

BIG STEAM NEWS

NEW MEXICO STEAM LOCOMOTIVE & RAILROAD HISTORICAL SOCIETY

Quarterly Newsletter

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With 2926

SANTA FE 2926 is
NEW MEXICO True



FINALLY! A SHELTER FOR NEW MEXICO'S RAIL ICON

In 1956, Santa Fe 2926 was slowly pushed into Albuquerque's Coronado Park for display. One of the spectators at that event was a ten year old who lived just a few blocks east of the park. That youngster was longtime Society member Albert Leffler. Though he ultimately settled in Phoenix, Arizona, he never forgot the huge machine. He joined the Society's effort to acquire it in the mid 1990's. Last month, Albert was on site for the official dedication of a building to protect the venerable steam locomotive. Below, he summarizes the recovery of an old friend, Santa Fe Steam Locomotive Number 2926. . . Editor

THE ENGINE SHED: PROTECTING SANTA FE 2926

As the restoration of Santa Fe 2926 progressed through the years, so did the build-up of the infrastructure at our restoration site. When Santa Fe 2926 first arrived, it was to a fenced-in bare concrete pad with a slightly curved spur running through it. Gradually our home became a community of large shipping containers with one transformed into a metal shop and others into tool storage and general storage for parts large and small. An old refrigerator car became an office/meeting room/security camera control center. Canopies and other structures added to the usefulness of the site. Along the way funds were raised to build a deep inspection pit and another effort paid for the professional stabilization of the decades-old track with its rotting ties. And through the years of restoration, Santa Fe 2926 Continued to rest out-of-doors, unprotected from the elements and theft from the occasional vandal. No longer will that be the case as Santa Fe 2926 now has a secure metal engine shed. Restoration efforts will continue out-of-doors, but when finished for the day, Santa Fe 2926 will be moved back into the shed and locked away.

Fundraising for the engine shed was the result of a successful Go-Fund-Me drive along with a generous gift from an anonymous donor. The engine shed is impressive from the outside at 130' long, 20' wide and 22' high. In one of those interesting illusions, it seems larger on the inside, especially when engine and tender with their combined 122' in length are within. Built of all metal secured to a reinforced concrete foundation, the engine shed is built to withstand the strongest of New Mexico's storms.

The engine shed represents one of the most critical elements post-restoration: Santa Fe 2926 will remain protected indoors in between runs. This is in stark contrast to the years spent unprotected in Coronado Park. We will never again witness that state of deterioration and the start of each run will see Santa Fe 2926 as if new.

Our heartfelt thanks go out to the many Go-Fund-Me donors and especially our anonymous donor who made the engine shed possible.—*Albert Leffler*



Santa Fe 2926 Engine Shed: This picture shows the new engine shed as appears to anyone traveling north on 8th St NW at the crossing of the Sawmill Rail Spur. The building at extreme right is a BIA warehouse.

CELEBRATING THE NEW SANTA FE 2926 ENGINE SHED

WHEN THE SHED WAS COMPLETED, SANTA FE 2926 WAS PARKED INSIDE AND THE DOORS ON EACH END WERE CLOSED. FOR THE FIRST TIME IN 60 YEARS, THE HUGE LOCOMOTIVE WAS UNDER COVER.

Santa Fe 2926 is having a good year. After four decades exposed to the elements and abuse, and almost 15 years under restoration—still outside and exposed—things are really looking up. The year began with Santa Fe 2926 being recognized as an icon of New Mexico history. In February, House Memorial 100 was introduced by Speaker Don Tripp and passed unanimously by the New Mexico House of Representatives, recognizing the historic locomotive as representative of New Mexico's railroad heritage.

Then with restoration completion in the not too distant future, a successful fundraising project matched by a generous donor allowed construction of a secure shelter for the locomotive to begin. On June 11, Society members, state and local officials, and a number of other friends of Santa Fe 2926 arrived at the restoration site to celebrate the completion of the engine shed with a ribbon cutting and official rollout of the famous locomotive. After the rollout, attendees enjoyed a barbecue lunch on site.

The following photos provide views of the event and additional pictures of the completed engine shed.

Tight fit inside and out:

In Photo 1 visitors scramble for space along the siding for a good spot to view the ribbon cutting and rollout. Space on site, and within the new building is very limited.

In Photo 2, Dave Traudt (with flags) watches as Glenn Walters, Chief of Staff to Speaker of the New Mexico House of Representatives cuts the ribbon assisted by longtime Society Toolmeister, Rev. Ed Strebe.

Following the ribbon cutting, the door was opened, revealing the locomotive inside, (bottom right). Then, Lurch the car mover, positioned behind the tender at the other end of the shed, pushed the rail icon from the shed to the paved portion of the restoration site.

After getting pictures and videos of the Santa Fe 2926 rollout, visitors and Society members enjoyed a barbecue lunch under canopies next to the locomotive.

Next, it was back to work, pushing forward on the restoration. But, now pleased that at the end of this and future work sessions, Santa Fe 2926 would be safe and secure.



Left and Above: View of the new 2926 engine shed as seen looking west from the 8th St gate. One of these views is what anyone passing on 8th St will see every Wednesday and Saturday, or other times when work on the locomotive is underway. The slope of the roof is to direct drainage of rain water away from the adjacent BIA building.

Right: View looking east from the restoration site with 2926 securely parked in its new home. Due to the tight fit, it must still be moved out of the building or most work. Only minor tasks can be done inside due to minimal clearance between the locomotive and the walls.



SANTA FE 2926: IT IS NOT ALL HEAVY METAL

At A Glance, Santa Fe 2926 Appears To Be A Massive Assembly Of Heavy Metal Parts, But In The Cab There Was A Lot Wood To Be Replaced, And It Was Hand Crafted

Cab Lining

There was extensive use of wood in the cab of Santa Fe 2926. Thick pine planks were used in the floor. The cab roof and walls were lined with narrow tongue-and-groove pine. In 1944 when the locomotive was built, molded paneling, plastic, plywood, etc. were not in wide use. Thus, the tongue-and-groove served two purposes. It fit snugly on curved surfaces, and allowed for expansion and contraction. Installation of that woodwork was described in a previous newsletter, (Vol. XII No. I, Jan-Feb-Mar, 2013). Pine was used for the replacement. The tongue and groove work, performed by Randy and his woodwork team, was intricate and required a lot of volunteer hours of labor. It is pictured at right after it was painted in the original cascade green.

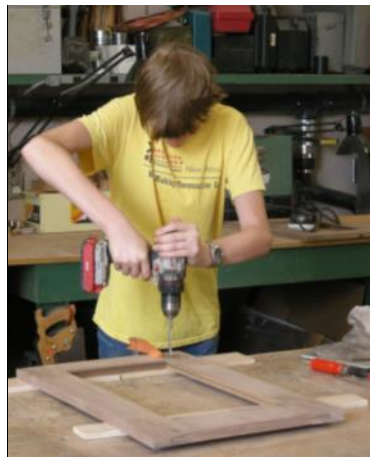


Cab Roof Woodwork w/Sunroof open: This image reveals the curvature and components that made installation a challenge.

Window Frames

The Santa Fe 2926 window frames were a different story. Obviously not pine, they were hardwood, probably ash, but severely rotted and in pieces.

Replacing them was also a different story. They were replicated by one of the Society's youngest members, Sam Baczkiewicz of Bernalillo, in his home shop. Sam is homeschooled by parents Tracey and Greg, and it appears his education goes well beyond just bookwork. His skill at woodworking reveals some hands-on learning and experience. The photos below show Sam hard at work on the window frames. The quality of Sam's work on the window frames speaks for itself. With the careful effort he put into his work, it may well exceed the original factory work.



Replication of Santa Fe 2926 Window Frames: These photos show Sam Baczkiewicz hard at work in his shop measuring, drilling, joining, and sanding Santa Fe 2926 window frames.

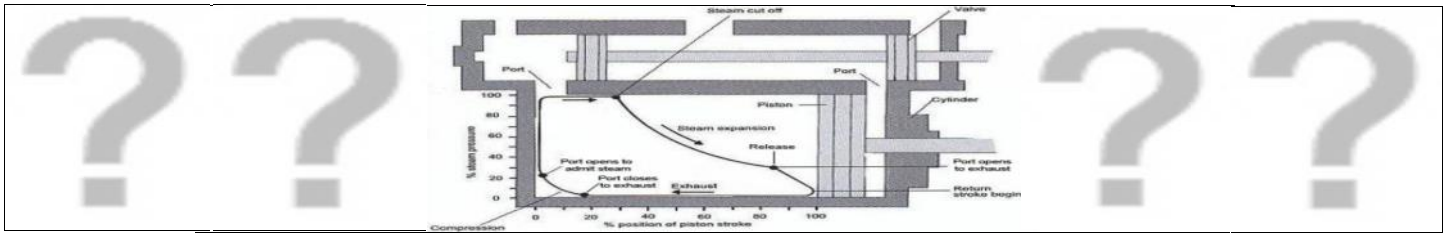
The wood that Sam used is definitely different from the original. That material, coupled with Sam's fine woodwork means that Santa Fe 2926 will hit the rails with some quality window frames. When Randy's crew began work on the cab interior, he acquired some high grade walnut that Sam could use to build the new window frames. It is quite probable that Santa Fe 2926 is the only big steam locomotive with solid walnut window frames. Visitors at the Santa Fe 2926 Open House in September will be able to see the new window frames along with other parts of the cab restoration.

Sam's interest in the Santa Fe 2926 project, and his skillful work in replicating the window frames is very encouraging to members of the Society. It is comforting to know that there are youngsters who will step up to maintain and operate the classic locomotive for future generations to enjoy. The Society just needs to identify, recruit, and train more such young talent.

In future years, it is easy to envision Santa Fe 2926 under steam with Sam Baczkiewicz in the cab, arm resting on nice walnut window frames that he built.



Window Frame Installation: This photo of the right (Engineer's) side of Santa Fe 2926 shows the new walnut window frames during installation.



HOW POWERFUL IS IT?

The few big main line steam locomotives that still exist are major points of interest. Everyone from elementary school students to graduate engineers have questions about the huge machines that powered the transportation industry in the last century. Santa Fe 2926 is a member of that elite group of iconic machines. General questions about New Mexico's flagship steam locomotive are easily answered with a fact sheet that contains manufacturer, build date, cost, weight, length, date of service, area of operation, etc. However, many questions are far more complex. None are more complex than those relating to specific mechanical functions, and those concerning power and performance—especially as compared to similar machines.

The following query by Santa Fe 2926 fan Jeremiah Johnson of Milwaukee is typical of the serious questions we receive concerning power and performance. Longtime Society member Steve Bradford's response is bound to keep the discussion going. Perhaps some day when Santa Fe 2926 is in operation, there will be an opportunity to gather data that will shed more light on the issue.

Drawbar Horsepower Question

Subject: 2900 class performance question
To: nmslrhs@nmslrhs.org

Greetings from Milwaukee, I've been following your restoration project intimately for the past few years and I'm am so incredibly excited at the prospect that my favorite engine of all time (tied with the Santa Fe 5011 class) and Baldwin's best, will be operational in the span of a few months.

I've had a question that's been burning in my mind for a long time and I haven't been able to find any answers to it online or in any books or magazine that I have. So this is all purely speculative. But was it possible that the Santa Fe 2900 class could perform higher than the 4590 drawbar horsepower (dbhp) that Santa Fe 2919 displayed shortly after delivery?

The 2900 class got quite a few improvements over the years between 1946-1951 including lightweight roller bearing rods (reducing machine friction), the stack extension (improving draft in the firebox), and the security circulators. According to Lloyd Stagner the circulators increased the 2900s heating surface to the equal of the 3765 class at 5400 sq ft. Mr. Stagner also said in his account of Santa Fe's 2-10-4 that it took some work on the front end of the 2900s for them to become to prodigious steam producers they came to be known as in later years.

With this said is it possible the 4590 dbhp figure is outdated and if so what would you estimate the 2900s were truly capable of?

If I am overestimating the function of each of these improvements please let me know, I have limited knowledge on the mechanics behind these improvements and their effect of the 2900s performance in regular service.

Thank you so much for taking the time out to read this lengthy email, and congratulations on all of your tireless efforts and hard work coming to fruition. I sincerely hope that in the near future I can come out and see my first member of the 2900 class firsthand.

Jeremiah Johnson.

Response To Question

Jeremiah:

Your question is a good one and tricky to answer. I do not have my books and information available to me as I am on an RV trip and currently in Eugene Oregon. But I do remember some things that are relative to your question. There are several data sources that shed light on this issue: 1) Stagner's *Thirty Years of 4-8-4s* article in the Feb 1987 issue of *Trains* (on Santa Fe 4-8-4s) and his Aug 1975 article on ATSF 2-10-4s "The Ultimate Development", and 2) "The Santa Fe's Big Three" book by S. Kip Farrington (<https://www.amazon.com/Santa-Fes-Big-Three-Locomotives/dp/B0006C4BDE>). Also Ralph Johnson's "The Steam Locomotive" has all the engineering basics that are the foundation for calculating power.

According to Stagner Santa Fe 2919 made three trips with the dynamometer car in 1944, and it was during those runs that the 4590 dbhp figure was derived. So that is a drawbar horsepower figure calculation based upon actual dynamometer car drawbar pull measurements combined with actual speed. Grade and tonnage data would also have been available along with cut-off, steam chest pressure, boiler pressure, and other useful data. Stagner must have had access to more detailed test information on 2919 and he certainly did for Santa Fe 3766. Who knows what happened to that test data. Unfortunately, all we know from published sources about 2900-class performance is that little mention in the *Trains* article.

By way of contrast, 3766 was tested extensively when new in 1938 and Farrington included a lot of the test detail in his book, including some indicator cards which record extensive locomotive data in a "snapshot" fashion. He had access to extensive technical test data when he wrote that book. The 3766, with the smaller, lighter tender exerted about 4600 horsepower at the tender drawbar which is about the same as the 2919 with its heavier tender.

So how much would the drafting changes have affected the dbhp when the extension stacks were installed? Impossible to know. But it is reasonable to speculate that they were installed to improve draft, which might have had some beneficial effect on back pressure and therefore water and fuel consumption. That might also have bumped dhp up a little.

As for the Timken roller bearing rods, the reduced resistance would have added a little to dbhp, probably not much. They paid dividends in less dynamic augment to counter balance and less rotating weight to counterbalance—and a great reduction in the need to stop and lube the rods. Remember stopping and shooting the rods at other than a scheduled station affected schedule time.

(Continued on Pg 7 Column 2)

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President Michael Hartshome
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Chief Safety Officer John Spargo
Community Liaison Steve Bradford
Webmaster Rich Bugge
Facebook Editor Julie Tiedemann
Newsletter Editor Doyle Caton

MAILING ADDRESS

NMSLRHS
P. O. BOX 27270
Albuquerque, NM 87125-7270
Restoration Site: 1833 8th St. NW
Tel: (505) 246-2926 Web: www.nmslrhs.org

LOOKING DOWN THE TRACK

Three Stages Of Success

Crawl, Walk, Run: Through the ages, those words, descriptive of human growth and development have been used to define many endeavors. They are found in the schema of management, marketing, combat training, etc. An internet search on *Crawl, Walk, Run Methodology* will result in a lot of references on the subject.

If applied to the restoration of Santa Fe 2926, the terms might represent; 1) Crawl—from park display to steam-up, 2) Walk—adjustments, testing, and 3) Run—historic passenger carrying tourist excursions. Defined in that manner, the volunteer restoration crew can finally look forward to the end of a very long crawl.

Stage 1: In addition to thousands of hours of hard work under difficult circumstances, the crawl required a lot of learning on the part of the volunteer crew, along with incredible support from individuals and organizations. There are still a lot of tasks to be done, many literally crawling around, in, and under the locomotive. But now we have a well trained, experienced, dedicated crew, with world wide support.

Stage 2: The testing and adjustments will be carried out on-site, and on local lines with no passengers. It will include the huge locomotive's first time out of the 8th St. gate since it was pushed onto the site in May, 2002.

For public safety purposes, this activity will not be announced in advance and on-site visits may be suspended. Hopefully, this stage, which includes a lot of interface with other railroad entities, can be measured in weeks. During that time, Santa Fe 2926 will on occasion be visible in motion in the Albuquerque area.

Rail fans who see such activity, and wish to view or photograph 2926 are reminded of safety issues. Rules of the New Mexico Department of Transportation, Federal Railroad Administration, and Albuquerque Traffic Control apply.

Stage 3: This is the stage that Santa Fe 2926 volunteers, supporters, and the tourism community have looked forward to for years. Initial planning is underway. Discussions with participants, including governmental and private organizations are underway.

As interest in the Santa Fe 2926 project has increased, so have questions, comments, and rumors. Incidentally, the most frequently asked question is: "When are you going to run?"

We will let everyone know as soon as possible. For current, accurate information regarding Santa Fe 2926 restoration and planned operational status, please refer our web site, Facebook page, or this newsletter.—*Editor*

(Questions Continued)

Note also that the 2900s are lugging around a heavier tender and that takes more horsepower, more than the 3766 would have spent lugging its lighter tender. But both engines show about the same drawbar horsepower available for pulling the train. Could it be that the 2900s do develop a couple of hundred more horsepower (indicated horsepower) but some of that has to be subtracted to haul the heavier tender?

So, basically I have also wondered why these huge powerful engines were less powerful (in terms of power at speed, i.e. horsepower) than the N&W J class and the NYC S-1a/S-1b Niagaras.

A couple of things come to mind. Farrington's book reproduces the narrative test reports for the 5011 and 3766 class. Both reports identify an issue with both locomotives that would have limited top end horsepower, a large drop in steam chest pressure at higher speeds. It is normal for steam chest pressure to decline, even at shorter cut-offs, as an engine gets going in the medium-higher speed range

But both reports call this a problem excessive pressure drop. If that is more than would normally be expected (and I don't know what "normal" would be) then it would definitely reduce horsepower, big time.

It could be due to steam passages obstructing steam flow due to being too small. That could be super heater, throttle, dry pipe etc. I don't know where in the steam circuit between steam dome and steam chest the steam might be constrained at high flow rates. Or it could be that those over-size 28 X 32 cylinders just eat steam too fast when running at speed, at full throttle and shortened cut off settings. Remember, the 3765/3776/2900s were all designed for 300 psi with big 28 X 32 cylinders and had limited cut off (60%) when starting to keep the tractive force within what the adhesive weight (295,000 lbs) could handle without excessive wheel slip.

That is why I think the big Santa Fe 4-8-4s apparently could not generate the 5000-5200 dbhp that the J's and the Niagara's could.

Steve Bradford, Sent from my iPad

ALSO IN THE MAIL

The following correspondence from Californian Rick Meissner reveals that he and his friend Chuck Stokke are experienced and zealous steam rail fans. Chuck, who is from Victorville CA, immediately recognized the specific location of the picture we have of Santa Fe 2926 near Victorville pulling the second segment of the Santa Fe Chief in 1947.

Rick is looking beyond the completion of the 2926 restoration. His note below looks to the future when 2926 is ready to take to the high rails for classic rail passenger excursions. Ardent rail fans like those who have followed the restoration will still show up—but the potential fan base will expand significantly. Once the locomotive is under steam and pulling classic coaches, people who have little or no interest in horsepower, speed, or mechanical aspects will show up in large numbers.

That means the Society will be dealing with a much more diverse type of visitor. It will also mean dealing with the public at large, and a wide range of administrative and regulatory entities, both governmental and industrial. It is good to know that folks like Rick and Chuck have us on their personal radar. We hope to sign them up as volunteers.

Rick's Letter

Dear Doyle,

I would like to sincerely thank you for the time you gave Chuck Stokke and I July 6th. We appreciated talking with you and the supreme effort all associated with ATSF 2926 are making to restore this magnificent machine.

This gigantic project reflects the passion of those involved who appreciate the significance the 2926 represents to rail fans worldwide, to New Mexico and local government. Many rail fans may not even be aware of the fact that this project exists. So the question remains on how to get the message out and how to convince rail fans, the State and the local government to be more supportive and involved. Press! Press! and more Press!—perhaps from an angle of safety such as Operation Life Saver that will also serve a purpose to educate the public. I have attended past events of this nature and they were very successful in drawing the attention of many who otherwise would not have had an interest.

As I stated to you, I'm still employed full time but expect to retire during the first quarter of 2017. Once retired, I plan on becoming more active with your organization as well as the Cumbres and Toltec railroad.

*Again, Chuck and I express our thanks and gratitude for the work you are doing and wish you and your organization the utmost success!
Sincerely, Rick Meissner*

SANTA FE 2926 OPEN HOUSE

Ten Years ago, the New Mexico Steam Locomotive & Railroad Historical Society held the first Santa Fe 2926 Open House. Work on the locomotive's tender was still underway, and some disassembly of the engine itself was just starting. The badly deteriorated cab had been removed and was resting on cribbing awaiting hundreds of hours of work. Viewed from any angle, inside and out, anticipated work to restore the derelict steam rail icon was downright intimidating, (Figure 1).

A decade later, the picture is quite different. Folks attending the 2016 Open House will see a much different picture, (Figure 2). After strong, continuing support from around the U.S. and abroad, and more than 140,000 hours of volunteer labor—a total value of more than \$2,000,000—reassembly is nearing completion.



Figure 1: Just Getting The Restoration Underway.



Figure 2: Nearing Completion.

There is still a lot of work to do—hydrotest, insulation and sheet metal installation—but at this year's Open House Santa Fe 2926 will look more like a big locomotive than a rusty relic. Visitors this year can see all the work that has been done—brakes, piping, accessories—and take a look inside the cab at all the new gauges and woodwork.

The 2016 event could be the last Open House at the current site. If things go well, by the time the 2017 Open House comes around, Santa Fe 2926 should be under its own power. Once mobile, Santa Fe 2926 might just seek out a larger venue near downtown Albuquerque—maybe near the Alvarado Transportation Center. After all, it served that neighborhood when it could be seen at the head of a famous passenger train taking on passengers at the Alvarado Hotel, Crown Jewel of the famous Harvey House chain.

SANTA FE 2926 OPEN HOUSE 2016 SEPTEMBER 24TH 9AM TO 4PM 1833 8TH ST NW

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Parking is different from previous years. Some parking is still available on 8th St, but additional parking is available on the adjacent GSA warehouse parking lot. Entrance is on 12th St between the frontage road and the railroad tracks..

Additional information, such as specific music groups and time will be available on our website www.nmslrhs.org, and on facebook as details come available.

