Recabling WPMW 37, Unloading S.N. 146, and Other Crane Stories

By Jim Ley, FRRS Crane Supervisor

When we first thought about acquiring the former SN 146, a 44-ton GE center cab locomotive, the method of transporting it was a consideration. The 146 had friction bearing axles which would preclude its movement on its own wheels; it would have to be loaded on a flat car. Since we have a 200 ton locomotive crane, we could lift the unit off the flat car once it got to Portola.

There was a small problem with using the WPMW 37 to unload anything. A while back, while inspecting WPMW 37, I discovered, to my great consternation, that the hoisting cable for the headline (the 60 ton capacity hook at the tip of the boom) was kinked in two places and had "whiskers" (broken cable strands) showing, rendering it unsafe and therefore unusable.

The hoisting cable for the 200 ton "Big Hook" was in much better condition, although the end at the block thimble was frayed, and would have to be cut off and reset. Well, one thing led to another, so the whole idea of replacing and repairing cables was put on hold as replacing 350 feet of 1-1/4 inch cable was going to cost well over $2000.

It was decided to remove the cable from the auxiliary hoist, called the "head line." Hank Stiles, Brian Challender and I removed the old cable so that we could verify its length (350') and a search was then made to find new cable at a reasonable price. Norm Holmes knew of a supplier in San Jose that could provide the right kind of cable for a very reasonable price. Norm drove our trusty Dodge pickup down there and acquired a reel of cable. While he was at it, Norm took some good pieces of the old cable with him and had this outfit make up two 18 foot long slings to match the two we had on hand. Now 350 feet of 1-1/4 inch cable weighs a little over half a ton, so it made the pickup truck ride real smooth on the way back.

The cable has a thimble on one end that is secured by pouring a hot lead compound into the thimble with the cable in place. There is a cable company in Oakland which does this kind of work and they did a very nice job on it. The thimble block on the other end, which secures the end of the cable to the hoisting drum, had to be leaded on after the cable was threaded onto the crane. As the leading process appeared to be a very tricky job, we considered hiring someone to do it for us, but were unable to find anyone interested in doing the job. Then I got lucky!

I stopped by Sacramento Wire and Cable in West Sacramento one day and talked to Joe, the head rigger, and told him about our problem. He explained exactly how to perform the leading operation, and gave me several ounces of Sal Ammoniac, which is used as a flux. He also told me that they considered the leading process to be obsolete. They now use an epoxy product, which is stronger than the metal which was used in the past.

After some discussion, I elected not to use the epoxy this time, since it requires 24 hours to set up, and the temperature must remain above 48 degrees in that time. Well, we didn't have 24 hours oncé this process started, and in the winter time in Portola, it never gets above 40 degrees, let alone staying above 48 degrees for 24 hours. I did, however, buy two epoxy kits for use in repairing the cable on the 200 ton hook later on. Since time was of the essence, using the metal was much more feasible, as all I had to do was melt the stuff, heat everything up, pour it in and wait until everything cooled off, which doesn't take long in the winter in Portola.

Then another problem arose. The leading process requires a melting pot, burner, and ladle to pour the molten metal. The metal is a zinc alloy known as socket metal. Well, Joe didn't have any more socket metal on hand, so I was stuck again. Enter Hap Manit. When I mentioned my dilemma to Hap, he said, "I'll be right back," and he re-appeared about a half-hour later with some ingots of socket metal, a melting pot, burner and ladle. Wow!

Once we had all the necessary tools, supplies and crew on hand, the first order of business was to unroll the cable from the shipping reel and lay it out on the shop floor, to avoid twisting and kinking it, then thread the cable through the sheaves at the boom tip, the lifting block and the rest of the boom, where it goes through various guides and rollers so that the end comes out near the draw works. Then, a steel block about four inches on a side, with a conical hole in it, has to be leaded onto the end of the cable. The little block fits in a slot in the lifting winch drum to secure the end of the cable to the drum. It is very important that this leading process be done in a proper manner. If it is not, the cable could slip off of the lifting winch under load, with very unfortunate results, such as dropping a locomotive on someone.

Finally everything came together. After the SN 146 on the flatcar, as well as the companion gondola with spare parts, arrived at Portola, the weather and various other factors delayed unloading the locomotive until the weekend of December 3-4, 1994. Upon Dave Anderson's and my arrival on the 3rd, I was pleased to note that Steve Habeck, Norm Holmes and Gordon Wollesen had switched the WPMW 37 onto shop track No. 2, over the pit. The HUGE size of it becomes very apparent when it is in the shop; it clears the shop door by about six inches.

Moving the crane into the shop turned out to be a very good idea, as it was snowing heavily from time to time. It was also very handy having lights to work under, since we

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Jim Ley is shown hard at work recabling our "Big Hook." Photo by Ed Warren.

GE 44 ton diesels: the history

By Kent Stephens

Some of the newer railfans have been known to ask, "what is the reason for the GE 44-ton unit being 44 tons? Why not just make it 45 tons?" Some railfans have also confused GE 44-ton and 45-ton centercab units, not realizing that the two models represent a completely different engineering concept, and the GE 44-ton model is not another small industrial switcher that just happens to weigh 44 tons.

The origin of the GE 44-ton model was a compromise agreement between the carriers and the unions in 1937 that was known as the "90,000 pound rule." In the late 1930's, a number of railroads started experimenting with replacing steam switchers with diesel switchers, particularly in city terminals where there was concern about excessive smoke. The railroad companies attempted to save labor costs by insisting that a fireman wasn't necessary on a diesel, but the unions contended that firemen were necessary for safety reasons. A compromise agreement was reached that a fireman would not be needed on any diesel locomotive that weighed less than 90,000 pounds (45 tons) on a common carrier railroad, thus permitting the economy of one person operation. Industrial operations as well as the military, didn't have this union restriction, thus they had the option of one person operation of the 45, 50, 65, 80, and 95 ton centercab models.

General Electric, as well as other locomotive manufacturers, developed the 44-ton model for the railroad market and not the industrial market. The statistics tell the story -- Class I railroads rostered only 17 centercab GE's weighing 45, 50, 65, 80, or 95 tons in contrast to owning a total of 239 GE 44-ton units. The 44-ton models, from both GE and other manufacturers, became known as railroad switchers, the other centercab models designed for industrial service are known as industrial switchers. Our museum's two 80-tonners are industrial switchers, not railroad switchers.

The 44-ton railroad switcher was an entirely different engineering design concept from the 45 ton industrial switcher. The 44-tonner was designed for sustained hard pulling power over a railroad line; the industrial switchers weren't designed for sustained pulling power but for short distance switching moves within a plant. The 44-tonners have more horsepower, higher speed, and lower rpm engines, the 45-tonners have less horsepower, lower speed and higher rpm engines. The 44-tonners have four traction motors, one on each axle. The 45-tonners have two traction motors -- one of two axles on each truck has a traction motor -- with power transmitted to the other axle by means of a chain drive or side rod.

The majority of GE 44-tonners were built with two 190 hp Caterpillar Model D17000 V8 diesel engines for a total of 380 hp. The later models had a 200 hp rating.

Sacramento Northern's 44-tonners

With their light weight, the 44-tonners were ideal for the weight restrictions on electric interurban railroads and small short lines with light rail. It's no wonder that the 44-tonner became what one author called, "...the short line's best friend." GE 44-tonners were widely used on a number of Northern California electric interurban railroads and short lines including Almanor RR, Arcata & Mad River, Petaluma & Santa Rosa, San Francisco & Napa Valley, Sacramento Northern, Central California Traction, Tidewater Southern, Amador Central and Quincy Railroad.

SN had part ownership of three 44-tonners during the war years -- San Francisco & Napa Valley Nos. 30, 40, 50 that had been bought in 1942-43 by the SF&NV. They stayed on the SF&NV for the duration of the war. 44-tonner No. 40 was transferred to the Sacramento Northern in May 1946, becoming the No. 141 on the SN. SN had also placed an order with GE for five more 44-ton units. Sacramento

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worked on threading the cable through the lifting block and the boom until 8 o'clock Saturday night. Everything was ready to rethread the cable on the winch with the socket block set on the end of the cable.

First thing Sunday morning, Dave Anderson, Norm Holmes, Tom Graham and daughter Melissa and I unrolled the cable from the shipping reel, laid the cable out on the shop floor and wound it up on the lifting winch drum. It took all of us to pull, heave and haul on the cable, because we were pulling it up the end steps and through the little house on the boom car, then onto the tip of the boom. This was necessary, as there was not enough space to rotate the crane in the shop. Next the crane and boom car were moved outside alongside the flatcar with the 44 tonner. The outrigger blocks were set in place with the help of our front-end loader, which is a necessary auxiliary machine to operate the WPMW 37 as moving the outrigger beams in and out, as well as setting the blocks, would be very difficult, if not impossible without it, not to mention moving the snow out of the way. At this point, we ran out of daylight and suspended operations for the day. It gets dark too early in the winter! Incidentally, we all agreed that the crane looked great in the dark with all the lights on. Night shot, anyone?

Since we were paying demurrage on the flat car and we had a crew on hand, we agreed to stay over Monday to finish the unloading job. This involved Dave, Tom and I missing a day's work, as well as a day's pay, and Melissa missing a day's school. Monday turned out to be a beautiful, clear and cold day. We all turned to and finished blocking up the crane outriggers. When Norm picked up the new cable, he also bought four 35 ton shackles to be used to secure the cable to the locomotive. In Oklahoma, the crane company welded four one-half inch plates to the frame with a hole to be used for the cable tie downs. Norm, Dave, Tom and Skip Englert rigged the lifting slings centered over the engine cab. I took a slow lift on the engine, and it picked right up off of the car. As soon as the engine was clear of the flatcar, Skip pulled the car out from under the engine with engine 1857. The riggers had very cleverly arranged the rigging so that one end of the engine was slightly higher than the other, so that when it was lowered to the track, one wheelset at a time hit the rail. With some pulling and hauling on taglines, and judicious shoving and pulling with the front-end loader, skillfully being operated by Norm, the engine was on the rail and being pulled away in just over an hour. Melissa recorded the entire operation on videotape. Ken Roller added his talents and advice to the operation, as well. When the 146 was on the rails, we dismantled the blocking under the outrigger beams, shoved the beams back into place with the loader, secured the crane for movement and Norm took us all to lunch.

I want to thank Norm Holmes, Hap Manit, Skip Englert, Tom Graham, Melissa McGrath, Dave Anderson, Steve Habeck, Gordon Wollesen and Ken Roller for making this a safe and successful operation. Nothing got broken and no one was injured while working under somewhat hazardous conditions. There were eighteen inches of snow on the ground, it was very cold and everything was very slippery. Nice Job! I also want to thank Sharon McGarr for providing the nice warm house for Dave, Tom, Melissa and I to stay in over the weekend, as well as the Union Pacific Railroad for donating the WPMW 37 to the museum and Norm Holmes, for talking them into it.

Modelers' Note: Athearn has produced, in the past, an HO scale Industrial Brownhoist Big Hook which is very close to what the WPMW 37 looked like when it was steam powered. The conversion to the Diesel powered version shouldn't be too difficult. A few pictures in various stages are available, including some shots in the Western Pacific Video that is available in our gift shop. If anyone does a model of this thing, I'd like to see it.