My Chessie Steam Special

By Allan Adelman
Austin, Texas

Some background – I grew up, in part, in Chesterton, Indiana. One of my favorite memories was being with my mom and dad watching the Chessie Steam Special T1 no. 2101 steam by on her way to Chicago. Seeing that huge 4-8-4 decked out in the Chessie colors with the matching passenger cars was an awesome sight for a 7 year old! My dad was really into model railroading, and I got the bug when I was 3. Being into Lionel trains, I remember seeing their version of the Chessie Steam Special pulled by a Berkshire with matching passenger cars that came out soon after the real thing ran, but I never purchased it.

Skip forward 25 years – I had just bought my first house and set up a two track 12x20 oval O-scale layout. It was the early years of eBay, so for fun, I am looking at Lionel trains for sale. On a whim, I enter a search for "Chessie" and I see several of the original Chessie Steam Special engines and matching cars – and then I saw it. I saw this huge Lionel scale 4-8-4 (6-18011) decked out in the Chessie Steam Special livery. I actually had to do some research to determine that this was the actual engine used to pull the passenger train, not the 2-8-4 of the original set. It was then that I made my first eBay purchase. A little over a week later, I had a huge box show up at my door. I pulled out my mint engine and realized that this was something new to me – my previous "big" engine was the Lionel Lines 2055 Hudson. I knew that I would need to find some scale passenger cars to go with the engine. After a short search, I found the Williams scale 72' Madison passenger cars in the Chessie Steam Special livery. I ordered the 6 car set and they looked great together. One thing I noticed when I got the cars was the decals on the cars were not the for the Chessie Steam Special, rather they were for the Chessie Safety Express, which was pulled by the no. 614 Greenbrier after Chessie 2101 was caught in a roundhouse fire in Kentucky. It was at this point I decided that I wanted to update this train the closest to prototypical as I could. Little did I know how the odyssey I was starting on.

The first thing I decided to change was the decals on the passenger cars. A quick search on the internet lead me to a fallen flags webpage (http://www.rr-fallenflags.org/) with many pictures of the Chessie Steam Special (CSS). I found a great picture of the CSS symbol used on the passenger cars, including the slightly different one on the observation car. I downloaded these and using a picture editor, I cropped them and cleaned them up in preparation to making decals for the cars. From my local hobby store, I purchased clear inkjet decal paper and using MS Word, I pasted in the designs in the proper size and printed out the decals. I then bought yellow paint and painted several coats over the existing decals. When that was dry, I applied the new decals. After they had set and dried, I clear enamel on them so they would stick and be protected. For the observation car, I cut out a square out of styrene to scale and applied the end decal to it. After enameling it, I glued it to the end of the car.

Looking at the pictures of the CSS on the webpage, I decided that my next project would be to make an auxiliary tender for my set. I first looked on eBay, and found a tender that someone had re-decaled to have the auxiliary tender's decal. I purchased this, not intending to use it on the train, but to give me ideas for what I eventually wanted which was a scale version. I looked for different tender options comparing what was out there to what was actually used. The tender used came from a NYC 4-8-2 Mohawk tender and I found out (again on eBay) that Lionel also made a 4-8-2 (6-18009) with the same tender used on the CSS. I nearly purchased that engine just to get the tender to use, but thought better of it (I didn't want an engine without a tender). Basing my search on what I wanted the trucks to look like, I found some scale Hudson 700T tenders available on eBay that had similar trucks. I purchased one and started out planning the changes I would be making. I first taped the tender up and using a spray gun, I used the paint on the passenger cars to pray the yellow and followed up with the orange stripes. On the fallen flags web page, I found a great profile shot of the auxiliary tender and took that into my photo editing program to get the decal design scaled and cleaned up for printing on the decal paper. To get it the right scale, I printed out several sizes on regular paper until I found the one that was the size shown in the picture. I printed the decal, placed it and enameled it. I went in search of a coupler for the front of the tender and found Olsen Toy Train Parts (http://pictures.olsenstoy.com/). Entering 700T in the search brought up a parts list including couplers. I purchased the coupler I needed. While waiting for it to be delivered, I finished the tender by using styrene to cover the coal bed as they did with the prototype. The finished product came out great, but it was not scale in length, so I knew that there would be another version in the future. For the new version, I bought another 700T tender and a plastic shell for another. I cut a 1" section out of the shell. I lengthened the tender frame using brass, re-sized my decal, and when all was done, had a pretty nice looking tender.

While I was happy with the 2101 engine, there were some things that I knew I would be updating. The first was to paint several parts of the engine. I took some flat black paint and painted the smokestack, the headlamp, and a pipe coming out of the smoke box. Taking white paint, I painted the steps on either side of the cow catcher. Using gold paint, I updated the bell. The second was to install an Engineer and Fireman. I found a set made by Bowser (item # 13700) that I liked. I made seats for them out of styrene and a nail and glued everything into place.

During this time, I had purchased an MTH Premier Berkshire (Nickel Plate #765) and I realized that I was not happy with the Railsounds version that was in my CSS engine. I did a search on the internet for Railsounds upgrades and found Digital Dynamics (http://www.digitdynam.com/) who offered Railsounds 4.0 upgrades. I purchased the appropriate one for my engine and set out to install it. I had helped my dad with his train layout, so soldering and wire tracing was not difficult for me. I pulled out the old Railsounds board and figured out the wires that I needed to power the board. On this engine, the power for the sound board and for the reverse lamp came from a tether from the engine. Once I had identified which wires were which, I wired it all up per the steps listed in nice instruction book that came with the upgrade. I was extremely happy with the result – not only did it sound great, but using the sensor included in the kit, the chuff

rate went from 1 per revolution with the original board to a prototypical 4 per revolution with the upgrade kit. I did not change where the sensor was – on the third wheel of the front truck of the tender, but Lionel set up the size ratio that one rotation of the drivers equaled two rotations of the tender wheel. The magnet on the tender wheel changed phases twice per rotation, so the new sensor worked great for what I was looking for.

A few years later, I was surfing the internet and was looking at pages of 2101 when I came across a link for sister engine 2100 located at the Golden Pacific Railroad (http://www.goldenpacificrr.com/hi_fi/GPRR.html). I was really happy to know that one of the four remaining T1s was in operating condition. I was looking at the webpage and saw that they had several movies of 2100. I was watching these and realized that the Railsounds 4.0 4-8-4 sound board I had installed on my engine did not sound anything like the real thing. So I searched around for sound files of the various Railsounds 4.0 chipsets and after finding some, decided that I wanted to change the sound board out for the "small steam" version which had a whistle that more closely matched 2100. I contacted Digital Dynamics who let me purchase the sound board with the chip only. When it came in, I was really happy with how it sounded in my engine – the new board had much more character and realism than the old version.

The MTH Berkshire not only got me to upgrade the sound, but it also had a fan driven smoke unit. I wondered if an upgrade was available, so I did a search and found Train America Studios (http://www.tastudios.com/index2.htm) who offered exactly what I was looking for. So I purchased the new smoke unit and proceeded to start the installation. I made a new bracket out of brass, and then I realized that for it to fit, I was going to have to make several major changes. The first was that the reversing unit would no longer fit in the engine – I had to move it to the tender. I drew a diagram for what wire went where, and bought two 3 pin RC Car tethers I could use to run between the engine and tender. I ran the wires, soldered everything up, and made sure it worked. The second major change was that I had to grind the opening on the under side of the boiler so I could get the smoke unit into the boiler cavity. I wired the smoke unit up per the instruction manual, integrated an on/off switch into the brass bracket, ran the chuff sensor wire back to the tender, and put everything back together. The results were great!

There were two main things I wanted to work on next – updating the front end of the engine by adding marker lights and number boards, and finishing the rod work on the drivers. To work on these two projects, I had to figure out what I would need. I figured that for the number boards, styrene would do the trick. For everything else, I decided to see if I could find ready made parts. I found out that on both the MTH and Lionel web pages, there were replacement parts that could be purchased. For both of these, you have to know the part number of what you are wanting. I was able to find schematics on several different steam engines to get the parts. For the marker lights, I used the same ones that were on my Berkshire. For the rods, I had a harder time finding what I thought I would need. Looking at pictures of the prototype, I saw that the rods between the drive piston and the eccentric rod (the union link, the combination lever, and the radius bar) connected under the lower part of the crosshead arm. I found a parts diagram for an

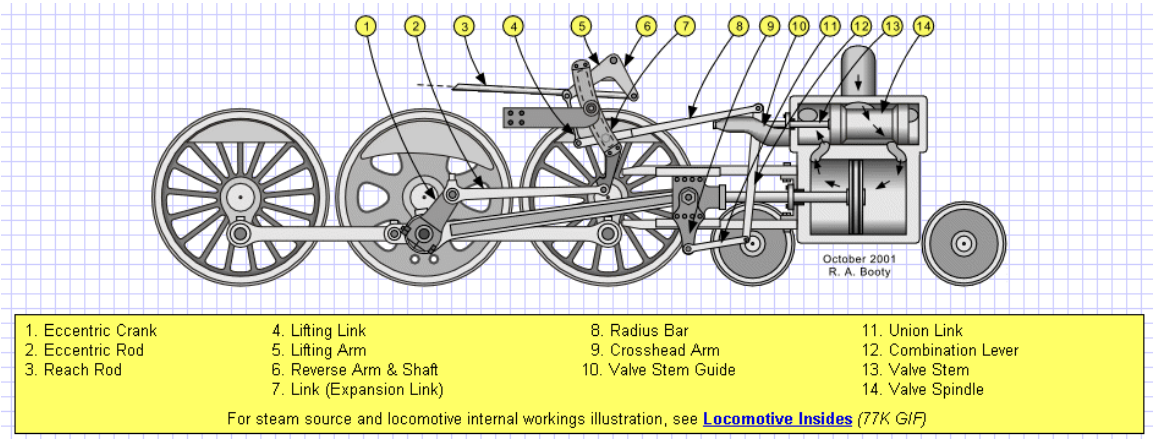
MTH Big Boy that I had a similar setup. I purchased those, but I also wanted shorter rods just in case. From the Lionel page, I purchased rod assemblies for a 700E Hudson.

While I waited for my parts to come in, I set to making my number boards. I used styrene to make boards similar in size/shape to the ones on my Berkshire. The front headlamp on the engine was dropped from track voltage to 6 volts (constant lighting setup). I got a couple of 6 volt grain of wheat bulbs and integrated them into the number boards. I made the triangular shaped boxes and painted them black. I used clear plastic with 2101 decals on them so that the light would shine through and wired the lights in parallel to the headlamp using the existing light plug. I then used epoxy to glue the marker lights in place.

Since I had the styrene out, I decided to make tool boxes the prototype had under the tender. I made the shape out of balsa wood and covered it with the styrene, making a latch out of the styrene as well. I painted the boxes black and glued them into place.

I modified the marker lights to change how they would be glued to the engine. I used wire cutters to do this since they were made of soft metal. I got some clear lenses from my local hobby shop and glued them in place. The hardest part for this upgrade was finding small enough bulbs that would work with the 6 volt circuit. I found some 3 volt grain of wheat bulbs that were small enough. I installed them, wiring them in series (not parallel) with the headlamp to drop the voltage.

One of the things I'm most proud of is the rod work I did. When I got my parts in, I figured out what rods I was going to use. For the connection to the crosshead arm, I used the Big Boy's union link and combination lever. For the radius bar that connected the combination lever to the expansion link, I used the Hudson's radius bar. I used my Dremel Tool to carefully cut the lower assembly from the crosshead arm. I then used a grinder wheel to grind down the rivets to take the original radius arm off both assemblies. I used a small screw/nut to put the Hudson radius arm to the leftover Big Boy rod assembly, dropping a little superglue on the nut so it would not loosen during operation. I straightened the radius arm and opened the ring on one end so I could attach it to the expansion link assembly.



I used superglue to attach the rod assembly to the existing crosshead arm. I guided the rod assembly into the existing valve stem guide and then attached the end of the radius bar to the expansion link assembly. The screw/nut held the assembly in place by resting on top of the valve stem guide. Once dried everything was in place and dry, it worked really well and looked great.

All these changes on the engine were done over a period of years. During this time, I had joined my local O-scale train club, the Tinplate Trackers (http://www.trainweb.org/ttat/) and had purchased my first TMCC engine (Lionel JLC Allegheny). I loved being able to be able to control the engine via the Cab-1 remote and control multiple trains at once on the same track. I started upgrading all my DC powered engines to TMCC using upgrade kits from both Digital Dynamics and Train America Studios. After I got comfortable by upgrading around 8 engines, I was ready to tackle upgrading an AC powered engine. I decided on the Digital Dynamics TMCC upgrade so it would match the sound board I purchased from them before. I also purchased an 8 wire harness from them. Following the instructions, I removed the old harnesses and reversing unit. I wired everything in per the instruction manual. I ran into a couple of problems that I had to troubleshoot. The first was how to drop the voltage for the front headlamp down to 6 volts. I tried to tie it in with the existing voltage regulator and that did not work. I ended up leaving the headlamp assembly as manufactured by Lionel and not integrating it with the TMCC board. The second was that for this model, Lionel did not use a lever to turn the reversing using on and off – they used a single wire plug that was plugged into one of two holes in the motor. Without the plug, one of the windings would not get power so the engine would not run. I found diagrams of several Lionel AC motors and by using the diagrams and a little trial and error, I figured out where I needed to run an extra jumper. I got lucky in that Lionel made the coal load out of plastic, so I did not have to insulate the tender shell. I put everything back together and the engine ran great – it had better control than when run conventionally.

I've added several other details to get to the point where I consider the engine complete. The first was adding a scale front coupler, replacing the cast in one. I used my Dremel to cut the old one off, and then using a coupler from Olsen, I cut and glued the new one on. The second detail was to add brake assemblies to all the drivers. I found the brakes on a diagram of MTH's scale Daylight 4-8-4 and ordered them. When they came in, I glued them to brass strips to get the height correct. I then glued the brass strips to the bottom of the 2101. The third was to try to find a golden eagle to put on the headlamp. This was one of the hardest things to find. I couldn't find anything online that would work. I was browsing around at my local hobby shop and looking at the HO figures in the Walther's catalog, I saw a hunting party set that included a duck. The duck's wings were in a similar position as the prototype. I bought the set, and went to work on trying to make the duck look more like an eagle. I cut its head off (very gruesome) and used a small wire to shape a new beak. I painted it gold and glued it to the headlamp.

So what did I learn from this experience? Well, for starters, there is the sense you get when you buy a new engine/car you have always wanted. To me, there is an even greater sense of satisfaction when you get something and update it. You can't be afraid to roll up

your sleeves and get dirty. I know it is harder to do that when something is still new and still in the warranty period. I had a pretty easy decision for this engine since it was built in the early 90s. Getting to compare my model to the real thing is fun too. My sister lives in the DC area, so I've gotten to go up to Baltimore when visiting to the B&O railway museum. 2101 is on display there painted in her American Freedom Train colors (cosmetically restored after the roundhouse fire). Seeing her and getting to see the detail up close is great feeling and I only wish she could be restored to running order. At least I can watch my version of the Chessie Steam Special steaming down the line pulling her passenger cars in all her glory and know that I've added many things to make her more like the prototype in Baltimore.