# JMRI Operations

**Dennis Drury** 

### So what is JMRI?

JMRI stands for Java Model Railroad Interface. It includes:

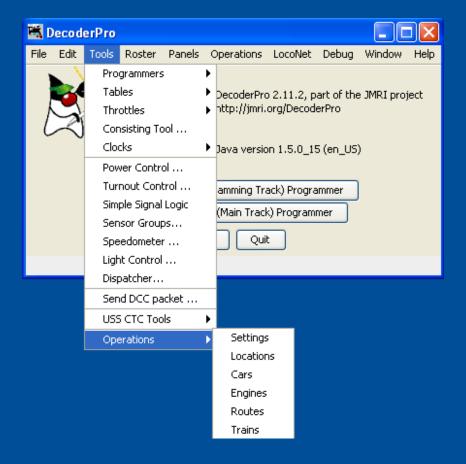
- DecoderPro®
- PanelPro™
- SoundPro
- And Operations

# So what is JMRI Operations?

- A. JMRI Operations is a computerized car forwarding / management system
- B. The operations program will allow you to print out the paperwork that will enable your operating crew to run your layout in a more prototypical manner.
- C. If you have also created a panel for your railroad, the operations program will place icons on it to track the progress of your trains as they run across the railroad.

#### Sounds great. How do we begin.

The operations program is found in all the JMRI startup applications. Click on Tools then Operations to get started.



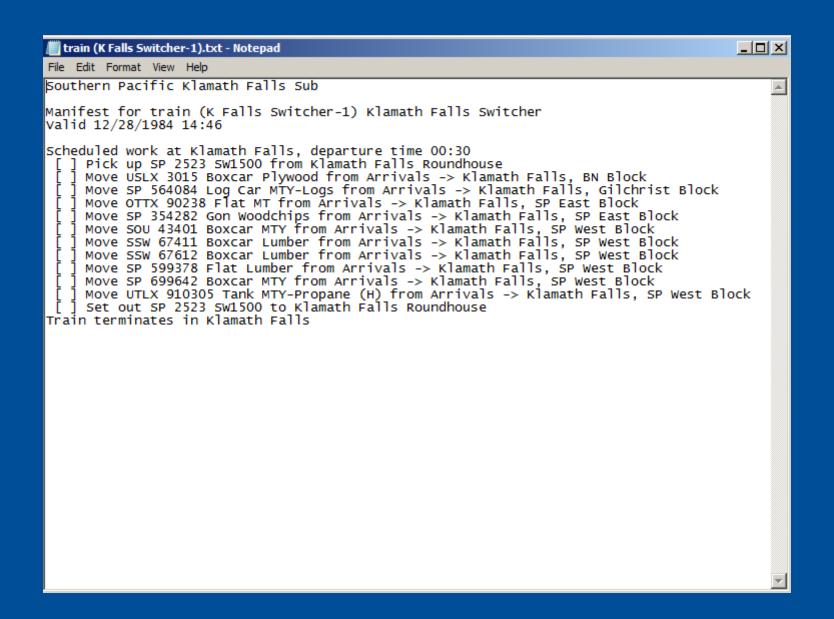
# Paperwork examples

The next three slides show examples of the paperwork generated.

The K Falls switcher list shows the yard engine moving a cut of cars from the arrival track and sorting them into the correct outbound blocks. All the crew has to do is follow the list and check off the entries as the work is done.

The second list shows a portion of the work for the Southern Pacific RVEUY train. It shows the train being built in Roseville and the work it does in Klamath Falls.

Last is the local that runs on my layout, the Gilchrist Turn.



```
_ | D | X |
 train (SP RVEUY).txt - Notepad
File Edit Format View Help
Southern Pacific Klamath Falls Sub
Manifest for train (SP RVEUY) SP Roseville to Eugene Manifest
|Valid 12/28/1984 14:49
Scheduled work at Roseville, departure time 05:00
     Pick up D&RGW 5399 SD4OT-2 from Roseville Roundhouse
     Pick up D&RGW 5411 SD40T-2 from Roseville Roundhouse
     Pick up SP 8277 SD40T-2 from Roseville Roundhouse
     Pick up SSW 9053 SD45 from Roseville Roundhouse
     Pick up OTTX 90075 Flat MTY from Huffman Lumber
     Pick up CALX 3010 Tank Asphalt (H) from Huntway Refining
     Pick up SSW 88168 BHFlat MTY from Lumber Roller BHFlat
     Pick up SP 509445 BHFlat MTY from Lumber Roller BHFlat
     Pick up SSW 88325 BHFlat MTY from Lumber Roller BHFlat
     Pick up SP 242530 Boxcar MTY from Lumber Roller Box
     Pick up SSW 67363 Boxcar MTY from Lumber Roller Box
     Pick up SP 242030 Boxcar MTY from Lumber Roller Box
     Pick up SP 694579 Boxcar Wine from Gallo
     Pick up UOCX 10327 Tank Diesel (H) from Unocal Diesel
     Pick up SP 215803 Boxcar MTY from Georgia Pacific
     Pick up SP 621112 Boxcar MTY from Gemco
     Pick up SOU 43428 Boxcar Furniture from Matthews Furniture
     Pick up SSW 67566 Boxcar MTY from Lumber Roller Box
     Pick up SP 599346 Flat MTY from Burns Lumber
     Pick up UTLX 11360 Tank Acid (H) from Rhone Poulenc
     Pick up SP 699723 Boxcar Canned Food from Hunt Wesson
     Pick up SSW 48235 Boxcar Canned Food from Salinas Canning
     Pick up SP 496543 HopGrain MTY from Anheuser Busch
     Pick up TTPX 804150 BHFlat MTY from TTPX
     Pick up SP 354295 Gon Woodchips from Sierra Pacific Chip
     Pick up ACFX 71901 Tank Kaolin from Englehard Kaolin
     Pick up SP 228021 Boxcar MTY from Sacramento Bee
     Pick up SP 1544 Caboose from Caboose Track
Train departs Roseville Eastbound with 9 loads, 15 empties, 1,671 feet, 2,021 tons
No work at Dunsmuir
Scheduled work at Klamath Falls, estimated arrival time 05:10
   ] Pick up PFE 453318 Reefer Frozen Food from SP East Block
     Pick up SP 354282 Gon Woodchips from SP East Block
     Set out OTTX 90075 Flat MTY from Roseville -> Klamath Falls, Arrivals
     Set out CALX 3010 Tank Asphalt (H) from Roseville -> Klamath Falls, Arrivals
     Set out SSW 88168 BHFlat MTY from Roseville -> Klamath Falls, Arrivals
     Set out SP 509445 BHFlat MTY from Roseville -> Klamath Falls, Arrivals
     Set out SSW 88325 BHFlat MTY from Roseville -> Klamath Falls, Arrivals
     Set out SP 242530 Boxcar MTY from Roseville -> Klamath Falls, Arrivals
     Set out SSW 67363 Boxcar MTY from Roseville -> Klamath Falls, Arrivals
     Set out SP 242030 Boxcar MTY from Roseville -> Klamath Falls, Arrivals
Train departs Klamath Falls Eastbound with 10 loads, 8 empties, 1,321 feet, 1,907 tons
```

```
_ | D | X
 train (Gilchrist Turn).txt - Notepad
File Edit Format View Help
Southern Pacific Klamath Falls Sub
Manifest for train (Gilchrist Turn) Klamath Falls to Gilchrist Junction Turn
Valid 3/31/1984 13:20
Scheduled work at Klamath Falls, departure time 12:00
 [ ] Pick up SP 3384 GP9 from Klamath Falls Roundhouse
[ ] Pick up SP 3759 GP9 from Klamath Falls Roundhouse
[ ] Pick up SP 563948 Log Car MTY-Logs from Gilchrist
[ ] Pick up SP 354282 Gon MTY from Gilchrist Block
   ] Pick up SP 563948 Log Car MTY-Logs from Gilchrist Block
 Pick up SSW 4730 Caboose from Caboose Track
Train departs Klamath Falls Eastbound with 1 loads, 2 empties, 276 feet, 427 tons
No work at Modoc Point
No work at Chiloquin
No work at Calimus
No work at Diamond Lake
Scheduled work at Gilchrist Junction, estimated arrival time 12:25
 [ ] Pick up SSW 88325 BHFlat Lumber from SP Block
   ] Pick up SP 564084 Log Car Logs from SP Block
 Set out SP 563948 Log Car MTY-Logs from Klamath Falls
      -> Gilchrist Junction, Gilchrist Block
Train departs Gilchrist Junction Westbound with 2 loads, 2 empties, 340 feet, 529 tons
Scheduled work at Diamond Lake, estimated arrival time 12:45
 [ ] Pick up MR 2243 Boxcar Lumber from Circle D Lumber Box
[ ] Pick up SP 242506 Boxcar Lumber from Circle D Lumber Box
[ ] Set out SP 354282 Gon MTY from Klamath Falls -> Diamond Lake, Circle D Chip
Train departs Diamond Lake Westbound with 4 loads, 1 empties, 385 feet, 675 tons
No work at Calimus
No work at Chiloquin
No work at Modoc Point
Scheduled work at Klamath Falls, estimated arrival time 13:20
 [ ] Set out MR 2243 Boxcar Lumber from Diamond Lake -> Klamath Falls, Arrivals
   ] Set out SP 242506 Boxcar Lumber from Diamond Lake -> Klamath Falls, Arrivals
   ] Set out SSW 88325 BHFlat Lumber from Gilchrist Junction -> Klamath Falls, Arrivals
   ] Set out SP 564084 Log Car Logs from Gilchrist Junction -> Klamath Falls, Arrivals
     Set out SSW 4730 Caboose from Klamath Falls -> Klamath Falls, Caboose Track
   ] Set out SP 3384 GP9 to Klamath Falls Roundhouse
     Set out SP 3759 GP9 to Klamath Falls Roundhouse
Train terminates in Klamath Falls
```

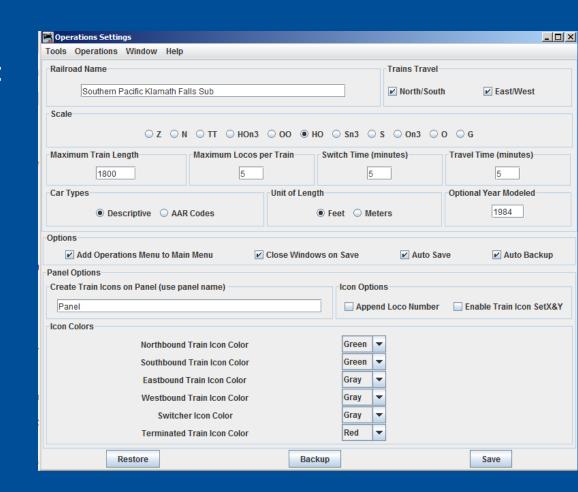
# Now that we've seen examples of the program output, what steps are necessary to set up Operations?

- Settings
- Locations
- Cars
- Locomotives
- Routes
- Trains
- Schedules (optional)

# Configuring Settings

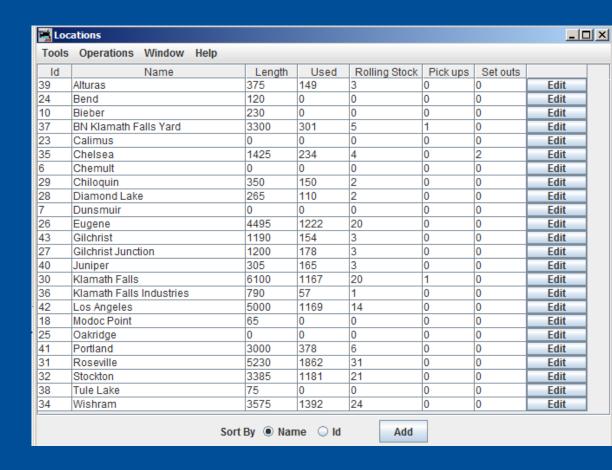
Here we configure the global settings. We enter things like:

- Railroad Name
- Train direction
- Scale
- Global maximum values
- Car types
- Optional year modeled
- Add operations to main menu
- Panel options



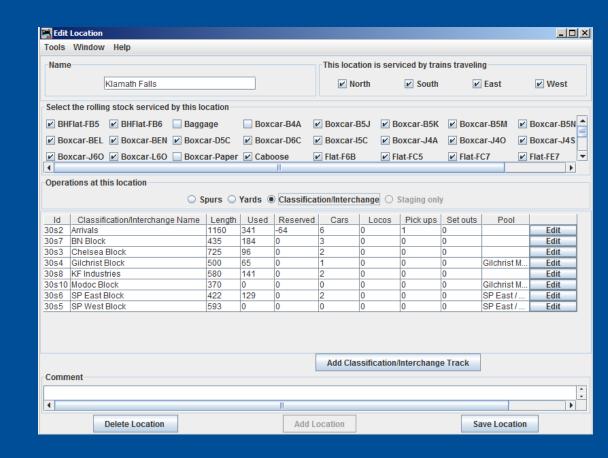
## **Adding Locations**

Now we're ready to add some locations. Note that not all locations have to be on the layout.



### Adding tracks

This is the Edit Location screen. It's where we start adding tracks to our locations, but before we start adding tracks we'll need an understanding of the different types of tracks.



# Types of Tracks

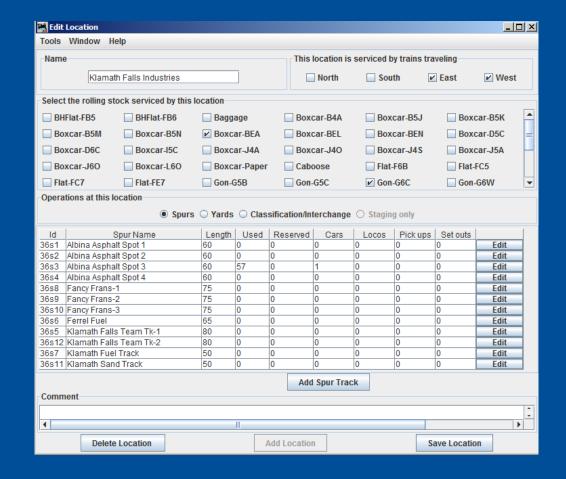
The program has four types of tracks you can enter. They are Spurs, Yard, Classification / Interchange and Staging.

- Spurs are your basic industry tracks.
- Yard tracks are for car storage
- Classification / Interchange tracks are used by the program to move cars from one railroad to another or from one train to another within the same railroad and are the tracks use to set up a classification yard.
- Staging tracks are used to park trains prior to their appearing on the railroad or after a train has run.

Note that a location can have either staging or all other types of tracks but not both.

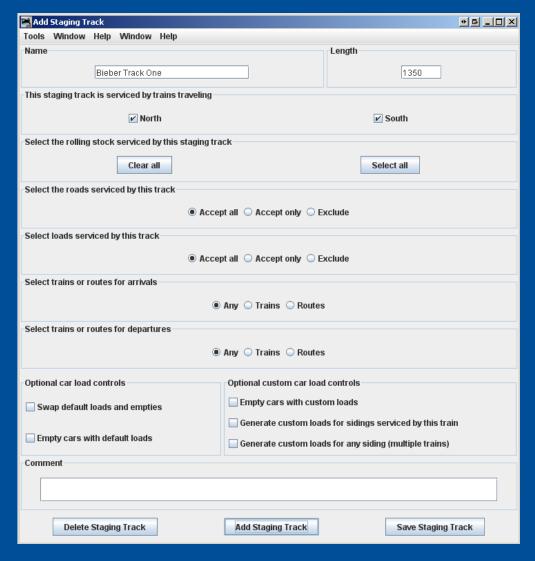
### Spurs

Spurs are the industry tracks where freight cars are loaded and unloaded during the course of our operating sessions.



# Staging Tracks

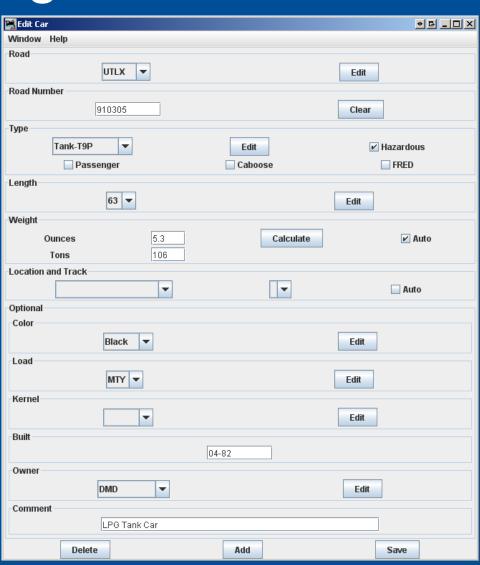
Here is the Add Staging Track screen. As you can see, you have a lot of options to configure the program to manage your car movements.



## Adding Cars

# This is the Edit Car window. Here you can input the:

- Road (reporting marks)
- Road number
- Car type and category
- Length
- Weight
- Location
- Color
- Load
- Kernel
- Year built
- Car owner



# AAR vs. Descriptive Codes

One of the choices you were given in the Settings screen is whether to use AAR or Descriptive car types. Regardless of which type you choose you can add a modifier that will allow you to fine tune how the program assigns cars to various industry sidings. We'll talk about that in the next slide.

# Using the "-" function

The dash is an important component in Operations. When you enter or modify a car type, inserting a "-" (dash) followed by more text after the car type the program will use all the text in the car type to assign a particular car to an industry, but will only print out the text before the dash in the switchlists and manifests. Examples might be XM-1, XM-2 or XM-3; or Boxcar-1, Boxcar-2 or Boxcar-3.

**JMRI** Operations

#### **UMLER** codes

UMLER codes are a way to let the program know the difference between cars of the same general type. For example, Boxcar-BEN is a Standard boxcar (B) that is between 50 and 60 feet long with a cushioned under frame (E) and is a double door car. Boxcar-D5C is a DF (Damage Free) boxcar that is between 49 and 58 feet long and has a cushioned under frame.

UMLER Car ©odes			NOTE: UMLER stand for Universal Machine Langauge Equipment Register								
		First									
Type of car	Sub-Type	Digit	Second Digit			Third Digit					
			Inside			Single Door Width				Double	
			Length	Standard	Cushioned	Capacity	6 feet	8 feet	9 feet	10 feet +	Door
Boxcar	Standard	В	< 50 feet	4	D	< 70 Tons	Α	D	G	J	М
			50 blt 60 ft	5		70 blt 90 T	В	Е	Н	K	N
			60 blt 70 ft	6	F	> 90 Tons	С	F		L	0
			> 70 ft	7	G						
			Inside								
			Length								
			< 49 feet	4		Cushioned	С				
Boxcar	DF	D	49 blt 58 ft	5							
			58 blt 70 ft	6		Not Cushion	U				
			> 70 ft	7							
			All Door	Α							
			Roof Hatch	Н							
			Inside								
			Length								
Boxcar	DF	l (eye)	< 49 feet	4		Cushioned	С				
	Insulated		49 blt 58 ft	5							
			58 blt 70 ft	6		Not Cushion	U				
			> 70 ft	7							
			Inside								
			Length								
Boxcar	Load	L	< 52 feet	4		Side Filler	S				
	Divider		52 blt 58 ft	5		Air Pack	Α				
			58 blt 70 ft	6		Other	0				
			> 70 ft	7							

# Adding Locomotives

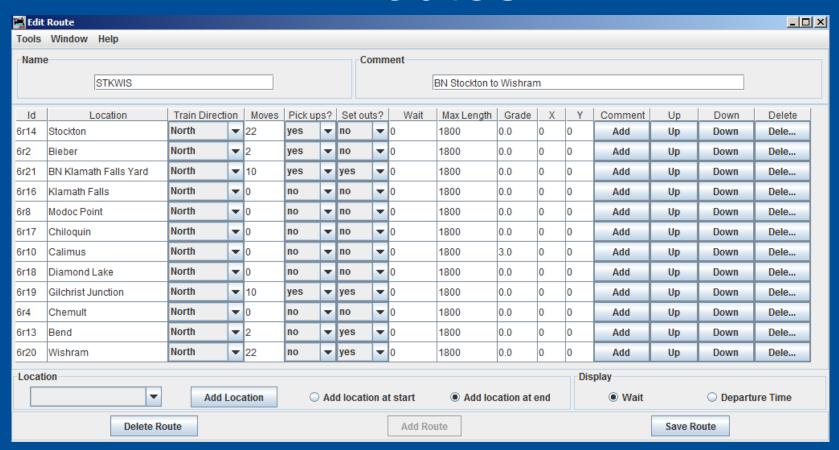
This is the Add Locomotive screen. You can import the roster information from DecoderPro if you're already using JMRI or you can enter it manually. You can enter:

- Road
- Number
- Model
- Type
- Length
- Location and track
- Weight
- Horsepower
- If the unit is part of a consist
- Year built
- Owner

Note that many of these fields can be edited.



#### Routes

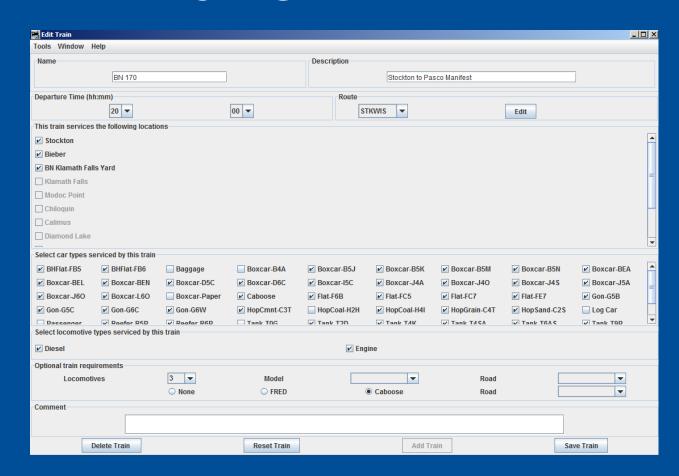


This is the Edit Route screen for my Stockton to Wishram route. As you can see it runs northbound from Stockton to Wishram and is the route used by BN train 170.

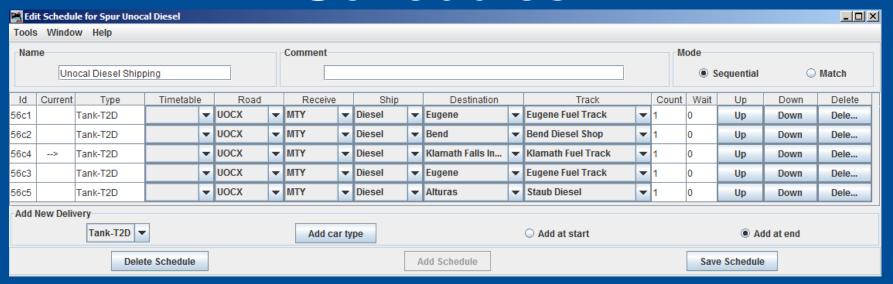
#### **Trains**

This is the add / edit train window. You'll enter in the:

- Name
- Description
- Departure time
- Route
- Car types
- Locomotive type
- Optional info
- Comments



#### Schedules



This is the Edit Schedule window. Here you can enter such data as:

- Name and comments
- Sequential or Match loads
- Type and road of car
- Receive and Ship
- Destination and track
- Count and Wait

#### **Build Reports**

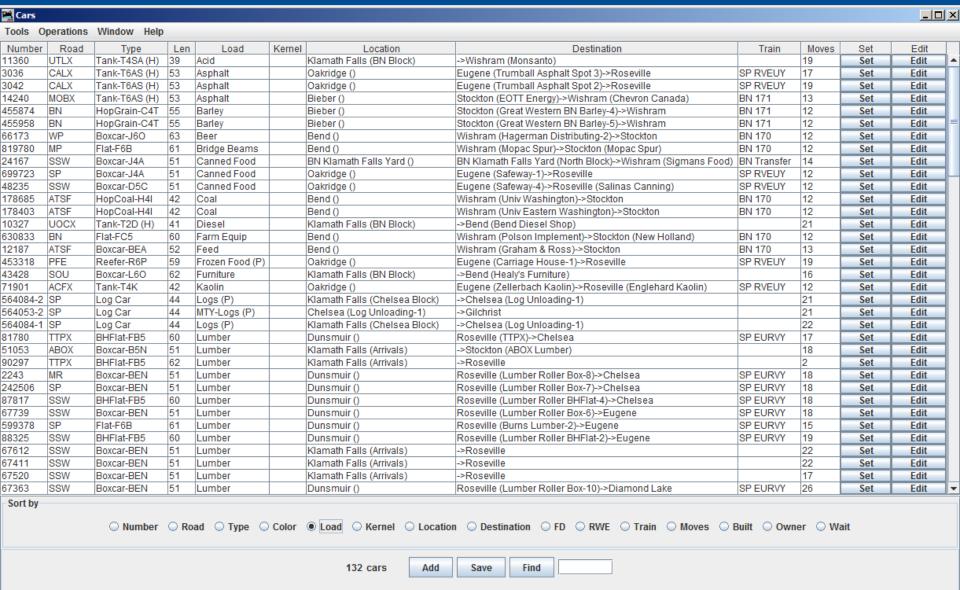
Build reports are used for troubleshooting problems in building trains or if you find some of your cars are not moving. As an example if you find a car that is not moving search for that car to see why.

```
File Edit Format View Help
   Build Report for train (Chelsea Turn) built on 2/10/13 3:11 PM
   JMRI version 3.2-r21862
   Build report detail level Normal
5- Build report detail level Detailed
   Build report detail level Very Detailed
7- Train Build Options
7- Allow local moves when car has a custom load
7- Allow cars to travel from origin to terminal
3- Location (Klamath Falls) requests 15 pick ups
3- Location (Chelsea) requests 20 moves
3- Location (Chelsea) requests 20 moves
3- Location (Klamath Falls) requests 15 set outs
1- Route (KFCHT) requests 35 cars and 70 moves
5- Train (Chelsea Turn) services locomotive types:
5- Diesel, Engine
  Train requires 2 consisted locomotives, model (GP9) road ()
   Search for 2 loco(s), model (GP9), road (), departing (Klamath Falls), destination
   (Klamath Falls)
  Loco (SP 3384) is lead loco for consist (3384) and has 2 locomotives
5- Loco (SP 3384) road (SP) model (GP9) type (Diesel)
5- at location (Klamath Falls, Klamath Falls Roundhouse) destination (Klamath Falls)
7- Can't set out loco (SP 3384) to track (SP East Block) due to type (Diesel)
7- Can't set out loco (SP 3384) to track (Caboose Track) due to type (Diesel)
7- Can't set out loco (SP 3384) to track (Modoc Block) due to type (Diesel)
7- Can't set out loco (SP 3384) to track (KF Industries) due to type (Diesel)
7- Can't set out loco (SP 3384) to track (BN Block) due to type (Diesel)
7- Can't set out loco (SP 3384) to track (Gilchrist Block) due to type (Diesel)
7- Can't set out loco (SP 3384) to track (Chelsea Block) due to type (Diesel)
7- Can't set out loco (SP 3384) to track (RIP Track) due to type (Diesel)
1- Loco (SP 3384) assigned destination (Klamath Falls, Klamath Falls Roundhouse)
1- Loco (SP 3759) assigned destination (Klamath Falls, Klamath Falls Roundhouse)
   Done assigning locomotives to train (Chelsea Turn)
5- Train (Chélsea Turn) services car types:
5- BHFlat-FB5, BHFlat-FB6, Boxcar-B5N, Boxcar-BEN, Boxcar-I5C, Boxcar-J5A, Caboose,
5- Flat-F6B, Flat-FC5, Flat-FE7, Gon-G6W, Log Car, Tank-T9P
   Remove cars not serviced by this train:
   Exclude car (MTTX 98051) by route, no pick up from track (Klamath Falls, Arrivals)
  Exclude car (SP 365019) by route, no pick up from track (Klamath Falls, KF Industries) Exclude car (SSW 24167) by route, no pick up from track (Klamath Falls, BN Block)
7- Exclude car (OTTX 90238) by route, no pick up from track (Klamath Falls, SP East Block)
7- Exclude car (SSW 67520) by route, no pick up from track (klamath Falls, Modoc Block)
7- Exclude car (SP 340635) bý route, no pick up from track (Klamath Falls, KF Industries)
7- Exclude car (ACFX 4563) by route, no pick up from track (Klamath Falls, Modoc Block)
7- Exclude car (SP 354272) by route, no pick up from track (Klamath Falls, SP East Block)
7- Exclude car (USLX 19002) by route, no pick up from track (Klamath Falls, BN Block)
7- Exclude car (TTPX 804090) by route, no pick up from track (Klamath Falls, BN Block)
7- Exclude car (SP 354282) by route, no pick up from track (Klamath Falls, Gilchrist
Block)
7- Exclude car (SSW 67612) by route, no pick up from track (Klamath Falls, Modoc Block)
7- Exclude car (SSW 67411) by route, no pick up from track (Klamath Falls, Modoc Block)
```

#### Trains Window

Train:	S										×
Tools Operations Window Help											
Time	Build	Function	Name	Description	Route	Departs	Terminates Current		Status	Action	Edit
00:05		Build	BN Transfer	Taking cars from the BN to the SP in Klam	BNXFER	BN Klamath Falls Y	BN Klamath Falls Y		Terminated 2/	Move	Edit
00:30	<b>V</b>	Build	K Falls Switcher-1	Klamath Falls Switcher	KFSW	Klamath Falls	Klamath Falls		Terminated 2/	Move	Edit
02:00	<b>V</b>	Build	Klamath Northern	Klamath Northern to Gilchrist Jct.	KNOR	Gilchrist	Gilchrist		Terminated 2/	Move	Edit
03:00	<b>V</b>	Build	KF Industry Job	Klamath Falls Industry Job	KFInd	Klamath Falls Klamath Falls			Terminated 2/	Move	Edit
03:30	<b>V</b>	Build	K Falls Switcher-2	Klamath Falls Switcher	KFSW	Klamath Falls	Klamath Falls	Clamath Falls		Move	Edit
05:00	<b>V</b>	Build	SP RVEUY	SP Roseville to Eugene Manifest	RVEUY	Roseville	Eugene	ugene		Move	Edit
05:50	<b>V</b>	Build	CZLAT	Pig train South	CZLAT	Portland	Los Angeles		Terminated 2/	Move	Edit
06:00	<b>V</b>	Build	BN 171	BN Wishram to Stockton Manifest	WISSTK	Wishram	Stockton		Terminated 2/	Move	Edit
08:00	<b>V</b>	Build	K Falls Switcher-3	Klamath Falls Switcher	KFSW	Klamath Falls	Klamath Falls		Terminated 2/	Move	Edit
08:15	<b>V</b>	Build	Amtrak 14	Northbound Coast Starlite	Amtrak 14	Los Angeles	Portland		Terminated 2/	Move	Edit
12:00	<b>V</b>	Build	Gilchrist Turn	Klamath Falls to Gilchrist Junction Turn	KFGJT	Klamath Falls	Klamath Falls	math Falls		Move	Edit
16:10	<b>V</b>	Build	K Falls Switcher-4	Klamath Falls Switcher	KFSW	Klamath Falls	Klamath Falls		Terminated 2/	Move	Edit
17:00	<b>V</b>	Build	SP EURVY	Eugene to Roseville Manifest	EURVY	Eugene	Roseville	Roseville		Move	Edit
18:00	<b>V</b>	Build	Klamath Falls Switcher-5	Klamath Falls Switcher	KFSW	Klamath Falls	Klamath Falls		Terminated 2/	Move	Edit
19:00	<b>V</b>	Build	Chelsea Turn	Klamath Falls to Chelsea and return	KFCHT	Klamath Falls	Klamath Falls		Terminated 2/	Move	Edit
19:45	<b>V</b>	Build	LABRF	Pig Train North	LABRF	Los Angeles	Portland	ortland		Move	Edit
19:55	<b>V</b>	Build	Amtrak 11	Southbound Coast Starlite	Amtrak 11	Portland	Los Angeles		Terminated 2/	Move	Edit
20:00	V	Build	BN 170	Stockton to Pasco Manifest	STKWIS	Stockton	Wishram		Terminated 2/	Move	Edit
21:00	<b>V</b>	Build	ALKFT	Alturas to Klamath Falls and return	ALKFT	Alturas	Alturas		Terminated 2/	Move	Edit
Show (	click on co	olumn headir	ing to sort) Options				Action				
● Time ○ Id				✓ Show All	Move						
Add Build Preview Open Switch Lists Terminate Save Builds											

## Car Report



#### Questions

If you have any questions please feel free to contact me directly at cowrr1984@gmail.com

In addition you can join the JMRI Users Yahoo group at:

http://groups.yahoo.com/group/jmriusers/ Or come see me after the clinic.

Thanks, Dennis Drury