



T&SF General Operating Manual

Updated 07/15/14

The T&SF model railroad is set in the Sierra foothills on the last day of summer, 1910. It is modeled loosely after the Sierra Railway operating out of Jamestown. The geographic region modeled spans from the town of Tuolumne (home of the West Side Lumber Company) in the mountains to the southeast to the town of San Andreas (represented by Los Piños) to the north.

Facing the layout is facing East, looking toward the higher Sierras. North is to the left, South is to the right.

Operators are encouraged to run at prototypical speeds. A locomotive moving 12 inches in 4 seconds or a 40' boxcar moving 1 length per second is travelling at 25 mph, the "speed limit" on the T&SF. At this speed a train on the SP line will take 5 minutes and 20 seconds to complete the loop. When trains arrive in Sutter that are carrying cars bound for the Sutter Yard or Interchange track, they should use the Arrival / Departure track (A/D track) if clear. If it is occupied, they should use the T&SF main (middle track) and wait until the A/D track is clear.

Under track uncoupling magnets have been strategically located at many of the yards to aid in switching and are marked with short white posts or oil stains on the track. Bamboo picks are also provided for uncoupling and also throwing unpowered switch points. In some locations, pausing the train with couplers above the magnets will be sufficient to uncouple, in others using the picks in conjunction with the magnets may be more efficient. Uncoupling at any location using only the picks is permitted.

Turnouts are operated in one of three ways. On the T&SF portion of the layout most accessible turnouts are thrown manually. This may be done with a finger tip or more appropriately with a bamboo skewer. Inaccessible turnouts and some accessible turnouts are powered and are operated by throwing the appropriate routing switch on the control panel and then pushing the adjacent momentary contact button. Powered switches are indicated as such on the control panels. The turnouts on the Los Piños portion of the layout are operated by push/ pull rods extending from the fascia.

Turnouts are to be returned to their original position after they have been thrown, switching operations (if any) are complete, and the train is clear.

Running unscheduled "Extras" without the direct permission of the Dispatcher is strictly forbidden.

Train Orders and car cards are provided for each normally scheduled train and should be reviewed carefully, along with any special instructions included prior to departure. In addition, the "Regularly Scheduled Train Information" in this document provides a broader explanation of each train's operation and should be read prior to receiving train orders. The Conductor is responsible for managing the Train Orders and car cards, which should remain with the train at all times. The Engineer is responsible for the movements of the train, with the assistance of the Conductor in aligning switches.

The Trains

The Southern Pacific, the Tuolumne & Sierra Foothill and the Tuolumne Lumber Company are the three railroads operating on the layout.



The Southern Pacific runs on a continuous loop around the outside of the layout, representing points north and south of the layout. It interchanges with the T&SF at both Sutter and Los Piños.



The Tuolumne & Sierra Foothill or T&SF is the primary line and has its base of operations in Sutter (modeled loosely after Jamestown and the Sierra Railway). It serves the towns of Angels Camp on the Angels Branch to the Northeast, and China Grove, Carson Hill and Tuolumne on the Tuolumne Branch to the South and East. It also serves Los Piños to the north via trackage rights from the SP.



The Tuolumne Lumber Company or TLC operates the logging line from Tuolumne where its yard and shops are located. It proceeds up the hill by switchback to Camp 4 and also to staging representing other camps. It also delivers logs to the TLC mill in China Grove via trackage rights from the T&SF.

The Tuolumne & Sierra Foothill scheduled train information



Southern Pacific Southbound freight

This train brings cars in from points north of the layout and takes cars out to points south of the layout. It originates in staging (below Los Piños) and proceeds south to Los Piños. If there are no local crews operating in town, this train may spot cars at local industries and make pick-ups from them that are destined for "SP South". If there is a local crew operating, this train sets out its cars at the interchange track and picks up from the interchange track (the yard spur).

Proceeding to Sutter, the train pulls into the arrival/ departure track where cars destined for interchange with the T&SF are cut from the train. The local operator pulls these cars and then spots cars destined for "SP South" in their place. Once the train is reassembled, it proceeds south eventually to the return loop back to staging.



Southern Pacific Northbound freight

This train brings cars in from points south of the layout and takes cars out to points north of the layout. It originates in staging (below Los Piños) and proceeds north around the back of the layout coming into view at the far right and arriving at Sutter. The train pulls into the Arrival/ Departure track where cars destined for interchange with the T&SF are cut from the train. The local operator pulls these cars and then spots cars destined for "SP North" in their place. Once the train is reassembled, it proceeds North to Los Piños.

Arriving in Los Piños, if there are no local crews operating in town, this train may spot cars at local industries and make pick-ups from them that are destined for "SP North". If there is a local crew operating, this train sets out its cars at the interchange track and picks up from the interchange track (the yard spur). It then continues north back to staging.



The Mountain Climber

The Mountain Climber is a local turn that serves the towns on the Tuolumne Branch. It departs Sutter heading south picking up and setting out/spotting cars (in order of arrival) in China Grove, Carson Hill, Carson Hill livestock spur, and Tuolumne and repeating on the way back down to Sutter. Trailing point moves should be made when possible. Cars may be delivered to the siding in China Grove on the uphill trip and left "off spot" until the return trip and then spotted with trailing point moves. Carson Hill set outs and pick ups should be made on the way up. Likewise stock car pickups should be made on the way up the hill and so on.

After switching Tuolumne, the locomotive runs around the train and returns at the head of the train with the caboose at the rear. Lighter steam locomotives (060's) are restricted to 4 cars and a caboose and must run reverse at the head of the train heading up hill. Heavier or geared locomotives may run reversed based on engineer's preference. This train does not set out or pick up ore cars or log buggies. When returning to Sutter use the Arrival / Departure track if clear. The locomotive is cut from the train and returns to the roundhouse after refueling.



Local Angels

The Local Angels serves the town of Angels Camp on the Angels Camp Branch. It departs Sutter heading Northeast on T&SF trackage (the "Eastern most" track heading north through the portal) up a hidden helix to reappear through the grove of Digger Pines outside of town. It arrives on yard track 2 (middle track). Switching in Angels Camp can be tricky, read carefully the "Angels Camp Yard / Mill Special Instructions" included with the train orders. The Local also serves the Melones Stamp Mill, bringing a block of 3 loaded ore cars to be spotted in the mill and then picking up a block of 3 empties (the loco may enter the mill for both moves).

After switching is complete the locomotive runs around the train to return to Sutter at the head of the train with the caboose at the rear. Lighter steam locomotives (060's) are restricted to 5 cars and a caboose and must run reverse at the head of the train heading up hill. Heavier or geared locomotives may run reversed based on engineer's preference. When returning to Sutter use the Arrival / Departure track if clear. The locomotive is cut from the train and returns to the roundhouse after refueling.



Carson Hill Local

The Carson Hill Local serves the Ivegott Mine complex at Carson Hill on the Tuolumne Branch. It departs Sutter heading South passing by China Grove and pulling beyond the trailing switch for the mine yard. Switching in Carson Hill can be tricky, read carefully the "Carson Hill Yard Special Instructions" included with the train orders. The Local serves the mine tipple as well as the other mine and freight needs, bringing a block of 3 empty ore cars to be spotted in the tipple and then picking up a block of 3 loads (the loco may enter the mill for both moves). The whole switching operation thus far had been trailing point moves.

After switching is complete the locomotive leaves the train on the back leg of the "wye" and enters the main to run around the other two legs (the main line being one) putting the locomotive at the head of the train and the caboose at the rear. The train backs out onto the main and then returns to Sutter. Lighter steam locomotives (060's) are restricted to 4 cars and a caboose (reverse running is not required due to the "wye"). When returning to Sutter use the Arrival / Departure track if clear. The locomotive is cut from the train and returns to the roundhouse after refueling.



The Miner's Run

The Miner's Run is a special serving only the Ivegott Mine at Carson Hill and the Melones Stamp mill in Angels Camp on a single turn. Depending on what is waiting in the Sutter yard (loads or empties) the train heads for one or the other industries and performs all the duties outlined for Local Angels and Carson Hill Local (see these train descriptions for more information). After serving both industries the train returns to Sutter with the loaded or empty hoppers (as the case may be).

Switching at both locations can be tricky, read carefully the "Carson Hill Yard Special Instructions" and the "Angels Camp Yard / Mill Special Instructions" included with the train orders. When returning to Sutter use the Arrival / Departure track if clear. The locomotive is cut from the train and returns to the roundhouse after refueling.



The Los Piños Turn

Los Piños is located north of Sutter on the SP line. It is serviced by the T&SF via trackage rights granted by Southern Pacific. The Los Piños Turn originates in Sutter, proceeds north on the SP line (outside track) through the tunnel portal to arrive at the Los Piños yard. The Turn services all the industries in town, picking up and setting out cars and also performing any other necessary in-town switching duties. If there are cars bound for SP north or south still spotted at industries, they should be moved to the interchange track (spur) in the yard to free up spots at those industries if needed. Cars that are “off spot” or on the yard spur that are bound for local industries should be spotted. Any cars in town (at industries or in the yard) that are bound for the T&SF (not destined for SP North or South) should be picked up for the return trip to Sutter. While performing local switching duties, the main line (adjacent to the depot) must be left clear for SP traffic. Locomotives running around the train or moving cars may use the main with permission from the dispatcher

After switching is complete the caboose is placed at the rear of the train (if not already there) and the locomotive moves to the head of the train. Typically the locomotive runs reverse for the return trip. When the turntable is operational it may be used for turning the locomotive. When returning to Sutter use the Arrival / Departure track if clear. The locomotive is cut from the train and returns to the roundhouse after refueling.



The Lumber Jack

This TLC train originates in Tuolumne and serves only the TLC Mill in China Grove. The engineer pulls the locomotive from the shed at the TLC shops in Tuolumne, puts a bobber caboose on the end of the string of loaded skeleton cars, pulls the string onto the siding, runs around to the front of the train and departs down the hill. Speed limit on wood trestles is 8 mph (creeping at 1” per second). The train pulls into the siding at China Grove, pulls the empties from the log dump track and spots them on the siding. Uncoupling from the caboose, the loaded train runs around on the main and back onto the siding, to back the loads onto the log dump track. The locomotive can then pick up the empties with the caboose already on the end for the return trip up the mountain.

Back in Tuolumne, the caboose is cut off and the empties left on one of the spurs off the siding. The locomotive is refueled and watered and returned to the shed.

Shay locomotives may run reverse on either leg of the trip. To reverse the locomotive, there is a “wye” using the left engine stall in the shed. Careful not to overshoot the wye tail, it’s a long drop to the river.



Southern Pacific Southbound Passenger

This train passes through from points north of the layout and takes cars out to points south of the layout. It originates in staging (below Los Piños) and proceeds south to Los Piños, then on to Sutter and departs to the south to return to staging.



Southern Pacific Northbound Passenger

This train passes through from points south of the layout and takes cars out to points north of the layout. It originates in staging (below Los Piños) and proceeds north to Sutter, then on to Los Piños, departs to the north to return to staging.



The Yard Boss

The Yard Boss is the person doing the switching work in the T&SF yard at Sutter. This is a position of authority and responsibility and assures lots of activity.

The Yard Boss duties include (but are not limited to):

- **Making up the trains that run on the T&SF:**
Collect cars and assemble the trains based upon the train orders for the day and the waybills of the cars in the yard. Trains should be assembled on the yard track bearing the train's name. When time nears for departure set out the string of cars along with a caboose on the A/D track. Operate the turntable (address 99 on the throttle) to aid the train's engineer in bringing up the appropriate locomotive.
- **Tearing down trains arriving back at Sutter:**
When returning trains arrive on the A/D track, coordinate cutting the locomotive from the train and aligning the turntable for the engineer (after refueling). Pull the cars from the A/D track and set out in the yard. Return the caboose to the caboose track.
- **Making up cuts of cars for interchange with the SP:**
Collect cars in the yard bound for interchange with the SP and spot them on the interchange track (adjacent to the wood cribbing retaining wall).
- **Servicing SP through trains arriving in Sutter:**
When SP through trains arrive on the A/D track, coordinate cutting out the cars bound for interchange with the T&SF. Once the cars are cut, pull them from the A/D track and set them out in the yard. Pull the cut of cars bound for the SP from the interchange track and spot them on the A/D track. Offer assistance as needed as the engineer of the SP train reassembles his train and departs.

Other tasks of The Yard Boss (when train servicing duties are momentarily completed):

- **Switching the local industries connected to the Sutter yard:**
Review the waybills of the cars in the yard and of those coming into the yard. Spot cars at industries or locations indicated.
- **Switching the icing platform:**
Reefer waybills may require the car to be iced prior to spotting at industries, after being pulled from industries or before being sent out on the line. There is a runaround track in front of the icing platform that will hold 2 reefers, allowing the locomotive to run around them as required to service the icing platform and also Mel's Produce.

Items of special importance:

- Keep the A/D track clear for incoming trains. When not actively building a train or servicing a train, this track should not be blocked.
- Read the train orders and waybills carefully when assembling trains. Special instructions may be given for locations of cars within the train that will simplify critical switching moves. Failure to do so may result in discontented mutterings from remote portions of the railroad...

• Car Cards on the Tuolumne & Sierra Foothill Railroad

Cars on the T&SF are forwarded around the layout using Car Cards and waybills. Each car has a corresponding car card that includes the car's road and number, type or designation, color, and in some cases descriptive information and special notes. The card also indicates where the car should return when the waybill has been completed or is removed. A complete list of car types or designations is included in this document. At the bottom of the car card is a pocket that holds the waybill.

ROAD #	COLOR
TYPE	Description
Special Notes	
Return location	

HPCX 555	RED
BOX	Hercules Powder
Hazard	
SP-INT	

The T&SF uses 4 sided waybills that are rotated with each use creating 4 car movements per waybill. Each "side" of a waybill provides information pertaining to that movement and includes the movement number or "side" of the waybill, the road handling the move, the car type or designation needed for the shipment, the destination station, the customer, the spot location and the cargo. Some waybills also include special information such as icing requirements or car placement in the train due to hazard or nuisance. In moves that require an interchange, the roads involved are listed in the order of their handling the move (SP brings the car to the T&SF interchange point and T&SF moves the car to its destination is represented by SP via TSF).

Move #	Road	Type
To Station		
Customer		
Spot Location		
Cargo		
Special Instructions		

1	SP via TSF	BOX
To Carson Hill		
Ivegott Mine		
Freight Dock		
Blasting powder		
Hazard - 1 car from loco & caboose		

When switching industries, all waybills for spotted cars should be checked. Cars whose car cards are facing backwards are to remain on spot, all others should be picked up. If cars are "off spot" near an industry they should be spotted if possible. When setting out cars per the waybill, if another car occupies the spot location and is not to be moved, the car being delivered must be placed "off spot" nearby in the yard, siding or spur. As trains move around the layout, the Conductor holds on to the Train Orders and car cards. As cars are picked up or set out, the car cards are placed backwards in or taken from the industry's corresponding car card box on the fascia. The Train Orders and car cards are to remain with the train at all times.