

## Chapter 11 - More Car-orders and Opr. Sessions

At this point we've got a basic railroad defined in ProTrak and we have been able to move a few cars around. From this point on, we'll build on the knowledge we've gained and expand the railroad. Any concept that we've covered in previous chapters will not be gone into in detail. A reference to where to look for instructions will be included, however. When we do delve into a new concept, we'll detail the steps that need to be taken to complete the task(s).

Here's what we will be looking at and doing in this chapter:

- We'll edit some of the waybills and add car-orders for North Star Engineered Lumber (NSEL). We have the waybills set up, but no car-orders. In order to properly get cars moving to NSEL we need to set up the car-orders as well.
- We'll add two more through trains. Up to now we've been working with trains that originate and terminate in either the CHI02s or STL03s staging track. As a result, we currently have a car that cannot be returned to its home railroad <sup>(1)</sup>. In addition, some of the cars that will be loaded will go through some of the other two staging tracks.
- We'll change the location of the staging track used to represent STL03s. Up to this point we've had both of the through trains running from a track in East Staging to Actonvale then returning to East Staging. We'll change that so that train CHSL runs from East Staging to Actonvale and then on to West Staging and train SLCH runs from West Staging to Actonvale to East Staging <sup>(2)</sup>. Both trains of course exit staging as the other train during the next session. Note that while we are changing the staging yard where each of the trains terminates, this has no impact on how each train exits staging the next day.
- We'll setup the zone printing for the two remaining staging tracks. Now that we have all four staging tracks in use, we need to update the zone printing settings.
- We'll establish a timetable for train movements. Up to this point we've only had three trains and with just those three trains we could assume that each of the three trains moved from their initial location to their interim location and waited there until all three trains had reached their interim location. At that point all three trains started off on the final leg of their journey. Obviously that is not prototypical and not practical now that we

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<sup>1</sup> If we look at Figure G-9 in Appendix G we can see that car EABX 3667 shows a destination of NYC01s – a staging track that currently has no train reaching it.

<sup>2</sup> This change will allow both CHSL and SLCH to run completely across the railroad. Once this change is made and the two new trains have been established, at the start of each session we will have one through train in each of the staging yards which will proceed across the entire railroad to terminate in the opposite staging yard. This will add some additional movement on the railroad.

- have five trains. We'll set up schedules of when trains leave and arrive at the various stops on their schedule to try to make things more prototypical.
- Finally, we'll run a few sessions to make sure our cars are getting moved around properly.

## Waybills and Car-orders

- As was noted in the introduction to this chapter, we need to have a look at the waybills that we've already established for NSEL. We want to change waybill 21 to have the load shipped through Seattle (SEA01s) rather than St Louis (STL03s). We also want to change waybills 25, 26 and 28 to have the loads shipped through New York (NYC01s) rather than Chicago (CHI02s).
- Chapter 8 detailed how to maintain waybills. Using the knowledge you have gained, change the "Shipper Siding Number" for waybill 21 to "SEA01s" and the "Shipper Siding Number" for waybills 25 and 26 to "NYC01s". Finally change the "Consignee Siding Number" for waybill 28 to "NYC01s". Once all of the changes have been made, here's what the "Bill of Lading/Waybills..." window should look like. (A larger version of Figure 11-1 can be found in Appendix C).

Bill of Lading/Waybills, showing: 31 available, of: 31 total

#	Nxt	Kind	Commodity	Wgt	Tra...	Freq'y	Shipper/City	Shpr Siding	Consignee/City	Csgn Siding
1		T	diesel fuel	5	local		R&D Fuels/Bufalo, NY	ACT-Yd	fuel track/	ACT-Yd
2		LO	sand, traction	mty	local		Kraft Sand Dune/Lewes, DE	ACT-Yd	sand track/	ACT-Yd
13			ties, rr, creos	34	local		/		/	
14			rail bonds	68	local		/		/	
15			rail	68	local		/		/	
16			empty	mty	local		/		/	
17			empty	mty	local		/		/	
18		HM	steam coal	5	local		R&D Fuels/Bufalo, NY	ACT-Yd	coal track/	ACT-Yd
19			empty	mty	local		/		/	
20		XM	empty	mty	**OV		/	CHI02s	/	CHI02s
21		FBC	dimensional lumber	63	in	always	Simpson Timber/Korbel, CA	SEA01s	North Star Eng./Berwick	BER-10
22		FBC	dimensional lumber	63	in	always	Landon Lumber/Madison, CT	CHI02s	North Star Eng./Berwick	BER-10
23		XM	plywood	63	in	always	Georgia Pacific/Savannah, GA	STL03s	North Star Eng./Berwick	BER-10
24		XM	plywood	63	in	always	Columbia Plywood/Presque Isle	CHI02s	North Star Eng./Berwick	BER-10
25		LU	adhesives	85	in	always	IMC Chemical PI/Sorbin, ME	NYC01s	North Star Eng./Berwick	BER-10
26		LU	adhesives	85	in	always	Delta Chemicals/Searsport, M	NYC01s	North Star Eng./Berwick	BER-10
27		FBC	engineered lumber	35	out	always	North Star Eng./Berwick	BER-10	Builders Supply/Jewett City,	CHI02s
28		FBC	engineered lumber	35	out	always	North Star Eng./Berwick	BER-10	Ryan Homes Co/Thurmond, MD	NYC01s
29		LU	engineered lumber	35	out	always	North Star Eng./Berwick	BER-10	Donohue Inc./Comtois, PQ	CHI02s
30		GB	scrap iron	67	out	always	Wilson & Sons S/Berwick	BER-11	LTV Steel/Henepin, IL	CHI02s
31		GB	scrap iron	67	out	always	Wilson & Sons S/Berwick	BER-11	Nucor Steel/Crawfordvil	NYC01s

Figure 11-1

- We also need to set up car-orders for NSEL. Again, the process for maintaining car-orders is detailed in Chapter 8. We need to order dimensional lumber, plywood (OSB) and adhesives to be delivered, and we need cars to be available for shipping the finished product. We'll add the car-orders for Monday only.

4. Here are the waybills for which we need to set up car orders:
- Waybill 21 - dimensional lumber - in;
  - Waybill 23 - plywood(OSB) - in;
  - Waybill 25 - adhesives – in;
  - Waybill 27 - engineered lumber – out on an FBC; and
  - Waybill 29 - engineered lumber – out in an LU.
5. Once you have done up the car-orders, here's what the "Rule 15: Agency Record of a Shipper's Request for Cars" <sup>(3)</sup> and the "Rule 15 Record of Car-Orders" windows should look like (Figure 11-2 and 11-3 respectively).

**Rule 15: Agency Record of a Shipper's Request for Cars**

Location: 8 North Star Eng. Lmbr  
 SPOT/Track: BER-10  
 City: Berwick  
 Car-orders for: Monday

Car-orders	Delivery in	Infrequent BoL
1) Load/waybill 21 carloads 1	OK today	<input type="checkbox"/> Order anyways
2) Load/waybill 23 carloads 1	OK today	
3) Load/waybill 25 carloads 1	OK today	
4) Load/waybill 27 carloads 1	OK today	
5) Load/waybill 29 carloads 1	In 8 days	

Available siding length at this spot: 203 feet.  
 Track length required for these orders: 225 feet.

There are 1 too many cars ordered today.

Cancel OK

**Possible Bills-of-Lading/Waybills**

###	<->	Kind	Lading	SPOT	Company/City
21	in	FBC	dimensional L...	SEA01s	Simpson Timber
22	in	FBC	dimensional L...	CHIC2s	Landon Lumber,
23	in	XM	plywood	STLM3s	Georgia Pacific/
24	in	XM	plywood	CHIC2s	Columbia Plywo
25	in	LU	adhesives	YYY01s	IMC Chemical P
26	in	LU	adhesives	YYY01s	Delta Chemicals
27	out	FBC	engineered L...	CHIC2s	Builders Supply
28	out	FBC	engineered L...	YYY01s	Ryan Homes Cc
29	out	LU	engineered L...	CHIC2s	Donohue Inc./C

Figure 11-2

<sup>3</sup> The values shown in the column headed "Delivery in" may be different.

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	All days
5 carloads	0 carloads	0 carloads	0 carloads	0 carloads	0 carloads	0 carloads	0 carloads
dimensional lu							
plywood							
adhesives							
engineered lum							
engineered lum							
Show details	Show details	Show details	Show details	Show details	Show details	Show details	Show details

Figure 11-3

Good, we've now got our waybills and car-orders set up so that we can start to service NSEL. Now let's move on to the trains that will move these commodities.


## Through Trains and Staging Track Changes

As we indicated at the start of this chapter, we'll add two more through trains and adjust one of the staging tracks used by the existing two trains.

1. Chapter 5 discusses the process of setting up trains. We'll add two new trains:
  - "SENY" will travel from Seattle ("SEA01s") to Actonvale then on to New York ("NYC01s"); and
  - "NYSE" will travel from New York ("NYC01s") to Actonvale then on to Seattle ("SEA01s").
2. Things to keep in mind:
  - Train "SENY" will depart at 2:30 pm;
  - Train "NYSE" will depart at 4:00 am;
  - Both trains operate daily;
  - Both trains can have a maximum of 20 cars;
  - Both trains are restricted to a maximum of 40 mph;
  - Each train exits staging as the other ("SENY" becomes "NYSE" and "NYSE" becomes "SENY").

3. There are two ways that you can accomplish the additions. First, on the ProTrak Standard toolbar, click on "Scheduling", then select "Establish Train jobs and yarding", then:
  - While leaving the "Listing of train jobs" window open, from the ProTrak Standard toolbar click on "Edit" then select "New train" from the dropdown list and fill in all of the applicable fields; or
  - In the "Listing of train jobs" window, highlight a train ("SLCH" for example) then on the ProTrak Standard toolbar, click on "Edit" then select "Copy a train" from the dropdown list and finally make any changes required.

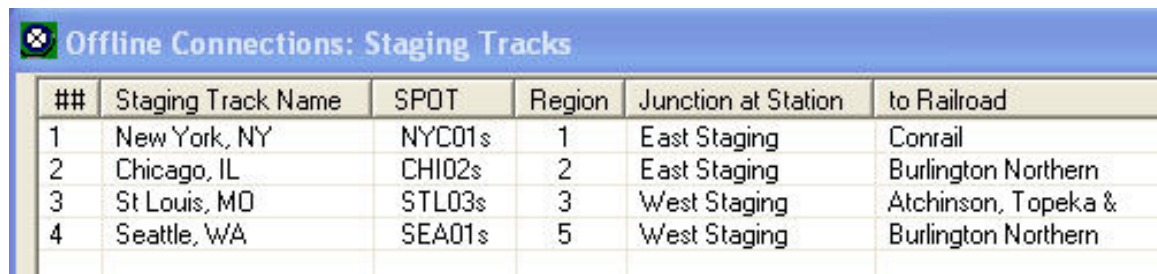
Which of these two methods you choose to use is up to you.
4. Once you have the two trains added the "Listing of train jobs" window should look like Figure 11-4. (A larger version of Figure 11-4 can be found in Appendix C).



No.	Symbol/Number	Connecting	Mvg	Op RR	Time	Days	Origin Terminal	Origin	Final Terminal	Terminal	E/W
1	SLCH	CHSL	OK		1:01 AM	Daily	St Louis, MO	STL03s	Chicago, IL	CHI02s	local
2	CHSL	SLCH	OK		9:00 AM	Daily	Chicago, IL	CHI02s	St Louis, MO	STL03s	local
3	202		OK		7:00 AM	Daily	Actonvale	ACT-Yd	Berwick	BER02y	East
4	SENY	NYSE	OK		2:30 PM	Daily	Seattle, WA	SEA01s	New York, NY	NYC01s	East
5	NYSE	SENY	OK		4:00 AM	Daily	New York, NY	NYC01s	Seattle, WA	SEA01s	West

Figure 11-4

5. There is one last change to make – to change the staging track that represents "STL03s". Chapter 3 covers staging tracks. Edit the staging track representing ST. Louis, MO and change the "Junction is at station" data field to read "West Staging" rather than "East Staging". Once the change to "STL03s" has been made, the "Offline Connections: Staging Tracks" window should look like Figure 11-5.



##	Staging Track Name	SPOT	Region	Junction at Station	to Railroad
1	New York, NY	NYC01s	1	East Staging	Conrail
2	Chicago, IL	CHI02s	2	East Staging	Burlington Northern
3	St Louis, MO	STL03s	3	West Staging	Atchinson, Topeka &
4	Seattle, WA	SEA01s	5	West Staging	Burlington Northern

Figure 11-5

6. If you look at Figure 11-4 you will notice that trains SLCH and CHSL are shown as "local"<sup>(4)</sup> in the column headed "E/W". If we open the "Listing of

<sup>4</sup> Why did trains SLCH and CHSL show up as 'local'? Remember they originally ran from a track in East Staging to Actonvale then back to East staging. Since this is a back-and-forth on the

train jobs” window you probably would have expect train SLCH would now show “East” since we’ve made train SLCH’s route eastward for the entire journey. Figure 11-4 shows us that hasn’t happened, but we can force that the direction to be updated, by double-clicking on train “SLCH” then clicking on “OK” in the “Changing train...” window. Repeat that process for train “CHSL”. You should now see that train “SLCH” shows “East” and train “CHSL” show “West” as is shown in Figure 11-6

Listing of train jobs											
No.	Symbol/Number	Connecting	Mvg	Op RR	Time	Days	Origin Terminal	Origin	Final Terminal	Terminal	E/W
1	SLCH	CHSL	OK		1:01 AM	Daily	St Louis, MO	STL03s	Chicago, IL	CHI02s	East
2	CHSL	SLCH	OK		9:00 AM	Daily	Chicago, IL	CHI02s	St Louis, MO	STL03s	West
3	202		OK		7:00 AM	Daily	Actonvale	ACT-Yd	Berwick	BER02y	East
4	SENY	NYSE	OK		2:30 PM	Daily	Seattle, WA	SEA01s	New York, NY	NYC01s	East
5	NYSE	SENY	OK		4:00 AM	Daily	New York, NY	NYC01s	Seattle, WA	SEA01s	West

Figure 11-6

- If this was a real layout, we would now need to physically move train “SLCH” currently in “East Staging” to “West Staging”. Since we’re still doing things on paper, ProTrak will handle this for us and thus we’ve finished with the staging track changes.
- We have one last thing that need to be done and that is to update the “Line-up of trains”. On the ProTrak standard toolbar, click on “Scheduling” then select “Line-up of Trains” from the dropdown list. This will automatically update the “Line-up of trains”. <sup>(5)</sup>

## Zone Printing Changes

In Chapter 9 we dealt with how to set up zone printing to allow “switchlists” and “cultists” to be printed at a location other than the default printer. If you only have one printer and wish to skip this section, you can go directly to the section in this chapter labeled “Establishing a Timetable”.

- Since we’ve added a couple of new trains, we need to go back in to the zone printing setup and make sure that the zone printing is correct. As previously noted, Chapter 9 dealt with zone printing. Change the “Assigned Printer” data field for zones “NYC” and “SEA” to the appropriate printer (mine is an HP1200 series printer).

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same track, it shows as local. Once we have SPOT “STL03s” set up as being in West Staging the two trains will travel in one direction only.

<sup>5</sup> If you are told that the line-up is current and asked if you want to form a new line-up, click on “Yes”.





Some of you I'm sure are very familiar with this process but please bear with us as we go ahead and delve into the intricacies of developing a schedule for our trains.

One of the most common types of timetables is the one commonly called a "Public Timetable". Below is an example of one – in this case taken from the December 2008 VIA Rail Canada timetable.

Read Down				Read Up				
85	87	89		Train		86	84	88
		X6		Days		X6,7		
1100	1740	2200	Dp	Toronto	Ar	0820	1040	2309
1135	1817	2234		Brampton		0748	1012	2240
1146	1829	2244		Georgetown		0737	1002	2230
1211	1855	2313		Guelph		0707	0938	2200
1235	1919	2336		Kitchener		0644	0904	2134
1307	1950	0007		Stratford		0614	0837	2104
1326	2013	0024		St. Marys		0557	0820	2047
1359	2047	0058	Ar	London	Dp	0525	0749	2011
1404	2052		Dp		Ar		0739	2006
1424	2121			Strathroy			0717	1944
	2150			Wyoming			0646	
1503	2204		Ar	Sarnia	Dp		0630	1900

I have left some of the footnotes and comments off this timetable. It is simply an example of the train schedule part of a public timetable.

Similar to a "Public Timetable" is an "Employee Timetable" and the names themselves indicate who the intended user of the timetable. Often an "Employee Timetable" will have a lot of information that is necessary for train operations that the public need not be aware of. These might include such things as siding lengths, location of set-out tracks and other similar information. Since we're going to be 'employees' of our railroad, we'll set up a simple "Employee Timetable" for our railroad – for simplicities sake we'll just call it a timetable.

Another way to set up the timetable is to use a time/distance string diagram, and we'll show you ours at the end of this section. This is often the most useful one when you are trying to plan the timings for your trains.

Before we go into actually setting up the timings, we need to examine some of the information in Table 1 of Appendix B. This table has the distances between each station shown.

We're going to make some assumptions at this point:



- a) All trains will travel between stations at 20mph. Even though the maximum speed for the trains may show 40mph, we've restricted our train's speeds (look at the "Zone speed limit" setting in Table 1 of Appendix B).
- b) All through trains will take 1 hour to do their switching at ACT Yard.
- c) Train 202 will take 2 hours to switch the two industries at Berwick.

OK, let's get started.

1. One of the first things to look at is how trains move from place to place. With the exception of train "202", all of the trains travel from a Staging Track to Actonvale to another Staging Track. In every case, there are no stops at Berwick, JT Junction or Castle Rock.
2. To make our task easier, let's calculate the distances from the entrance/exit point in East Staging to the east entrance/exit point of Actonvale. We can use the distances shown in Table 1 of Appendix B to accomplish this. The table below shows the distances from EAS to ACT:

East Staging to Castle Rock	50"
Track at Castle Rock	30"
Castle Rock to JT Junction	10"
JT Junction to Berwick	60"
Track at Berwick	25"
Berwick to Actonvale	50"
Total Distance	225"

3. We've calculated the distance from East Staging to Actonvale but we also need to concern ourselves with the distance from Actonvale to West Staging. Again looking at Table 1 we can see that this is 70".
4. While it is not shown in Figure Intro-1 in the Introduction section of this manual, each staging track has a reversing loop to allow a train entering the staging yard to reverse direction prior to departing. When a train reaches the entrance to our staging tracks, it first proceeds through the reversing loop then enters the appropriate staging track and stops just short of the entrance/exit point. Here are the distances for the tracks in the two staging yards. All tracks in each yard are the same length and the figures below include both the staging track and the reversing loop portions of the track:

East Staging	60"
West Staging	60"

5. One last thing to determine is where the entrance to ACT-Yd is located at Actonvale. For ease of calculation, we'll assume the entrance is midway through the trackage at Actonvale. Actonvale has a track length of 30" so when a through train arrives at or departs from Actonvale, it must travel 15" to reach the ACT-Yd entrance/exit point. Similarly, a train leaving ACT-Yd must travel 15" to reach the end of the Actonvale track.
6. We've figured out how far it is between the various critical points so now we can start to determine how far each train travels.
7. Look at train "SLCH". It leaves West Staging and travels to Actonvale. We can determine that this train has traveled 70" (see point 3 above) + 15" (point 5) or a total of 85" to reach the entrance to ACT-Yd.
8. Leaving ACT-Yd heading to East Staging, train "SLCH" travels 15" (point 5) plus 225" (point 2) plus 60" (point 4) for a total of 300".
9. Train "SLCH" is shown leaving West Staging at 1:01 am (see Figure 5-8 in Chapter 5). If we assume that it takes 1 fast-clock hour to travel 60 inches, this means that a train from West Staging to Actonvale will take 1 hour and 25 minutes (in other words 85 minutes) to reach the point where the train can start to do its switching. If train "SLCH" departed at 1:01 am it will be 2:26 am when it reaches the entrance to ACT-Yd.
10. Train "SLCH" needs 1 hour to switch ACT-Yd. It will be ready to depart at 3:26 am.
11. The distance from ACT-Yd to East Staging is 300". Using our calculations of 60 minutes for 60", we see that it will take 5 hours for train "SLCH" to complete the balance of the journey meaning it will arrive at the exit from East Staging at 8:26 am.
12. In total, train "SLCH" needs 7 hours and 25 minutes.
13. We've done "SLCH" but we need to do the same calculations for each of the other 3 through trains. Here's what I calculated:

## Train "CHSL":

Depart	East Staging	9:00 am
Arrive	Actonvale	2:00 pm
Depart	Actonvale	3:00 pm
Arrive	West Staging	4:25 pm

## Train "SENY"

Depart	West Staging	2:30 pm
Arrive	Actonvale	3:55 pm
Depart	Actonvale	4:55 pm
Arrive	East Staging	9:55 pm

## Train "NYSE"

Depart	East Staging	4:00 am
Arrive	Actonvale	9:00 am
Depart	Actonvale	10:00 am
Arrive	West Staging	11:25 am

14. We also need to do the same sort of calculations for train 202; there are some different considerations however. It is safe to assume that the reporting point at Berwick (BER-02y) is located at the far end of the at station trackage in Berwick. This means that the distance from Actonvale to Berwick is:

ACT-Yd to clearance point	15"
Actonvale to Berwick	50"
Trackage at Berwick	25"
Grand Total	90"

15. This means that it will take 1 hour and 30 minutes to travel from Actonvale to Berwick, 2 hours to switch Berwick and another 1 hour and 30 minutes to return to Actonvale.

16. Here's the timings for train 202

Depart	Actonvale	7:00 am
Arrive	Berwick	8:30 am
Depart	Berwick	10:30 am
Arrive	Actonvale	12:00 pm.

17. Now that we've got all of the timings for each of the trains, we can build a timetable similar to the one we saw at the beginning of this section:

Read Down

Read Up

SLCH	SENY	202		Train		202	NYSE	CHSL
1:01 am	2:30 pm		Dp	West Staging	Ar		11:25 am	4:25 pm
2:26 am	3:55 pm		Ar	Actonvale	Dp		10:00 am	3:00 pm
3:26 am	4:55 pm	7:00 am	Dp		Ar	12:00 pm	9:00 am	2:00 pm
		8:30 am	Ar	Berwick	Dp	10:30 am		
				JT Junction				
				Castle Rock				
8:26 am	9:55 pm		Ar	East Staging	Dp		4:00 am	9:00 am

18. We've now got a timetable for our trains. Now let's look at how to make a "string diagram" timetable. This diagram is simply a grid with time shown across the top of the grid in equal increments. Down the side of the grid are the stations. Here's an example of how that might look:

	12:00 am	12:30 am	1:00 am	1:30 am	2:00 am	2:30 am	3:00 am	3:30 am	4:00 am	4:30 am
WST										
ACT										
BER										
EAS										

Often this grid is constructed using a pad of  $\frac{1}{4}$ " square graph paper which is available at most stationary stores. Since the squares on our grid represent 30 minute intervals, we will have to "guestimate" where times that are not an exact hour or half hour will fall within the square.

19. Using train "SLCH" as an example put a dot in the square representing 1:00 am on the line labeled "WST". For the purposes of our string diagram, 1:00 am is close enough to represent 1:01 am. Now go over to the column headed "2:30 am (an approximation of 2:26 am) and put another dot but this time on the line labeled "ACT". Connect those two dots with a straight line. We now have the portion of the train's journey from West Staging to Actonvale shown.

	12:00 am	12:30 am	1:00 am	1:30 am	2:00 am	2:30 am	3:00 am	3:30 am	4:00 am	4:30 am
WST										
ACT										
BER										
EAS										

20. We know that train SLCH will spend 1 hour in Actonvale switching, so still on the ACT line, go over to the column headed "3:30 am" and put another dot. Connect the two dots on the ACT line together. This line represents the time spent at Actonvale.

	12:00 am	12:30 am	1:00 am	1:30 am	2:00 am	2:30 am	3:00 am	3:30 am	4:00 am	4:30 am
WST										
ACT										
BER										
EAS										

21. One final dot needs to be put on the line marked "EAS" in the column headed "8:30 am" (not shown). Connect this dot to the dot at ACT/3:30 am. The final line represents the last leg of train SLCH's journey. Here's what that might look like:

	12:00 am	12:30 am	1:00 am	1:30 am	2:00 am	2:30 am	3:00 am	3:30 am	4:00 am	4:30 am
WST										
ACT										
BER										
EAS										

22. On at least one of the travel legs, mark the train symbol above the line or at the end of the line so that you will know what that line represents.

	12:00 am	12:30 am	1:00 am	1:30 am	2:00 am	2:30 am	3:00 am	3:30 am	4:00 am	4:30 am
WST		SLCH								
ACT										
BER										
EAS										

23. Repeat steps 19 through 22 for all of the other trains and you now can quickly see where each train is at any particular time.
24. A few notes about this method:
- a) It is common to use a different color for each train's lines so that following a train's path is easier.
  - b) As you draw these out you may see that you have scheduled two trains to be traveling in opposite directions on the same stretch of single track. You then have to decide what to do – add a passing siding or reschedule one of the trains.
  - c) Many model railroaders go through a number of iterations of these diagrams until they get the movement of trains working the way they want. It is a very helpful planning tool.

Appendix K contains a copy of our "Timetable" (Figure K-1) and final "string diagram" (Figure K-2). Note that the "string diagram" is broken into two sections – an AM and a PM section.

## **Revising the Timetable**

Let's take a close look at the "string diagram" (Figure K-2). If we look at the AM section we can see where we have a couple of problems.

1. Look at trains SLCH and NYSE and you will see that they are currently scheduled to meet and pass at JT Junction. This is not possible since JT Junction is single track.
2. Next, look at trains 202 and NYSE. These two trains are currently scheduled to meet on the single track section between West Staging and Actonvale; again this is a problem.
3. How do we fix these two problems? Let's examine train NYSE. If we were to move its departure time to a bit later, perhaps we could eliminate both problems.
4. Let's try to have trains SLCH and NYSE meet at Castle Rock. The first thing we need to do is have a printed copy of Figure K-2 so if you haven't already printed a copy, do so now. We can see how moving the time will look by putting a straight edge of some sort on the printed copy of Figure K-2 and aligning it with NYSE's EAS/ACT portion of the diagram. Now slide the straight edge to the right maintaining its relative position to the NYSE EAS/ACT line. Keep moving it until it crosses SLCH's ACT/EAS portion of the diagram at CAS. I see that occurring at 7:00 am.

5. With the straight edge in place, look at when train NYSE should depart. I see that as occurring at 6:30 am. Make a note of that as we will have to go back and adjust our timetable (Figure K-1), but leave the straight edge in place for now.
6. Look at where the straight edge crosses train 202's lines. It appears that the best place to meet train 202 would be at Berwick, yet train 202 is just arriving so perhaps we should move the starting time of train 202 to 6:00 am. This would allow train 202 to be at Berwick and it could clear a track to allow train NYSE to pass <sup>(6)</sup>. Again, make a note of that time.
7. We now need to go back and adjust the timings for trains NYSE and 202 on our timetable <sup>(7)</sup>, and again plot our timetable on a string diagram. Train NYSE will depart EAS at 6:30 am, arrive at ACT at 11:30 am, depart ACT at 12:30 pm and arrive at WST at 1:55 pm. Train 202 will depart ACT at 6:00 am, arrive at BER at 7:30 am, depart BER at 9:30 am and arrive at ACT at 11:00 am.
8. It looks like we have also resolved the problem with trains NYSE and 202. Train 202 is now due to arrive back at Actonvale at 11:00 and will be safely put away before train NYSE is due to arrive at 11:30.
9. Now that we've got trains NYSE, SLCH and 202 fixed up, we still have one more problem. Look at trains CHSL and SENY in the PM portion of the string diagram. Again, they are scheduled to pass on the single track section between West Staging and Actonvale.
10. We've looked at sliding a train's whole schedule along to eliminate passing conflicts, but there is another way to eliminate these problems – extend the stay of one train until the second train arrives. Let's look at how we can accomplish that with trains CHSL and SENY.
11. Currently, train CHSL departs East Staging at 9:00 am, arrives at Actonvale at 2:00 pm, spends 1 hour switching Actonvale then departs at 3:00 pm arriving at West Staging at 4:25 pm. Similarly, train SENY departs West Staging at 2:30 pm and arrives at Actonvale at 3:55 pm. We could hold train CHSL at Actonvale until train SENY arrives. Let's change train CHSL's schedule to say that it waits to depart Actonvale at 4:30 pm and arrives at West Staging at 5:55 pm. Let's go back to our timetable and change those times.

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<sup>6</sup> In the 'real world' of railroading, Rule 91 exists. This rule requires a 20 minute interval between following trains except when there is a signaling system in place.

<sup>7</sup> We will also need to adjust the departure times for the trains in ProTrak itself, but we'll wait until we get our schedule finalized before we do that.



12. Now that we've changed the times in the timetable, we need to redraw the string diagram to show the correct timings. The revised timetable and string diagram are included in Appendix K as Figures K-3 and K-4 respectively.
13. Now that we've got the timetable where we want it we need to adjust the departure times for trains 202 and NYSE in ProTrak (see Chapter 5). On the ProTrak Standard toolbar, click on "Scheduling" then select "Establish Train jobs and yarding" from the dropdown list to open the "Listing of train jobs" window. Trains NYSE and 202 need to have their departure time adjusted so double click on the "Symbol/number" for the one of the trains. This will open the "Changing train: X of: Y" window where the departure time can be adjusted. Make the necessary adjustment to the departure time and click on "OK" to make the change permanent, close the "Changing train..." window and return you to the "Line-up of trains..." window. Repeat these actions for the second train.
14. Once the changes have been made, the lineup of trains needs to be updated ("Scheduling"/"Line-up of Trains"). Once you have updated trains 202 and NYSE, Figure 11-8 shows what the "Listing of Trains..." window will look like.



No.	Symbol/Number	Time	Days	Origin Terminal	Final Terminal	Direction
1	SLCH	1:01 AM	Daily	St Louis, MO	Chicago, IL	East
2	202	6:00 AM	Daily	Actonvale	Berwick	East
3	NYSE	6:30 AM	Daily	New York, NY	Seattle, WA	West
4	CHSL	9:00 AM	Daily	Chicago, IL	St Louis, MO	West
5	SENY	2:30 PM	Daily	Seattle, WA	New York, NY	East

Figure 11-8

15. As you can see, it took a few iterations of the schedule to get one that works. As more and more trains get added, it will likely take even more tries to get a schedule in a workable form.

## Running more Sessions

1. Now that we've got scheduling out of the way, let's run some more sessions. With the changes we've made you should see all of the cars on the railroad moving including the EBAX tank car which had been sitting in ACT-Yd waiting to go back to it 'home road' via the NYC01s staging track.

2. You should also see various cars with material for NSEL being delivered as well as finished material being shipped. These cars are in addition to the cars being moved in and out of Wilson's.
3. Rather than just move all trains to the mid point in their journey then report all of them at the same time, let's use the final string diagram (Figure K-4) to tell us when to move a train from one location to another and report it. We don't need to have a clock running, just make sure the reporting and terminating of trains occurs in the correct sequence – train SLCH gets reported at ACT and gets terminated at CHI02s then train NYSE gets reported at ACT etc. The string diagram will help you see where each train is at any point in time. I found that it helped to take a piece of paper and make a list in time order of what has to happen and when:

<u>Time</u>	<u>Train</u>	<u>Action</u>
1:00 am	SLCH	print 1 <sup>st</sup> switchlist
2:30 am	SLCH	report at ACT
3:30 am	SLCH	print 2 <sup>nd</sup> switchlist
6:00 am	202	report at ACT before leaving
6:00 am	202	print 1 <sup>st</sup> switchlist
6:30 am	NYSE	print 1 <sup>st</sup> switchlist
and so on.		

Making this list helped me avoid missing a step and you may wish to make a similar list.

4. Don't forget to report train 202 before leaving Actonvale as was discussed in Chapter 9 and also to check to see if you need to double report train 202 at Berwick as was discussed in Chapter 10. Also don't forget to check to see if you need to update the car routing ("Yardmaster"/"Route cars at Yards & Customers").
5. I'll leave it up to you as to how many sessions you run, but I would suggest a minimum of three to make sure cars are moving correctly. At this point, you should have gained enough knowledge and skills that I won't bother giving you a train by train synopsis of what cars got moved where.

## **Summary**

In this chapter, we have:

- Expanded our operations to include 2 new through trains and made adjustments to others;
- Updated the “zone printing” setting;
- Set up a schedule of our trains (an employee timetable);
- Created a “string diagram” from the timetable;
- Corrected conflicts with trains in our timetable;
- Ran a few more sessions.

Let’s move on to Chapter 12 where we’ll extend train 202 to service not only Berwick, but also Castle Rock. We’ll also look further at scheduling.