

BIG STEAM NEWS

NEW MEXICO STEAM LOCOMOTIVE & RAILROAD HISTORICAL SOCIETY

Quarterly Newsletter

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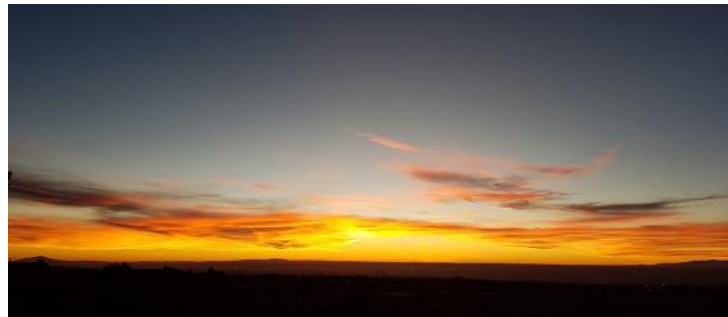
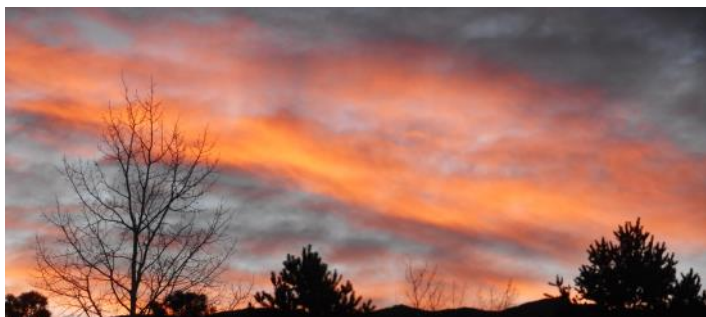
Get Your Kicks™
With 2926

SANTA FE 2926 is
NEW MEXICO True



A VERY GOOD YEAR FOR NEW MEXICO'S BIG STEAM ICON

BIG STEAM WITH NEW MEXICO'S SCENIC VIEWS WILL OFFER GREAT PHOTO OPPORTUNITIES WHEN AT&SF #2926 IS READY TO PULL EXCURSIONS, IT WILL ADD NEW DIMENSIONS TO TOURISM.



Sunrise And Sunset 12/30/2017, Last Workday Of The Year For The Dedicated 2926 Crew.

THREE BUSY MONTHS MEAN THE 2926 RESTORATION IS ALMOST FINISHED

The year just ended marked the final year of a 1½ decades effort to restore AT&SF 2926 to operational condition. From May 2, 2002 through December 30, 2017, the NMSLRHS team averaged 900 hours per month of volunteer labor at the restoration site. That labor was supported by additional off site labor, equipment and material donations, along with many cash contributions from around the U.S. and abroad.

December 30 was the final workday of the year for the volunteers working outside in any weather. That last day was good weather. It began and ended in New Mexico True fashion as shown above. Always an attraction, such typical New Mexico assets will offer new vistas for residents and visitors when viewed from a rail excursion pulled by an operating Santa Fe 2926. *What a background for shooting photos and videos of historic big steam locomotive operations!*

The pictures below and on the following pages depict a few of the many finishing tasks that will lead to completion of the resurrection of a New Mexico railroad icon. After the first steam up there will be a period of testing. Then the final installation of insulation and sheet metal jacketing will be done. The iconic big steam locomotive will then have the capability to pull excursions. The volunteers and their supporters are anxiously looking forward to that.



A Few Of The Final Tasks Leading To Completion Of The 2926 Restoration

Left: Volunteers are fitting some of the insulation and sheet metal jacketing that can be installed before steam up and testing. Jacketing around the boiler and other areas will not be installed until testing is complete.

Center: Dave V. watches as Scott A, and Rick K. focus on completion of one of the many small tasks involved in restoration of all the controls and instruments on the backhead.

Right: Firing up a big steam locomotive is not a simple task, especially for the first time after a complete rebuild. A detailed step by step plan is being developed. Here John T. goes line by line through the plan with Larry L. and Ken D. Having served as a nuclear engineer on the U.S. nuclear submarine Nautilus, John thus has steam experience, but with a different source of heat.

CONNECTIONS: ENGINE AND TENDER

Putting it all together has proved to be very time consuming for the 2926 volunteers. On the website and previous newsletters, we have often noted, and shown photos of, the many pipes on the locomotive. There are steam pipes, water pipes, air pipes, oil pipes, sand pipes, and electrical conduit. They are in all sizes and shapes, and must be connected to something. Many of the original pipes were very corroded. That meant replacement, a seemingly never ending task of acquiring, cutting, and bending to replace the originals. They were then threaded and connected to a variety of devices and other pipes. See page 5 for more about pipes.

There are three other, very important connections that link the engine to its water/fuel tender. The first, providing the strong connection to pull a heavy consist are two massive drawbars. They are installed, one above the other, in pockets under the cab and on the front of the tender. They are held in place by large steel pins. Directly above the drawbars is a second critical connection, the radial buffer assembly. Both the drawbars and the radial buffer were basic restoration tasks—made worse by some stolen parts described later. The third important connection was the Multiple Unit (MU) control system. It went beyond simple restoration.

The MU system was not a part of the locomotive when it was built. Originally developed to synchronize connected electric powered tractive units, MU systems were not often used with steam power. It is now needed to link 2926 to a diesel or an MU equipped steam unit for many operations. That link means building control boxes, installing the boxes, connecting them with conduit, and running a lot of wire from the engine to the rear of the tender. There, connection to an additional tractive unit was installed. The total design, production, and installation of the MU system proved to be a challenging task..

DRAWBAR RESTORATION

Title 49 CFR Sec. 230.90, Draw gear between steam locomotive and tender: *The pins and drawbar shall be removed and tested for defects using an appropriate NDE method at every annual inspection. Where visual inspection does not disclose any defects, an additional NDE testing method shall be employed.*

This task has drawn more discussion than actual work. The regulation cited above does not specifically require that the drawbar and pins be annealed—but the Folio for the AT&SF steam locomotives does.

The subject of regular drawbar annealing has been discussed for decades. Some organizations required periodic annealing. As early as June 19, 1920 Railway Review noted that fact with the following. “Drawbars in service shall be thoroughly annealed at least every six months.”

The 2926 drawbars were certainly due an inspection more than sixty years after the locomotive’s retirement to the park. Other than some descaling and rust removal, this was an off-site task. The drawbars were loaded into Rick’s Ford truck and hauled to Team Industries, Inc. in Farmington where Kyle Riley and his crew annealed them. The photos at right show the process, and the drawbars back at the restoration site.



THE RADIAL BUFFER

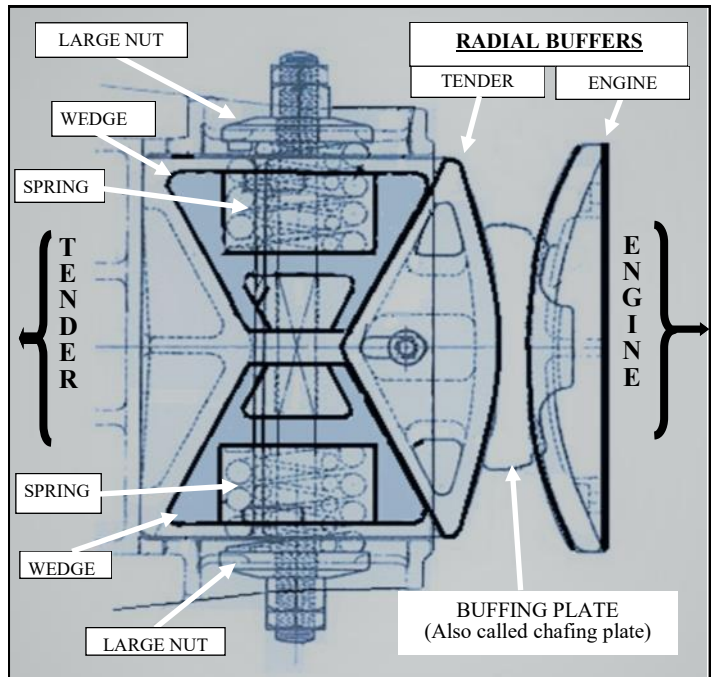
The radial buffer assembly is mounted above the drawbars on the tender. It employs spring tension to maintain a snug connection between the tender and engine while allowing flexibility.

At the front of the assembly is a large convex steel element—the tender side buffer. It faces a similar buffer on the engine. Sandwiched between the convex buffers when connected is an expendable concave brass buffering plate, also called a chafing plate or wear plate. Behind the tender side buffer is an assembly of springs and wedges that maintain tension on the buffer. At right is a sketch of a buffer assembly similar to the one on 2926. The purpose of the radial buffer is to control slack in the engine-tender connection, while allowing flexibility for curves.

The complexity of this task was complicated a few years ago by a burglary. The tender side buffer, wedges and nuts were stolen. Those valuable parts were probably sold as metal scrap at a few cents per pound. The incident led to a serious and expensive increase in site security. Recovery from the theft was also costly and time consuming. Some of the hard working volunteers would still like to meet the burglars for a physical lecture on the value of historic items.

However, with help from the owners of AT&SF 2912 in Pueblo CO., a local metal company, materials purchase, and a lot of on-site labor, the parts were replicated and installed—except for the buffering plate.

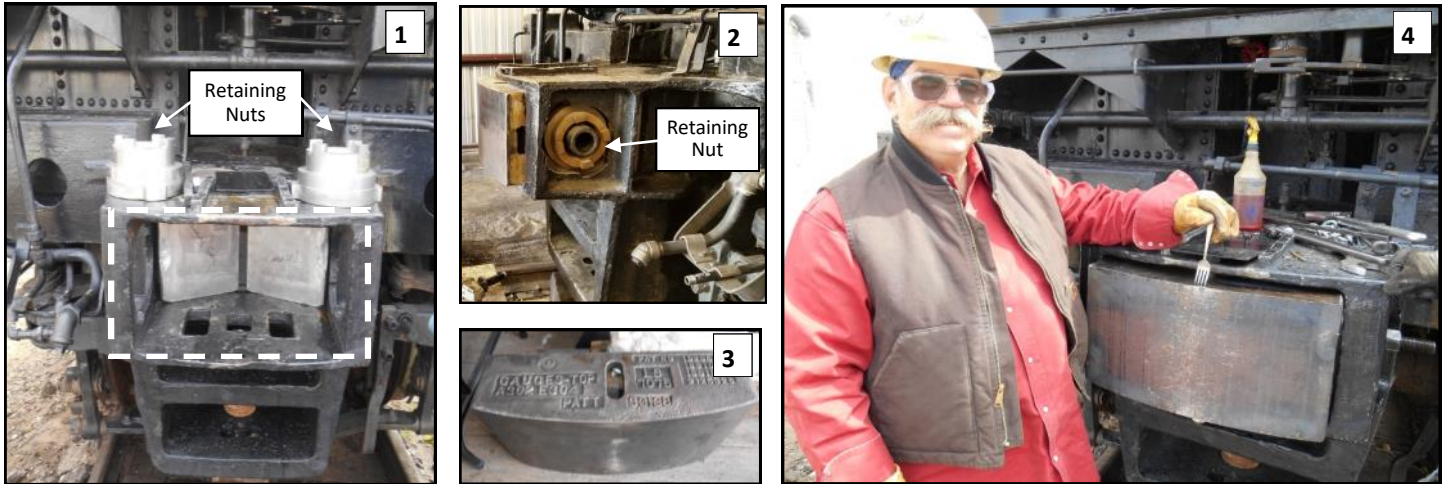
The buffering plate, designed to wear, was showing deterioration, and would have to be replaced. Replacing it required some skills not yet used on the site. Fortunately, those skills exist within in the 2926 volunteer team. It just meant building a furnace and casting the brass plate. The photos on the next page show the location of the radial buffer and some of its parts.



RADIAL BUFFER:

There are many types of radial buffers. The above drawing resembles the Franklin design used after the early 1900s. AT&SF used a similar Franklin design.

Tender Portion Of The Radial Buffer



The pictures above show parts of the radial buffer assembly on the tender. Several of those parts were stolen and had to be replicated. Located directly above the tender's two drawbar pockets, the buffer housing is defined by the dashed line in Photo 1. It contains a set of wedges and a large spring. The spring is mounted on a horizontal shaft passing through the assembly housing. The tender side buffer element is mounted on the front of the assembly. It is shaped to fit against wedges inside the assembly and on the spring. The shaft carrying the wedge enclosed spring is threaded on both ends, and secured by two large nuts that retain all the parts. The large odd shaped nuts were produced by Eric R. from solid blocks of steel. They are shown resting on top of the housing in Photo 1, and one is shown mounted in place on the shaft in Photo 2.

The purpose of this assembly is to keep the curved buffer units between the tender and locomotive snugged tight on the buffer plate as lateral movement occurs.. The lateral movement allows the engine-tender combination to flex. Photo 3 is a picture of the borrowed AT&SF 2912 tender side buffer. It was used as a pattern for making a new buffer to replace the one that was stolen. In Photo 4, after reassembly, Carlos points to the new tender side buffer that was built on site, .

Engine Side Of Radial Buffer

The photo at right was taken after the burglary when work in and under the cab was just getting underway. The front buffer is the only part of the overall buffer assembly mounted on the engine. The fact that it was still mounted in place is all that probably allowed it to avoid the theft.

Once the tender side stolen parts were replicated and reassembled, and the engine side buffer cleaned, the only part still needing attention was the brass buffer plate that fits between the buffers. The original plate was not stolen, but due to poor condition, a decision was made to replace it.

Radial buffer parts for an old locomotive are not usually found at the local parts store. The restoration crew was left with two options. 1. They could have one made off site at considerable cost, or 2. They could develop the capability to replicate parts on site. Once again showing the varied talents of the 2926 volunteers, the crew opted for the second choice.

Work began to build a furnace for creating a buffer plate and future casting needs. When finished, it will be tested and practice pours will be made. The crew will then cast a new brass buffering plate to provide the bearing surface that will complete the radial buffer engine-tender connection.

The first photo below shows the furnace building process—using firebrick to build it. The second photo shows some of the initial testing of the new on site capability. Actual production work and photos of the final product will be placed on our web site, Facebook, and the next newsletter.



This view is different now. Cab controls, gauges, and appliances have been installed. .

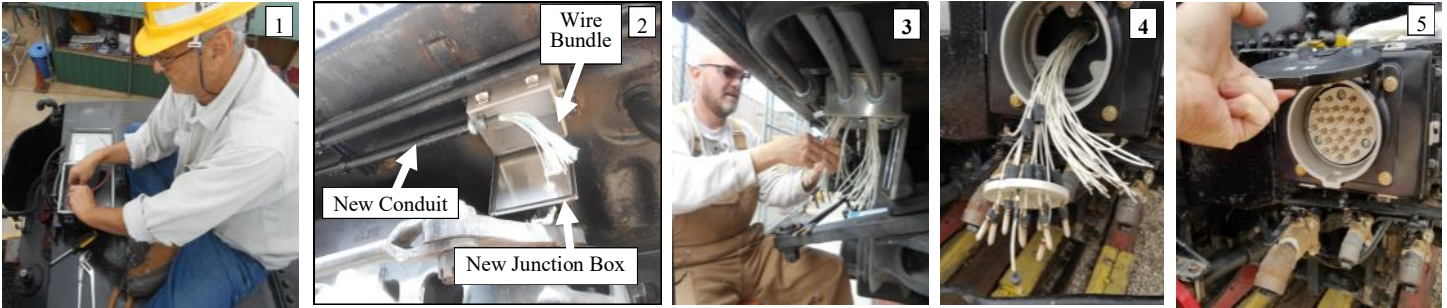
THE MULTIPLE UNIT CONNECTION

Multiple Unit Systems

Santa Fe 2926 will be fitted with a Multiple Unit Control System. Anyone wishing to learn all about MU Control Systems should be prepared for a lot of research and reading. It was developed by Frank J. Sprague in 1897 for the South Side Elevated Railroad in Chicago. Originally employed for single point control of electrically powered traction units, many variations, electric, pneumatic, and hybrid have since evolved. During the following decades, MU systems began to see use on diesel-electric units, and occasionally, but not extensively, on steam locomotives. To say the least, the latter was more complex and difficult.

Now, for most excursion activity, Santa Fe 2926 must have a diesel unit in its consist. Maybe sometime there will even be an opportunity to double head with another steam locomotive—if it also has an MU system. Therefore, 2926 must have MU capability.

For some time 2926 volunteers have been planning and installing the 2926 MU system. It is not a simple task, and still underway. It will not be needed until Santa Fe 2926 has gone through a lot of testing and is ready for the main line. So the volunteers still have time to build and install the system. The following pictures show some of the work in building control boxes, mounting the boxes, and running wires from the cab to the rear of the tender. They also had to make the electrical and pneumatic connections.



This series of photos show some of the many tasks involved in creating and installing a Multiple Unit System between the cab of 2926 and the rear of the tender. This is just a few steps in the portion of the system on the tender. Designing and installing the interface with controls in the cab is also a complicated task. To see many additional pictures of the design, building, and installation of the MU System, check the NMSLRHS web site <http://www.nmslrhs.org/> Progress on the MU project, with photos will be included in the next quarterly newsletter.

Photo 1: Bill R. is building a junction box for the MU System.

Photo 2: A junction box has been installed on the tender bottom, connected to conduit, and the wire has been pulled through.

Photos 3 and 4: Chip K. sorting wires, preparing junctions, and connectors.

Photo 5: A completed connection.

* * * * *

SPECIAL VISITORS

The restoration site visitor log reveals rail fans from throughout the U.S. and abroad. The last few weeks of 2017 saw a steady stream of 2926 friends. Among those visitors were two special visitors representing noted steam locomotive programs.

In late October, Sam Lanter, retired former manager of the Grand Canyon steam program dropped by for a look at the restoration progress. Sam and his crew have been very supportive of the 2926 restoration. They provided valuable assistance in restoration of the 2926 cross-heads about five years ago.

A recent operation on both knees seemed to have no effect on Sam's climb to the engineer's seat on Santa Fe 2926. In the photo at right, he appears ready to roll with the big 4-8-4. Keep an eye on the 2926 project Sam. We are almost there.

The other visitor was Ed Dickens, Union Pacific Senior Manager-Heritage Operations. After three week-long excursions last summer with Union Pacific's Number 844, Ed and the UP Steam Team have been busy with a real big steam locomotive restoration—Union Pacific Big Boy Number 4014.

The 2926 volunteers were very pleased that Ed took time off from the Big Boy restoration to come down and visit with us. With only a few big steam locomotives operational in the U.S., it is important that the steam teams stay in touch to better preserve memories of the country's rail heritage.

Sam, Ed, and other steam operators are welcome any time. AT&SF 2926 hopes to join your ranks soon.



Photo: Right to left; Ed Dickens, with his wife, daughter and 2926 volunteer, Paul Baynes next to AT&SF 2926.

ANOTHER LOOK AT THOSE PESKY PIPES

As previously mentioned 2926 is heavily populated with pipes of all sizes, shapes and types. The photo at right provides a look at many of the pipes atop the locomotive. A large number of the original pipes had to be replaced.

Among the most tedious and time consuming tasks of the entire restoration are those involving the fabrication, installation, insulating and painting of many yards of pipes.



Above and Below: Just threading and connecting the pipes occupied many hours of volunteer time, **Below Right:** Nate finds pipefitting workspace underneath the cab a bit cramped.



Below Left, Larry L. and Dave V. work on some larger pipes on top of the locomotive. They may appear to have a lot of room to work, but like Nate's situation below the cab, the pipes are so close together that completing the connections requires painstaking labor. Below right, Scotty A. works on a very small pipe behind other pipes. He is applying Teflon tape to the threads. Having been developed just a few years before 2926 was built, there is little chance Teflon tape was used when the locomotive was operating. It takes more time to apply, but is much less messy than pipe compound. Both Teflon and 'pipe dope' were used in the 2926 project.



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VISITORS WELCOME

9:00 AM to 2:00 PM Wednesday and Saturday

TOOL CAR UPDATE

Preparation For A Trip West



Pictured above is RPCX 3939 baggage car donated to NMSLRHS by Curt Potter. It is currently located in Bellevue, Ohio. Under the care of Mark Magers, the first stage of its transformation into a tool car for 2926 is underway.

That first stage includes removal, (Photo below) and disassembly of both trucks for inspection and any needed repairs. It should be ready to roll by summer. It will then be moved to Albuquerque for the second stage of the transformation at the restoration site.



Above: Workers in Ohio ignore snow and cold to remove the baggage car trucks. And the 2926 crew thought working outside in NM was a challenge

At the site, second stage work will begin. Storage space for tools, spare parts, electrical wiring, lubricants, and related materials will be built. The large rotary air compressor, welding equipment, an electric generator, and other large equipment will be installed and secured.

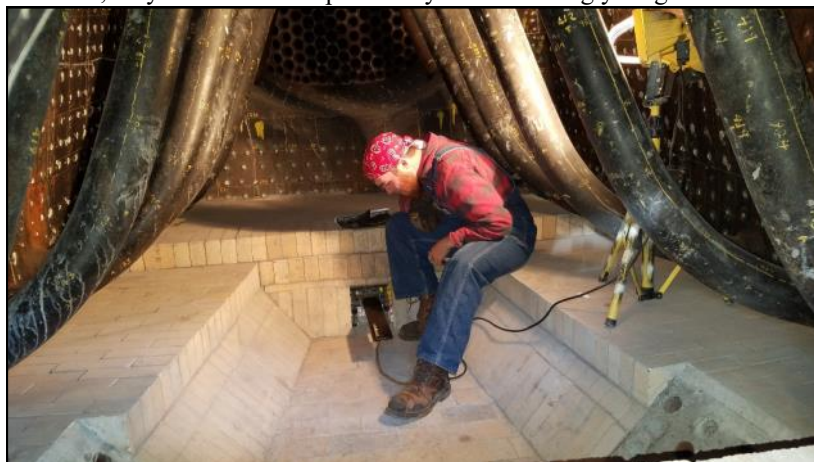
Other tasks will include some door repair, painting, and seating for the road crew.

LOOKING DOWN THE TRACK

Since Ed Bukove called the first meeting aimed bringing 2926 back into operation, NMSLRHS membership has consisted primarily of older individuals. Old enough to have experienced and remember the steam era, they have spare time, and want to stay active. Also, those older folks with steam memories, have accumulated knowledge and skills necessary to carry out the restoration—with a lot of outside help, of course. They are eager to help retain a segment of the country's rail heritage.

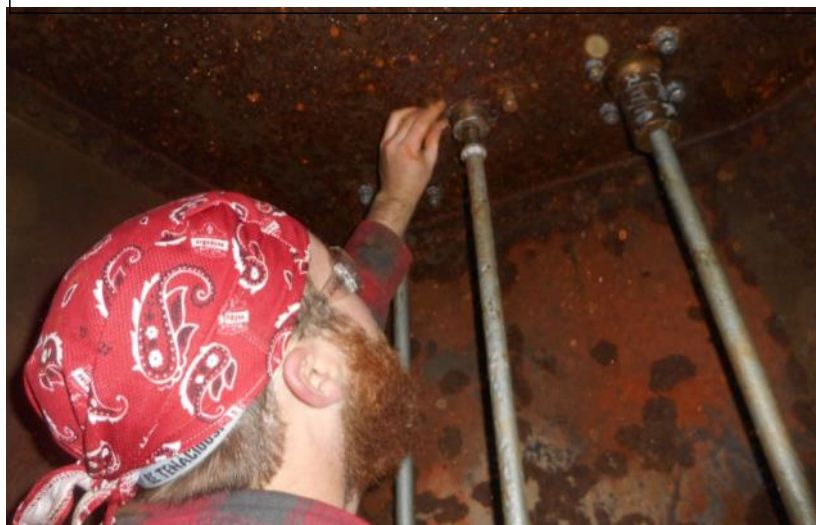
Now, looking forward to operation, there will be an increased need for youthful members like Henry R. pictured here. Henry joined the Society along with other family members. almost seven years ago. He was still in school. John, Henry's father, works full time at Kirtland AFB, yet both still showed up regularly to work on the historic locomotive.

Now that Henry has several years experience and is a valuable team member, maybe he can be a 'poster boy' for recruiting younger members.



Above: Henry checks the key fire point. Fuel oil is delivered to an atomizer at the front of the firebox next to Henry's right foot. With someone on the other end of the fuel line applying pressure, he is checking to make sure the line is clear and can deliver oil to the atomizer.

Below: Deep inside the front of the water tender, Henry checks a leak on the telltale water level valve. The leak was caused by some grit on a hard rubber seal when the valve was rebuilt.



THE 2018 ANNUAL SAFETY REFRESHER TRAINING MAKEUP SESSION

The 2018 Annual Safety Refresher Training makeup session will be held on Saturday, February 17, 2018. It will be onsite in the Reefer, will begin at 9 AM sharp and last for one hour.

This training is required for members to work on site during 2018. The topic for this year is "Things You Should and Shouldn't Do Around a Hot Steam Engine!"

If there are any questions please contact Jon Spargo at kc5ntw@sdcc.org