



Union Pacific had a fleet of wrecking derricks on the system from 1900 until today. This article is the story of these wreckers and the article that follows shows how to model them. Number 02797 was working in conjunction with wrecking derrick 02801 installing the girders on the bridge at Fort Steele, Wyoming in 1901. The bridge crews typically had a derrick on each end of the girder to lift the beams up and off the flatcar before placing it in position on the concrete piers. Stimson Collection, Wyoming State Archives

Wrecking Derrick Cars

By Thornton Waite

Introduction

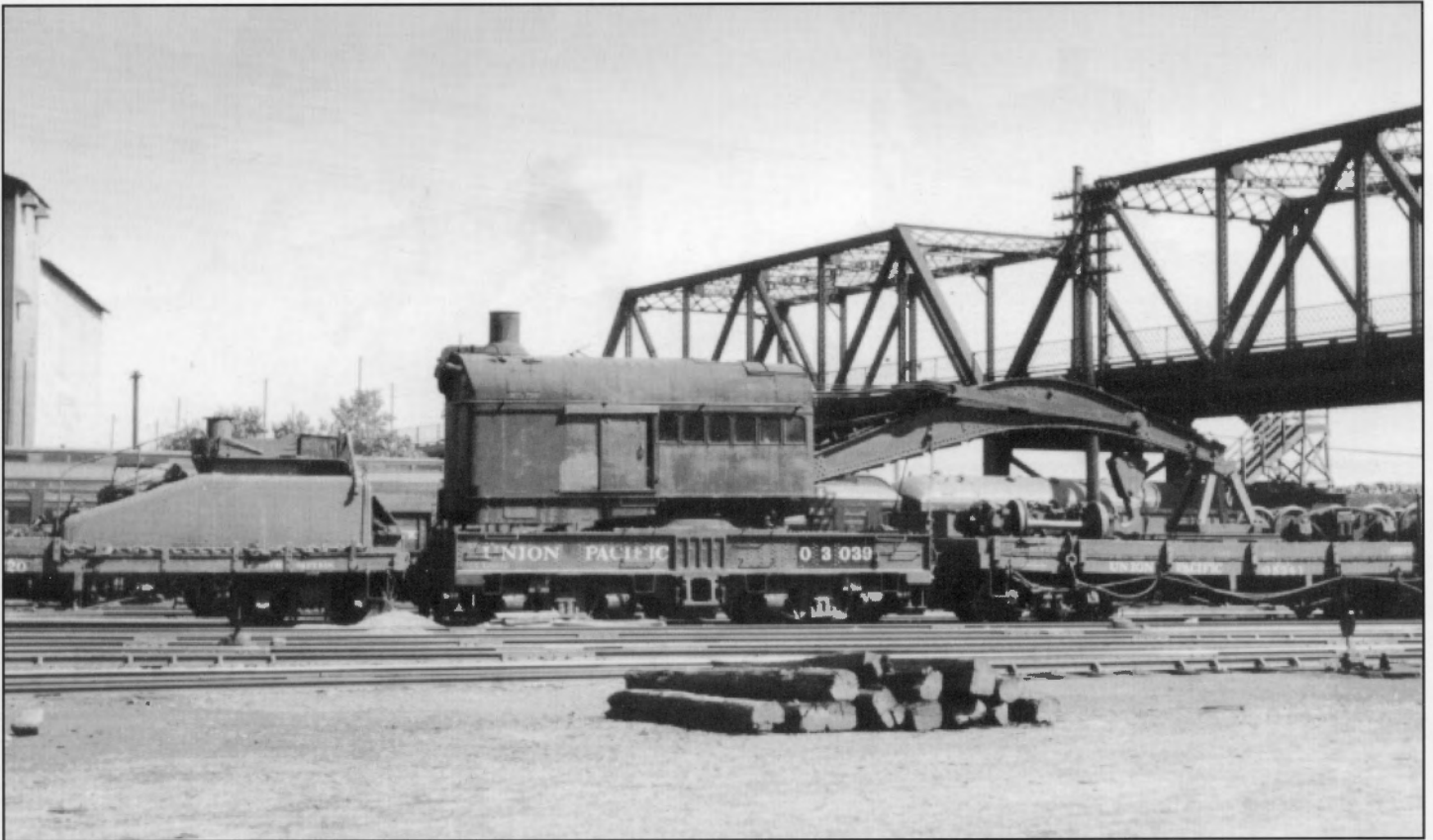
In the late 19th century, when the Union Pacific Railroad constructed their main and branch lines throughout the western United States, they needed specialized work equipment to install bridges and to lift heavy items. This equipment was also needed to clear up wrecks, which were common in this period. Special derrick cars were designed and constructed to perform these tasks. The derrick cars could easily move large bridge pieces into posi-

tion since they could carry loads on either side or in front of the derrick car, and they could maneuver the boom so that the load could be extended beyond the end of the tracks.

These derrick cars evolved into the wrecking derricks, some of which are still in use on the railroad today. The wrecking derricks are designed to withstand heavy service under demanding work conditions. Not only are the loads being lifted heavy, but they are also frequently in hard-to-reach, awkward, or precarious locations.

With the use of heavy over-the-road equipment, the wrecking derrick has been largely eliminated from the Union Pacific rosters. The railroad now relies on heavy side-boom crawler tractors. Owned and operated by both private firms and the railroad, the special bulldozers are taken over the highway to the wreck site. This equipment can quickly and easily go alongside the derailed equipment to clear the wreck site.

The Union Pacific also uses Hi-Rail cranes with capacities of up to 50 tons to



Number 03039 was photographed in 1939 by Otto Perry at Denver, where it worked for most of its life on the railroad. It was powered by coal at this time, and the tender can be seen to the left of the derrick. The lettering scheme is typical of the pre-World War II period. Otto Perry, Denver Public Library

do the lifting work on smaller derailments. These Hi Rails can travel on rails with flanged wheels that can be lowered onto the rails, as the rubber tires are raised above the tracks. They allow more flexibility for maintenance and wrecking work and are more economical to operate and maintain.

Heavy duty wrecking derricks remain on call at selected terminals for those circumstances that require heavy lifting operations, such as lifting a locomotive or doing heavy work in a remote area.

The Union Pacific Railroad has had many wrecking derricks over the years, and only a few of them are still in service. Fortunately, at least three of the retired wrecking derricks have been preserved for display.

Development of the Derrick

The word 'derrick' is derived from a 17th century hangman who lived in Tyburn, England. He devised an improved gallows for his line of work, using the principles of the derrick configuration. This invention evolved into the derrick crane, which is still in common use today.

The basic derrick provides a means of

moving a load vertically and horizontally. The load is at the end of a pivoting jib. This jib can move vertically, thereby moving the entire load horizontally, or the rigging can be used to raise and lower the load vertically. The jib is supported by cables secured to the top of the mast, or boom, which has bracing to provide the necessary strength. The hoisting machinery is mounted so that it acts as a counterweight for the load on the boom. A block and tackle is at the end of the boom for hoisting and lifting heavy items.

In the early days some section crews built their own derrick cars for the maintenance work along their section of line. In 1911 the Pennsylvania Lines West group reported that their forces were building their own derricks using an old flatcar and a single hoisting engine. Rotation of the derrick and the raising and lowering of the boom was done manually with levers and gears. The gear mechanism allowed the men to turn the crank quickly and easily. The derrick car was even able to pull itself along the rails by a cable attached to a secure object ahead of the car.

This derrick was used to maneuver

small pieces of equipment, for small bridge pieces and for other work that did not require a heavy crane. The small derrick car made work easier, faster and more economical. The car had its own boiler and tender for coal and water, and the boom could be removed for long distance movements.

Today's wrecking derricks are an outgrowth and improvement over the original, basic design. They were, and still are, used to clear wrecks, move heavy objects, and install bridges. Today's wrecking derrick is essentially a heavy duty locomotive crane, and some railroads call it a wrecking crane.

The wrecking derricks were steam powered, first with coal and then oil, and they have been replaced by diesel powered machines as the older ones have been retired and larger ones purchased. In some cases, though, the wrecking derricks were converted from coal to oil power and then from oil to diesel power.

Initially built completely with wood, the derrick cars gradually evolved into the all-steel designs used today. Since the cars are not in constant or frequent use, and are used only for special lifts or wrecks, they



A side view of 910000, built for the Los Angeles & Salt Lake in 1904 by Industrial Works. The 60 ton crane had an open cab, which was protected by canvas when not in service. The short, 24-foot-2-inch frame seems small compared with today's 250 ton wrecker. Following World War II this wrecking derrick was assigned to Lynndyl and Provo, both in Utah, until its retirement in the late 1960s. This view was taken at Provo, Utah, on October 3, 1966. H.N. Proctor, J.C. LaRue collection



120- ton 902005 was built for the Oregon Short Line by Bay City in 1913. Converted from coal to oil in 1952, it had plain bearings and was not self-propelled. Before retiring in 1975, it was assigned to Glens Ferry, Idaho and Albina and Hinkle, Ore. When this picture was taken at Omaha on June 26, 1975, it had just returned from clearing up a wreck, as evidenced by the engine hood on the boomcar. The walkway on the roof was constructed from GP 9 handrails J.R. Quinn, collection of John C. LaRue Jr.

Derrick car 10002 was built for the Los Angeles & Salt Lake by Industrial Works in 1905. This car spent its last years at Idaho Falls until it was retired in the early 70s. This photo was taken in Idaho Falls in 1954. Charles Reed Collection, courtesy of Thornton Waite.



typically last many years. They are also well-maintained, since the railroads cannot afford to have the derrick break down while cleaning up a wreck. Today the remaining wrecking derricks are staged at the principal railroad terminals, while the highway cranes are available at other strategic points.

It is interesting to observe the development of the wrecking derrick by looking through past editions of "The Car Builder's Dictionary." The 1879 edition showed a derrick car consisting of a simple, small jib crane on a flat car.

Crane cars were not listed or mentioned in this edition, since mechanical equipment was only just beginning to come into common use.

The new machines became essential to the train operations as the railroads found that their rolling stock was becoming larger and labor more expensive. Fortunately, the technology was also developing so that effective derrick cars could be constructed.

By the turn of the century more efficient mechanical equipment had been developed. The 1906 edition of "The Car Builder's Dictionary" not only mentioned derrick cars, but it also showed pictures of pile drivers and wrecking cranes. The wrecking crane cars and derrick cars were shown as being the same equipment. They were manually operated or steam powered.

The wrecking crane referenced in the 1906 edition indicated that it was usually steam powered, mounted on railroad trucks, and used to clear up wrecks. Both the derrick cars and wrecking cranes discussed in the 1906 edition referenced the same crane illustration, so there was no difference between the two pieces of equipment at this time.

The 1937 edition defines a wrecking derrick as "having a donkey engine to raise and lower booms and hoists; an engine housed in and on separate platform with boom, that is pivoted in center of car frame in order that it can be worked on either sides or ends. A derrick is usually fitted with anchor beams to be used for heavy lifting and fitted with safety appliances and propelled by means of locomotive."

Although the locomotive crane referenced in this edition had the same design features as the wrecking derrick, it had a smaller lifting capacity. Crane cars were also often self propelled, and could be eas-

ily adapted to other purposes. Special magnet attachments gave them the ability to lift scrap metal from the right-of-way during a track renewal project, and other special attachments allowed them to act as pile drivers, become a power shovel, or be used for other types of maintenance work on the railroad.

The capacity of the wrecking derricks increased as the weight of the railroad motive power increased over the years. The derrick ratings went from 20 to 40 tons at the turn of the century up to today's 250 tons. This increase in capacity has been in parallel with the increase in the weight of locomotives, from less than 50 tons for a steam locomotive built before the turn of the century to almost 200 tons for today's modern diesel locomotives.

Since the wrecking derricks are a "specialty" item, and require extensive design and fabrication experience, there have been only a few manufacturers over the years. Names such as Bucyrus-Erie, Industrial Brownhoist, Bay City, and American Hoist & Derrick are commonly seen on the builders plates. The Union Pacific wrecking derricks at the turn of the century were purchased mostly from Industrial Brownhoist and Bay City, while most of the most recent wrecking derricks were manufactured by Bucyrus-Erie and American Hoist and Derrick.

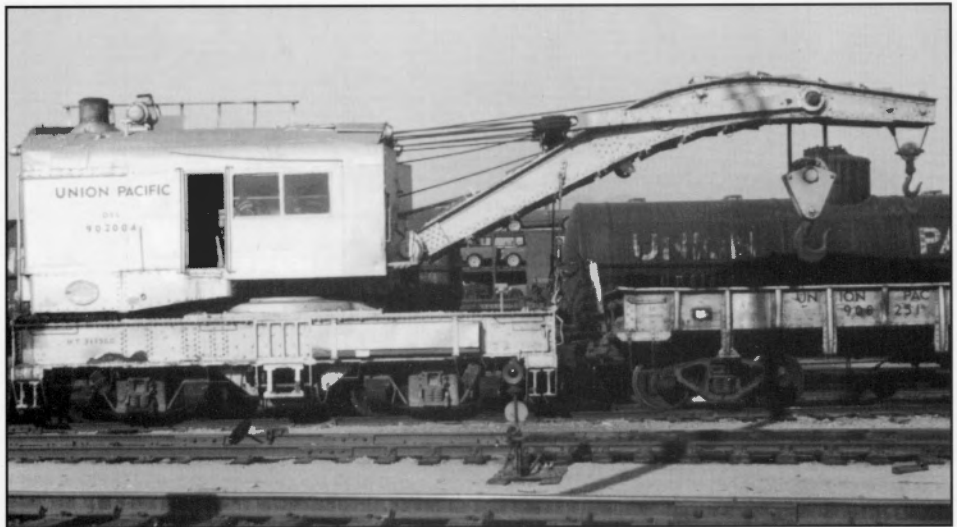
The Industrial Works of Bay City, Mich., (later renamed the Industrial Brownhoist Corporation) built some of the first derrick cars, and in 1883 constructed the first steam wrecking crane. Ten years later the company released the first derrick car with a revolving deck.

By 1913 the company had built a derrick with a capacity of 120 tons, and the capacity increased until they released one with a 250 ton rating in 1941.

Bucyrus-Erie was the other major competitor to Industrial Brownhoist. Another familiar name, the American Hoist & Derrick Company, of St. Paul, Minn., made only a few wrecking derricks, and instead concentrated on cranes with a lower capacity, used mostly for maintenance of way work.

Derrick Car Design

The catalog distributed by the Industrial Brownhoist Corporation in the 1930s gives a good description of what the wrecking derricks of that period were like. Although some features, such as the steam power, are no longer applicable, other



Industrial Works built 902004 in 1910 and it had a capacity of 120 tons. It had been converted from coal to oil power in 1953, a period in which most of the wrecking derrick cars were converted to the more preferable oil power. This wrecking derrick had plain bearings, steel construction, and was not self-propelled. It was photographed at Salt Lake City on July 3, 1966. F.H. Worsfield, collection of John C. LaRue Jr.



Wrecking derrick 902006 was donated to the Canyon County Museum at Nampa, Idaho, after it was retired in October 1979. This car was the last steam powered wrecking derrick owned and operated by the Union Pacific. Built by the Industrial Brownhoist Corporation in 1917 for the Oregon Short Line, it had a capacity of 150 tons. Note the larger windows for better viewing compared with 903037, which was built only seven years earlier. Black chevrons on the door are unusual. H.N. Proctor, J.C. LaRue Collection.



In 1910-11 the Oregon Short Line upgraded the bridge across the Snake River using wrecking derrick 768 to place the girders in position. It was brand new having been built in 1910. Collection of Pete Peterson



UP 910003 was a 120 ton Industrial Brownhoist that was assigned to Kansas City when photographed September 20, 1969. F.H. Worsfield, Collection of John C. LaRue Jr.



Number 900307 was a 100 ton model built in 1906 by Industrial Works. It was photographed at Grand Island, Neb., in May 1961. It was converted from coal to oil in 1953, and before it was retired in 1969, it was assigned to Albina, Ore., Yermo, Calif. and then Grand Island, Neb. Rumbolz, collection of John C. LaRue Jr.



UP 900308 was assigned to Huntington, Ore., when this photograph was taken on August 16, 1967. With a capacity of 120 tons, the car was built in 1910 for the Oregon-Washington Railroad and Navigation Company by Industrial Works. It was converted from coal to oil power in 1953, and finally retired in 1976. The cylinders on this wrecker were boxed in with a sheet metal cover. W. Pennington, Collection of John C. LaRue Jr.

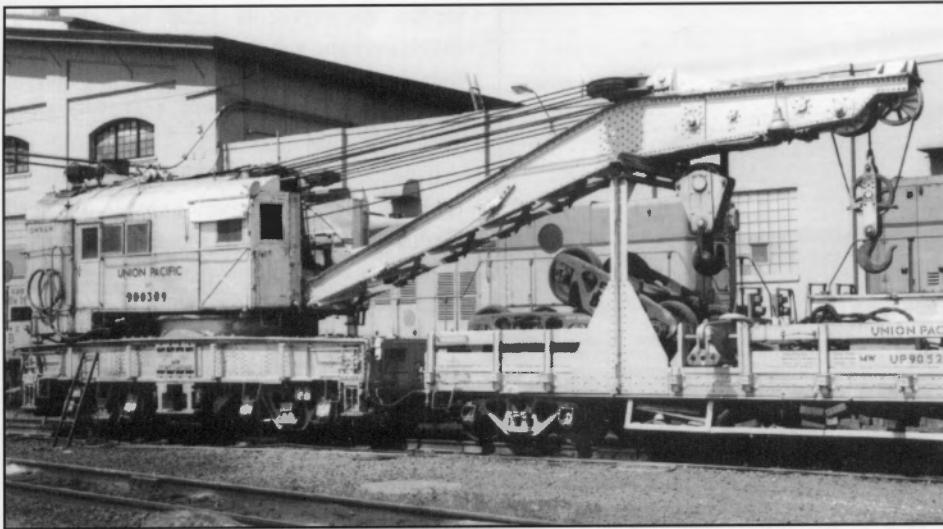
design requirements have not changed much over the years. Their catalog showed that the Industrial wrecking derricks were offered in capacities of 75, 100, 120, 150, 160, 175, and 200 tons. They could be self-propelled, if desired, and were advertised as being versatile, capable of performing many types of maintenance work as well as clearing up wrecks.

They were, of course, all steam powered. Some features noted in their catalog were common to the design of all wrecking derricks. The machinery framework "consists of massive side frames connected by heavy cross-beams and revolving with conical bearings on a heavy base plate casting fastened to the body of the car. All ...wreckers except the largest size utilize the center pin type of construction for holding the revolving upper worms on the car body...on the larger types, a set of external hold-down rollers is used under the rear end of the crane. These rollers... are externally located so that their action can be clearly seen by ground men, and where they are readily accessible for lubrication."

Other design details included the fact that "special care has been taken to assure a clear view of the work from the operating position, and the boom members have been specially designed so as not to obstruct the operator's vision when the crane is in operation. On these larger cranes the operator is located on the front right-hand corner at the end of the running board, where he takes his instructions directly from the wreck-master on the ground. The water glass and steam gauge on the boiler are, however, within his range of vision."

Control of all motions was always important, so "on the largest sizes of wrecking cranes, the operating clutches are all controlled by air. Small air cylinders...engage and disengage the clutches." The slewing mechanism, used to turn the crane, was designed with "double friction clutches...so that the machine may be turned in either direction without reversing the engines. This mechanism operates through a highly efficient worm wheel which holds the boom at a fixed angle with respect to the car. The largest wrecking cranes are arranged with two slewing speeds to be selected by the operator.

"With the fast speed, light loads may be handled quickly and efficiently, while the slow speed allows heavy loads to be



Wrecking derrick 900309 was assigned to Portland on June 13, 1975. Built by Industrial Brownhoist Corporation in 1926, it had a capacity of 160 tons. The 26' 1" long car was originally powered by coal, but was converted to oil in 1951. This photograph shows the cables needed to control the boom and hooks. The boom car held a unique raised boom support, used to guide the boom while the car was being moved to the work location. Following World War II this car was assigned to Rieth and then Albina (Portland) before retirement in 1977. J.R. Quinn, collection of John C. LaRue Jr.

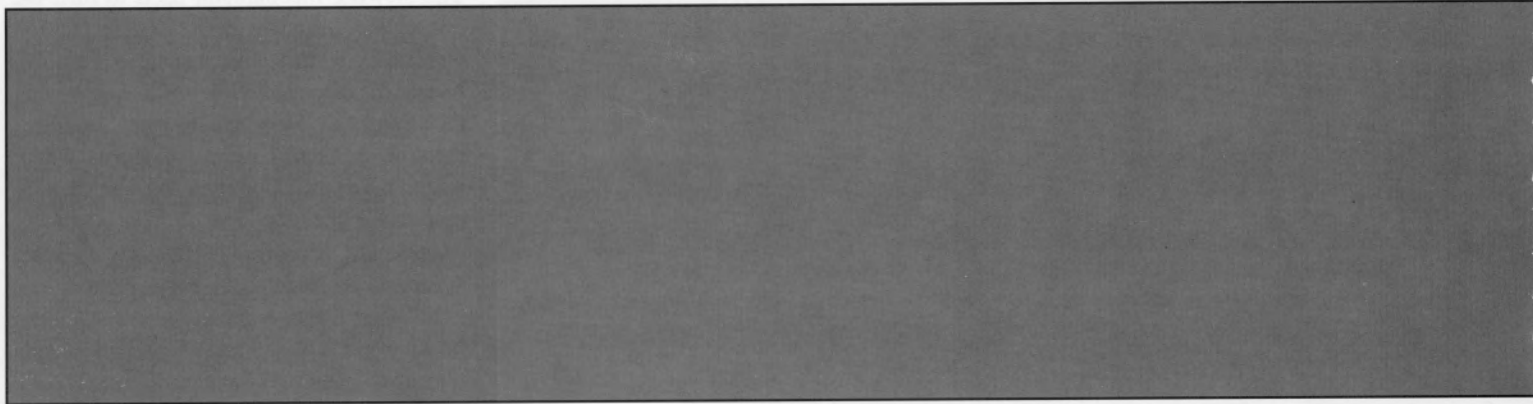


Car 900310 was seen at Council Bluffs, Iowa, on August 10, 1975. It was originally powered by oil, but was converted to diesel power in 1976. The boom and underframe were welded. Its assignments included La Grande, Ore.; Stockton, Calif.; North Platte, Neb.; Council Bluffs, Iowa, and back to Stockton, Calif. The railroad has used a wide variety of boom cars over the years. This particular car has side stakes, but is otherwise a conventional flatcar. G.R.Cockle, collection of John C. LaRue Jr.

handled safely and accurately.”

The boom of the wrecking derricks was an important feature, and the Industrial Brownhoist boom “takes the form of a straight, heavily latticed column upon which the heavy loads handled by the main block are supported. Beyond this point the boom is curved slightly to give maximum clearance for the auxiliary block. The distance between the location of the main and auxiliary sheaves in the boom has been standardized after a great deal of experience. The bracing between the boom members has been specially designed to allow the operator an unobstructed view of the work between them. The auxiliary hoist sheave at the tip of the boom is suspended in a swivelling yoke that swings when the auxiliary line pulls in a sideways direction, thereby preventing any abrasion of the rope and keeping the rope from coming off the sheave or becoming fouled at the tip.”

The boom hoist is another item requiring careful attention. The Industrial hoist “has been...made virtually foolproof. Mechanical interlocking devices that may prove inoperative in unforeseen conditions of service are not depended upon to hold the suspended load. A powerful friction brake supplementing the self-locking Hindley worm of the boom hoist is furnished...insuring a reliable means of checking the boom when lowering. This brake is arranged to operate automatically. The power for raising and lowering the boom is transmitted through a Hindley-type worm and wheel which forms a very efficient and powerful arrangement...The relation between the main hoist and the boom hoist mechanism has been carefully developed so that the load on the main hoist block may be raised as the boom is lowered or vice-versa, as desired. This allows the load to be traversed in or out while suspended at approximately a con-



stant height.”

The car frame had to be very strong, and the “crane car is of extremely strong construction and is built up entirely of structural steel, with many heavy cover plates tying the main members together. The longitudinal sills are built up of deep section, heavy I-beams, boxed with cover plate, top and bottom. The cross members are of heavy construction and very strongly connected to the main sills. The end sills are heavy steel plates, connected to all longitudinal beams and heavily reinforced..”

Other details, such as the outriggers, truck design, and boiler were all given special consideration in the design and fabrication. The boiler carried a high pressure so the wrecking crane could operate quickly and for a long period of time.

Due to their design, the derricks were limited to slow speeds, even when being taken to the wreck sites. Speed restrictions of 35 mph with the boom trailing and 25 mph with the boom leading were common limits for the equipment.

The Union Pacific’s wrecking derricks look similar to those described in the Industrial Brownhoist catalog from the 1930s, although they are now diesel powered. The Union Pacific’s remaining wrecking derricks are typical of the ones used on most railroads today. The wrecking derricks that were used on the Union Pacific and its subsidiaries in the past were also typical of those used on the railroads throughout the country in the same time periods.

The curved boom is still incorporated in the derrick design. The cars are basically a heavyweight crane car, with many special design features. The frame is heavy, reinforced, and strengthened throughout, with massive side frames connected by heavy cross beams. The derrick rotated on rollers on a base plate on the top center of the car frame, so that it can rotate



Number 910006 was photographed at North Platte, Neb., on Dec. 17, 1978. The self-propelled, diesel powered model was built in 1956 by Bucyrus-Erie. It had a capacity of 250 tons, with roller bearings on the trucks. The standard paint scheme for the B-E cars was dark (Batavia) green body, black underframe and trucks, white lettering, aluminum roof, and 12” chevron black and white stripes, front and back. The stripes were not standard when this photograph was taken. The derrick was originally assigned to Council Bluffs before being moved to North Platte. G.R. Cockle, J.C. La Rue Collection



Derrick 910005 was built by Bucyrus-Erie in 1945. With a 36’ length, it had a capacity of 250 tons. Originally powered by coal, it was converted to oil in 1951, and then to diesel in 1978. The 12” black chevrons had recently been added when it was seen at the Cheyenne roundhouse in July, 1966. It was assigned to Cheyenne before being transferred to Pocatello. A.J. Wolff

circumferentially. Provisions are included in the design for ease of maintenance of key components.

The car frame has side outriggers on both ends of the car as well as in the center to prevent the car from tipping over during heavy lifts. The outriggers are retracted for transportation movements, and then extended out for lifting operations, especially on side lifts. The cars are not particularly long, typically being about 40 feet between couplers. Due to the short length of the wrecking derrick car a special caboose or flatcar is normally required to support and protect the boom during movements. This car guides the boom when it is being transported.

The wrecking derricks are designed so the counterweight on the rear of the crane can compensate for the load on the boom on the front end. The boom is typically only 35 to 40 feet long and holds a main hook and an auxiliary hook.

The large main hook is a few feet from the end of the boom, and the auxiliary hook, with a smaller capacity, is at the end of the boom. This auxiliary hook is easier to work when smaller, lighter, loads are being lifted. The load capacity of a crane varies with the distance of the hook from the car pivot point. Tables and instructions provide this information and are posted in the cab.

The two hooks have different purposes. The auxiliary hook is used to lift cars and drag equipment closer to the track. The larger hook is used to lift the heavier locomotives. In all cases the hook is always attached to rigging, which in turn is attached to the load, and not the load itself.

The wrecking derrick is normally moved over the road by a locomotive, but some of them are self-propelled, with low maximum speeds at the wreck or job site. The derrick is normally pulled to the work site by the locomotive, and then the locomotive will move to the rear of the derrick car and push the derrick to the wreck or job. On many occasions there have been wrecking derricks working from both sides of the wreck, especially in the days before the highway cranes were placed in service. Lights are normally mounted on the derrick for night work.

The derricks also have their own air compressor, although train air can be used. The air from the derrick compressor or train air can be used to control the motion using air cylinders.



UP 903036 was a 120 ton Industrial Brownhoist. A handrail had been added to the top of the cab. Minor variations can be noted in the painting and lettering with all the wreckers. The Los Angeles wrecker had black trucks, boom rods and tool crib. F.H. Worsfield, Collection of John C. LaRue Jr.



Wrecking derrick 903037 has been preserved by the Utah State Railroad Museum at Ogden, Utah. It is currently being stored nearby at the Defense Depot, and is in need of substantial repairs, as well as removal of asbestos. The 120 ton self propelled derrick was shipped to the Union Pacific in December 1909 by Industrial Works in Bay City, Mich. It burned oil and the 26' 2" car frame was constructed of steel. It was stationed for many years in Kansas City following World War II, and later at Omaha, Neb.; Salina, Kan, and finally Las Vegas, Nev., before it was retired. When it was retired, the car apparently still had its original heavy duty archbar trucks. The Utah State Railroad Museum at Ogden also has UPX250, a 250 ton wrecking derrick built in 1967, on display at the museum. It is diesel powered, and was recently donated by Union Pacific when they determined repairs to it were not worth the cost to keep it in service. G. Cockle, collection of John C. LaRue Jr.

Special rigging is required to connect the load to the hook and a designated railroad car holding the large, specialty rigging equipment is normally part of the wrecking train. Figure I shows a typical rigging sketch using special slings. This information is vital for the wrecking crews who are working under intense pressure

and tight deadlines.

Development of UP Derricks

The early development and increase in the capacity of the wrecking derrick can be learned by looking at some of the wrecking derricks owned by the Oregon-Washington Railroad & Navigation Company



Number 903044 was photographed at Green River, Wyo., on August 7, 1966. Constructed by Bucyrus-Erie in 1945, it had a capacity of 250 tons. It weighed in at 356,800 pounds and it was 36' long. It was not self-propelled, and was originally coal-powered, but was later converted to coal in 1953 and finally to oil in 1975. It was assigned to Green River and was later sent to Las Vegas until it was retired. L. Callolia, collection of John C. LaRue Jr.



Four 250 ton units purchased in the late 60s and early 70s by the UP. Built in 1969 by American Hoist & Derrick, the car has the normal steel construction, diesel power, roller bearings. It was photographed at Rawlins, Wyo., on July 3, 1970. This series of cars has three outriggers on each side, one in the center and one on each end, and the two three-axle trucks span the length of the car. F.H.Worsfield, collection of John C. LaRue Jr.



No. 903043, was photographed at Pocatello on September 12, 1969. The rear end of the unit was the counter-weight and scrap metal was typically placed in it. Note that the boomcar is holding some spare trucks. F.H. Worsfield, collection of John C. LaRue Jr.

(OWR&N). The 1916 ICC Valuation Report listed several wrecking derrick cars on the railroad's roster, numbered 0302 through 0308.

Wrecking derricks 0302, 0303 and 0304, built between 1890 and 1895, were all wood cars and had a capacity of 20 tons. The following car on the roster, 0305, was built by Industrial Works in 1902, and had a steel underframe and a larger capacity of 60 tons.

Car 0306 was built two years later and had the same capacity as the previous wrecking derrick car, although various details differed. The next wrecking derrick, car 0307, had a capacity of 100 tons and was also built by Industrial Works. In 1910 Industrial Works built the last car listed on the roster, 0308, and it had a capacity of 120 tons.

Most of these cars remained in service for many years, and they were converted to oil in the early 1950s and finally retired in the 1960s and 1970s.

For many years the Union Pacific required a large number of wrecking derricks on their system. In 1948 the railroad listed 36 wrecking derricks on the system with capacities ranging from 20 tons to 250 tons. They were all coal or oil powered. Cheyenne had a new 250 ton wrecking derrick, as did Green River, both having been built in 1945. La Grande had the newest one, with a 250 ton capacity, built in 1947.

The capacities of the other derricks decreased in accordance with the importance of the junction. Their ages went back to 1895, and a total of four of the wrecking derricks dated back to the 1890s. Another 20 were constructed in the first decade of the twentieth century. Cities such as Walla Walla, Idaho Falls, and Sidney were assigned some of the lighter, 40-ton capacity wrecking derricks. The single remaining 20 ton one was listed as about to be retired.

In 1956 the railroad purchased their first diesel powered wrecking derrick. Numbered 910006, it came from the Bucyrus-Erie Company, and was assigned to Council Bluffs.

The diesel was, of course, a preferred means of power, since it was easier to operate and maintain. If nothing else, a tender was not required for fuel and water on the new derrick. The capacity of the main hook was 250 tons at 17-1/2', and the auxiliary hook in this case could support

60 tons at 40 feet. The counterweight hung out 18 feet behind the center of the 40-foot-9-inch car. The diesel engine powered a motor generator set, which in turn powered the hoist motor. Placing the motor on the back end of the cab, acted as a counterweight to the load on the boom. Even with that weight, an additional six tons of scrap was still required for ballast. Due to the main, auxiliary, and whip hooks and the boom hoist, there were numerous wire ropes between the cab and the boom. The wheels were on 5'6" centers, the trucks on a 19' center, and the car was 38' long (40'9" across coupler faces). The entire unit required a clearance of 18 feet from the center pivot point, an important consideration in tight areas. By 1971 the first diesel wrecker was assigned to North Platte.

By 1957 the number of wrecking derricks on the Union Pacific system had decreased to 33 and the majority were not self propelled. Some of them still dated back to the turn of the century, showing how long some of the cars remained in railroad service. The newest ones on the roster were the 250-ton cranes purchased in 1945. Fifteen of the 33 wrecking derricks in service in 1957 burned coal, one burned diesel fuel, and the rest used oil.

By 1971 there were only 20 wrecking derricks remaining on the roster with an additional 10 over-the-road cranes in service. Only two of the wrecking derricks that burned coal remained by 1971, four had diesel engines, while the remaining burned oil. These four diesel-powered wrecking derricks were built in the 1960s and 1970s. Even at this late date some of the wrecking derricks dated back to 1910. This list showed that many of the wrecking derricks had been removed from service and several of them replaced with Holmes Crane Trucks or similar highway crane trucks.

Most of these wrecking derricks have been retired, and over-the-road cranes are normally used. This list has been further changed since that date, and many more of the wrecking derricks removed from service, so that only eight of them remain in service by the early 1990s.

Although the railroad bought over-the-road cranes in 1969-1970, they also bought four new wrecking derricks at the same time, 903045, 903046, and 903047, and later, 903050, in 1973. They are all 250 ton, self-propelled derricks built by

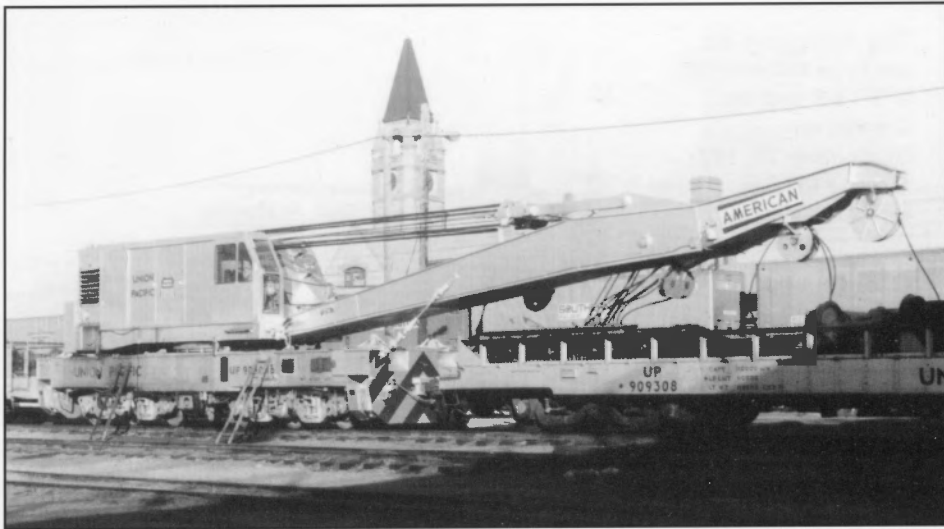


Wrecking derrick 903042 was assigned to Rawlins, Wyo., when photographed on September 3, 1970. Built by Industrial Brownhoist Corporation in 1926, the 200 ton wrecking derrick weighed 345,100 pounds and was 36'4" long. It was converted from oil to diesel in 1978, and was self-propelled. Note the black stripes on the end. The frames of these cars are basically massive I-beams, with heavy riveting and stiffeners to make them strong enough to lift and move heavy equipment. Following World War II this wrecking derrick was assigned to many locations, including La Grande, Ore.; Las Vegas, Nev.; Council Bluffs, Iowa; Rawlins, Wyo.; and Kansas City, Mo.; before it was retired. F.H. Worsfield, collection of John C. LaRue Jr.



Bucyrus-Erie built 200 ton wrecker number 903043 was seen at Council Bluffs, Iowa, on February 28, 1977. It was converted from oil to diesel power in 1977 and was all-steel construction. Weighing 377,800 pounds, the car was 36' long. The boom and chassis were riveted unlike the later models from Bucyrus-Erie which were welded. Following World War II it was assigned to Las Vegas, Pocatello, and finally Ogden before it was retired. Note that the boom car was a regular Union Pacific flat car, and not a maintenance flatcar with sides to hold additional equipment needed to clear up wrecks. G.R. Cockle, Collection of John C. LaRue Jr.

Wreckers Today



Number 903046 is a 250 ton model that was assigned to Cheyenne until recently. The landmark Cheyenne depot can be seen in the background. Built by American Hoist & Derrick in 1969, it is powered by a diesel engine. One of a series of four, 903045, 903046, 903047, and 903050, it is still in service on the railroad today.



This view of 903046 shows the massive frame and body needed to be able to lift 250 tons of railroad equipment. The end of the car was aluminum colored with 12 inch black chevron stripes for visibility, and the two three-axle Buckeye trucks span almost the entire length of the car body. It was photographed at Cheyenne in 1985, along with its boom car, which was made from a retired heavyweight passenger car.

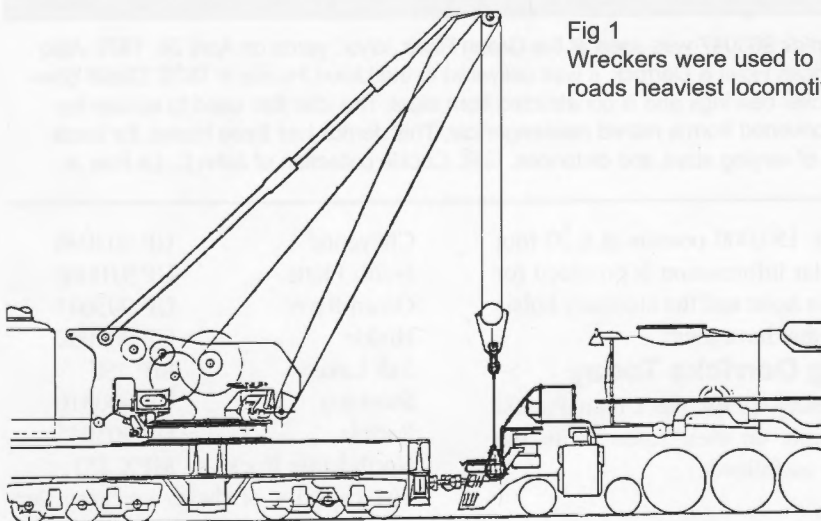


Fig 1
Wreckers were used to lift the railroads heaviest locomotives.

the American Hoist & Derrick Company, with many similar design characteristics as the Bucyrus-Erie 910006.

Even the wheel centers were the same 5'6", and the other derrick dimensions were similar to previous ones. The earlier designs had obviously been proven durable and reliable through years of demanding service.

Other design specifications are interesting, showing what must be included in this type of car. There are two load indicators on the boom, so that the capacity and rating of the two hooks will not be exceeded. The wheels are 33-inch rolled steel with heat treated rims, on 64"x12" axles, with Timken roller bearings. The cars are self-propelled and can operate at a maximum speed of 28 mph. They are also very heavy, tipping the scales between 408,000 to 410,000 pounds, have six axles, and can negotiate curves with a 125 foot radius. The boom can rotate 360 degrees at speeds of up to 1.6 RPM, and the center of gravity, a critical consideration during heavy lifts, is 3' 8-1/2" above the top of the rail. The car has a diesel fuel capacity of 175 gallons.

The large, double hook has a 250-ton capacity at 17-1/2', and the single auxiliary hook has a 15 ton capacity. The wrecking derrick has the standard center and end outriggers, which can be extended from the car sides. They are 44'4" long between coupler faces, with a 20-foot wheel base. The tail of the crane, which holds the scrap metal ballast, extends 17'3" to the rear. Initially three of these wrecking derricks were stationed at Green River, Cheyenne, and Rawlins, major points on the busy Union Pacific main line

While looking at the pictures and comparing the wrecking derricks with the rosters, it is important to note that the Union Pacific had a major renumbering of their maintenance-of-way equipment in 1959-60. In order to convert the car numbers to a six digit number for the new computer system, all maintenance of way equipment numbers were converted to begin with a "9" and the original car number was retained by adding enough "0" digits to make a six digit number. Therefore wrecking derrick 03037 became 903037, and LA & SL wrecking derrick 010006 renumbered to 910006. With this information, it is easier to trace the heritage of the old derricks over the years.

When a new derrick was ordered, it

immediately affected the assignments for those already in service. The new cranes were typically the largest, so they would take the most important slots, such as Cheyenne and La Grande, and the derricks assigned there would be bumped on down to less important terminals. Finally, the oldest and smallest were retired. A listing from 1945 shows that when two 250 ton cranes were purchased, 0304, a 20 ton crane built in 1895 for the OWR&N was to be retired, and 010002, a 60-ton derrick built in 1905, would be released to the maintenance-of-way department for their use.

Some of the steam derricks were converted to diesel over the years. This was done on the newer, larger derricks, 903042 was converted in 1978 from an oil burner, while 903043 was converted to diesel in 1977.

These were both 200 ton derricks. Three 250 ton models, 900310, 910005, and 903044, were all converted from oil to diesel in 1976, 1978, and 1975, respectively. Basically, they were large and new enough that it was economical to make the conversion. Operation was faster and easier with the diesel engine.

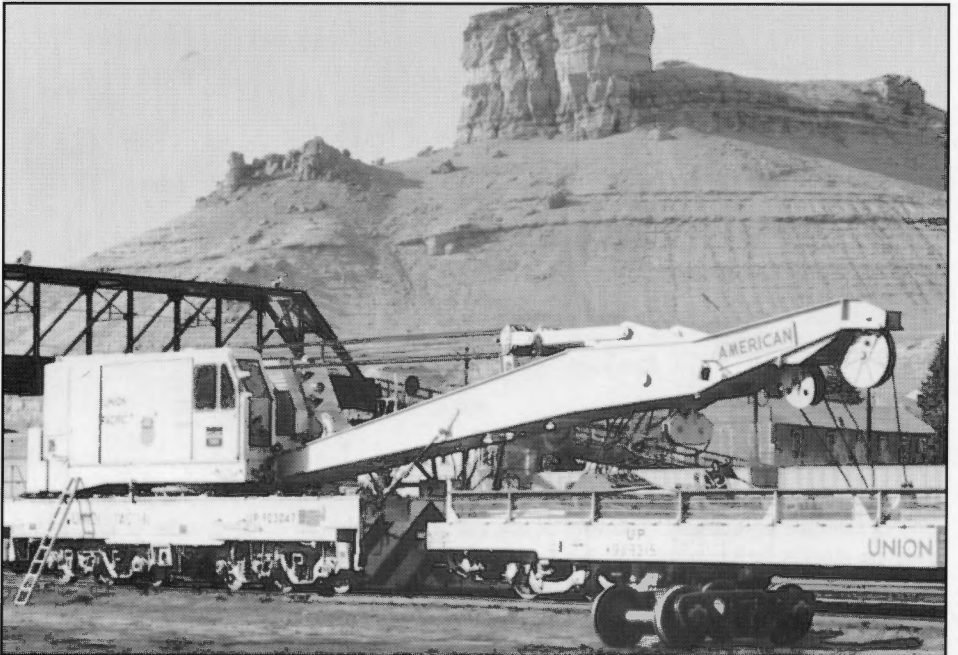
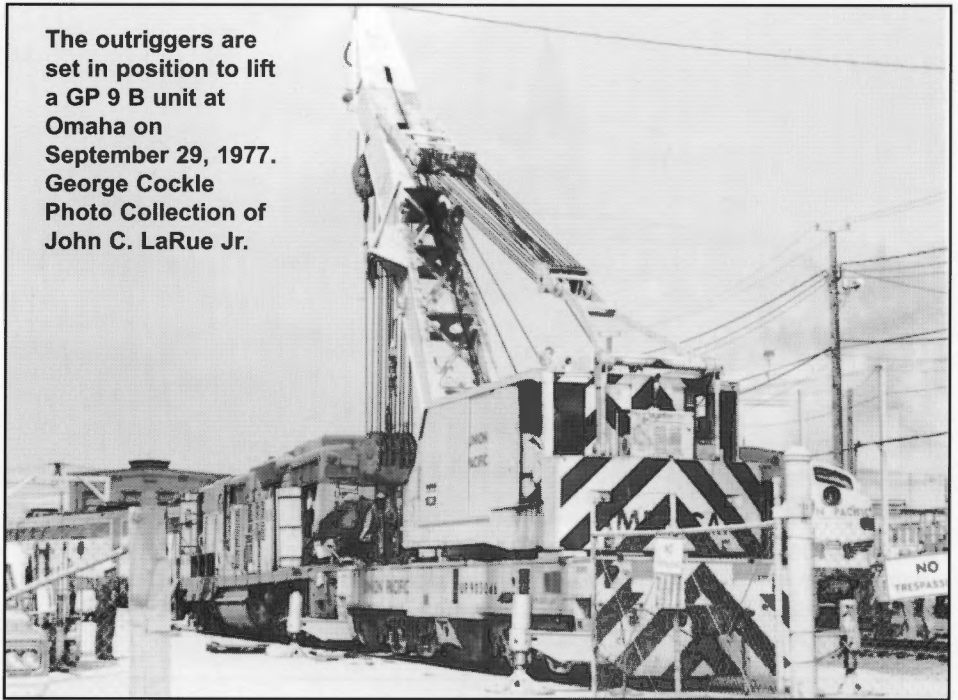
Wrecking Derrick Operations

Operating the wrecking derrick is done in accordance with Research and Mechanical Standards procedures provided by the Office of the General Superintendent, Motive Power & Machinery. All work is also performed under strict supervision. Typical instructions include the requirement that outriggers be positioned, especially where the track is elevated, before rotating the derrick. The derrick is not to be moved while carrying a load. It is also necessary to remember that the combination of a longer boom and a heavy back end load can cause the derrick to become overloaded. A load chart is posted in the cab, listing the boom length and weight allowable. The loads listed are with and without the outriggers, and for both the main hoist and the auxiliary hoist.

The Union Pacific's Office of the General Superintendent, MP&M, issues tables and instructions for the operation of the wrecking derrick cars. As an example, OWR&N wrecking derrick 0307 was listed as having 12,000 pounds of scrap in the boiler extension that acted as a counterweight.

The capacity increases from 33,000

The outriggers are set in position to lift a GP 9 B unit at Omaha on September 29, 1977. George Cockle Photo Collection of John C. LaRue Jr.



Wrecking derrick 903047 was seen at the Green River, Wyo., yards on April 24, 1976. Also built by American Hoist & Derrick, it was delivered to the Union Pacific in 1970. Diesel powered, it has roller bearings and is constructed from steel. The idler flat used to secure the boom was converted from a retired passenger car. This derrick has three hooks, for loads and reaches of varying sizes and distances. G.R. Cockle collection of John C. La Rue Jr.

pounds up to 150,000 pounds at a 20 foot radius. Similar information is provided for both the main hoist and the auxiliary hoists on the ones that have them.

Wrecking Derricks Today

In the early 1990s the Union Pacific had eight units on their roster, with the assignments as follows:

Cheyenne	UP 903046
North Platte	UP 910006
Green River	UP 903047
Hinkle	UP 903050
Salt Lake	MP 250
Stockton	UP 900310
Portola	UP 903045
North Little Rock	MPX 251

The capacity of these wrecking derricks is 250 tons, and all of the lighter



Union Pacific wrecking derrick 903050 was one of the last, if not the last built for the railroad. Constructed in 1973 by American Hoist & Derrick, it has a capacity of 250 tons and is diesel powered. It is self-propelled and has roller bearing equipped Buckeye trucks. It is assigned to Hinkle, and was photographed there on September 26, 1978. The standard paint for the American Hoist & Derrick cars is aluminum with black lettering without the 12-inch chevrons. J.R. Quinn, collection of John C. LaRue Jr.



Aunt Peachy, presumably not the official Union Pacific designation for wrecking derrick 903053, was photographed at Denver on December 20, 1969. This piece of equipment was built in 1901 by Industrial Works for the Union Pacific. The 40-ton crane was 24'2" long, and weighed 149,000 pounds. It burned coal, and also had a steel underframe with a wood superstructure. Originally numbered 02800, it was changed to 03053 in 1918, and to 903053 in the 1959 renumbering. It was assigned to Denver for almost 70 years until it was donated to the Forney Transportation Museum in Denver. F.H. Worsfield, collection of John C. LaRue Jr.

capacity wreckers have been retired. The Union Pacific/Missouri Pacific/Western Pacific merger obviously affected assignments, with MP 250 being assigned to Salt Lake City and UP 903045 being assigned to Portola at that time.

The paint scheme varies according to the manufacturer. The ones manufactured by American Hoist & Derrick are painted aluminum, with black letters and numbering. The newer Bucyrus-Erie models, however, are painted differently. They have an aluminum roof with a dark green body, and black paint is used on the bed, boom, truck, and car body structure. There are 12" chevron black and white stripes, angled at 45 degrees, on the front and rear of the crane.

In addition to the wrecking derrick cars remaining on the roster, there are three preserved in museums. Number 902006 is preserved at the Canyon County Museum in Nampa, Idaho, 903037 is preserved at the Utah State Railroad Museum in Ogden, Utah and Aunt Peachy, 903053, is preserved at the Forney Transportation Museum in Denver. All of them had a varied career, with many assignments and changes over the years.

The last steam powered derrick owned by the Union Pacific, 902006, was retired in 1979 and then donated to the Canyon County Historical Society in Nampa, Idaho.

The museum is housed in the Nampa depot, and the wrecking derrick is displayed next to it. The aluminum colored wrecking derrick and its associated fuel tender were given to the museum and moved by the railroad onto a 117 foot section of track where it is displayed alongside an old CA-3 caboose. It had been assigned out of Nampa when it was retired, so the railroad apparently decided it would be easier to donate it to Nampa, since it was already there. Built in 1917 by Industrial in Bay City, Mich., it burned oil when it was retired.

The necessary oil and water were supplied by the fuel tender coupled to the rear of the derrick. The fuel tender used was one obtained from a retired steam locomotive.

The wrecking derrick had been converted from coal in July 1952, and was finally vacated from the roster in October 1979. It weighed 150 tons, and was not self-propelled.

It is interesting to look at the assignments for 902006 over the years, since it

ORIG NO	1912 NO	1918 NO	1950 NO.	MAX LOAD	BUILDER	BUILT	MAY 45	SEP 45	SEP 48	NOV 48	DEC 54	FEB 57	AUG 65	OCT 71	AUG 81	WORN OUT	
OWR & N 304		304		20 TONS	OWRR & N	1895	RETIRE										NOV '45
OWR & N 305		305	903005	80 TONS	INDUSTRIAL	1902	KEMMERER	KEMMERER	KEMMERER	KEMMERER	KEMMERER	KEMMERER	KEMMERER				
OWR & N 306		306	903006	80 TONS	INDUSTRIAL	1904	SPOKANE	SPOKANE	SPOKANE	SPOKANE	SPOKANE	SPOKANE	SPOKANE				
OWR & N 307		307	903007	100 TONS	INDUSTRIAL	1908	ALBINA	ALBINA	YERMO	YERMO	YERMO	GRAND ISLAND	GRAND ISLAND				
OWR & N 308		308	903008	120 TONS	INDUSTRIAL	1910	HUNTINGTON	HUNTINGTON	HUNTINGTON	HUNTINGTON	HUNTINGTON	HUNTINGTON	HUNTINGTON				
OWR & N 309		309	903009	180 TONS	INDUSTRIAL	1926	RIETH	RIETH	RIETH	RIETH	ALBINA	ALBINA	ALBINA				
OWR & N 309		310	903010	250 TONS	BUCYRUS-ERIE	1947			LA GRANDE	LA GRANDE	NORTH PLATTE	NORTH PLATTE	NORTH PLATTE	COUNCIL BLUFFS	STOCKTON		
OSL 785		2001	902001	40 TONS	BAY CITY	1989	IDAHO FALLS	IDAHO FALLS	POCATELLO	POCATELLO							AUG '51
OSL 786		2002	902002	40 TONS	BAY CITY	1901	WALLA WALLA	WALLA WALLA	WALLA WALLA	WALLA WALLA							DEC '53
OSL 787		2003	902003	50 TONS	BAY CITY	1902	NAMPA	NAMPA	NAMPA	NAMPA	NAMPA	NAMPA	RETIRE				DEC '54
OSL 788		2004	902004	120 TONS	BAY CITY	1910	SALT LAKE	SALT LAKE	SALT LAKE	SALT LAKE	SALT LAKE	SALT LAKE	SALT LAKE				JUN '70
		2005	902005	120 TONS	BAY CITY	1913	GLENNS FERRY	GLENNS FERRY	ALBINA	ALBINA	HINKLE	HINKLE	HINKLE	HINKLE			JUN '75
		2006	902006	180 TONS	BAY CITY	1917	POCATELLO	POCATELLO	GLENNS FERRY	GLENNS FERRY	OGDEN	OGDEN	OGDEN	SALT LAKE			OCT '79
	2780	3035	903035	120 TONS	INDUSTRIAL	1910	COUNCIL BLUFFS	COUNCIL BLUFFS	COUNCIL BLUFFS	COUNCIL BLUFFS	GLENNS FERRY	GLENNS FERRY	NAMPA				SEP '71
	2781	3036	903036	120 TONS	INDUSTRIAL	1910	LOS ANGELES	LOS ANGELES	LOS ANGELES	LOS ANGELES	LOS ANGELES	LOS ANGELES	LOS ANGELES	NAMPA			APR '76
	2787	3037	903037	120 TONS	INDUSTRIAL	1910	KANSAS CITY	KANSAS CITY	KANSAS CITY	KANSAS CITY	KANSAS CITY	KANSAS CITY	OMAHA	SALINA			OCT '79
	2788	3038	903038	120 TONS	INDUSTRIAL	1910	LARAMIE	LARAMIE	LARAMIE	LARAMIE	LARAMIE	LARAMIE	MARYSVILLE	MARYSVILLE			MAR '73
	2779	3039	903039	120 TONS	INDUSTRIAL	1916	DENVER	DENVER	DENVER	DENVER	DENVER	DENVER	DENVER	DENVER			AUG '78
	2782	3040	903040	120 TONS	INDUSTRIAL	1916	OGDEN	OGDEN	OGDEN	MILFORD	MILFORD	MILFORD	MILFORD				JUN '70
		3041	903041	180 TONS	BUCYRUS-ERIE	1919	NORTH PLATTE	NORTH PLATTE	NORTH PLATTE	NORTH PLATTE	LA GRANDE	LA GRANDE	LA GRANDE	LA GRANDE			
		3042	903042	200 TONS	INDUSTRIAL	1926	LA GRANDE	LA GRANDE	LAB VEGAS	LAB VEGAS	COUNCIL BLUFFS	COUNCIL BLUFFS	RAWLINS	KANSAS CITY			
		3043	903043	200 TONS	BUCYRUS-ERIE	1930	LAB VEGAS	LAB VEGAS	POCATELLO	POCATELLO	POCATELLO	POCATELLO	POCATELLO	OGDEN			
		3044	903044	250 TONS	BUCYRUS-ERIE	1946	GREEN RIVER	GREEN RIVER	GREEN RIVER	GREEN RIVER	GREEN RIVER	GREEN RIVER	GREEN RIVER	LAB VEGAS			
UP 783	2783	3045	903045	80 TONS	INDUSTRIAL	1903	GRAND ISLAND	GRAND ISLAND	GRAND ISLAND		GRAND ISLAND						AUG 65
			903045-2	250 TONS	AMERICAN	1989								RAWLINS	PORTOLA		
	2788	3048	903048	80 TONS	INDUSTRIAL	1903	ELLIS	ELLIS	ELLIS	ELLIS	ELLIS	ELLIS	OMAHA				AUG 65
			903048-2	250 TONS	AMERICAN	1970								CHEYENNE	CHEYENNE		
	2783	3047	903047	80 TONS	INDUSTRIAL	1903	MARYSVILLE	MARYSVILLE	MARYSVILLE	MARYSVILLE	MARYSVILLE	MARYSVILLE	MARYSVILLE	COUNCIL BLUFFS			JUL 66
			903047-2	250 TONS	AMERICAN	1971								GREEN RIVER	GREEN RIVER		
	2802	3048	903048	80 TONS	INDUSTRIAL	1902	SALINA	SALINA	SALINA	SALINA	SALINA	SALINA	SALINA				MAR 74
903050				250 TONS	AMERICAN	1973											
	2786	3051	903051	40 TONS	INDUSTRIAL	1888	GERING	GERING	GERING	GERING	GERING	GERING	GERING				MAR 70
	2787	3052		40 TONS	INDUSTRIAL	1888	SIDNEY	JUNCTION CITY	JUNCTION CITY	JUNCTION CITY							NOV '52
	2800	3053	903053	40 TONS	INDUSTRIAL	1901	DENVER	DENVER	DENVER	DENVER	DENVER	DENVER	DENVER				MAR 70
	2801	3054	903054	40 TONS	INDUSTRIAL	1901	KANSAS CITY	KANSAS CITY	KANSAS CITY	KANSAS CITY	KANSAS CITY	KANSAS CITY	KANSAS CITY				MAY '85
LA & SL 001		10000	910000	80 TONS	INDUSTRIAL	1904	LYNDYL	LYNDYL	PROVO	PROVO	PROVO	PROVO	PROVO				MAR 70
LA & SL 002		10001	910001	80 TONS	INDUSTRIAL	1904	RAWLINS	RAWLINS	SIDNEY	SIDNEY	SIDNEY	SIDNEY	SIDNEY				SEP '86
LA & SL 003		10002	910002	80 TONS	INDUSTRIAL	1905	TO MOW	SIDNEY	IDAHO FALLS	IDAHO FALLS	IDAHO FALLS	IDAHO FALLS	IDAHO FALLS				APR 70
LA & SL 004		10003	910003	120 TONS	INDUSTRIAL	1911	YERMO	YERMO	RAWLINS	RAWLINS	RAWLINS	RAWLINS	KANSAS CITY	PROVO			JUN 73
LA & SL 005		10004	910004	180 TONS	INDUSTRIAL	1924	CALIENTE	CALIENTE	MILFORD	OGDEN	OGDEN	OGDEN	OGDEN	LOS ANGELES	LOS ANGELES		DEC 77
LA & SL 008		10005	910005	250 TONS	BUCYRUS-ERIE	1946	CHEYENNE	CHEYENNE	CHEYENNE	CHEYENNE	CHEYENNE	CHEYENNE	CHEYENNE	POCATELLO			
LA & SL 007		10006	910006	250 TONS	BUCYRUS-ERIE	1946							COUNCIL BLUFFS	COUNCIL BLUFFS	NORTH PLATTE		

The Union Pacific has owned many wrecking derricks over the years. Distribution of the wreckers, builder information and capacities are given for all the pre-Missouri Pacific merger equipment.



A view of 02797 at Fort Steele, Wyo. in 1901. This 40 ton derrick was constructed in 1899 by Industrial Works and weighed 140,000 pounds. It was 24' 2" long and had a steel underframe and wood superstructure and burned coal. The car was renumbered to 03052 in 1918 and retired in 1952. The wrecking derrick was working in conjunction with wrecking derrick 02801 to install the girders on the bridge. The bridge crews typically had a derrick car on each end of the girder to lift the beam up and off from the flatcar before placing it in position on the concrete piers. Stimson photo Wyoming State Historical Society.



New wrecking derrick 02801 and its associated coal tender are helping construct the bridge across the North Platte River at Fort Steele, Wyo., in 1901. The 40 ton derrick car was built by Industrial Works in 1901 and renumbered to 03054 in 1919. The 24' 2" long car weighed 133,000 pounds, and had a steel underframe and a wood superstructure. Using wrecking derricks to help do work such as place girders on bridges was a logical use for equipment such as this, which was, hopefully, not being used very frequently to clear up wrecks. Note how the bridge is being constructed, with a temporary wooden falsework used to build the bridge being replaced by the permanent steel girders. Stimson photo Wyoming State Historical Society

moved around so frequently. It was listed as being assigned out of Pocatello in 1945, Glens Ferry in 1948, Ogden in 1957, Salt Lake City in 1971, and it finally ended up Nampa.

Wrecking derrick 903037 was built in 1910 by Industrial Works. It had a capacity of 120 tons, was converted to oil from coal, and finally vacated from the roster in October 1978. It was originally numbered 02787, and renumbered 03037 in May 1918, and finally to 903037 in 1959 as part

of the general renumbering program. Assignments for this wrecking derrick included Salina, Kansas City, and it ended up at Las Vegas, where it was finally retired from service.

These pictures give an idea of what the wrecking derricks looked like in service over the years. They were a necessity for railroad operations for over 100 years, clearing the tracks of wrecks and performing heavy maintenance work. Although their number has been reduced and many

of them have been replaced by highway cranes, a small number will remain, since they are still needed to lift derailed locomotives and other heavy items.

Special thanks to Jim Ehernberger for providing valuable information on the Union Pacific wrecking derricks for this article.

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