



Operations on the Pennsylvania Southern Railroad

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Operations on the Pennsylvania Southern

- Introduction
- Layout tour
- Train descriptions
- Rolling stock
- Staffing
- Session setup
- Car routing
- Dispatching
- Yard operations
- Local operations



Introduction

- HO scale freelance line linking Pittsburgh with the South
- Modeled portion from Pittsburgh to West Virginia state line
- Single track with passing sidings
- Lots of industry and through traffic
- Era: 1980

Introduction

- Lenz DCC
- 4 LH-100 programmable throttles
- 2 XPA cordless telephone throttles
- Extensive use of back EMF decoders
- All locomotive speed curves match for complete compatibility

Layout Tour

- North Yard
 - ◆ Staging
 - ◆ All points north



Layout Tour

- Pittsburgh
 - ◆ Main classification yard
 - ◆ Major engine terminal
 - ◆ Intermodal terminal
 - ◆ Several industries



Layout Tour

- Bridgeville
 - ◆ Long passing siding
 - ◆ Major industrial center
 - ◆ Active interchange with Montour
 - ◆ Joint switching district with Montour
 - ◆ Two set out tracks to aid in local switching

Layout Tour

- Bridgeville



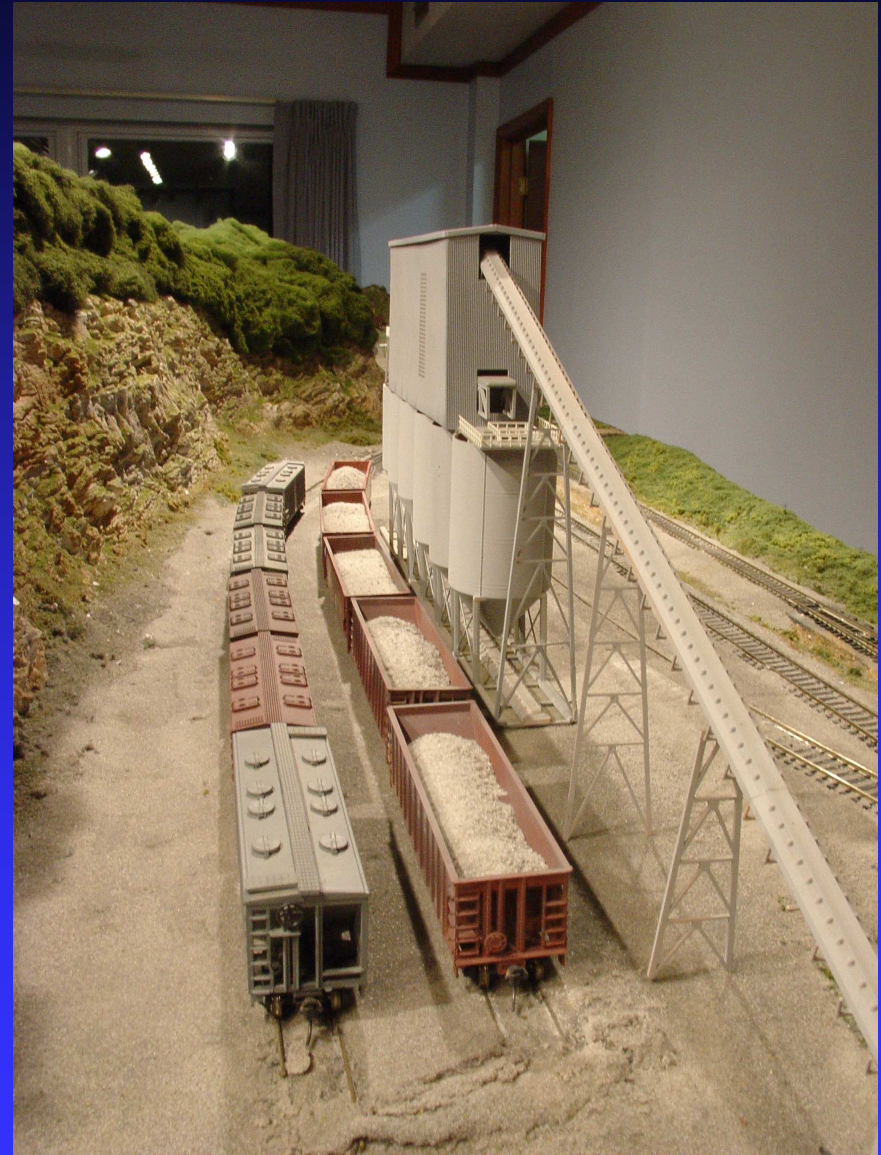
Layout Tour

- Canonsburg
 - ◆ No passing siding
 - ◆ Three small industries



Layout Tour

- Houston
 - ◆ Large sand and gravel plant
 - ◆ Individual car loading of sand and gravel
 - ◆ Unit rock train loading facility



Layout Tour

- Washington
 - ◆ Long passing siding
 - ◆ Secondary classification yard providing relief to Pittsburgh
 - ◆ Small engine terminal
 - ◆ Some industry
 - ◆ Hub for local trains and Wheeling branch

Layout Tour

■ Washington



Layout Tour

- Baker
 - ◆ One small industry
- Wheeling Branch
 - ◆ Nothing more than a lead to a staging yard representing Wheeling, WV



Layout Tour

- West Union
 - ◆ One large industry
 - ◆ Short runaround track



Layout Tour

- Waynesburg
 - ◆ Passing siding
 - ◆ Coal mine loading unit trains
 - ◆ Some industry



Layout Tour

- State Line Yard
 - ◆ Staging
 - ◆ All points south



Operations

- Train descriptions
- Rolling stock
- Session setup
- Car routing
- Dispatching
- Yard operation
- Local operation
- Bridgeville switching district

Train Descriptions

- Through trains (100 series)
 - ◆ Run from staging to staging
 - ◆ Drop blocks of cars for processing at Pittsburgh and Washington yards
 - ◆ Pick up cars for their destinations at Pittsburgh and Washington
 - ◆ May shuttle cars blocks of cars between Pittsburgh and Washington
 - ◆ Do no switching enroute

Train Descriptions

- Trail Van (TV series)
 - ◆ Run from staging to staging
 - ◆ One train each trailers/containers and autoracks
 - ◆ Autoracks northbound with trailers southbound, alternate each session
 - ◆ Each train sets out and picks up block of cars in Pittsburgh

Train Descriptions

- Locals (400 series)
 - ◆ Bridgeville jobs
 - ◆ Work between Pittsburgh and Washington
 - ◆ Switch Canonsburg (northbound)
 - ◆ Switch Houston (southbound)
 - ◆ Usually drop and pick up blocks of cars at Bridgeville

Train Descriptions

- Locals (200 series)
 - ◆ Waynesburg Turn
 - ◆ Originates at Washington
 - ◆ Switches West Union (southbound)
 - ◆ Switches Waynesburg
 - ◆ Turns at Waynesburg
 - ◆ Switches Baker (northbound)
 - ◆ Terminates at Washington

Train Descriptions

- N&W Trains (300 series)
 - ◆ Most run between Wheeling and Pittsburgh via trackage rights
 - ◆ AJ-1 and AJ-2 continue through Pittsburgh to the B&O as part of the Alphabet Route
 - ◆ No switching although AJ trains swap blocks in Pittsburgh

Train Descriptions

- Unit Trains (500 series)
 - ◆ Mine run from Pittsburgh to Waynesburg and return
 - ◆ Southbound lake ore from North Yard to Bridgeville
 - ◆ Ore left at steel mill
 - ◆ Empty coal hoppers picked and taken to West Virginia for loading
 - ◆ Opposite moves in alternate sessions

Train Descriptions

- Unit Trains (500 series)
 - ◆ Auto parts
 - ◆ Northbound one session, southbound the next
 - ◆ Thayer Sand and Gravel Rock Train
 - ◆ Empties from State Line Yard
 - ◆ Loads at Houston
 - ◆ Returns to State Line Yard

Train Descriptions

■ Unit Trains

◆ Western Maryland Rock Train

- ◆ Empties from Baltimore area steel mills via North Yard
- ◆ Loads at Houston
- ◆ Returns to Baltimore

◆ Wisconsin Electric

- ◆ Empties from Wisconsin via North Yard
- ◆ Loads south of layout via State Line Yard
- ◆ Returns to Wisconsin

Train Descriptions

- ◆ CSUX
 - ◆ Empties from Colorado via North Yard
 - ◆ Loads south of layout via State Line Yard
 - ◆ Returns to Colorado
- ◆ Grain
- ◆ Intermodal Extra

Train Descriptions

- Other unscheduled Trains
 - ◆ Pittsburgh and Washington Extras: run as needed to move cars between yards
 - ◆ Wheeling Local: runs as needed
 - ◆ Any visiting trains: run as needed

Rolling Stock

■ Locomotives

- ◆ Heavy use of SD-40-2s, SD-45s for through trains
- ◆ Variety of four axle EMD power with a focus on GP-38-2s
- ◆ Several operator owned units on long term loan

Rolling Stock

- PS cars represent about 35% of all cars on layout.
- PS fleet concentrates on many copies of few types of cars.
- Primary connections well represented
- Secondary connections less well represented
- Lots of Railbox and IPD cars
- Lots of shipper owned cars

Staffing

- Minimum full crew
 - ◆ Yardmaster at Pittsburgh
 - ◆ Yardmaster at Washington
 - ◆ Three road crews
 - ◆ Dispatcher
- Nice to have
 - ◆ Assistant YM at Pittsburgh
 - ◆ Montour crew for Bridgeville

Session Setup

- All staging stub ended
- Session ends with
 - ◆ All cars delivered to industries and
 - ◆ Staging tracks full of trains pointed away from layout
 - ◆ Classification yards nearly empty
- All trains must be turned

Session Setup

- Special note about sessions
 - ◆ Session defined as one trip through the entire operating schedule of trains
 - ◆ Session can take 15 to 20 hours!
 - ◆ With monthly meetings, it takes 3 to 4 months to run through a single session
 - ◆ All the setup work suddenly does not look so onerous

Session Setup

- New car destinations generated
- All trains turned and blocked as needed
- Train lengths equalized as needed
- Train switchlist prepared as needed
- All open cars loaded or unloaded as needed
 - ◆ All coal, ore, gravel, and wood chips are live loads
- Staging yard report prepared for dispatcher

Session Setup

- Paperwork distributed
- Session starts with
 - ◆ All trains in staging pointed toward layout
 - ◆ All industry tracks full
 - ◆ Any cars left in classification yards at session end are treated as recently arrived cars to be classified



Car Routing

■ Goals

- ◆ Empty foreign cars head toward home
- ◆ Loaded foreign cars move in a logical manner
- ◆ Home road cars head off home rails only if loaded
- ◆ Shipper owned or IPD boxcars can roam at will as on the prototype
- ◆ Industries get all the cars they need
- ◆ Complete turnover of cars at most industries

Car Routing

- Factors affecting destination
 - ◆ Previous location
 - ◆ Industry
 - ◆ Interchange
 - ◆ Staging
 - ◆ Car owner
 - ◆ Home road
 - ◆ Privately owned
 - ◆ Primary connection
 - ◆ Secondary connection
 - ◆ Loaded or empty

Car Routing

- Home made computer program
 - ◆ Macros in Microsoft Excel
 - ◆ Large matrix of car type and industries
 - ◆ Car type depends on factors on previous slide
 - ◆ Industry data includes number of cars it can accept
 - ◆ Matrix filled with 1s and 0s for acceptable and unacceptable car destinations

Car Routing

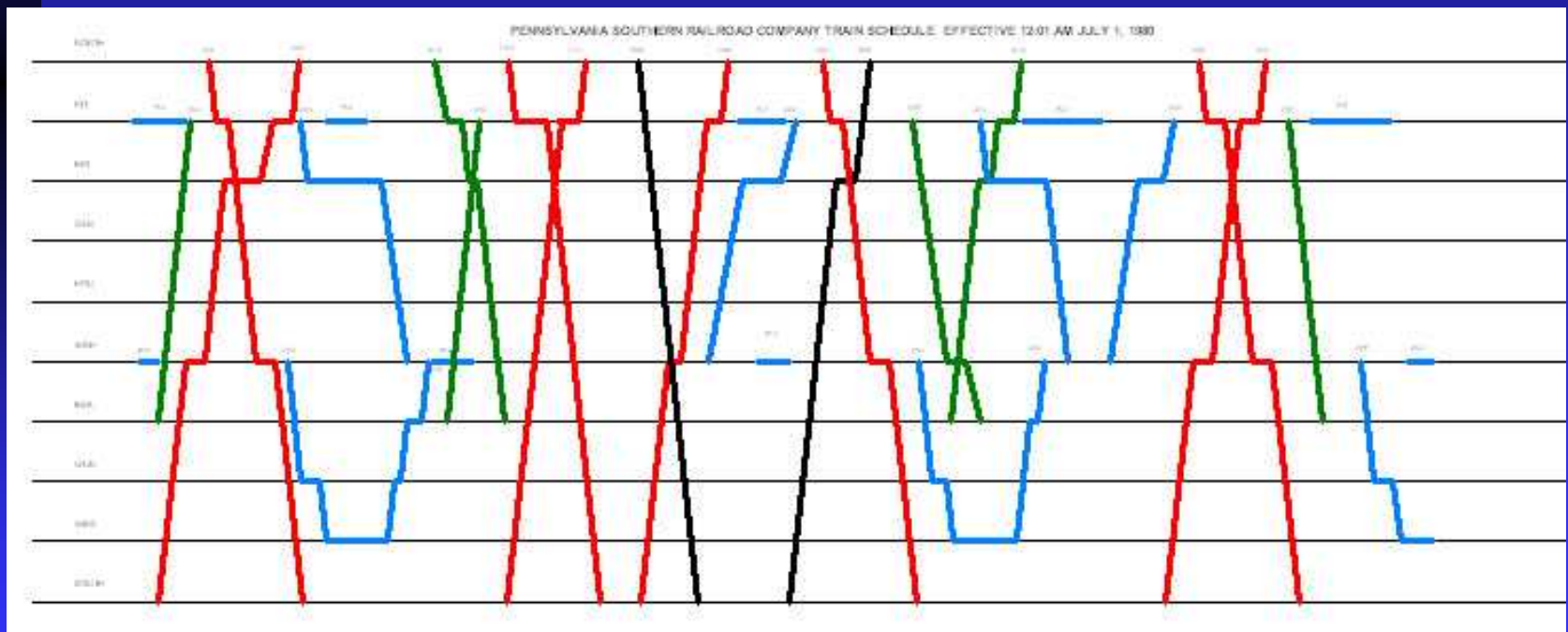
- ◆ Algorithm
 - ◆ Read in matrix
 - ◆ Car type code determined
 - ◆ Car randomly selected
 - ◆ Industry randomly selected
 - ◆ Is this an acceptable match?
 - ◆ If so, is there still room at this industry?
 - ◆ If so, the match is made and the industry capacity is decremented by 1

Car Routing

- ◆ Algorithm, continued
 - ◆ Process continues until all industries and interchanges are filled
 - ◆ Final step is to direct cars without destinations to staging yards

Dispatching

- Nominal schedule of trains that does not convey timetable authority



Dispatching

- Train Orders
 - ◆ Thanks to Lin Young and the Grafton and Greenbrier
 - ◆ Combination Form 19 and Track Warrant
 - ◆ Lines 3, 4, and 5 can authorize meets when initially written or at a later time without the need to issue a whole new order

PENNSYLVANIA SOUTHERN RAILROAD

ORDER No. _____ DATE ____/____/____

TO C&E OF ENG _____ AT _____

1 AFTER ARRIVAL OF _____

2 ENG _____ RUN EXTRA _____ TO _____

3 EXTRA _____ MEET EXTRA _____
AT _____, EXTRA _____ HOLD _____

4 EXTRA _____ MEET EXTRA _____
AT _____, EXTRA _____ HOLD _____

5 EXTRA _____ MEET EXTRA _____
AT _____, EXTRA _____ HOLD _____

6 _____ IS AHEAD _____ TO _____

7 ENG _____ WILL ASSIST _____ TO _____

8 OTHER INFORMATION

COM: _____ M. DISPR _____ OPR _____

Dispatching

- Dispatcher sits in laundry room adjacent to layout
- Dispatcher communicates with crews via FRS radio
- Dispatcher logs all train movements including times out, times in, and crews
- Dispatcher also logs yardmasters on duty



Dispatching

- Schedule is only a guideline
- Trains are run early or late as circumstances warrant
- Scheduled meeting points are changed as appropriate
- Extra coal, grain, and TTX trains are run to make things interesting

Dispatching

- Remote dispatching available via VOIP and radio interface to computer
- Radio traffic available over the internet
 - ◆ Chatter recorded then edited to remove long quiet periods
 - ◆ Available as MP3 podcasts at www.pennsylvaniasouthern.com

Yard Operations

- Main task is to classify cars per yardmaster switchlists

PENNSYLVANIA SOUTHERN RAILROAD COMPANY																	
PITTSBURGH YARDMASTER SWITCHLIST																	
AA	5164	BRI	CR	627089	CR	MTW	4086	CAN	PS	15803	BRI	PS	53610	WSH	SP	355162	N&W
ABOX	51000	WBG	CR	766083	WBG	NAHX	90218	BUF	PS	15806	BRI	PS	53641	PIT	SP	696425	WSH
ABOX	51238	CAN	CR	879214	HOU	NAHX	900056	WBG	PS	15817	PLE	PS	53648	WSH	SRN	5382	N&W
ABOX	51242	BRI	DH	15237	PIT	NATX	87067	WHL	PS	15820	PIT	PS	56275	HOU	SSDK	1041	PLE
ACFX	3360	BRI	DH	24001	BRI	NKP	99932	CHT	PS	15824	CHT	PS	56278	PIT	TASD	78198	BRI
ACFX	12234	N&W	DHNY	50168	WSH	NLG	5064	N&W	PS	15829	BRI	PS	56283	HOU	TCAX	30033	WBG
ACFX	17311	N&W	DRGW	15346	CHT	NOPB	3690	CHT	PS	18462	B&O	PS	56285	PIT	TCAX	60084	PLE
ACFX	17431	WHL	DRGW	15948	WHL	NP	96038	PIT	PS	18469	CR	PS	56287	PIT	TLDX	6406	CHT
ACFX	17666	N&W	DRGW	61254	WSH	NW	12475	CHT	PS	21273	CR	PS	58610	WHL	TLDX	7415	BRI
ACFX	44631	WHL	DRGW	61326	BRI	NW	57275	N&W	PS	21367	PIT	PS	58620	BUF	TLDX	7686	BUF
ACFX	48927	N&W	DTI	10326	N&W	NW	71001	BUF	PS	21386	BRI	PS	58624	WHL	TM	3024	WBG
ACFX	51138	WHL	DUPX	17398	BRI	NW	97119	B&O	PS	21454	BRI	PS	60300	CHT	TTPX	80632	CHT
ACFX	53022	BUF	DUPX	36028	PIT	NW	98596	BRI	PS	21647	BRI	PS	60549	WHL	TTPX	81786	CHT
ACFX	59272	BRI	EFCX	2503	BRI	NW	120612	WSH	PS	21737	PLE	PS	60550	CHT	TTPX	81789	CHT
ACFX	59430	BUF	EJE	7129	BRI	NW	171232	BRI	PS	21740	BRI	PS	60799	WHL	TTZX	87559	CHT
ACFX	72474	WHL	EL	9172	BRI	NW	173710	N&W	PS	21742	PIT	PS	60805	BUF	TTZX	87576	BUF
ACFX	77374	N&W	EL	9175	CR	NW	180308	WSH	PS	21745	PIT	PS	60807	WHL	TTZX	87625	WHL
ACFX	78812	WHL	EL	21303	WSH	NW	292531	PLE	PS	21752	PLE	PS	61521	WHL	TXPX	33073	N&W
ACFX	85275	CHT	ERIE	95788	WSH	NW	355069	N&W	PS	24102	BRI	PS	62204	BUF	UELX	78627	CHT

Yard Operations

- Pittsburgh activities:
 - ◆ Originate and terminate
 - ◆ Two pairs of N&W trains
 - ◆ Three pairs of locals
 - ◆ As many as three pairs of transfer runs to and from Washington
 - ◆ Interchange jobs from CR, P&LE
 - ◆ Blocks set out and picked up by ten passing trains
 - ◆ Three industrial switch jobs

Yard Operations

- Pittsburgh has sub yard for Pittsburgh industries
- Industries are hard to reach so industry switch jobs are carefully blocked before heading out to work
- Each of the three industry jobs only works specific industries in order to keep number of cars coming back for classification to a manageable level

Yard Operations

- Pittsburgh Arrival/Departure yard
 - ◆ Good place to get trains in off main without working them right away
 - ◆ Good place to stash overflow cars by making up outbound train
 - ◆ Does not interfere with yard operation

Yard Operations

- Washington activities:
 - ◆ Originate and terminate
 - ◆ Three pairs of Bridgeville locals
 - ◆ Two pairs of Waynesburg locals
 - ◆ One pair of Wheeling locals
 - ◆ As many as three pairs of transfer runs to and from Pittsburgh
 - ◆ Blocks set out and picked up by six passing trains
 - ◆ Two industrial switch jobs

Local Operations

■ Locals use switchlists

PENNSYLVANIA SOUTHERN RAILROAD COMPANY							
WAYNESBURG TURN SWITCHLIST							
ABOX	51000	WBG	TEAM TRACK	BAK	GREENE COUNTY COOP	BADX	1007
AN	5517	WBG	TEAM TRACK			PS	15512
BADX	1007	BAK	GREENE COUNTY COOP			SOU	35531
BFGX	1033	WBG	ARROW REFURBISHING			WRWK	5055
CCR	6139	WBG	TEAM TRACK				
CR	766083	WBG	TEAM TRACK	WBG	ARROW REFURBISHING	BFGX	1033
GATX	26995	WBG	COMMERCIAL PROPANE			NAHX	900056
GATX	97325	WBG	COMMERCIAL PROPANE			UTLX	49376
LN	109625	WBG	TEAM TRACK				
MB	4030	WUN	PENNSYLVANIA PRINTING	WBG	COMMERCIAL PROPANE	GATX	26995
NAHX	900056	WBG	ARROW REFURBISHING			GATX	97325
PROX	29391	WBG	COMMERCIAL PROPANE			PROX	29391
PS	15237	WUN	PENNSYLVANIA PRINTING				
PS	15512	BAK	GREENE COUNTY COOP	WBG	TEAM TRACK	ABOX	51000
PS	15524	WUN	PENNSYLVANIA PRINTING			AN	5517
PS	15547	WUN	PENNSYLVANIA PRINTING			CCR	6139
PS	15572	WUN	PENNSYLVANIA PRINTING			CR	766083
PS	15665	WBG	TEAM TRACK			LN	109625

Local Operations

- Switchlist use is so simple it is hard
- If a car is in your train and on the list, spot it at the industry
- If a car at an industry is not on the list, it does not belong there so pick it up
- Limits on the number of pickups keep the yard from being swamped

Bridgeville Operations

- Special joint switching district with Montour Railroad
- Large industrial center with about 95 cars in and 95 cars out per session excluding unit train operations at steel mill
- Served by several locals in each direction

Bridgeville Operations

- First local switches 87 Lumber and team track leaving behind any other Bridgeville cars that go to other industries
- Montour switcher appears with interchange cars
- Later locals drop and pick up cars but do not switch industries

Bridgeville Operations

- Montour switcher switches specific industries between each local
- Working ahead too much leads to too many cars arriving in yard at one time
- Montour switcher leaves with interchange cars late in session
- Last local switches any remaining cars into industries at end of session

Credits

- Rick Tipton and Jim Rollwage for introducing me to operations
- Lin Young, Jerry Doyle, Dave Matheny, and the entire G&G crew for showing me a better way to dispatch
- Lin, Jerry, Greg McCartney, Tony Parrish, Russ Miller, Anthony Cole, and Dwight Sherman for being the core of a great operating group and inspiration to always make things better