

RESSURECTING ATSF TANK CAR 100221

by Don Harper

Galveston Railroad Museum Volunteer and Advisory Board Member

The Galveston Island Railroad Museum and Terminal has in its inventory 4 tank cars. One of these is ATSF 100221, a member of the Tk-J class of cars. It was built by Pressed Steel Car Co. in 1915, 1 of 400 in the number series 99900-100299. It is a 38-foot, 10,618-gallon, 40-ton capacity, 1-dome tank car. The dome retains its original yoke-mounted safety valves and its screw-on cover with 4 holes into which pry bars were inserted to increase leverage when unscrewing the cover. It retains its original placard holders on both ends and its stemwinder brake wheel. It also has the high running boards characteristic of ATSF tank cars.

While much is original, there have been several changes from as-built condition. The original draft gear was replaced after World War II as an upgrade that was applied to almost all of the tank cars; the original Miner friction gear and top-operated Type D couplers were obsolete by that time, so the cars got new draft gear, bottom operated Type E couplers, and rotary uncoupling mechanisms, when they were shopped for repairs and maintenance. It is likely that the original Andrews Class 545 trucks were replaced with AAR trucks at the same time. And finally, as-built ATSF tank cars had 4" X 6" wooden tank supports that ran most of the length of the tank. At some point the boards on 100221 were cut at each end of the support brackets.

100221 was donated to the Museum by the Santa Fe Railroad soon after the Museum opened in 1982. It was painted black and stenciled for diesel fuel when donated; long time Museum volunteer, and now Executive Director, Morris Gould, said that the car was used for a time to store diesel fuel for the Museum's locomotives.

By 2005, time and Galveston's maritime climate had taken its toll on ATSF 100221. Much of the car's paint was gone, particularly on the upper surface of the tank, and the remaining paint had been weathered to a dull black having a slight greenish tint. Rust had pitted the surfaces in many places, had obliterated some of the markings, and there were several places on the lower quarter of the tank on both sides where the metal had rusted through to the inside. There is no telling how long since the car had been treated with any care at all. It was more of a prime candidate for the scrap yard than for a restoration effort (Figure 1).



Figure 1. ATSF 100221 as it appeared in January 2005.

I began the restoration effort in May 2005 and first worked on everything above the running boards. I used sanding disks and wire wheels on an electric drill to remove paint and rust. This was much slower than sand blasting or a needle gun, but I had learned in earlier restoration efforts that older markings under paint could be carefully uncovered using my equipment. Paint was removed down to at least the primer, or if both were gone, down to bare metal. Each day, after an area was cleaned, I applied rust converter, and then primed it the following day (Figure 2).



Figure 2. Don Harper priming the belly of the tank car on a hot day in September 2006

Stencils on the tank indicated the car's most recent use was to transport diesel fuel. However, as I removed paint from the second "section" of the tank (between the first tank strap and next series of rivets) at the right end (as you face the car), I found red paint beneath the black paint and primer. The red paint turned out to be a red band that extended from the midline at the top of the tank to the top of the first tank support board. Traces of the same red paint were also found on the dome (Figure 3). The ATSF used color coding from the mid-1940s to May 1977 to denote car contents. The red color band indicated the car had been used to carry gasoline; this use was confirmed when I uncovered a white "GASOLINE" stencil over the red band on the car's left side (Figure 4). I was very judicious in the use of sandpaper on the red bands, keeping as much of the original paint in place as possible. Just in case someone in the future wants an original color paint chip.



Figure 3. Dome of 100221 showing traces of red paint



Figure 4. Left side red band showing GASOLINE stencil.

Just to the right of the left side red band, I uncovered some stencils that have not been completely interpreted. The top word appears to be LUBE and they may indicate when the last lubrication was done, similar to a COTS stencil on modern cars. Unfortunately there was a lot of rust in this area and several letters were destroyed (Figure 5).



Figure 5. Stencils on the left side, to the right of the red band. The red is overspray from the band.

When I cleaned the retainer valve handle, I found orange paint under the black paint (Figure 6). Richard Hendrickson informed me he had found only one photographic instance of a valve handle with this color.

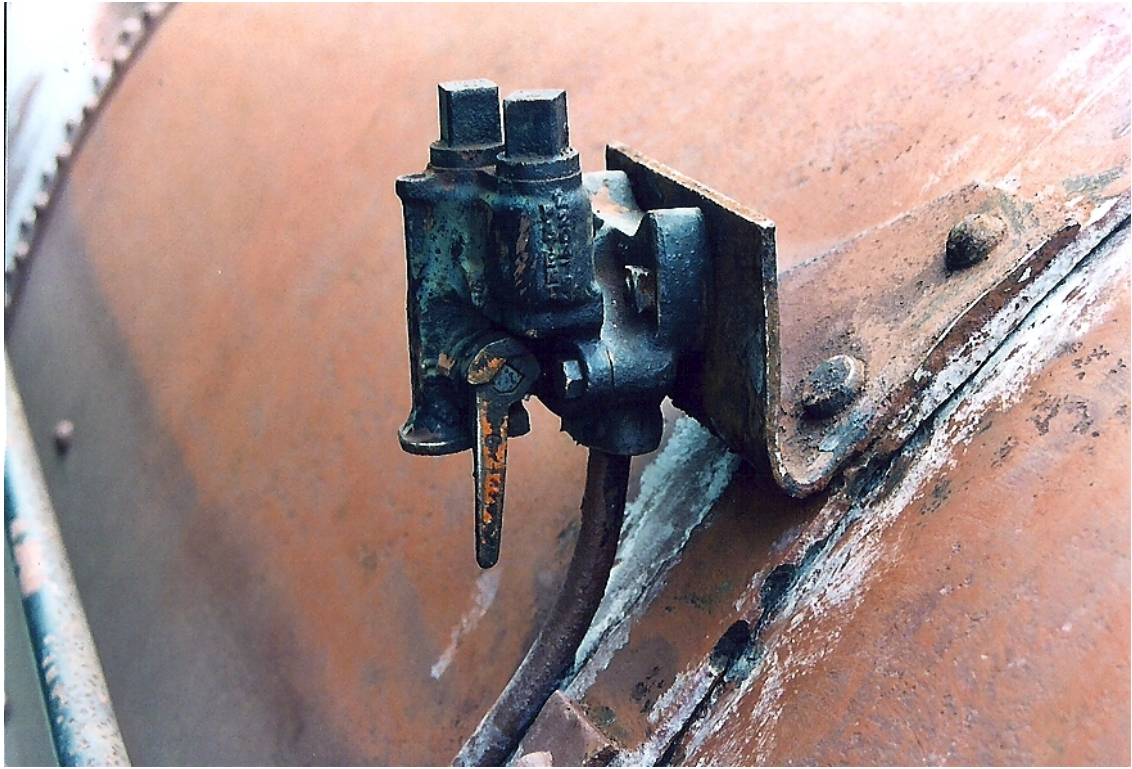


Figure 6. Retainer valve handle with remnants of orange paint.

Below the running boards progress was slower. There were several holes rusted through the tank, a couple of them large enough to put your hand through. I cleaned around these holes, applied liberal amounts of rust converter and then patched the holes in with Bondo. Bondo had to be applied over a several-day period to fill the larger holes. When the holes were finally filled, the Bondo was sanded smooth, and made to conform to the curvature of the tank (Figure 7.

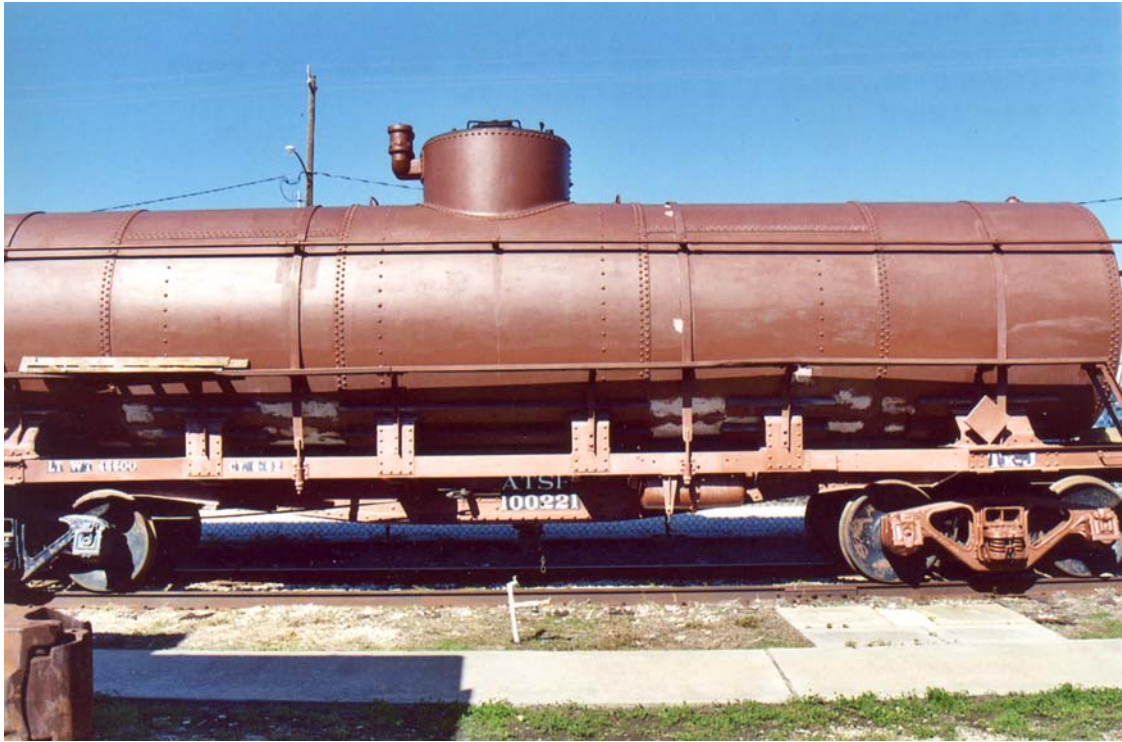


Figure 7. Right side of 100221 showing Bonded areas before priming. Note the large letters on the center sill.

By carefully sanding, I uncovered the old CAPY 80000 stencils on the tank body. These were between the running boards and the tank supports, toward the left ends (as you face the car) of the car. The older stencils were just above the newer ones (Figure 8).



Figure 8. Older and newer right side, B end CAPY stencils

The B end of the tank was so badly rusted that only the CAPY marks remained. The A end was in a little better condition and the car number and CAPY marks could be seen. When these were carefully sanded, earlier stencils were found beneath them in approximately the same locations, indicating that the stencil locations did not change much during recent times (Figure 9).



Figure 9. A end showing older and newer car number and capacity stencils.

I had intended to only paint the parts of the frame that were visible, but once I crawled underneath and inspected the center sill and bolsters, I decided the remainder of the car needed to be cleaned before it was painted. There was considerable rust on the inside of the centersill, particularly along the upper plate seam (Figure 10), and the bolsters contained a lot of loose rust.



Figure 10. B end center sill before cleaning

The rust was ground away using a wire wheel, then the metal was sprayed with rust converter and primed (Figure 11)



Figure 11. B end centersill after cleaning and priming.

As I cleaned the outside of the center section of the fishbelly center sill on both sides, I carefully sanded away 4 inch tall letters and numbers and found older, 2 inch tall letters and numbers beneath the black paint. Note that the older stencil was identical on both sides of the sill (ATSF stenciled over the number), whereas the newer stencils were applied differently on the left and right sides (Figures 12, 13).



Figure 12. Right side center sill marks



Figure 13. Left side center sill marks

The center sill deck plate had a large hole rusted through it toward the B end. Bondo would not stay on this horizontal surface, so I applied a piece of plaster cloth (Figure 14), let it dry, then spread Bondo over the patch. It took 3 applications of Bondo to get the depression filled in. The area was then sanded and primed.



Figure 14. Rusted hole in the center sill plate patched with plaster cloth

Finally I worked my way down to the bolsters and trucks. On the outside of the B end bolster I found faint traces of the white paint used to stencil the road and car number. I tried to photograph these marks, but the camera's flash washed them out. There was a lot of rust and debris inside the bolsters and I spent several hours pushing a long shop vac hose in and out of the bolsters, sucking out the accumulated dirt and rust. Once the insides were free of loose rust I had our engine man back our switcher up and bang hard into the car a couple of times to knock rust loose that I could not reach, and then vacuumed that out. I estimated that about 10 to 15 pounds of "stuff", mostly rust, was removed from each side of each bolster (Figure 15). When cleaned, I sprayed Ospho all around the inside, then brush painted what I could reach and spray painted the remainder. The brake gear was also cleaned and primed.



Figure 15. Rust removed from the B end bolster. The 6-inch pen is for scale.

Surface preparation required over a year, working part time, mainly on Saturdays and some weekday afternoons (I still had a real job when I started on the car). The car was fully primed in October 2006 (Figures 16, 17). I retired in August 2006 and thereafter devoted about 5 hours per day, 6 days per week, on the car.



Figure 16. ATSF 100221, B end, right side, fully primed



Figure 17. ATSF 100221 top and right side fully primed

I began painting in October 2006 and was completed at the end of December 2006. I started by painting the frame, trucks, bolsters and underbelly. Then I started on the tank proper. I backdated the car and repainted it in the black body with red band color scheme. I delimited the area to be painted red with painter's masking tape and painted the body black. After the second coat had dried, I removed the tape and applied new tape to the outside edge of the unpainted surface and applied two coats of safety red.

ATSF 100221 now sports its beautiful black paint job with red stripes and dome (Figure 18).



Figure 18. ATSF 100221 fully painted and awaiting stenciling.

Santa Fe Historical Society member and Museum volunteer Pat Duffin partly relettered and renumbered the car in April 2007. He plans to continue in the fall when the temperature moderates.

This restoration was one of the most satisfying periods of my life. I have about 450 hours invested in the car and the final result was worth every minute of it.