 |
| 39-3 | 53358 | 53387 | 53405 | 53475 |
| 40-1 | 53256 | 53362 | 53398 | 53468 |
| 40-2 | 53198 | 53257 | 53324 | 53372 |
| 40-3 | 53147 | 53233 | 53384 | 53493 |
| 41-1 | 53226 | 53250 | 53292 | 53497 |
| 41-2 | 53215 | 53248 | 53356 | 53383 |
| 41-3 | 53213 | 53234 | 53364 | 53484 |
| 42-1 | 53275 | 53368 | 53391 | 53479 |
| 42-2 | 53238 | 53353 | 53472 | 53490 |
| 42-3 | 53340 | 53361 | 53431 | 53437 |
| 43-1 | 52692 | 53418 | 53449 | 53482 |
| 43-2 | 52585 | 52649 | 52709 | 52957 |
| 43-3 | 53012 | 53064 | 53067 | 53115 |
| 44-1 | 52810 | 52859 | 53050 | 53062 |
| 44-2 | 52520 | 52594 | 52613 | 52820 |
| 44-3 | 52516 | 52607 | 52636 | 52698 |
| 45-1 | 52545 | 52603 | 52909 | 52991 |
| 45-2 | 52536 | 52563 | 52659 | 52809 |
| 45-3 | 52615 | 52882 | 52898 | 52946 |
| 46-1 | 52521 | 52638 | 52823 | 52864 |
| 46-2 | 52581 | 52588 | 52873 | 52984 |
| 46-3 | 52835 | 52900 | 52982 | 52987 |
| 47-1 | 52695 | 52769 | 52803 | 52825 |
| 47-2 | 52510 | 52650 | 52696 | 52704 |
| 47-3 | 52674 | 52748 | 52904 | 52928 |
| 48-1 | 52573 | 52669 | 52961 | 52962 |
| 48-2 | 52539 | 52583 | 52608 | 52895 |
| 48-3 | 52554 | 52726 | 52794 | 52796 |
| 49-1 | 52691 | 52799 | 52816 | 52999 |
| 49-2 | 52513 | 52680 | 52728 | 52980 |
| 49-3 | 52578 | 52681 | 52776 | 52871 |
| 50-1 | 52634 | 52727 | 52802 | 52808 |
| 50-2 | 52577 | 52682 | 52831 | 52855 |
| 50-3 | 52701 | 52885 | 52939 | 52970 |
| 51-1 | 52689 | 52707 | 52732 | 52817 |
| 51-2 | 52672 | 52847 | 52879 | 52989 |
| 51-3 | 52506 | 52798 | 52908 | 52945 |
| 52-1 | 52511 | 52730 | 52756 | 52863 |
| 52-2 | 52593 | 52718 | 52905 | 52938 |
| 52-3 | 52555 | 52631 | 52708 | 52877 |
| 53-1 | 52623 | 52648 | 52676 | 52927 |
| 53-2 | 52571 | 52710 | 52829 | 52988 |
| 53-3 | 52641 | 52705 | 52711 | 52911 |



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| Group/ Unit | Car 1 | Car 2 | Car 3 | Car 4 |
|---|---|---|---|---|
| 54-1 | 52525 | 52662 | 52846 | 52860 |
| 54-2 | 52590 | 52742 | 52844 | 52922 |
| 54-3 | 52560 | 52580 | 52751 | 52800 |
| 55-1 | 52514 | 52549 | 52550 | 52883 |
| 55-2 | 52582 | 52671 | 52854 | 52903 |
| 55-3 | 52535 | 52647 | 52715 | 52964 |
| 56-1 | 52664 | 52755 | 52897 | 52907 |
| 56-2 | 52524 | 52569 | 52944 | 52969 |
| 56-3 | 52686 | 52747 | 52789 | 52943 |
| 57-1 | 52642 | 52770 | 52815 | 52931 |
| 57-2 | 52605 | 52916 | 52926 | 52932 |
| 57-3 | 52530 | 52663 | 52678 | 52836 |
| 58-1 | 52546 | 52584 | 52741 | 52870 |
| 58-2 | 52706 | 52716 | 52865 | 52899 |
| 58-3 | 52733 | 52745 | 52775 | 52968 |
| 59-1 | 52540 | 52788 | 52850 | 52923 |
| 59-2 | 52526 | 52553 | 52627 | 52839 |
| 59-3 | 52518 | 52721 | 52822 | 52843 |
| 60-1 | 52589 | 52722 | 52888 | 52891 |
| 60-2 | 52564 | 52757 | 52761 | 52785 |
| 60-3 | 52687 | 52739 | 52884 | 52954 |
| 61-1 | 52529 | 52670 | 52801 | 52995 |
| 61-2 | 52509 | 52587 | 52768 | 52773 |
| 61-3 | 52624 | 52702 | 52819 | 52849 |
| 62-1 | 52566 | 52668 | 52684 | 52719 |
| 62-2 | 52527 | 52667 | 52677 | 52876 |
| 62-3 | 52604 | 52731 | 52827 | 52965 |
| 63-1 | 52666 | 52723 | 52826 | 52986 |
| 63-2 | 52533 | 52679 | 52764 | 52893 |
| 63-3 | 52574 | 52618 | 52727 | 52787 |
| 64-1 | 52565 | 52600 | 52754 | 52830 |
| 64-2 | 52652 | 52688 | 52842 | 52892 |
| 64-3 | 52602 | 52637 | 52654 | 52935 |
| 65-1 | 52542 | 52592 | 52786 | 52845 |
| 65-2 | 52717 | 52828 | 52848 | 52881 |
| 65-3 | 51359 | 51371 | 51615 | 52396 |
| 66-1 | 51136 | 51237 | 51482 | 52253 |
| 66-2 | 51140 | 51330 | 51674 | 52241 |
| 66-3 | 51339 | 51515 | 51614 | 51983 |
| 67-1 | 51028 | 51354 | 51690 | 52023 |
| 67-2 | 51602 | 51871 | 52103 | 52440 |
| 67-3 | 51131 | 51334 | 51992 | 52088 |
| 68-1 | 51199 | 51965 | 52076 | 52239 |
| 68-2 | 51035 | 51118 | 51783 | 51922 |
| 68-3 | 51595 | 51632 | 51671 | 51947 |
| 69-1 | 52111 | 52187 | 52385 | 52427 |
| 69-2 | 51076 | 51183 | 51419 | 52425 |
| 69-3 | 51296 | 51830 | 51934 | 52330 |
| 70-1 | 51184 | 51800 | 52361 | 52380 |
| 70-2 | 51217 | 51461 | 51708 | 52250 |
| 70-3 | 51320 | 52109 | 52130 | 52258 |
| 71-1 | 51589 | 51626 | 51711 | 51810 |
| 71-2 | 51308 | 51309 | 51797 | 52368 |
| 71-3 | 51196 | 51390 | 52080 | 52370 |
| 72-1 | 51043 | 51660 | 51808 | 52173 |
| 72-2 | 51201 | 51290 | 51480 | 51624 |

| Group/ Unit | Car 1 | Car 2 | Car 3 | Car 4 |
|---|---|---|---|---|
| 72-3 | 51122 | 51754 | 52081 | 52086 |
| 73-1 | 51127 | 51268 | 51409 | 51943 |
| 73-2 | 51503 | 51604 | 51611 | 51881 |
| 73-3 | 51216 | 51380 | 52424 | 52481 |
| 74-1 | 51267 | 51973 | 52094 | 52402 |
| 74-2 | 51071 | 51439 | 51672 | 52397 |
| 74-3 | 51211 | 51336 | 51942 | 52289 |
| 75-1 | 51210 | 51470 | 51568 | 52244 |
| 75-2 | 51067 | 51915 | 52443 | 52465 |
| 75-3 | 51130 | 51275 | 51430 | 52163 |
| 76-1 | 51640 | 51839 | 51862 | 52190 |
| 76-2 | 51763 | 51935 | 52018 | 52098 |
| 76-3 | 51178 | 52175 | 52208 | 52419 |
| 77-1 | 51616 | 51758 | 52123 | 52398 |
| 77-2 | 51047 | 51423 | 52193 | 52351 |
| 77-3 | 51081 | 51203 | 51891 | 52263 |
| 78-1 | 51542 | 51723 | 52340 | 52404 |
| 78-2 | 51191 | 51474 | 52041 | 52270 |
| 78-3 | 51001 | 51347 | 51500 | 52233 |
| 79-1 | 51246 | 51929 | 51968 | 52343 |
| 79-2 | 51162 | 51176 | 51625 | 52283 |
| 79-3 | 51020 | 51291 | 51823 | 52017 |
| 80-1 | 51346 | 52412 | 52417 | 52429 |
| 80-2 | 51564 | 51661 | 51953 | 51972 |
| 80-3 | 51391 | 51446 | 51623 | 52332 |
| 81-1 | 51059 | 51532 | 51951 | 51956 |
| 81-2 | 51225 | 51331 | 51796 | 51997 |
| 81-3 | 51212 | 51436 | 51588 | 51874 |
| 82-1 | 51032 | 51278 | 51876 | 51984 |
| 82-2 | 51567 | 51818 | 52468 | 52913 |
| 82-3 | 51049 | 51781 | 52512 | 52774 |
| 83-1 | 51539 | 52359 | 52508 | 52985 |
| 83-2 | 52415 | 52665 | 52795 | 52976 |
| 83-3 | 52562 | 52697 | 52766 | 52858 |
| 84-1 | 52570 | 52760 | 52912 | 52997 |
| 84-2 | 52503 | 52729 | 52792 | 52958 |
| 84-3 | 52620 | 52872 | 52919 | 52966 |
| 85-1 | 52507 | 52561 | 52576 | 52934 |
| 85-2 | 51689 | 51886 | 52056 | 52805 |
| 85-3 | 52725 | 52790 | 52806 | 52812 |
| 86-1 | 51161 | 51814 | 51920 | 52067 |
| 86-2 | 51180 | 51349 | 51597 | 51918 |
| 86-3 | 51314 | 51751 | 52096 | 52345 |
| 87-1 | 51398 | 51925 | 52093 | 52280 |
| 87-2 | 51725 | 51854 | 51998 | 52114 |
| 87-3 | 51107 | 51717 | 52309 | 52358 |
| 88-1 | 51030 | 51078 | 51204 | 51628 |
| 88-2 | 51522 | 51534 | 52129 | 52191 |
| 88-3 | 51413 | 51748 | 52144 | 52238 |
| 89-1 | 51062 | 51097 | 51442 | 52143 |
| 89-2 | 51167 | 51647 | 51963 | 52388 |
| 89-3 | 51288 | 51516 | 51770 | 52019 |
| 90-1 | 51186 | 51658 | 51855 | 52000 |
| 90-2 | 51618 | 51970 | 52003 | 52489 |
| 90-3 | 51010 | 51113 | 51190 | 52334 |
| 91-1 | 51529 | 51790 | 52247 | 52347 |

| Group/ Unit | Car 1 | Car 2 | Car 3 | Car 4 |
|---|---|---|---|---|
| 91-2 | 51282 | 51691 | 52180 | 52472 |
| 91-3 | 51437 | 51477 | 51630 | 52485 |
| 92-1 | 51449 | 51733 | 52375 | 52376 |
| 92-2 | 51994 | 52148 | 52273 | 52498 |
| 92-3 | 51466 | 51494 | 52185 | 52432 |
| 93-1 | 51202 | 51256 | 51417 | 52226 |
| 93-2 | 51362 | 51530 | 52242 | 52316 |
| 93-3 | 51641 | 51799 | 52466 | 52478 |
| 94-1 | 51051 | 51590 | 52186 | 52248 |
| 94-2 | 51213 | 51593 | 52268 | 52438 |
| 94-3 | 51133 | 51174 | 51540 | 52178 |
| 95-1 | 51088 | 51313 | 51945 | 51967 |
| 95-2 | 51518 | 52031 | 52454 | 52482 |
| 95-3 | 51104 | 51317 | 51558 | 52211 |
| 96-1 | 51188 | 51747 | 51849 | 52344 |
| 96-2 | 51337 | 52044 | 52194 | 52315 |
| 96-3 | 51207 | 51579 | 51897 | 52389 |
| 97-1 | 51447 | 51581 | 51620 | 52176 |
| 97-2 | 51479 | 52004 | 52049 | 52276 |
| 97-3 | 51065 | 51086 | 51322 | 51344 |
| 98-1 | 51092 | 51141 | 51753 | 52090 |
| 98-2 | 51124 | 51664 | 51938 | 52008 |
| 98-3 | 51096 | 51735 | 51950 | 52394 |
| 99-1 | 51310 | 51333 | 51767 | 52464 |
| 99-2 | 51073 | 51121 | 51166 | 52414 |
| 99-3 | 51223 | 51284 | 52042 | 52285 |
| 100-1 | 51396 | 51443 | 51562 | 52399 |
| 100-2 | 51415 | 51537 | 51652 | 51720 |
| 100-3 | 51138 | 51312 | 51520 | 51734 |
| 101-1 | 51018 | 51170 | 51250 | 52492 |
| 101-2 | 51137 | 51279 | 51729 | 51773 |
| 101-3 | 51048 | 51248 | 51659 | 51710 |
| 102-1 | 51077 | 51700 | 52128 | 52401 |
| 102-2 | 51502 | 52092 | 52390 | 52445 |
| 102-3 | 51185 | 51687 | 52267 | 52378 |
| 103-1 | 51000 | 51080 | 51493 | 52118 |
| 103-2 | 51378 | 51563 | 52084 | 52030 |
| 103-3 | 51027 | 51177 | 51631 | 52014 |
| 104-1 | 51205 | 51824 | 51826 | 52227 |
| 104-2 | 51569 | 51682 | 52192 | 52496 |
| 104-3 | 51134 | 51192 | 52007 | 52444 |
| 105-1 | 51050 | 51400 | 51572 | 52299 |
| 105-2 | 51206 | 51692 | 51872 | 52234 |
| 105-3 | 51095 | 51804 | 52021 | 52354 |
| 106-1 | 51111 | 51789 | 51868 | 52353 |
| 106-2 | 51052 | 52177 | 52254 | 52408 |
| 106-3 | 51646 | 52170 | 52297 | 52409 |
| 107-1 | 51082 | 51156 | 51663 | 52073 |
| 107-2 | 51713 | 51791 | 51894 | 52295 |
| 107-3 | 51241 | 51526 | 52221 | 52306 |
| 108-1 | 51085 | 51541 | 51730 | 51765 |
| 108-2 | 51977 | 52025 | 52095 | 52215 |
| 108-3 | 51471 | 51916 | 52433 | 52455 |
| 109-1 | 51505 | 51592 | 51727 | 52156 |
| 109-2 | 51820 | 51995 | 52009 | 52249 |
| 109-3 | 51332 | 51535 | 51657 | 51742 |


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| Group/ Unit | Car 1 | Car 2 | Car 3 | Car 4 |
|---|---|---|---|---|
| 110-1 | 51070 | 51462 | 52050 | 52314 |
| 110-2 | 51752 | 52203 | 52228 | 52271 |
| 110-3 | 51153 | 51556 | 51812 | 52052 |
| 111-1 | 51142 | 51219 | 51286 | 52064 |
| 111-2 | 51233 | 51252 | 52304 | 52352 |
| 111-3 | 51712 | 51757 | 51846 | 52272 |
| 112-1 | 51108 | 52140 | 52174 | 52382 |
| 112-2 | 51024 | 51264 | 52125 | 52387 |
| 112-3 | 51003 | 51454 | 51582 | 51896 |
| 113-1 | 51831 | 52045 | 52282 | 52490 |
| 113-2 | 51521 | 51946 | 51948 | 52224 |
| 113-3 | 51817 | 52141 | 52293 | 52328 |
| 114-1 | 51787 | 51974 | 52122 | 52284 |
| 114-2 | 51608 | 51966 | 52037 | 52471 |
| 114-3 | 51060 | 51865 | 52386 | 52494 |
| 115-1 | 51327 | 51485 | 51804 | 52091 |
| 115-2 | 51144 | 52272 | 51274 | 52070 |
| 115-3 | 51022 | 51341 | 51376 | 52183 |
| 116-1 | 51011 | 51435 | 51921 | 52243 |
| 116-2 | 51129 | 51253 | 51318 | 52020 |
| 116-3 | 51236 | 51377 | 51798 | 51900 |
| 117-1 | 51101 | 51622 | 51906 | 52460 |
| 117-2 | 51004 | 51079 | 51639 | 52365 |
| 117-3 | 51305 | 51483 | 52071 | 52220 |
| 118-1 | 51263 | 51300 | 51679 | 52085 |
| 118-2 | 51383 | 51707 | 51964 | 52431 |
| 118-3 | 51132 | 51668 | 52197 | 52355 |
| 119-1 | 51165 | 51285 | 51425 | 52338 |
| 119-2 | 51570 | 51841 | 52002 | 52199 |
| 119-3 | 51147 | 51260 | 51832 | 52452 |
| 120-1 | 51014 | 51394 | 52055 | 52058 |
| 120-2 | 51198 | 52134 | 52168 | 52434 |
| 120-3 | 51103 | 51247 | 51651 | 51873 |
| 121-1 | 51019 | 51038 | 51355 | 51686 |
| 121-2 | 51084 | 51816 | 51988 | 52155 |
| 121-3 | 51021 | 51091 | 51301 | 51762 |
| 122-1 | 51238 | 51335 | 51352 | 52035 |
| 122-2 | 51524 | 51629 | 51649 | 52133 |
| 122-3 | 52016 | 52102 | 52252 | 52366 |
| 123-1 | 51635 | 51655 | 52060 | 52169 |
| 123-2 | 51289 | 51695 | 51709 | 52201 |
| 123-3 | 51266 | 51453 | 51619 | 52467 |
| 124-1 | 51621 | 51864 | 51923 | 52202 |
| 124-2 | 51696 | 52006 | 52318 | 52435 |
| 124-3 | 51100 | 51554 | 51853 | 52275 |
| 125-1 | 51847 | 51919 | 52259 | 52379 |
| 125-2 | 51168 | 51232 | 52210 | 52298 |
| 125-3 | 51158 | 51445 | 51653 | 52051 |
| 126-1 | 51361 | 51669 | 51699 | 52291 |
| 126-2 | 51110 | 51784 | 51910 | 51930 |
| 126-3 | 51087 | 51258 | 51574 | 52209 |
| 127-1 | 51187 | 51389 | 52360 | 52480 |
| 127-2 | 51061 | 51234 | 51822 | 52393 |
| 127-3 | 51157 | 51908 | 52022 | 52423 |
| 128-1 | 51221 | 51231 | 51739 | 52068 |
| 128-2 | 51802 | 52161 | 52350 | 52487 |
| 128-3 | 52024 | 52377 | 52442 | 52470 |
| 129-1 | 51777 | 51809 | 51884 | 51917 |
| 129-2 | 51933 | 52230 | 52367 | 52395 |
| 129-3 | 51776 | 51867 | 52311 | 52323 |
| 130-1 | 51801 | 51875 | 52113 | 52189 |
| 130-2 | 52151 | 52321 | 52348 | 52439 |
| 130-3 | 52124 | 52213 | 52216 | 52288 |
| 131-1 | 51179 | 51272 | 51356 | 51961 |
| 131-2 | 51455 | 51656 | 51878 | 52214 |
| 131-3 | 51328 | 51681 | 51936 | 52392 |
| 132-1 | 51547 | 51980 | 52046 | 52484 |
| 132-2 | 51002 | 51152 | 51522 | 51552 |
| 132-3 | 51869 | 52164 | 52232 | 52369 |
| 133-1 | 51350 | 51880 | 51982 | 52450 |
| 133-2 | 51834 | 52157 | 52374 | 52441 |
| 133-3 | 51772 | 52240 | 52264 | 52281 |
| 134-1 | 51150 | 51848 | 52115 | 52132 |
| 134-2 | 51099 | 51226 | 51888 | 52256 |
| 134-3 | 52034 | 52053 | 52322 | 52333 |
| 135-1 | 51576 | 51989 | 51993 | 52384 |
| 135-2 | 51228 | 51325 | 51702 | 52277 |
| 135-3 | 51093 | 51827 | 52158 | 52337 |
| 136-1 | 51410 | 51911 | 51960 | 52375 |
| 136-2 | 51885 | 51979 | 52106 | 52146 |
| 136-3 | 51432 | 51662 | 52391 | 52411 |
| 137-1 | 51249 | 51905 | 52078 | 52126 |
| 137-2 | 51218 | 51412 | 51893 | 52061 |
| 137-3 | 51293 | 51428 | 51636 | 52205 |
| 138-1 | 51283 | 51580 | 51882 | 52320 |
| 138-2 | 51261 | 51307 | 51675 | 52172 |
| 138-3 | 51075 | 51240 | 52040 | 52043 |
| 139-1 | 51220 | 51379 | 51486 | 52100 |
| 139-2 | 51245 | 51265 | 51342 | 52336 |
| 139-3 | 51251 | 51401 | 51987 | 52287 |
| 140-1 | 51007 | 51009 | 52329 | 52477 |
| 140-2 | 51005 | 51304 | 51550 | 51794 |
| 140-3 | 51026 | 51326 | 51949 | 52447 |
| 141-1 | 51214 | 51633 | 51786 | 51991 |
| 141-2 | 51135 | 51324 | 51429 | 51941 |
| 141-3 | 51587 | 52038 | 52217 | 52483 |
| 142-1 | 51732 | 51402 | 51666 | 52302 |
| 142-2 | 51069 | 51643 | 51858 | 52346 |
| 142-3 | 51478 | 52147 | 52279 | 52462 |
| 143-1 | 52084 | 52204 | 52265 | 52413 |
| 143-2 | 51427 | 51523 | 51738 | 52112 |
| 143-3 | 51543 | 51811 | 51852 | 51863 |

*Cars are not necessarily in the order of the group. Car 1 may be the 2nd, 3rd or 4th car in the set or in any random order.*

*-continued from page 219*

and renumbered into the 51001–59991 series. Work on the initial 508 cars was completed by December 31, 1972 and the remaining 266 cars done in early 1973. A small number, 1, 2 or 3, was added to the set numbers to further divide up the cars for air brake testing during specific years. This was done because unlike regular ore cars the mini-quads were in year-round service and instead of a stencil group test year, the small numbers were used and cars were air-brake tested on a more frequent basis.

During June 1973 Class U30 70-ton ore car DMIR 52931 was painted gold for the DM&IR Veteran Employees Association to celebrate their 50th Anniversary (1924 to 1974) annual meeting on May 10, 1974. Car was adorned with special lettering and the Scotchlite safety-first DM&IR monogram.

AFE 10893 of July 10, 1974 requested 244 additional regular ore cars be converted to mini hi-sides and drawbar-coupled into mini-quad sets to provide equipment for the new Minorca Taconite plant located at Virginia. All cars were rebuilt by November 2, 1976 but 124 cars had not been painted. Painting on these was completed July 14, 1977.

An additional 244 mini-quads were requested on AFE 10834 on January 9, 1975. Expansion of Eveleth Taconite in 1975 required 168 additional mini hi-sides, with the remaining 76 cars being rebuilt for service to other taco-



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nite plants and allow for sufficient cars to meet annual shopping of equipment. All were to be coupled in four-car mini-quad sets.

AFE 11006 was approved on December 1975 for the rebuilding of 340 additional mini-quads to be placed in the 51001–53498 series. Prefabricated steel extensions for the tops of the carbodies were purchased from Paper Calmenson of Duluth. These were completed on October 5, 1977, bringing the total ownership of mini-quads to 1,528 cars.

The speed of dumping operations at the Eveleth Taconite Co. plant (EVTAC) became a concern in 1974. EVTAC was going to increase production and they felt application of air-operated doors to the drop-door mechanism would speed up unloading. On June 5, 1974, Cost Authority C-6027 was approved for $5,400 to install air-operated doors on two shaker-pocket crude ore cars. Application was completed on January 10, 1975 and cars placed in service. This allowed cars to have drop doors operated either with air or a trapping machine. No additional cars were converted.

EVTAC, through equipment modifications and improvements, increased annual pellet production from 1.6 to 2.4 million tons of pellets, a 50 percent increase, during the period from November 1970 to January 1973. During the same period DM&IR increased their shaker pocket fleet of hi-side cars from 77 to 94 cars in an attempt to keep pace with the higher production. Operations experience during 1973 determined that the current 94 cars did not provide sufficient operating flexibility and cars for maintenance outages. Initially, crude ore trains from T-Bird to EVTAC averaged 17 trips per week. By 1973 they averaged 29 trips weekly. The ownership of 94 shaker pocket cars and an average train length of 89 cars showed that the excess five cars did not provide enough equipment to allow shop time. Additional cars were needed for T-Bird service and AFE 10852 was approved on March 13, 1975, for the conversion of ten additional shaker pocket-equipped hi-side cars. Cars were selected from Class U29




Class U30 52931 was repainted in this gold paint scheme in June 1973 to celebrate the 50th Anniversary of the DM&IR Veteran Employees Association. Proctor, June 1973 (MRHS collection)




Overhead view of 51362, part of mini-quad set 93-2 at Biwabik, September 22, 1986. Note the interior bracing for the side extensions. (D.P. Holbrook)

31000–32498 series with first number changed to 5 when rebuilt. Car numbers: 51025, 51386, 51460, 51600, 51638, 51782, 52074, 52099, 52116 and 52245 were all converted at Proctor during April 1975. Track modifications were made at EVTAC during 1974 to allow T-Bird crude taconite trains to be increased from 89 cars to 96 cars. The DM&IR rostered 104 T-Bird crude taconite cars and 776 mini-quad taconite cars at the end of 1975.

Eveleth Taconite would further expand their operations in 1975 and 1976 and add


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The opening of the second T-Bird mine, "South" in 1976 caused DM&IR to rebuild 168 T-Bird crude ore service cars 40000–40167 during summer of 1976. Starting on October 6, 1976, the original T-Bird service cars were renumbered to 40168–40271 from 51000, 52000, 53000 series numbers. Placing all in the 40000 series allowed for easier tracking of cars by type of service. All were repainted with the T-Bird logo above the reporting marks. DM&IR 40255 Keenan, September 10, 1978. (R.F. Kucaba)




Expansion at Eveleth Taconite crude ore haulage created the need for 168 additional T-Bird service cars 40000–40167. Beginning on July 29, 1976, Proctor began rebuilding these cars and painting them in the special T-Bird service paint scheme. Starting on Ocobert 6, 1976, earlier T-Bird service cars scattered in the 51000–53000 series were renumbered to 40168–40271 and also painted in the T-Bird paint scheme. DM&IR 40030, former 31302, then renumbered 531302 when high sides were applied in 1964, and finally to 40030 on April 28, 1976, when repainted for T-Bird service. Virginia, September 6, 1976. (R.C. Anderson)

another crude taconite loadout, T-Bird South, which would ship its first crude taconite on July 13, 1976. The 104 cars were insufficient to handle production from the two T-Bird loadouts and Proctor Shops was called upon to build additional shaker-pocket hi-side cars for this service. AFE 10934 was approved Feb 21, 1975 for the rebuilding of 168 mini hi-side taconite cars, 168 additional T-Bird crude taconite cars and four cabooses to cover the increased carloadings.

During January 1976 ETCO approached the DM&IR for a solution to the continuing problem of frozen crude ore in the T-Bird cars. The problem was expected to become even more significant when pellet production was increased from 2.6 million tons to 6 million tons annually. ETCO request the DM&IR insulate the exterior of the end slope sheets on the fleet of 104 existing cars. Two cars had been equipped with foam insulation during the fall of 1974 and favorable results had been obtained.

Starting on July 29, 1976, 168 cars numbered 40000–40167 were rebuilt for T-Bird service at Proctor with all equipped with shaker pockets under AFE 10934. The decision to start the new 40000 series numbers was made to allow easier tracking of cars in T-Bird service. These were all completed by September 9, 1976. Cars were painted with a special T-Bird logo above the initial and number on the sides. All were sprayed with polyurethane foam insulation underneath the slope sheets to reduce freezing of the crude ore. Prior to these 168 cars being rebuilt, there were a total of 104 T-Bird cars with shaker pockets mixed in the 51000, 52000, 53000 series.

Starting on October 6, 1976, the original 104 T-Bird cars in the 51000, 52000, 53000 series were renumbered 40168–40271 to group them in the new 40000 series. Cars were returned to Proctor Shops and had the end slope sheet area covered with foam insulation and were renumbered at that time. All of these cars were also repainted with the special T-Bird



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logo when renumbered. Eight additional T-Bird cars numbered 40272–40279 were rebuilt on September 21, 1978 from 31000, 32000 series cars. No additional cars would receive the T-Bird paint job.

During November 1978 an additional U31 70-ton ore car, DMIR 52454, part of mini-quad set 95, was painted gold for the loading of the 100 millionth ton of pellets loaded at Minntac on November 15, 1978.

As of February 27, 1978 the roster included 1,560 mini-quads assigned: 1,040 to Minntac, 276 to EVTAC and 244 to Minorca. AFE 11205 was made out on February 8, 1978, for the conversion of 156 additional regular ore cars to mini-quads in 50001–59991 series. All were to be equipped with shaker pockets. Prior to these cars all other mini-quads were not equipped with shaker pockets. Project was started on November 15, 1979, and all were completed by April 12, 1980. The additional mini-quads were needed to serve increased taconite pellet production. Total mini-quad taconite car ownership would reach an all-time high of 1,716 cars on July 31, 1980.

By the winter of 1981, the existing 280 T-Bird cars were showing wear and tear from the constant pounding during the loading of crude taconite at T-Bird North and South mines. Cars were found to have excessive slope sheet wear, cracked side sheet stiffeners, weld seams failing and numerous other problems. AFE 11565 was approved for the retirement of the existing T-Bird cars numbered 40000–40279 and transfer of the top end extensions to other stored regular ore cars. These old 19½-inch extensions were cut in half horizontally and used on mini-quad cars that needed replacement extensions. The "new" T-Bird crude cars were numbered 40280–40460. Retirements and conversions began during March 1982 and were completed December 8, 1982.

AFE 11719 in 1984 was authorized for the retirement of 100 T-Bird crude ore cars and replacing them with 100 regular ore cars converted for crude ore service. Subsequent to the




DM&IR 40265 in T-Bird service paint scheme. Built as Class U31 33435, it was renumbered 533435 in 1964, to 53435 on August 2, 1967 and finally to 40265 on October 27, 1976. Proctor, October 13, 1977. (D.P. Holbrook collection)




The 100 millionth ton of taconite pellets at the U.S. Steel Minntac Plant was produced on November 15, 1978. To commemorate the occasion, DM&IR repainted Class U29 ore car 52454 in this gold paint scheme. Forbes, June 13, 1987. (R.C. Anderson)




The final group of 156 regular ore cars rebuilt to mini-quad sets in late 1979 were equipped with shaker pockets. These would be the only mini-quads so equipped. DM&IR 51587, Mt. Iron, May 12, 2005. (D.P. Holbrook)


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Two cars, 52823, 52521 from mini-quad set 46-1 Proctor, July, 1975. The other two cars in the set are 52864 and 52638. (D.P. Holbrook collection)

AFE approval, Transportation Superintendent P.D. Stephenson requested that additional air brake modifications, specifically the application of straight air (Orinoco), be made to 60 of the 100 converted cars. Experience had shown from 20 to 25 occurrences of flat wheels on T-Bird crude ore trains. It was determined that this was being caused by the engineer reducing feed-valve air pressure during loading to achieve needed braking without a service application.

To eliminate this practice it was recommended that eight T-Bird cars be equipped with straight-air on each end of the three T-Bird train sets. An experiment during June 1984 using one set of mini-quads (four cars) on each end of T-Bird North trains and two sets of mini-quads (eight cars) on one end of the T-Bird South trains resulted in a solution to the flat wheel problem. During the winter of 1985 until the fall of 1987 a total of 60 mini-quads were assigned to T-Bird service to assist in eliminating the flat wheel problems. Normal operation at this time was to use two engines on T-Bird trains between December and April and one engine from April through November.

AFE 11912 and CA-6134 were requested in 1986 for authority to modify 60 crude ore cars with the application of Orinoco straight air. It was determined after the project started that 50 cars would be converted. These cars were numbered 45001–45050 to allow crews to distinguish between straight air and non-straight air equipped cars. Cars were converted between September 1986 and November. 1987. Once converted they were added to the ends of the T-Bird train sets.

Until 1986 260 of the T-Bird crude ore service cars continued to use plain-bearing trucks. CA-6147 was approved in August 1986 to convert these trucks to roller bearings. This eliminated the periodic need to rebuild plain-bearing trucks for these cars. Also beginning in 1986, with the assistance of jigs, gauges and technical help from Timken, a five-year project was begun to replace all 6x11-inch plain-bearing trucks with roller-bearing inserts on all 1,716 mini-quad ore cars.

The loss of Rhude & Fryberger natural ore business in 1987 and aging of the ore car fleet caused DM&IR to rationalize the ore car roster. Ownership in 1987 consisted of 3,961 active ore cars broken down as: 1,503 regulars, 1,716 mini-quads, 280 T-Bird crude service and 462 60000 series regulars qualified for pellet service. The inactive rosters consisted of: 989 stored cars, 19 authorized for disposal and 377 cars out on lease. It was determined that 700 of these cars were excess and needed to be disposed of. By January 1990 this reduction had been accomplished through sales and retirements.

T-Bird crude cars had an 8–10 year service life because during loading the unprocessed taconite rock caused damage and excessive wear



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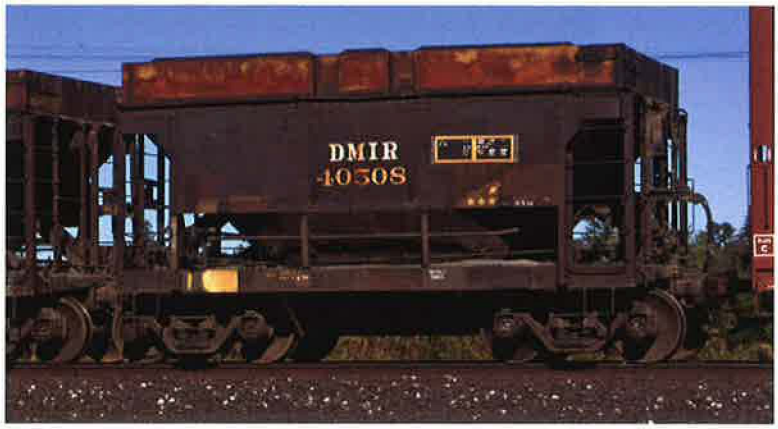
on side and slope sheets. AFE 12142 was for 50 "First Generation" crude cars, 40461–40510 regular T-Bird cars. The first 20 cars 40461–40480 were rebuilt during 1988 without authority retaining their original regular ore car numbers. Once AFE 12142 was approved they were renumbered. During mid-1989 it was decided to use secondhand 1-inch thick rubber conveyor belt material to line the slope sheets on T-Bird cars to minimize the damage caused by loading crude taconite. Testing of this theory began in late July 1989. Tests were successful and 30 cars 40481–40510 were equipped with the rubber belting. First Generation crude cars were cars without rubber belting material and the Second Generation were cars that were equipped with rubber belting on the slope sheet areas. All future T-Bird cars would be Second Generation cars.

AFE 12220 was approved in 1989 for 25 Second Generation T-Bird crude cars: two cars, 45051 and 45052, with straight air, eight cars 49001–49008 with permanent ETD bracket without side extensions, and 15 cars 40511–40525 as regular T-Bird cars. Project was terminated early and the last 3 cars, 40523–40525 were not rebuilt. Project resumed in May 1994 with 40523–40525 completed and eight additional cars added to the project, 40526–40533.

Retirements of damaged crude cars and the need to support up to ten trains per day consisting of two 96-car and one 84-car set to support increased pellet production at EVTAC required additional crude taconite cars to be rebuilt. AFE 12529 was approved in June 1994 for the rebuilding of 30 additional crude cars. Eighteen cars 40534–40550 and 45053 were completed in July 1994 and the remaining 12 cars 40551–40562 in October 1994.

Approved in October 1994 was AFE 12531 for rebuilding 25 additional T-Bird crude taconite cars 40563–40587 and AFE 12529 for one additional straight-air equipped T-Bird car 45053 for EVTAC service.

T-Bird cars were averaging 12-year service lives in 1995. An additional 25 T-Bird cars




Thirty 40481–40510 of the 50 40461–40510 ore cars rebuilt in 1988 and 1989 for T-Bird service were equipped with rubber belt material on the slope sheets to minimize damage when loading crude taconite in the cars. DM&IR 40508 Alborn, September 27, 2001. (D.P. Holbrook)




DM&IR 40730 converted to T-Bird crude taconite service in 1999 was one of 70 added to T-Bird fleet in that year. Wolf, May 12, 2005. (D.P. Holbrook)

40588–40612 were constructed under AFE 12590 approved July 26, 1996. Almost as soon as these were completed, an additional 100 cars, 40613–40712 were approved on AFE 12654 July 1, 1997. These 125 cars were used as replacements for previously rebuilt cars dating to 1946 that would be overage in 1996, exceeding the 50-year rule. Some 22 additional cars, 40713–40727 and replacement T-Bird idler cars 49001, 49003, 49005, 49007 and 49008 were rebuilt during 1998.

AFE 1031 was approved in March 1999 for the rebuilding of 100 additional T-Bird


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Once freight cars reached 50 years of age they became non-interchange qualified. As such the DM&IR mini-quad fleet would be overage between 1998 and 2007. Looking to purchase replacement cars, Kingsport Railcar of Kingsport, Tennessee rebuilt this drawbar-coupled two-car set of demonstrator ore cars from old ACF Coalveyor bathtub bottom coal cars in 2001. Cars tested on DM&IR in 2002 but no orders were placed. Proctor, March 2, 2002. (D. Schauer)

crude taconite cars. Changes in operations at EVTAC in 1999 allowed for a reduction from three sets of equipment to two sets, reducing the need to 72 cars 40728–40797 and replacement idler cars 49004, 49006.

The final groups of T-Bird crude cars would be 10 cars 40798–40807 rebuilt in 2002, and 24 cars 40808–40831 rebuilt in 2004 under AFE 5423.

## NEW CARS?

The turn of the century in 2000 brought about the need to consider replacing the taconite car fleet. The mini-quads had all been rebuilt from regular ore cars constructed between 1952 and 1957 and were approaching the 50-year overage rule which would cause the cars to need FRA waivers to continue operating.

Kingsport Railcar Co. of Kingsport, Tennessee, built an articulated 143-ton capacity two-car drawbar-coupled set of demonstrator ore cars during 2001. Kingsport rebuilt two ACF Coalveyor-type unit train coal gondolas by cutting one end off and shortening the car and installing new slope sheets on the cutoff end and repositioning the trucks. These cars, RCSX 1001 and 1002, arrived on DM&IR for testing in early 2002. After initial testing the slope sheets were modified by May 2002 to allow cars to have the proper capacity and prevent overloading of the cars. Normally an articulated car would carry one number, but builder elected to build cars with each having its own air and hand brake system and have a number on each car in the event DM&IR elected to remove the drawbar and replace it with standard Type E couplers. Cars were returned to builder in 2003.

DM&IR would not order any new cars to replace the older mini-quad fleet and elected to obtain waivers from FRA to operate the older cars. DM&IR would be acquired by Canadian National in May 2004. After the merger CN would purchase multiple orders of new cars to replace the old mini-quads.

## DM&IR CABOOSES

At the time of the merger there were a total of 44 D&IR and 30 DM&N cabooses on the roster. DM&N cars retained their numbers and D&IR cabooses had the numeral "1" added to their number when relettered DM&IR. Beginning on May 11, 1938 the prefix letter "C" was added to the number on cabooses. After December 9, 1939 road numbers with the letter C

*-continued on page 233*



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# Duluth, Missabe & Iron Range Cabooses

| No. | Builder | Cl | Built | Retired | O.L | Notes |
|---|---|---|---|---|---|---|
| C-5 | Duluth Mfg Co | G | 1910 | 11/8/1977 | 31' | SU applied 1940 - Donated to LSMT 11/8/77 |
| C-8 | Duluth Mfg Co | H | 1893 | 8/12/1974 | 36'0" | Side door equipped - SU applied April. 1945. Trucks removed and car body placed alongside track at T-Bird North Mine January, 1966. Placed back in service in 1969. Retired 8/12/74 |
| C-9 | Duluth Mfg Co | H | 1893 | 11/8/1977 | 36'0" | Side door equipped - Cupola in Center of Caboose 9 - SU applied April. 1945. Donated to LSMT 11/8/77 |
| C-10 | Duluth Mfg Co | H | 1893 | 6/4/1975 | 36'0" | Side door equipped - Cupola removed June 1910 - SU applied 4/4/45. Cupola reinstalled ? - To work service W10 in 1/29/75 AFE 10935 |
| C-12 | Duluth Mfg Co | H | 1894 | 3/3/1975 | 36'0" | SU applied in 1940 - Donated to LSMT 11/8/77 |
| C-15 | Duluth Mfg Co | G1 | 1894 | 5/22/1975 | 31' | Sold to D&NE 2/29 repurchased from D&NE 5/42 -SU applied 4/4/45 - Sold to Hyman Michaels 5/22/75 |
| C-18 | American Car & Foundry | G1 | 1899 | Rebuilt 1948 | 31' | SU applied 1940 - Retired April 1947 - Rebuilt to DM&IR C191 12/48 |
| C-22 | American Car & Foundry | G1 | 1900 | 4/13/1973 | 31' | Sold to D&NE 2/29 repurchased from D&NE 5/42 - SU applied 4/45 - Sold to Hyman Michaels 5/22/75 |
| C-25 | American Car & Foundry | G1 | 1900 | 11/8/1977 | 31' | SU applied 1940 - Sold to LSRM 11/6/80, resold to Bud Bulgrin |
| C-26 | American Car & Foundry | G1 | 1900 | 4/15/1969 | 31' | SU applied 1940 - Destroyed by fire on Soo Line 4/15/69 |
| C-30 | D&IR Two Harbors | G1 | 1911 | 11/8/1977 | 31' | SU applied 1940 - Sold to LSMT 11/6/80 |
| C-38 | D&IR Two Harbors | G1 | 1911 | 8/9/1977 | 31' | SU applied 1940 - Witte engine and Radio telephone equipped in 1948. Sold to L Tomporowski Proctor MN 8/9/77 |
| C-39 | D&IR Two Harbors | G1 | 1911 | 12/30/1974 | 31' | SU applied 1940 - Witte engine and radio telephone in 1948 Radio removed 1952 to C200 series. Sold to D&NE 12/30/74 |
| C-40 | D&IR Two Harbors | G1 | 1911 | 4/15/1969 | 31' | SU applied 1940 - Destroyed by fire on Soo Line 4/15/69 |
| C-43 | D&IR Two Harbors | G1 | 1911 | 10/8/1981 | 31' | SU applied 1940 - Witte engine and radio telephone equipped in 1947 - Radio removed 1952 to C200 series. Sold to LSMT 10/8/81 |
| C-44 | D&IR Two Harbors | G1 | 1911 | 7/30/1981 | 31' | SU applied 1940 - Witte engine and radio telephone equipped in 1947 - Radio removed 1952 to C200 series. Sold to LSMT 7/30/81 then resold to private individual 1981 |
| C-50 | D&IR Two Harbors | G1 | 1911 | 5/28/1975 | 31' | SU applied 1940 - Sold to Hyman Michaels 5/28/75 |
| C-51 | D&IR Two Harbors | G1 | 1911 | Retired before May 1943 | 31' | Steel underframe |
| C-52 | D&IR Two Harbors | G1 | 1911 | 7/30/1981 | 31' | SU applied 1940 - Witte engine and radio telephone equipped in 1948 - Radio removed 1952 to C200 series - Radio and engine reinstalled July, 1966. Sold to LSMT 7/30/81 |
| C-55 | D&IR Two Harbors | G1 | 1911 | 7/4/1976 | 31' | Steel underframe - Donated to Biwabik, MN 7/4/76 then to Museum of Mining Chisholm, MN |
| C-56 | D&IR Two Harbors | G1 | 1911 | 10/8/1981 | 31' | SU applied 1940 - Witte engine and radio telephone equipped in 1948 - Radio removed 1952 to C200 series. Sold to LSMT 10/8/81 |
| C-57 | D&IR Two Harbors | G1 | 1911 | 10/16/1962 | 31' | Steel underframe - Witte engine and radio equipped in 1948. Radio removed 1952 to C200 series |
| C-58 | D&IR Two Harbors | G1 | 1911 | 10/8/1981 | 31' | SU applied 1940 - Witte engine and radio telephone equipped in 1948 - Radio removed 1952 to C200 series. Sold to LSMT 10/8/81 then to private individual 1981, then to Iola Historical Society, Iola, WI |
| C-60 | DM&N Proctor Shops | H1 | 1912 | 10/18/1960 | 36'5" | Center cupola - side door equipped - SU applied 4/45 |
| C-61 | DM&N Proctor Shops | H1 | 1913 | 4/1/1975 | 36'5" | Center cupola - side door equipped - SU applied 4/45 - To work service W-61 1/29/75. Then to private individual at Popular, WI in 2004 |
| C-70 | DM&N Proctor Shops | G2 | 1924 | 5/26/1966 | 33'2" | Equipped with Witte engine and radio telephone in 1947 |
| C-71 | DM&N Proctor Shops | G2 | 1924 | 4/??/1967 | 33'2" | Equipped with Witte engine and radio telephone in 1947 |
| C-72 | DM&N Proctor Shops | G2 | 1924 | 9/8/1959 | 33'2" | Equipped with Witte engine and radio telephone in 1947 |
| C-73 | DM&N Proctor Shops | G2 | 1924 | 3/6/1963 | 33'2" | Equipped with Witte engine and radio telephone in 1947. Sold unknown date for cabin at Lake Vermillion, MN then donated to Tower, MN in 2001 |
| C-74 | DM&N Proctor Shops | G2 | 1924 | 09/??/1965 | 33'2" | Equipped with Witte engine and radio telephone in 1947. Sold to Mid-Continent RR Museum North Freedom, WI September 1965 |
| C-75 | DM&N Proctor Shops | G2 | 1924 | 10/25/1963 | 33'2" | Equipped with Witte engine and radio telephone in 1947 |
| C-76 | DM&N Proctor Shops | G2 | 1924 | Unknown | 33'2" | Equipped with Witte engine and radio telephone in 1947 |
| C-77 | DM&N Proctor Shops | G2 | 1926 | 11/11/1963 | 33'2" | Equipped with Witte engine radio telephone in 1947. Barber trucks as of 8/15/58. Sold to LS&I, then to Waunakee, WI for display |
| C-90 | EJE-Joliet Shops | | Rcvd 1/49 | 11/8/1977 | 34'8" | Former EJE 5. SU when built. Sold to LSMT 8/1/80 |
| C-91 | EJE-Joliet Shops | | Rcvd 1/49 | 5/22/1975 | 34'8" | Former EJE 88. SU when built. Sold Hyman Michaels 5/22/75 |
| C-92 | EJE-Joliet Shops | | Rcvd 1/49 | 10/26/1965 | 34'8" | Former EJE 96. - SU when built. Sold to LS&I 10/26/66 |
| C-93 | EJE-Joliet Shops | | Rcvd 1/49 | 2/27/1964 | 34'8" | Former EJE 101. SU when built. Sold to FJ Paripovich, Hibbing, MN 5/6/64 |


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| No. | Builder | Cl | Built | Retired | O.L | Notes |
|---|---|---|---|---|---|---|
| C-94 | EJE-Joliet Shops | | Rcvd 1/49 | 11/9/1976 | 34'8" | Former EJE 120. SU when built. Donated to LSMT 11/9/76 |
| C-95 | EJE-Joliet Shops | | Rcvd 1/49 | 5/28/1975 | 34'8" | Former EJE 123. SU when built. Sold Hyman Michaels 5/28/75 |
| C-96 | EJE-Joliet Shops | | Rcvd 1/49 | 11/8/1971 | 34'8" | Former EJE 144. SU when built. Sold to LSMT 11/8/71 |
| C-97 | EJE-Joliet Shops | | Rcvd 1/49 | 10/8/1976 | 34'8" | Former EJE 145. SU when built. Sold to Oglebay Norton Co. Virginia, MN 10/8/76 then donated to City of Eveleth then moved to Iron World Chisholm, MN |
| C-98 | EJE-Joliet Shops | | Rcvd 1/49 | 1/22/1971 | 34'8" | Former EJE 155. SU when built. Destroyed Wilpen, MN Sept. 1970. Dismantled on site. Sold to Hyman Michaels 3/15/71 |
| C-129 | D&IR Two Harbors | K1 | 1909/10 | 10/3/1972 | 31' | SU applied 1940 - Equipped with Witte engine and radio telephone in 1947 - Radio removed 1952 to C200 series. Sold to Hyman Michaels 10/3/72 |
| C-132 | D&IR Two Harbors | K1 | 1909/10 | 5/14/1975 | 31' | SU applied 1940 - Equipped with Witte engine and radio telephone in 1948. Radio removed 1952 to C200 series. Wrecked Coons-Pacific Washing Plant 8/29/74. Sold to Hyman Michaels 5/14/75 |
| C-135 (1st) | D&IR Two Harbors | K1 | 1909/10 | 6/15/1982 | 31' | SU applied 1940 - Equipped with Witte engine and radio telephone in 1948 -Radio removed 1952 to C200 series Rebuilt in 1967 to (2nd) C-135, cupola removed and replaced by winterized side window for T-Bird service |
| C-135 (2nd) | DM&IR Proctor Shops | | 1967 | 6/15/1982 | 31' | Sold to LSMT 6/15/82 |
| C-136 | D&IR Two Harbors | K1 | 1909/10 | 12/16/1975 | 31' | SU applied 1940 - Equipped with Witte engine and radio telephone in 1948 - Radio removed 1952 to C200 series - Sold to Hyman Michaels 12/16/75 |
| C-137 | D&IR Two Harbors | K1 | 1909/10 | 8/30/1967 | 31' | 6-bunks - SCS 1927 - Equipped with radio telephone in 1948. Sold to LS&I 8/30/67 |
| C-138 | D&IR Two Harbors | K1 | 1909/10 | 11/8/1977 | 31' | SU applied 1940 - Equipped with Witte engine and radio telephone in 1948. Sold to LSMT 4/22/81 |
| C-143 | D&IR Two Harbors | K1 | 1909/10 | 9/24/1981 | 31' | Equipped with Witte engine and radio telephone in 1948 -Back-up horn added 7/26/74. Sold to LSRM 9/24/81 |
| C-144 | D&IR Two Harbors | K1 | 1909/10 | 8/13/1975 | 31' | Equipped with Witte engine and radio telephone in 1948 - Destroyed by fire Endion, MN 4/25/75. Sold to West End Iron & Metal 8/13/75 |
| C-147 | D&IR Two Harbors | K1 | 1909/10 | 8/23/1967 | 31' | 6-bunks - SU applied 1927. To switch tenders' shanty at TH 8/23/67. Car body resold to JC Severson, Duluth, MN 8/29/79 |
| C-151 | D&IR Two Harbors | K1 | 1909/10 | 9/22/1965 | 31' | 6-bunks - SU applied 1935 - Equipped with Witte engine and Radio telephone in 1948 |
| C-152 | D&IR Two Harbors | K1 | 1934 | Retired before May 1943 | 31' | 6-bunks - SU when built |
| C-153 | D&IR Two Harbors | K1 | 1909/10 | 10/12/1946 | 31' | 6-bunks - SU applied 1934 - Burned Tower Jct. 8/30/46 |
| C-154 | D&IR Two Harbors | K2 | 1909/10 | 9/22/1965 | 31' | 6-bunks - SU applied 1934 - Equipped with Witte engine and radio telephone in 1948 |
| C-156 | D&IR Two Harbors | K2 | 1909/10 | 1/4/1949 | 31' | 6-bunks - SCS 1927 - Destroyed by fire Toivola, MN 10/13/48 |
| C-157 | D&IR Two Harbors | K2 | 1909/10 | 8/23/1967 | 31' | 6-bunks - SCS 1927 - To switch tenders' shanty Rainy Jct. Yard 8/23/67 |
| C-158 | D&IR Two Harbors | K2 | 1909/10 | 8/30/1967 | 31' | 6-bunks - SCS 1927 - Sold to LS&I 8/30/67 |
| C-159 | D&IR Two Harbors | K2 | 1909/10 | 3/23/1959 | 31' | 6-bunks - SCS 1927 |
| C-160 | D&IR Two Harbors | K2 | 1909/10 | 3/11/1965 | 31' | 6-bunks - SCS 1927 - Sold to Laona & Northern 4/30/65 |
| C-161 | D&IR Two Harbors | K2 | 1909/10 | 4/5/1968 | 31' | 6-bunks - SCS 1927 - Equipped with Witte engine and radio telephone in 1947 removed in 1951 - Radio reinstalled 6/66 |
| C-162 | D&IR Two Harbors | K2 | 1909/10 | 6/9/1969 | 31' | 6-bunks - SCS 1927 - Sold, less trucks, to Dr. John Wandmaker, Duluth, MN 6/9/69 |
| C-163 | D&IR Two Harbors | K2 | 1909/10 | 2/19/1961 | 31' | 6-bunks - SCS 1927 - Equipped with Witte engine and radio telephone in 1947 - Radio removed 1952 to C200 series |
| C-164 | D&IR Two Harbors | K2 | 1909/10 | 4/5/1968 | 31' | 6-bunks - SCS 1927 |
| C-165 | D&IR Two Harbors | K2 | 1909/10 | 8/30/1965 | 31' | 6-bunks - SCS 1927 |
| C-166 | D&IR Two Harbors | K2 | 1909/10 | 11/??/1968 | 31' | 6-bunks - SCS 1927 |
| C-167 | D&IR Two Harbors | K2 | 1909/10 | 6/17/1969 | 31' | 6-bunks - SCS 1927 - Sold, less trucks to Mr. Gerald Brechlin, Duluth, MN 6/17/69 |
| C-168 | D&IR Two Harbors | K2 | 1909/10 | 6/16/1969 | 31' | 6-bunks - SCS 1927 - Equipped with Witte engine and radio telephone in 1947 - Radio removed 1952 to C200 series. Sold, less trucks to Dr. John Wandmaker, Duluth, MN 6/16/69 |
| C-169 | D&IR Two Harbors | K2 | 1909/10 | 9/26/1967 | 31' | 6-bunks - SCS 1927 - Sold to D&NE |
| C-170 | D&IR Two Harbors | K2 | 1909/10 | 06/??/1960 | 31' | 6-bunks - SCS 1927 |
| C-172 | D&IR Two Harbors | K2 | 1909/10 | 5/22/1953 | 31' | 6-bunks - SCS 1927 - Equipped with Witte engine and radio telephone in 1947 - Radio removed 1952 to C200 series |
| C-173 | D&IR Two Harbors | K2 | 1909/10 | 8/30/1967 | 31' | 6-bunks - SCS 1927 - Sold to LS&I |
| C-174 | D&IR Two Harbors | K2 | 1909/10 | 8/30/1967 | 31' | 6-bunks - SCS 1927 - Sold to LS&I |
| C-175 | D&IR Two Harbors | K2 | 1909/10 | 1/3/1967 | 31' | 6-bunks - SCS 1927 - Equipped with Witte engine and radio telephone in 1947 - Radio removed 1952 to C200 series |
| C-176 | D&IR Two Harbors | K2 | 1909/10 | 10/26/1965 | 31' | 6-bunks - SCS 1927 - Sold to LS&I |



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| No. | Builder | Cl | Built | Retired | O.L | Notes |
|---|---|---|---|---|---|---|
| C-177 | D&IR Two Harbors | K2 | 1909/10 | 7/21/1969 | 31' | 6-bunks - SCS 1927 - Donated to John V Wolak 7/21/69. Restored in 1971 at St. Stephen's Church St. Cloud, MN |
| C-179 | D&IR Two Harbors | K2 | 1909/10 | 1/3/1967 | 31' | 6-bunks - SCS 1927 - Sold to Ira Sack c/o Mid-South Society for Preservation Memphis, TN. Relettered ISC for movement |
| C-180 | D&IR Two Harbors | K1 | 1909/10 | 11/8/1977 | 31' | Equipped with Witte engine and radio telephone in 1948 - Sold to LSRM 4/22/81 then to Pflueger Construction Co. Wabasha, MN late 1981. |
| C-181 | D&IR Two Harbors | K3 | 1909/10 | 01/??/1956 | 40'4" | SCS 1935 |
| C-182 | D&IR Two Harbors | K4 | 1910 | 4/15/1969 | 34' | 6-bunk - Bunks and Stove removed in April 1937 - SU 2/10/47. Destroyed by fire on Soo Line 4/15/69 |
| C-183 | D&IR Two Harbors | K4 | 1910 | 11/8/1977 | 34' | 6-bunk - Bunks and Stove removed in April 1947 - SU 4/16/47. Sold to LSMT 8/1/80 then to private individual Elroy, WI late 1980 then to Mid-Continent RR Museum North Freedom, WI in 1985 |
| C-184 | Rebuilt D&IR Two Harbors | K3 | 1920 | 1/29/1975 | 40'4" | 6-bunks - SCS 1921 - SU 9/14/46 - To work service W-184 1/29/75 AFE 10935. Donate to LS&M |
| C-185 | Rebuilt D&IR Two Harbors | K3 | 1920 | 4/13/1942 | 40'4" | Wrecked at Waldo, MN 3/6/42 - Dismantled Two Harbors 4/13/42 |
| C-186 | Rebuilt D&IR Two Harbors | K5 | 1923 | 10/29/1967 | 40'7" | 6-bunks - side doors - Center Cupola - SU 3/31/47 - Equipped with Witte engine and radio telephone in 1948. Radio telephone removed in 1951 |
| C-187 | Rebuilt D&IR Two Harbors | K3 | 1920 | 1/29/1975 | 40'4" | 6-bunks - SCS 1921 - SU 7/10/46 - Equipped with Witte engine and radio telephone in 1948 - To work service W-187 1/29/75 AFE 10935. Donated to LS&M |
| C-188 | Rebuilt D&IR Two Harbors | K3 | 1920 | 4/15/1975 | 40'4" | 6-bunks - SU 1921 - Equipped with Witte engine and radio telephone in 1948. Sold to Hyman Michaels 4/15/75 |
| C-189 | Rebuilt D&IR Two Harbors | K3 | 1920 | 1/29/1975 | 40'4" | 6-bunks - Steel underframe 1921 - Equipped with Witte engine and radio telephone in 1948 - To work service W-189 1/29/75 AFE 10935 |
| C-190 (1st) | DM&IR Two Harbors | | 1942 | 1965 | 31' | Steel underframe when built - Equipped with Witte engine and radio telephone in 1947 - Constructed on AFE M4858 5/4/42. Rebuilt to (2nd)C-190 at Proctor by removing cupola and adding winterized side window for T-Bird service 1965 |
| C-190 (2nd) | DM&IR Proctor | | 1965 | 7/25/1967 | 31' | Wrecked 1967 |
| C-191 (1st) | DM&IR Two Harbors | | 1947 | 1965 | 31' | C18 retired 1947 and rebuilt to C191 in Dec 1948 - Equipped with Witte engine and radio telephone in 1948. Rebuilt to (2nd) C-191 at Proctor by removing cupola and adding winterized side window for T-Bird service 1965 |
| C-191 (2nd) | DM&IR Proctor | | 1965 | 6/15/1982 | 31' | Sold to LSMT 6/15/82. Resold to private individual Pengilly, MN |
| C-192 | DM&IR Two Harbors | | 1951 | 10/8/1981 | 31' | Built with SU - Equipped Witte engine and radio telephone when built. AFE 6951 1/30/50. Sold to LSRM 10/8/81. Sold to Burger King Kenosha, WI in late 81 |
| C-193 | DM&IR Two Harbors | | 1951 | 10/11/1979 | 31' | Built with SU - Equipped with Witte engine and radio telephone when built AFE 6951 1/30/50. Sold to Reserve Mining Co. 10/11/79 |
| C-200 | International Railway Car Co. | | 1952 | 4/9/1990 | 39'10" | Straight air equipped 1968 Donated to Proctor, MN in early 1990's. On display |
| C-201 | International Railway Car Co. | | 1952 | 4/9/1990 | 39'10" | |
| C-202 | International Railway Car Co. | | 1952 | 4/9/1990 | 39'10" | Straight air equipped 1968 |
| C-203 | International Railway Car Co. | | 1952 | 4/9/1990 | 39'10" | |
| C-204 (1st) | International Railway Car Co. | | 1952 | 1976 | 39'10" | Rebuilt to (2nd) C-204 2/6/76 - Cupola removed and replaced with bay window |
| C-204 (2nd) | DM&IR Proctor Shops | | 1976 | 4/9/1990 | 39'10" | |
| C-205 (1st) | International Railway Car Co. | | 1952 | 1976 | 39'10" | Rebuilt to (2nd) C-205 2/6/76 - Cupola removed and replaced with bay window |
| C-205 (2nd) | DM&IR Proctor Shops | | 1976 | 4/9/1990 | 39'10" | Sold to NSM 7/3/2000. Purchased from NSM by LSMT in 2003 |
| C-206 | International Railway Car Co. | | 1952 | 10/19/1973 | 39'10" | Destroyed in wreck at Highlands, MN 10/19/73 |
| C-207 | International Railway Car Co. | | 1952 | 4/9/1990 | 39'10" | |
| C-208 | International Railway Car Co. | | 1952 | 4/9/1990 | 39'10" | Donated to Rose School Duluth, MN in late 1990's |
| C-209 (1st) | International Railway Car Co. | | 1952 | 1967 | 39'10" | Rebuilt to (2nd) C-209 in 1967 - Cupola removed and replaced with side winterized window |
| C-209 (2nd) | DM&IR Proctor Shops | | 1967 | 4/9/1990 | 39'10" | |
| C-210 (1st) | International Railway Car Co. | | 1952 | 1967 | 39'10" | Rebuilt to (2nd) C-210 in 1967 - Cupola removed and replaced with side winterized window |
| C-210 (2nd) | DM&IR Proctor Shops | | 1967 | By 1995 | 39'10" | |


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| No. | Builder | Cl | Built | Retired | O.L | Notes |
|---|---|---|---|---|---|---|
| C-211 | International Railway Car Co. | | 1952 | 4/9/1990 | 39'10" | Straight air equipped 1968 |
| C-212 | International Railway Car Co. | | 1952 | 4/9/1990 | 39'10" | Straight air equipped 1968 |
| C-213 | International Railway Car Co. | | 1952 | 4/9/1990 | 39'10" | Straight air equipped 1968 |
| C-214 | International Railway Car Co. | | 1952 | 4/9/1990 | 39'10" | Straight air equipped 1968 |
| C-215 | International Railway Car Co. | | 1952 | 4/9/1990 | 39'10" | Straight air equipped 1968 |
| C-216 | International Railway Car Co. | | 1952 | 4/9/1990 | 39'10" | Straight air equipped 1968 |
| C-217 | International Railway Car Co. | | 1952 | 4/9/1990 | 39'10" | Straight air equipped 1968 |
| C-218 (1st) | International Railway Car Co. | | 1952 | 2/6/1976 | 39'10" | Straight air equipped 1968 Rebuilt to (2nd) C-218 2/6/76. Cupola removed replaced by bay window. |
| C-218 (2nd) | DM&IR Proctor Shops | | 1976 | By 1995 | 39'10" | |
| C-219 (1st) | International Car Co. | | 1952 | 2/6/1976 | 39'10" | Straight air equipped 1968 Rebuilt to (2nd) C-219 2/6/76. Cupola removed replaced by bay window |
| C-219 (2nd) | DM&IR Proctor Shops | | 1976 | 4/9/1990 | 39'10" | Rebuilt 2-6-76 - Cupola removed and replaced with bay window - radio equipped when rebuilt |
| C-220 | International Car Co. | | 1974 | 4/9/1990 | 42'5" | Straight air and radio equipped when built |
| C-221 | International Car Co. | | 1974 | 4/9/1990 | 42'5" | Straight air and radio equipped when built |
| C-222 | International Car Co. | | 1974 | Feb. 2005 | 42'5" | Straight air and radio equipped when built. Sold to Duluth Port Authority in Feb. 2005 for use with Schnabel car movements |
| C-223 | International Car Co. | | 1974 | 4/9/1990 | 42'5" | Straight air and radio equipped when built |
| C-224 | International Car Co. | | 1974 | By 1995 | 42'5" | Straight air and radio equipped when built |
| C-225 | International Car Co. | | 1974 | 4/9/1990 | 42'5" | Straight air and radio equipped when built |
| C-226 | International Car Co. | | 1974 | 4/9/1990 | 42'5" | Straight air and radio equipped when built |
| C-227 | International Car Co. | | 1974 | 2000 | 42'5" | Straight air and radio equipped when built - Sold to NSM 7/3/00 |
| C-228 | International Car Co. | | 1974 | 4/9/1990 | 42'5" | Straight air and radio equipped when built |
| C-229 | International Car Co. | | 1974 | 4/9/1990 | 42'5" | Straight air and radio equipped when built |
| C-230 | International Car Co. | | 1974 | 4/9/1990 | 42'5" | Straight air and radio equipped when built |
| C-231 | International Car Co. | | 1974 | 4/9/1990 | 42'5" | Straight air and radio equipped when built |
| C-232 | International Car Co. | | 1974 | 4/9/1990 | 42'5" | Straight air and radio equipped when built |
| C-233 | International Car Co. | | 1974 | 4/9/1990 | 42'5" | Straight air and radio equipped when built |
| C-234 | International Car Co. | | 1974 | 4/9/1990 | 42'5" | Straight air and radio equipped when built |
| C-235 | International Car Co. | | 1974 | 4/9/1990 | 42'5" | Straight air and radio equipped when built |
| C-236 | International Car Co. | | 1974 | 4/9/1990 | 42'5" | Straight air and radio equipped when built |
| C-237 | International Car Co. | | 1974 | 4/9/1990 | 42'5" | Straight air and radio equipped when built |
| C-238 | International Car Co. | | 1974 | 4/9/1990 | 42'5" | Straight air and radio equipped when built |
| C-239 | International Car Co. | | 1974 | 4/9/1990 | 42'5" | Straight air and radio equipped when built |

***Abbreviations***

*LS&M* *Lake Superior & Mississippi Railroad, West Duluth, MN*
*LSMT* *Lake Superior Museum of Transportation, Duluth, MN*
*D&NE* *Duluth & North Eastern RR, Cloquet, MN*
*EJ&E* *Elgin, Joliet & Eastern*
*LS&I* *Lake Superior & Ispheming*
*NSM* *North Shore Mining*
*Rcvd* *Received*

*All cabooses are 8-wheel.*

*AFE 5882 Ten locomotives, 17 cabooses(C-43, C-44, C-70, C-71, C-72, C-73, C-74, C-75, C-76, C-77, C-129, C-161, C-163, C-168, C-172, C-175,C-190) and 7 wayside office equiped in 1947 with Aireon inductive radio. Each caboose equipped with Witte 4-HP one-cylinder diesel engine.*

*AFE 6180 19 cabooses (C-38, C-52, C-56, C-57, C-58, C-132, C-135, C-136, C-138, C-143, C-144, C-151, C-154, C-180, C-186, C-187, C-188, C-189, C-191) equipped with radio and Witte 4-HP engines in 1948.*

*Following cabooses had radio and Witte 4-HP engines installed unknown date: C-39, C-96, C-152, C-153, C-164, C-165, C-166, C-167, C-173, C-174.*

*Following cabooses plywood sheathed between 1964-70: C-39, C-44, C-50, C-58, C-135, C-136, C-138, C-143, C-144, C-180, C-191, C-192, C-193.*

*Following cabooses "Duroply" sheathed between 1964-70: C-15, C-38, C-43, C-50, C-56, C-91.*

*Following cabooses confirmed in "Arrowhead" paint scheme: C-43, C-44, C-52, C-56, C-58, C-138, C-143, C-144, C-180, C-192, C-193, C-204, C-205, C-210, C-218, C-219.*



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Cabooses C-55, C-96 and C-95 are on hand at Mitchell on July 28, 1969. C-96, former EJ&E 123, and C-96, former EJ&E 144, were purchased in January 1949. Note the roof profiles, arched on C-96 and peaked on C-95 and the different style letterboards. (D.P. Holbrook collection)

*-continued from page 228*

were added to the ends of cupolas. A hyphen was added between the letter C and the road number beginning on January 12, 1942.

Prior to merger, D&IR cabooses did not have an assigned Class and were assigned classes K1, K2, K3, K4 and K5 after the merger. See DM&IR caboose roster for details.

An inventory of cabooses and types of underframes on October 9, 1939 showed C-129, C-132, C-135, C-136, C-138, C-143, C-144, C-180, C-151, C-154, and C-182 through C-187 equipped with wood underframes that had been reinforced with steel rails. Cabooses C-137, C-153, C-156 to C-170, C-172 to C-177, C-179, C-181 were equipped with steel center sills. Cabooses C-147, C-188, C-189 were equipped with steel underframes. A total of 16 cabooses with wood underframes, 10 with steel-rail reinforced underframes, 25 with steel center sills and 3 with steel underframes, all former D&IR cabooses

Cabooses C-55, C-57, C-70 through C-77 were all equipped with steel underframes. Cabooses C-5, C-8 thru C-10, C-12 through C-58 were all equipped with wooden underframes. A total of 20 with wood and 10 with steel underframes, all former DM&N.

AFE 4138 was approved for $8,500 on October 27, 1939 for rebuilding eight class G1 cabooses with steel underframes. Chosen were C-5, C-12, C-26, C-30, C-39, C-40, C-43 and C-58. Eight additional cabooses, C-18, C-25, C-38, C-44, C-50, C-52, C-56 and C-132 were approved for steel underframes under AFE 4329, and four more, cabooses C-129, C-135, C-136, and C-138 under AFE 4344. All used Cardwell NY-11-E draft gears for the underframes, being more flexible than the draft gears which were applied to other former D&IR steel-underframe cabooses. The former G-1 series was chosen for rebuilding because all had the same 24-foot underframes. Project was started on November 7, 1939, and completed on March 18, 1940. When the project was completed only five 24-foot and 31-foot or longer cabooses were left with wooden underframes.

Increased shipments of ore with the start of World War II caused a severe caboose shortage. Two former DM&IR cabooses, D&NE 3 and 5, were purchased and delivered back to DM&IR at Saginaw on May 15, 1942. Both were taken to Two Harbors for repairs and restencilling, D&NE 3 to C-22 and D&NE 5 to C-13. To assist in the shortage in 1942, two cabooses were leased from NP. An unknown number of cabooses were leased from sister road EJ&E during early 1947 and returned the same year at the end of the ore


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A caboose shortage during 1946 caused DM&IR to lease a number of cabooses from sister road EJ&E. EJ&E 109 is with Class K 2-8-0 DM&IR 1204 pulling interchange cars from NP Rice's Point Yard. (R.V. Nixon photo, Museum of Rockies collection)

season. Also leased were an unspecified number of Omaha Ry. bay-window cabooses.

Request was made in 1944 to equip seven wooden underframe cabooses, C-8, C-9, C-10, C-15, C-22, C-60, C-61 assigned to Proctor Hill ore transfers with steel underframes. AFE M5248 was approved April 14, 1944 and all work completed at Two Harbors by April 4, 1945.

After the war many railroads began to install radio communication in engines, cabooses, yard offices, dispatcher's offices and depots to allow for better communication and safer operations. AAR Communications Section had established a special Committee 7 on December 11, 1944, to consider the application of communication equipment to rolling stock. Discussion during these meetings determined that engines, both steam and diesel, had sufficient electrical capabilities but recommended an additional turbo-generator on steam engines to supply 117 volts, single-phase AC power for radios. The committee considered axle generators and storage batteries for cabooses. Both had disadvantages; axle generators were only effective if train speed was sufficient to charge on-board batteries. Storage batteries without an axle generator would require charging locations at each terminal, with cabooses switched to those locations. The third possibility was a small internal combustion engine connected to an AC or DC generator. In 1944, the only engine available was fueled by gasoline and considered a fire hazard.

DM&IR approved AFE 5882 on November 30, 1946, at a cost of $90,000 for the installation of inductive radios, Witte diesel engines for electrical power and fuel oil tanks on 17 cabooses: C-43, C-44, and C-70 through C-77, C-129, C-161, C-163, C-168, C-172, C-175, and C-190 on the Missabe Division. Also equipped with radios were steam engines 502, 513, 220, 223, 228-231, 235 and 237. Testing of this equipment was begun on June 30, 1947 using engine 235 and caboose C-172. Caboose radio installations were completed on April 10, 1947, at Two Harbors shop.

Radios were installed on additional engines 81, 190, 1207, 90–93, D&RGW 1550, D&RGW 1551 and D&RGW 1553 during October 1947 for use in Proctor yards per AFE 6176. During May 1948, radio equipment was moved from engine 81, 190 and 1207, to 506, 514, and 515. D&RGW engines 1550, 1551 and 1553 had radios removed in summer 1948 and reinstalled on DM&IR engines 508, 510 and 512.



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Installation of inductive radio equipment for the Iron Range Division was approved on AFE 6180 on December 5, 1947, for installation on 15 cabooses, 14 engines and six wayside locations at a cost of $116,000. An additional 19 cars were approved under AFE 6180 in 1948: C-38, C-52, C-56, C-57, C-58, C-132, C-135, C-136, C-138, C-143, C-144, C-151, C-154, C-180, C-186 through C-189 and C-191. All 10 M4 Class and 4 M3 Class 2-8-8-4 Yellowstones were equipped with inductive radios during 1948.

DM&IR formed a caboose committee in 1947 consisting of eight labor and 14 management employees to design a new wood caboose. After many meetings a caboose design, similar to those constructed in 1937, was approved.

The design was to consist of:

- Wood caboose bodies with additional bracing and screws in place of nails.
- All metal objects, such as stoves, tables, coal boxes, lockers, window sashes, door jambs, handhold and shelving would have rounded corners.
- All glass would be safety glass.
- All aisleways coated with a non-skid surface.
- Ends platforms and steps were to be of the open grid type.
- Caboose steps would be lowered to a height of not over 14 inches above rail.
- Inside of all cupolas would be sealed so there are no protruding ribs or braces.
- Cupola seats and back rest would be cushioned by springs or foam rubber.
- Thermos jug would be installed.
- All to have steel underframes.
- Windows in cupola had to be moved as close to corner of cupola as possible.
- Conductor's desk would be raised to a height of 32 inches.
-Raise ladder from platforms to roof of caboose 30 inches above the latitudinal running board, but in no case, higher than cupola roof.

Install in all cabooses, suitable wash basin, the same as in sample caboose C-18 which was rebuilt to caboose C-191.

- Standardize on end railings, the same as were then installed on Class G-2 cabooses.
- Reverse coal box by putting it against end of the long seat between seat and stove and padded.
- Provide larger containers for yellow fusees.
- Standardize on type of cupola on the Class G-2 cabooses, except end windows would be the same as in sample caboose C-18 (C-191). The height of windows and height of cupola were to be the same as Class G-2 cabooses.
- All cabooses rebuilt or purchased for use in road, ore or local way freight service to be as wide as widest ore car.

The caboose shortage was too great in 1948 and a decision was made to find suitable second-hand cabooses to tie DM&IR over until shop time was available at Two Harbors. Caboose C-18 was destroyed by fire and retired in April 1947. Parts were salvaged and new caboose C-191 was built from these in July, 1947 using the designs approved by the 1947 caboose committee.

## EJ&E CABOOSE PURCHASE

On December 22, 1948, DM&IR approved the purchase for $14,000 of nine secondhand cabooses from EJ&E. These cars, EJE 5, 88, 96, 101, 120, 123, 144, 145, and 155 were shipped from EJE Joliet Yard on December 26, 1948, and delivered from Omaha Ry. at South Itasca to DM&IR on January 3, 1949. Cabooses were immediately placed in service, still with EJE orange paint. Cars were renumbered, in order, as DM&IR C90–C98. All cars had 12-inch channel steel center sills, 10-inch channel steel side and ends sills. A letter from P.M. Sullivan, superintedent motive power & cars, on January 19, 1949, requested that all nine cabooses be painted. The final two cars were painted on


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