VOLUME VIII NUMBER 2 APR—MAY—JUN 2009

NEW MEXICO STEAM LOCOMOTIVE AND RAILROAD HISTORICAL SOCIETY

P. O. BOX 27270, ALBUQUERQUE, NM 87125-7270—TEL (505)332-2926

HELP RESTORE 2926

Sponsor One Or More Flue Tubes

A key element and major cost factor in the 2926 restoration is boiler recertification. Much of that effort is replacement of the flue tubes and superheater pipes.

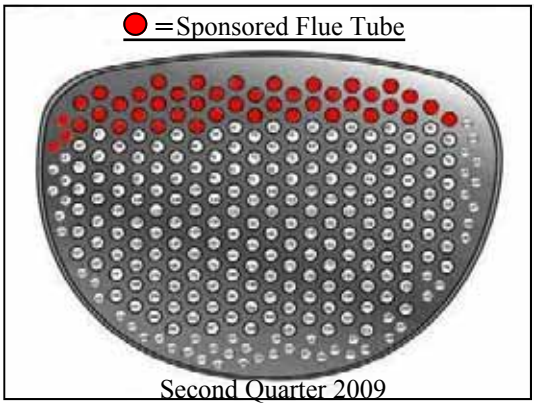
The boiler has 220 3.5 inch diameter flue tubes and 54 2.5 inch diameter tubes, each over 20 feet long. They carry hot gases from the rear flue sheet at the firebox, to the front flue sheet, at the smokebox. Each of the large tubes contains four superheater pipes.

New flue tubes have been ordered. Their purchase will seriously deplete the restoration funds. The restoration project needs help in replenishing those funds to meet other needs.

Help raise thpse funds, AND create your permanent link to 2926 by making a donation to sponsor one or more flue tubes..

With each tube you sponsor, your name or other names you choose, (i.e. children, grandchildren, other family members or friends,) will be added to the 2926 Restoration Honor Roll.

Sponsorship of a large flue is $300, and a small tube is $200. There are two ways you can purchase flue sponsorship(s). Just mail a check to the NMSL&RHS address on page 2. Or you can go to the NMSL&RHS website at http://www.nmslrhs.org/pages/howtohelp.html and donate via credit card or Pay Pal.



This flue sheet diagram will be updated quarterly to show progress of flue sponsorships.

GIL BENNETT 2926 PAINTING

We still have a few signed copies of Gil Bennett's painting of 2926 steaming past red cliffs near Gallup. Order yours today.

NOW HEAR THIS- - -OR NOT

Non-Destructive Testing Beyond Human Hearing

Today, most people are familiar with the terms ultrasound and ultrasonic. This was not always so. In fact, many of our members are older than the common use of those terms. Regular use of ultrasound technology in manufacturing, medicine, and other disciplines is rooted in the explosion of technological developments during and immediately after World War II.

Companies such as boilermaker Babcock and Wilcox began use of ultrasonic technology to test metals in the 1950's. AT&SF Locomotive Number 2926, built in 1944, was already retired by then. Not until the 1970's did the Federal Rail Administration (FRA) develop standards that led to regular ultrasound test (UT) of steam locomotive boilers, rail and other metal components.

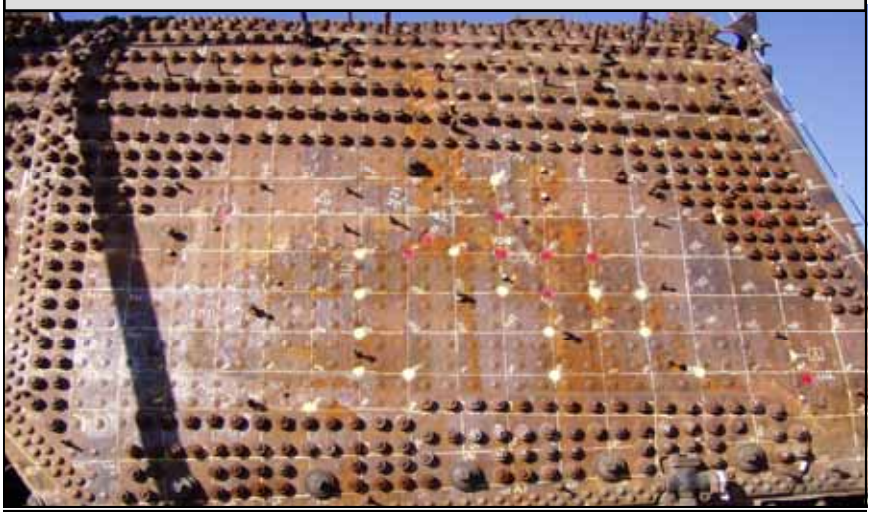
NMSL&RHS President, Dr. Mike Hartshorne, is a radiologist with extensive ultrasound experience- - - on people. UT of a large locomotive boiler is just a bit different, and was an enlightening experience for Mike and his crew. In the following report, Mike describes the use of ultrasound to meet FRA steam locomotive boiler certification requirements.

* * * * *

THE ATSF 2926 UT PROJECT

By Mike Hartshorne

NUMBER OF- - -Measurements reported in mils	7060
- - -Boiler drawings.	47
- - -OJT trained ultrasound technologists.	5
- - -Visits by 3751 stalwart Wolf Fengler.	2
- - -Saturdays and Wednesdays	Nobody Counted
Completion of the ultrasound project:	**PRICELESS!!!!**



It looks easy. ***Just lay out a grid, and get UT readings where the lines intersect and record the readings. It wasn't so easy. The UT team thought measuring this flat part of the wrapper sheet was difficult—until they got into the tighter places. Then they realized the outer wrapper sheet was simple compared to the rest of the job.***

During the past year, the entire pressurized boiler for ATSF 2926 has been mapped, and ultrasound measured for metal thickness—***inside and out.*** The resulting data of both stayed and un-stayed portions of the boiler were recorded on detailed drawings. That included the firebox, combustion chamber, smoke

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President————Michael F. Hartshorne
Vice President————
Chief Mechanical Officer——Bob DeGroft
Chief Safety Officer————Jon Spargo
Newsletter Editor———— Doyle L. Caton
WebMaster ———————— Marlin Allison
MAIL ADDRESS: NMSL&RHS
P.O. BOX 27270
Albuquerque, NM 87125-7270
Tel: (505)332-2926 web: www.nmslrhs.org

2926 MILESTONES

by Bob DeGroft, CMO

Two years and a few months ago, we finished the restoration of the locomotive tender.

It was a significant milestone for our hard working group and it changed the way our efforts are perceived by the general public. Until then, it was very difficult for us to convince industry skeptics and the public that we were actually accomplishing something. WE knew we were making progress but all visitors saw was piles of pieces and parts. There many steam groups around the country that did not get this far and stalled due to funding or support problems. We were in danger of being included in that bucket.

The results of having a finished tender to show are dramatic. More volunteers signed up, more workers came on site. Cash and in-kind donations increased dramatically. Our ***"Sponsor a New Flue"*** program was well received and about 43 have been sold. We are being talked about in trade papers, magazines, and websites in a positive manner.

People now believe what we have known from the start. We are going to **'get her done'**.

The Latest Milestone

When the tender was done, we shifted our efforts to the engine. She is now stripped of her appliances, tubes, flues, superheaters, plumbing and jacketing. We are starting the actual rebuild of sub-assemblies and appliances.

Due to the increased donations and fund raising projects we now have enough funding in place to order ***all*** of the replacement tubes, flues, and superheater tubing. Timing was perfect. The steel market dropped through the floor this year and we were able to get the items at a huge discount. They should arrive in October and we will be able to start the boiler refit.

We are reviewing the results of over 7,000 UT measurements and shortly we'll know what must be done to bring the boiler shell up to spec. No "deal breakers" were found.

With the flues on hand and funds to buy rigid stay bolts we now have plenty of work. We'll be very busy for the next twelve months.

Many have asked us when we expect to get her back under steam. We have answered that question with a lot of IF's, but now the end is in sight and 2926 WILL be on the rails again.

We still need more funding, but the major hurdle has been crossed. Keep the donations coming, buy a tube or a flue, get your friends to join and by all means drop by and see what's been going on!

BANGING ON A 2900

Larry Lukash

In the year 1940 in a borough far, far away was born the son of a tower man who worked for a subway system. The borough was Manhattan. The city was New York. The new arrival was Larry Lukash. According to the genetic theory of Railroading Larry's mechanical interest, love of trains, and eventual involvement with the 2926 was foreordained. (The latent gene for trains is usually an autosomal dominant found on a Y chromosome.)

Larry's genetic predilection for things mechanical led to technical schooling, mechanical training, and vehicle restoration, (Read on for more about the restoration of a beautiful Corvette.) The final step of Larry's westward migration led him to 1833 8th St. NW in Albuquerque where he found AT&SF 2926 undergoing restoration to operating condition.

Young Larry Lukash a serious National Guard wheeled vehicle mechanic. Just look at the '60's era sideburns.

Our Larry Lukash, a happy 2926 restoration crew member. The sideburns have turned grey. And who says retirement isn't fun?

Larry was thrilled! Here he found a group of guys who were in need of his skills—*and they were working on a steam locomotive*. He signed on.

Larry's life hasn't been all mechanical and technical. He did have a lot of other "nature and nurture" determinants in his life. As a youngster, he became a Mets, not a Yankee, fan. He roller-skated on Saturdays and Sundays when he was a kid. He received a thorough grammar school education at St. Thomas Aquinas Catholic School.

With grammar school behind him, the latent genes began to show. He attended a high school that emphasized aviation vocational work with academics in a building on 63rd street and vocational education on 64th street where graduates were certified in Airframe and Engine skills.

Even before high school, Larry became intrigued by steam. In summers of the late 1940s he spent time with steel mill employee relatives in Bethlehem, Pennsylvania. There he could run down to the yards where the Pennsy, Reading, and Lehigh Valley Railroads mixed it. He was fascinated watching steam locomotives. Little did he know they were at that time heading for near extinction. Nor did he know that he would someday help bring one back to life.

After high school the aviation business wasn't hiring. Never afraid of something new, Larry took to sheet metal work. For three years he built hotdog street carts for two different employers. In 1961, the sheet metal work came to an end—he was laid off

Army reserve duty as a wheeled vehicle mechanic: Maybe we should have Larry explain how one gets assigned to military field operations like this. Looks like those guys at Camp Drum knew how to party.

Larry then switched from sheet metal to another discipline requiring hand-on skills. He hooked up with some friends from his teenage years. This time it was carpentry. For the next 14 years, he

(*Continued on back page)*

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box, 6 siphons, front and rear flue sheets, doublers on the first, conical and third course, man way, steam dome, air reservoirs. and more were meticulously mapped and scanned.

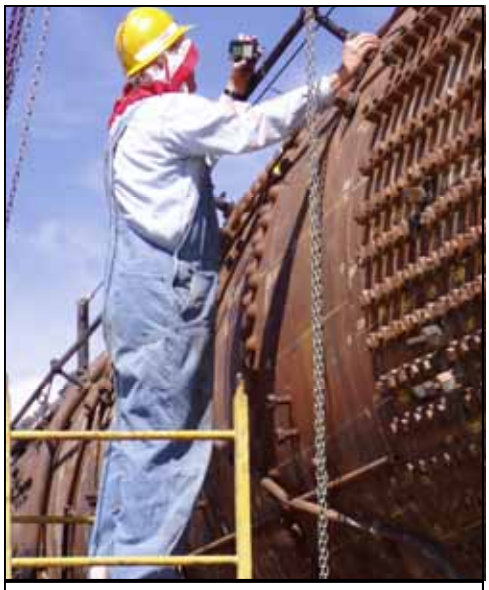
John Taylor, Randy McEntire, Bob Scott, and Pete Adair, and I formed the A-team. Others joined in on occasion. After serving as trainer for the rest of the crew, I joined the crew rotation, and the UT work got underway.

All measurements derived from ultrasound readings were carefully entered into charts drawn to represent a specific portion of the boiler.

The guys on the team were promised nice clean ultrasound work with no heavy lifting. A grid in yellow paint was constructed over every surface, mostly in 8" blocks with a corresponding drawing. Unfortunately, yellow paint pens only work really well oriented on horizontal pieces of clean metal. There are no such surfaces on a locomotive. The yellow paint pen does work well on fingers, clothing, and faces in any orientation, however.

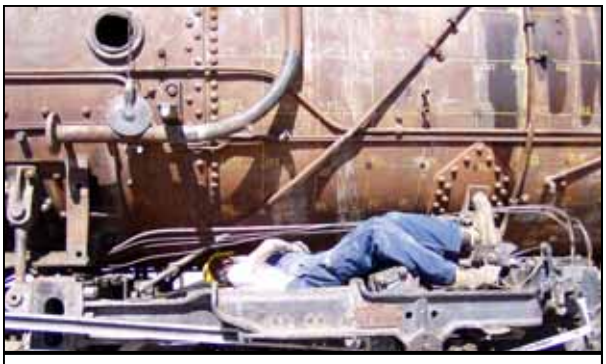
Before each day's work the ultrasound machine was calibrated against gauge blocks and recorded for CMO review. Measurements required spot grinding and polishing of the grid intersections where readings would be made. This was done to ensure a smooth surface for good contact with the transducer.

A good slobbering of medical ultrasound gel was applied at each intersection. Excess gel wound up on gloves, coveralls, helmets and faces of the ultrasonologists. That's OK, the gel is sanitary. The rust and grease it suspends are not.



John Taylor takes ultrasound measurements in an 'easy' spot. The 'easy' means it only involved a scaffold, climbing, grinding, and tolerance of varying weather conditions.

Measurements at grid intersections were recorded in numerals painted on metal at the grid points and penciled on the drawings. They had to be done upside down on the crown sheet; inside the barrel of the boiler; hanging from safety harness on top of the boiler; and perched on scaffolding on the side of the boiler. The outside bottom of the boiler was reached by crawling over the frame under the boiler.



Zack Blea begins to squeeze into place atop the frame of 2926 to begin ultrasound measurements of the bottom of the boiler. Size, reluctant muscles and stiff joints keep most members from even thinking about such maneuvers.

Fortunately, members Amanda Atwell and Zach Blea are thin enough to do just that. They squeezed below the boiler to get those important readings.

The UT acrobatics and contortions were done in hot sun, freezing weather, rain, wind, or whatever mix of weather came along.

Some areas required closer attention. They were areas where trapped moisture had caused increased corrosion, thus reducing the thickness of boiler metal. When initial readings of 8" blocks revealed such potential problem spots, additional ultrasound measurement of the area was done using a grid of 4" blocks.

Clean duplicate copies of the recorded sheets were mailed in batches to Wolf Fengler at the San Bernardino Railroad Historical Society. The recorded data must be entered into an engineering database Wolf created for 2926.

July 15, 2008: *Shortly after the start of the UT measurements, Wolf Fengler came for a visit and to give our UT crew guidance. Here, Wolf and Bob DeGroft review recorded measurements to determine if adjustments in methodology are necessary.*

The data entered is used to calculate minimum boiler wall thickness to operate 2926 at 300 psi boiler pressure. The result of the calculation drives needed boiler repairs. It will show which areas can be trusted as is, which need build-up welding, and which need new steel.

The data also will be used to create the Federal Rail Administration Form 4 (BOILER SPECIFICATION CARD). The FRA regulations, including Form 4 are available on line if you are curious. Its six pages look simple, until you've seen Wolf's calculations covering the complex geometry of the boiler and the 47 sheets of data that are fed into his calculations.

* * * *

BOARD ELECTION 2009

Old Hands Are New Faces On Board

Rick Kirby and Dave Traudt were elected to the NMSL&RHS Board Of Directors at the annual meeting. The two new Directors are new faces on the Board. They replace Marlin Allison who chose not to run when his position expired, and Ed Strebe, who was finishing out the Board position vacated by Bob Scott.

Though they are new faces on the Board, Rick and Dave are anything but newcomers to the organization. Both are longtime members and are old hands who regularly show up for work sessions. They provide an excellent example of the diverse talents, team spirit and hard work that is endemic to the NMSL&RHS.

Congratulations guys! Now, you can add more duties to your busy work schedule.

(Continued from Page 2)

worked as a union carpenter. He liked the relative independence of doing carpentry work (ask him about building airport counters without any plans).

During his carpentry period, Larry also served in the National Guard. From '63 to '69, he spent his National Guard summer camps at Camp Drum as a wheeled vehicle mechanic in an artillery battalion. There he gained additional mechanical experience.

Larry's guard duty just may have revealed a bit of stereotyping. His Guard battalion contained a lot of hard partying firemen and policemen. As a vehicle mechanic, he worked closely (and partied) with them. Their 105mm, 155mm howitzers and 8" artillery made a lot of satisfactory noise. One wonders if there might be a connection between firemen, cops, and loud noises that Larry found interesting. (Maybe we should ask New Mexico Artillery Company President, Ken Dusenberry/NMSL&RHS member, a retired policeman, about this. He and Larry seem to have an affinity for loud noises.) But enough about National Guard maneuvers, let's get back to Larry's civilian life.

In the mid 1970's, after working at odd jobs for a while, Larry got a really good job with the New York Port Authority. It was a job he worked until he retired in 2001. In fact, only eight months before the World Trade Center was hit by terrorists on 9/11, Larry was at his retirement ceremony in the World Trade Center office of the Port Authority.

A few years later he and his wife moved to Ventana Ranch, on Albuquerque's west side. The move followed a number of visits that Larry and his wife had made to the Albuquerque area to see members of her family.

Over the decades of his working life living in Valley Stream, Long Island Larry had time to indulge in the restoration of what started as a $900 basket case Corvette. He paid for it with money earned in the National Guard. After many hours of loving labor, it became a gorgeous "re-sell red" machine worth $35,000. He rallied with a corvette club for a time, but sold the machine in 2005. I think he misses it.

When it wasn't the 'vette occupying his free time, Larry was working on an HO layout. (Obviously, the latent train genes were still at work.) Unlike the 'vette, the HO layout made its way to Rio Rancho, carefully boxed up by Larry so that it did not lose a blade of grass. Now it is expanded and occupies one of the bays in his three car garage.

Larry's genetic predisposition to like steam engines took over his life when his rail fan brother visited him in 2007. While on a RailRunner trip to Belen the conductor told the brothers about the ATSF 2926 restoration and the two did the rest. They found the locomotive for a drop-in visit during a work session.

Next thing you know Larry signed up and began to show up for work sessions at the 2926 site. And he fit right in. After all, he had the experience of the Corvette restoration AND an innate interest in railroading reflected in his passion for the HO layout.

Since joining NMSL&RHS, Larry has been handy in a variety of jobs and has been a lot of fun to work alongside. What a great way to spend a productive retirement with new friends! When 2926 runs he'll certainly be in line for a cab ride. We'll need a wide angle lens to take a picture of Larry's grin.

Clad in red, white, and blue, Larry smiles broadly as he poses in front of the Corvette. Perhaps we should not dwell on this, but the sign at the top of the picture casts a bit of doubt on Larry's restoration skills. Larry, did you restore it or have it delivered AS IS ?

Larry's beautiful HO layout that survived the move from New York, and now resides in his garage.

2926—OPEN HOUSE—2009

SATURDAY SEPTEMBER 26
9:00 AM TO 4:00 PM
1833 8th St NW
(4 blocks south of I-40 between 8th and 12th Sts)

—FREE HOT DOGS AND SOFT DRINKS—
—LIVE MUSIC—
—FUN FOR THE KIDS (of all ages)—

Get a close up look at an important part of New Mexico's history that is being brought back to life.

Come down and check our progress in restoring AT&SF Steam Locomotive Number 2926 to operating condition.