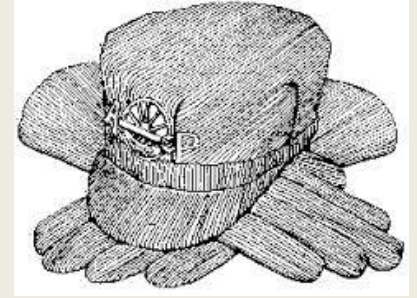# Modular Operations PNWOn30 with JMRI

Rich Blake

Operations Goals

- Simulate prototype operations (simplified)

- Give participants focus and something to do

- Provide example for spectators of something besides just "running trains"

- Expand experience base of participants

- Learn, explore and implement operations methods, NMRA AP support

- Find all the bad track segments and mismatched coupler heights

- HAVE FUN!!!
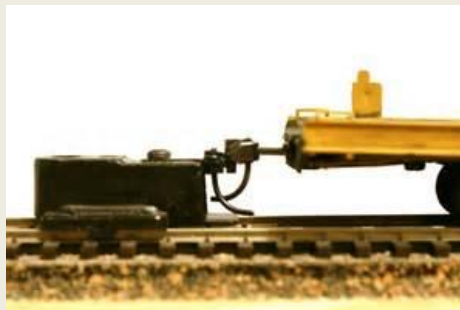
Unique Issues

- Car inventory and markings (RTR models, duplicate #s, inconsistent decaling/road names, etc)

- Locomotive availability and reliability

- Module set up different every event, staging concerns

- Not enough time to build train orders on site

- Rules and regulations (i.e. this is not a free for all)

JMRI OPS - Assumptions and Constraints

- JMRI is used to control train movement on modules due to it's flexibility
- This is not an "intro to JMRI ops" clinic, further research and study is required to gain full understanding of JMRI's features
- JMRI OPS requires the following:
  - Detailed rolling stock inventory and baseline starting location
  - Industry/station locations and lengths of spurs, yards and staging
  - Rolling stock allowances at each location
  - Train routes based on established locations
- Once the above has been generated, trains can be established and switch lists created for trains

PanelPro

File   Edit   Tools   Roster   Panels   Operations   Debug   Window   Help

Panel Pro

JMRI

Trains

Tools   Operations   Window   Help

Time	Build	Function	Name	Description	Route	Departs	Terminates	Current	Status	Action	Edit
00:00	✔	Prev...	A Milk Run	Vaughn to Oly Turn	A Milk Run	Vaughn Dairy Farms	Vaughn Dairy Farms	Vaughn Dairy Farms	Partial 2/9 cars	Move	Edit
00:00	✔	Build	Camp Turn 1 EB	Oly to Stage 2 all camps	A Camp Turn	Staging Off Layout 1	Staging Off Layout 2		Terminated 2/28/20...	Move	Edit
00:00	✔	Build	Camp Turn 2 WB	Stage 2 to Oly all camps	A Camp Turn 2	Staging Off Layout 2	Staging Off Layout 1		Terminated 2/28/20...	Move	Edit
00:00	✔	Build	Logger 1	Camp 4 to JD Mill	A Logger 1	Camp 4	Camp 4		Terminated 3/1/201...	Move	Edit
00:00	✔	Build	Logger 2	ISNG to JD mill	A Logger 2	ISNGR Log Camp	ISNGR Log Camp		Terminated 3/1/201...	Move	Edit
00:00	✔	Prev...	Mill Extra		Mill Extra	Vaughn Dairy Farms	Nemah (Sector plate)	Vaughn Dairy Farms	Built 6 cars	Move	Edit
00:00	✔	Build	Mixed 1 EB	Mixed train east bound	A Mixed 1	Staging Off Layout 1	Vaughn Dairy Farms		Train reset	Move	Edit
00:00	✔	Build	Mixed 2 WB	Mixed train west bound	A Mixed 2	Staging Off Layout 2	Staging Off Layout 1		Terminated 2/28/20...	Move	Edit
00:00	✔	Prev...	Mixed 4 PM WB	Mixed 4 PM WB	A Mixed 4 WB	Staging Off Layout 1	Staging Off Layout 2	Staging Off Layout 1	Partial 4/5 cars	Move	Edit
00:00	✔	Prev...	Mixed PM EB	Mixed 3 Eastbound	A Mixed 3 EB	Staging Off Layout 2	Staging Off Layout 1	Staging Off Layout 2	Built 5 cars	Move	Edit

Show (click on column heading to sort)   ● Time ○ Id

Options   ☑ Show All ☑ Messages ☐ Build Reports ☑ Preview

Action   ● Move ○ Conductor ○ Terminate ○ Reset

Add   Build   Preview   Switch Lists   Terminate   Save Builds

Car Inventory Reality

- RTR, Kit Bash, Scratch, etc. Everything can and does go on the layout.
- Numbering inconsistent, duplicates, no decals, road names, difficult to make unique
- Key is car type, i.e. BOX, TANK, FLAT etc. we will see how this is managed in JMRI

Car Inventory

- Excel database used for car inventory, detail and control
- Each user has a unique 2 digit ID number and color code
- Running numbers if available but not critical to JMRI OPS method

Rolling Stock

Use NMRA "S" scale standards for weight. 2oz initial and add .5 oz per inch.

First Name	Last Name	Owner's Color Code	Type	Road Name	ID Mark	AAR	Road Number	Length	Remarks	MODEL DATA (Optional)				
										MFR	COUPLER	STD	TRUCK	WEIGHT
Rich	Blake	brown/brown	skeleton	Bay Logging Co.	BLC	FL	12	18		BACHMANN	KADEE 148	HO	BACH	3.2
Rich	Blake	brown/brown	skeleton	Bay Logging Co.	BLC	FL	13	18		BACHMANN	KADEE 148	HO	BACH	3.2
Rich	Blake	brown/brown	skeleton	Bay Logging Co.	BLC	FL	14	18		BACHMANN	KADEE 148	HO	BACH	3.2
Rich	Blake	brown/brown	skeleton	Bay Logging Co.	BLC	FL	15	18		BACHMANN	KADEE 148	HO	BACH	3.2
Rich	Blake	brown/brown	tank	Bay Logging Co.	BLC	TM	27	20	oil tank	MHM	KADEE 32	HO	SAN JUAN	
Rich	Blake	brown/brown	box	Bay Logging Co.	BLC	XM	51	24		BACHMANN	KADEE 148	HO	BACH	4.8
Rich	Blake	brown/brown	box	Bay Logging Co.	BLC	XM	52	24	old style frame	BACHMANN	KADEE 148	HO	BACH	4.8
Rich	Blake	brown/brown	caboose	Bay Logging Co.	BLC	NE	5	20		BACHMANN	KADEE 148	HO	BACH	4.15
Alan	Murray	blue/green	Combine Car	Olympia & Tenino RR		CA	-7751		Olive, No Observation	BACHMANN		HO	BACH	
Alan	Murray	blue/green	Coach	Olympia & Tenino RR		PA	-7750		Olive, No Observation	BACHMANN		HO	BACH	
Alan	Murray	blue/green	Box	BBRX		RA	1044	24	Dogfish Head Craft Breweery	BACHMANN		HO	BACH	
Alan	Murray	blue/green	Box	GPEX		RA	1827	24	A. C. Dole & Son Milk	BACHMANN		HO	BACH	
Alan	Murray	blue/green	Box			LC	23714	24	Former GN	BACHMANN		HO	BACH	
Alan	Murray	blue/green	Box			LC	216	24	Under Construction			HO	BACH LOW PRO	
Alan	Murray	blue/green	Box			LC	221	24	Under Construction			HO	BACH LOW PRO	
Alan	Murray	blue/green	Box			LC	229	24	Under Construction			HO	BACH LOW PRO	
Alan	Murray	blue/green	Livestock			SA	642	24		BACHMANN		HO	BACH	
Alan	Murray	blue/green	Gondola				512	24	Low Sided w/ Gravel Load	BACHMANN		HO	BACH	
Alan	Murray	blue/green	Gondola				451	24	Low Sided	BACHMANN		HO	BACH	
Alan	Murray	blue/green	Gondola				517	18	High-side w/ Firewood Load	BACHMANN		HO	BACH	
Alan	Murray	blue/green	Gondola				529	18	High-side w/ Firewood Load	BACHMANN		HO	BACH	
Alan	Murray	blue/green	Flat			FM	1	24		BACHMANN		HO	BACH	
Alan	Murray	blue/green	Flat			FM	71	24		BACHMANN		HO	BACH	
Alan	Murray	blue/green	Flat			FM	107	24	Former GN	BACHMANN		HO	BACH	
Alan	Murray	blue/green	Flat			FM	270	24		BACHMANN		HO	BACH	
Alan	Murray	blue/green	Flat			FL	1071	24	w/ Log Load	BACHMANN		HO	BACH	
Alan	Murray	blue/green	Tank			TM	413	24	18,000 gallon steel	BACHMANN		HO	BACH	
Alan	Murray	blue/green	Tank			TM	495	24	18,000 gallon steel	BACHMANN		HO	BACH	

Module Descriptions / Throttles / Engines / **Rolling Stock** / AAR codes

ady   80%

Rolling Stock Import Option to JMRI

- Using MS Excel makes it easy to create the fields required for exporting a .csv file to JMRI to build a car roster.
- Simplified and consistent use of car type is key for operators to know exactly what is required on final switch lists

Menu Bar

Tools

- **Roster -->**
  - **Import from File**
    Opens the **Open** dialog box, to import a roster of cars if you already have a list of cars in a database. The import function requires an ACSII text file, with one line for each car. The car import requires four attributes and the order is car number, road name, type, and length. An example of a correct format:

    336 GCR Flat 40
    655579 UP Boxcar 40

    Optionally you may include additional attributes in the following order: weight, color, owner name, date built, and location. Check the Windows help file for further information.

JMRI Building a Car Roster
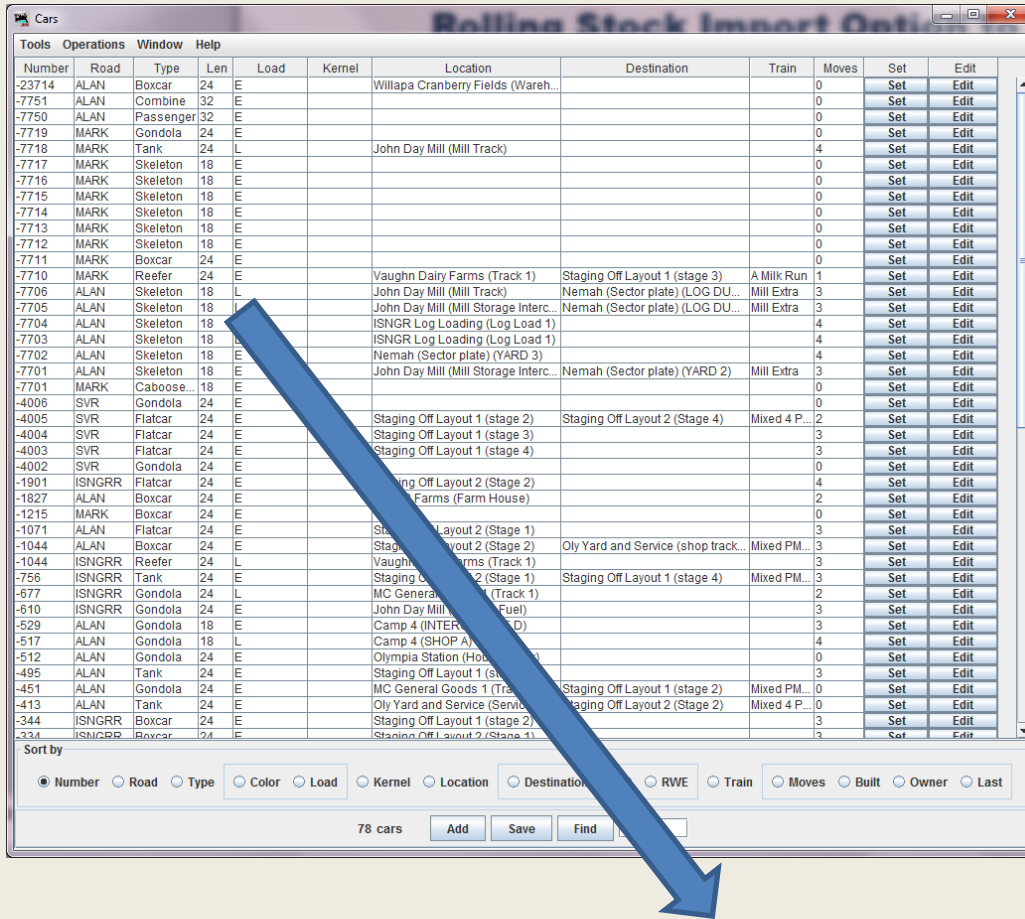
- Simplified car types based on common name vice AAR code
- Use of "-" hyphen before running number within the inventory will cause JMRI to hide the number on switch lists. Number can be any unique number set for each road name
- This is the key to simple operations that are based only on *car type* not numbers as it would be with other car forwarding systems

-7710	MARK	Reefer	24	E		Vaughn Dairy Farms (Track 1)	Staging Off Layout 1 (stage 3)	A Milk Run
-7706	ALAN	Skeleton	18	L		John Day Mill (Mill Track)	Nemah (Sector plate) (LOG DU...	Mill Extra
-7705	ALAN	Skeleton	18	L		John Day Mill (Mill Storage Interc...	Nemah (Sector plate) (LOG DU...	Mill Extra

(Notice "road name" is name of person who owns the car if an actual road name is not available)

Locomotive Availability and Reliability

- Usually more locos are available than can be used for a typical session. Choose the best locos for the jobs available and leave the rest off the layout.

- Post a loco DCC key card at a central location so everybody knows how to acquire. Using unique ID for DCC ensures control and address conflict avoidance

- Unreliable locos should be pulled and replaced as required during op sessions

- Ensure programming track or stand alone system is available to test/tune locos, however op session is not time for test and tune

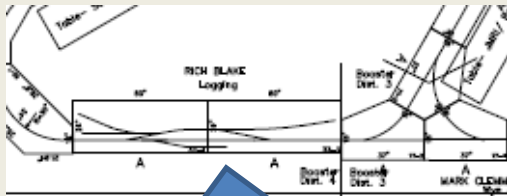|								
1					Engine Assignments			
2	Preferably your engine number assignment should match the number you have on the unit. In cases where the same number is used on							
3	more then one engine, one could be the short address, and the other could be the long address. If no number exists on your engine it							
4	would be a good idea to put something like a sticky note on it so everyone will know what number it is.							
5	Short Addresses can be numbers from 1 thru 127 - Long Addresses can be numbers 0000 thru 9999							
6	A short address of 3 for example, can be made a long address with the addition of a "0" in front of the number or "03". You will however							
7	have to reprogram your decoder to accept this long address or it will not work.							
8/9	First Name	Last Name	Owner's Unique No.	Owner's Color Code	Engine Type	Road Name	Visable Engine Number	Engine Address
19	Jerry	Barnes	19XX		T Boiler Shay	ISNGRR	11	1911
20	Jerry	Barnes	19XX		4-6-0	ISNGRR	35	1935
21	Jerry	Barnes	19XX		Freight Goose	RGS	3	1903
22	Jerry	Barnes	19XX		4-4-0	ISNGRR	46	1946
23								
24	Rich	Blake	33XX		2 Truck Shay	BAY LOGGING CO	2	3302
25	Rich	Blake	33XX		Gas-Mech.	BAY LOGGING CO	14	3314
26	Rich	Blake	33XX		2 Truck Climax	BAY LOGGING CO	3	3303
27	Rich	Blake	33XX		Rail Bus	Nemah Valley N.G.	11	3311
28	Rich	Blake	33XX		Porter 0-4-0	BAY LOGGING CO	1	3301
29	Rich	Blake	33XX		2-4-4-2	BAY LOGGING CO	8	3308
30	Rich	Blake	33XX		0-4-0 On18	Willapa Cranberries	x	3318
31								
32	Adam	Robins	74XX	Orange & Yellow	Porter 0-4-0		7	7407
33	Adam	Robins	74XX	Orange & Yellow	2-6-6-2		44	7444
34	Adam	Robins	74XX	Orange & Yellow	GE 50-tonner	Southern Pacific	1	7401
35	Adam	Robins	74XX	Orange & Yellow	Rail Truck			

Module Set Up and Locations

- PNWOn30 is always a point to point configuration and always a different set up, this presents a unique challenge not only at setup but also for operations

- All modules are drawn out in Auto CAD to scale and saved as layer blocks to allow for arrangement within CAD to figure out configuration for allowable space at shows

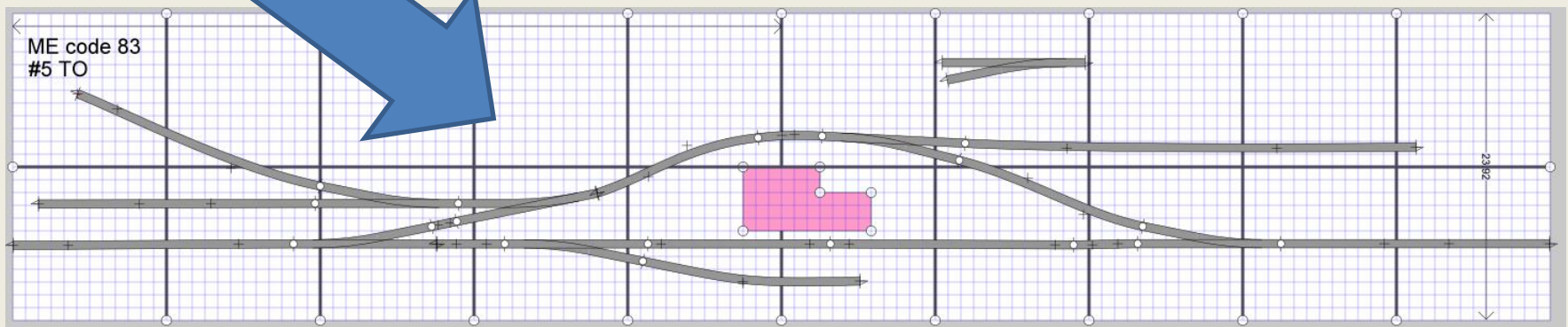- Creating an individual location in JMRI for each module and using order of locations to create routes allows for operations over any configuration
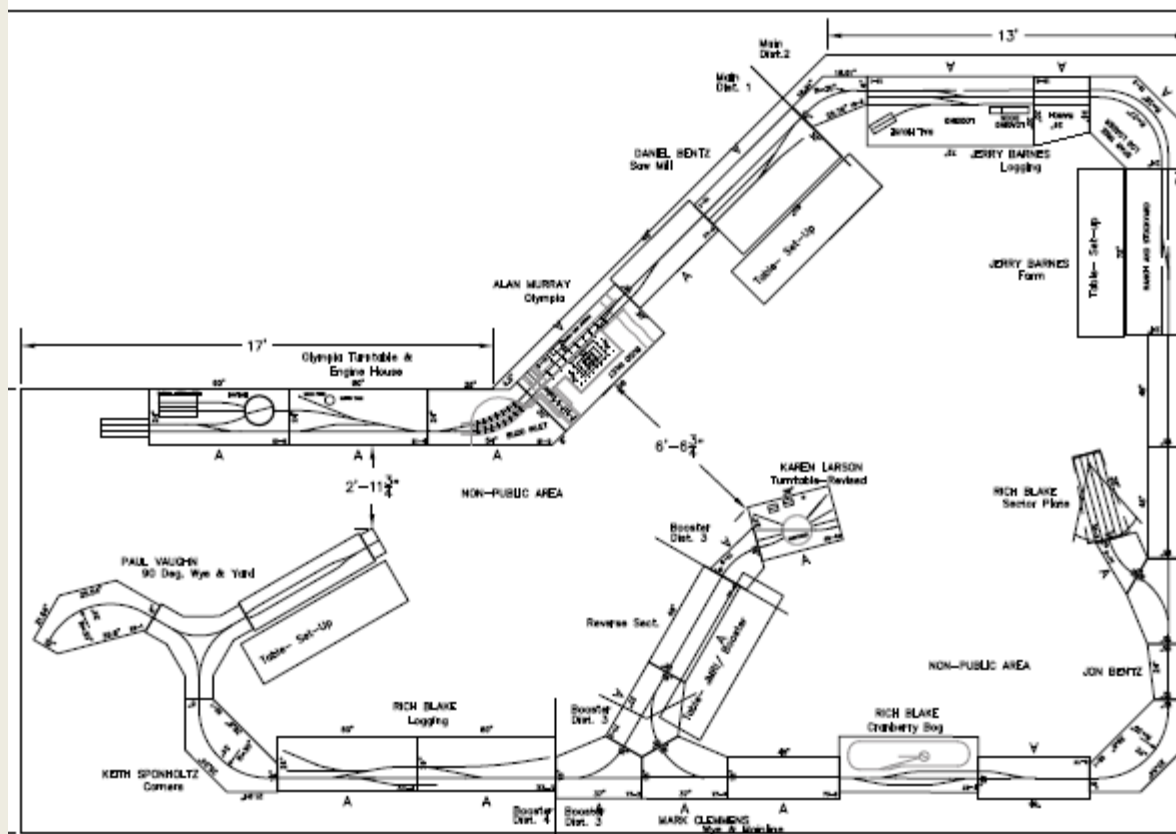
Each Module is it's own Location

- To build locations in JMRI, each module can be an individual location, example below is "Camp 4"

- Camp 4 has four industry spurs

- From CAD, each track can be measured accurately and the length and track name entered into JMRI for rolling stock control

- Entering rolling stock requirements for each spur track completes the location build information

Building Routes and Trains

- Once car inventory and locations are built, it is a simple matter to build routes based on the configurations of the modules (JMRI locations)
- Staging considerations may involve off layout staging, this can also be a "location" entry into JMRI
- Max length of trains can also be set to keep within passing siding limits
- "Moves" field allows for control over more or less switching moves at each location

Routes

Tools Operations Window Help

Id	Name	Comment	Status	
13	A Camp Turn	Oly Camp service WB to Stage 2	Okay	Edit
14	A Camp Turn 2	Stage 2 to Oly Camp service	Okay	Edit
11	A Logger 1	Logging Train	Okay	Edit
12	A Logger 2	ISNG to JD Mill	Okay	Edit
15	A Milk Run	Reefer Madness	Okay	Edit
9	A Mixed 1	Mixed freight WB	Okay	Edit
10	A Mixed 2	Mixed Freight EB	Okay	Edit
17	A Mixed 3 EB	Stage 2 to Stage 1	Okay	Edit
18	A Mixed 4 WB	Stage 1 to Stage 2	Okay	Edit
19	Mill Extra	clean out	Okay	Edit

Tools Window Help

Name: A Mixed 1

Comment: Mixed freight WB

Id	Location	Train Direction	Moves	Pick ups?	Set outs?	Wait	Max Length	Grade	X	Y	Comment	Up	Down	Delete
9r1	Staging Off Layout 1	West	5	yes	no	0	200	0.0	0	0	Add	Up	Down	Dele...
9r2	Olympia Station	West	1	no	yes	0	200	0.0	0	0	Add	Up	Down	Dele...
9r4	ISNGR Farms	West	2	yes	yes	0	200	0.0	0	0	Add	Up	Down	Dele...
9r5	Camp 4	West	2	yes	yes	0	200	0.0	0	0	Add	Up	Down	Dele...
9r6	Vaughn Dairy Farms	West	1	yes	yes	0	200	0.0	0	0	Add	Up	Down	Dele...

Building Routes and Trains

- Final step is to build trains that follow established routes
- JMRI will select rolling stock and switching moves based on locations, route "moves" options and consist configuration
- Selecting "build" and then "preview" will display/print a switch list for each train that can be assigned to your operators
- After each train is run, the "move" and "terminate" buttons must be used to move the rolling stock within JMRI for the next run or session

Switch List Example


```
train (Mixed 1 EB) - Notepad

File   Edit   Format   View   Help

PNW On30 Modules Monroe

Manifest for train (Mixed 1 EB) Mixed train east bound
Valid 6/1/1932 18:14
All trains must have caboose.  25 foot switching limit beyond working module,
use flags as appropriate.

Scheduled work at Staging Off Layout 1, departure time 00:00
 [ ] Pick up  Flatcar  E from stage 2
 [ ] Pick up  Skeleton  E from stage 3
 [ ] Pick up  Tank  E from stage 1
Train departs Staging Off Layout 1 Westbound with 3 cars, 78 feet, 45 tons

No work at Olympia Station

Scheduled work at ISNGR Farms, arrival time 01:00
 [ ] Pick up  Boxcar  E from Farm House
 [ ] Set out  Flatcar  E to Farm House
Train departs ISNGR Farms Westbound with 3 cars, 78 feet, 45 tons

Scheduled work at Camp 4, arrival time 01:50
 [ ] Set out  Skeleton  E to INTERCHANGE D
 [ ] Set out  Tank  E to SHOP B
Train departs Camp 4 Westbound with 1 cars, 28 feet, 16 tons

Scheduled work at Vaughn Dairy Farms, arrival time 02:40
 [ ] Set out  Boxcar  E to Track 1
Train terminates in Vaughn Dairy Farms
```
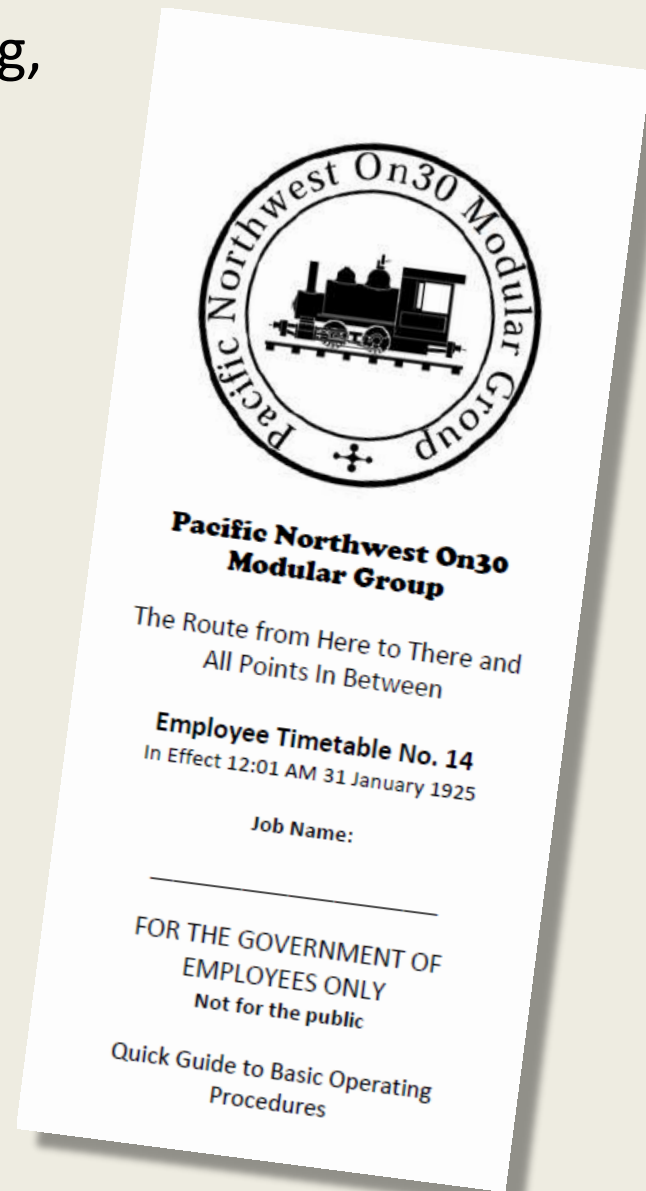
Rules and Regs

- Controlling trains is one thing, controlling operators can be another

- Basic ground rules set standards to follow

- Some examples:
  - Superiority of trains
  - Throwing and resetting turnouts
  - Sound effect usage
  - Speed limits
  - Coupling standards
  - Switching limits and flag use
  - General practices while running

Pacific Northwest On30 Modular Group

Pacific Northwest On30 Modular Group

The Route from Here to There and All Points In Between

Employee Timetable No. 14
In Effect 12:01 AM 31 January 1925

Job Name:

FOR THE GOVERNMENT OF EMPLOYEES ONLY
Not for the public

Quick Guide to Basic Operating Procedures

Running Op Sessions

- Once the prerequisite work is done to populate JMRI with cars, locations and routes it is a simple matter to create and re-create trains as needed to keep people busy

- Key people are needed to perform certain tasks such as a trainmaster/dispatcher to monitor JMRI and print switch lists, yard masters to control staging and at shows a crowd control PR person who can answer questions

- Double up operators when possible into conductor/engineer, this ensures max participation and employment

- Can be as formal or informal as needed

- Allow time for breaks, lunch and just general running

- **HAVE FUN!**